PHASE TWO CONCEPTUAL SITE MODEL

A Phase Two Conceptual Site Model (P2CSM) was prepared for 949, 949A, 949B, 951, 951A,953, 955B, 957C and 971 Gladstone Avenue and 145 and 155 Loretta Avenue North, Ottawa, Ontario (hereafter referred to as the Site or the Phase Two Property) based on environmental investigations completed by Pinchin and others. A key map showing the Phase Two Property location is provided as Figure 1 (all Figures are attached to this P2CSM).

The P2CSM provides a narrative, graphical and tabulated description of the Site, integrating information related to the geologic and hydrogeologic conditions, Potentially Contaminating Activities (PCAs), Areas of Potential Environmental Concern (APECs), the presence and distribution of potential contaminants of concern (PCOCs), contaminant fate and transport, and potential exposure pathways. The P2CSM was completed in accordance with Ontario Regulation 153/04, as amended (O. Reg. 153/04), in conjunction with the submission of a Pre-Submission Form (PSF) to support the submission of a Tier 3 Risk Assessment (RA), as defined by the Ontario Ministry of the Environment, Conservation and Parks (MECP).

The extents of the Phase One Property, Phase Two Property, RSC Property and RA Property are shown on Figure 2. For brevity, the RSC Property and RA Property are collectively referred to herein as the RSC/RA Property. In addition, the terms Phase One Property or Phase Two Property will be used unless it is important to make the distinction between the Phase One Property or Phase Two Property and the RSC/RA Property.

1.1 Background

The Phase Two Property is triangular in shape, approximately 1.1 hectares (2.6 acre) in size and is located on the northeast corner of the intersection of Gladstone Avenue and Loretta Avenue North in Ottawa, Ontario. A key map showing the Phase Two Property location is provided as Figure 1. The Phase Two Property is bounded by Loretta Avenue North to the west, commercial/light industrial properties and a railway line to the north, a railway line, parkland, and commercial land uses to the east and northeast and Gladstone Avenue and commercial and residential land use to the south. The Site and surrounding land use are illustrated on Figure 2 and 3.

The Phase Two Property is currently occupied by a multi-level commercial building (Site Building A at 951 Gladstone Avenue) and a three-storey commercial building (Site Building B at 145 Loretta Avenue North). At the time of the Phase One ESA Update completed by Pinchin, the Site Buildings were occupied by various commercial tenants, including but not limited to a tattoo parlor, furniture designer, art and music studios, automotive parts sales, brewer, winemaker, IT company, and a gym.

The Client intends to redevelop the Site for mixed residential/commercial use with two buildings. One building is proposed to have two 33 to 35 storey towers, and the other is proposed to have a 30 storey tower. Up to five levels of an underground parking garage (UPG) is proposed, which would extend below all of the buildings and occupy the majority of the Site footprint. Given that this constitutes a change to a more sensitive land use, the filing of an RSC for the Phase Two Property with the MECP is a mandatory requirement of O. Reg. 153/04.

1.2 Phase One Conceptual Site Model

A Phase One Conceptual Site Model (P1CSM) was created during the Pinchin Phase One ESA Update in order to provide a detailed visualization of the APECs which could occur on, in, under, or affecting the Phase Two Property. The P1CSM is summarized in Figures 1 through 4, which illustrate the following features within the Phase One Study Area, where present:

- Existing buildings and structures, including utilities;
- Water bodies located in whole or in part within the Phase One Study Area;
- Areas of natural significance located in whole or in part within the Phase One Study Area;
- Drinking water wells located at the Phase One Property;
- Land use of adjacent properties;
- Roads within the Phase One Study Area;
- PCAs within the Phase One Study Area, including the locations of tanks; and
- APECs at the Phase One Property.

The Phase One Study Area is depicted on Figure 2. The Phase One Property with a depiction of current buildings, structures, and known underground utilities, is shown on Figure 3.

The following subsections expand on the P1CSM with the information collected during the completion of the Phase Two ESA.

1.2.1 Potentially Contaminating Activities

The Phase One ESA Update identified 12 PCAs on-Site, and five PCAs off-Site within the Phase One Study Area, as illustrated on Figure 3. The 12 on-Site PCAs and all of the five off-Site PCAs could potentially affect the environmental condition of the subsurface media on, in or under the Phase Two Property, and are considered APECs.

The potential for PCAs to result in APECs at the Phase One Property was evaluated by considering the source of a contaminant, as well as its mobility under the influence of soil and groundwater conditions present at the Phase One Property and the Phase One Study Area. Highly mobile contaminants situated

upgradient of the Site relative to the inferred groundwater flow were considered more likely to result in an APEC at the Site than relatively immobile contaminants situated trans-gradient of the Site. This rationale was used by the QP in selecting PCAs that contribute to APECs at the Phase One Property.

1.2.2 Areas of Potential Environmental Concern

The following table summarizes all APECs identified at the Phase One Property during the Phase One ESA Update, as well as their respective PCAs, COPCs and the media which could potentially be impacted.

APEC	Location of APEC on Phase Two Property	PCA	Location of PCA	COPCs	Media Potentially Impacted
APEC-1 (Fill of unknown quality)	Entire Phase One Property	Item 30 - Importation of Fill Material of Unknown Quality	On-Site	Metals PHCs PAHs	Soil and Groundwater
APEC-2 (Two gasoline above ground storage tanks [ASTs])	Northeast portion of Phase One Property	Item 28 - Gasoline and Associated Products Storage in Fixed Tanks	On-Site	BTEX PHCs	Soil and Groundwater
APEC-3 (Former On-Site retail fuel outlet [RFO] with three underground storage tanks [USTs])	Southwest portion of Phase One Property	Item 28 - Gasoline and Associated Products Storage in Fixed Tanks	On-Site	VOCs PHCs PAHs Metals	Soil and Groundwater
APEC-4 (Former On-Site UST west of 145 Loretta Site Building)	West-central portion of the Phase One Property	Item 28 - Gasoline and Associated Products Storage in Fixed Tanks	On-Site	BTEX PHCs	Soil and Groundwater
APEC-5 (Former On-Site AST within east portion of 951 Gladstone Site Building)	Southeast portion of the Phase One Property	Item 28 - Gasoline and Associated Products Storage in Fixed Tanks	On-Site	BTEX PHCs	Soil and Groundwater
APEC-6 (Former Automotive Service Garage in 145 Loretta	Central Portion of Phase One	Item 27 - Garages and Maintenance and Repair of Railcars, Marine	On-Site	VOCs PHCs	Soil and Groundwater

APEC	Location of APEC on Phase Two Property	PCA	Location of PCA	COPCs	Media Potentially Impacted
Site Building)	Property	Vehicles and Aviation Vehicles		PAHs	
APEC-7 (Former Printing Facility within east portion of 951 Gladstone Site Building)	Southeast Portion of Phase One Property	Item 31 - Ink Manufacturing, Processing and Bulk Storage	On-Site	VOCs PHCs PAHs Metals	Soil and Groundwater
APEC-8 (Former Rail Spur)	Southeast Portion of Phase One Property	Item 46 - Rail Yards, Tracks and Spurs	On-Site	BTEX PHCs PAHs Metals	Soil and Groundwater
APEC-9 (Off-Site UST to the north at 131 Loretta Avenue North)	North Portion of the Phase One Property	Item 28 - Gasoline and Associated Products Storage in Fixed Tanks	Off-Site	BTEX PHCs	Soil and Groundwater
APEC-10 (Off-Site Rail Tracks at the east adjacent property)	East Portion of Phase One Property	Item 46 - Rail Yards, Tracks and Spurs	Off-Site	BTEX PHCs PAHs Metals	Soil and Groundwater
APEC-11 (Former Off-Site Ordnance Depot to the northeast across the rail tracks)	East Portion of Phase One Property	Item 38 - Ordnance Use	Off-Site	VOCs PHCs PAHs Metals	Soil and Groundwater
APEC-12 (Off-Site Private Fuel Outlet to the south at 175 Loretta Avenue North)	Southeast Portion of Phase One Property	Item 28 - Gasoline and Associated Products Storage in Fixed Tanks	Off-Site	VOCs PHCs Metals	Soil and Groundwater
APEC-13 (Off-Site Printing Facility to the west at 975 Gladstone	West Portion of Phase One Property	Item 31 - Ink Manufacturing, Processing and Bulk Storage	Off-Site	VOCs PHCs PAHs	Soil and Groundwater

APEC	Location of APEC on Phase Two Property	PCA	Location of PCA	COPCs	Media Potentially Impacted
Avenue)				Metals	
APEC-14 (On-Site Pad Mounted Transformer west of 145 Loretta Site Building)	Central West Portion of Phase One Property	Item 55 - Transformer Manufacturing, Processing and Use	On-Site	PHCs PCBs	Soil
APEC-15 (Former On-Site UST northwest of 145 Loretta Site Building)	Northwest of Site Building B	Item 28 - Gasoline and Associated Products Storage in Fixed Tanks	On-Site	BTEX PHCs	Soil and Groundwater
APEC-16 (On-Site Salt Storage in a Quonset building)	Northeast Portion of Phase One Property	Item 48 - Salt Manufacturing, Processing and Bulk Storage	On-Site	EC SAR Sodium Chloride	Soil and Groundwater
APEC-17 (Current/Former On-Site UST northeast of 951 Gladstone Site Building)	Northeast of Site Building A	Item 28 - Gasoline and Associated Products Storage in Fixed Tanks	On-Site	BTEX PHCs	Soil and Groundwater

Notes:

As, Sb, Se – arsenic, antimony, selenium; BTEX – benzene, toluene, ethylbenzene, xylenes; Cr (VI) – chromium VI; PCBs – polychlorinated biphenyls; PHCs – petroleum hydrocarbon fractions F1-F4; PAHs – polycyclic aromatic hydrocarbons; VOCs – volatile organic compounds; AST – above ground storage tank; UST – underground storage tank

Figure 4 shows the locations of the APECs.

1.2.3 Characterization of APECs

The Phase Two ESA included an assessment of soil and/or groundwater quality within each of the APECs. In addition, the Phase Two ESA relied on soil and groundwater data obtained during previous subsurface investigations completed by DST in 2017 and Paterson in 2020.

The following table summarizes the soil and groundwater sampling program completed by DST, Paterson and Pinchin to investigate each of the APECs. The following table does not include boreholes and monitoring wells advanced outside of APEC areas for delineation purposes.

APEC	Borehole Advanced	Soil Analysis	Monitoring Well Sampled	Groundwater Analysis
APEC 1	BH101, BH102, BH103, BH104, BH105, BH106, BH107, BHMW108, BHMW112, BH113, BHMW115, BHMW117, BHMW118, , BHMW123, BHMW124	PHCs, BTEX, PAHs, Metals	Groundwater is not a medium of concern	NA
	BHMW114	PHCs, BTEX, Metals		
	BH121, BH126	PHCs, BTEX, PAHs		
APEC 2	BH2017-13, BHMW117, BHMW124	PHCs, VOCs, PAHs, Metals	BHMW117	PHCs, VOCs, PAHs
	BH2017-10	PHCs, VOCs, Metals		
	BH2017-11, BH103	PHCs, BTEX, PAHs, Metals		
APEC 3	BHMW108, BHMW112	PHCs, VOCs, PAHs, Metals	BH2-20, BHMW3, BHMW108, BHMW110, BHMW111, BHMW112	PHCs, VOCs, PAHs
	BH2017-01, BH2017-02	PHCs, VOCs, Metals	BH2017-02	PHCs, VOCs, Metals
	BH2-20	PHCs, BTEX, PAHs	BHMW109	PHCs, VOCs
	BHMW109, BHMW110, BHMW111	PHCs, VOCs, PAHs		
APEC 4	BHMW125	PHCs, VOCs, PAHs	BH5-20, BHMW125	PHCs, VOCs, PAHs
	BH5-20	VOCs, PAHs	BH2017-06	PHCs, VOCs, Metals
	BH2017-06, BH2017-08	PHCs, VOCs, Metals		

APEC	Borehole Advanced	Soil Analysis	Monitoring Well Sampled	Groundwater Analysis
APEC 5	BH2017-04	PHCs, VOCs, PAHs, Metals	BH2017-04	PHCs, VOCs, Metals
APEC 6	BH2017-05, BH2017-05A, BH2017-08	PHCs, VOCs, Metals	BH2017-05	VOCs, Metals
	BH2017-09	PHCs, VOCs, PAHs, Metals	BH2017-09	PHCs, VOCs, Metals
APEC 7	BH2017-05, BH2017-05A	PHCs, VOCs, Metals	BH2017-04	PHCs, VOCs, Metals
	BH2017-03	PHCs, BTEX, Metals	BH2017-05	VOCs, Metals
	BH2017-04	PHCs, VOCs, PAHs, Metals		
APEC 8	BH2017-04	PHCs, VOCs, PAHs, Metals	BH2017-04	PHCs, VOCs, Metals
	BH2017-05	PHCs, VOCs, Metals	BH2017-05	VOCs, Metals
	BH2017-05A	PHCs, VOCs		
APEC 9	BH2017-11	PHCs, BTEX, PAHs, Metals	BH2017-11	PHCs, VOCs
APECs 10 and 11	BH2017-04, BH2017-09, BH2017-13	PHCs, VOCs, PAHs, Metals	BH2017-04, BH2017-09	PHCs, VOCs, Metals
	BH2017-03	PHCs, BTEX, Metals	BH2017-05	VOCs, Metals
	BH2017-05	PHCs, VOCs, Metals		
	BH2017-05A	PHCs, VOCs		
APEC 12	BH2017-04	PHCs, VOCs, PAHs, Metals	BH2017-04	PHCs, VOCs, Metals
	BH2017-03	PHCs, BTEX, Metals		

APEC	Borehole Advanced	Soil Analysis	Monitoring Well Sampled	Groundwater Analysis
APEC 13	BH2017-01, BH2017-02, BH2017-06, BH2017-08, BH2017-10	PHCs, VOCs, Metals	BH2017-02, BH2017-06, BH2017-07	PHCs, VOCs, Metals
	BH2017-03	PHCs, BTEX, Metals	BH2017-11	PHCs, VOCs
	BH2017-07, BH2017-11	PHCs, BTEX, PAHs, Metals		
APEC 14	BH121	PHCs, BTEX, PAHs, PCBs	Groundwater is not a medium of concern	NA
APEC 15	BHMW122, BHMW123	PHCs, VOCs, PAHs, Metals	BHMW122, BHMW123	PHCs, VOCs, PAHs
APEC 16	BHMW124	PHCs, VOCs, PAHs, Metals, EC, SAR	BHMW124	PHCs, VOCs, PAHs, Metals, Sodium, Chloride
APEC 17	BH113, BH126, BHMW127	PHCs, VOCs, PAHs	BHMW127	PHCs, VOCs, PAHs

Notes:
NA – Not applicable as it is not a media of concern for APEC

The APECs and associated boreholes/monitoring wells are shown on Figure 5B.

1.3 Subsurface Structures and Utilities

Underground utilities which are known or inferred to be present at the Phase Two Property include the following:

- A hydro duct bank runs parallel to Loretta Avenue North west of Site Building B and enters a pad-mounted transformer southwest of Site Building B. The depth of the hydro duct bank is unknown; however is inferred to be located approximately 1 mbgs;
- One natural gas line runs in an east-west direction from the central portion of the Phase Two Property boundary and enters Site Building B along the north elevation. A second gas line runs in an east-west direction from the southwest portion of the Phase Two Property boundary and enters Site Building A along the southwest elevation. The depth of the natural gas lines are unknown; however, is inferred to be located approximately 1 mbgs; and

- Storm water sewers are located at various locations throughout the exterior portion of the Phase Two Property. The storm water sewers range in depth from approximately 2 to 3 mbgs.

Interaction of the groundwater at the Phase Two Property with buried utilities is unlikely given that the water table in most areas of the Phase Two Property is located at approximate depths of between 3 and 6 mbgs and the utilities are assumed to be located at depths less than 3 mbgs. The underground utilities are shown on Figure 5C.

1.4 Physical Setting

Based on the work completed as part of this Phase Two ESA, the following subsections provide a summary of the physical setting of the Phase Two Property.

1.4.1 Stratigraphy

The observed stratigraphy at the borehole locations completed for the Phase Two ESA generally consisted of granular fill (sand and gravel with some silty sand, trace silt and trace clay) of unknown origin to a maximum depth of approximately 5.3 mbgs. The native soil stratigraphy underlying the surficial fill materials was generally comprised of sand and gravel, silty clay, and silty clay with trace gravel to a depth ranging from approximately 2.1 mbgs to 8.2 mbgs. Limestone/shale bedrock was encountered underlying the native soil, from a minimum depth of 5.2 mbgs to the maximum borehole completion depth of 17 mbgs. The borehole locations are shown on Figure 5C. Cross-sections summarizing the subsurface geological conditions at the time of the Phase Two ESA have been provided as Figures 6A and 6B.

1.4.2 Hydrogeological Characteristics

The overburden and bedrock units are interpreted to represent an unconfined aquifer. The groundwater flow direction in the overburden aquifer at the Phase Two Property is inferred to be towards the northwest. The groundwater flow direction in the bedrock aquifer at the Phase Two Property is inferred to be towards the east/northeast (subject to seasonal variability). Refer to the groundwater elevation plans for monitoring wells screened within the overburden (Figures 7Ai, 7Bi and 7Ci) and for wells screened within the bedrock (Figures 7Aii, 7Bii and 7Cii). The July 17, 2017 bedrock groundwater elevations and resultant contours and interpretation of the groundwater flow direction are inconsistent with the remainder of the available dataset and appear to be related to an anomalous groundwater elevation reported at BH2017-5, resulting in a radial flow pattern in the bedrock at the Site. These 2017 bedrock groundwater elevations may have been influenced by the bedrock drilling methodology employed (i.e., diamond core barrel utilizing water as a drilling fluid).

The horizontal hydraulic gradient within the unconfined aquifers at the Phase Two Property was calculated to be 0.031 m/m in the overburden unit and 0.006 m/m in the limestone/shale bedrock unit, based on the September 2020 and April 2021 data. Vertical hydraulic gradients calculated using water levels at well pairs screened within the bedrock and overburden units indicated a downward vertical gradient of 0.392 m/m. This horizontal gradient is essentially “flat”, with a significant downward vertical gradient indicative of an aquifer recharging condition. These findings confirm the interpretation that the shallow and deep-water bearing zones within the unconfined aquifer have good hydraulic connectivity.

1.4.3 Approximate Depth to Bedrock

Bedrock was encountered at several borehole locations across the Phase Two Property at depths ranging from 5.2 mbgs at borehole BHMW116 to 8.2 mbgs at borehole BHMW119 (i.e., greater than 2.0 mbgs at all borehole locations).

1.4.4 Approximate Depth to Water Table

The water table at the Phase Two Property is located primarily within the shallow silt/silty sand/sand unit located as well as the limestone/shale bedrock stratigraphy, which represents an unconfined aquifer. The depth to the water table across the Phase Two Property ranged from approximately 4.0 to 7.6 mbgs during the July 17, 2017 groundwater sampling event. The depth to the water table across the Phase Two Property ranged from approximately 2.91 to 15.73 mbgs during the June 23, 2021 groundwater sampling event. The depth to the water table across the Phase Two Property ranged from approximately 2.77 to 6.62 mbgs during the November 30, 2021 groundwater sampling event.

The shallowest depth to groundwater measured on-Site was 2.77 mbgs.

1.4.5 Applicability of Section 35, 41 or 43.1 of O. Reg. 153/04

Site Condition Standards for non-potable groundwater use have been applied to the Phase Two Property given that the following conditions specified in Section 35 of O. Reg. 153/04 have been met:

- The Phase Two Property and all properties within 250 metres of the Phase Two Property are supplied by a municipal drinking water system.
- The Phase Two Property is not located within a well head protection area or other designation identified by the City.
- There are no wells located at the Phase Two Property or within the Phase One Study Area that are used or intended for use as a water source for human consumption or agriculture.

The City was advised in writing in a letter submitted by Pinchin dated April 30, 2021 of the intent to apply non-potable Site Condition Standards at the Phase Two Property. Pinchin has not received a response letter from the City and, given that 30 days have elapsed since the notification letter was submitted, Pinchin has concluded that the City has no objection to the use of non-potable Site Condition Standards at the Phase Two Property.

Section 41 of O. Reg. 153/04 states that a property is classified as an “environmentally sensitive area” if, the property is within an area of natural significance; the property includes or is adjacent to an area of natural significance or part of such an area; the property includes land that is within 30 m of an area of natural significance or part of such an area; the soil at the property has a pH value for surface soil less than 5 or greater than 9; or, the soil at the property has a pH value for subsurface soil less than 5 or greater than 11.

The Site is not located in or adjacent, nor does it contain land within 30 m of, an area of natural significance. Furthermore, 10 soil samples were collected from the Site and submitted for pH analysis; the results indicated that soil pH is within the MECP-accepted range.

Section 41 does not apply to the Site.

Section 43.1 of O. Reg. 153/04 states that a property is classified as a “shallow soil or water body” property if one-third or more of the area consists of soil less than 2 m in depth or the property includes all or part of a water body, is adjacent to a water body or includes land that is within 30 m of a water body.

The depth to bedrock is approximately 5 to 8 mbgs. As such, the Site is not a shallow soil property.

Furthermore, the Site does not contain, is not adjacent to, nor does it include land that is within 30 m of a water body. The nearest water body is the Ottawa River, located approximately 940 m north-northwest of the Site.

Section 43.1 does not apply to the Site.

1.4.6 Soil Imported to Phase Two Property

No soil was imported to the Phase Two Property during completion of the Phase Two ESA.

1.4.7 Proposed Buildings and Other Structures

The Client intends to redevelop the Site for mixed residential/commercial use with two buildings. One building is proposed to have two 33 to 35 storey towers, and the other is proposed to have a 30 storey tower. Up to five levels of a UPG is proposed, which would extend below all of the buildings and occupy the majority of the Site footprint.

1.4.8 Grain Size Classification

Based on the grain size analysis of representative soil samples collected during the Phase Two ESA and the observed stratigraphy at the borehole locations, Pinchin concluded that over two-thirds of the overburden at the Phase Two Property is coarse-textured as defined by O. Reg. 153/04 and Site Condition Standards for medium and fine-textured soil were not applied.

1.5 Applicable Site Condition Standards

Based on the information obtained from the Phase One and Two ESAs, the appropriate Site Condition Standards for the Phase Two Property are the MECP (2011) Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Groundwater Condition for Residential/Parkland/Institutional land use and coarse-textured soil (*Table 3 Standards*).

Contaminants of Concern (COCs) were identified using the analytical data collected as part of the Phase Two ESA, compared to the *Table 3 Standards* and are defined as parameters which met one or all of the following criteria:

- Chemical exceeded the applicable *Table 3 Standards*.
- The reportable detection limit (RDL) of a chemical exceeded the applicable *Table 3 Standard*, the chemical was reported at a measurable concentration elsewhere on the Phase Two Property, and it is associated with a PCA associated with an APEC.
- The reportable detection limit (RDL) of a chemical exceeded the applicable *Table 3 Standards*, the chemical was reported at a measurable concentration elsewhere on the Site, and it is associated with a PCA associated with an APEC.

1.6 Contaminants of Concern in Soil

The following COCs were identified in soil:

- **PHCs:** PHCs F1 to F4;
- **VOCs:** benzene, 1,4-dichlorobenzene (1,4-DCB), 1,2-dichloroethane (1,2-DCA), ethylbenzene, hexane, toluene and xylenes;
- **PAHs:** acenaphthene, acenaphthylene, anthracene, benz(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, dibenz(a)anthracene, fluoranthene, indeno(1,2,3-cd)pyrene, methylnaphthalenes, naphthalene, phenanthrene and pyrene;
- **Metals:** arsenic, barium, cobalt, lead, molybdenum, selenium, vanadium and zinc; and,
- **Salt-related parameters:** electrical conductivity (EC) and sodium adsorption ratio (SAR).

1.7 Contaminants of Concern in Groundwater

The following COCs were identified in groundwater.

- **PHCs:** PHCs F1 to F4;
- **VOCs:** chloroform, 1,2-DCA, hexane, methyl-tert-butyl ether (MTBE) and xylenes; and,
- **Salt-related parameter:** chloride.

1.8 Distribution and Release Mechanisms for Contaminants of Concern

PHCs in Soil

PHCs F1, F2, F3 and/or F4 concentrations reported in soil samples collected from the following sampling locations BH101, BH104, BH105, BH107 (DUP-1), BH110, BH111, BH112, BH113, BH115, BH122 and BH126 at depths ranging between 0.0 and 5.33 mbgs during the Phase Two ESA exceeded the corresponding *Table 3 Standards.* In addition, the PHCs F1, F2 and/or F3 concentrations in the following samples collected at BH2017-1, BH2017-5 and BH2017-7 at depths ranging between 1.2 and 7.2 mbgs during the 2017 DST Phase Two ESA also exceeded the *Table 3 Standards*.

The PHC impacts may be associated with several sources, including the former automotive service operations that occurred on the central portion of the Site (APEC-6); former on-Site USTs located on the west-central portion of the Site (APEC-4), northwest of Site Building B (APEC-15), and northeast of Site Building A (APEC-17); the former RFO located on the southwest portion of the Phase Two Property (APEC-3); and imported fill material of unknown quality (APEC-1). The observed PHC impacts were generally limited in lateral extent to the central, northwest and southwest portions of the Phase Two Property as shown on Figure 8A. Vertical delineation has been achieved at approximately 6.1 mbgs at BH114 at the central portion, and between approximately 4.57 and 7.8 mbgs along the west property boundary. PHCs in soil are presented on Figures 8A through 8C.

BTEX in Soil

The benzene, toluene, ethylbenzene and xylenes (BTEX) concentrations reported in the soil samples collected at boreholes BH108 and BH111 during the Phase Two ESA and BH2017-01 during the 2017 DST Phase Two ESA, at depths ranging between 3.6 to 7.2 mbgs, exceeded the *Table 3 Standards.* These boreholes were situated in the southwest portion of the Phase Two Property.

The BTEX impacts soil in this area may be associated with the former retail fuel outlet (APEC-3) located on the southwest portion of the Phase Two Property. The observed BTEX impacts were limited in lateral extent to the southwest portions of the Phase Two Property. BTEX in soil are presented on Figures 9A through 9C.

VOCs in Soil

The 1,4-DCB and hexane concentrations reported in the soil samples collected at boreholes BH108, BH110 and BH111 during the Phase Two ESA, and BH2017-01 during the 2017 DST Phase Two ESA at depths ranging between 3.8 to 7.2 mbgs exceeded the *Table 3 Standards.* These boreholes were situated in the southwest portion of the Phase Two Property. The 1,4-DCB and hexane impacts in soil in this area may be associated with the former retail fuel outlet (APEC-3) located on the southwest portion of the Phase Two Property, similar to the BTEX impacts in this area. The observed 1,4-DCB and hexane impacts were limited in lateral extent to the southwest portions of the Phase Two Property.

The 1,2-DCA concentrations reported in the soil samples collected at borehole BH2017-05 during the 2017 DST Phase Two ESA at a depths ranging between 1.2 to 1.8 mbgs exceeded the *Table 3 Standards.* This borehole is situated in the west-central portion of the Phase Two Property. The 1,2-DCA impacts in soil in this area may be associated with the former automotive service garage (APEC-6) located on the central portion of the Phase Two Property or a former on-Site UST (APEC-17). The observed 1,2-DCA impacts were limited in lateral extent to the west-central portion of the Phase Two Property. Vertical delineation has been achieved at approximately 3.6 mbgs at BH2017-5 at the west-central portion.

VOCs in soil are presented on Figures 10A through 10C.

PAHs in Soil

PAH concentrations reported in the soil samples collected from the following sampling locations BH101, BH102, BH104, BH105, BH111, BH124 and BH126 at depths ranging between 0.0 and 4.57 mbgs during the Phase Two ESA exceeded the corresponding *Table 3 Standards.* In addition, PAH concentrations in the following samples collected at BH2017-11, BH2-20, BH3-20, and BH5-20 at depths ranging between 0.76 and 4.41 mbgs during the 2017 DST Phase Two ESA or the 2020 Paterson Phase Two ESA also exceeded the *Table 3 Standards*.

The PAH exceedances in soil are located at the southwest, southeast and north portions of the Site, as shown on Figure 11A, and may be associated with the importation of fill materials to the Phase Two Property (APEC-1) and with the former on-Site RFO (APEC-3). Vertical delineation has been achieved between approximately 3.81 and 5.33 mbgs at the north portion, at approximately 4.57 mbgs at the southwest portion, and at approximately 2.4 mbgs at the southeast portion. PAHs in soil are presented on Figures 11A through 11C.

The depth to groundwater across the Phase Two Property ranges between approximately 3 and 6 mbgs, which is below the depth of observed fill materials in these areas. In addition, groundwater samples

collected from all wells were below the *Table 3 Standards* for all PAHs. Given the above evidence as well as the low solubility of PAHs, the PAH exceedances in soil are unlikely to impact groundwater at the Site.

Metals in Soil

Metal concentrations reported in the soil samples collected from the following sampling locations BH102, BH104, BH112 and BH124 at depths ranging between 0.75 and 6.10 mbgs during the Phase Two ESA exceeded the corresponding *Table 3 Standards.* In addition, metal concentrations in the following samples collected at BH2017-5, BH2017-8, BH2017-11, BH2017-13, BH3-20, and BH4-20 at depths ranging between 0.76 and 4.2 mbgs during the 2017 DST Phase Two ESA or the 2020 Paterson Phase Two ESA also exceeded the *Table 3 Standards*.

Metals exceedances in soil are widespread laterally across the Phase Two Property, as shown on Figure 12A, and may be associated with the importation of fill materials to the Phase Two Property (APEC-1). Vertical delineation has been achieved between approximately 4.57 and 7.2 mbgs at various areas. Metals in soil are presented on Figures 12A through 12C.

Groundwater samples collected from all wells were below the *Table 3 Standards* for all metals. Given the above evidence as well as the low mobility of most metals in soil at the pH levels identified at the Site, the metal exceedances in soil are unlikely to impact groundwater at the Site.

Electrical Conductivity (EC) and Sodium Adsorption Ratio (SAR) in Soil

The EC and SAR concentrations reported in the soil samples collected at borehole BH124 during the Phase Two ESA at a depth of 0 – 0.75 mbgs (SAR) and 5.33 – 6.10 mbgs (EC) exceeded the *Table 3 Standards.* BH124 was situated in the north portion of the Phase Two Property adjacent to the on-Site Quonset hut, as shown on Figure 13. The EC and SAR impacted soil in this area may be associated with the on-Site salt storage (APEC-16) located on the northeast portion of the Phase Two Property.

Fate and Transport of Soil COCs

A number of factors can govern the transport and fate of contaminants in subsurface environments, including dilution, adsorption, advection and dispersion, volatilization, geochemical dynamics, and chemical or biological transformation (microbial attenuation). The soil with concentrations of PHCs and VOCs exceeding the *Table 3 Standards* are located at depths up to approximately 7.6 mbgs, within the groundwater bearing zone, and may serve as a future source of groundwater contaminants; however, PHC and VOC impacts are already present in groundwater. The soil with concentrations of PAHs and metals exceeding the *Table 3 Standards* are generally located at depth above the water table, and are unlikely to impact groundwater at the Site.

In the absence of future remediation, it is expected that geochemical factors, such as microbial attenuation and to a lesser degree, volatilization, would reduce the PHC and VOC concentrations in soil.

However, the rate of attenuation cannot be accurately quantified and, would be anticipated to persist for some period of time at the Phase Two Property. The PAH and metal concentrations in soil would likely persist given the strong adsorption of these groups of parameters onto soil.

PHCs F1 to F4 in Groundwater

Concentrations of PHCs F1, F2, F3 and/or F4 exceeded the corresponding *Table 3 Standards* in groundwater samples collected at BH2017-2, BH2-20, BHMW3, BHMW108, BHMW110, BHMW115 and BHMW122 at depths ranging from approximately 2.8 to 6.5 mbgs during the current Phase Two ESA and previous Phase Two ESAs.

The PHC F1 and F2 groundwater impacts at monitoring wells BH2017-2, BH2-20, BHMW108 and BHMW110 may be associated with the former on-Site RFO (APEC-3) located on the southwest portion of the Phase Two Property, as shown on Figure 14A. It should be noted that monitoring well BH2-20 initially reported a PHC F1 exceedance, however, was resampled in April 2021 and was below the RDL. Vertical delineation was achieved at the southwest portion of the Site with monitoring well BHMW111 at a depth of approximately 17.6 mbgs. BHMW3 at the southwest portion of the Site also reported PHC F3 and F4 exceedances, but that may be associated with sediment bias in a duplicate sample collected in April 2021, given that the original sample collected at the same time had PHC concentrations below the *Table 3 Standards*.

The PHC F2, F3 and/or F4 groundwater impacts at BHMW115 at the west-central portion of the Site, as shown on Figure 14A, may be associated with the former on-Site automotive service garage (APEC-6) or the former on-Site UST (APEC-17) in this area. Vertical delineation was achieved at the west-central portion of the Site with monitoring well BH1-20 at a depth of approximately 8.1 mbgs.

The PHC F2 groundwater impacts at BHMW122 at the northwest portion of the Site, as shown on Figure 14A, may be associated with the former on-Site fuel oil UST (APEC-15) located northwest of Site Building B. However, subsequent sampling of this monitoring well in November 2021 indicated that PHCs were all non-detect, suggesting that the marginal PHC F2 impact during June 2021 may have been associated with the presence of sediment. Vertical delineation was achieved at the northwest portion of the Site with monitoring well BH5-20 at a depth of approximately 10.4 mbgs.

Lateral delineation of PHC impacts in groundwater was achieved with various monitoring wells. PHCs in groundwater are presented on Figures 14A through 14C.

VOCs in Groundwater

Concentrations of 1,2-DCA exceeded the corresponding *Table 3 Standards* in groundwater samples collected at BH2017-5, BH2017-09, BH1-20, BH4-20, BHMW116, BHMW119 and BHMW120 at depths ranging from approximately 1.8 to 14.9 mbgs during the current Phase Two ESA and previous Phase

Two ESAs. The 1,2-DCA exceedances in groundwater are limited to the east property boundary, as shown on Figure 15A, and were found in monitoring wells installed both in the overburden and the limestone/shale bedrock stratigraphy at the Phase Two Property. The 1,2-DCA impacts may be associated with the former on-Site automotive repair garage located on the central portion of the Site (APEC-6), similar to the 1,2-DCA impacts in soil. Vertical delineation of 1,2-DCA impacts in groundwater has not been achieved, and non-standard delineation (NSD) has been applied (refer to Section 1.10).

Concentrations of VOCs including chloroform, 1,2-DCA, hexane, methyl-tert-butyl ether (MTBE), xylenes, and exceeded the corresponding *Table 3 Standards* in groundwater samples collected at BH2017-2, BH2017-5, BH2017-09, BH1-20, BH2-20, BH4-20, BH5-20, BHMW116, BHMW119 and BHMW120 at depths ranging from 3.0 to 14.9 mbgs during the current Phase Two ESA and previous Phase Two ESAs.

Additional VOC impacts in groundwater including chloroform (BH5-20), hexane (BH2017-2 and BH2-20), MTBE (BH2017-5), and xylenes (BH2017-2) were limited in both lateral and vertical extent at the Phase Two Property, as shown on Figure 15A. It should be noted that monitoring well BH2-20 initially reported a hexane exceedance in September 2020, however, was resampled in April 2021 and had non-detect hexane concentrations below the RDL. Furthermore, the chloroform exceedance initially reported at BH5-20 in September 2020 was resampled in April 2021 and had a non-detect chloroform concentration below the RDL, with the initial groundwater sample likely biased due to the use of municipal water during bedrock coring activities. Nevertheless, these additional VOC impacts located at the southwest portion (BH2017-02 and BH2-20), at the northwest portion (BH5-20) and at the west-central portion (BH2017-05) have been laterally delineated by various wells in these areas, as shown on Figure 15A. Vertical delineation has been achieved at approximately 17.9 mbgs at the southwest portion and at approximately 11.8 mbgs at the west-central portion.

VOCs in groundwater are presented on Figures 15A through 15C.

Chloride in Groundwater

Chloride exceedances are limited to BHMW124 at a depth of approximately 3.0 to 6.21 mbgs, as shown on Figure 16, and may be associated with the on-Site salt storage activities (APEC-16) on the northeast portion of the Site.

Fate and Transport of Groundwater COCs

A number of factors can govern the transport and fate of PHCs and VOCs in groundwater, including dilution, adsorption, advection and dispersion, volatilization, geochemical dynamics, and chemical or biological transformation (microbial attenuation).

The distribution in terms of relative concentrations of groundwater impacts in shallow overburden monitoring wells versus the deeper bedrock monitoring wells indicates that natural attenuation of these

parameters is likely occurring at the Phase Two Property. Therefore, these concentrations would be expected to decrease over time. However, the rate of attenuation cannot be accurately quantified and, would be anticipated to persist for some period of time at the Phase Two Property.

1.9 Migration of COCs Away from APECs

Off-Site migration of VOCs in groundwater has been inferred at the Site to the north of the Phase Two Property at monitoring wells BH4-20, BHMW119 and BHMW116.

1.10 Non-Standard Delineation

Efforts to vertically and laterally delineate soil and groundwater impacts at the Phase Two Property did not result in soil and groundwater at all delineation depths and locations meeting the *Table 3 Standards.* Given that an RA is planned for the Phase Two Property, a Non-Standard Delineation (NSD) was considered an acceptable alternative to undertaking additional delineation activities. It is the QP_{ESA}'s opinion that an NSD was suitable given the following:

- The delineation requirements outlined in Section 7 of Schedule E of O. Reg. 153/04 were met except for the requirement that all COCs have been delineated to the *Table 3 Standards*.
- The Phase Two ESA has identified all COCs at the Phase Two Property through the investigation of all APECs.
- The Phase Two ESA investigated known source areas within APECs. Where impacts were identified within these APECs, follow up sampling for delineation purposes showed decreasing concentrations laterally and/or vertically with distance from the source area as follows:
    - As shown on Figure 15A, vertical delineation of 1,2-DCA in groundwater was not achieved. The concentrations of 1,2-DCA in groundwater decreases vertically, with the highest 1,2-DCA concentrations of 8.1 to 22 µg/L reported in groundwater collected from the shallow overburden monitoring well (BH2017-9 and BHMW116 screened between approximately 1.8 and 4.9 mbgs), and the 1,2-DCA concentrations decreasing in the intermediate monitoring wells (BH4-20, BH1-20 and BH2017-05 screened between 7.7 and 11.1 mbgs) and deep monitoring wells (BHMW119 and BHMW120 screened between approximately 11.8 and 14.9 mbgs); and

  As such, it is the QP_{ESA}'s opinion that maximum COC concentrations have been identified at the Phase Two Property.

Based on the above, it is the QP_{ESA}'s opinion that further delineation would not provide any meaningful information regarding the distribution and extent of COCs at the Phase Two Property.

1.11 Meteorological and Climatic Conditions

The groundwater table was observed to fluctuate in elevation (i.e., a maximum difference of 1.2 m) over several rounds of groundwater monitoring completed between September 2020 and November 2021. The temporal groundwater table fluctuations likely reflect seasonal variations in water levels and are expected to have had a minimal effect on contaminant distribution throughout the Phase Two Property. Also, the Phase Two Property is either covered by pavement or by the Site Buildings, which is expected to have limited the influence of meteorological and climatic conditions on contaminant distribution and migration in the subsurface, especially given that the water table is located at depths of approximately 3 to 6 mbgs at the Phase Two Property. As such, it is the QP's opinion that meteorological or climatic conditions have not influenced the distribution or migration of the contaminants at the Phase Two Property.

1.12 Soil Vapour Intrusion Considerations

Soil vapour intrusion from impacted soil and groundwater may occur in the existing Site Buildings and a future on-Site building or surrounding properties through preferential pathways in the subsurface. Potential preferential vapour pathways may include untrapped floor drains, unsealed sumps, expansion joints and utility conduits. In addition, depressurization of buildings due to temperature differences between indoor and outdoor air, and operation of a building's HVAC systems may temporarily impact vapour intrusion.

1.13 Remedial Activities

No remedial activities have been conducted at the Phase Two Property.

1.14 Contaminant Exposure Assessment

Potential exposure pathways and receptors were evaluated for the Phase Two Property. The exposure pathways and receptors which are considered are as follows:

Exposure Pathways

- GW1 – The protection of drinking water for humans.
- GW2 – The protection of indoor air sourced from vapours originating from groundwater for humans in an overlying building.
- GW3 – The protection of the aquatic environment in the nearest surface water body.

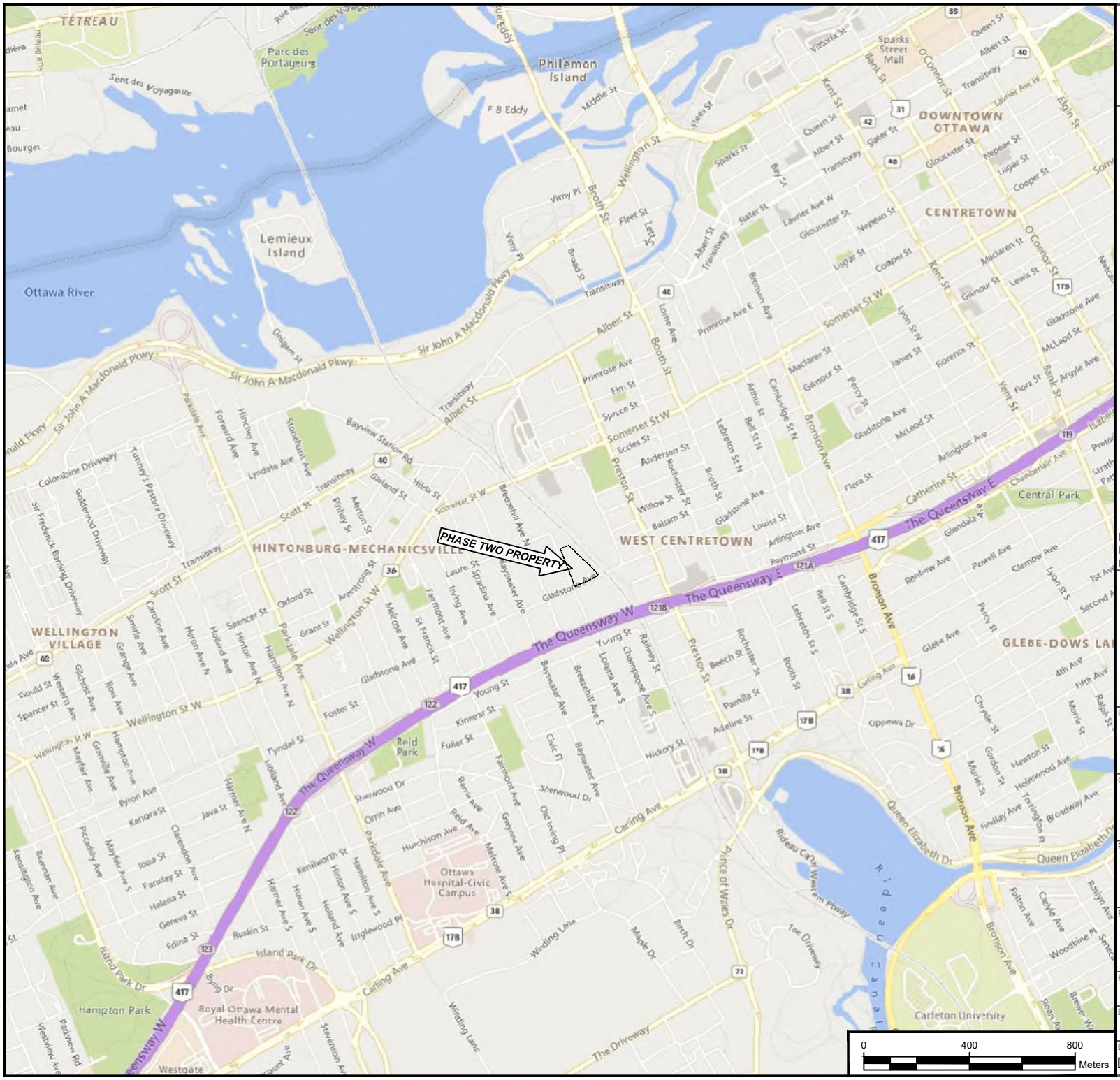
- S1 – High-frequency, high-intensity, human health direct contact exposure scenario equivalent to that of surface soil at a residential/parkland/institutional or agricultural/other site (children and pregnant women are present).
- S2 – Lower-frequency and lower-intensity, human health direct contact exposure scenario without children present and used at commercial/industrial/community sites or at depth at residential/parkland/institutional or agricultural/other sites.
- S3 – Low-frequency, high-intensity, human health direct contact exposure scenario without children present that is protective of a worker digging in the soil. It is used for subsurface soils at commercial/industrial/community sites.
- S-IA – The protection of indoor air sourced from vapours originating from soil for humans in an overlying building.
- S-OA – The protection of outdoor air sourced from vapours originating from soil, using a volatilization model combined with atmospheric mixing for humans.
- S-Odour – Soil concentrations that will not result in unacceptable odours from direct sniffing of the soil.
- S-GW1 – The protection of drinking water for humans via leaching of soil.
- S-GW3 – The protection of the aquatic environment in the nearest surface water body via leaching of soil.
- Plants and Soil Organisms (P&O) – Soil values protective of direct contact exposure scenario for plants and soil-dwelling organisms.
- Mammals and Birds (M&B) – Soil values protective of direct contact exposure scenario for some representative mammalian and avian species.

In considering the current and proposed land use scenarios and future redevelopment activities (i.e., digging, construction, etc.), all exposure pathway/receptor scenarios are considered applicable, with the exception of:

- S-GW1 and GW1 pathways, as the Phase Two Property is in a non-potable water scenario, rendering the potable groundwater pathways incomplete.

The human health CSM is presented in Figure 17, and the ecological CSM is presented in Figure 18.

PHASE TWO CONCEPTUAL SITE MODEL FIGURES



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

PINCHIN

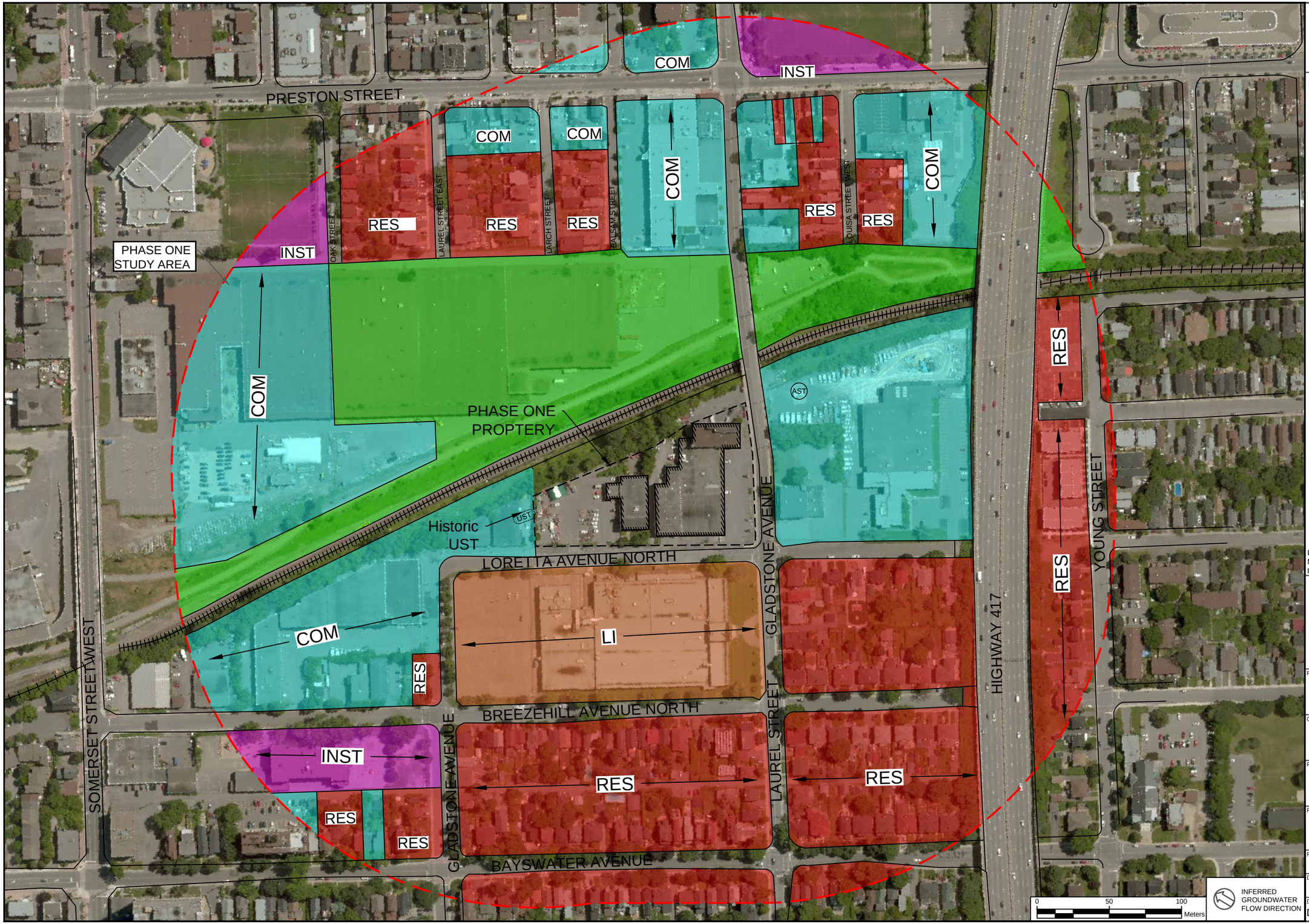
PROJECT NAME:
PHASE TWO ENVIRONMENTAL SITE ASSESSMENT

CLIENT NAME:
TIP GLADSTONE LIMITED PARTNERSHIP

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

FIGURE NAME:
KEY MAP

PROJECT NUMBER:	SCALE:
285722.003	AS SHOWN
DRAWN BY: DM	REVIEWED BY: CT
DATE: DECEMBER 2021	FIGURE NUMBER: 1



LEGEND

- PHASE ONE PROPERTY BOUNDARY
- PHASE ONE STUDY AREA
- SITE BUILDING
- RES RESIDENTIAL
- COM COMMERCIAL
- INST INSTITUTIONAL
- LI LIGHT-INDUSTRIAL
- AST ABOVEGROUND STORAGE TANK
- UST UNDERGROUND STORAGE TANK
- HISTORIC RAILWAY LINE
- RESIDENTIAL
- COMMERCIAL
- INSTITUTIONAL
- LIGHT-INDUSTRIAL
- PARKLAND

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

PINCHIN

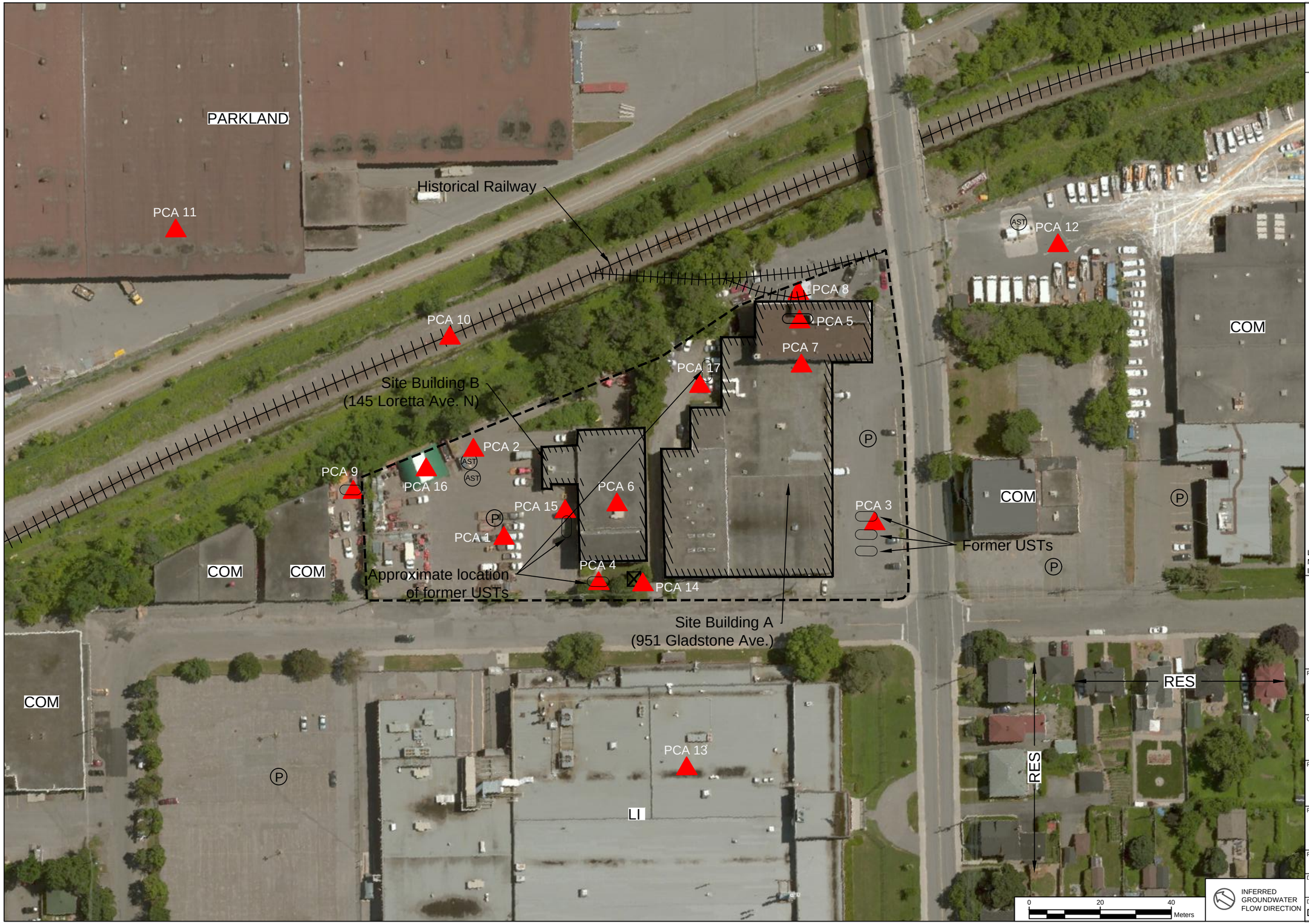
PROJECT NAME: PHASE TWO ENVIRONMENTAL SITE ASSESSMENT

CLIENT NAME: TIP GLADSTONE LIMITED PARTNERSHIP

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

FIGURE NAME: PHASE ONE STUDY AREA

PROJECT NUMBER:	SCALE:
285722.003	AS SHOWN
DRAWN BY:	REVIEWED BY:
DM	CT
DATE:	FIGURE NUMBER:
DECEMBER 2021	2



LEGEND

	PHASE ONE PROPERTY BOUNDARY
	SITE BUILDING
RES	RESIDENTIAL
COM	COMMERCIAL
MTC	MULTI-TENANT COMMERCIAL
LI	LIGHT-INDUSTRIAL
AST	ABOVEGROUND STORAGE TANK
UST	UNDERGROUND STORAGE TANK
P	PARKING
	HISTORIC RAILWAY LINE
	TRANSFORMER
UST	FORMER UNDERGROUND STORAGE TANK
	POTENTIAL CONTAMINATING ACTIVITY (PCA)

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

PINCHIN

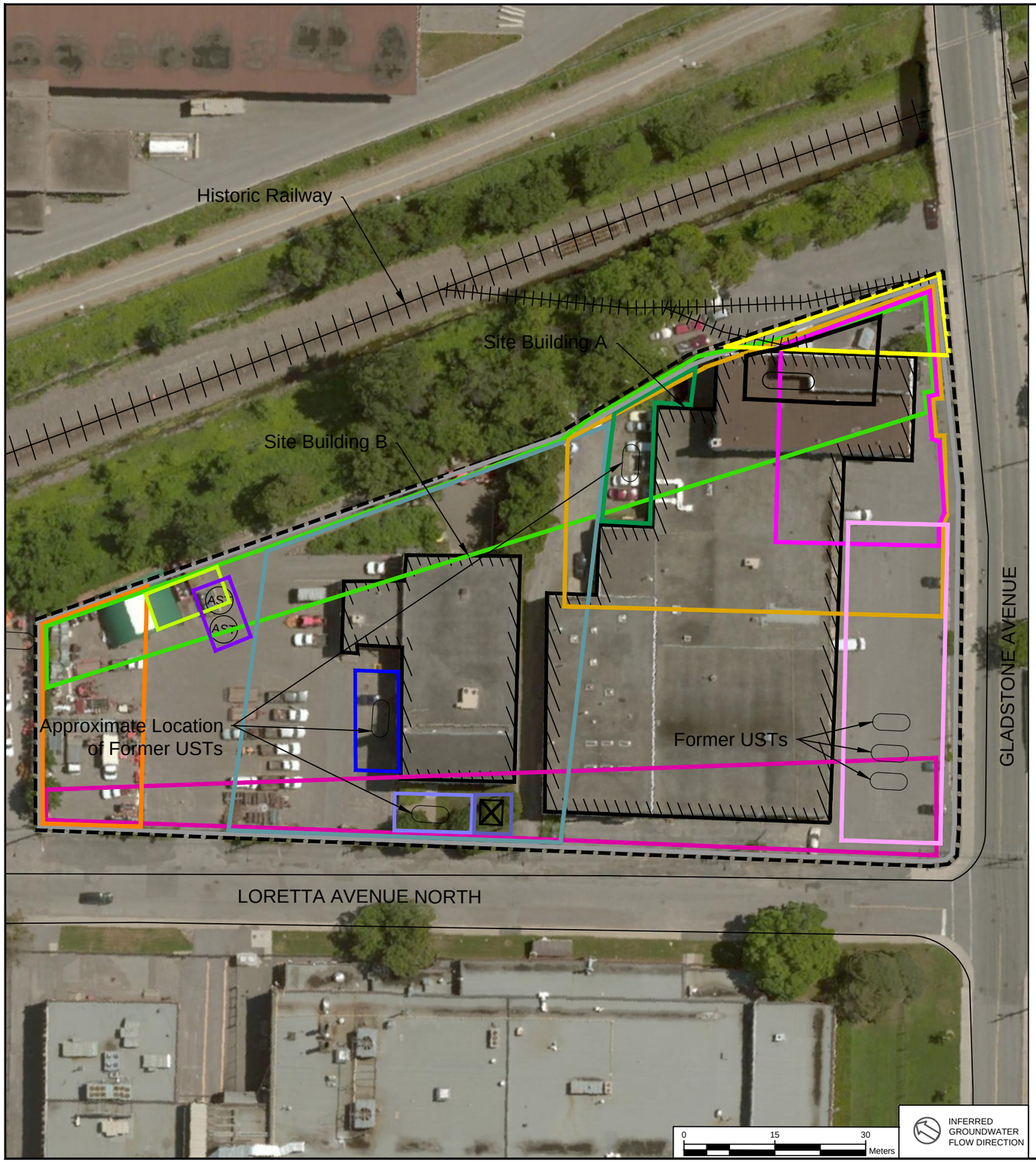
PROJECT NAME:
PHASE TWO ENVIRONMENTAL SITE ASSESSMENT

CLIENT NAME:
TIP GLADSTONE LIMITED PARTNERSHIP

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

FIGURE NAME:
POTENTIALLY CONTAMINATING ACTIVITIES

PROJECT NUMBER:	SCALE:
285722.003	AS SHOWN
DRAWN BY:	REVIEWED BY:
DM	CT
DATE:	FIGURE NUMBER:
DECEMBER 2021	3



APEC	Location of APEC	PCA	Location of PCA	COPCs	Media
APEC-1 (Fill of unknown quality)	Entire Phase One Property	Item 30 - Importation of Fill Material of Unknown Quality	On-Site	Metals, PHCs, PAHs	Soil and Groundwater
APEC-2 (Two gasoline above ground storage tanks [ASTs])	Northeast portion of Phase One Property	Item 28 - Gasoline and Associated Products Storage in Fixed Tanks	On-Site	BTEX, PHCs	Soil and Groundwater
APEC-3 (Former On-Site retail fuel outlet [RFO] with three undergound storage tanks [USTs])	Southwest portion of Phase One Property	Item 28 - Gasoline and Associated Products Storage in Fixed Tanks	On-Site	VOCs, PHCs, PAHs, Metals	Soil and Groundwater
APEC-4 (Former On-Site UST west of 145 Loretta Site Building)	West-central portion of the Phase One Property	Item 28 - Gasoline and Associated Products Storage in Fixed Tanks	On-Site	BTEX, PHCs	Soil and Groundwater
APEC-5 (Former On-Site AST within east portion of 951 Gladstone Site Building)	Southeast portion of the Phase One Property	Item 28 - Gasoline and Associated Products Storage in Fixed Tanks	On-Site	BTEX, PHCs	Soil and Groundwater
APEC-6 (Former Automotive Service Garage in 145 Loretta Site Building)	Central Portion of Phase One Property	Item 27 - Garages and Maintenance and Repair of Railcars, Marine Vehicles and Aviation Vehicles	On-Site	VOCs, PHCs, PAHs	Soil and Groundwater
APEC-7 (Former Printing Facility within east portion of 951 Gladstone Site Building)	Southeast Portion of Phase One Property	Item 31 - Ink Manufacturing, Processing and Bulk Storage	On-Site	VOCs, PHCs, PAHs, Metals	Soil and Groundwater
APEC-8 (Former Rail Spur)	Southeast Portion of Phase One Property	Item 46 - Rail Yards, Tracks and Spurs	On-Site	BTEX, PHCs, PAHs, Metals	Soil and Groundwater
APEC-9 (Off-Site UST to the north at 131 Loretta Avenue North)	North Portion of the Phase One Property	Item 28 - Gasoline and Associated Products Storage in Fixed Tanks	Off-Site	BTEX, PHCs	Soil and Groundwater
APEC-10 (Off-Site Rail Tracks at the east adjacent property)	East Portion of Phase One Property	Item 46 - Rail Yards, Tracks and Spurs	Off-Site	BTEX, PHCs, PAHs, Metals	Soil and Groundwater
APEC-11 (Former Off-Site Ordnance Depot to the northeast across the rail tracks)	East Portion of Phase One Property	Item 38 - Ordnance Use	Off-Site	VOCs, PHCs, PAHs, Metals	Soil and Groundwater
APEC-12 (Off-Site Private Fuel Outlet to the south at 175 Loretta Avenue North)	Southeast Portion of Phase One Property	Item 28 - Gasoline and Associated Products Storage in Fixed Tanks	Off-Site	VOCs, PHCs, Metals	Soil and Groundwater
APEC-13 (Off-Site Printing Facility to the west at 975 Gladstone Avenue)	West Portion of Phase One Property	Item 31 - Ink Manufacturing, Processing and Bulk Storage	Off-Site	VOCs, PHCs, PAHs, Metals	Soil and Groundwater
APEC-14 (On-Site Pad Mounted Transformer west of 145 Loretta Site Building)	Central West Portion of Phase One Property	Item 55 - Transformer Manufacturing, Processing and Use	On-Site	PHCs, PCBs	Soil
APEC-15 (Former On-Site UST northwest of 145 Loretta Site Building)	Northwest of Site Building B	Item 28 - Gasoline and Associated Products Storage in Fixed Tanks	On-Site	BTEX, PHCs	Soil and Groundwater
APEC-16 (On-Site Salt Storage in a Quonset building)	Northeast Portion of Phase One Property	Item 48 - Salt Manufacturing, Processing and Bulk Storage	On-Site	EC, SAR, Sodium, Chloride	Soil and Groundwater
APEC-17 (Current/Former On-Site UST northeast of 951 Gladstone Site Building)	Northeast of Site Building A	Item 28 - Gasoline and Associated Products Storage in Fixed Tanks	On-Site	BTEX, PHCs	Soil and Groundwater

LEGEND

- PHASE ONE PROPERTY BOUNDARY
- SITE BUILDING
- PARKING
- HISTORIC RAILWAY LINE
- APEC — AREA OF POTENTIALLY ENVIRONMENTAL CONCERN
- APEC-1
- APEC-2
- APEC-3
- APEC-4
- APEC-5
- APEC-6
- APEC-7
- APEC-8
- APEC-9
- APEC-10
- APEC-11
- APEC-12
- APEC-13
- APEC-14
- APEC-15
- APEC-16
- APEC-17

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

PINCHIN

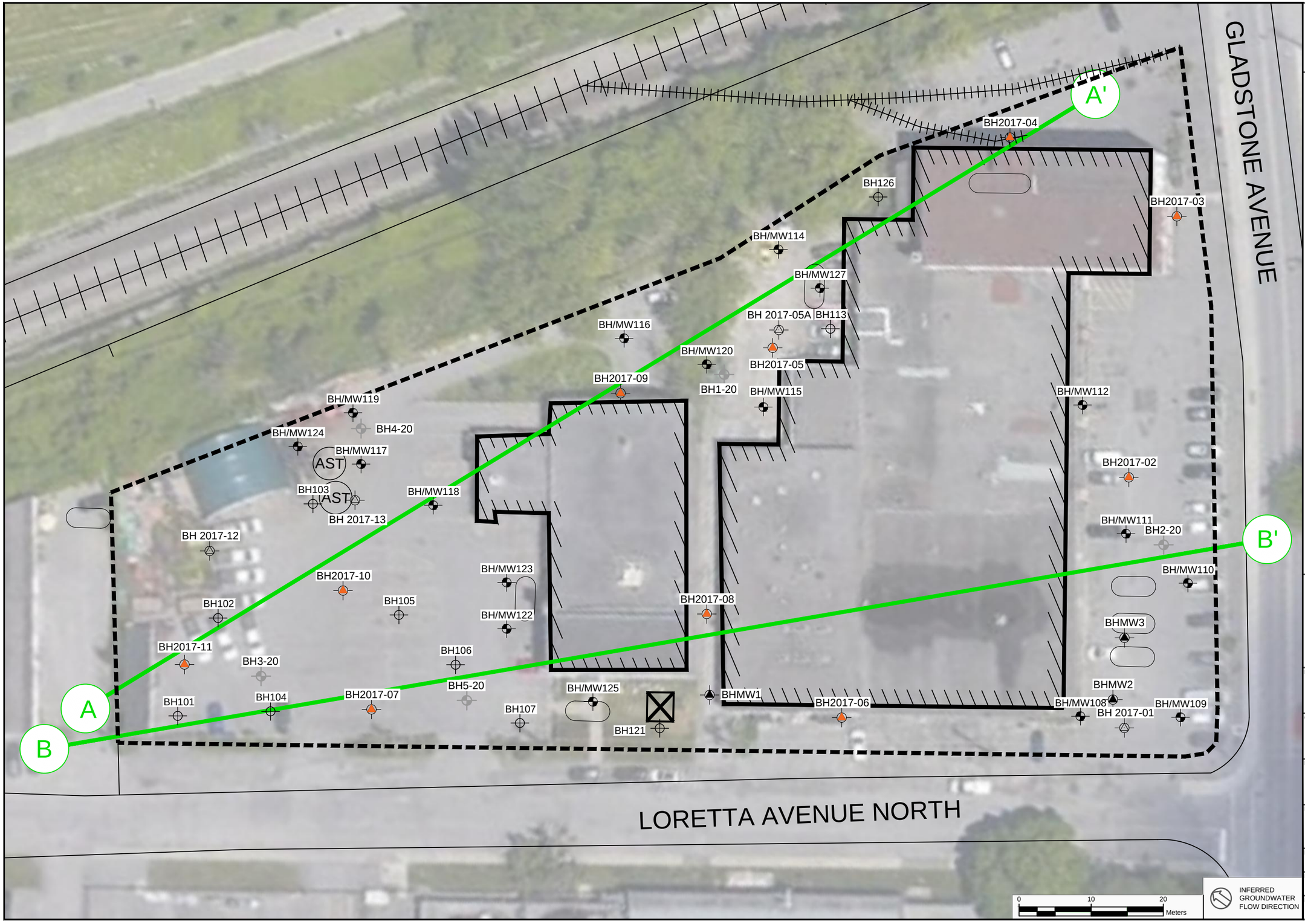
PROJECT NAME:
PHASE TWO ENVIRONMENTAL SITE ASSESSMENT

CLIENT NAME:
TIP GLADSTONE LIMITED PARTNERSHIP

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

FIGURE NAME:
AREAS OF POTENTIAL ENVIRONMENTAL CONCERN

PROJECT NUMBER:	SCALE:
285722.003	AS SHOWN
DRAWN BY: DM	REVIEWED BY: CT
DATE: DECEMBER 2021	FIGURE NUMBER: 4



LEGEND

- PHASE TWO PROPERTY BOUNDARY
- SITE BUILDING
- BOREHOLE (Pinchin 2021)
- MONITORING WELL (Pinchin 2021)
- MONITORING WELL (DST 2009)
- MONITORING WELL (DST 2017)
- BOREHOLE (DST 2017)
- BOREHOLE, MONITORING WELL (Patersongroup 2020)
- CROSS SECTIONS

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

PINCHIN

PROJECT NAME:
PHASE TWO ENVIRONMENTAL SITE ASSESSMENT

CLIENT NAME:
TIP GLADSTONE LIMITED PARTNERSHIP

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

FIGURE NAME:
BOREHOLE AND MONITORING WELL LOCATION PLAN WITH CURRENT LAYOUT

PROJECT NUMBER:	SCALE:
285722.003	AS SHOWN
DRAWN BY:	REVIEWED BY:
DM	CT
DATE:	FIGURE NUMBER:
DECEMBER 2021	5A

GLADSTONE AVENUE

LORETTA AVENUE NORTH

A

A'

B

B'

BH2017-04

BH2017-03

BH2017-02

BH/MW114

BH/MW116

BH/MW120

BH2017-09

BH/MW115

BH/MW112

BH4-20

BH/MW124

BH/MW117

AST

AST

BH103

BH 2017-13

BH/MW118

BH 2017-12

BH2017-10

BH/MW123

BH105

BH102

BH/MW122

BH2017-08

BH2017-11

BH3-20

BH106

BH5-20

BH/MW125

BHMW1

BH2017-06

BH/MW108

BH 2017-01

BH/MW109

BH101

BH104

BH2017-07

BH107

BH121

BH/MW111

BH2-20

BH/MW110

BHMW3

BHMW2

0 10 20 Meters

INFERRED GROUNDWATER FLOW DIRECTION

LEGEND

- PHASE TWO PROPERTY BOUNDARY
- SITE BUILDING
- BOREHOLE (Pinchin 2021.)
- MONITORING WELL (Pinchin 2021.)
- MONITORING WELL (DST 2009.)
- MONITORING WELL (DST 2017.)
- BOREHOLE (DST 2017.)
- BOREHOLE, MONITORING WELL (Patersongroup 2020.)
- APEC — AREA OF POTENTIALLY ENVIRONMENTAL CONCERN
- CROSS SECTIONS
- APEC-1
- APEC-2
- APEC-3
- APEC-4
- APEC-5
- APEC-6
- APEC-7
- APEC-8
- APEC-9
- APEC-10
- APEC-11
- APEC-12
- APEC-13
- APEC-14
- APEC-15
- APEC-16
- APEC-17

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

PINCHIN

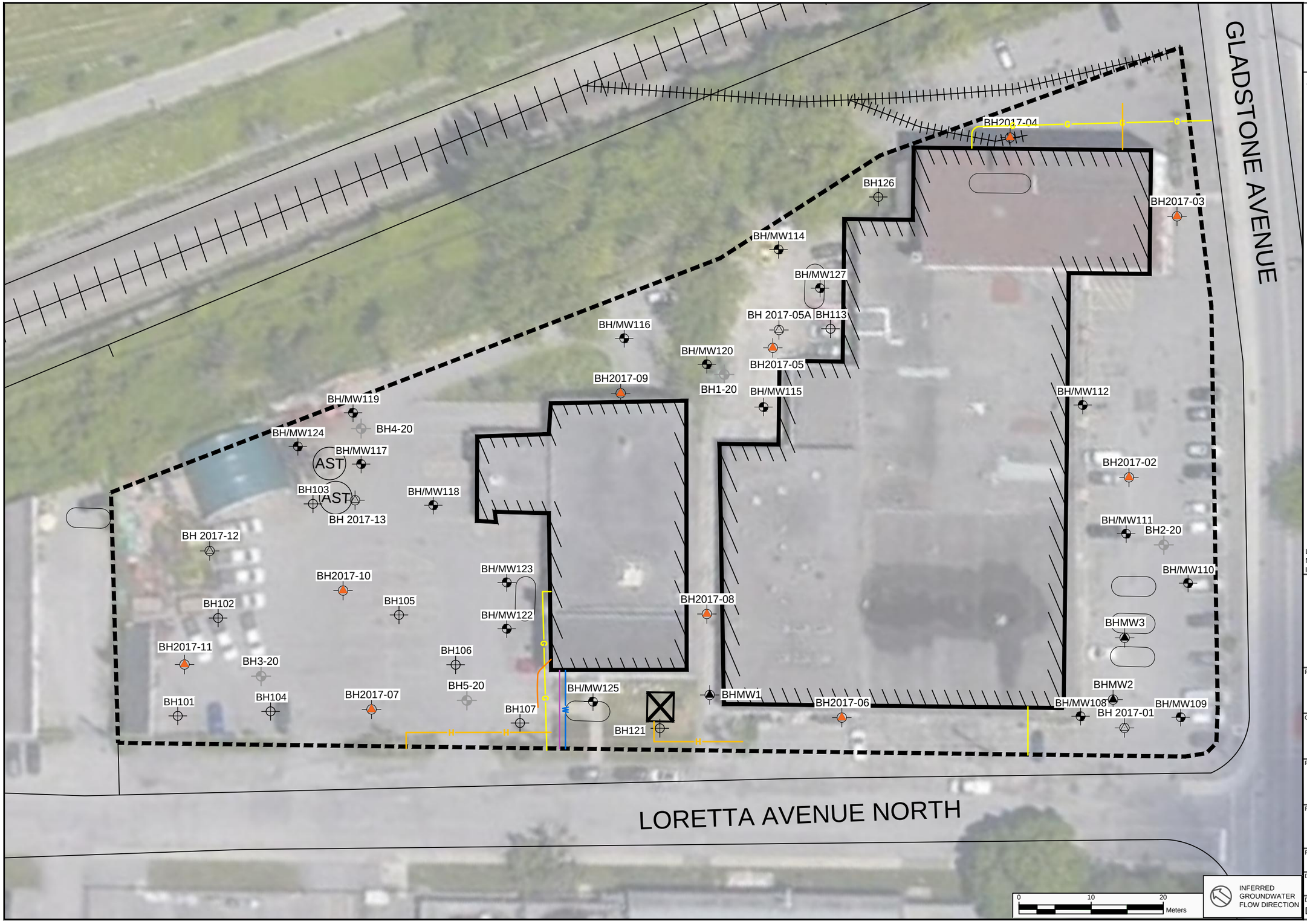
PROJECT NAME: PHASE TWO ENVIRONMENTAL SITE ASSESSMENT

CLIENT NAME: TIP GLADSTONE LIMITED PARTNERSHIP

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

FIGURE NAME: BOREHOLE AND MONITORING WELL LOCATION PLAN WITH AREAS OF POTENTIAL CONCERN

PROJECT NUMBER:	SCALE:
285722.003	AS SHOWN
DRAWN BY: DM	REVIEWED BY: CT
DATE: DECEMBER 2021	FIGURE NUMBER: 5B



LEGEND

- PHASE TWO PROPERTY BOUNDARY
- SITE BUILDING
- BOREHOLE (Pinchin 2021)
- MONITORING WELL (Pinchin 2021)
- MONITORING WELL (DST 2009)
- MONITORING WELL (DST 2017)
- BOREHOLE (DST 2017)
- BOREHOLE, MONITORING WELL (Patersongroup 2020)
- C — COMMUNICATION LINE
- G — GAS LINE
- H — HYDRO LINE
- SAN — SANITARY LINE
- W — WATER LINE

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

PINCHIN

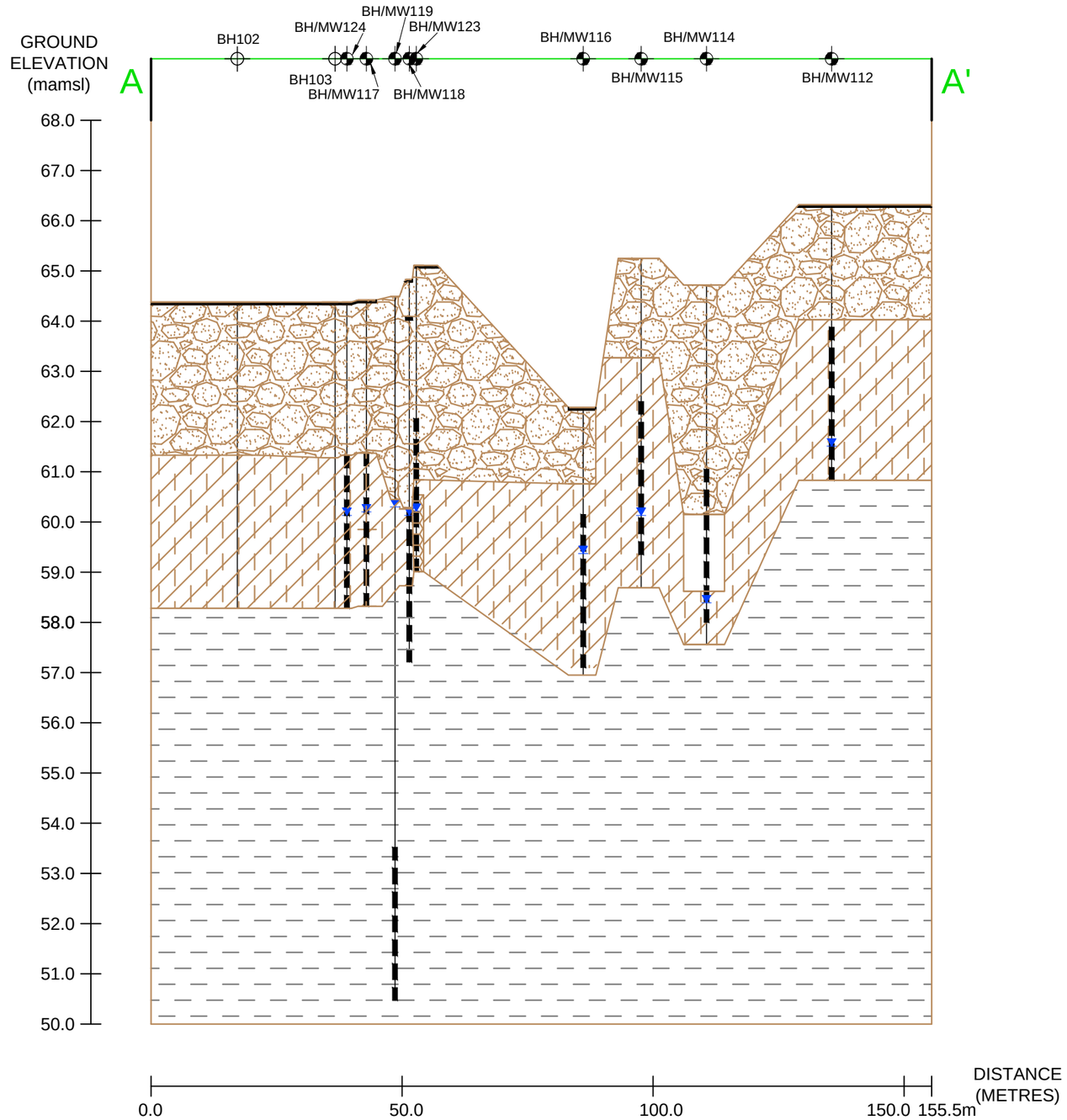
PROJECT NAME:
PHASE TWO ENVIRONMENTAL SITE ASSESSMENT

CLIENT NAME:
TIP GLADSTONE LIMITED PARTNERSHIP

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

FIGURE NAME:
BOREHOLE, MONITORING WELL AND UTILITY LOCATION PLAN

PROJECT NUMBER:	SCALE:
285722.003	AS SHOWN
DRAWN BY:	REVIEWED BY:
KP	CT
DATE:	FIGURE NUMBER:
DECEMBER 2021	5C



LEGEND

- PHASE TWO PROPERTY BOUNDARY
- A A' CROSS-SECTION LINE
- BOREHOLE (Pinchin 2021)
- MONITORING WELL (Pinchin 2021)
- ASPHALT
- SAND AND GRAVEL FILL
- SILTY CLAY
- NO DATA
- BOULDERS
- BEDROCK
- WELL CASING/ BENTONITE
- MEASURED GROUNDWATER ELEVATION (JUNE 23, 2021)
- WELL SCREEN

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

PINCHIN

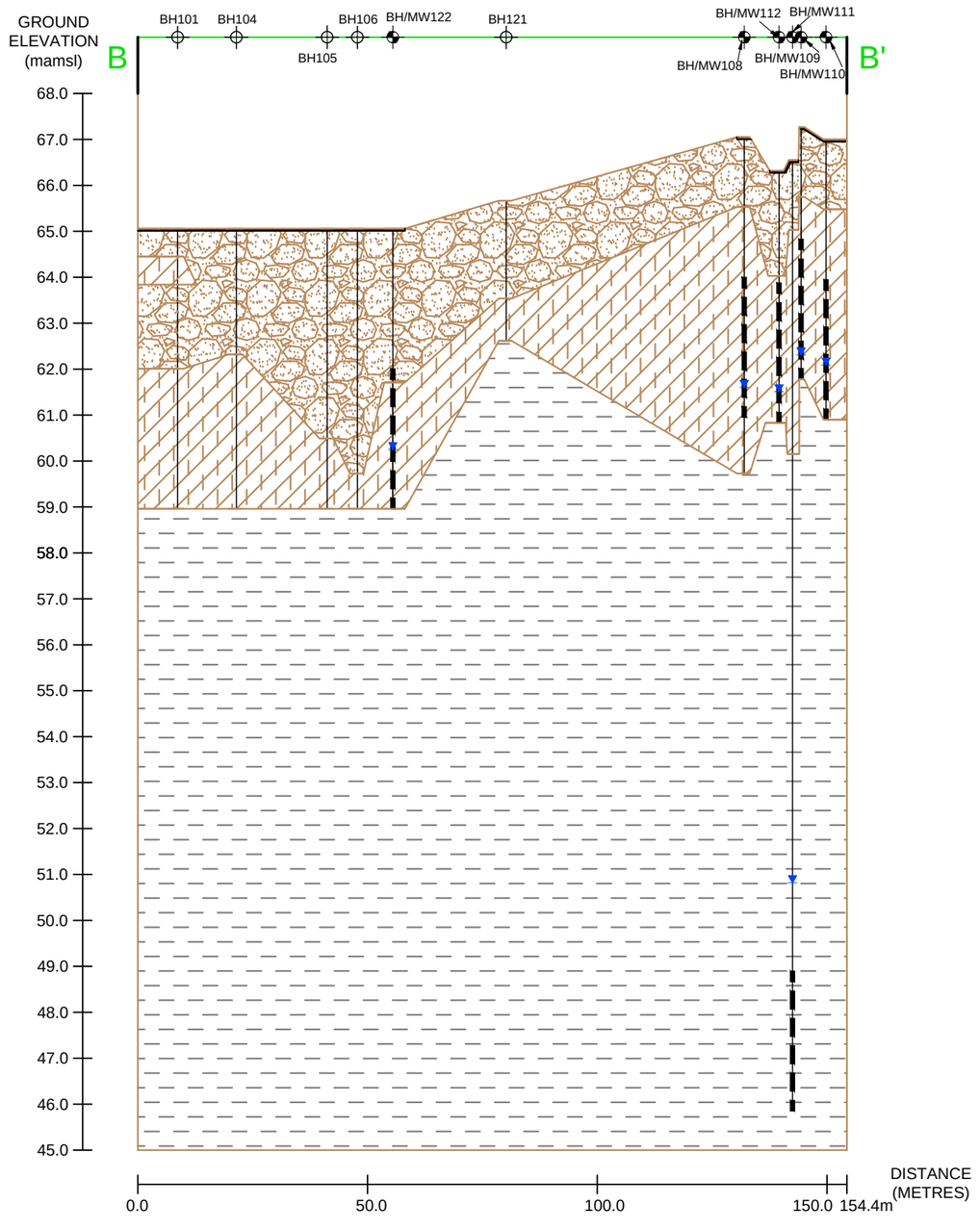
PROJECT NAME: PHASE TWO ENVIRONMENTAL SITE ASSESSMENT

CLIENT NAME: TIP GLADSTONE LIMITED PARTNERSHIP

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

FIGURE NAME: CROSS-SECTION A-A'

PROJECT NUMBER:	SCALE:
285722.003	AS SHOWN
DRAWN BY: DM	REVIEWED BY: CT
DATE: DECEMBER 2021	FIGURE NUMBER: 6A



LEGEND

- PHASE TWO PROPERTY BOUNDARY
- A A' CROSS-SECTION LINE
- BOREHOLE (Pinchin 2021)
- MONITORING WELL (Pinchin 2021)
- ASPHALT
- SAND AND GRAVEL FILL/SAND AND GRAVEL
- SILTY CLAY
- BEDROCK
- WELL CASING/ BENTONITE
- MEASURED GROUNDWATER ELEVATION (JUNE 23, 2021)
- WELL SCREEN

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

PINCHIN

PROJECT NAME:
PHASE TWO ENVIRONMENTAL SITE ASSESSMENT

CLIENT NAME:
TIP GLADSTONE LIMITED PARTNERSHIP

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

FIGURE NAME:
CROSS-SECTION B-B'

PROJECT NUMBER:	SCALE:
285722.003	AS SHOWN
DRAWN BY:	REVIEWED BY:
DM	CT
DATE:	FIGURE NUMBER:
DECEMBER 2021	6B

GLADSTONE AVENUE

LORETTA AVENUE NORTH

BH2017-04 [58.4]
BH126
BH2017-03
BH/MW114
BH/MW127
BH 2017-05A
BH113
BH/MW116
BH/MW120
BH2017-05
[57.4]
BH2017-09
BH1-20
BH/MW115
BH/MW112
BH/MW119
BH4-20
BH/MW124
BH/MW117
[62.1]
BH2017-02
BH103
BH/MW118
BH 2017-13
BH/MW111
BH2-20
BH 2017-12
BH/MW110
BH2017-10
BH/MW123
BH105
BH2017-08
BH102
BH/MW122
BHMW3
[60.4]
BH2017-11
BH106
BH3-20
BHMW2
[57.1]
BH2017-07
BH5-20
BH/MW125
BHMW1
BH2017-06
[60.6]
BH/MW108
BH/MW109
BH101
BH104
BH107
BH121
BH 2017-01
BH/MW121
58.0
59.0
60.0
61.0
62.0

0 10 20 Meters

LEGEND

- PHASE TWO PROPERTY BOUNDARY
- SITE BUILDING
- BOREHOLE (Pinchin 2021.)
- MONITORING WELL (Pinchin 2021.)
- MONITORING WELL (DST 2009.)
- MONITORING WELL (DST 2017.)
- BOREHOLE (DST 2017.)
- BOREHOLE, MONITORING WELL (Patersongroup 2020.)
- [#] GROUNDWATER ELEVATION (mags)
- GROUNDWATER CONTOUR ELEVATION (mags)
- GROUNDWATER FLOW DIRECTION
- mags METRES ABOVE GROUND SURFACE

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

PINCHIN

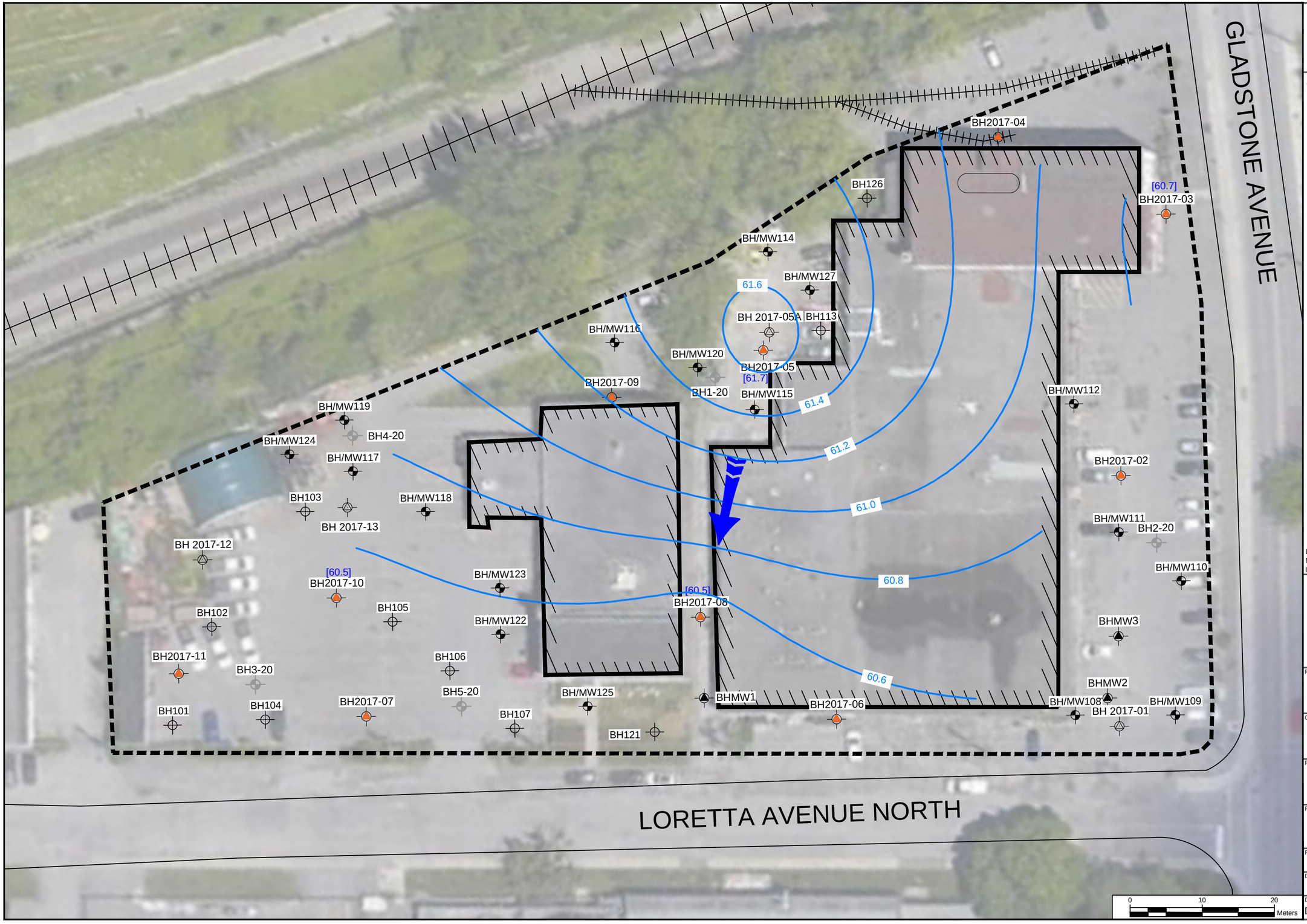
PROJECT NAME:
PHASE TWO ENVIRONMENTAL SITE ASSESSMENT

CLIENT NAME:
TIP GLADSTONE LIMITED PARTNERSHIP

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

FIGURE NAME:
GROUNDWATER ELEVATION PLAN IN OVERBURDEN WELLS (JULY 17, 2017)

PROJECT NUMBER:	SCALE:
285722.003	AS SHOWN
DRAWN BY:	REVIEWED BY:
DM	EC
DATE:	FIGURE NUMBER:
DECEMBER 2021	7Ai



LEGEND

- PHASE TWO PROPERTY BOUNDARY
- SITE BUILDING
- BOREHOLE (Pinchin 2021.)
- MONITORING WELL (Pinchin 2021.)
- MONITORING WELL (DST 2009.)
- MONITORING WELL (DST 2017.)
- BOREHOLE (DST 2017.)
- BOREHOLE, MONITORING WELL (Patersongroup 2020.)
- [#] GROUNDWATER ELEVATION (mags)
- GROUNDWATER CONTOUR ELEVATION (mags)
- GROUNDWATER FLOW DIRECTION
- mags METRES ABOVE GROUND SURFACE

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

PINCHIN

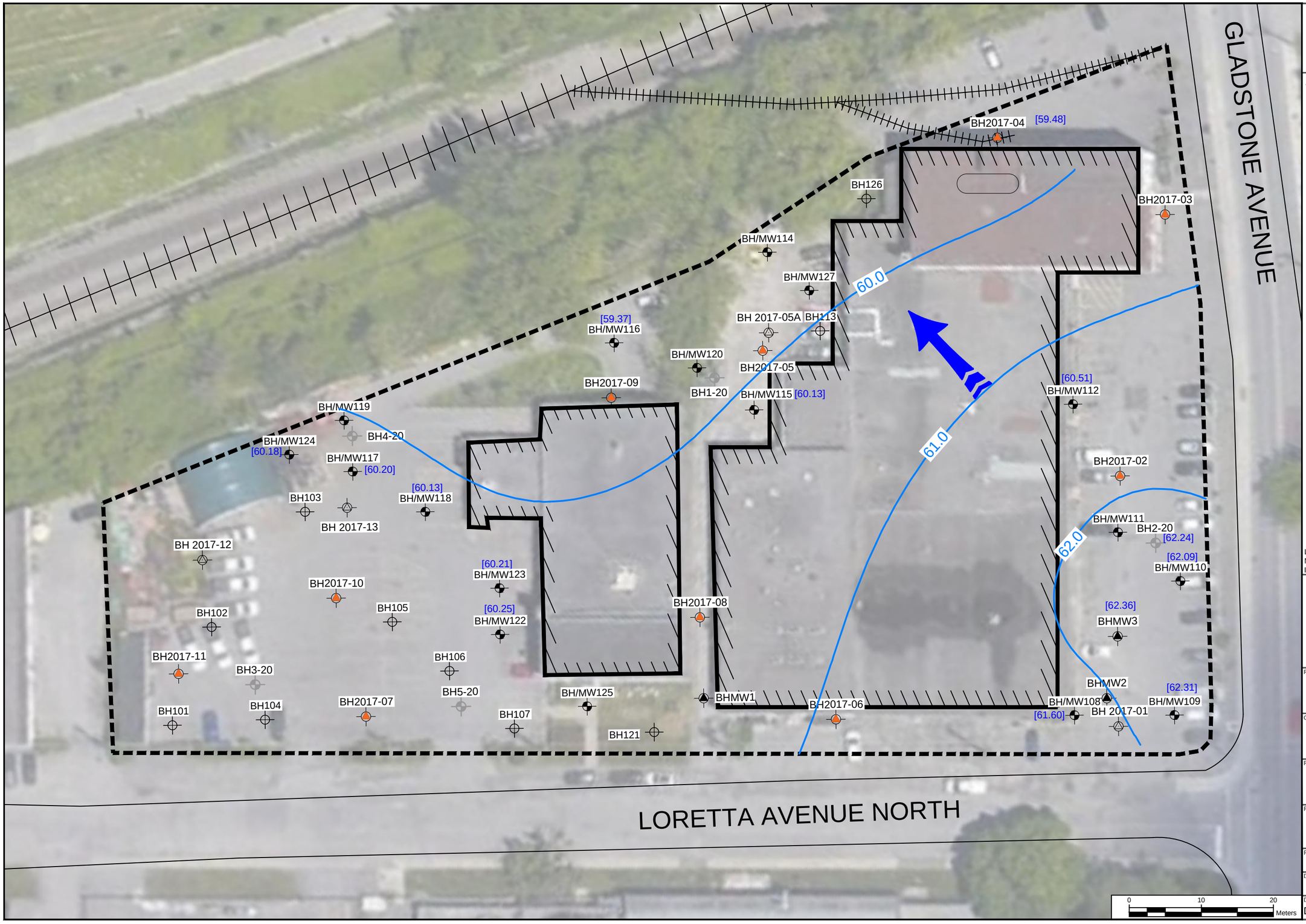
PROJECT NAME: PHASE TWO ENVIRONMENTAL SITE ASSESSMENT

CLIENT NAME: TIP GLADSTONE LIMITED PARTNERSHIP

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

FIGURE NAME: GROUNDWATER ELEVATION PLAN IN BEDROCK WELLS (JULY 17, 2017)

PROJECT NUMBER:	SCALE:
285722.003	AS SHOWN
DRAWN BY:	REVIEWED BY:
DM	EC
DATE:	FIGURE NUMBER:
DECEMBER 2021	7Aii



LEGEND

- PHASE TWO PROPERTY BOUNDARY
- SITE BUILDING
- BOREHOLE (Pinchin 2021.)
- MONITORING WELL (Pinchin 2021.)
- MONITORING WELL (DST 2009.)
- MONITORING WELL (DST 2017.)
- BOREHOLE (DST 2017.)
- BOREHOLE, MONITORING WELL (Patersongroup 2020.)
- [#] GROUNDWATER ELEVATION (mags)
- GROUNDWATER CONTOUR ELEVATION (mags)
- GROUNDWATER FLOW DIRECTION
- mags METRES ABOVE GROUND SURFACE

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

PINCHIN

PROJECT NAME: PHASE TWO ENVIRONMENTAL SITE ASSESSMENT

CLIENT NAME: TIP GLADSTONE LIMITED PARTNERSHIP

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

FIGURE NAME: GROUNDWATER ELEVATION PLAN IN OVERBURDEN WELLS (JUNE 23, 2021)

PROJECT NUMBER:	SCALE:
285722.003	AS SHOWN
DRAWN BY:	REVIEWED BY:
DM	EC
DATE:	FIGURE NUMBER:
DECEMBER 2021	7Bi

GLADSTONE AVENUE

LORETTA AVENUE NORTH

BH2017-04
BH126
BH2017-03
BH/MW114
BH/MW127
BH 2017-05A
BH113
BH/MW116
[60.14]
BH/MW120
BH2017-05
BH2017-09
BH1-20
[60.15]
BH/MW115
BH/MW112
[60.30]
BH/MW119
BH/MW124
BH4-20
[59.88]
BH/MW117
BH2017-02
[50.82]
BH/MW111
BH2-20
BH103
BH/MW118
BH 2017-13
BH 2017-12
BH/MW110
[60.09]
BH2017-10
BH/MW123
BH105
BH102
BH2017-08
BHMW3
BH/MW122
BH2017-11
[60.14]
BH3-20
BH106
BHMW2
BH5-20
[60.16]
BH/MW125
BHMW1
BH/MW108
BH/MW109
BH101
BH104
BH2017-07
BH2017-06
BH 2017-01
BH107
BH121

58.0
60.0
58.0
56.0
54.0
52.0

0 10 20 Meters

LEGEND

- PHASE TWO PROPERTY BOUNDARY
- SITE BUILDING
- BOREHOLE (Pinchin 2021.)
- MONITORING WELL (Pinchin 2021.)
- MONITORING WELL (DST 2009.)
- MONITORING WELL (DST 2017.)
- BOREHOLE (DST 2017.)
- BOREHOLE, MONITORING WELL (Patersongroup 2020.)
- [#] GROUNDWATER ELEVATION (mags)
- GROUNDWATER CONTOUR ELEVATION (mags)
- GROUNDWATER FLOW DIRECTION
- mags METRES ABOVE GROUND SURFACE

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

PINCHIN

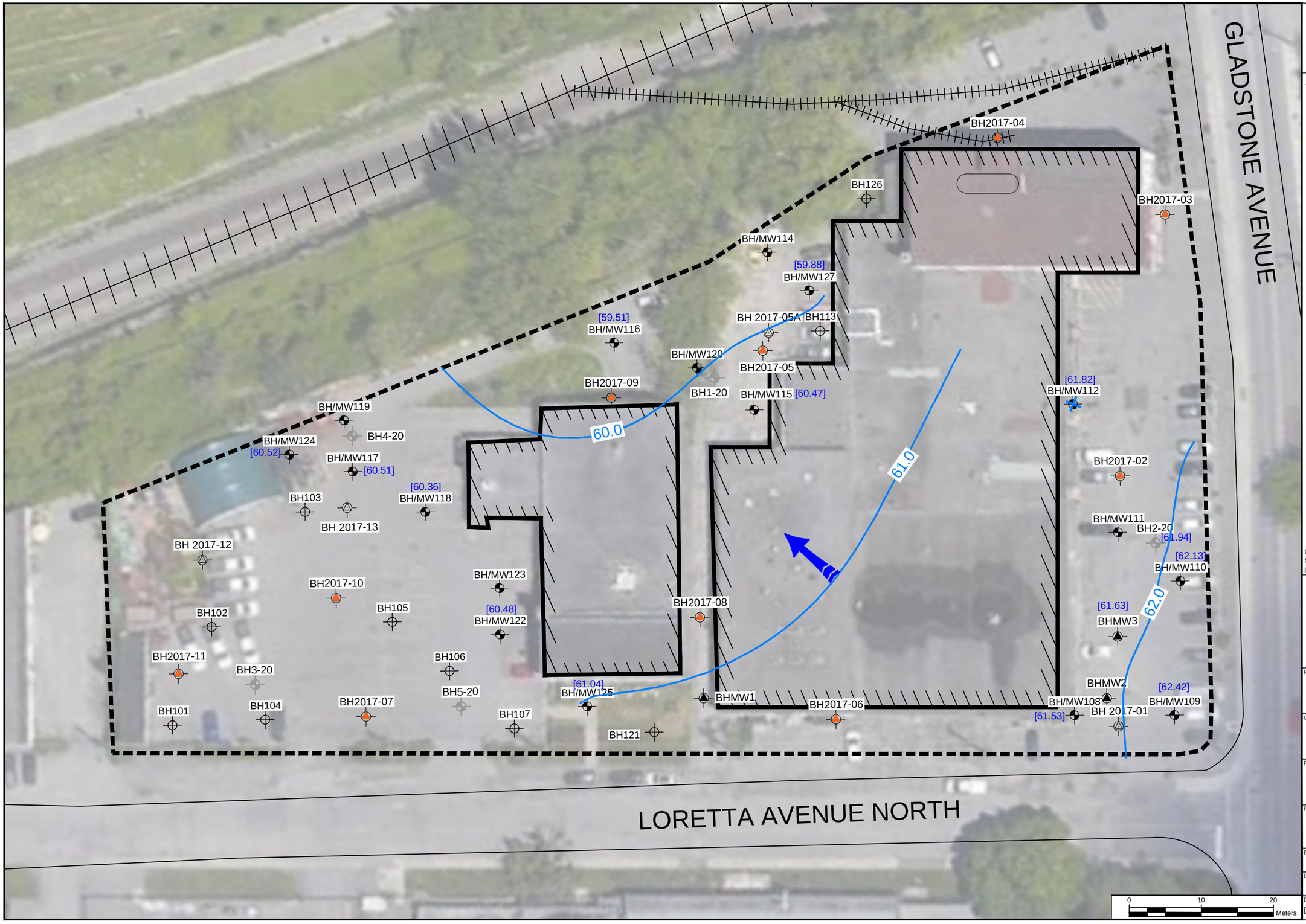
PROJECT NAME: PHASE TWO ENVIRONMENTAL SITE ASSESSMENT

CLIENT NAME: TIP GLADSTONE LIMITED PARTNERSHIP

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

FIGURE NAME: GROUNDWATER ELEVATION PLAN IN BEDROCK WELLS (JUNE 23, 2021)

PROJECT NUMBER:	SCALE:
285722.003	AS SHOWN
DRAWN BY:	REVIEWED BY:
DM	EC
DATE:	FIGURE NUMBER:
DECEMBER 2021	7Bii



LEGEND

- PHASE TWO PROPERTY BOUNDARY
- SITE BUILDING
- BOREHOLE (Pinchin 2021.)
- MONITORING WELL (Pinchin 2021.)
- MONITORING WELL (DST 2009.)
- MONITORING WELL (DST 2017.)
- BOREHOLE (DST 2017.)
- BOREHOLE, MONITORING WELL (Patersongroup 2020.)
- [#] GROUNDWATER ELEVATION (mags)
- GROUNDWATER CONTOUR ELEVATION (mags)
- GROUNDWATER FLOW DIRECTION
- mags METRES ABOVE GROUND SURFACE

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

PINCHIN

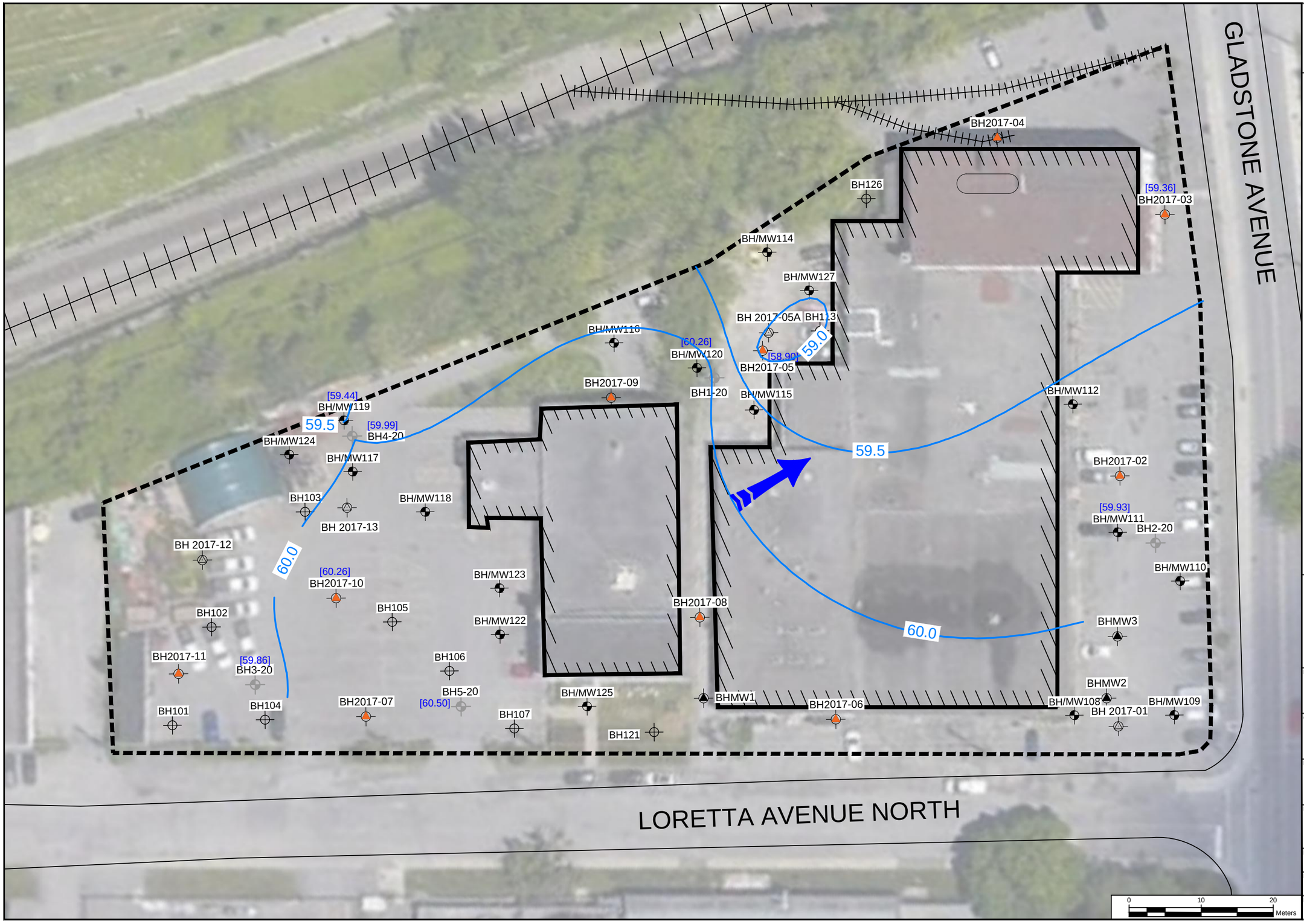
PROJECT NAME: PHASE TWO ENVIRONMENTAL SITE ASSESSMENT

CLIENT NAME: TIP GLADSTONE LIMITED PARTNERSHIP

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

FIGURE NAME: GROUNDWATER ELEVATION PLAN IN OVERBURDEN WELLS (NOVEMBER 30, 2021)

PROJECT NUMBER:	SCALE:
285722.003	AS SHOWN
DRAWN BY: DM	REVIEWED BY: EC
DATE: DECEMBER 2021	FIGURE NUMBER: 7Ci



LEGEND

- PHASE TWO PROPERTY BOUNDARY
- SITE BUILDING
- BOREHOLE (Pinchin 2021.)
- MONITORING WELL (Pinchin 2021.)
- MONITORING WELL (DST 2009.)
- MONITORING WELL (DST 2017.)
- BOREHOLE (DST 2017.)
- BOREHOLE, MONITORING WELL (Patersongroup 2020.)
- [#] GROUNDWATER ELEVATION (mags)
- GROUNDWATER CONTOUR ELEVATION (mags)
- GROUNDWATER FLOW DIRECTION
- mags METRES ABOVE GROUND SURFACE

0 10 20 Meters

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

PINCHIN

PROJECT NAME: PHASE TWO ENVIRONMENTAL SITE ASSESSMENT

CLIENT NAME: TIP GLADSTONE LIMITED PARTNERSHIP

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

FIGURE NAME: GROUNDWATER ELEVATION PLAN IN BEDROCK WELLS (NOVEMBER 30, 2021)

PROJECT NUMBER:	SCALE:
285722.003	AS SHOWN
DRAWN BY: DM	REVIEWED BY: EC
DATE: DECEMBER 2021	FIGURE NUMBER: 7Cii

COCs	BH2017-5		
	07/07/2017		
	1.2 - 1.8	3.6 - 4.2	6.6 - 7.2
PHCs F1	<10	**60**	<10
PHCs F2	**260**	**160**	<10
PHCs F3	**2300**	**340**	<50
PHCs F4	490	79	<50

COCs	BH112	
	27/04/2021	
	4.57 - 5.33	
PHCs F1	21	
PHCs F2	**120**	
PHCs F3	<50	
PHCs F4	<50	

COCs	BHMW126	
	06/10/2021	
	0 - 0.75	
PHCs F1	<10	
PHCs F2	**290**	
PHCs F3	**6200**	
PHCs F4	1400	

COCs	BH115	
	28/04/2021	
	1.52 - 2.29	4.57 - 5.33
PHCs F1	<10	<10
PHCs F2	<10	<10
PHCs F3	<50	**590**
PHCs F4	<50	69

COCs	BH110	
	27/04/2021	
	4.57 - 5.33	
PHCs F1	**390**	**580**
PHCs F2	90	39
PHCs F3	<50	<50
PHCs F4	<50	<50

COCs	BH113	
	28/04/2021	
	1.52 - 2.29	4.57 - 5.33
PHCs F1	<10	<10
PHCs F2	<10	27
PHCs F3	<50	**1600**
PHCs F4	<50	170

COCs	BH122	
	25/05/2021	
	3.81 - 4.57	5.33 - 6.10
PHCs F1	<10	<10
PHCs F2	**180**	<10
PHCs F3	220	<50
PHCs F4	<50	<50

COCs	BH111	
	27/04/2021	
	3.81 - 4.57	
PHCs F1	**2600**	
PHCs F2	**400**	
PHCs F3	<50	
PHCs F4	<50	

COCs	BH105	
	26/04/2021	
	0.75 - 1.50	4.57 - 5.33
PHCs F1	<10	11
PHCs F2	<10	**280**
PHCs F3	190	**340**
PHCs F4	1000	<50

COCs	BH101	
	26/04/2021	
	0.75 - 1.50	3.81 - 4.57
PHCs F1	<10	<10
PHCs F2	**550**	<10
PHCs F3	**690**	<50
PHCs F4	110	<50

COCs	BH104	
	26/04/2021	
	2.29 - 3.05	4.57 - 5.33
PHCs F1	<10	<10
PHCs F2	<10	**130**
PHCs F3	210	160
PHCs F4	170	<100

COCs	BH2017-7	
	27/06/2017	
	4.2 - 4.8	7.8 - 8.0
PHCs F1	<10	<10
PHCs F2	**310**	<10
PHCs F3	**340**	<50
PHCs F4	<50	<50

COCs	BH107		
	26/04/2021		
	1.52 - 2.29		4.57 - 5.33
PHCs F1	<10	<10	<10
PHCs F2	<10	<10	<10
PHCs F3	130	**320**	<50
PHCs F4	1100	**3100**	<50

COCs	BH108	
	26/04/2021	
	5.33 - 6.10	
PHCs F1	**520**	
PHCs F2	27	
PHCs F3	<50	
PHCs F4	<50	

COCs	BH2017-1	
	05/07/2017	
	3.6 - 4.2	6.6 - 7.2
PHCs F1	**200**	**460**
PHCs F2	78	**470**
PHCs F3	<50	<50
PHCs F4	<50	<50

GLADSTONE AVENUE

BH2017-04 (1.8 - 3.0m)
BH126
(0.6 - 1.2m), (6.0 - 6.4m) BH2017-03
BH/MW114 (1.52 - 2.29m), (6.10 - 7.01m)
BH/MW127 (3.81 - 4.57m)
BH 2017-05A
BH113
BH/MW116 (2.29 - 3.05m), (4.57 - 5.33m)
BH/MW120
BH2017-05
BH2017-09 (1.8 - 2.4m), (4.2 - 4.5m)
BH1-20
BH/MW115
BH/MW112
BH/MW119
BH4-20
BH/MW124 (0 - 0.75m), (5.33 - 6.10m)
BH/MW117 (1.52 - 2.29m)
BH2017-02 (3.0 - 3.6m), (4.8 - 5.4m)
(1.2 - 1.8m) BH103
(0.75 - 1.52m) BH/MW118
BH 2017-13 (0.75 - 1.5m), (4.57 - 5.33m)
BH/MW111
BH2-20 (4.57 - 5.18m)
BH 2017-12
(3.05 - 3.81m) BH/MW123
(5.6 - 6.6m) BH2017-10
BH/MW110
BH105
BH2017-08 (2.3 - 3.0m), (6.6 - 7.2m)
BH102 (0.75 - 1.5m), (3.81 - 4.57m)
BH/MW122
BHMW3
BH2017-11 (6.0 - 6.6m), (7.2 - 7.8m)
(2.29 - 3.05m), (5.33 - 6.10m) BH106
BH3-20
(3.81 - 4.57m) BH/MW125
BHMW2
(4.57 - 5.33m) BH/MW109
BH5-20
BH2017-07
BHMW1
BH2017-06 (6.6 - 7.2m)
BH/MW108
BH 2017-01
BH104
BH101
BH107
(0.0 - 0.75m) BH121

LEGEND

- PHASE TWO PROPERTY BOUNDARY
- SITE BUILDING
- BOREHOLE (Pinchin 2021.)
- MONITORING WELL (Pinchin 2021.)
- MONITORING WELL (DST 2009.)
- MONITORING WELL (DST 2017.)
- BOREHOLE (DST 2017.)
- BOREHOLE, MONITORING WELL (Patersongroup 2020.)
- SOIL SAMPLE LOCATION WHICH EXCEEDS MECP TABLE 3 STANDARDS, RESIDENTIAL LAND USE, MEDIUM/FINE TEXTURED SOIL
- SOIL SAMPLE LOCATION WHICH EXCEEDS MECP TABLE 3 STANDARDS, RESIDENTIAL LAND USE, MEDIUM/FINE TEXTURED SOIL
- m — METERS
- mbgs — METERS BELOW GROUND SURFACE
- ppm — PARTS PER MILLION BY VOLUME
- SOIL IMPACT PLUME

MECP TABLE 3 SCS:

	MECP Table 3 SCS
PHCs F1	55
PHCs F2	98
PHCs F3	300
PHCs F4	2800

MECP (2011)TABLE 3: FULL DEPTH GENERIC SITE CONDITION STANDARDS IN A NON-POTABLE GROUNDWATER CONDITION FOR RESIDENTIAL/PARKLAND/INSTITUTIONAL PROPERTY USE AND COARSE-TEXTURED SOILS

BOLD	Exceeds SCS
Sample Location	BHXX
Sample Collection Date	dd/mm/yyyy
Sample Depth	mbgs
Parameter	Concentration (µg/g)

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

0 10 20 Meters

INFERRED GROUNDWATER FLOW DIRECTION

PINCHIN

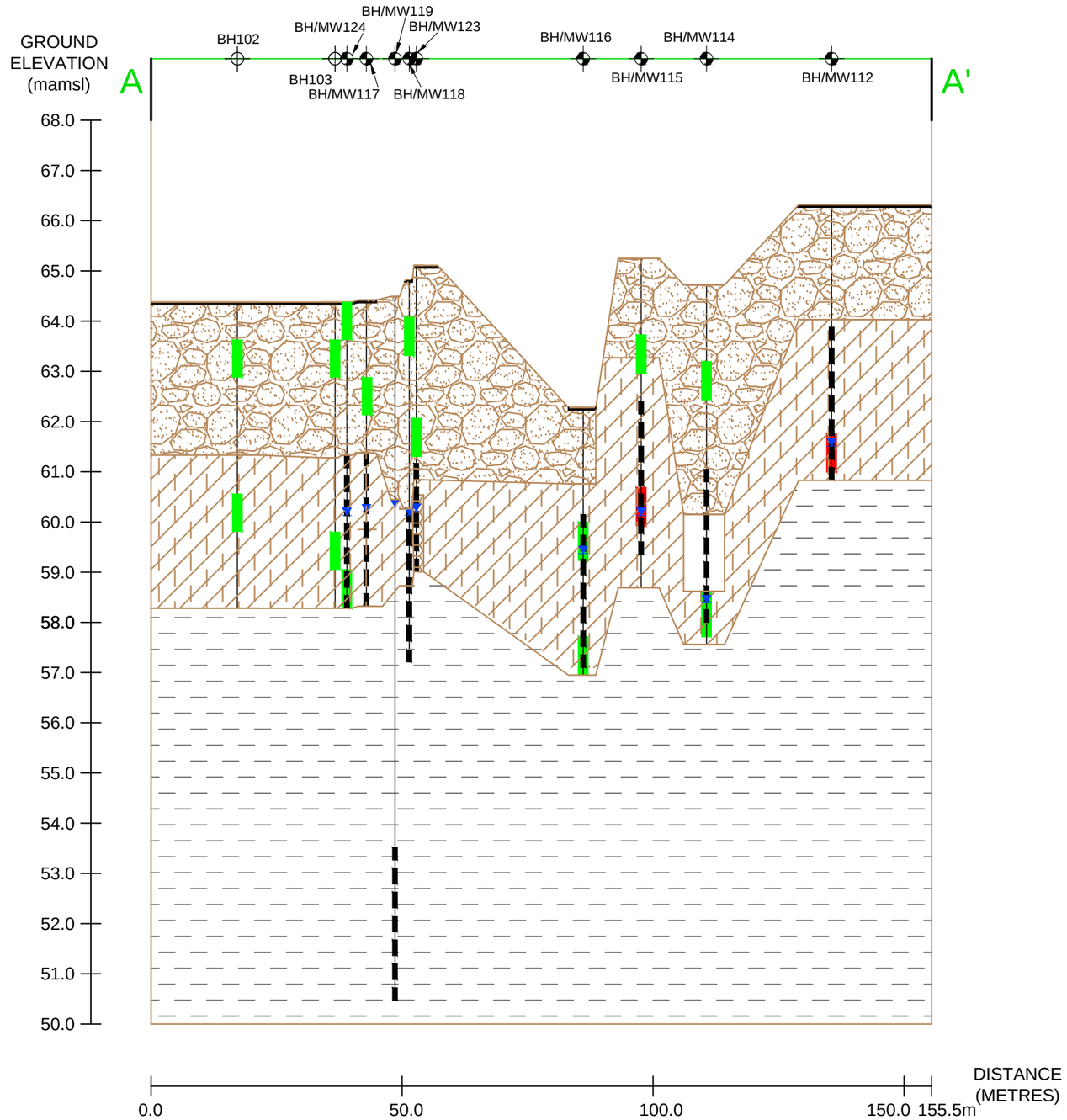
PROJECT NAME: PHASE TWO ENVIRONMENTAL SITE ASSESSMENT

CLIENT NAME: TIP GLADSTONE LIMITED PARTNERSHIP

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

FIGURE NAME: PHC EXCEEDANCES IN SOIL

PROJECT NUMBER: 285722.003
SCALE: AS SHOWN
DRAWN BY: DM
REVIEWED BY: EC
DATE: DECEMBER 2021
FIGURE NUMBER: 8A



LEGEND

- PHASE TWO PROPERTY BOUNDARY
- A A' CROSS-SECTION LINE
- BOREHOLE (Pinchin 2021)
- MONITORING WELL (Pinchin 2021)
- ASPHALT
- SAND AND GRAVEL FILL
- SILTY CLAY
- NO DATA
- BOULDERS
- BEDROCK
- WELL CASING/ BENTONITE
- MEASURED GROUNDWATER ELEVATION (JUNE 23, 2021)
- WELL SCREEN
- SAMPLE MEETS SITE CONDITION STANDARDS
- SAMPLE EXCEEDS SITE CONDITION STANDARDS

SCS: MECP (2011) TABLE 3: FULL DEPTH GENERIC SITE CONDITION STANDARDS IN A NON-POTABLE GROUND WATER CONDITION FOR RESIDENTIAL/PARKLAND/INSTITUTIONAL PROPERTY USE AND COARSE-TEXTURED SOILS

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

PINCHIN

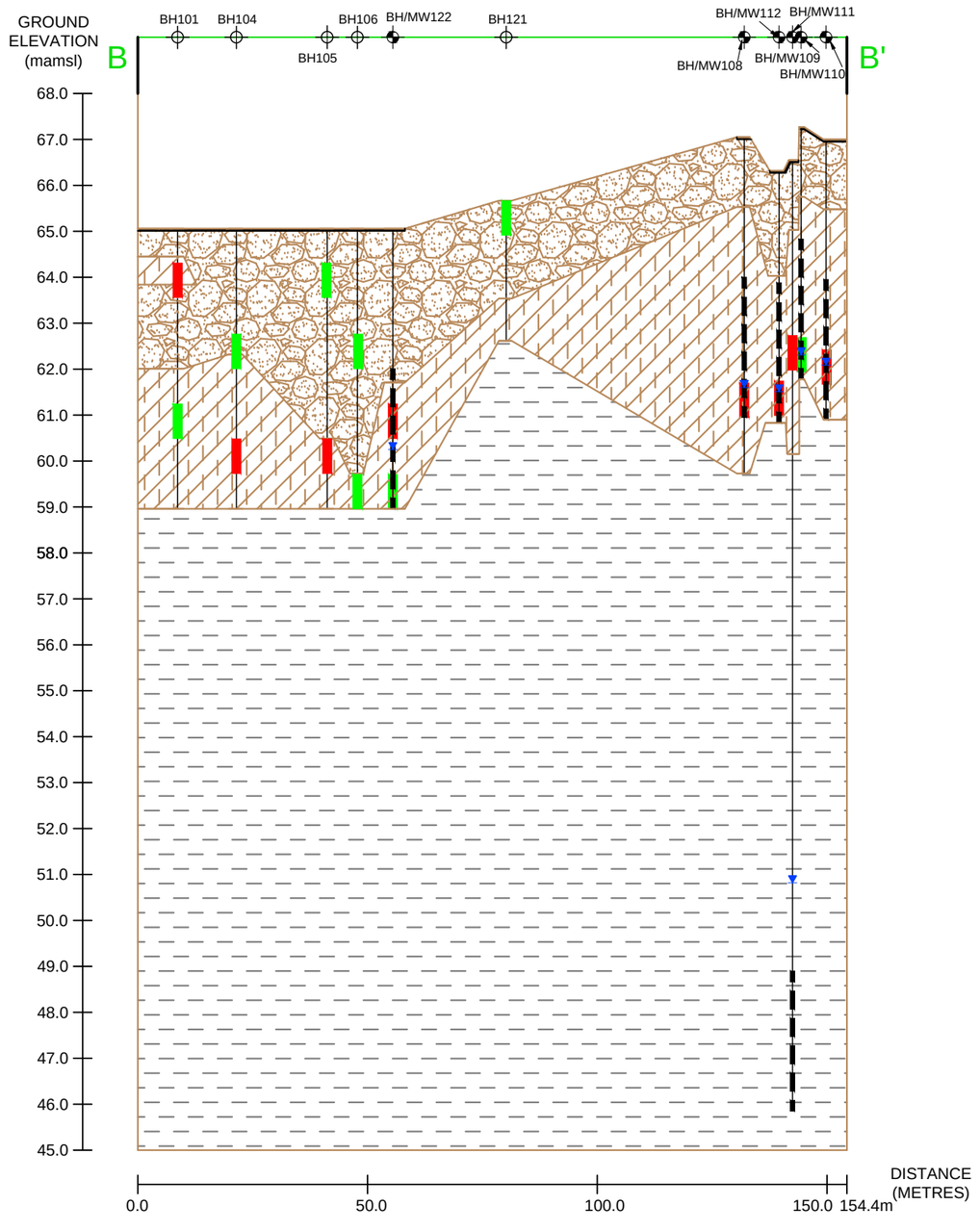
PROJECT NAME: PHASE TWO ENVIRONMENTAL SITE ASSESSMENT

CLIENT NAME: TIP GLADSTONE LIMITED PARTNERSHIP

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

FIGURE NAME: CROSS-SECTION A-A' WITH PHC EXCEEDANCES IN SOIL

PROJECT NUMBER:	SCALE:
285722.003	AS SHOWN
DRAWN BY: DM	REVIEWED BY: CT
DATE: DECEMBER 2021	FIGURE NUMBER: 8B



LEGEND

- PHASE TWO PROPERTY BOUNDARY
- A A' CROSS-SECTION LINE
- BOREHOLE (Pinchin 2021)
- MONITORING WELL (Pinchin 2021)
- ASPHALT
- SAND AND GRAVEL FILL/SAND AND GRAVEL
- SILTY CLAY
- BEDROCK
- WELL CASING/ BENTONITE
- MEASURED GROUNDWATER ELEVATION (JUNE 23, 2021)
- WELL SCREEN
- SAMPLE MEETS SITE CONDITION STANDARDS
- SAMPLE EXCEEDS SITE CONDITION STANDARDS

SCS: MECP (2011) TABLE 3: FULL DEPTH GENERIC SITE CONDITION STANDARDS IN A NON-POTABLE GROUND WATER CONDITION FOR RESIDENTIAL/PARKLAND/INSTITUTIONAL PROPERTY USE AND COARSE-TEXTURED SOILS

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

PINCHIN

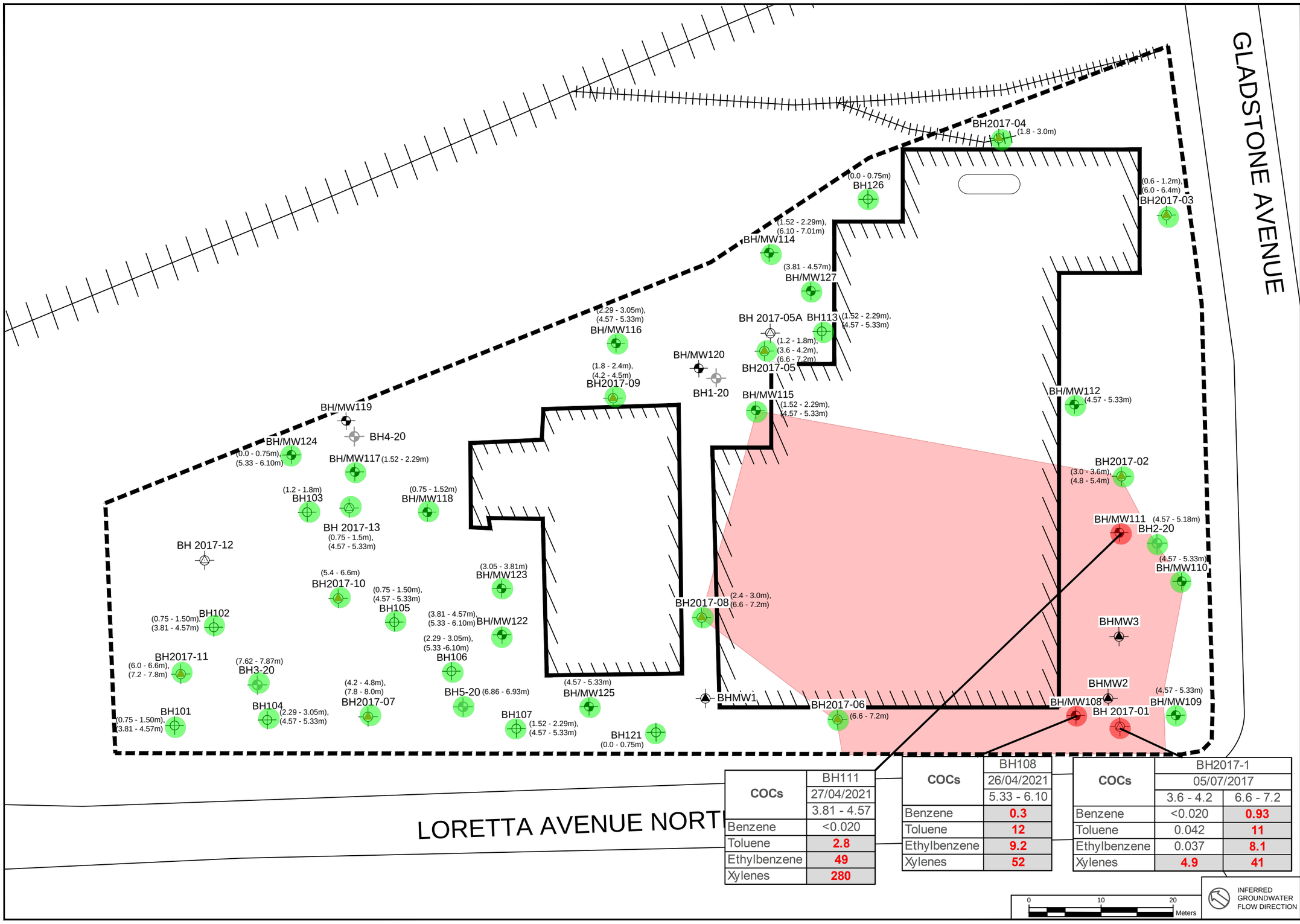
PROJECT NAME:
PHASE TWO ENVIRONMENTAL SITE ASSESSMENT

CLIENT NAME:
TIP GLADSTONE LIMITED PARTNERSHIP

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

FIGURE NAME:
CROSS-SECTION B-B' WITH PHC EXCEEDANCES IN SOIL

PROJECT NUMBER:	SCALE:
285722.003	AS SHOWN
DRAWN BY:	REVIEWED BY:
DM	CT
DATE:	FIGURE NUMBER:
DECEMBER 2021	8C



COCs	BH111
	27/04/2021
	3.81 - 4.57
Benzene	<0.020
Toluene	**2.8**
Ethylbenzene	**49**
Xylenes	**280**

COCs	BH108
	26/04/2021
	5.33 - 6.10
Benzene	**0.3**
Toluene	**12**
Ethylbenzene	**9.2**
Xylenes	**52**

COCs	BH2017-1	
	05/07/2017	
	3.6 - 4.2	6.6 - 7.2
Benzene	<0.020	**0.93**
Toluene	0.042	**11**
Ethylbenzene	0.037	**8.1**
Xylenes	**4.9**	**41**

0 10 20 Meters

INFERRED GROUNDWATER FLOW DIRECTION

LEGEND

- PHASE TWO PROPERTY BOUNDARY
- SITE BUILDING
- BOREHOLE (Pinchin 2021.)
- MONITORING WELL (Pinchin 2021.)
- MONITORING WELL (DST 2009.)
- MONITORING WELL (DST 2017.)
- BOREHOLE (DST 2017.)
- BOREHOLE, MONITORING WELL (Patersongroup 2020.)
- SOIL SAMPLE LOCATION WHICH EXCEEDS MECP TABLE 3 STANDARDS, RESIDENTIAL LAND USE, MEDIUM/FINE TEXTURED SOIL
- SOIL SAMPLE LOCATION WHICH EXCEEDS MECP TABLE 3 STANDARDS, RESIDENTIAL LAND USE, MEDIUM/FINE TEXTURED SOIL
- m METERS
- mbgs METERS BELOW GROUND SURFACE
- ppmv PARTS PER MILLION BY VOLUME
- SOIL IMPACT PLUME

MECP TABLE 3 SCS:

	MECP Table 3 SCS
Benzene	0.21
Toluene	2.3
Ethylbenzene	2
Xylenes	3.1

MECP (2011)TABLE 3: FULL DEPTH GENERIC SITE CONDITION STANDARDS IN A NON-POTABLE GROUNDWATER CONDITION FOR RESIDENTIAL/PARKLAND/INSTITUTIONAL PROPERTY USE AND COARSE-TEXTURED SOILS

BOLD	Exceeds SCS
Sample Location	BHXX
Sample Collection Date	dd/mm/yyyy
Sample Depth	mbgs
Parameter	Concentration (µg/g)

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

PINCHIN

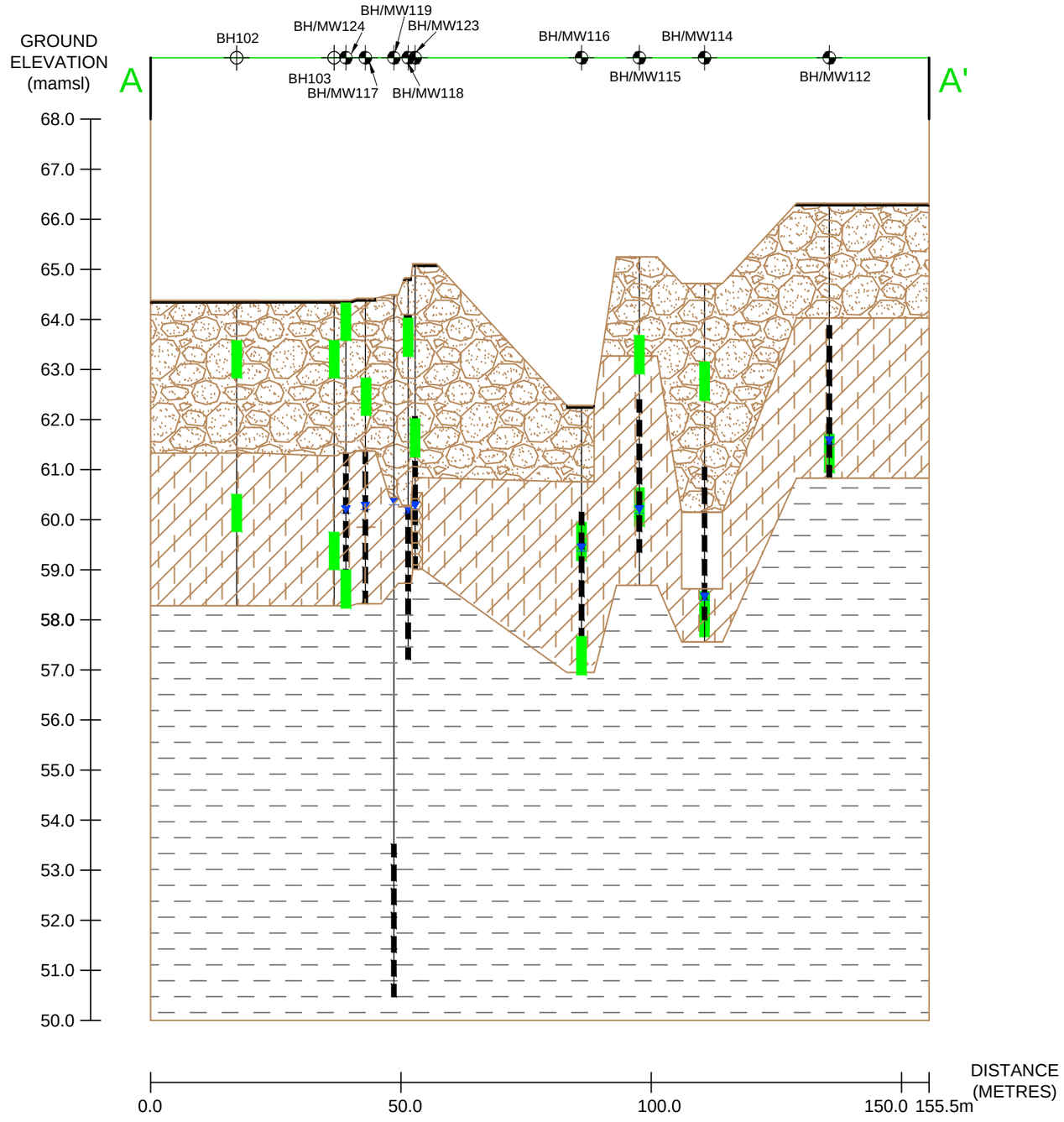
PROJECT NAME:
PHASE TWO ENVIRONMENTAL SITE ASSESSMENT

CLIENT NAME:
TIP GLADSTONE LIMITED PARTNERSHIP

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

FIGURE NAME:
BTEX EXCEEDANCES IN SOIL

PROJECT NUMBER:	SCALE:
285722.003	AS SHOWN
DRAWN BY: DM	REVIEWED BY: EC
DATE: DECEMBER 2021	FIGURE NUMBER: 9A



LEGEND

- PHASE TWO PROPERTY BOUNDARY
- A A' CROSS-SECTION LINE
- BOREHOLE (Pinchin 2021)
- MONITORING WELL (Pinchin 2021)
- ASPHALT
- SAND AND GRAVEL FILL
- SILTY CLAY
- NO DATA
- BOULDERS
- BEDROCK
- WELL CASING/ BENTONITE
- MEASURED GROUNDWATER ELEVATION (JUNE 23, 2021)
- WELL SCREEN
- SAMPLE MEETS SITE CONDITION STANDARDS
- SAMPLE EXCEEDS SITE CONDITION STANDARDS

SCS: MECP (2011) TABLE 3: FULL DEPTH GENERIC SITE CONDITION STANDARDS IN A NON-POTABLE GROUND WATER CONDITION FOR RESIDENTIAL/PARKLAND/INSTITUTIONAL PROPERTY USE AND COARSE-TEXTURED SOILS

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

PINCHIN

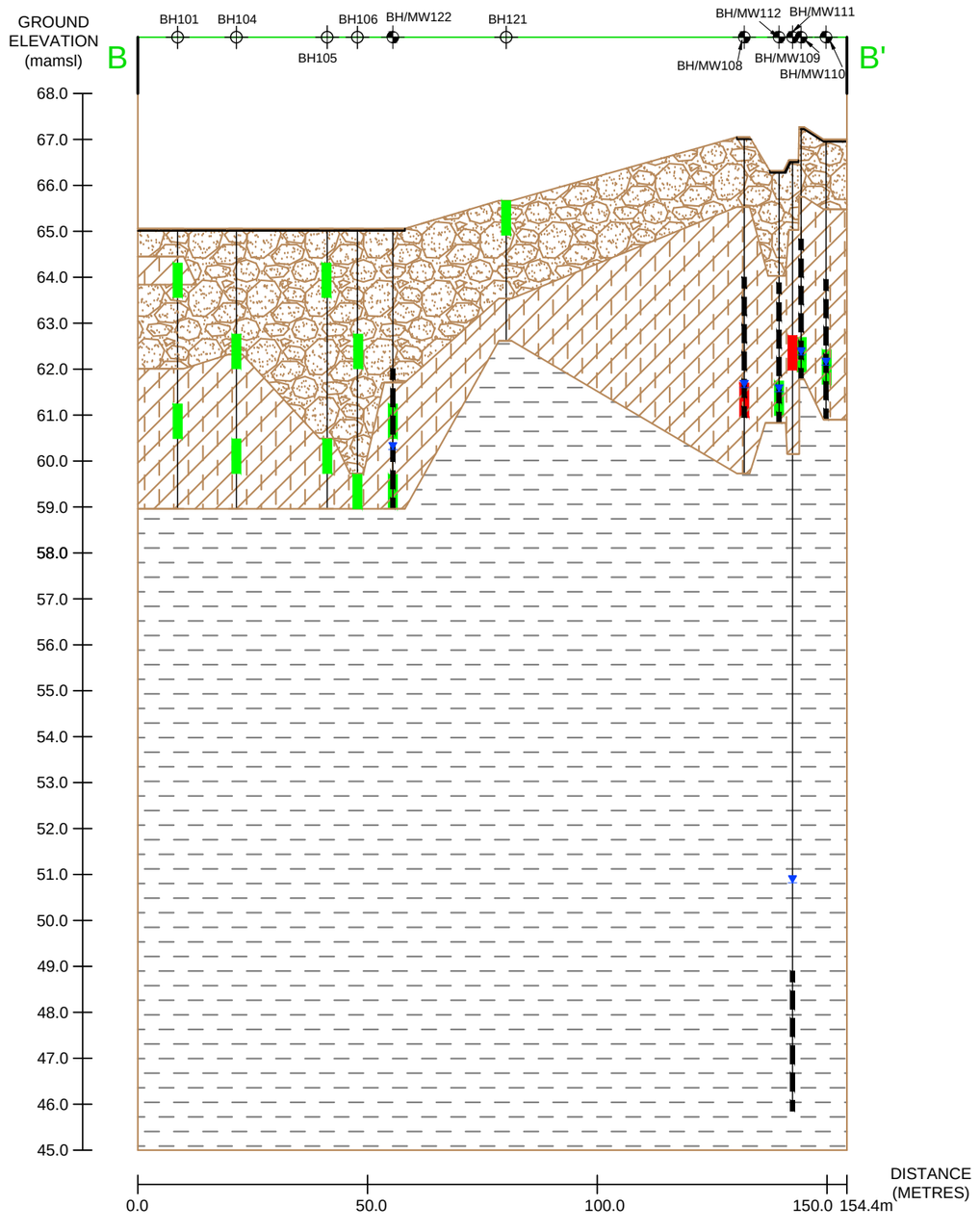
PROJECT NAME:
PHASE TWO ENVIRONMENTAL SITE ASSESSMENT

CLIENT NAME:
TIP GLADSTONE LIMITED PARTNERSHIP

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

FIGURE NAME:
CROSS-SECTION A-A' WITH BTEX EXCEEDANCES IN SOIL

PROJECT NUMBER:	SCALE:
285722.003	AS SHOWN
DRAWN BY:	REVIEWED BY:
DM	CT
DATE:	FIGURE NUMBER:
DECEMBER 2021	9B



LEGEND

- PHASE TWO PROPERTY BOUNDARY
- A A' CROSS-SECTION LINE
- BOREHOLE (Pinchin 2021)
- MONITORING WELL (Pinchin 2021)
- ASPHALT
- SAND AND GRAVEL FILL/SAND AND GRAVEL
- SILTY CLAY
- BEDROCK
- WELL CASING/ BENTONITE
- MEASURED GROUNDWATER ELEVATION (JUNE 23, 2021)
- WELL SCREEN
- SAMPLE MEETS SITE CONDITION STANDARDS
- SAMPLE EXCEEDS SITE CONDITION STANDARDS

SCS: MECP (2011) TABLE 3: FULL DEPTH GENERIC SITE CONDITION STANDARDS IN A NON-POTABLE GROUND WATER CONDITION FOR RESIDENTIAL/PARKLAND/INSTITUTIONAL PROPERTY USE AND COARSE-TEXTURED SOILS

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

PINCHIN

PROJECT NAME: PHASE TWO ENVIRONMENTAL SITE ASSESSMENT

CLIENT NAME: TIP GLADSTONE LIMITED PARTNERSHIP

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

FIGURE NAME: CROSS-SECTION B-B' WITH BTEX EXCEEDANCES IN SOIL

PROJECT NUMBER:	SCALE:
285722.003	AS SHOWN
DRAWN BY:	REVIEWED BY:
DM	CT
DATE:	FIGURE NUMBER:
DECEMBER 2021	9C

COCs	BH110	
	27/04/2021	
	4.57 - 5.33	
1,4-Dichlorobenzene	<0.050	<0.050
1,2-Dichloroethane	<0.050	<0.050
Hexane	**21**	**16**

COCs	BH2017-5	
	07/07/2017	
	1.2 - 1.8	3.6 - 4.2
1,4-Dichlorobenzene	<0.050	<0.050
1,2-Dichloroethane	**0.2**	<0.050
Hexane	<0.050	<0.050

GLADSTONE AVENUE

LORETTA AVENUE NORTH

BH2017-04 (2.4 - 3.0m)
BH126 (0.0 - 0.75m)
BH2017-03
BH/MW114 (1.52 - 2.29m)
(3.81 - 4.57m) BH/MW127
BH 2017-05A
BH113 (1.52 - 2.29m), (4.57 - 5.33m)
BH2017-05
BH/MW116 (2.29 - 3.05m)
BH/MW120
BH1-20
BH2017-09 (1.8 - 2.4m)
BH/MW115 (1.52 - 2.29m), (4.57 - 5.33m)
BH/MW112 (4.57 - 5.33m)
BH/MW119
BH4-20
BH/MW124 (0.0 - 0.75m), (5.33 - 6.10m)
BH/MW117 (1.52 - 2.29m)
BH2017-02 (4.8 - 5.4m)
BH103
BH/MW118 (0.75 - 1.52m)
BH 2017-13 (1.2 - 1.8m)
BH/MW111
BH2-20
BH 2017-12
BH/MW110
(3.05 - 3.81m) BH/MW123
(5.4 - 6.0m) BH2017-10
BH105
BH2017-08 (6.6 - 7.2m)
BHMW3
BH102
(3.81 - 4.57m), (5.33 - 6.10m) BH/MW122
BH2017-11
BH3-20 (7.62 - 7.87m)
BH106
BHMW2
(4.57 - 5.33m) BH/MW125
BH5-20 (6.86 - 6.93m)
BH/MW108
(4.57 - 5.33m) BH/MW109
BH101
BH104
BH2017-07
BHMW1
BH2017-06 (6.6 - 7.2m)
BH 2017-01
BH107
BH121

COCs	BH111	
	27/04/2021	
	3.81 - 4.57	
1,4-Dichlorobenzene	<0.050	
1,2-Dichloroethane	<0.050	
Hexane	**51**	

COCs	BH108	
	26/04/2021	
	5.33 - 6.10	
1,4-Dichlorobenzene	<0.050	
1,2-Dichloroethane	<0.050	
Hexane	**24**	

COCs	BH2017-1	
	05/07/2017	
	6.6 - 7.2	
1,4-Dichlorobenzene	**1.1**	
1,2-Dichloroethane	<0.050	
Hexane	**11**	

0 10 20 Meters

INFERRED GROUNDWATER FLOW DIRECTION

LEGEND

- PHASE TWO PROPERTY BOUNDARY
- SITE BUILDING
- BOREHOLE (Pinchin 2021.)
- MONITORING WELL (Pinchin 2021.)
- MONITORING WELL (DST 2009.)
- MONITORING WELL (DST 2017.)
- BOREHOLE (DST 2017.)
- BOREHOLE, MONITORING WELL (Patersongroup 2020.)
- SOIL SAMPLE LOCATION WHICH EXCEEDS MECP TABLE 3 STANDARDS, RESIDENTIAL LAND USE, MEDIUM/FINE TEXTURED SOIL
- SOIL SAMPLE LOCATION WHICH EXCEEDS MECP TABLE 3 STANDARDS, RESIDENTIAL LAND USE, MEDIUM/FINE TEXTURED SOIL
- m METERS
- mbgs METERS BELOW GROUND SURFACE
- ppm PARTS PER MILLION BY VOLUME
- SOIL IMPACT PLUME

MECP TABLE 3 SCS:

COCs	MECP Table 3 SCS
1,4-Dichlorobenzene	0.083
1,2-Dichloroethane	0.05
Hexane	2.8

MECP (2011)TABLE 3: FULL DEPTH GENERIC SITE CONDITION STANDARDS IN A NON-POTABLE GROUNDWATER CONDITION FOR RESIDENTIAL/PARKLAND/INSTITUTIONAL PROPERTY USE AND COARSE-TEXTURED SOILS

BOLD	Exceeds SCS
Sample Location	BHXX
Sample Collection Date	dd/mm/yyyy
Sample Depth	mbgs
Parameter	Concentration (µg/g)

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

PINCHIN

PROJECT NAME: PHASE TWO ENVIRONMENTAL SITE ASSESSMENT

CLIENT NAME: TIP GLADSTONE LIMITED PARTNERSHIP

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

FIGURE NAME: VOC EXCEEDANCES IN SOIL

PROJECT NUMBER: 285722.003

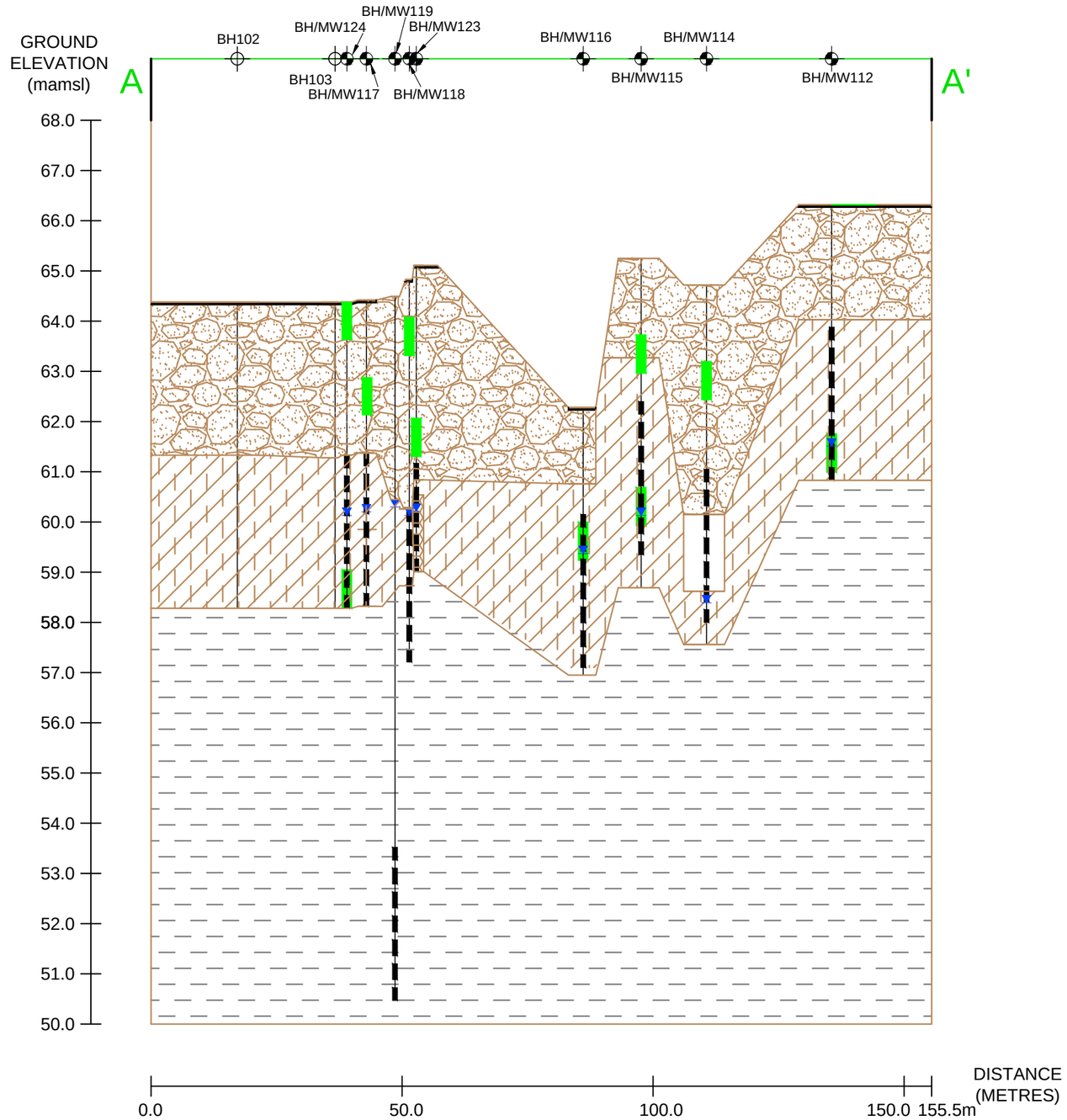
SCALE: AS SHOWN

DRAWN BY: DM

REVIEWED BY: EC

DATE: DECEMBER 2021

FIGURE NUMBER: 10A



LEGEND

- PHASE TWO PROPERTY BOUNDARY
- A A' CROSS-SECTION LINE
- BOREHOLE (Pinchin 2021)
- MONITORING WELL (Pinchin 2021)
- ASPHALT
- SAND AND GRAVEL FILL
- SILTY CLAY
- NO DATA
- BOULDERS
- BEDROCK
- WELL CASING/ BENTONITE
- MEASURED GROUNDWATER ELEVATION (JUNE 23, 2021)
- WELL SCREEN
- SAMPLE MEETS SITE CONDITION STANDARDS
- SAMPLE EXCEEDS SITE CONDITION STANDARDS

SCS: MECP (2011) TABLE 3: FULL DEPTH GENERIC SITE CONDITION STANDARDS IN A NON-POTABLE GROUND WATER CONDITION FOR RESIDENTIAL/PARKLAND/INSTITUTIONAL PROPERTY USE AND COARSE-TEXTURED SOILS

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

PINCHIN

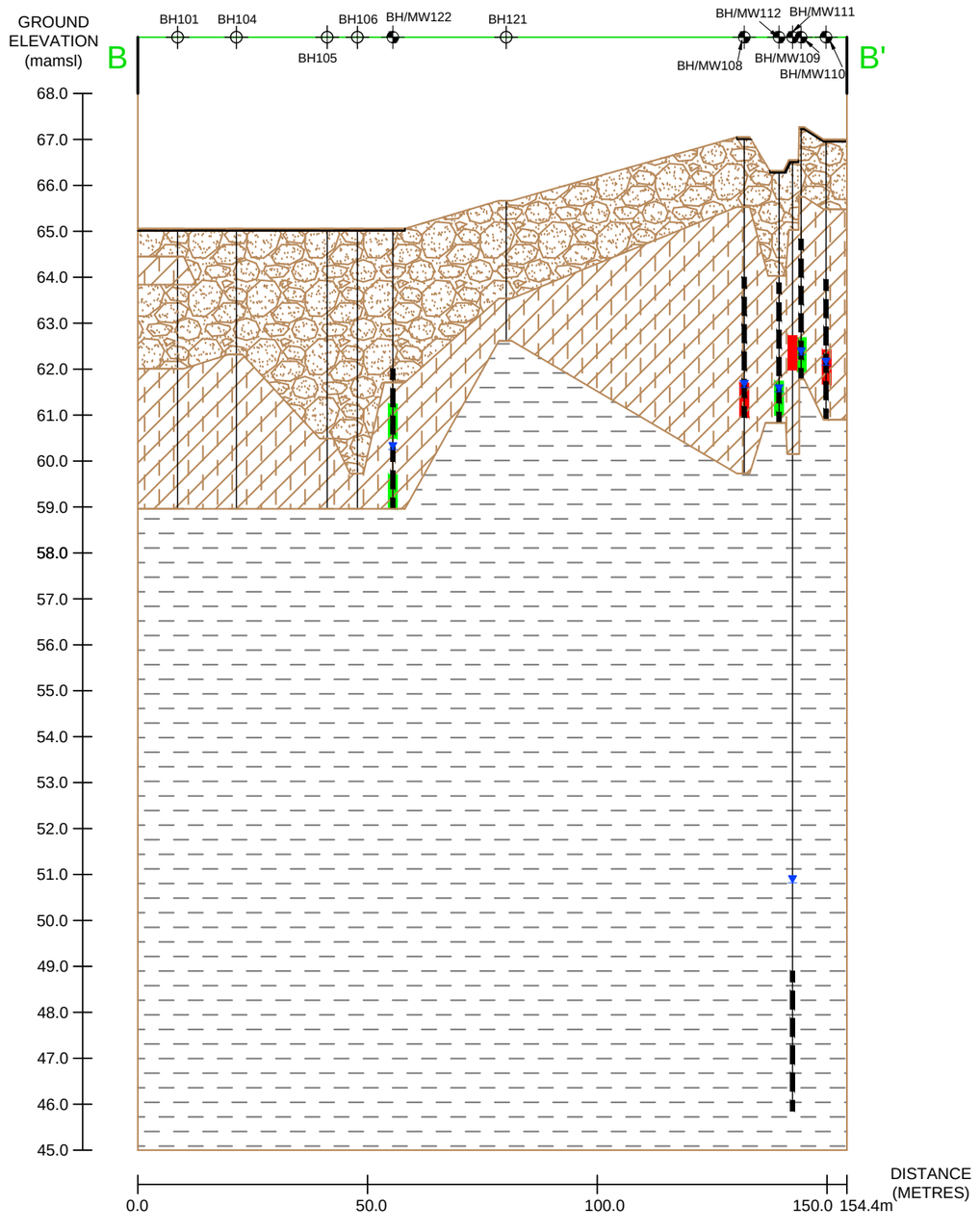
PROJECT NAME: PHASE TWO ENVIRONMENTAL SITE ASSESSMENT

CLIENT NAME: TIP GLADSTONE LIMITED PARTNERSHIP

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

FIGURE NAME: CROSS-SECTION A-A' WITH VOC EXCEEDANCES IN SOIL

PROJECT NUMBER:	SCALE:
285722.003	AS SHOWN
DRAWN BY: DM	REVIEWED BY: CT
DATE: DECEMBER 2021	FIGURE NUMBER: 10B



LEGEND

- PHASE TWO PROPERTY BOUNDARY
- A A' CROSS-SECTION LINE
- BOREHOLE (Pinchin 2021)
- MONITORING WELL (Pinchin 2021)
- ASPHALT
- SAND AND GRAVEL FILL/SAND AND GRAVEL
- SILTY CLAY
- BEDROCK
- WELL CASING/ BENTONITE
- MEASURED GROUNDWATER ELEVATION (JUNE 23, 2021)
- WELL SCREEN
- SAMPLE MEETS SITE CONDITION STANDARDS
- SAMPLE EXCEEDS SITE CONDITION STANDARDS

SCS: MECP (2011) TABLE 3: FULL DEPTH GENERIC SITE CONDITION STANDARDS IN A NON-POTABLE GROUND WATER CONDITION FOR RESIDENTIAL/PARKLAND/INSTITUTIONAL PROPERTY USE AND COARSE-TEXTURED SOILS

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

PINCHIN

PROJECT NAME:
PHASE TWO ENVIRONMENTAL SITE ASSESSMENT

CLIENT NAME:
TIP GLADSTONE LIMITED PARTNERSHIP

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

FIGURE NAME:
CROSS-SECTION B-B' WITH VOC EXCEEDANCES IN SOIL

PROJECT NUMBER:	SCALE:
285722.003	AS SHOWN
DRAWN BY:	REVIEWED BY:
DM	CT
DATE:	FIGURE NUMBER:
DECEMBER 2021	10C

GLADSTONE AVENUE

LORETTA AVENUE NORTH

BH2017-04 (2.4 - 3.0m)
BH126
BH2017-03
BH/MW114
(3.81 - 4.57m)
BH/MW127
BH 2017-05A
BH113 (4.57 - 5.33m)
(2.29 - 3.05m)
BH/MW116
BH/MW120
BH2017-05
(1.8 - 2.4m)
BH2017-09
BH1-20
(0.76 - 2.13m)
BH/MW115 (4.57 - 5.33m)
BH/MW112
(1.52 - 2.29m),
(4.57 - 5.33m)
BH/MW119
(3.05 - 3.66m)
BH4-20
BH/MW124
BH/MW117 (1.52 - 2.29m)
BH2017-02
(0.75 - 1.52m)
BH/MW118
BH103
(0.75 - 1.5m),
(4.57 - 5.33m)
BH 2017-13
(1.2 - 1.8m)
BH/MW111
BH2-20
BH 2017-12
(4.57 - 5.33m)
BH/MW110
(3.05 - 3.81m)
BH/MW123
BH2017-10
BH2017-08
BH105
BH102
(3.81 - 4.57m),
(5.33 - 6.10m)
BH/MW122
BHMW3
(2.29 - 3.05m),
(5.33 -6.10m)
BH106
BH2017-11
BH3-20
(4.57 - 5.33m)
BH/MW125
BHMW2
(4.57 - 5.33m)
BH/MW109
BH5-20
BHMW1
BH2017-06
BH/MW108
BH 2017-01
BH101
BH104
BH2017-07
BH107 (1.52 - 2.29m),
(4.57 - 5.33m)
(0.0 - 0.75m)
BH121
(0.75 - 1.50m),
(5.33 - 6.10m)

COCs	BH102 26/04/2021 0.75 - 1.50	BH102 26/04/2021 3.81 - 4.57
Acenaphthene	0.046	0.018
Acenaphthylene	0.073	<0.0050
Anthracene	0.18	0.0085
Benzo(a)anthracene	0.49	<0.0050
Benzo(a)pyrene	**0.5**	<0.0050
Benzo(b)fluoranthene	0.63	<0.0050
Benzo(g,h,i)perylene	0.35	<0.0050
Benzo(k)fluoranthene	0.23	<0.0050
Chrysene	0.43	<0.0050
Dibenzo(a,h)anthracene	0.089	<0.0050
Fluoranthene	**1.1**	<0.0050
Indeno(1,2,3-cd)pyrene	0.35	<0.0050
1- & 2-Methylnaphthalene	0.084	<0.0071
Naphthalene	0.026	<0.0050
Phenanthrene	0.75	0.022
Pyrene	1	0.0076

COCs	BH124 25/05/2021 0 - 0.75	BH124 25/05/2021 5.33 - 6.10
Acenaphthene	0.042	<0.0050
Acenaphthylene	0.034	<0.0050
Anthracene	0.13	<0.0050
Benzo(a)anthracene	0.45	<0.0050
Benzo(a)pyrene	**0.42**	<0.0050
Benzo(b)fluoranthene	0.56	<0.0050
Benzo(g,h,i)perylene	0.29	<0.0050
Benzo(k)fluoranthene	0.2	<0.0050
Chrysene	0.39	<0.0050
Dibenzo(a,h)anthracene	0.071	<0.0050
Fluoranthene	**0.84**	<0.0050
Indeno(1,2,3-cd)pyrene	0.32	<0.0050
1- & 2-Methylnaphthalene	0.073	<0.0071
Naphthalene	0.041	<0.0050
Phenanthrene	0.53	<0.0050
Pyrene	0.72	<0.0050

COCs	BH2-20 14/09/2020 0.76 - 1.37
Acenaphthene	0.04
Acenaphthylene	**0.20**
Anthracene	0.21
Benzo(a)anthracene	0.40
Benzo(a)pyrene	**0.57**
Benzo(b)fluoranthene	0.64
Benzo(g,h,i)perylene	0.32
Benzo(k)fluoranthene	0.37
Chrysene	0.51
Dibenzo(a,h)anthracene	0.08
Fluoranthene	**0.81**
Indeno(1,2,3-cd)pyrene	0.29
1- & 2-Methylnaphthalene	0.08
Naphthalene	0.03
Phenanthrene	0.39
Pyrene	0.69

COCs	BH111 27/04/2021 3.81 - 4.57
Acenaphthene	0.039
Acenaphthylene	<0.010
Anthracene	0.011
Benzo(a)anthracene	<0.0050
Benzo(a)pyrene	<0.0050
Benzo(b)fluoranthene	<0.0050
Benzo(g,h,i)perylene	<0.0050
Benzo(k)fluoranthene	<0.0050
Chrysene	<0.0050
Dibenzo(a,h)anthracene	<0.0050
Fluoranthene	0.0096
Indeno(1,2,3-cd)pyrene	<0.0050
1- & 2-Methylnaphthalene	**0.4**
Naphthalene	**5.3**
Phenanthrene	0.055
Pyrene	0.013

COCs	BHMW126 06/10/2021 0 - 0.75
Acenaphthene	**39**
Acenaphthylene	**0.77**
Anthracene	**110**
Benzo(a)anthracene	**180**
Benzo(a)pyrene	**120**
Benzo(b)fluoranthene	**200**
Benzo(g,h,i)perylene	**57**
Benzo(k)fluoranthene	**65**
Chrysene	**140**
Dibenzo(a,h)anthracene	**18**
Fluoranthene	**450**
Indeno(1,2,3-cd)pyrene	**62**
1- & 2-Methylnaphthalene	**17**
Naphthalene	**12**
Phenanthrene	**430**
Pyrene	**330**

COCs	BH2017-11 04/07/2017 1.2 - 1.8
Acenaphthene	0.26
Acenaphthylene	**0.84**
Anthracene	**0.73**
Benzo(a)anthracene	**3.5**
Benzo(a)pyrene	**3.2**
Benzo(b)fluoranthene	**3.9**
Benzo(g,h,i)perylene	2.1
Benzo(k)fluoranthene	**1.4**
Chrysene	2.9
Dibenzo(a,h)anthracene	**0.51**
Fluoranthene	**7**
Indeno(1,2,3-cd)pyrene	**2.5**
1- & 2-Methylnaphthalene	0.62
Naphthalene	0.4
Phenanthrene	2.2
Pyrene	5.7

COCs	BH101 26/04/2021 0.75 - 1.50	BH101 26/04/2021 3.81 - 4.57
Acenaphthene	0.43	<0.0050
Acenaphthylene	**0.18**	<0.0050
Anthracene	0.43	<0.0050
Benzo(a)anthracene	**1.2**	<0.0050
Benzo(a)pyrene	**1.3**	<0.0050
Benzo(b)fluoranthene	**1.8**	<0.0050
Benzo(g,h,i)perylene	0.96	<0.0050
Benzo(k)fluoranthene	0.68	<0.0050
Chrysene	1	<0.0050
Dibenzo(a,h)anthracene	**0.25**	<0.0050
Fluoranthene	**2.6**	<0.0050
Indeno(1,2,3-cd)pyrene	**0.98**	<0.0050
1- & 2-Methylnaphthalene	0.44	<0.0071
Naphthalene	<0.30	<0.0050
Phenanthrene	1.7	<0.0050
Pyrene	2.2	<0.0050

COCs	BH3-20 22/09/2020 0.76 - 1.37	BH3-20 22/09/2020 3.81 - 4.41
Acenaphthene	0.09	0.02
Acenaphthylene	**0.80**	0.07
Anthracene	**0.85**	0.09
Benzo(a)anthracene	**1.77**	0.25
Benzo(a)pyrene	**1.98**	**0.32**
Benzo(b)fluoranthene	**2.40**	0.37
Benzo(g,h,i)perylene	1.55	0.21
Benzo(k)fluoranthene	**1.31**	0.19
Chrysene	1.97	0.26
Dibenzo(a,h)anthracene	**0.41**	0.05
Fluoranthene	**3.90**	0.54
Indeno(1,2,3-cd)pyrene	**1.47**	0.20
1- & 2-Methylnaphthalene	0.10	0.06
Naphthalene	0.05	0.03
Phenanthrene	1.44	0.28
Pyrene	3.08	0.45

COCs	BH104 26/04/2021 2.29 - 3.05	BH104 26/04/2021 4.57 - 5.33
Acenaphthene	0.052	0.018
Acenaphthylene	**0.16**	<0.0050
Anthracene	0.21	0.0063
Benzo(a)anthracene	**0.97**	<0.0050
Benzo(a)pyrene	**1.3**	<0.0050
Benzo(b)fluoranthene	**1.8**	<0.0050
Benzo(g,h,i)perylene	1.1	<0.0050
Benzo(k)fluoranthene	0.66	<0.0050
Chrysene	0.86	<0.0050
Dibenzo(a,h)anthracene	**0.25**	<0.0050
Fluoranthene	**1.7**	0.012
Indeno(1,2,3-cd)pyrene	**1.1**	<0.0050
1- & 2-Methylnaphthalene	<0.071	<0.0071
Naphthalene	0.062	<0.0050
Phenanthrene	0.76	0.031
Pyrene	1.4	0.025

COCs	BH105 26/04/2021 0.75 - 1.50	BH105 26/04/2021 4.57 - 5.33
Acenaphthene	0.084	0.065
Acenaphthylene	0.076	<0.0050
Anthracene	0.29	<0.050
Benzo(a)anthracene	**1.2**	<0.0050
Benzo(a)pyrene	**1.2**	<0.0050
Benzo(b)fluoranthene	**1.4**	<0.0050
Benzo(g,h,i)perylene	0.7	<0.0050
Benzo(k)fluoranthene	0.55	<0.0050
Chrysene	1	<0.0050
Dibenzo(a,h)anthracene	**0.2**	<0.0050
Fluoranthene	**2**	0.02
Indeno(1,2,3-cd)pyrene	**0.7**	<0.0050
1- & 2-Methylnaphthalene	0.32	<0.011
Naphthalene	0.072	<0.010
Phenanthrene	1.5	<0.0050
Pyrene	2.3	0.069

COCs	BH5-20 23/09/2020 0.76 - 1.37
Acenaphthene	0.18
Acenaphthylene	**0.67**
Anthracene	**1.09**
Benzo(a)anthracene	**2.29**
Benzo(a)pyrene	**2.26**
Benzo(b)fluoranthene	**2.25**
Benzo(g,h,i)perylene	1.13
Benzo(k)fluoranthene	**1.09**
Chrysene	2.3
Dibenzo(a,h)anthracene	**0.35**
Fluoranthene	**5.15**
Indeno(1,2,3-cd)pyrene	**1.17**
1- & 2-Methylnaphthalene	0.29
Naphthalene	0.32
Phenanthrene	3.3
Pyrene	4.4

0 10 20 Meters

INFERRED GROUNDWATER FLOW DIRECTION

LEGEND

- PHASE TWO PROPERTY BOUNDARY
- SITE BUILDING
- BOREHOLE (Pinchin 2021.)
- MONITORING WELL (Pinchin 2021.)
- MONITORING WELL (DST 2009.)
- MONITORING WELL (DST 2017.)
- BOREHOLE (DST 2017.)
- BOREHOLE, MONITORING WELL (Patersongroup 2020.)
- SOIL SAMPLE LOCATION WHICH EXCEEDS MECP TABLE 3 STANDARDS, RESIDENTIAL LAND USE, MEDIUM/FINE TEXTURED SOIL
- SOIL SAMPLE LOCATION WHICH EXCEEDS MECP TABLE 3 STANDARDS, RESIDENTIAL LAND USE, MEDIUM/FINE TEXTURED SOIL
- m METERS
- mbgs METERS BELOW GROUND SURFACE
- ppm PARTS PER MILLION BY VOLUME
- SOIL IMPACT PLUME

MECP TABLE 3 SCS:

COCs	MECP Table 3 SCS
Acenaphthene	7.9
Acenaphthylene	0.15
Anthracene	0.67
Benzo(a)anthracene	0.5
Benzo(a)pyrene	0.3
Benzo(b)fluoranthene	0.78
Benzo(g,h,i)perylene	6.6
Benzo(k)fluoranthene	0.78
Chrysene	7
Dibenzo(a,h)anthracene	0.1
Fluoranthene	0.69
Indeno(1,2,3-cd)pyrene	0.38
1- & 2-Methylnaphthalene	0.99
Naphthalene	0.6
Phenanthrene	5.2
Pyrene	78

MECP (2011)TABLE 3: FULL DEPTH GENERIC SITE CONDITION STANDARDS IN A NON-POTABLE GROUNDWATER CONDITION FOR RESIDENTIAL/PARKLAND/INSTITUTIONAL PROPERTY USE AND COARSE-TEXTURED SOILS

BOLD	Exceeds SCS
Sample Location	BHXX
Sample Collection Date	dd/mm/yyyy
Sample Depth	mbgs
Parameter	Concentration (µg/g)

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

PINCHIN

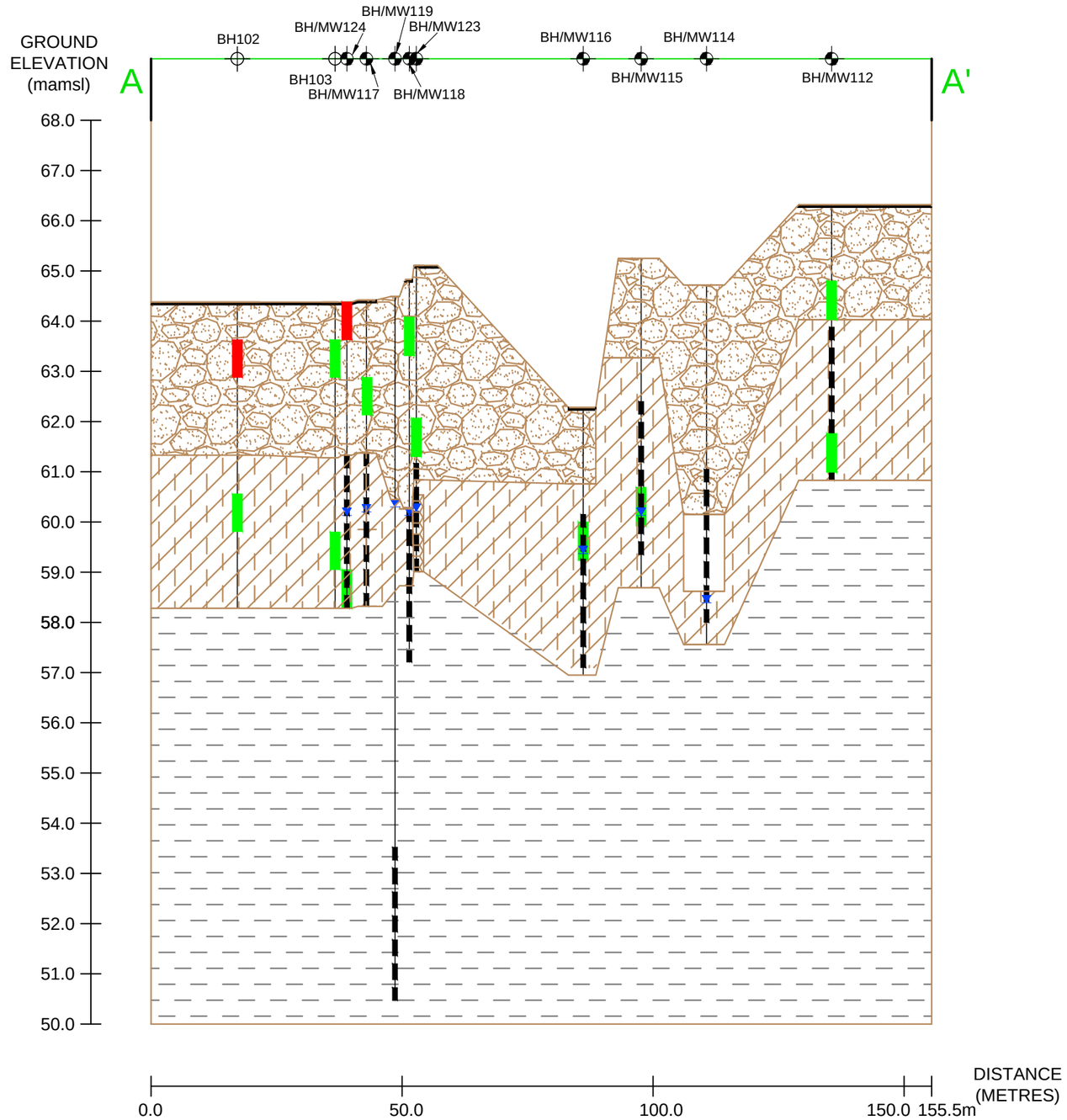
PROJECT NAME: PHASE TWO ENVIRONMENTAL SITE ASSESSMENT

CLIENT NAME: TIP GLADSTONE LIMITED PARTNERSHIP

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

FIGURE NAME: PAH EXCEEDANCES IN SOIL

PROJECT NUMBER:	SCALE:
285722.003	AS SHOWN
DRAWN BY: DM	REVIEWED BY: EC
DATE: DECEMBER 2021	FIGURE NUMBER: 11A



LEGEND

- PHASE TWO PROPERTY BOUNDARY
- A A' CROSS-SECTION LINE
- BOREHOLE (Pinchin 2021)
- MONITORING WELL (Pinchin 2021)
- ASPHALT
- SAND AND GRAVEL FILL
- SILTY CLAY
- NO DATA
- BOULDERS
- BEDROCK
- WELL CASING/ BENTONITE
- MEASURED GROUNDWATER ELEVATION (JUNE 23, 2021)
- WELL SCREEN
- SAMPLE MEETS SITE CONDITION STANDARDS
- SAMPLE EXCEEDS SITE CONDITION STANDARDS

SCS: MECP (2011) TABLE 3: FULL DEPTH GENERIC SITE CONDITION STANDARDS IN A NON-POTABLE GROUND WATER CONDITION FOR RESIDENTIAL/PARKLAND/INSTITUTIONAL PROPERTY USE AND COARSE-TEXTURED SOILS

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

PINCHIN

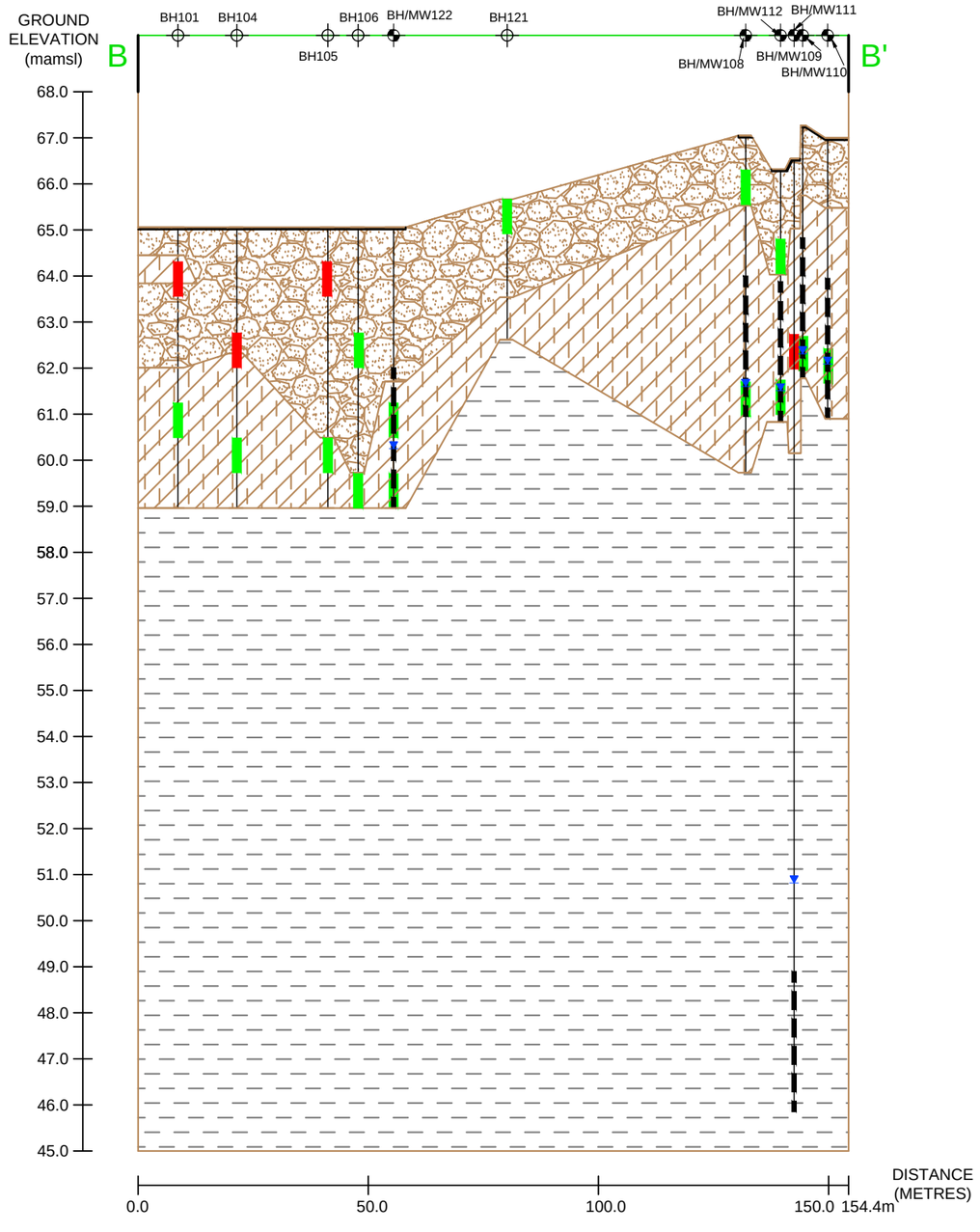
PROJECT NAME: PHASE TWO ENVIRONMENTAL SITE ASSESSMENT

CLIENT NAME: TIP GLADSTONE LIMITED PARTNERSHIP

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

FIGURE NAME: CROSS-SECTION A-A' WITH PAH EXCEEDANCES IN SOIL

PROJECT NUMBER:	SCALE:
285722.003	AS SHOWN
DRAWN BY: DM	REVIEWED BY: CT
DATE: DECEMBER 2021	FIGURE NUMBER: 11B



LEGEND

- PHASE TWO PROPERTY BOUNDARY
- A A' CROSS-SECTION LINE
- BOREHOLE (Pinchin 2021)
- MONITORING WELL (Pinchin 2021)
- ASPHALT
- SAND AND GRAVEL FILL/SAND AND GRAVEL
- SILTY CLAY
- BEDROCK
- WELL CASING/ BENTONITE
- MEASURED GROUNDWATER ELEVATION (JUNE 23, 2021)
- WELL SCREEN
- SAMPLE MEETS SITE CONDITION STANDARDS
- SAMPLE EXCEEDS SITE CONDITION STANDARDS

SCS: MECP (2011) TABLE 3: FULL DEPTH GENERIC SITE CONDITION STANDARDS IN A NON-POTABLE GROUND WATER CONDITION FOR RESIDENTIAL/PARKLAND/INSTITUTIONAL PROPERTY USE AND COARSE-TEXTURED SOILS

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

PINCHIN

PROJECT NAME:
PHASE TWO ENVIRONMENTAL SITE ASSESSMENT

CLIENT NAME:
TIP GLADSTONE LIMITED PARTNERSHIP

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

FIGURE NAME:
CROSS-SECTION B-B' WITH PAH EXCEEDANCES IN SOIL

PROJECT NUMBER:	SCALE:
285722.003	AS SHOWN
DRAWN BY:	REVIEWED BY:
DM	CT
DATE:	FIGURE NUMBER:
DECEMBER 2021	11C

GLADSTONE AVENUE

LORETTA AVENUE

BH2017-04 (2.4 - 3.0m)

BH126

BH2017-03 (0.6 - 1.2m)

BH/MW114 (6.10 - 7.01m)

BH/MW127

BH 2017-05A

BH113 (4.57 - 5.33m)

BH/MW116 (4.57 - 5.33m)

BH/MW120

BH2017-05

BH2017-09 (1.8 - 2.4m)

BH1-20

BH/MW115 (4.57 - 5.33m)

BH/MW112

BH/MW119

BH4-20

BH/MW124

BH/MW117 (1.52 - 2.29m)

(4.8 - 5.4m) BH2017-02

(0.75 - 1.5m) BH103

BH 2017-13

(0.75 - 1.52m) BH/MW118

BH/MW111

BH2-20

BH 2017-12

BH/MW110

(3.05 - 3.81m) BH/MW123

(7.2 - 7.8m) BH2017-10

(0.75 - 1.5m) BH105

BH2017-08

BH102

(3.81 - 4.57m), (5.33 - 6.10m) BH/MW122

BHMW3

(2.29 - 3.05m) BH106

BH2017-11

BH3-20

BHMW2

(2.4 - 3.0m) BH2017-07

BH5-20

BH/MW125

BHMW1

BH2017-06 (6.6 - 7.2m)

BH/MW108 (0.75 - 1.5m)

BH 2017-01 (3.6 - 4.2m)

BH/MW109

(0.75 - 1.5m) BH101

BH104

BH107 (1.52 - 2.29m)

BH121

COCs	BH2017-13	
	28/06/2017	
	1.2 - 1.8	
Arsenic	2.1	1.7
Barium	340	290
Cobalt	**23**	21
Lead	18	22
Molybdenum	0.54	0.66
Selenium	<0.5	<0.5
Vanadium	**100**	**95**
Zinc	120	110

COCs	BH124	
	25/05/2021	25/05/2021
	0 - 0.75	5.33 - 6.10
Arsenic	3.3	<1.0
Barium	85	380
Cobalt	7.2	18
Lead	80	7.2
Molybdenum	0.86	0.79
Selenium	<0.50	<0.50
Vanadium	37	**91**
Zinc	130	110

COCs	BH4-20	
	22/09/2020	
	3.05 - 3.66	
Arsenic	**20.7**	
Barium	109	
Cobalt	9.7	
Lead	46.1	
Molybdenum	<1	
Selenium	<1	
Vanadium	41.2	
Zinc	77.3	

COCs	BH2017-5	
	07/07/2017	
	3.6 - 4.2	
Arsenic	1.4	
Barium	320	
Cobalt	21	
Lead	13	
Molybdenum	0.54	
Selenium	<0.5	
Vanadium	**92**	
Zinc	110	

COCs	BH2017-11	
	04/07/2017	
	1.2 - 1.8	
Arsenic	**33**	
Barium	300	
Cobalt	7	
Lead	**410**	
Molybdenum	6.5	
Selenium	1.2	
Vanadium	24	
Zinc	310	

COCs	BH102	
	26/04/2021	
	0.75 - 1.50	
Arsenic	**23**	
Barium	360	
Cobalt	16	
Lead	**150**	
Molybdenum	2.4	
Selenium	**2.5**	
Vanadium	75	
Zinc	280	

COCs	BH104	
	26/04/2021	
	2.29 - 3.05	
Arsenic	16	
Barium	150	
Cobalt	13	
Lead	**500**	
Molybdenum	2.2	
Selenium	0.53	
Vanadium	25	
Zinc	200	

COCs	BH3-20	
	22/09/2020	
	0.76 - 1.37	
Arsenic	**56.6**	
Barium	249	
Cobalt	6.4	
Lead	**484**	
Molybdenum	**9**	
Selenium	1.7	
Vanadium	25.6	
Zinc	**374**	

COCs	BH2017-8	
	10/07/2017	
	2.4 - 3.0	
Arsenic	2	
Barium	370	
Cobalt	22	
Lead	10	
Molybdenum	0.53	
Selenium	<0.5	
Vanadium	**90**	
Zinc	110	

COCs	BH112	
	27/04/2021	
	1.52 - 2.29	
Arsenic	1.6	
Barium	**430**	
Cobalt	**23**	
Lead	7.6	
Molybdenum	<0.50	
Selenium	<0.50	
Vanadium	**97**	
Zinc	130	

0 10 20 Meters

INFERRED GROUNDWATER FLOW DIRECTION

LEGEND

- PHASE TWO PROPERTY BOUNDARY
- SITE BUILDING
- BOREHOLE (Pinchin 2021.)
- MONITORING WELL (Pinchin 2021.)
- MONITORING WELL (DST 2009.)
- MONITORING WELL (DST 2017.)
- BOREHOLE (DST 2017.)
- BOREHOLE, MONITORING WELL (Patersongroup 2020.)
- SOIL SAMPLE LOCATION WHICH EXCEEDS MECP TABLE 3 STANDARDS, RESIDENTIAL LAND USE, MEDIUM/FINE TEXTURED SOIL
- SOIL SAMPLE LOCATION WHICH EXCEEDS MECP TABLE 3 STANDARDS, RESIDENTIAL LAND USE, MEDIUM/FINE TEXTURED SOIL
- m METERS
- mbgs METERS BELOW GROUND SURFACE
- ppm PARTS PER MILLION BY VOLUME
- SOIL IMPACT PLUME

MECP TABLE 3 SCS:

COCs	MECP Table 3 SCS
Arsenic	18
Barium	390
Cobalt	22
Lead	120
Molybdenum	6.9
Selenium	2.4
Vanadium	86
Zinc	340

MECP (2011)TABLE 3: FULL DEPTH GENERIC SITE CONDITION STANDARDS IN A NON-POTABLE GROUNDWATER CONDITION FOR RESIDENTIAL/PARKLAND/INSTITUTIONAL PROPERTY USE AND COARSE-TEXTURED SOILS

BOLD	Exceeds SCS
Sample Location	BHXX
Sample Collection Date	dd/mm/yyyy
Sample Depth	mbgs
Parameter	Concentration (µg/g)

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

PINCHIN

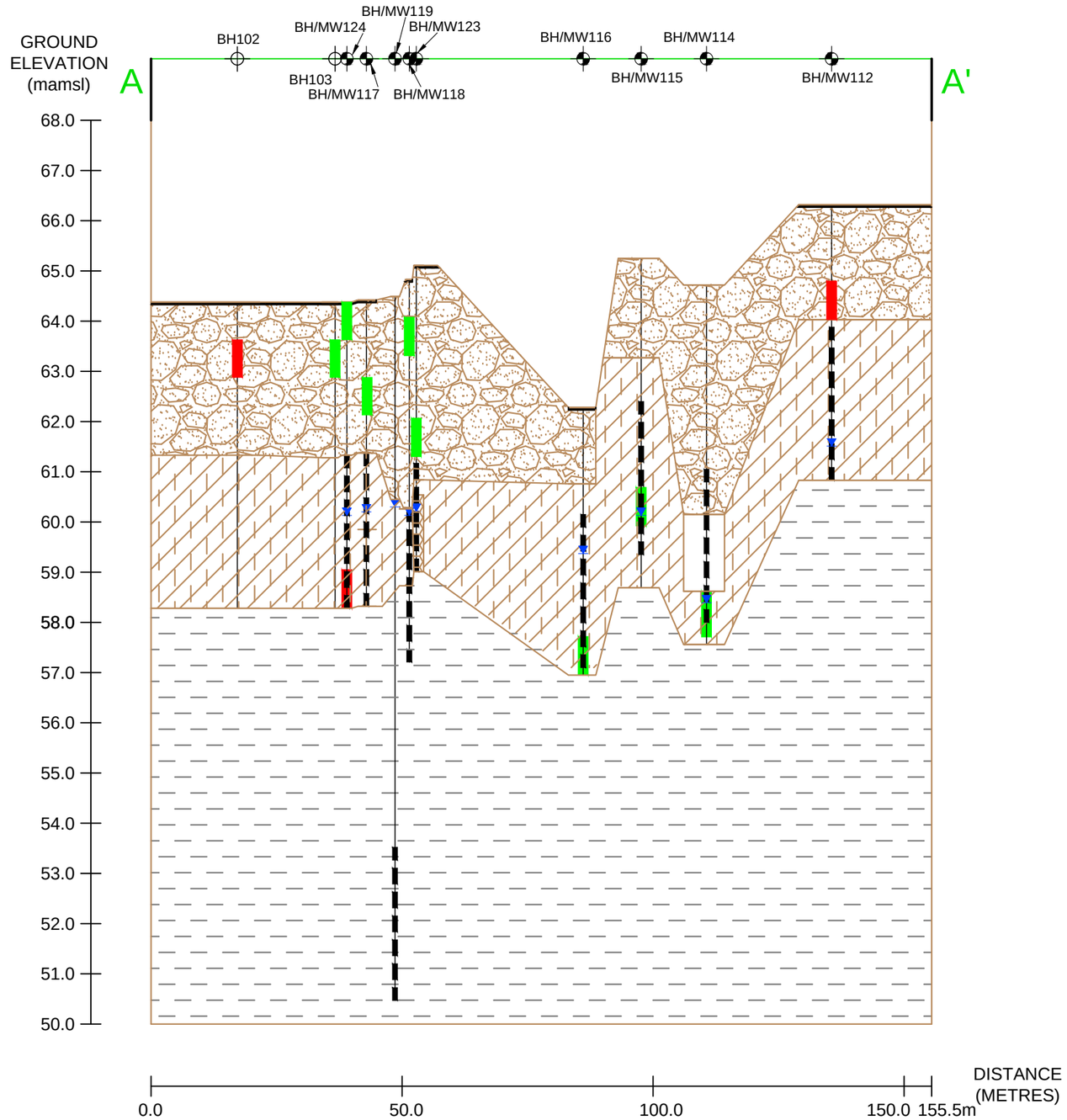
PROJECT NAME: PHASE TWO ENVIRONMENTAL SITE ASSESSMENT

CLIENT NAME: TIP GLADSTONE LIMITED PARTNERSHIP

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

FIGURE NAME: METAL EXCEEDANCES IN SOIL

PROJECT NUMBER:	SCALE:
285722.003	AS SHOWN
DRAWN BY: DM	REVIEWED BY: EC
DATE: DECEMBER 2021	FIGURE NUMBER: 12A



LEGEND

- PHASE TWO PROPERTY BOUNDARY
- A A' CROSS-SECTION LINE
- BOREHOLE (Pinchin 2021)
- MONITORING WELL (Pinchin 2021)
- ASPHALT
- SAND AND GRAVEL FILL
- SILTY CLAY
- NO DATA
- BOULDERS
- BEDROCK
- WELL CASING/ BENTONITE
- MEASURED GROUNDWATER ELEVATION (JUNE 23, 2021)
- WELL SCREEN
- SAMPLE MEETS SITE CONDITION STANDARDS
- SAMPLE EXCEEDS SITE CONDITION STANDARDS

SCS: MECP (2011) TABLE 3: FULL DEPTH GENERIC SITE CONDITION STANDARDS IN A NON-POTABLE GROUND WATER CONDITION FOR RESIDENTIAL/PARKLAND/INSTITUTIONAL PROPERTY USE AND COARSE-TEXTURED SOILS

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

PINCHIN

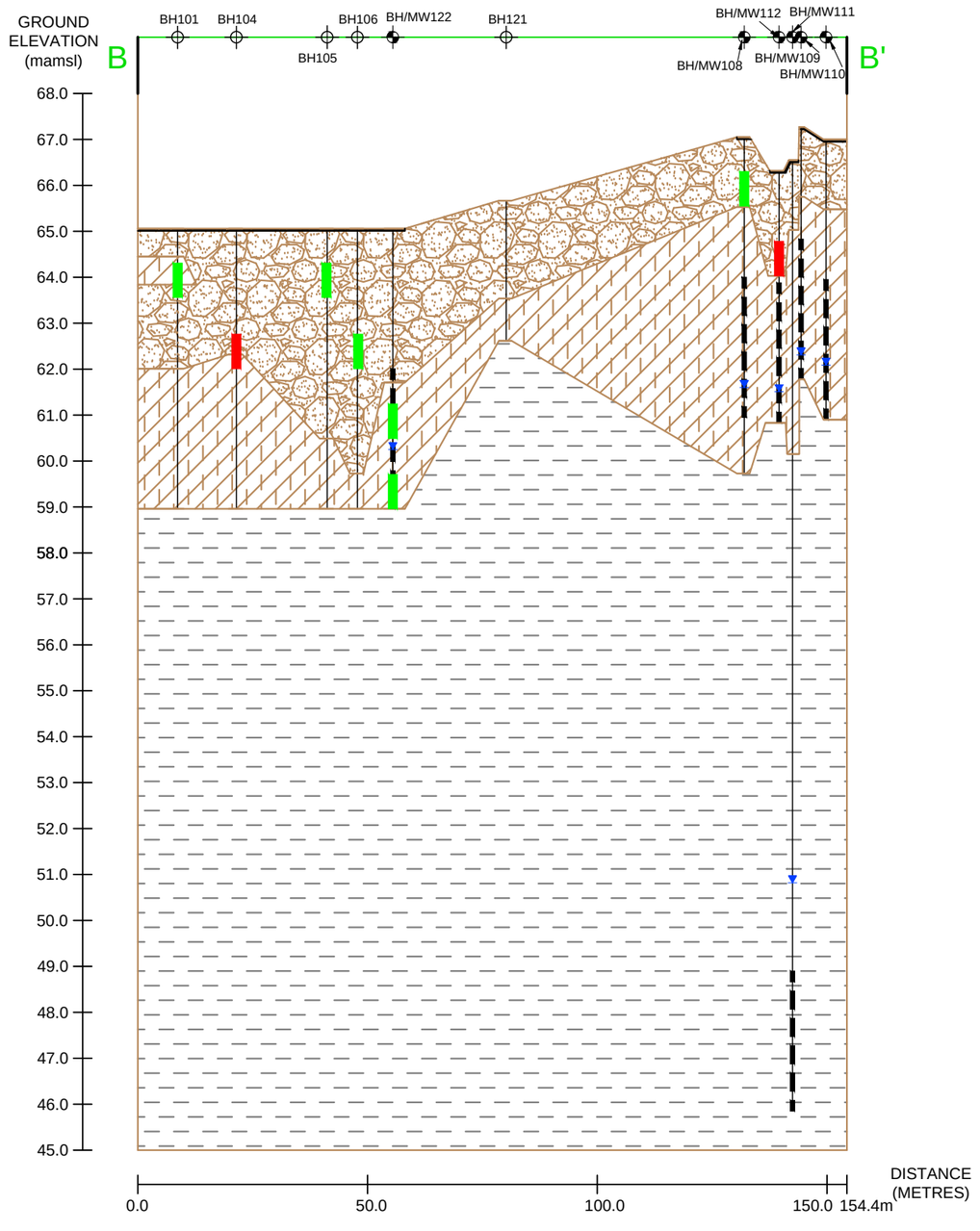
PROJECT NAME: PHASE TWO ENVIRONMENTAL SITE ASSESSMENT

CLIENT NAME: TIP GLADSTONE LIMITED PARTNERSHIP

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

FIGURE NAME: CROSS-SECTION A-A' WITH METAL EXCEEDANCES IN SOIL

PROJECT NUMBER:	SCALE:
285722.003	AS SHOWN
DRAWN BY: DM	REVIEWED BY: CT
DATE: DECEMBER 2021	FIGURE NUMBER: 12B



LEGEND

- PHASE TWO PROPERTY BOUNDARY
- A A' CROSS-SECTION LINE
- BOREHOLE (Pinchin 2021)
- MONITORING WELL (Pinchin 2021)
- ASPHALT
- SAND AND GRAVEL FILL/SAND AND GRAVEL
- SILTY CLAY
- BEDROCK
- WELL CASING/ BENTONITE
- MEASURED GROUNDWATER ELEVATION (JUNE 23, 2021)
- WELL SCREEN
- SAMPLE MEETS SITE CONDITION STANDARDS
- SAMPLE EXCEEDS SITE CONDITION STANDARDS

SCS: MECP (2011) TABLE 3: FULL DEPTH GENERIC SITE CONDITION STANDARDS IN A NON-POTABLE GROUND WATER CONDITION FOR RESIDENTIAL/PARKLAND/INSTITUTIONAL PROPERTY USE AND COARSE-TEXTURED SOILS

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

PINCHIN

PROJECT NAME:
PHASE TWO ENVIRONMENTAL SITE ASSESSMENT

CLIENT NAME:
TIP GLADSTONE LIMITED PARTNERSHIP

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

FIGURE NAME:
CROSS-SECTION B-B' WITH METAL EXCEEDANCES IN SOIL

PROJECT NUMBER:	SCALE:
285722.003	AS SHOWN
DRAWN BY:	REVIEWED BY:
DM	CT
DATE:	FIGURE NUMBER:
DECEMBER 2021	12C

COCs	BH124		
	25/05/2021		
	0 - 0.75		5.33 - 6.10
EC	0.31	0.35	**2.1**
SAR	**5.6**	**6.3**	3.5

BH2017-04
BH126
BH2017-03
BH/MW114
BH/MW127
BH 2017-05A
BH113
BH/MW116
BH/MW120
BH2017-05
BH2017-09
BH1-20
BH/MW115
BH/MW112
BH/MW119
BH4-20
BH/MW124
BH/MW117
BH2017-02
BH103
BH/MW118
BH 2017-13
BH/MW111
BH2-20
BH 2017-12
BH/MW110
BH2017-10
BH/MW123
BH105
BH2017-08
BH102
BH/MW122
BHMW3
BH2017-11
BH3-20
BH106
BHMW2
BH5-20
BH/MW125
BHMW1
BH2017-06
BH/MW108
BH/MW109
BH101
BH104
BH2017-07
BH107
BH121
BH 2017-01

GLADSTONE AVENUE

LORETTA AVENUE NORTH

0 10 20 Meters

INFERRED GROUNDWATER FLOW DIRECTION

LEGEND

- PHASE TWO PROPERTY BOUNDARY
- SITE BUILDING
- BOREHOLE (Pinchin 2021.)
- MONITORING WELL (Pinchin 2021.)
- MONITORING WELL (DST 2009.)
- MONITORING WELL (DST 2017.)
- BOREHOLE (DST 2017.)
- BOREHOLE, MONITORING WELL (Patersongroup 2020.)
- SOIL SAMPLE LOCATION WHICH EXCEEDS MECP TABLE 3 STANDARDS, RESIDENTIAL LAND USE, MEDIUM/FINE TEXTURED SOIL
- SOIL SAMPLE LOCATION WHICH EXCEEDS MECP TABLE 3 STANDARDS, RESIDENTIAL LAND USE, MEDIUM/FINE TEXTURED SOIL
- m METERS
- mbgs METERS BELOW GROUND SURFACE
- ppm PARTS PER MILLION BY VOLUME

MECP TABLE 3 SCS:

COCs	MECP Table 3 SCS
Electrical Conductivity (EC, as mS/cm)	0.7
Sodium Adsorption Ratio (SAR, no Units)	5

MECP (2011)TABLE 3: FULL DEPTH GENERIC SITE CONDITION STANDARDS IN A NON-POTABLE GROUNDWATER CONDITION FOR RESIDENTIAL/PARKLAND/INSTITUTIONAL PROPERTY USE AND COARSE-TEXTURED SOILS

BOLD	Exceeds SCS
Sample Location	BHXX
Sample Collection Date	dd/mm/yyyy
Sample Depth	mbgs
Parameter	Concentration (µg/g)

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

PINCHIN

PROJECT NAME: PHASE TWO ENVIRONMENTAL SITE ASSESSMENT

CLIENT NAME: TIP GLADSTONE LIMITED PARTNERSHIP

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

FIGURE NAME: EC AND SAR EXCEEDANCES IN SOIL

PROJECT NUMBER:	SCALE:
285722.003	AS SHOWN
DRAWN BY: DM	REVIEWED BY: EC
DATE: DECEMBER 2021	FIGURE NUMBER: 13

GLADSTONE AVENUE

LORETTA AVENUE NORTH

COCs	BH2017-02
	18/07/2017
	3.4 - 6.5
PHCs F1	12000
PHCs F2	6100
PHCs F3	<200
PHCs F4	<200

COCs	BHMW115	
	09/06/2021	30/11/2021
	2.8 - 5.9	
PHCs F1	42	37
PHCs F2	240	330
PHCs F3	740	28000
PHCs F4	<200	3600

COCs	BHMW122		
	09/06/2021	30/11/2021	
	3.0 - 6.1		
PHCs F1	<25	<25	<25
PHCs F2	170	<100	<100
PHCs F3	<200	<200	<200
PHCs F4	<200	<200	<200

COCs	BHMW3	
	22/04/2021	
	Unknown	
PHCs F1	31	27
PHCs F2	<100	<100
PHCs F3	390	550
PHCs F4	460	4900

COCs	BHMW108	
	9/6/2021	30/11/2021
	3.0 - 6.1	
PHCs F1	630	480
PHCs F2	410	110
PHCs F3	250	<200
PHCs F4	<200	<200

COCs	BH2-20	
	30/09/2020	22/04/2021
	3.2 - 6.2	
PHCs F1	1940	<25
PHCs F2	<100	<100
PHCs F3	<100	<200
PHCs F4	<100	<200

COCs	BHMW110	
	09/06/2021	30/11/2021
	3.0 - 6.1	
PHCs F1	470	28
PHCs F2	380	<100
PHCs F3	<200	<200
PHCs F4	<200	<200

BH2017-04 (2.2 - 4.6m)
BH126
BH2017-03
BH/MW114
BH/MW127 (3.8 - 6.9m)
BH 2017-05A
BH113
BH/MW116 (3.03 - 4.88m)
BH/MW120 (11.8 - 14.9m)
BH2017-05
BH2017-09 (1.8 - 4.5m)
BH1-20 (8.1 - 11.1m)
BH/MW115
BH/MW112 (2.4 - 5.5m)
BH/MW119 (12.5 - 14.0m)
BH/MW124 (3.0 - 6.1m)
BH4-20 (7.7 - 10.7m)
BH/MW117 (3.0 - 6.1m)
BH2017-02
BH103
BH/MW118 (4.5 - 7.6m)
BH 2017-13
BH/MW111 (17.6 - 20.7m)
BH2-20
BH 2017-12
BH/MW110
BH2017-10 (10.0 - 13.1m)
BH/MW123 (3.0 - 6.1m)
BH2017-08
BH102
BH105
BH/MW122
BHMW3
BH2017-11 (5.3 - 8.4m)
BH3-20 (9.2 - 12.2m)
BH106
BH5-20 (10.4 - 11.9m)
BHMW2
BH/MW109 (2.4 - 5.5m)
BH2017-07 (4.9 - 8.0m)
BH/MW125 (3.0 - 6.1m)
BHMW1
BH/MW108
BH 2017-01
BH2017-06 (4.7 - 7.8m)
BH101
BH104
BH107
BH121

0 10 20 Meters

INFERRED GROUNDWATER FLOW DIRECTION

LEGEND

- PHASE TWO PROPERTY BOUNDARY
- SITE BUILDING
- BOREHOLE (Pinchin 2021.)
- MONITORING WELL (Pinchin 2021.)
- MONITORING WELL (DST 2009.)
- MONITORING WELL (DST 2017.)
- BOREHOLE (DST 2017.)
- BOREHOLE, MONITORING WELL (Patersongroup 2020.)
- SOIL SAMPLE LOCATION WHICH EXCEEDS MECP TABLE 3 STANDARDS, RESIDENTIAL LAND USE, MEDIUM/FINE TEXTURED SOIL
- SOIL SAMPLE LOCATION WHICH EXCEEDS MECP TABLE 3 STANDARDS, RESIDENTIAL LAND USE, MEDIUM/FINE TEXTURED SOIL
- m METERS
- mbgs METERS BELOW GROUND SURFACE
- (#) WELL SCREEN INTERVAL
- ppm PARTS PER MILLION BY VOLUME
- GROUNDWATER IMPACT PLUME

MECP TABLE 3 SCS:

COCs	MECP Table 3 SCS
PHCs F1	750
PHCs F2	150
PHCs F3	500
PHCs F4	500

MECP (2011)TABLE 3: FULL DEPTH GENERIC SITE CONDITION STANDARDS IN A NON-POTABLE GROUNDWATER CONDITION FOR RESIDENTIAL/PARKLAND/INSTITUTIONAL PROPERTY USE AND COARSE-TEXTURED SOILS

BOLD Exceeds SCS

Sample Location	MWXX
Sample Collection Date	dd/mm/yyyy
Well Depth Interval	mbgs
Parameter	Concentration (µg/L)

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

PINCHIN

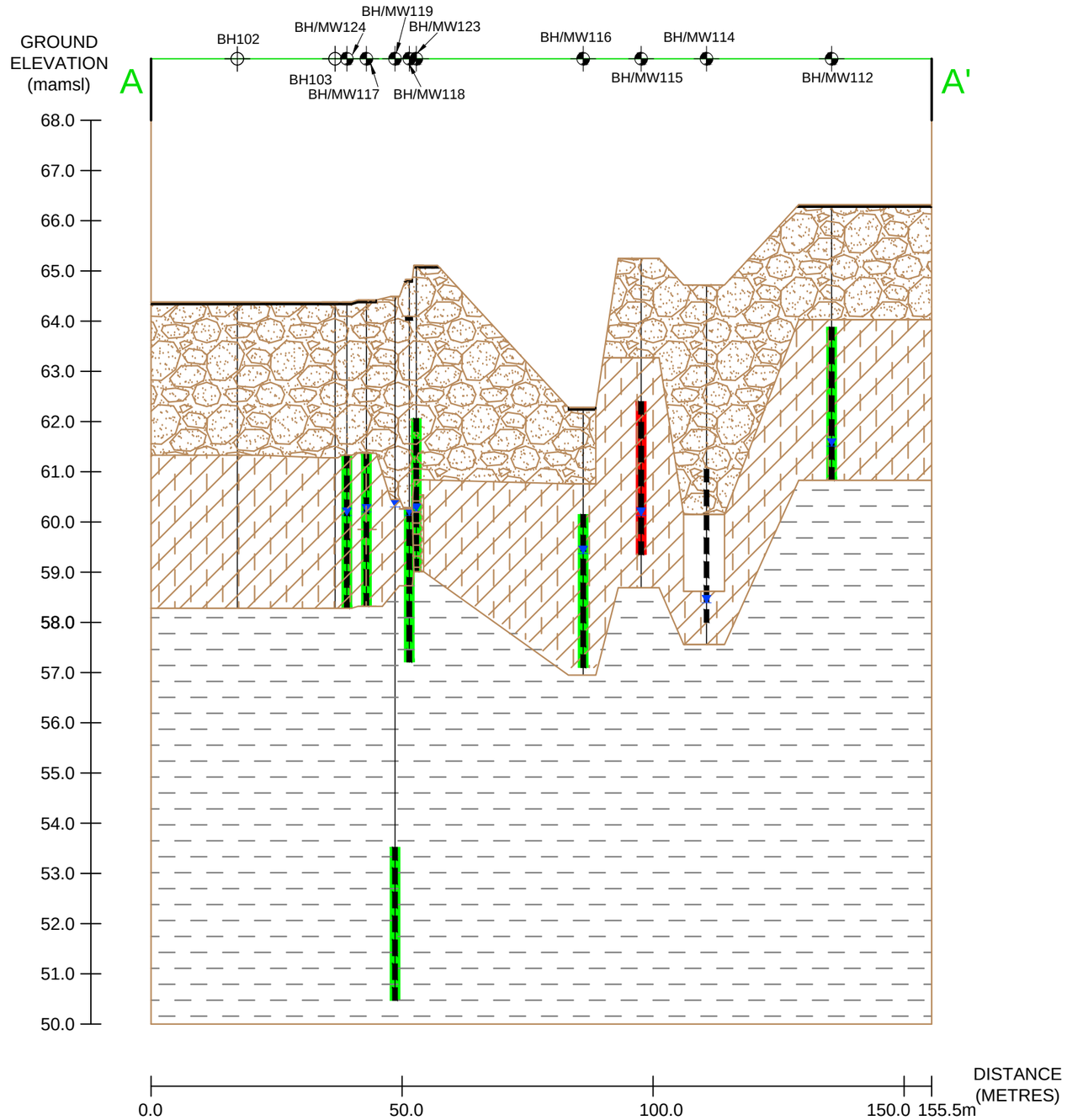
PROJECT NAME: PHASE TWO ENVIRONMENTAL SITE ASSESSMENT

CLIENT NAME: TIP GLADSTONE LIMITED PARTNERSHIP

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

FIGURE NAME: PHC EXCEEDANCES IN GROUNDWATER

PROJECT NUMBER:	SCALE:
285722.003	AS SHOWN
DRAWN BY: DM	REVIEWED BY: EC
DATE: DECEMBER 2021	FIGURE NUMBER: 14A



LEGEND

- PHASE TWO PROPERTY BOUNDARY
- A A' CROSS-SECTION LINE
- BOREHOLE (Pinchin 2021)
- MONITORING WELL (Pinchin 2021)
- ASPHALT
- SAND AND GRAVEL FILL
- SILTY CLAY
- NO DATA
- BOULDERS
- BEDROCK
- WELL CASING/ BENTONITE
- MEASURED GROUNDWATER ELEVATION (JUNE 23, 2021)
- WELL SCREEN
- SAMPLE MEETS SITE CONDITION STANDARDS
- SAMPLE EXCEEDS SITE CONDITION STANDARDS

SCS: MECP (2011) TABLE 3: FULL DEPTH GENERIC SITE CONDITION STANDARDS IN A NON-POTABLE GROUND WATER CONDITION FOR RESIDENTIAL/PARKLAND/INSTITUTIONAL PROPERTY USE AND COARSE-TEXTURED SOILS

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

PINCHIN

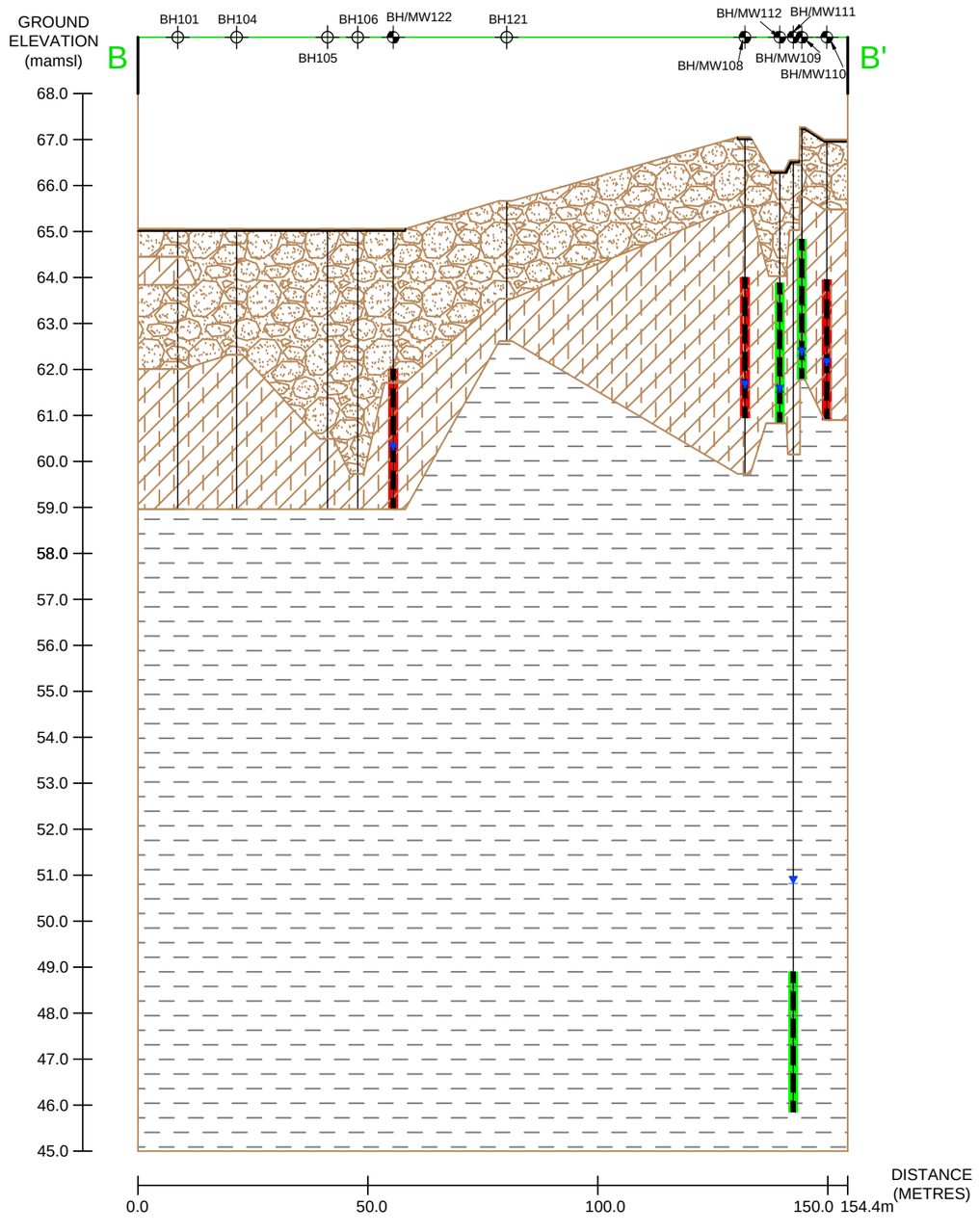
PROJECT NAME: PHASE TWO ENVIRONMENTAL SITE ASSESSMENT

CLIENT NAME: TIP GLADSTONE LIMITED PARTNERSHIP

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

FIGURE NAME: CROSS-SECTION A-A' WITH PHC EXCEEDANCES IN GROUONDWATER

PROJECT NUMBER:	SCALE:
285722.003	AS SHOWN
DRAWN BY: DM	REVIEWED BY: CT
DATE: DECEMBER 2021	FIGURE NUMBER: 14B



LEGEND

- PHASE TWO PROPERTY BOUNDARY
- A A' CROSS-SECTION LINE
- BOREHOLE (Pinchin 2021)
- MONITORING WELL (Pinchin 2021)
- ASPHALT
- SAND AND GRAVEL FILL/SAND AND GRAVEL
- SILTY CLAY
- BEDROCK
- WELL CASING/ BENTONITE
- MEASURED GROUNDWATER ELEVATION (JUNE 23, 2021)
- WELL SCREEN
- SAMPLE MEETS SITE CONDITION STANDARDS
- SAMPLE EXCEEDS SITE CONDITION STANDARDS

SCS: MECP (2011) TABLE 3: FULL DEPTH GENERIC SITE CONDITION STANDARDS IN A NON-POTABLE GROUND WATER CONDITION FOR RESIDENTIAL/PARKLAND/INSTITUTIONAL PROPERTY USE AND COARSE-TEXTURED SOILS

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

PINCHIN

PROJECT NAME:
PHASE TWO ENVIRONMENTAL SITE ASSESSMENT

CLIENT NAME:
TIP GLADSTONE LIMITED PARTNERSHIP

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

FIGURE NAME:
CROSS-SECTION B-B' WITH PHC EXCEEDANCES IN GROUNDWATER

PROJECT NUMBER:	SCALE:
285722.003	AS SHOWN
DRAWN BY:	REVIEWED BY:
DM	CT
DATE:	FIGURE NUMBER:
DECEMBER 2021	14C

COCs	BHMW116	
	09/06/2021	30/11/2021
	1.8 - 4.9	
Chloroform	<0.20	<0.20
1,2-DCA	8.1	22
Hexane	<1.0	<1.0
MTBE	140	130
Xylenes	<0.20	<0.20

COCs	BH1-20	
	30/09/2020	22/04/2021
	8.1 - 11.1	
Chloroform	<0.5	<0.20
1,2-Dichloroethane	4.5	3.8
Hexane	2	<1.0
Methyl t-Butyl Ether	44.3	44
Xylenes	<0.5	<0.20

COCs	BH2017-05	
	18/07/2017	
	7.8 - 10.8	
Chloroform	0.7	0.6
1,2-Dichloroethane	6.6	7
Hexane	<1.0	<1.0
Methyl t-Butyl Ether	240	240
Xylenes	<0.20	<0.20

COCs	BHMW119	
	15/06/2021	30/11/2021
	12.5 - 14.0	12.5 - 14.0
Chloroform	0.78	0.53
1,2-DCA	1.9	<0.50
Hexane	<1.0	<1.0
MTBE	15	7.1
Xylenes	0.78	0.99

COCs	BH2017-09
	18/07/2017
	1.8 - 4.5
Chloroform	<0.20
1,2-Dichloroethane	20
Hexane	<1.0
Methyl t-Butyl Ether	110
Xylenes	0.22

COCs	BHMW120		
	9/6/2021		02/12/2021
	11.8 - 14.9		
Chloroform	<0.20	<0.20	<0.20
1,2-DCA	5.2	5	3.6
Hexane	<1.0	<1.0	<1.0
MTBE	39	37	38
Xylenes	0.22	0.22	<0.20

COCs	BH4-20		
	30/09/2020		22/04/2021
	7.7 - 10.7		
Chloroform	<0.5	<0.5	<0.20
1,2-Dichloroethane	2.7	2.7	2.3
Hexane	<1.0	<1.0	<1.0
Methyl t-Butyl Ether	15.7	15.6	19
Xylenes	<0.5	<0.5	<0.20

COCs	BH5-20	
	30/09/2020	22/04/2021
	10.4 - 11.9	
Chloroform	3.4	<0.20
1,2-Dichloroethane	<0.5	<0.50
Hexane	<1.0	<1.0
Methyl t-Butyl Ether	<2.0	<0.50
Xylenes	<0.5	<0.20

COCs	BH2017-02
	18/07/2017
	3.4 - 6.5
Chloroform	<0.20
1,2-Dichloroethane	<0.50
Hexane	280
Methyl t-Butyl Ether	<0.50
Xylenes	6600

COCs	BH2-20	
	30/09/2020	22/04/2021
	3.2 - 6.2	
Chloroform	<0.5	<0.20
1,2-Dichloroethane	<0.5	<0.50
Hexane	52	<1.0
Methyl t-Butyl Ether	<2.0	<0.50
Xylenes	90.7	<0.20

GLADSTONE AVENUE

LORETTA AVENUE NORTH

BH2017-04 (2.2 - 4.6m)
BH126
BH2017-03
BH/MW114
BH/MW127 (3.8 - 6.9m)
BH 2017-05A
BH113
BH/MW116
BH/MW120
BH2017-05
BH2017-09
BH1-20
BH/MW115 (2.8 - 5.9m)
BH/MW119
BH4-20
BH/MW124 (3.0 - 6.1m)
BH/MW117 (3.0 - 6.1m)
BH/MW112 (2.4 - 5.5m)
BH2017-02
BH103
BH 2017-13
(4.5 - 7.6m) BH/MW118
(17.6 - 20.7m) BH/MW111
BH2-20
BH 2017-12
(3.0 - 6.1m) BH/MW110
(10.0 - 13.1m) BH2017-10
(3.0 - 6.1m) BH/MW123
BH105
BH2017-08
BH102
(3.0 - 6.1m) BH/MW122
(Unknown) BHMW3
(5.3 - 8.4m) BH2017-11
(9.2 - 12.2m) BH3-20
BH106
BHMW2
(4.9 - 8.0m) BH2017-07
BH5-20
(3.0 - 6.1m) BH/MW125
BHMW1
BH2017-06 (4.7 - 7.8m)
BH/MW108 (3.0 - 6.1m)
BH 2017-01
(2.4 - 5.5m) BH/MW109
BH101
BH104
BH107
BH121

0 10 20 Meters

INFERRED GROUNDWATER FLOW DIRECTION

LEGEND

- PHASE TWO PROPERTY BOUNDARY
- SITE BUILDING
- BOREHOLE (Pinchin 2021.)
- MONITORING WELL (Pinchin 2021.)
- MONITORING WELL (DST 2009.)
- MONITORING WELL (DST 2017.)
- BOREHOLE (DST 2017.)
- BOREHOLE, MONITORING WELL (Patersongroup 2020.)
- SOIL SAMPLE LOCATION WHICH EXCEEDS MECP TABLE 3 STANDARDS, RESIDENTIAL LAND USE, MEDIUM/FINE TEXTURED SOIL
- SOIL SAMPLE LOCATION WHICH EXCEEDS MECP TABLE 3 STANDARDS, RESIDENTIAL LAND USE, MEDIUM/FINE TEXTURED SOIL
- m METERS
- mbgs METERS BELOW GROUND SURFACE
- (#) WELL SCREEN INTERVAL
- ppm PARTS PER MILLION BY VOLUME
- GROUNDWATER IMPACT PLUME

MECP TABLE 3 SCS:

COCs	MECP Table 3 SCS
Chloroform	2.4
1,2-Dichloroethane	1.6
Hexane	51
Methyl t-Butyl Ether	190
Xylenes	4200

MECP (2011)TABLE 3: FULL DEPTH GENERIC SITE CONDITION STANDARDS IN A NON-POTABLE GROUNDWATER CONDITION FOR RESIDENTIAL/PARKLAND/INSTITUTIONAL PROPERTY USE AND COARSE-TEXTURED SOILS

BOLD Exceeds SCS

Sample Location	MWXX
Sample Collection Date	dd/mm/yyyy
Well Depth Interval	mbgs
Parameter	Concentration (µg/L)

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

PINCHIN

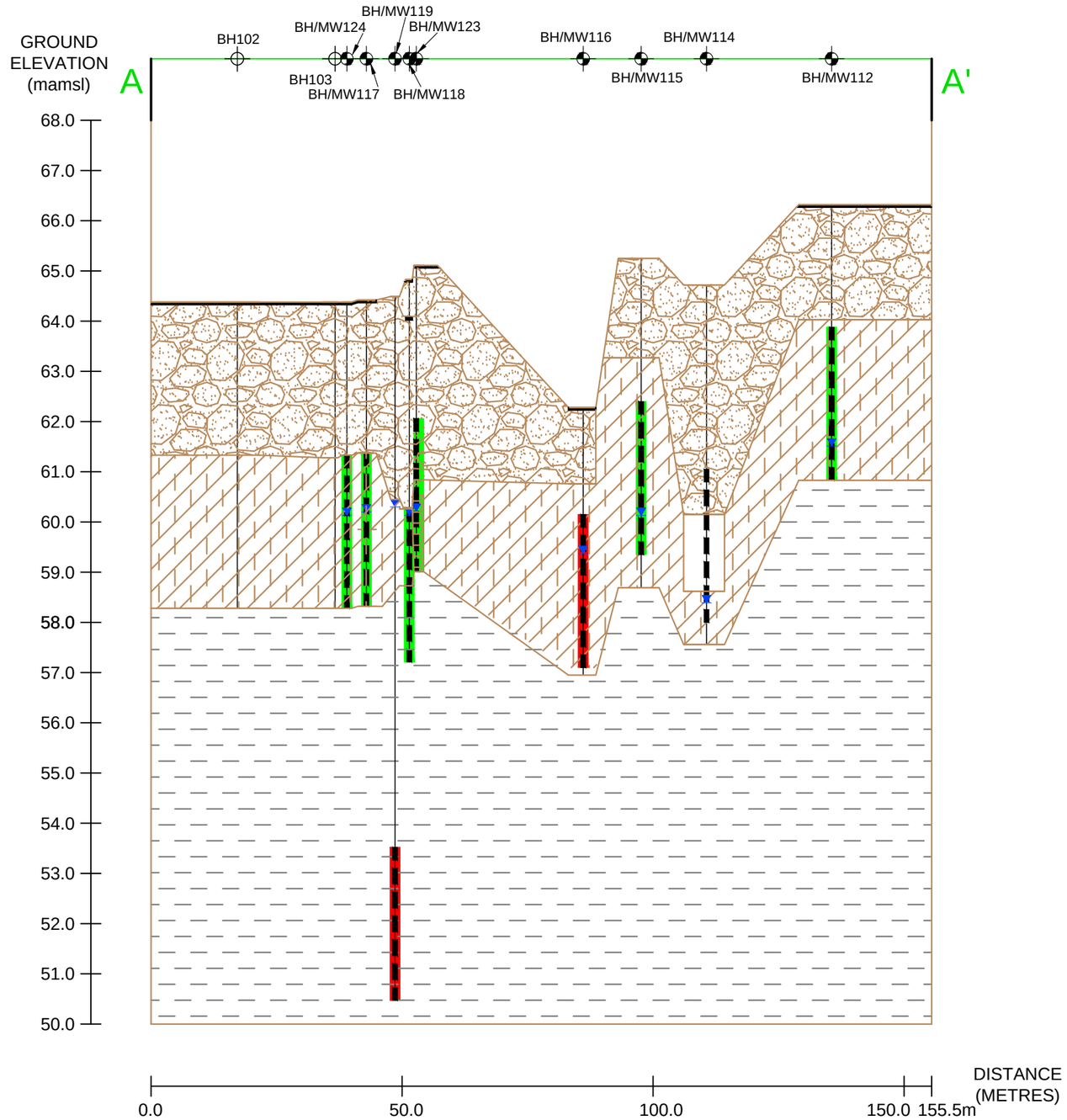
PROJECT NAME:
PHASE TWO ENVIRONMENTAL SITE ASSESSMENT

CLIENT NAME:
TIP GLADSTONE LIMITED PARTNERSHIP

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

FIGURE NAME:
VOC EXCEEDANCES IN GROUNDWATER

PROJECT NUMBER:	SCALE:
285722.003	AS SHOWN
DRAWN BY:	REVIEWED BY:
DM	EC
DATE:	FIGURE NUMBER:
DECEMBER 2021	15A



LEGEND

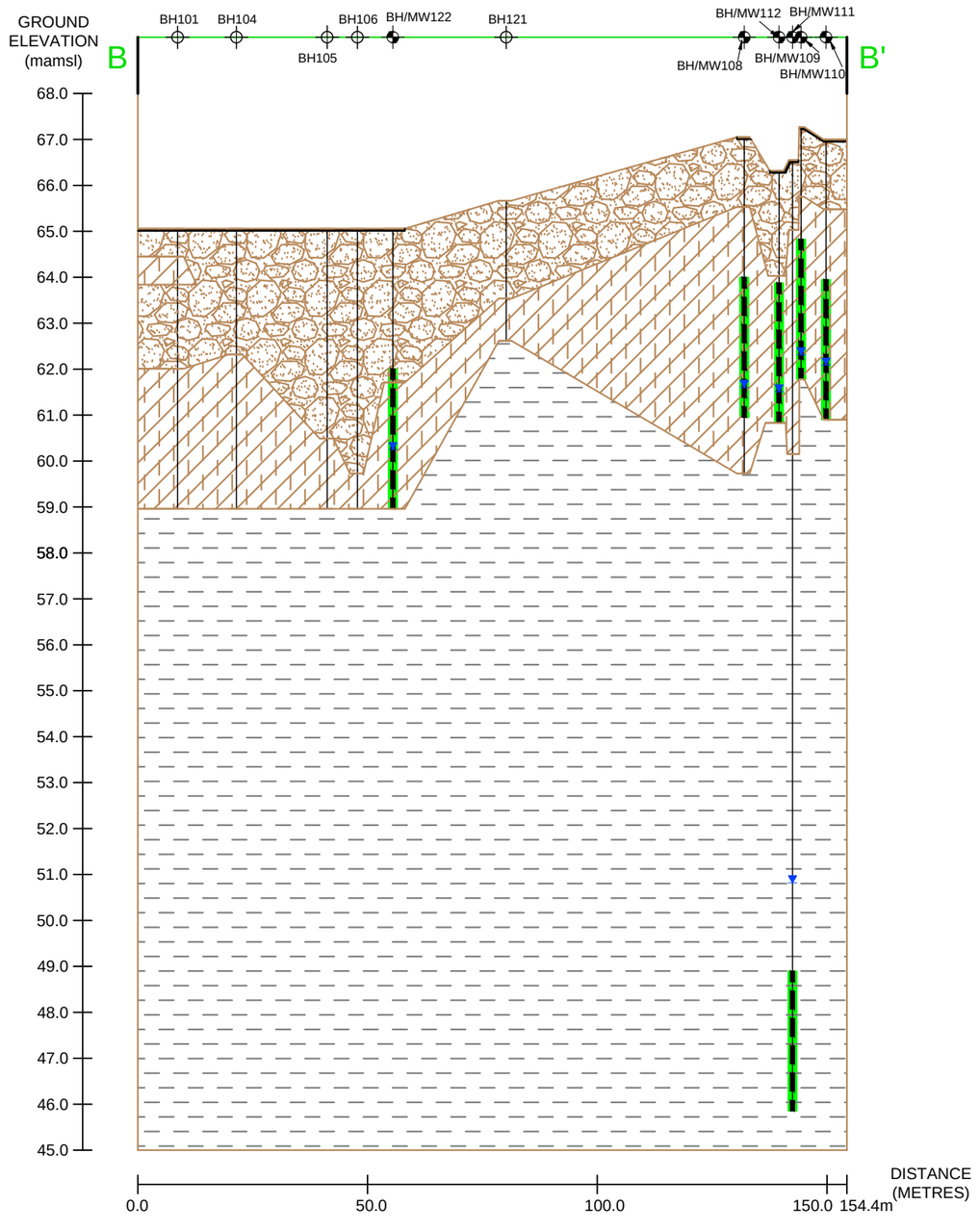
- PHASE TWO PROPERTY BOUNDARY
- A A' CROSS-SECTION LINE
- BOREHOLE (Pinchin 2021)
- MONITORING WELL (Pinchin 2021)
- ASPHALT
- SAND AND GRAVEL FILL
- SILTY CLAY
- NO DATA
- BOULDERS
- BEDROCK
- WELL CASING/ BENTONITE
- MEASURED GROUNDWATER ELEVATION (JUNE 23, 2021)
- WELL SCREEN
- SAMPLE MEETS SITE CONDITION STANDARDS
- SAMPLE EXCEEDS SITE CONDITION STANDARDS

SCS: MECP (2011) TABLE 3: FULL DEPTH GENERIC SITE CONDITION STANDARDS IN A NON-POTABLE GROUND WATER CONDITION FOR RESIDENTIAL/PARKLAND/INSTITUTIONAL PROPERTY USE AND COARSE-TEXTURED SOILS

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

PINCHIN

PROJECT NAME:	PHASE TWO ENVIRONMENTAL SITE ASSESSMENT
CLIENT NAME:	TIP GLADSTONE LIMITED PARTNERSHIP
PROJECT LOCATION:	951 GLADSTONE AVENUE AND 145 LORETTA AVENUE NORTH, OTTAWA, ONTARIO
FIGURE NAME:	CROSS-SECTION A-A' WITH VOC EXCEEDANCES IN GROUONDWATER
PROJECT NUMBER: 285722.003	SCALE: AS SHOWN
DRAWN BY: DM	REVIEWED BY: CT
DATE: DECEMBER 2021	FIGURE NUMBER: 15B



LEGEND

- PHASE TWO PROPERTY BOUNDARY
- A A' CROSS-SECTION LINE
- BOREHOLE (Pinchin 2021)
- MONITORING WELL (Pinchin 2021)
- ASPHALT
- SAND AND GRAVEL FILL/SAND AND GRAVEL
- SILTY CLAY
- BEDROCK
- WELL CASING/ BENTONITE
- MEASURED GROUNDWATER ELEVATION (JUNE 23, 2021)
- WELL SCREEN
- SAMPLE MEETS SITE CONDITION STANDARDS
- SAMPLE EXCEEDS SITE CONDITION STANDARDS

SCS: MECP (2011) TABLE 3: FULL DEPTH GENERIC SITE CONDITION STANDARDS IN A NON-POTABLE GROUND WATER CONDITION FOR RESIDENTIAL/PARKLAND/INSTITUTIONAL PROPERTY USE AND COARSE-TEXTURED SOILS

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

PINCHIN

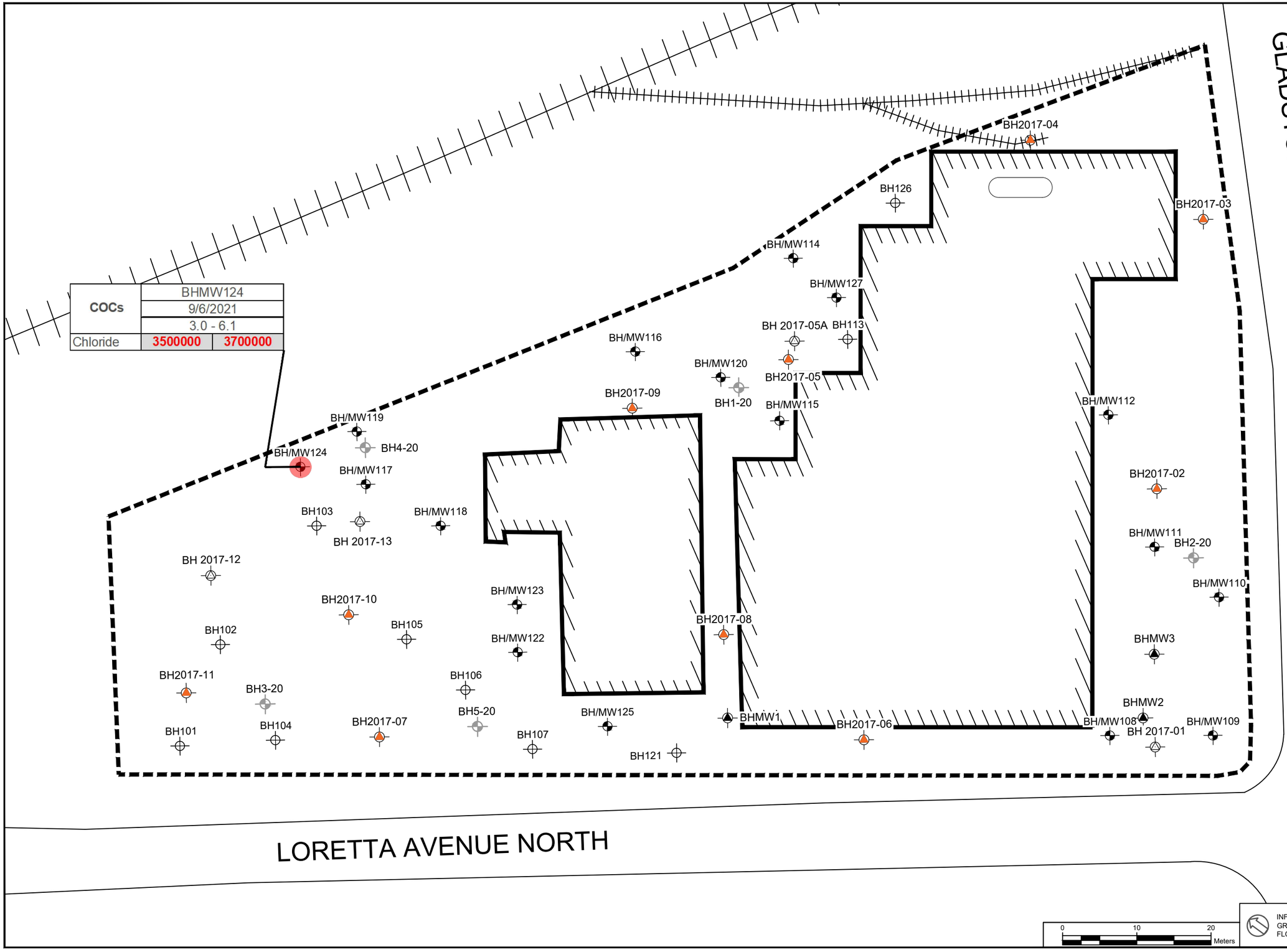
PROJECT NAME: PHASE TWO ENVIRONMENTAL SITE ASSESSMENT

CLIENT NAME: TIP GLADSTONE LIMITED PARTNERSHIP

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

FIGURE NAME: CROSS-SECTION B-B' WITH VOC EXCEEDANCES IN GROUNDWATER

PROJECT NUMBER:	SCALE:
285722.003	AS SHOWN
DRAWN BY:	REVIEWED BY:
DM	CT
DATE:	FIGURE NUMBER:
DECEMBER 2021	15C



COCs	BHMW124	
	9/6/2021	
	3.0 - 6.1	
Chloride	3500000	3700000

LEGEND

- PHASE TWO PROPERTY BOUNDARY
- SITE BUILDING
- BOREHOLE (Pinchin 2021.)
- MONITORING WELL (Pinchin 2021.)
- MONITORING WELL (DST 2009.)
- MONITORING WELL (DST 2017.)
- BOREHOLE (DST 2017.)
- BOREHOLE, MONITORING WELL (Patersongroup 2020.)
- SOIL SAMPLE LOCATION WHICH EXCEEDS MECP TABLE 3 STANDARDS, RESIDENTIAL LAND USE, MEDIUM/FINE TEXTURED SOIL
- SOIL SAMPLE LOCATION WHICH EXCEEDS MECP TABLE 3 STANDARDS, RESIDENTIAL LAND USE, MEDIUM/FINE TEXTURED SOIL
- m METERS
- mbgs METERS BELOW GROUND SURFACE
- (#) WELL SCREEN INTERVAL
- ppm PARTS PER MILLION BY VOLUME

MECP TABLE 3 SCS:

COCs	MECP Table 3 SCS
Chloride	2300000

MECP (2011)TABLE 3: FULL DEPTH GENERIC SITE CONDITION STANDARDS IN A NON-POTABLE GROUNDWATER CONDITION FOR RESIDENTIAL/PARKLAND/INSTITUTIONAL PROPERTY USE AND COARSE-TEXTURED SOILS

BOLD Exceeds SCS

Sample Location	MWXX
Sample Collection Date	dd/mm/yyyy
Well Depth Interval	mbgs
Parameter	Concentration (µg/L)

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

PINCHIN

PROJECT NAME: PHASE TWO ENVIRONMENTAL SITE ASSESSMENT

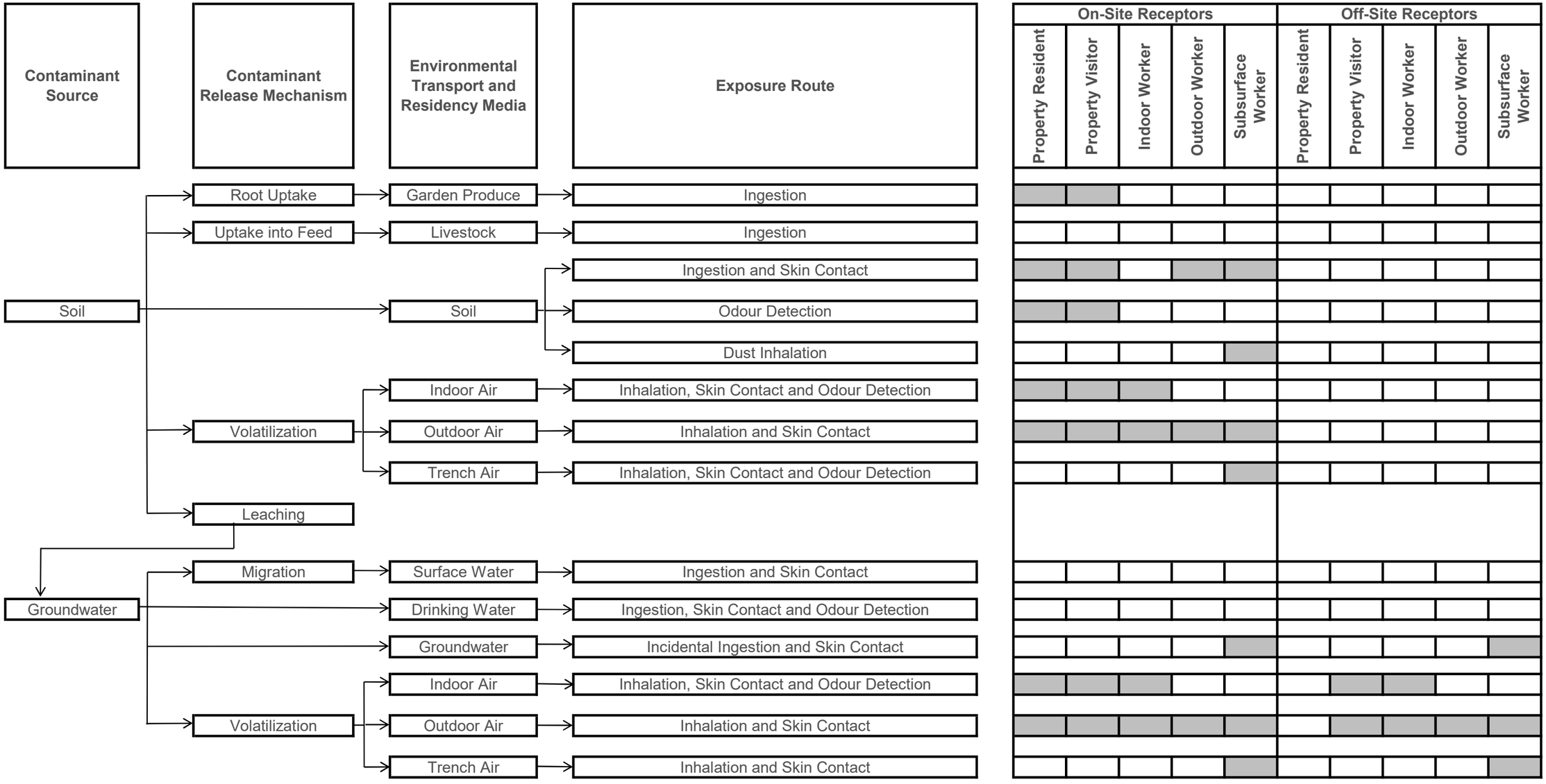
CLIENT NAME: TIP GLADSTONE LIMITED PARTNERSHIP

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

FIGURE NAME: CHLORIDE EXCEEDANCES IN GROUNDWATER

PROJECT NUMBER:	SCALE:
285722.003	AS SHOWN
DRAWN BY: DM	REVIEWED BY: EC
DATE: DECEMBER 2021	FIGURE NUMBER: 16

FIGURE 17: HUMAN HEALTH CONCEPTUAL SITE MODEL

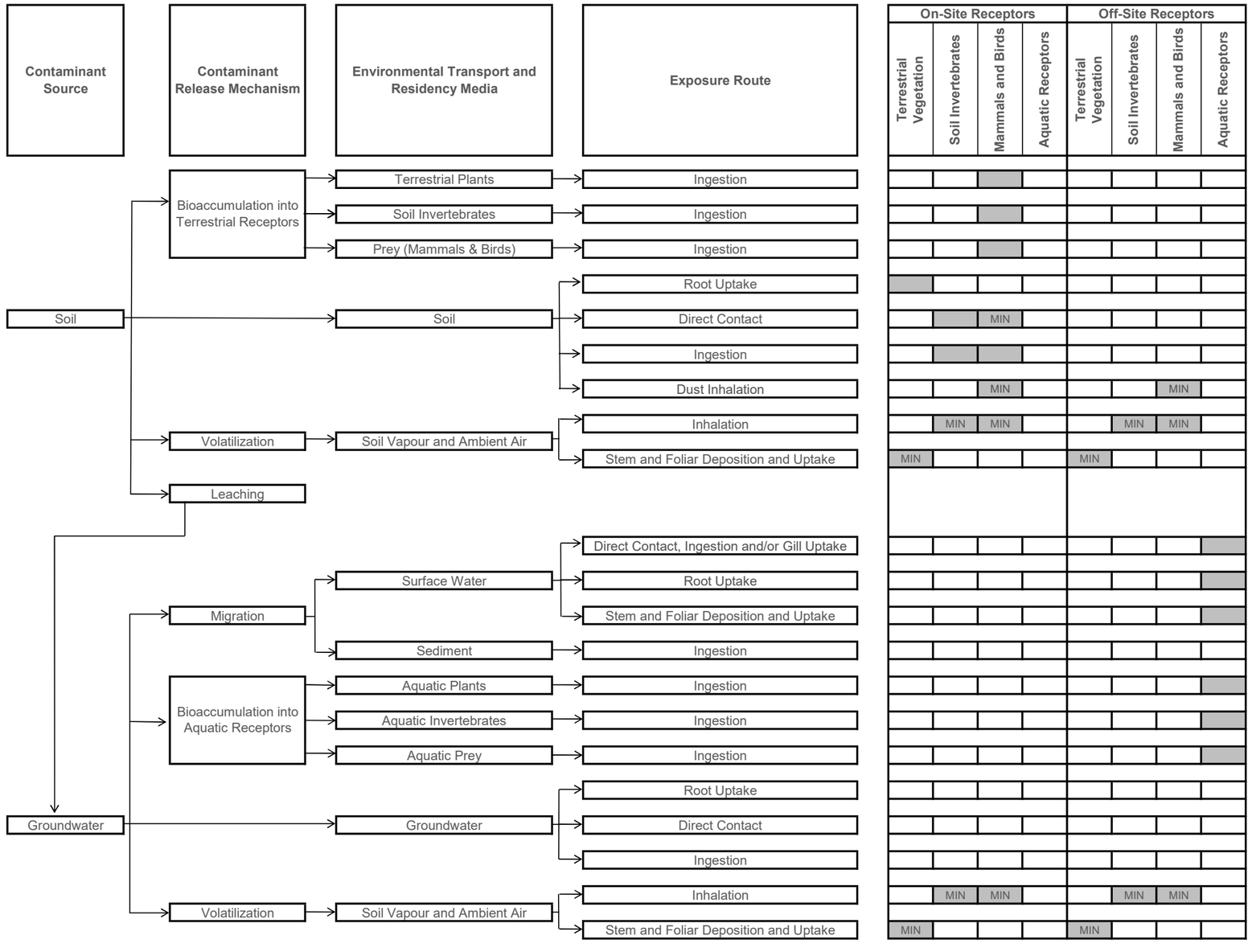


Notes:

Complete Pathway

Incomplete Pathway

FIGURE 18: ECOLOGICAL HEALTH CONCEPTUAL SITE MODEL



Notes:

- Complete Pathway
- Incomplete Pathway
- MIN — Minimal contributor to overall exposure