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July 19, 2022
File: PE4937-LET.04

Caivan Renaud Inc.
302-2934 Baseline Road
Ottawa, Ontario
K2H 1B2

Attention: **Mr. Hugo Lalonde**

Subject: **Phase II - Environmental Site Assessment Update**
Navan at Renaud Road
Ottawa, Ontario

Dear Sir,

Further to your request, Paterson Group (Paterson) carried out a Phase II - Environmental Site Assessment (ESA) Update for the aforementioned property. This report updates a Phase II-ESA prepared by Paterson Group entitled “Phase II-Environmental Assessment, 2980, 3054, 3060, 3080 Navan Road, and 6101 Renaud Road, Ottawa, Ontario” prepared and dated July 7, 2020. This report is only used to update the site conditions for the purposes of filing a Record of Site Condition (RSC) on the property.

As part of this Phase II ESA Update Paterson completed several additional boreholes, test pits, and monitoring wells in response to MECP comments and the findings of the remediation program.

Conceptual Site Model

The following section has been prepared in accordance with the requirements of O.Reg. 153/04 - Record of Site Condition regulation as amended, made under the Environmental Protection Act. Conclusions and recommendations are discussed in a subsequent section.

1.0 Site Description

The RSC Property is an approximately U-shaped parcel of land located on the south side of Navan Road, at the intersection of Pagé Road, in the City of Ottawa, Ontario.

Currently, the RSC Property is vacant and consists of a former excavation contractor yard and several former residential dwellings. The surrounding properties are a mix of

commercial and residential uses. The land within the study area generally slopes down towards the southeast, with the northwest boundaries of the RSC property being much higher in elevation than the properties to the east, south, and west.

2.0 Background

Paterson completed several site investigations for due diligence purposes for the property owner prior to the completion of a purchase of the property. These investigations consisted of soil and groundwater testing to identify potentially impacted material. Impacted soil was identified in several areas of the site, with several areas recommended to be investigated in the future if a purchase was completed.

Paterson then completed a Phase I ESA for the property, summarizing the existing environmental work and completing the required historical research.

A Phase II ESA was undertaken, in conjunction with a soil remediation on the property. The results of the Phase II ESA and soil remediation are outlined below.

3.0 Potentially Contaminating Activity and Areas of Potential Environmental Concern

Area of potential environmental concern	**Location of area of potential environmental concern on phase one property**	**Potentially contaminating activity**	**Location of PCA (on-site or off-site)**	**Contaminants of potential concern**	**Media potentially Impacted (Groundwater, soil and/or sediment)**
APEC 1A: Former Private Fuel Outlet	Eastern portion of the RSC Property	PCA 28 – "*Gasoline and Associated Products Storage in Fixed Tanks.*"	On-site	BTEX PHCs (F_1-F_4)	Soil Groundwater
APEC1B: Former AST	Within APEC1, on the eastern portion of the RSC property.	PCA 28 – "*Gasoline and Associated Products Storage in Fixed Tanks.*"	On-site	BTEX PHCs (F_1-F_4)	Soil Groundwater
APEC 2A: Former Maintenance Garage	Eastern portion of the RSC property	PCA 52 – *"Storage, maintenance, fuelling and repair of equipment, vehicles, and material used to maintain transportation systems."*	On-site	BTEX PHCs (F_1-F_4)	Soil Groundwater
APEC2B: Former Oil Water Separator	Within APEC2, on eastern portion of the RSC property	PCA 52 – *"Storage, maintenance, fuelling and repair of equipment, vehicles, and material used to maintain transportation systems."*	On-site	BTEX PHCs (F_1-F_4)	Soil Groundwater

Area of potential environmental concern	Location of area of potential environmental concern on phase one property	Potentially contaminating activity	Location of PCA (on-site or off-site)	Contaminants of potential concern	Media potentially Impacted (Groundwater, soil and/or sediment)
APEC 3A: Former Private Fuel Outlet	Southeastern portion of the Phase I Property	PCA 28 – "*Gasoline and Associated Products Storage in Fixed Tanks.*"	On-site	BTEX PHCs (F_1-F_4)	Soil Groundwater
APEC3B: Former UST	Southeastern portion of the Phase I Property	PCA 28 – "*Gasoline and Associated Products Storage in Fixed Tanks.*"	On-site	BTEX PHCs (F_1-F_4)	Soil Groundwater
APEC 4: Fill material of unknown quality	Throughout the RSC property	PCA 30 – "*Importation of Fill Material of Unknown Quality.*"	On-site	PHCs BTEX PAHs Metals (including As, Se, Sb)	Soil
APEC 5: Existing Contractor Yard	Central north side of the Phase I Property	PCA 28 – "*Gasoline and Associated Products Storage in Fixed Tanks.*"	Off-site	BTEX PHCs (F_1-F_4)	Soil
1 – "Metals" refers to the method groups known as "Metals" and Hydride forming Metals" throughout this report and all attached drawings.					

APEC 1A – Former private fuel outlet: Based on the findings of the Phase I ESA private fuel outlet for the excavation contractor was present on the RSC property. The former fuel outlet is considered to represent an APEC on the RSC property. Based on the former use of the site the ASTs were most likely used for dispensing fuel (diesel and/or gasoline) for the excavation equipment used by the former owners. Based on the aerial photos the dispensing system was located on the top of the AST, dispensing fuel directly from the tank. No additional pump islands or distribution lines are considered to be associated with the former private fuel outlet.

APEC1B – Former ASTs: ASTs stored fuel (diesel and/or gasoline) within APEC1A. The size, age, and construction of the ASTs is unknown. The AST was removed from the RSC property prior to the involvement of the current owners, although can be identified on aerial photos. The former ASTs are considered to represent an APEC on the RSC property.

APEC 2A – Former Maintenance Garage: A maintenance garage was located at the rear of the office building on the RSC property. This garage was used for minor maintenance activities of the smaller equipment used by the excavation contractor. An inspection of the maintenance garage prior to its demolition did not observe any hoists, trenches, or designated chemical storage areas. Small quantities of oils and gasoline were stored in portable containers. No signs of significant staining on the floor of the former maintenance garage were observed. The former maintenance garage is

considered to represent an APEC on the RSC property. Based on the observations made during the site visit the CPCs for APEC2 were determined to PHCs and BTEX.

APEC2B – Former Oil Water Separator: An oil water separator was observed in the former maintenance building. The oil water separator was dry at the time of the site visit, as the building was not in active use. The presence of the oil water separator is considered to represent an APEC on the RSC property.

APEC 3A – Former Private Fuel Outlet: A second private fuel outlet was reportedly present adjacent to the former maintenance garage/office building. Similarly, to APEC 1A, the former fuel outlet was most likely used for dispensing fuel (diesel and/or gasoline) for the excavation equipment used by the former owners. The exact locations of the former fuel dispensing areas and distribution network is not known, although are expected to be located adjacent to the former tank locations. The former fuel outlet is considered to represent and APEC on the RSC property.

APEC3B – Former UST: A UST reportedly served as a fuel (presumably diesel and/or gasoline based on the historical site activities) storage tank for APEC3A. The size, age, and construction of the former UST is unknown. The UST was decommissioned prior to the involvement of the current owners, or any former owners made available for interview. The former UST is considered to represent an APEC on the RSC property.

APEC 4 – Fill material of unknown quality: Fill material was identified during previous subsurface investigations at the RSC property. This fill material was presumed to have been placed during various grading and fill importation programs by the former excavation contractor. The fill material of unknown quality is considered to represent an APEC throughout the RSC property.

APEC 5 – Contractor Yard: A construction contractor is located to the north of the RSC property. A portion of that contractor yard is now part of the RSC property. The areas of the yard within the RSC property were used for vehicle and construction material storage. No signs of ASTs, USTs, or mechanic work are present within 20m of the RSC property boundary. The contractor yard is considered to represent an APEC on the RSC property.

The resulting APECs are shown on Drawing PE4937-Site Plan. No other PCAs identified in the Phase I ESA study area are considered to represent an APEC on the RSC property.

The majority of the PCAs are considered to be cross or downgradient from the RSC property and are not considered to represent an APEC.

The existing contractor yard, located to the north of the RSC property is primarily used as storage for building materials. One maintenance building and several ASTs are located on the property, however based on the separation distance (approximately 20m to the maintenance building, and 30+m to the ASTs) and the geological stratigraphy the

contractors yard is not considered to represent an APEC on the RSC property. A portion of the contactors yard does form a portion of the RSC property and has been addressed as an APEC.

4.0 Contaminants of Potential Concern

Based on the findings of the Phase I and Phase II ESA Updates, the following Contaminants of Potential Concern (CPCs) were identified on the RSC property:

Soil

- ❒ Benzene, Toluene, Ethylbenzene, and Xylenes (BTEX);
- ❒ Petroleum Hydrocarbons (PHCs, Fractions F1-F4);
- ❒ Polycyclic aromatic hydrocarbons (PAHs);
- ❒ Metals (including hydride-forming metals);

Groundwater

- ❒ BTEX
- ❒ PHCs

5.0 Subsurface Structures and Utilities

The residential buildings had shallow basements, typical of residential construction. These basements are located outside of any PCAs and APECs and are not considered to be a location of potential contaminant transport. The residential buildings also were on potable wells and septic. The specific locations of these structures were not provided at the time of the Phase I ESA, however, are inferred to be in the front yards (potable wells) and the rear yards (septic). The presence of these wells and septic are not considered to be a location of potential contaminant transport.

The former underground storage tank was reported to be present adjacent to the service/maintenance building. This tank is suspected to be one of the sources of the suspected PHC contaminated soil that was identified beneath the former service/maintenance building. Based on observations made during the remedial excavation the impacts were not widespread and the presence of the underground storage tank is not expected to have significantly played a role in contaminant transport beyond the immediate area of the former tank or former building.

Beneath the former office/maintenance building suspected impacted soil was observed. These impacts were generally confined to the area beneath the building slab. The footings for the former service/maintenance building limited the contaminant transport in the area of the former building.

Underground service locates were completed prior to the subsurface investigation. Underground utilities on the RSC property include natural gas, electrical, communications, private water, and septic services. In general, trench backfill (typically

sand) may provide a preferential pathway for contaminant transport of more mobile contaminants. Based on the observations made during the remedial excavation their role in contaminant transport is considered to be limited.

6.0 Physical Setting

6.1 Site Stratigraphy

The site stratigraphy, from ground surface to the deepest aquifer or aquitard investigated, is illustrated on the provided cross-sections. The stratigraphy can be broadly classified into 2 zones, the northeast corner and then the remainder of the RSC property.

Stratigraphy in the northeast corner consists of:

- ❒ Fill material generally consisting of brown silty sand and clay with crushed stone, gravel, concrete and metal debris, asphalt pieces, and boulders. The fill material extended from ground surface to the underlying native soil.
- ❒ Glacial till and/or silty clay was identified beneath the fill material. The glacial till is a sandy clay matrix with gravel and cobbles throughout. Groundwater was identified in the glacial till unit.
- ❒ Silty clay was identified beneath the fill material. Groundwater was identified in the silty clay.

Stratigraphy in the remainder of the site consists of:

- ❒ Fill material generally consisting of crushed stone, sand, and reworked clay material, approximately 0.5m to 1.5m in depth throughout the remainder of the property. Concrete and metals debris, asphalt, and boulders were not observed in this fill material.
- ❒ Glacial till and/or silty clay was identified beneath the fill material. The glacial till is a sandy clay matrix with gravel and cobbles throughout. Groundwater was identified in the glacial till unit.
- ❒ Silty clay was identified beneath the fill material. Groundwater was identified in the silty clay.

In both stratigraphic cases the groundwater is contained in the native glacial till and/or silty clay material. The fill material is not considered to be a water bearing unit. The native silty clay dominates the deeper stratigraphy of RSC property and is considered to be present throughout the RSC property.

6.2 Hydrogeological Characteristics

Based on groundwater elevations measured during the groundwater sampling program a groundwater contour map was completed and the horizontal hydraulic gradient for the RSC property was calculated. Groundwater flow at the RSC property was in a northwesterly direction with a gradient of 0.06m/m.

A secondary gradient was calculated using the groundwater monitoring wells installed in the northwest corner of the RSC property, the horizontal hydraulic gradient for the northwest corner of the RSC property was calculated to the 0.13 m/m in the southerly direction.

The difference in the groundwater flow directions is considered to be attributed to the excavation which was undertaken in the northwest corner. The monitoring wells in the northwest corner of the RSC property were all installed on a sloped surface, where the northernmost well is several meters higher in elevation than the southernmost well.

Groundwater at the RSC property was encountered within the glacial till and silty clay. These units are interpreted to function as the local aquifers at the subject site.

Based on the regional topography and the local features the groundwater flow direction is expected to be in the southerly direction, towards the Mer Bleue Bog. The variations in the local and regional groundwater flow direction are not considered to have affected the contaminant transport on the RSC property, nor do they change the conclusions of the report.

Approximate Depth to Bedrock

Bedrock was not encountered during any of the field investigations. Based on the available geological mapping bedrock is approximately 20-25m below the existing grade.

Approximate Depth to Water Table

Depth to water table at the subject site varies between approximately ground surface (0m-0.3m) to 3m below the existing grade.

In several of the monitoring wells on the RSC property the screened interval did not intercept the groundwater level. The presence of the elevated groundwater levels, in particular from BH1-21 and BH5-21 is expected to be a result of pore water pressure from within the underlying silty clay layer at the RSC property. Achieving a screened interval straddling the water table in several of the locations is not feasible as the water levels were observed to be above the ground surface at the sampling location, demonstrating the elevated pore water pressure. Based on observations made during development and sampling of the monitoring wells (including the obvious drawdown of the water column

within the monitoring well during development and sampling), the elevated water levels are not considered to have impacted results. In the opinion of the QP, the results of the analytical testing have not been adversely affected by the depth to the water table.

6.3 Section 35 of the Regulation

Section 35 of the Regulation does not apply to the RSC property. Properties located in whole or in part within 250m of the boundaries are services by potable water wells, therefore the conditions outlined in Section 35 of the Regulation are not met.

6.4 Sections 41 and 43.1 of the Regulation

Section 41 of the Regulation (Site Condition Standards, Environmentally Sensitive Areas) does not apply to the subject site.

Section 43.1 of the Regulation does not apply to the subject site in that the subject site is not a Shallow Soil Property or within 30 m of a water body.

6.5 Water Bodies and Areas of Natural and Scientific Interest

No water bodies or areas of natural and scientific interest (ANSI) were identified on or within 250 m of the RSC property.

6.6 Existing Buildings and Structures

The RSC property was most recently occupied by the following buildings, a single storey office and maintenance building related to the excavation contractor, and 3 residential dwellings.

Former Office and Maintenance Building

The former office building was constructed prior to 1965 as a building for the excavation contractor. Several additions to the building were made in the 1990s and 2000s. The building was demolished in the 2021 as part of the redevelopment of the site. The former building was heated using electric baseboard heaters. The south portion of the building was used for minor maintenance and repairs of equipment. Prior to demolition an inspection for obvious signs of staining, cracks, and scouring on the concrete floor was conducted. No obvious signs on staining, cracks, or scouring of the concrete floor within the maintenance area were observed. The remainder of the building was used as office and clerical space for the excavation contractor. The maintenance area is considered to represent an APEC on the RSC property.

Former Residential Buildings

All three former residential buildings were generally of the same construction. Each building was originally heated using electric heat and later converted to natural gas. No concerns were observed within the basements of the buildings. The buildings were demolished as part of the redevelopment of the RSC property. No PCAs or APECs were identified on the residential properties.

No other buildings or above grade structures were present on the RSC property. The locations of the buildings and structures are presented on Drawing PE4937-1 – Site Plan. The buildings and structures have since been demolished as part of the redevelopment of the site.

6.7 Proposed Buildings and Other Structures

A residential development is proposed for the RSC property. The buildings will consist of both single-family residential homes and town home blocks, all with shallow basement levels typical of residential construction. Several retaining walls are proposed for the site due to the grade changes, however the exact locations are not available at this time.

6.8 Areas On, In, or Under the Phase II Property where Excess Soil is Finally Placed

Approximately 3,500m^3 of excess soil was imported to the site in May of 2021 for future grading purposes. The excess soil was placed in the northwest corner of the site, within the footprint of the remediation.

The soil was native silty clay material excavated from a site located at northeast corner of the intersection of de Lamarche Avenue and Crevier Walk (the generating site). The excess soil was generated as part of the redevelopment of a greenfield property. No PCAs or APECs were identified during a historical review of the generating property. A total of 18 (plus 2 duplicates) soil samples were analysed for Metals (including As, Se, and Sb), BTEX, and PHCs prior to placement on the RSC property.

One soil sample exceeded the MECP Table 2.1 Standards for PHC F2 and F3. A soil remediation was undertaken in the area of this sample. The sample (exceedance) was fully delineated with 4 wall samples and 2 base samples analysed for Metals (including As, Se, and Sb, BTEX, and PHCs. All BTEX and PHC parameters complied with the MECP Table 2.1 Standards.

Based on the results of the soil sampling program, the following metals parameters exceeded the MECP Table 2.1 Standards: Barium, Cobalt, and Vanadium. In accordance with Section 49.1.3 of O.Reg.153/04, the qualified person has determined, based on a phase two environmental site assessment, that fill containing a contaminant that exceeds the applicable site condition standard was used at the property, but the concentration of

the contaminant does not exceed the naturally occurring range of concentrations of that contaminant typically found within the area where the property is located. As such, these exceedances are deemed to meet the standards.

As discussed in further in Section 7.0 of this CSM, the elevated concentrations of Barium, Cobalt, and Vanadium at the generating site are consistent with naturally occurring concentrations of the same parameters in native post-glacial Champlain Sea clay deposits, where no evidence of an anthropogenic disturbance was identified. Furthermore, Paterson has reviewed Record of Site Condition RSC#227583 filed for the property adjacent to the generating site, where elevated concentrations were observed.

Based on the information contained in this RSC together with Paterson's knowledge of the silty clay soil quality local to the RSC Property, the Qualified Person has determined that the elevated concentrations of Barium, Cobalt, and Vanadium identified in the excess soil finally placed at the RSC Property are naturally occurring and comply with the MECP Table 2.1 standards.

7.0 Environmental Condition

7.1 Areas Where Contaminants are Present

Soil

- ❒ PAHs

PAH impacted fill material was identified within the northwest corner of the RSC property. The impacted material extended from ground surface to the native soil. The bulk of the PAH impacts are located in the extreme northwest of the RSC property with exceedances also identified at TP31 and BH2.

- ❒ PHCs and BTEX

PHCs and BTEX were primarily located within the northwest corner of the RSC property. The exceedances in the northwest corner were identified in samples where the full PHC parameter group was not analysed, however the upon review the standard was deemed to have been exceeded.

In the southeast corner of the RSC property within the footprint of the former maintenance building visual signs of PHC and BTEX impacts were observed. Based on visual and olfactory indicators these impacts were deemed to exceed the standard and were removed from the site. No analytical testing was completed; however the area was considered to be impacted at the time of assessment.

One confirmatory sample in the area of BH2 was identified to exceed the applicable MECP standards for PHC F3. No other impacts were identified during the analytical testing programs.

❒ Metals

Several samples were identified which exceeded the applicable Site Condition Standards. These samples were primarily located in the northwest corner of the RSC property similar to the PAH exceedances.

Naturally Occurring Metals (Barium, Vanadium, Cobalt)

The imported fill material with elevated concentrations of Barium is considered to represent contamination and is not considered to be naturally occurring. The concentrations identified are beyond the generally accepted naturally occurring concentrations of Barium, and has been fully remediated, including vertical delineation of the Barium parameter with two separate soil samples.

The silty clay samples obtained from the RSC Property are typical in parts of eastern Ontario and western Quebec that fall within the Champlain Sea basin. Soils within this basin have a distinct composition compared to soils of other origins due to their unique geological history.

Metals (primarily Barium, Cobalt, and Vanadium) are commonly identified in Champlain Sea clay deposits at concentrations exceeding the applicable site condition standards, in this case the MECP Table 2 Standards.

The location of these naturally occurring soil exceedances at the RSC Property are shown on the following analytical testing plans:

❒ Drawing PE4937-4 – Analytical Testing Plan - Soil (Metals)
❒ Drawing PE4937-4EX1 – Analytical Testing Plan - Soil (Metals)
❒ Drawing PE4937-4A – Cross Section A-A' - Soil (Metals)
❒ Drawing PE4937-4B – Cross Section B-B' - Soil (Metals)
❒ Drawing PE4937-4CD – Excavation TP31 – Soil (Metals)
❒ Drawing PE4937-4EF – Excavation BH2 – Soil (Metals)
❒ Drawing PE4937-4GH – Excavation TP9 – Soil (Metals)
❒ Drawing PE4937 – Cross Section K-K' – Soil (Metals)

Section 49.1.3 Rationale

A summary of the environmental conditions at the RSC Property prior to remediation is provided below.

Background

The RSC Property was formerly a contractor yard used by Brazeau Excavation. The contractor's yard was present since the 1960s. Based on the information identified as part of the Phase I ESA, several potentially contaminating activities associated with the contractor's yard were identified (former private fuel outlets, a former maintenance garage and their associated infrastructure) and an existing adjacent contractor yard. No offsite PCAs (apart from the existing contractor's yard) were identified during the Phase I ESA.

No evidence of PCAs considered to contribute to the anthropogenic production or release of Barium, Cobalt, and Vanadium, were identified on the RSC Property or within the 250m study area at the time of the Phase I ESA.

Soil

Site Stratigraphy

The site stratigraphy, from ground surface to the deepest aquifer or aquitard investigated, is illustrated on the provided cross-sections. The stratigraphy can be broadly classified into 2 zones, the northeast corner and then the remainder of the RSC property.

Stratigraphy in the northeast corner consists of:

Fill material generally consisting of brown silty sand and clay with crushed stone, gravel, concrete and metal debris, asphalt pieces, and boulders. The fill material extended from ground surface to the underlying native soil.

Glacial till and/or silty clay was identified beneath the fill material. The glacial till is a sandy clay matrix with gravel and cobbles throughout. Groundwater was identified in the glacial till unit.

Silty clay was identified beneath the fill material. Groundwater was identified in the silty clay.

Stratigraphy in the remainder of the site consists of:

Fill material generally consisting of crushed stone, sand, and reworked clay material, approximately 0.5m to 1.5m in depth. Concrete and metal debris, asphalt, and boulders were not observed in this fill material.

Glacial till and/or silty clay was identified beneath the fill material. The glacial till is a sandy clay matrix with gravel and cobbles throughout. Groundwater was identified in the glacial till unit.

Silty clay was identified beneath the fill material. Groundwater was identified in the silty clay.

In both stratigraphic cases the groundwater is contained in the native glacial till and/or silty clay material. The fill material is not considered to be a water bearing unit. The native silty clay dominates the deeper stratigraphy of the RSC property and is considered to be present throughout the RSC property.

Impacted Soil

As part of the Phase II ESA and remediation program, impacted soil was identified on the RSC property. The impacted soil was primarily located in the northeast corner of the RSC property, apart from PHC and BTEX impacted soil located in the former maintenance building footprint.

Some of the impacted fill samples were found to have elevated levels of Barium and Cobalt, however based on the concentrations, locations, and distinct visual differences between the native soil and the fill material, these elevated metals concentrations of Barium and Cobalt in native clay are not believed to be a result of contamination by the fill layer. No Vanadium concentrations were identified exceeding the site condition standards within the fill layer.

Metals Exceeding the Site Condition Standards

The following metals parameters were identified to exceed the applicable site condition standards.

- ❒ Antimony
- ❒ Arsenic
- ❒ Barium[1]
- ❒ Cadmium
- ❒ Cobalt[1]
- ❒ Copper
- ❒ Lead
- ❒ Molybdenum
- ❒ Nickel
- ❒ Vanadium[2]
- ❒ Zinc

1- Metals parameter exceeding the SCS in both the fill material (considered to be from an anthropogenic source) and in the native silty clay (considered to be naturally occurring).
2- Metals parameter exceeding the SCS in the native silty clay only.

As shown on Drawing PE4937-4, samples from across the RSC property exceeded the Site Condition Standards (SCS) for Barium, Cobalt, and Vanadium, however the remaining metals parameters listed above only exceeded the site condition standards in the northwest corner of the RSC property.

As part of the environmental programs completed on the RSC property an environmental remediation program was carried out. The environmental remediation program excavated approximately 13876.6m^3 of impacted soil. The soil was subsequently hauled to the Waste Connections Canada Landfill on Navan Road. This included the elevated concentrations of Antimony, Arsenic, Cadmium, Copper, Lead, Molybdenum, and Nickel identified during the field programs. The samples of Barium and Cobalt identified to be beyond the generally accepted range of the naturally occurring concentrations within Eastern Ontario were also removed as part of this remediation program. The site has been remediated in compliance with the requirements of O.Reg. 153/04, giving full consideration to the presence of Barium, Cobalt, and Vanadium in the native silty clay.

Impacted Groundwater

As part of the Phase II ESA groundwater sampling as conducted at the RSC property. All groundwater samples comply with the MECP Table 2 Standards. No groundwater remediation was required.

Barium, Cobalt and Vanadium Concentrations Present on RSC Property

The silty clay samples obtained from the RSC Property are typical in the parts of eastern Ontario and western Quebec that fall within the Champlain Sea basin. Soils within this basin have a distinct composition compared to soils of other origins due to their unique geological history. When the ice sheets began to retreat at the end the Last Glacial Period (approximately 10,000 years ago), water flowed into this depressed region and formed the brackish inlet known as the Champlain Sea. This body of water continually deposited sediment such that when the surface of the earth eventually rebounded, and the Champlain Sea disappeared, it left behind marine deposits of up to 100m deep.

The silty clays found in these deposits are referred to as Leda clays. Due to their origin, these clays have mineralogical compositions, structures, physical properties, and physio-chemical characteristics that are distinct from soils of other origins in Ontario and Quebec.

Since deposition, the composition and properties of the Leda clays in the region have been altered by geological processes. The retreat of the Champlain Sea left much of the upper portion of the clay deposit exposed to freshwater, which decreased the salinity (salt content) of the exposed soil as the freshwater leached the salt ions from the soil. This increased the water content and decreased the cohesive strength of the affected clay, which resulted in clay that liquifies easily when subjected to stress, a common

characteristic of Leda clay. Above the water table, where the upper portion of the soil profile was silty clay, mechanical and chemical weathering transformed the upper two to four meters into a stiff brown crust. Beneath this, clay that is grey in colour and essentially unaltered by the mechanical and chemical weathering processes can be found.

Because of varying exposures to the geological processes, the types and concentrations of metals that are naturally occurring in a soil sample depend on both their marine depositional environment and the geological processes that they have undergone.

The RSC Property falls within the Champlain basin and is underlain with silty clay, generally starting at a geodetic elevation between 74m and 76m. The overburden consists of marine sediments (silty clay) with a drift thickness on the order of 25 to 50m. Silty clay was identified beneath the fill material on RSC property. Bedrock was not encountered during the Phase II and remedial investigations but is reported to be present at a depth of 25-50m based on geological mapping.

The central and western portions of the RSC Property have historically undergone fill placement with additional stockpiles of fill material imported onto the central-west and west sides of the property. Debris fill was found primarily on the northeast portion of the RSC Property while soil fill (consisting of crushed stone and reworked native clay) appears to be interspersed across the majority of the site.

The debris fill has since been remediated and confirmatory sampling of the underlying native silty clay indicated all soil samples complied with the applicable Site Condition Standards (MECP Table 2 Residential, Fine Grained Standards) for all parameters, with the exception of some samples that exceeded for Barium, Cobalt and Vanadium.

Soil Remaining on the RSC property

Confirmatory samples that exceeded the SCS for Barium, Cobalt, and Vanadium concentrations consisted of native silty clay. These samples were determined to be native silty clay based on the visual observations and distinct change in stratigraphy and composition of the soil within the excavation. When the native silty clay was reached deleterious materials (namely debris) were no longer observed and additionally the silty clay appeared to have uniformly be deposited whereas the fill material appeared to have been placed haphazardly. Of these 38 native silty clay samples tested, a total of 18 samples were identified to have concentration of one or more of these metals above the MECP Table 1 Standards. These soils were observed to be silty clay by both the field technicians collecting the samples and the reviewing engineers. Subsequent grain size analysis confirmed completed by a third-party laboratory that the soil remaining on the RSC property was appropriately classified. The grain size analysis confirmed the visual and tactile conclusions made by the technicians and engineers that the remaining soil is silty clay.

The respective concentrations of Barium, Cobalt and Vanadium in the soil samples remaining on the RSC Property are summarized below.

Table 1: Concentrations of Barium, Cobalt, and Vanadium at the RSC Property

Parameter	MECP Table 2 Standards	Low Value (ug/g)	High Value (ug/g)
Barium	390	94.9	402
Cobalt	22	11.7	27.9
Vanadium	86	51.1	125

As shown in Table 1 the concentrations of Barium, Cobalt and Vanadium in clayey soils are found to exceed the MECP Table 2 Standards. Given that that the Phase I ESA and Phase II ESA investigations did not identify any potential source for these metals in the silty clay, it is our opinion that the presence of these metals in excess of the MECP Table 2 Standards are naturally occurring, and not from a potential source of contamination.

Existing Data and Literature Review

The presence of the Barium, Vanadium, and Cobalt above the MECP Standards in the Ottawa Region is well known and documented in both literature and multiple RSC filings.

Literature Review

GeoOttawa Dataset

The paper entitled “Elevated Background Metals Concentrations in Champlain Sea Clay - Ottawa Region”, published jointly by Geofirma Engineering Ltd, Dillon Consulting Ltd and the City of Ottawa, was consulted as an additional dataset for the baseline of Barium, Cobalt, and Vanadium concentrations in silty clay within the Ottawa region. The study analyzed a compilation of data from the Ottawa region to support the definition of local background concentrations (for Eastern Ontario). The study provides a supporting technical rationale for establishing a naturally occurring background argument and justifying the movement of these clay soils between sites in eastern Ontario that have similar properties. The study also proposed new background values for Eastern Ontario, summarized in Table 2 below.

Table 2: Summary of Proposed Geo-Regional Background Values for Eastern Ontario (GeoOttawa, 2017)

Parameter	Concentration (µg/g)		
	Barium	Cobalt	Vanadium
Current MECP Table 1	220	21	86
Current MECP Table 2/3	390	22	86
Proposed Geo- Regional Background Values	460	35.2	123

While there are flaws in the study, including the lack of location and historical information about the sampling locations, the dataset does show that there are well known and generally accepted elevated concentrations of naturally occurring metals within the Ottawa Area and Eastern Ontario.

Analysis of Metal Concentrations Compared to Typical Crustal Abundance

Clay forms as a result of the erosion and weathering of rocks and soil over vast spans of time. This process involves diagenetic and hydrothermal alteration of rocks that transform the original minerals into clay minerals (USGS, 1999). Given this, comparing the typical metal concentrations in bedrock to the site data can provide additional context on the source of Barium, Cobalt and Vanadium in the clay.

Table 3: Comparison of Barium, Cobalt and Vanadium Concentrations in Clay to Crustal Abundance

Data	Average Barium Concentration (µg/g)	Average Cobalt Concentration (µg/g)	Average Vanadium Concentration (µg/g)
Typical Crustal Abundance of Continental Crust	425	25	120
Typical Crustal Abundance in Deep-Sea Clay	2,300	74	120

As shown in Table 3 above, the metals concentrations in continental crust and in deep-sea clay are significantly greater than the average metal concentrations outlined in the MECP Standards. The data therefore indicates that the metal concentrations in the silty clay at the RSC Property are not elevated above what is normal for silty clay in the Ottawa area, supporting the conclusions that elevated metals concentration identified in the silty clay onsite is naturally occurring.

Conclusions

The Phase I ESA, Phase II ESA and remediation conducted did not identify any potential Barium, Cobalt or Vanadium sources at the RSC Property or within the Phase I ESA study area. Based on the widespread knowledge of the elevated concentrations within the silty

clay in the Ottawa area (within the consultant, municipal, and MECP communities) it is our professional opinion that the concentrations of Barium, Cobalt, and Vanadium remaining on the RSC property are naturally occurring and are not the result of anthropogenic contamination.

Groundwater

No groundwater exceedances are present on the RSC property.

Sample locations are illustrated with analytical results in the attached analytical testing plans.

7.2 Types of Contaminants

Based on the results of the analytical testing contaminants of concern on the RSC property are considered to be the following;

Soil

- ❒ Metals
- ❒ PAHs
- ❒ PHCs
- ❒ BTEX

As discussed in Section 7.1, Barium, Cobalt, and Vanadium are not considered to represent contaminants within the native soil at the RSC property. As previously discussed, the elevated barium concentration identified in TP15-G4 is not considered to be naturally occurring. The concentration is beyond the generally accepted naturally occurring range of Barium in the silty clay of the Ottawa area.

All contaminant concentrations in the groundwater beneath the RSC property are in compliance with the MECP Table 2 Standards.

7.3 Contaminated Media

Based on the results of the Phase II ESA the soil is impacted on the RSC property.

The groundwater beneath the RSC property complies with the MECP Table 2 Standards.

7.4 What Is Known About Areas Where Contaminants Are Present

The impacted fill material in the northwest corner on the RSC property is considered to be related to the importation of fill material for offsite disposal from various construction projects by the former excavation contractor. The northwest corner is interpreted to be a

former dump site by the former owners of the site. The fill material on the remainder of the site is interpreted to have been imported for grading purposes and to create a stable working surface for construction activities by the former excavation contractor. The exact source of the fill material and/or source of the impacts is not known at this time.

The hydrocarbon impacted soil identified in the area of the former maintenance building is interpreted to be related to historical vehicle maintenance activities or the former underground storage tanks. Minor spills and leaks accruing over the years are considered to have impacted the soil at this area.

7.5 Distribution of Contaminants

The approximate horizontal and vertical distribution of contaminants exceeding the MECP Table 7 Standards prior to remediation are shown on the following drawings:

Metals

A plan view of all soil sample results (apart from remediation grab sample results) is provided on PE4937-4 Analytical Testing Plan – Soil (Metals), however several drawings have been produced showing more detail for clarity purposes. A summary of these drawings is provided below.

- ❒ Drawing PE4937-4 – Analytical Testing Plan - Soil (Metals)
- ❒ Drawing PE4937-4EX1 – Analytical Testing Plan - Soil (Metals)

Metals were identified to exceed in several soil samples in the northwest corner of the RSC property (TP14-G3, TP15-G4, TP35-G2, TP53-G1, TP60-G1, TP61-G1, TP62-G1, TP63-G1, WW1, WW2, WW5, WW7 and SW1). The soil samples were horizontally delineated using the property boundaries to the north and east. The soil samples were delineated partially by an open excavation face to the west and samples (WW6, WW8, WW9, WW10, SW2, SW4, SW6, SW8, and SW10). Based on the removal of the soil to the north and east property boundaries and the delineation soil samples on the south and west faces of the excavation the impacted soil is considered to be horizontally delineated.

- ❒ Drawing PE4937-4A – Cross Section A-A’ - Soil (Metals)
- ❒ Drawing PE4937-4B – Cross Section B-B’ - Soil (Metals)
- ❒ Drawing PE4937-4K – Cross Section K-K’ – Soil (Metals)
- ❒ Drawing PE4937-4L – Cross Section L-L’ – Soil (Metals)

Vertical delineation of the metals impacts in the northwest corner of the RSC property was completed using the following grab samples from the base of the excavation, GS5, GS6, GS11, GS12, GS13, GS14, GS16, GS17, GS18, GS19, GS22, and GS26. Vertical delineation of typical sections of the excavation are provided on drawings 4A and 4B.

❒ Drawing PE4937-4CD – Excavation TP31 – Soil (Metals)

Excavation TP31 was completed to address a PAH impact identified during a test pitting program. During the remediation work base and wall samples were analysed for metals. All samples comply with the MECP Table 2 Standards, apart from Vanadium which has been previously discussed to be naturally occurring and is not considered to be a contaminant.

❒ Drawing PE4937-4EF – Excavation BH2 – Soil (Metals)

Excavation BH2 was completed to address a PAH impact identified during a test pitting program. During the remediation work base and wall samples were analysed for metals. Two samples, BH2-EW1 and BH2-SW1 exceeded the MECP Table 2 Standards for Antimony. These sidewalls were enlarged and resampled. The Antimony exceedances are considered to be delineated horizontally and vertically using BH2-B1, BH2-B2, BH2-NW1, BH2-EW2, BH2-SW2, and BH2-WW1.

❒ Drawing PE4937-4GH – Excavation TP9 – Soil (Metals)

Excavation TP9 was originally conducted in an attempt to delineate the exceedance of Cobalt and Vanadium identified in sample TP9-G5. While the delineation attempts were successful, the concentrations of Cobalt and Vanadium are considered to be naturally occurring and are not considered to be a contaminant.

<u>BTEX and PHCs</u>

Many of the PHC soil samples were originally only analysed for PHC F_2-F_4, the BTEX and PHC F_1 was not analysed. These samples are identified differently on the drawings and are presented for information purposes, as previously discussed. Where impacts were identified in a PHC F_2-F_4 sample, the soil was considered to be impacted. A plan view of all soil sample results (apart from remediation grab sample results) is provided on PE4937-5 Analytical Testing Plan – Soil (BTEX and PHCs), however several drawings have been produced showing more detail for clarity purposes. A summary of these drawings is provided below.

❒ Drawing PE4937-5 – Analytical Testing Plan - Soil (BTEX and PHCs)
❒ Drawing PE4937-5EX1 – Analytical Testing Plan - Soil (BTEX and PHCs)

PHCs were identified to exceed in one soil sample in the northwest corner of the RSC property (TP62-G1). Soil sample TP15-G4 also identified parameters that exceed the MECP Table 2 Standards, however the PHC F_1 was not analysed. The sample is also considered impacted; however the full method group was not analysed. The soil samples were horizontally delineated using the property boundaries to the north and east. The soil samples were delineated partially by an open excavation face to the west and samples

(WW6, WW8, WW9, WW10, SW2, SW4, SW6, SW8, and SW10). Based on the removal of the soil to the north and east property boundaries and the delineation soil samples on the south and west faces of the excavation the impacted soil is considered to be horizontally delineated.

- ❒ Drawing PE4937-5A – Cross Section A-A' - Soil (BTEX and PHCs)
- ❒ Drawing PE4937-5B – Cross Section B-B' - Soil (BTEX and PHCs)
- ❒ Drawing PE4937-5K – Cross Section K-K' – Soil (BTEX and PHCs)

Vertical delineation of the PHC impacts in the northwest corner of the RSC property was completed using the following grab samples from the base of the excavation, GS5, GS6, GS11, GS12, GS13, GS14, GS16, GS17, GS18, GS19, GS22, and GS26. Vertical delineation of typical sections of the excavation are provided on drawings 5A and 5B.

- ❒ Drawing PE4937-5CD – Excavation TP31 – Soil (BTEX and PHCs)

Excavation TP31 was completed to address a PAH impact identified during a test pitting program. During the remediation work base and wall samples were analysed for BTEX and PHCs. All samples comply with the MECP Table 2 Standards.

- ❒ Drawing PE4937-5EF – Excavation BH2 – Soil (BTEX and PHCs)

Excavation BH2 was completed to address a PAH impact identified during a test pitting program (BH2-SS3). During the remediation work base and wall samples were analysed for BTEX and PHCs. One sample, BH2-SW1 exceeded the MECP Table 2 Standards for PHC F_3. This sidewall was enlarged and resampled. The PHC F_3 exceedance is considered to be delineated horizontally and vertically using BH2-B1, BH2-B2, BH2-NW1, BH2-EW2, BH2-SW2, and BH2-WW1.

- ❒ Drawing PE4937-5GH – Excavation TP9 – Soil (BTEX and PHCs)

Excavation TP9 was originally conducted in an attempt to delineate naturally occurring metals concentrations. As part of the delineation program base and wall samples were analysed for BTEX and PHCs. All samples comply with the MECP Table 2 Standards.

- ❒ Drawing PE4937-5IJ – Excavation 2 – Soil (BTEX and PHCs)

Excavation 2 was conducted following the demolition of the former maintenance and office building in the southeast corner of the RSC property. No samples were collected which exceeded the MECP Table 2 Standards, however visual and olfactory signs of impacted soil were identified. During the remedial program base and wall samples were

collected. The visually impacted soil was delineated horizontally and vertically using EX2-B1, EX2-B6, EX2-B8, EX2-B10, EX2-NW1, EX2-NW3, EX2-EW1, EX2-EW5, EX2-SW2, EX2-SW4, and EX2-WW3

PAHs

A plan view of all soil sample results (apart from remediation grab sample results) is provided on PE4937-6 Analytical Testing Plan – Soil (PAHs), however several drawings have been produced showing more detail for clarity purposes. A summary of these drawings is provided below.

- ❒ Drawing PE4937-6 – Analytical Testing Plan - Soil (PAHs)
- ❒ Drawing PE4937-6EX1 – Analytical Testing Plan - Soil (PAHs)

PAHs were identified to exceed in several soil samples in the northwest corner of the RSC property (TP14-G3, TP35-GS2, TP60-G1, TP62-G2, TP61-G1 TP36-GS2, TP13-G2, TP63-G1, TP34-GS3, TP53-G1, WW2, WW5, and B2). The soil samples were horizontally delineated using the property boundaries to the north and east. The soil samples were delineated partially by an open excavation face to the west and samples (WW6, WW7, WW8, WW9, SW2, SW4, SW6, SW8, and SW10). Based on the removal of the soil to the north and east property boundaries and the delineation soil samples on the south and west faces of the excavation the impacted soil is considered to be horizontally delineated.

- ❒ Drawing PE4937-6A – Cross Section A-A' - Soil (PAHs)
- ❒ Drawing PE4937-6B – Cross Section B-B' - Soil (PAHs)
- ❒ Drawing PE4937-6K – Cross Section K-K' – Soil (PAHs)

Vertical delineation of the PAH impacts in the northwest corner of the RSC property was completed using the following grab samples from the base of the excavation, GS5, GS6, GS11, GS12, GS13, GS14, GS16, GS17, GS18, GS19, GS22, and GS26. Vertical delineation of typical sections of the excavation are provided on drawings 6A and 6B.

- ❒ Drawing PE4937-6CD – Excavation TP31 – Soil (PAHs)

Excavation TP31 was completed to address a PAH impact identified during a test pitting program (TP31-G3). During the remediation work base and wall samples were analysed for PAHs. The original wall samples exceeded the MECP Table 2 Standards for PAHs and the excavation was enlarged and resampled. The subsequent wall samples complied with the MECP Table 2 Standards. All base samples comply with the MECP Table 2 Standards. The original exceedance and the subsequent exceedances identified during the remedial program are delineated horizontally and vertically using TP31-NW2, TP31-EW2, TP31-SW4, TP31-WW4, TP31-B1, and TP1-22-G3.

A supplemental test pit was excavated to provide further horizontal delineation of the original impacts TP1-22 was excavated in the Southwest corner of the former remediation and two samples were analysed for PAHs. These samples, TP1-22-G2 and TP1-22-G3 provide vertical and horizontal of previous exceedances.

❒ Drawing PE4937-6EF – Excavation BH2 – Soil (PAHs)

Excavation BH2 was completed to address a PAH impact identified during a test pitting program (BH2-SS3). During the remediation work base and wall samples were analysed for PAHs. Three samples, BH2-EW1, BH2-SW1, and BH2-WW1 exceeded the MECP Table 2 Standards for PAHs. These sidewalls were enlarged and resampled. All base samples comply with the MECP Table 2 Standards. The original exceedance and the subsequent exceedances identified during the remedial program are delineated horizontally and vertically using BH2-NW1, BH2-EW2, BH2-SW2, BH2-WW2, BH2-B1 and BH2-B2.

Drawing PE4937-6GH – Excavation TP9 – Soil (PAHs)

Excavation TP9 was originally conducted in an attempt to delineate naturally occurring metals concentrations. As part of the delineation program base and wall samples were analysed for PAHs. All samples comply with the MECP Table 2 Standards.

All groundwater results comply with the MECP Table 2 Standards.

7.6 Discharge of Contaminants

Northwest Corner of RSC property

It is our interpretation that the exceedances for PHCs, metals, and PAHs are a result of the use of the northwest corner as a dump site for excess soil from construction projects undertaken by the former owner. The impacts are not expected to be a result of the historical operations on the RSC property, but rather the importation of poor-quality fill. No information regarding the timing or source site for this imported fill material is available.

The exceedance of Barium in TP15 is beyond the generally accepted naturally occurring concentrations of Barium in the Ottawa area and is not considered to be naturally occurring. The barium concentration has been remediated and is vertically and horizontally delineated using several soil samples.

Former Maintenance and Office Building

It is our interpretation that the impacted soil observed in the area of the former maintenance and office building is a result of the former maintenance operations that took place on site. Other than the maintenance building being present from the 1960s until 2021 the timing of the contaminant discharge is unknown.

7.7 Migration of Contaminants

Based on the results of the groundwater sampling, contaminants exceeding the MECP Table 2 Standards at the RSC property are confined to the soil (fill). Groundwater beneath the RSC property complies with the MECP Table 2 Standards. Based on the findings of the Phase II ESA and remedial programs, no significant migration of contaminants is considered to have occurred on the RSC property.

7.8 Climatic and Meteorological Conditions

In general, climatic and meteorological conditions have the potential to affect contaminant distribution. Two ways by which climatic and meteorological conditions may affect contaminant distribution include the downward leaching of contaminants by means of the infiltration of precipitation, and the migration of contaminants via groundwater levels and/or flow, which may fluctuate seasonally.

Based on the results of the subsurface investigation, contaminants are present in both the soil and the groundwater at the subject site. In particular, fluctuation of groundwater levels and groundwater movement may affect contaminant transport at the subject site.

7.9 Potential for Vapour Intrusion

The potential for vapour intrusion may have been possible within the former maintenance and office building, given its proximity to more volatile compounds such as PHCs and BTEX. However, given that the analytical test results have identified no impacted soil or groundwater remaining on the RSC property following the environmental remediation program the risk of vapour intrusion on the future development is considered to be low. As such, there is no anticipated vapour intrusion into future subsurface structures and utilities at the RSC property.

7.10 Contaminant Distribution Diagram

Contaminant Transport Pathways

Physical transport – one potential contaminant transport pathway is the physical transport from one location to another of impacted soil, either intentionally or unintentionally, by earth moving equipment, vehicle traffic, or pedestrian traffic. The potential for physical transport of contaminants to have occurred on the RSC Property is considered to be low.

Precipitation/Infiltration/Leaching – As precipitation falls on the ground surface and subsequently infiltrates through the soil to the groundwater table, there is the potential for contaminants in the soil phase to enter the groundwater, depending on the solubility of the contaminants.

Impacts to the groundwater were not identified as such, precipitation, infiltration or leaching are not considered to have played a significant role in contaminant transport.

Human and Ecological Receptors

Human Receptors - Potential human receptors are considered to be limited to construction workers and environmental professionals who may contact the soil during the remediation and/or rehabilitation of the site.

Ecological Receptors – There are no significant potential ecological receptors are present on the Phase II subject site as the property is entirely covered by a building, parking garage and paved areas. No significant potential ecological receptors are present within the study area.

Receptor Exposure Points

Human Receptors – Prior to remediation, no significant human receptors were identified. Exposure points for human receptors are present during remedial excavations.

Ecological Receptors – In general, the most likely exposure points for ecological receptors include the root zones of plants and the burrows of burrowing wildlife.

Routes of Exposure

Human Receptors – Routes of exposure during remediation for human receptors (construction works and environmental professionals) include dermal contact, accidental ingestion and inhalation.

Ecological Receptors – Routes of exposure for ecological receptors include ingestion, dermal contact and inhalation. There are no potential ecological receptors apart from small plants and shrubs. Vegetation was stripped as part of the redevelopment of the site and is no longer considered to be present.

Refer to Drawing PE4937-10 – Contaminant Distribution Diagram which illustrates and provides narrative notes explaining the contaminant release mechanisms, contaminant transport pathways, human and ecological receptors, receptor exposure points, and routes of exposure at the subject site.

8.0 Environmental Remediation Program

Between November 2020 and March 2021 Paterson Group supervised an environmental soil remediation program which consisted of the removal of all impacted soil from the RSC property. During excavation work soil samples were collected to confirm the soil quality.

Following the completion of the remediation excavation work Paterson returned to site to install groundwater monitoring wells to confirm the groundwater quality at the RSC property. Paterson installed 5 monitoring wells on site for the purposes of general coverage and to address APECs not properly addressed at the time of the Phase II ESA. All supplemental groundwater results were in compliance with the MECP Table 2 Standards and the site was considered to be fully remediated.

Areas Where Soil Has Been Brought From Another Property and Placed On, In or Under the RSC Property

No soil was brought from another property and placed on, in or under the RSC Property as part of the environmental remediation program. As discussed in Section 6.8 approximately 3,500m^3 of excess soil was imported to the RSC following the completion of the remediation program. The soil was imported for grading purposes within the former remediation excavations.

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Statement of Limitations

This Phase II - Environmental Site Assessment Update report has been prepared in general accordance with Ontario Regulation 153/04, as amended by O.Reg. 269/11 under the Environmental Protection Act. The conclusions presented herein are based on information gathered from a limited historical review and field inspection program. The findings of the Phase II - ESA Update are based on a review of readily available geological, historical and regulatory information and a cursory review made at the time of the field assessment.

Should any conditions be encountered at the subject site and/or historical information that differ from our findings, we request that we be notified immediately in order to allow for a reassessment.

This report was prepared for the sole use of Caivan Renaud Inc. Permission and notification from the above noted party and this firm will be required to release this report to any other party.

We trust that this submission satisfies your current requirements. Should you have any questions please contact the undersigned.

Paterson Group Inc.

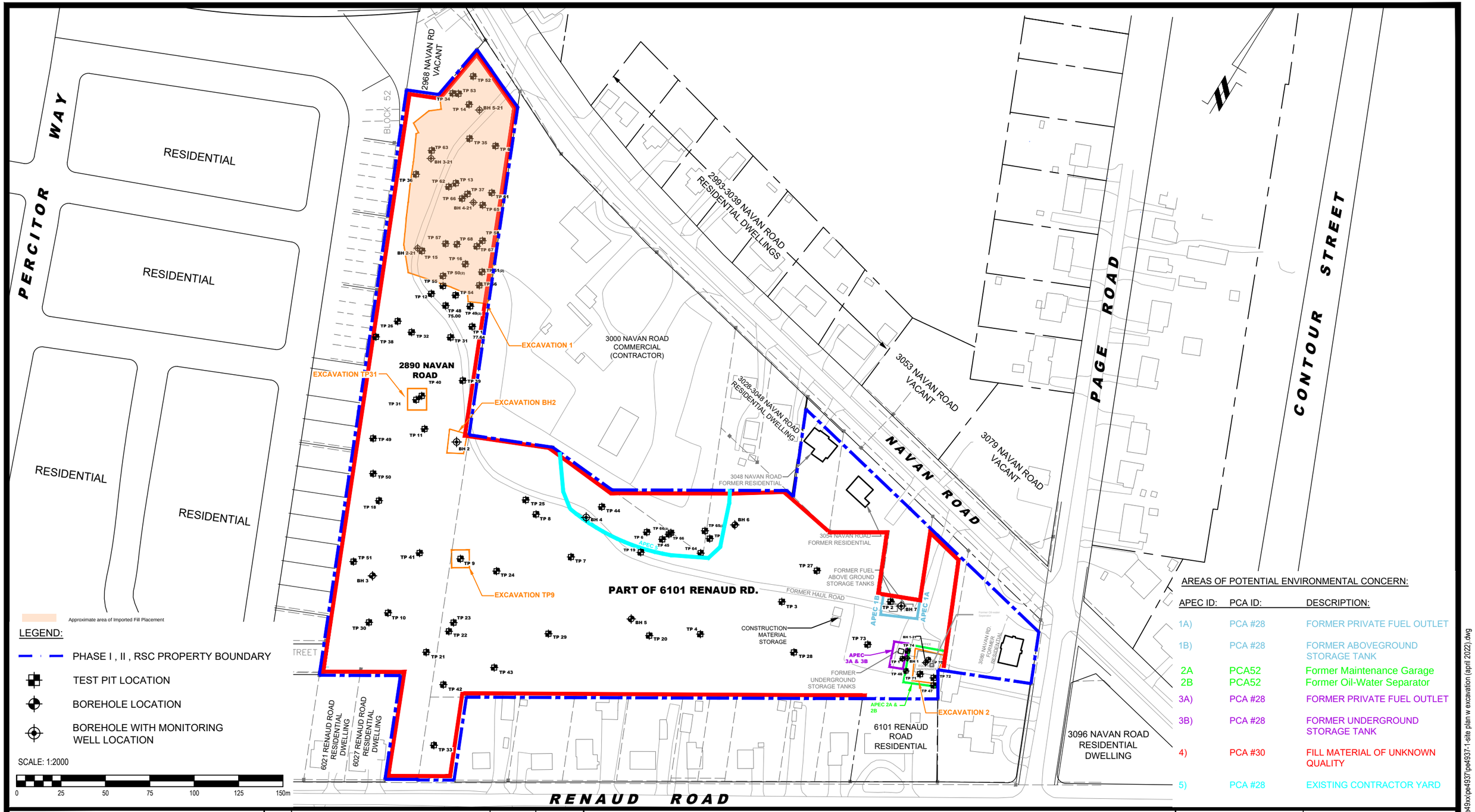
Michael Beaudoin, P.Eng., QP_{ESA}

Report Distribution

- ❑ Caivan Renaud Inc
- ❑ Paterson Group (1 copy)

Attachments

- ❒ Drawing PE4937-1 – Site Plan
- ❒ Drawing PE4937-2 – Surrounding Land Use Plan
- ❒ Drawing PE4937-3 – Test Hole Location Plan
- ❒ Drawing PE4937-4 – Analytical Testing Plan - Soil (Metals)
- ❒ Drawing PE4937-4EX1 – Analytical Testing Plan - Soil (Metals)
- ❒ Drawing PE4937-4A – Cross Section A-A' - Soil (Metals)
- ❒ Drawing PE4937-4B – Cross Section B-B' - Soil (Metals)
- ❒ Drawing PE4937-4CD – Excavation TP31 – Soil (Metals)
- ❒ Drawing PE4937-4EF – Excavation BH2 – Soil (Metals)
- ❒ Drawing PE4937-4GH – Excavation TP9 – Soil (Metals)
- ❒ Drawing PE4937-4IJ – Excavation 2 – Soil (Metals)
- ❒ Drawing PE4937-4K – Cross Section K-K' – Soil (Metals)
- ❒ Drawing PE4937-4L – Cross Section L-L' – Soil (Metals)
- ❒ Drawing PE4937-5 – Analytical Testing Plan - Soil (BTEX and PHCs)
- ❒ Drawing PE4937-5EX1 – Analytical Testing Plan - Soil (BTEX and PHCs)
- ❒ Drawing PE4937-5A – Cross Section A-A' - Soil (BTEX and PHCs)
- ❒ Drawing PE4937-5B – Cross Section B-B' - Soil (BTEX and PHCs)
- ❒ Drawing PE4937-5CD – Excavation TP31 – Soil (BTEX and PHCs)
- ❒ Drawing PE4937-5EF – Excavation BH2 – Soil (BTEX and PHCs)
- ❒ Drawing PE4937-5GH – Excavation TP9 – Soil (BTEX and PHCs)
- ❒ Drawing PE4937-5IJ – Excavation 2 – Soil (BTEX and PHCs)
- ❒ Drawing PE4937-5K – Cross Section K-K' – Soil (Metals)
- ❒ Drawing PE4937-6 – Analytical Testing Plan - Soil (PAHs)
- ❒ Drawing PE4937-6EX1 – Analytical Testing Plan - Soil (PAHs)
- ❒ Drawing PE4937-6A – Cross Section A-A' - Soil (PAHs)
- ❒ Drawing PE4937-6B – Cross Section B-B' - Soil (PAHs)
- ❒ Drawing PE4937-6CD – Excavation TP31 – Soil (PAHs)
- ❒ Drawing PE4937-6EF – Excavation BH2 – Soil (PAHs)
- ❒ Drawing PE4937-6GH – Excavation TP9 – Soil (PAHs)
- ❒ Drawing PE4937-6IJ – Excavation 2 – Soil (PAHs)
- ❒ Drawing PE4937-6K – Cross Section K-K' Soil (PAHs)
- ❒ Drawing PE4937-7 – Analytical Testing Plan – Groundwater
- ❒ Drawing PE4937-7A - Cross Section A-A' - Groundwater
- ❒ Drawing PE4937-7B - Cross Section B-B' – Groundwater
- ❒ Drawing PE4937-7IJ – Excavation 2 - Groundwater
- ❒ Drawing PE4937-8 – Contaminant Transport Diagram



Approximate area of Imported Fill Placement

LEGEND:

- PHASE I , II , RSC PROPERTY BOUNDARY
- TEST PIT LOCATION
- BOREHOLE LOCATION
- BOREHOLE WITH MONITORING WELL LOCATION

SCALE: 1:2000

0 25 50 75 100 125 150m

AREAS OF POTENTIAL ENVIRONMENTAL CONCERN:

APEC ID:	PCA ID:	DESCRIPTION:
1A)	PCA #28	FORMER PRIVATE FUEL OUTLET
1B)	PCA #28	FORMER ABOVEGROUND STORAGE TANK
2A	PCA52	Former Maintenance Garage
2B	PCA52	Former Oil-Water Separator
3A)	PCA #28	FORMER PRIVATE FUEL OUTLET
3B)	PCA #28	FORMER UNDERGROUND STORAGE TANK
4)	PCA #30	FILL MATERIAL OF UNKNOWN QUALITY
5)	PCA #28	EXISTING CONTRACTOR YARD

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NO.	REVISIONS	DATE	INITIAL

CAIVAN COMMUNITIES

PHASE I - ENVIRONMENTAL SITE ASSESSMENT
RENAUD ROAD AT NAVAN ROAD

OTTAWA, ONTARIO

Title:

SITE PLAN

Scale: 1:2000	Date: 04/2022
Drawn by: YA	Report No.: PE4937-1
Checked by: JC	Dwg. No.: PE4937-1
Approved by: MB	Revision No.:

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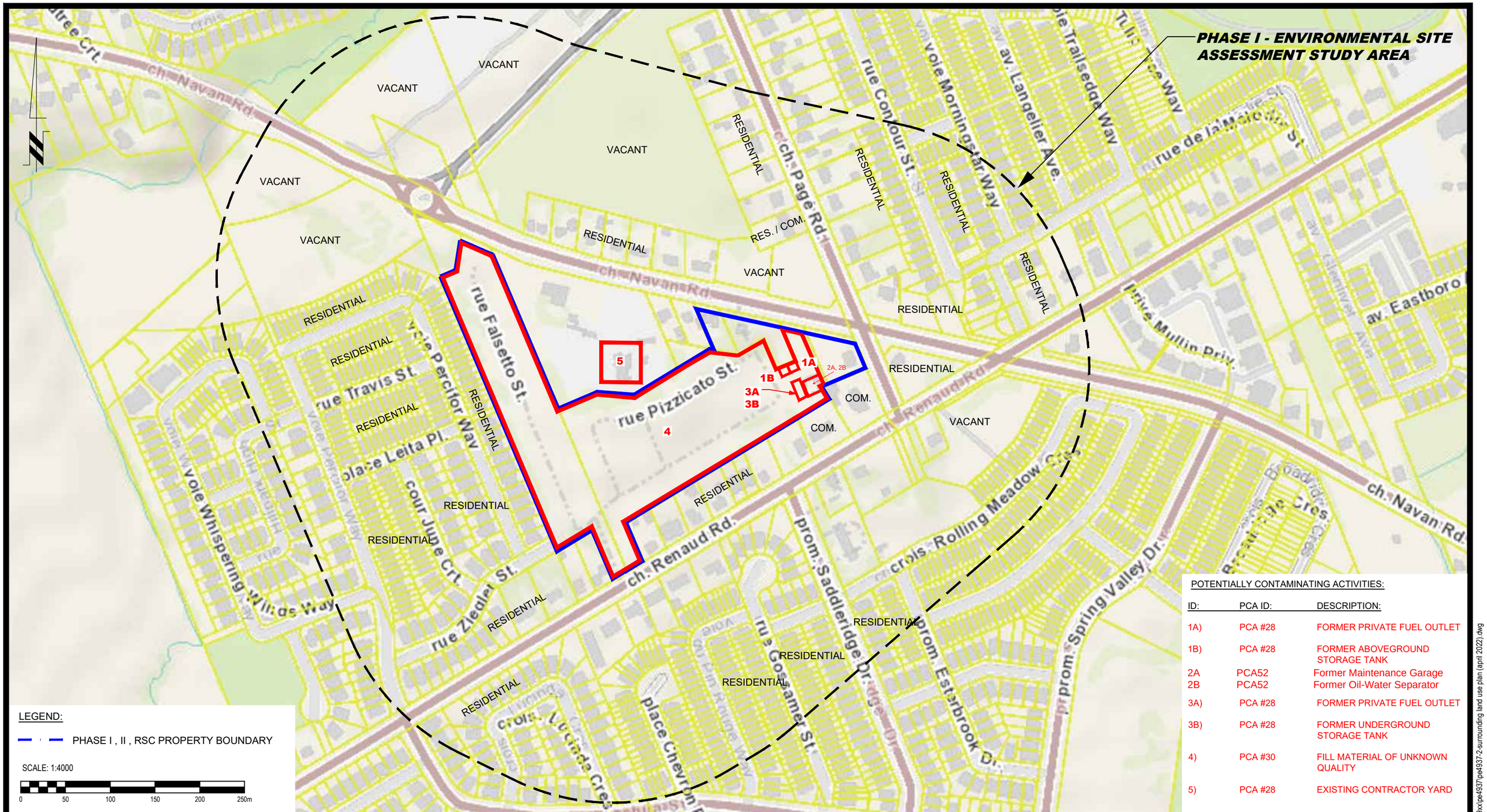

LEGEND:

PHASE I , II , RSC PROPERTY BOUNDARY

SCALE: 1:4000

0 50 100 150 200 250m

POTENTIALLY CONTAMINATING ACTIVITIES:

ID:	PCA ID:	DESCRIPTION:
1A)	PCA #28	FORMER PRIVATE FUEL OUTLET
1B)	PCA #28	FORMER ABOVEGROUND STORAGE TANK
2A	PCA52	Former Maintenance Garage
2B	PCA52	Former Oil-Water Separator
3A)	PCA #28	FORMER PRIVATE FUEL OUTLET
3B)	PCA #28	FORMER UNDERGROUND STORAGE TANK
4)	PCA #30	FILL MATERIAL OF UNKNOWN QUALITY
5)	PCA #28	EXISTING CONTRACTOR YARD

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NO.	REVISIONS	DATE	INITIAL

CAIVAN COMMUNITIES

PHASE I - ENVIRONMENTAL SITE ASSESSMENT
RENAUD ROAD AT NAVAN ROAD

OTTAWA, ONTARIO

Title:

SURROUNDING LAND USE PLAN

Scale: 1:4000	Date: 04/2022
Drawn by: YA	Report No.: PE4937-1
Checked by: JC	Dwg. No.: PE4937-2
Approved by: MB	Revision No.:

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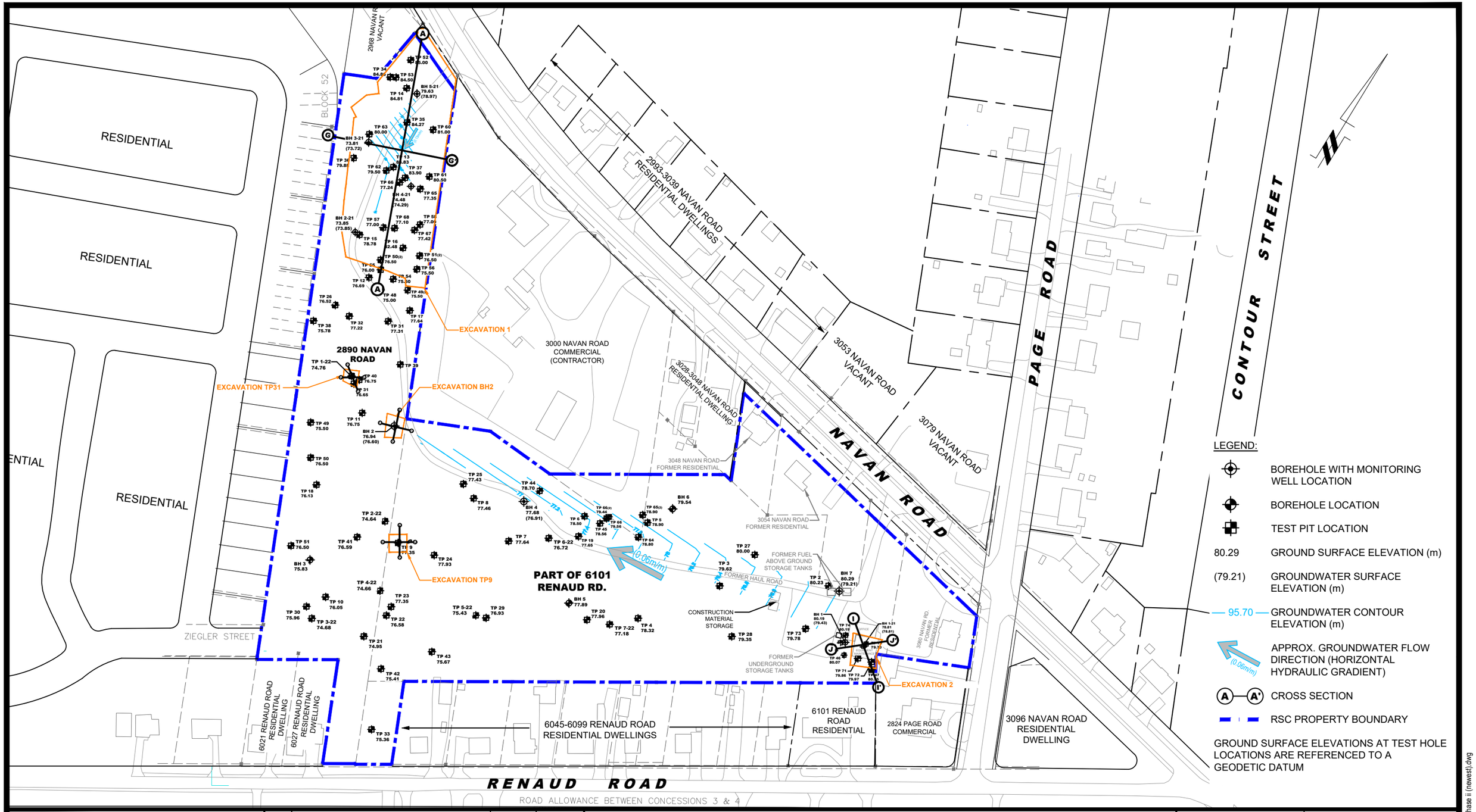

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NO.	REVISIONS	DATE	INITIAL

CAIVAN COMMUNITIES

PHASE II - ENVIRONMENTAL SITE ASSESSMENT
RENAUD ROAD AT NAVAN ROAD

OTTAWA, ONTARIO

Title:
TEST HOLE LOCATION AND GROUNDWATER CONTOUR PLAN

Scale: 1:2000	Date: 06/2021
Drawn by: YA	Report No.: PE4937-2
Checked by: MW	Dwg. No.: **PE4937-3**
Approved by: MSD	Revision No.:

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NO.	REVISIONS	DATE	INITIAL
0			

CAIVAN COMMUNITIES

PHASE II - ENVIRONMENTAL SITE ASSESSMENT
RENAUD ROAD AT NAVAN ROAD
OTTAWA, ONTARIO

Title:

ANALYTICAL TESTING PLAN - METALS

Stamp:

Scale:	1:1000
Drawn by:	RG
Checked by:	JC
Approved by:	MB
Date:	03/2021
Report No.:	PE4937
Drawing No.:	PE4937-4
Revision No.:	0

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CAIVAN COMMUNITIES

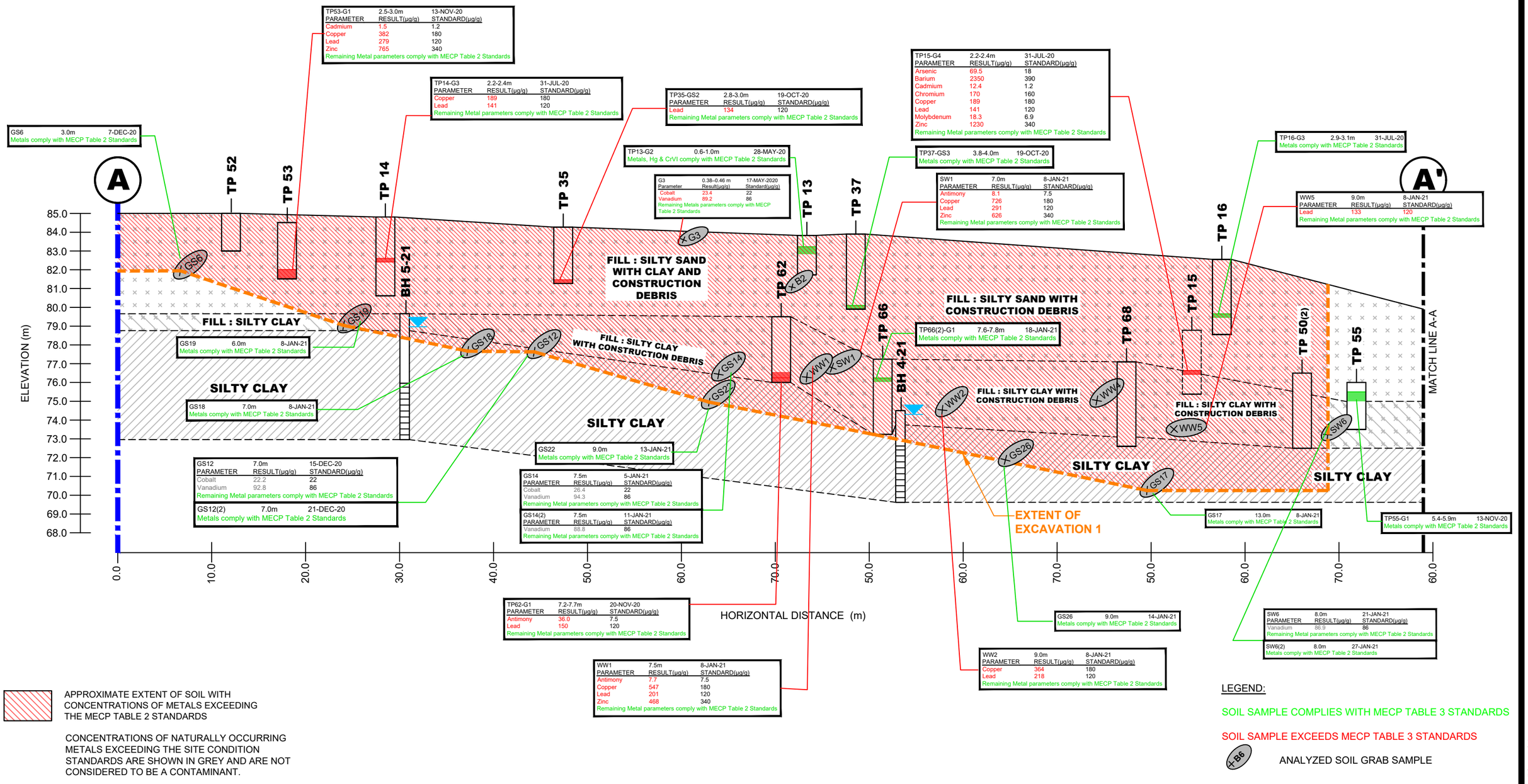
PHASE II - ENVIRONMENTAL SITE ASSESSMENT
RENAUD ROAD AT NAVAN ROAD
OTTAWA, ONTARIO

Title:

REMEDIATION PLAN - EXCAVATION 1 - SOIL(METALS)

Stamp:

Scale:	1:1000
Drawn by:	RG
Checked by:	JC
Approved by:	MB
Date:	
Report No.:	PE4937
Drawing No.:	PE4937-4EX1
Revision:	0



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NO.	REVISIONS	DATE	INITIAL

CAIVAN COMMUNITIES

PHASE II - ENVIRONMENTAL SITE ASSESSMENT
RENAUD ROAD AT NAVAN ROAD

OTTAWA, ONTARIO

Title:

CROSS SECTION A-A' - SOIL (METALS)

Scale: AS SHOWN	Date: 03/2022
Drawn by: RCG	Report No.: PE4937-2
Checked by: MB	Dwg. No.: PE4937-4A
Approved by: MB	Revision No.:

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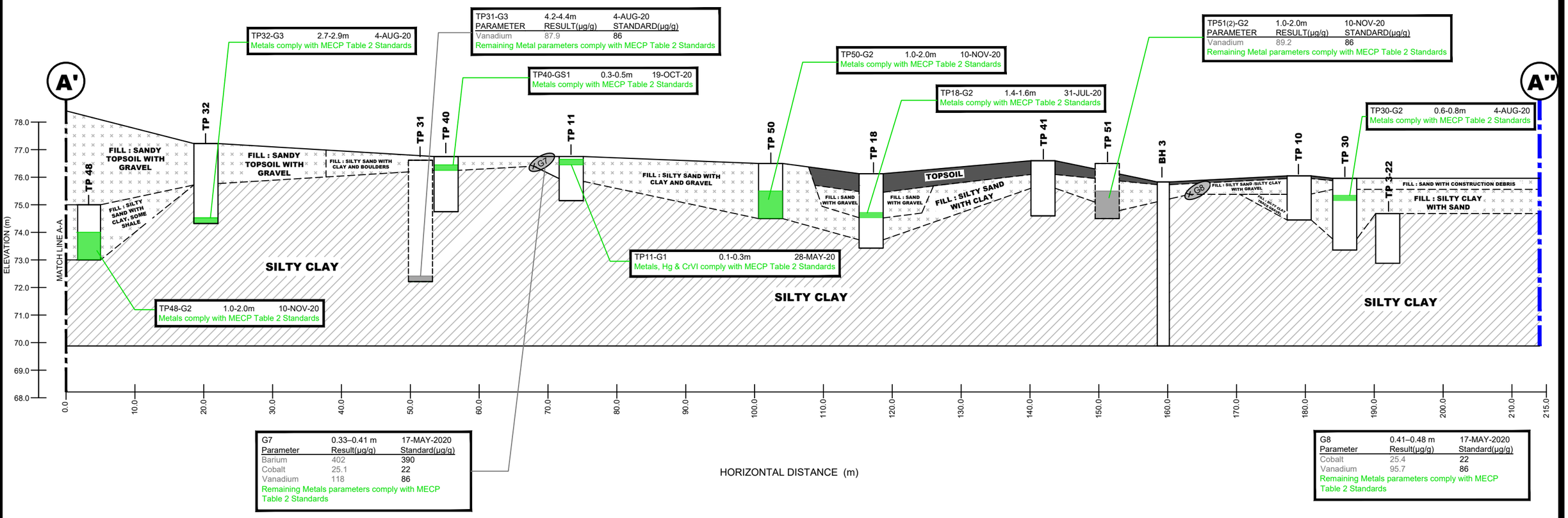

APPROXIMATE EXTENT OF SOIL WITH CONCENTRATIONS OF METALS EXCEEDING THE MECP TABLE 2 STANDARDS

CONCENTRATIONS OF NATURALLY OCCURRING METALS EXCEEDING THE SITE CONDITION STANDARDS ARE SHOWN IN GREY AND ARE NOT CONSIDERED TO BE A CONTAMINANT.

LEGEND:

SOIL SAMPLE COMPLIES WITH MECP TABLE 3 STANDARDS

SOIL SAMPLE EXCEEDS MECP TABLE 3 STANDARDS

TP-B6 ANALYZED SOIL GRAB SAMPLE

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CAIVAN COMMUNITIES

PHASE II - ENVIRONMENTAL SITE ASSESSMENT
RENAUD ROAD AT NAVAN ROAD

OTTAWA, ONTARIO

Title:
CROSS SECTION A'-A''- CONTINUATION - SOIL (METALS)

Scale: AS SHOWN	Date: 03/2022
Drawn by: RCG	Report No.: PE4937-2
Checked by: MB	Dwg. No.: PE4937-4A(cont.)
Approved by: MB	Revision No.:

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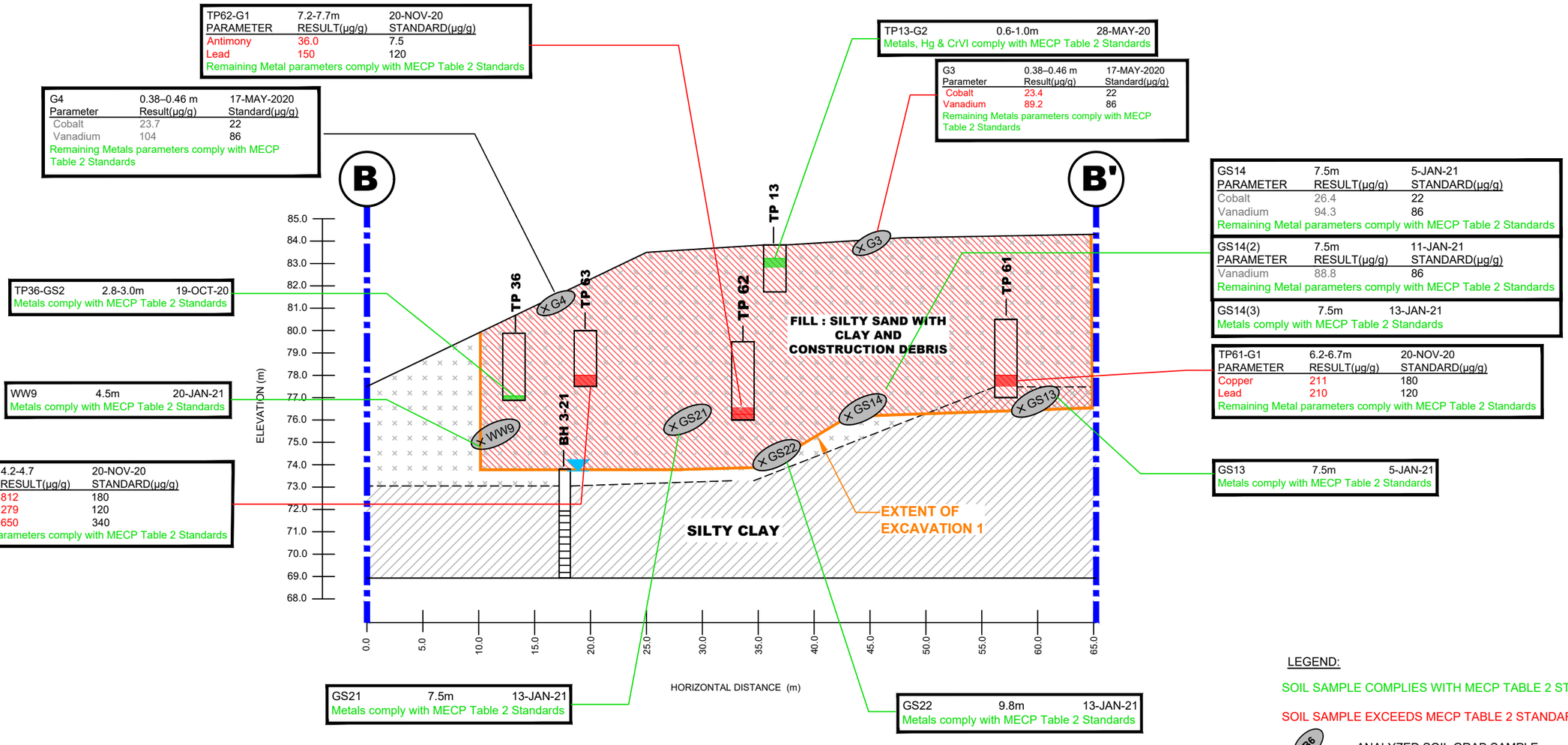

TP62-G1 7.2-7.7m 20-NOV-20

PARAMETER	RESULT(µg/g)	STANDARD(µg/g)
Antimony	36.0	7.5
Lead	150	120

Remaining Metal parameters comply with MECP Table 2 Standards

G4 0.38–0.46 m 17-MAY-2020

Parameter	Result(µg/g)	Standard(µg/g)
Cobalt	23.7	22
Vanadium	104	86

Remaining Metals parameters comply with MECP Table 2 Standards

TP13-G2 0.6-1.0m 28-MAY-20
Metals, Hg & CrVI comply with MECP Table 2 Standards

G3 0.38–0.46 m 17-MAY-2020

Parameter	Result(µg/g)	Standard(µg/g)
Cobalt	23.4	22
Vanadium	89.2	86

Remaining Metals parameters comply with MECP Table 2 Standards

GS14 7.5m 5-JAN-21

PARAMETER	RESULT(µg/g)	STANDARD(µg/g)
Cobalt	26.4	22
Vanadium	94.3	86

Remaining Metal parameters comply with MECP Table 2 Standards

GS14(2) 7.5m 11-JAN-21

PARAMETER	RESULT(µg/g)	STANDARD(µg/g)
Vanadium	88.8	86

Remaining Metal parameters comply with MECP Table 2 Standards

GS14(3) 7.5m 13-JAN-21
Metals comply with MECP Table 2 Standards

TP36-GS2 2.8-3.0m 19-OCT-20
Metals comply with MECP Table 2 Standards

TP61-G1 6.2-6.7m 20-NOV-20

PARAMETER	RESULT(µg/g)	STANDARD(µg/g)
Copper	211	180
Lead	210	120

Remaining Metal parameters comply with MECP Table 2 Standards

WW9 4.5m 20-JAN-21
Metals comply with MECP Table 2 Standards

GS13 7.5m 5-JAN-21
Metals comply with MECP Table 2 Standards

TP63-G1 4.2-4.7 20-NOV-20

PARAMETER	RESULT(µg/g)	STANDARD(µg/g)
Copper	812	180
Lead	279	120
Zinc	650	340

Remaining Metal parameters comply with MECP Table 2 Standards

GS21 7.5m 13-JAN-21
Metals comply with MECP Table 2 Standards

GS22 9.8m 13-JAN-21
Metals comply with MECP Table 2 Standards

LEGEND:

SOIL SAMPLE COMPLIES WITH MECP TABLE 2 STANDARDS

SOIL SAMPLE EXCEEDS MECP TABLE 2 STANDARDS

4+B6 ANALYZED SOIL GRAB SAMPLE

APPROXIMATE EXTENT OF SOIL WITH CONCENTRATIONS OF METALS EXCEEDING THE MECP TABLE 2 STANDARDS

CONCENTRATIONS OF NATURALLY OCCURRING METALS EXCEEDING THE SITE CONDITION STANDARDS ARE SHOWN IN GREY AND ARE NOT CONSIDERED TO BE A CONTAMINANT.

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CAIVAN COMMUNITIES

PHASE II - ENVIRONMENTAL SITE ASSESSMENT
RENAUD ROAD AT NAVAN ROAD

OTTAWA, ONTARIO

Title:

CROSS SECTION B-B' - SOIL (METALS)

Scale: AS SHOWN	Date: 03/2022
Drawn by: RCG	Report No.: PE4937-2
Checked by: MB	Dwg. No.: PE4937-4B
Approved by: MB	Revision No.:

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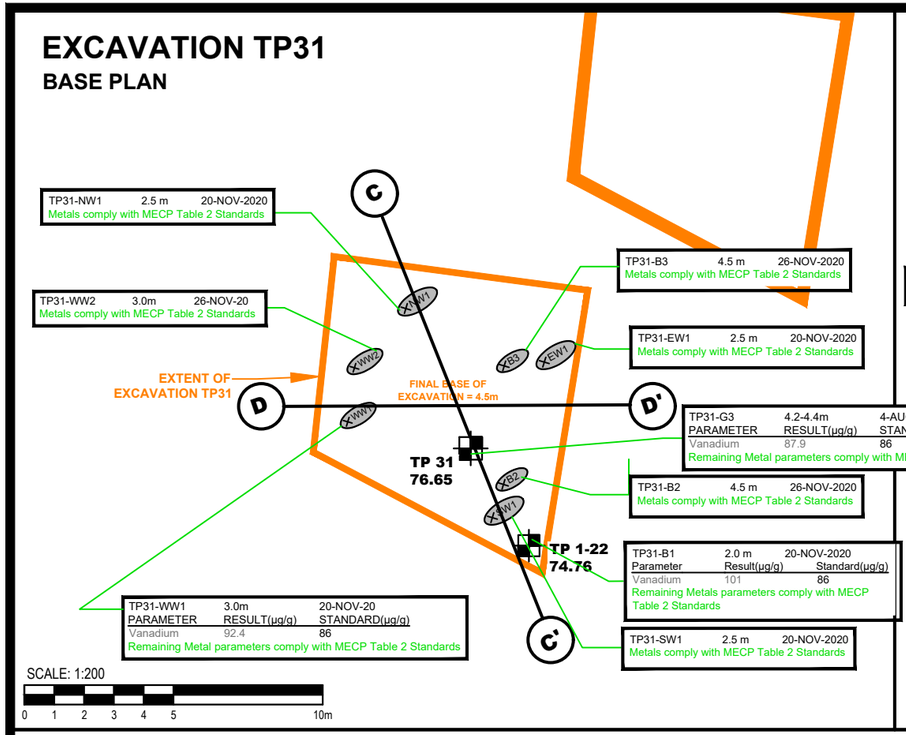
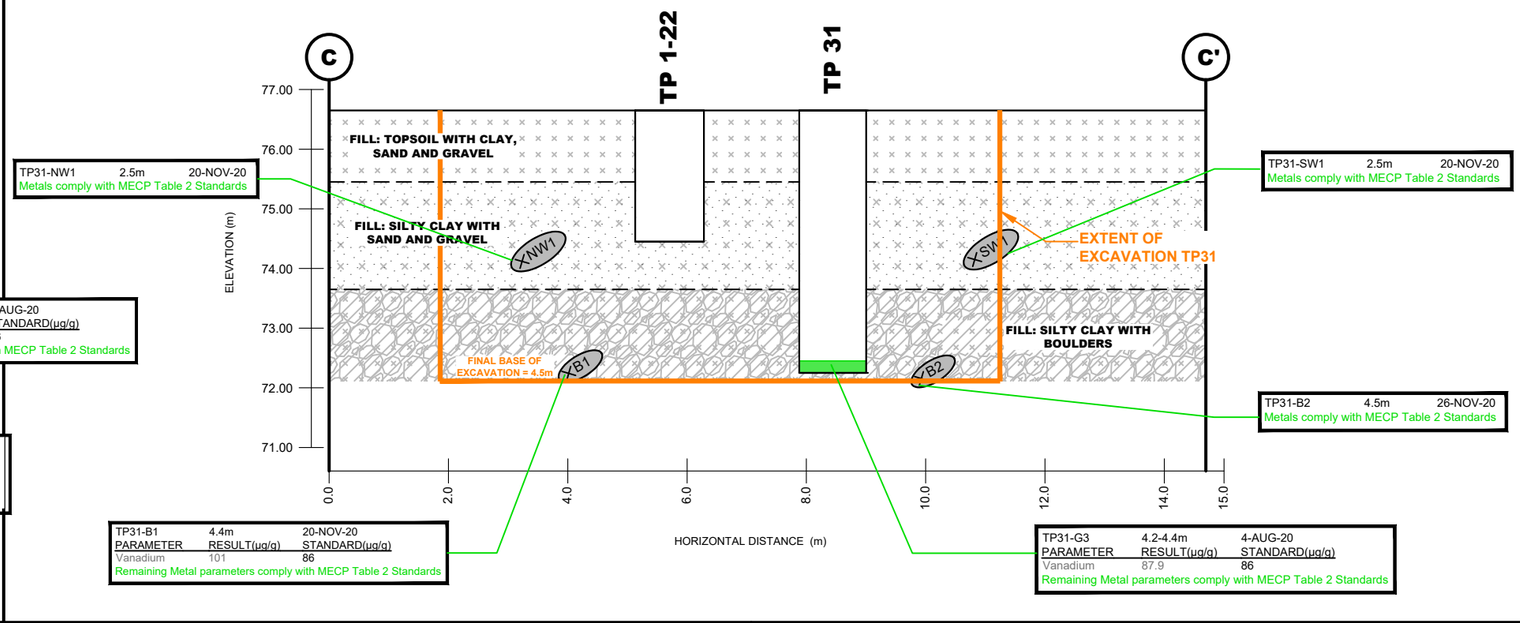
EXCAVATION TP31

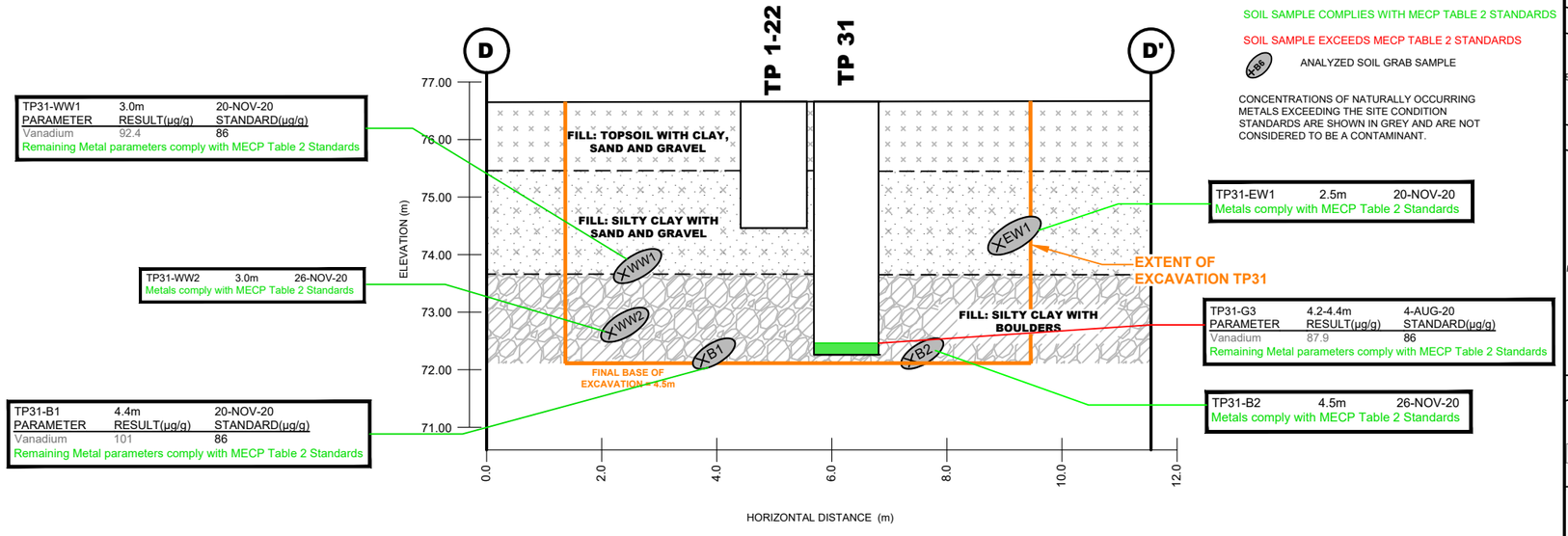
BASE PLAN



CROSS SECTION CC'



CROSS SECTION DD'



LEGEND:

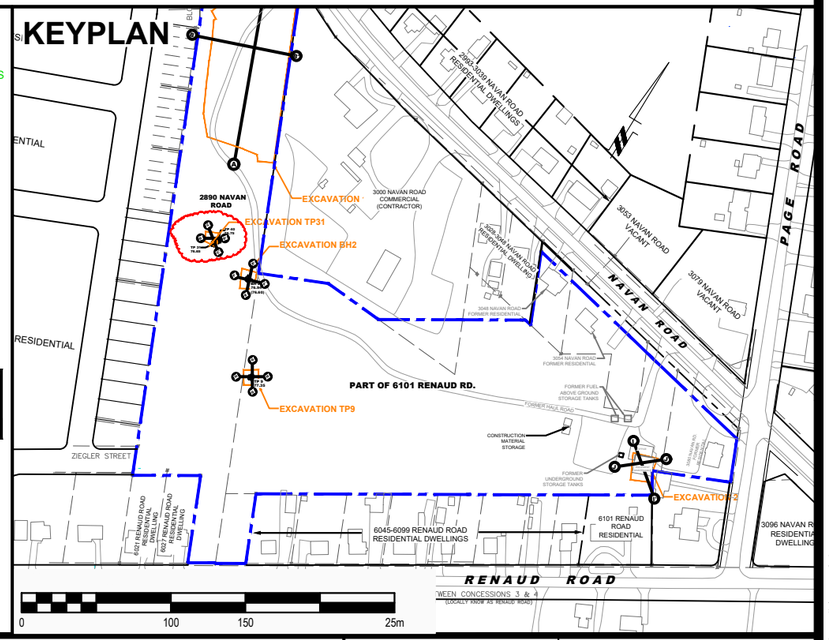
SOIL SAMPLE COMPLIES WITH MECP TABLE 2 STANDARDS

SOIL SAMPLE EXCEEDS MECP TABLE 2 STANDARDS

XBH ANALYZED SOIL GRAB SAMPLE

CONCENTRATIONS OF NATURALLY OCCURRING METALS EXCEEDING THE SITE CONDITION STANDARDS ARE SHOWN IN GREY AND ARE NOT CONSIDERED TO BE A CONTAMINANT.

KEYPLAN



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CAIVAN COMMUNITIES

PHASE II - ENVIRONMENTAL SITE ASSESSMENT
RENAUD ROAD AT NAVAN ROAD

OTTAWA, ONTARIO

Title:

EXCAVATION TP 31 - SOIL(METALS)

Scale: AS SHOWN	Date: 03/2022
Drawn by: YA	Report No.: PE4937-2
Checked by: MB	Dwg. No.: PE4937-4CD
Approved by: MB	Revision No.:

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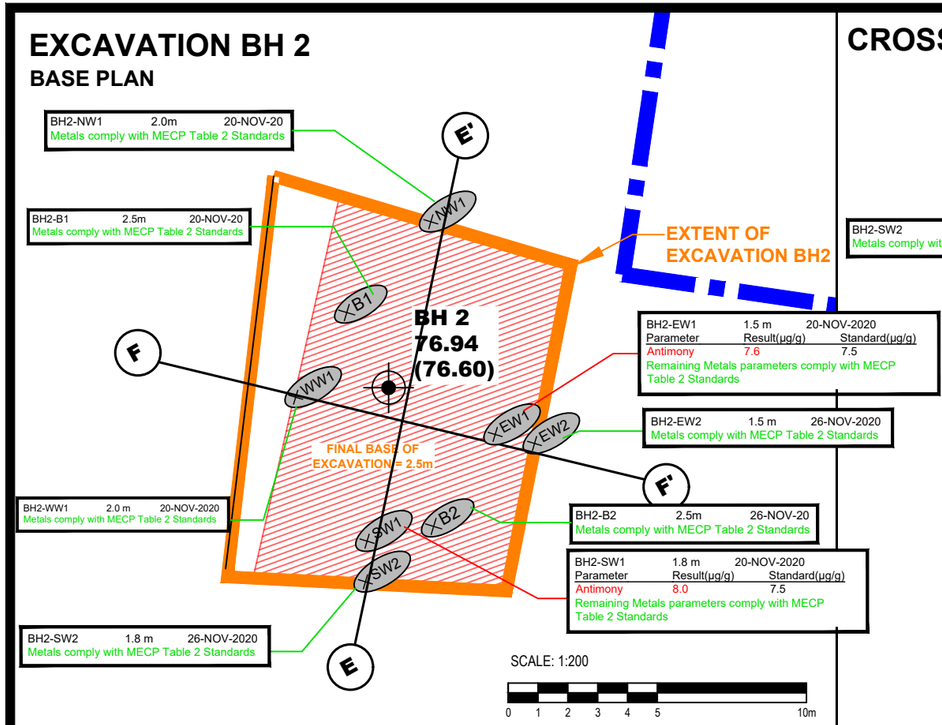
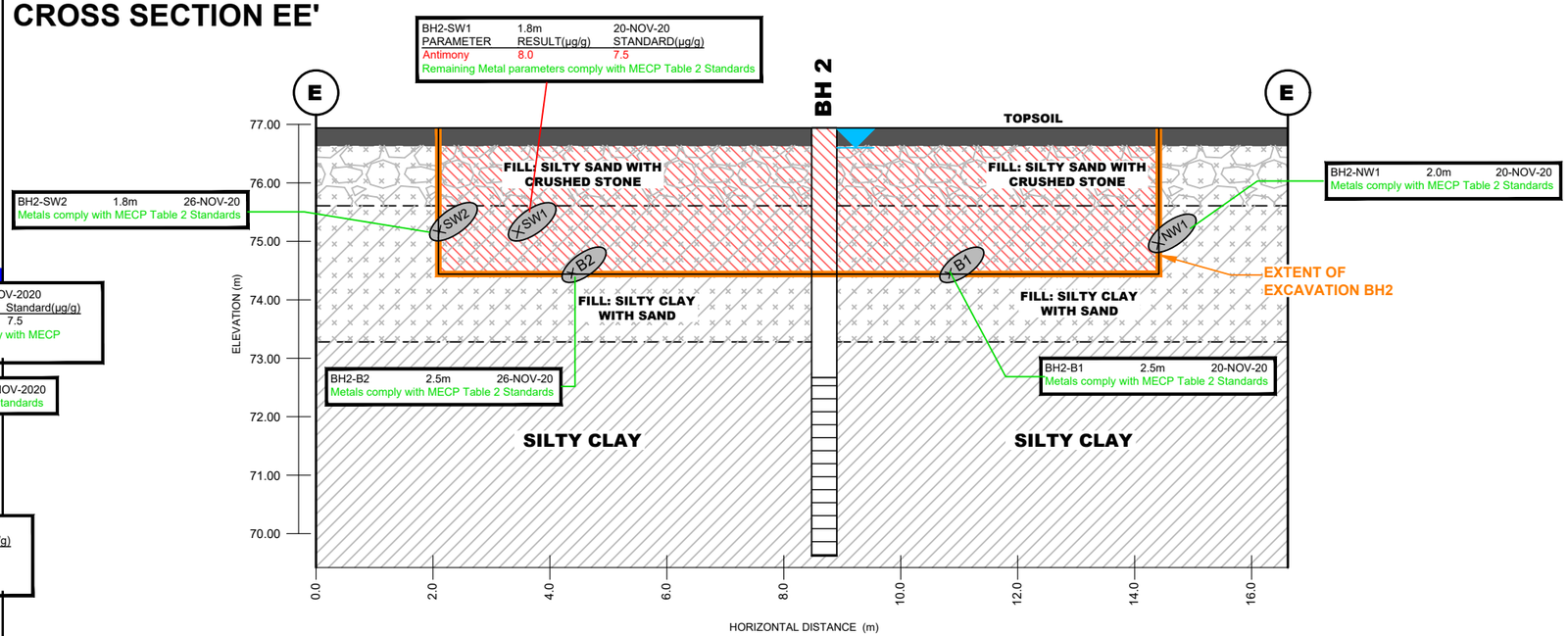
EXCAVATION BH 2

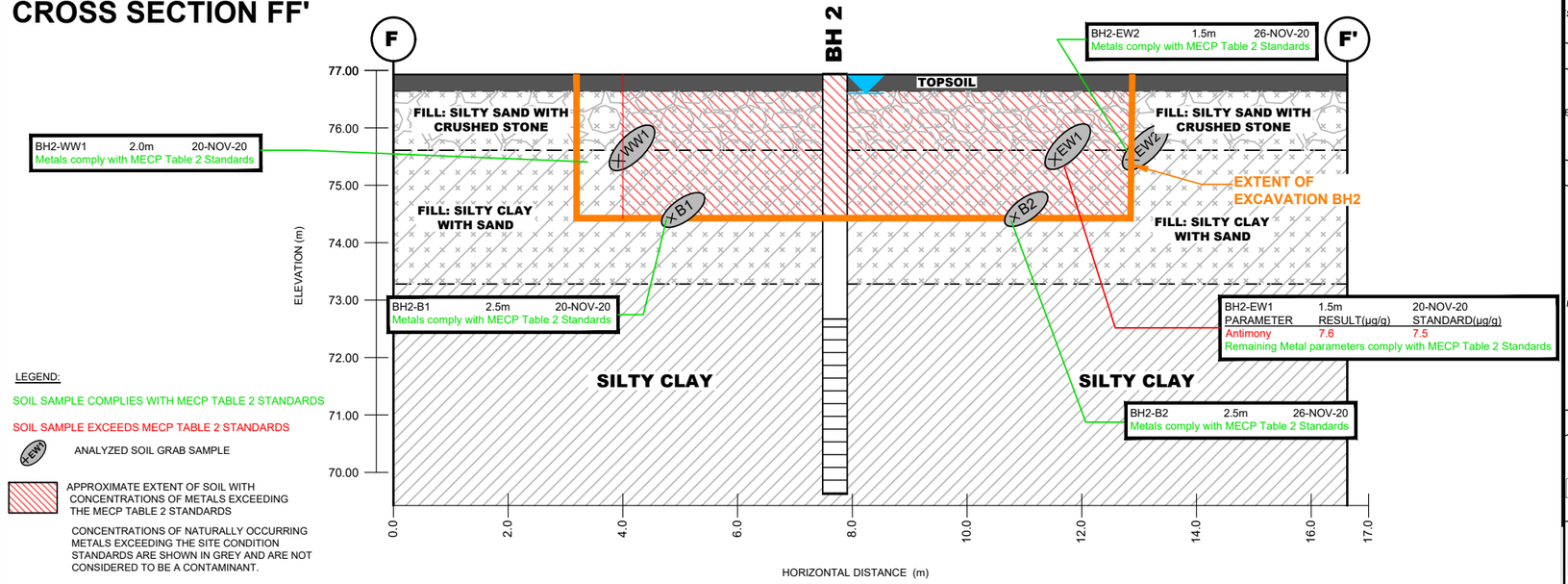
BASE PLAN



CROSS SECTION EE'



CROSS SECTION FF'



LEGEND:

SOIL SAMPLE COMPLIES WITH MECP TABLE 2 STANDARDS

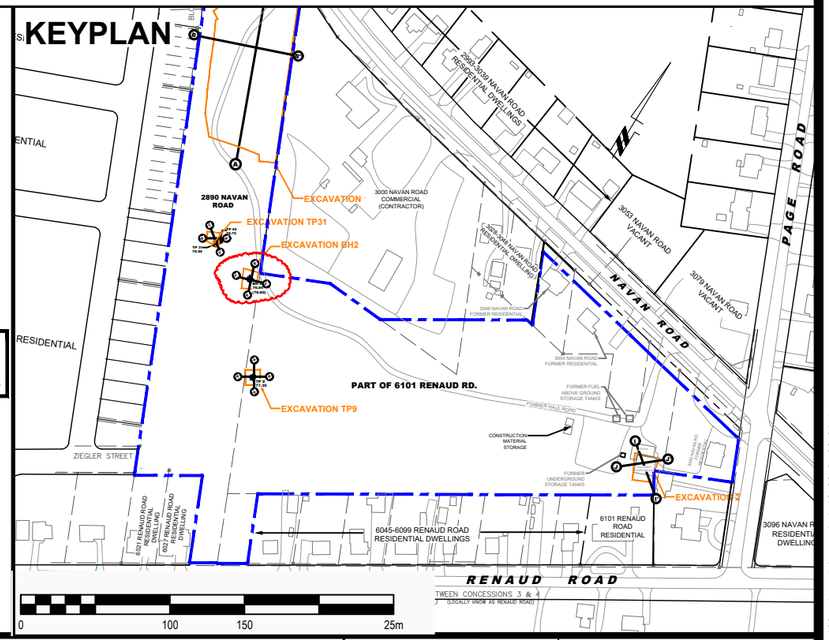
SOIL SAMPLE EXCEEDS MECP TABLE 2 STANDARDS

ANALYZED SOIL GRAB SAMPLE

APPROXIMATE EXTENT OF SOIL WITH CONCENTRATIONS OF METALS EXCEEDING THE MECP TABLE 2 STANDARDS

CONCENTRATIONS OF NATURALLY OCCURRING METALS EXCEEDING THE SITE CONDITION STANDARDS ARE SHOWN IN GREY AND ARE NOT CONSIDERED TO BE A CONTAMINANT.

KEYPLAN



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NO.	REVISIONS	DATE	INITIAL

CAIVAN COMMUNITIES

PHASE II - ENVIRONMENTAL SITE ASSESSMENT
RENAUD ROAD AT NAVAN ROAD

OTTAWA, ONTARIO

Title:

EXCAVATION BH 2 - SOIL(METALS)

Scale: AS SHOWN	Date: 03/2022
Drawn by: YA	Report No.: PE4937-2
Checked by: MB	Dwg. No.: PE4937-4EF
Approved by: MB	Revision No.:

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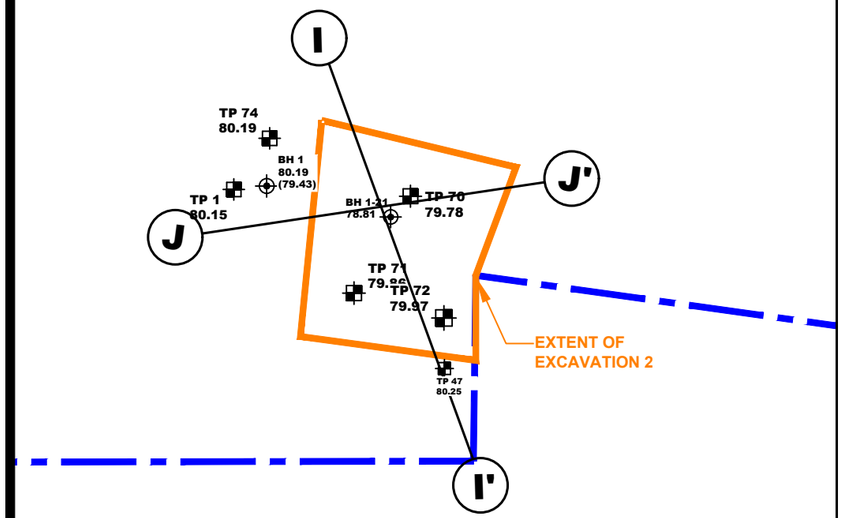
EXCAVATION TP 9

BASE PLAN



SCALE: 1:500

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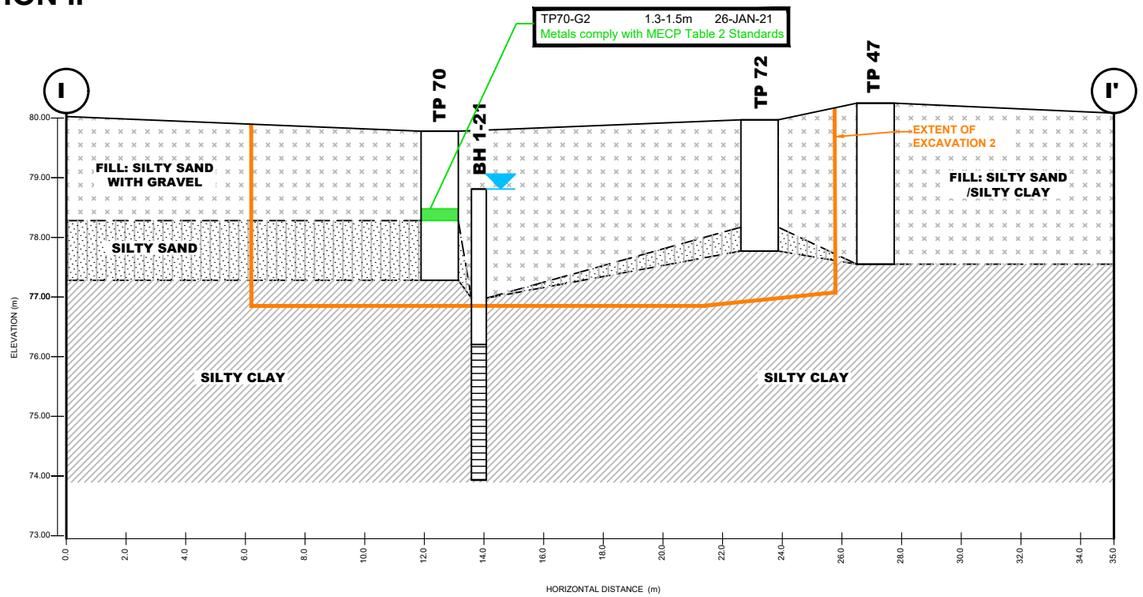
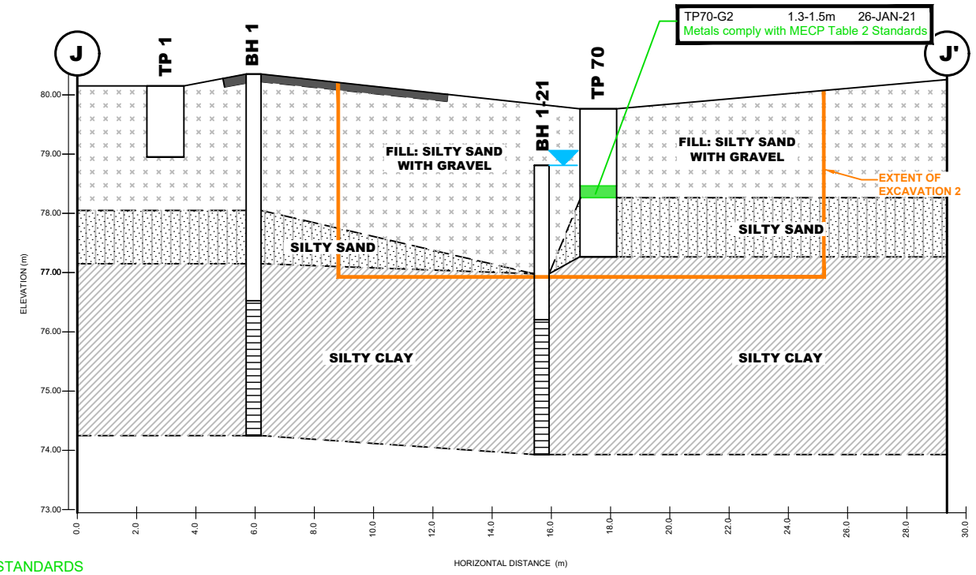
CROSS SECTION II'



CROSS SECTION JJ'

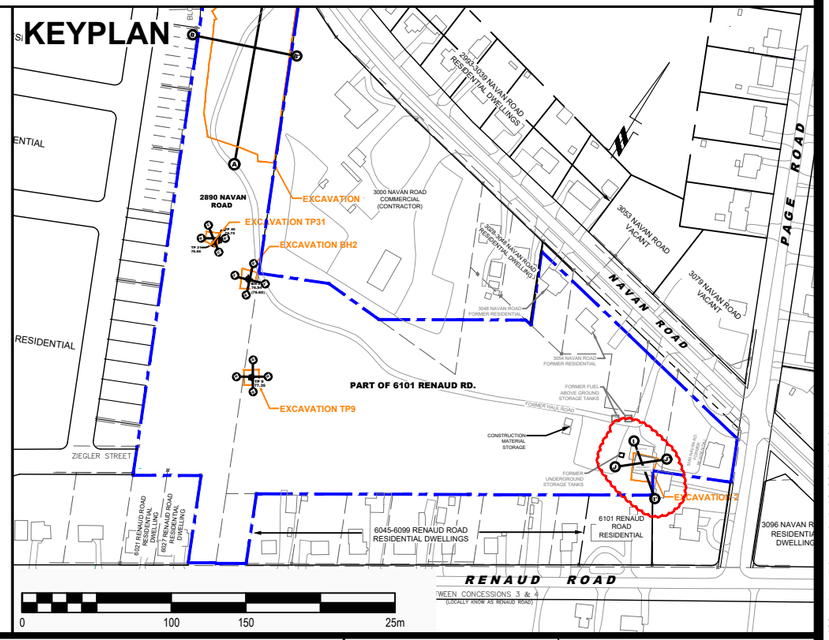


LEGEND:

SOIL SAMPLE COMPLIES WITH MECP TABLE 2 STANDARDS

SOIL SAMPLE EXCEEDS MECP TABLE 2 STANDARDS

KEYPLAN



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CAIVAN COMMUNITIES

PHASE II - ENVIRONMENTAL SITE ASSESSMENT
RENAUD ROAD AT NAVAN ROAD

OTTAWA, ONTARIO

Title:

EXCAVATION 2 - SOIL(METALS)

Scale: AS SHOWN	Date: 03/2022
Drawn by: YA	Report No.: PE4937-2
Checked by: MB	Dwg. No.: PE4937-4IJ
Approved by: MB	Revision No.:

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TP15-G4	2.2-2.4m	31-JUL-20
PARAMETER	RESULT(µg/g)	STANDARD(µg/g)
Arsenic	69.5	18
Barium	2350	390
Cadmium	12.4	1.2
Chromium	170	160
Copper	189	180
Lead	141	120
Molybdenum	18.3	6.9
Zinc	1230	340

Remaining Metal parameters comply with MECP Table 2 Standards

WW7	5.00m	20-JAN-21
PARAMETER	RESULT(µg/g)	STANDARD(µg/g)
Antimony	28.1	7.5
Arsenic	19.8	18
Barium	926	390
Cadmium	24.5	1.2
Cobalt	25.5	22
Copper	353	180
Lead	1930	120
Molybdenum	13.8	6.9
Nickel	199	130
Zinc	4000	340

Remaining Metal parameters comply with MECP Table 2 Standards

WW10 5.0m 2-FEB-21
Metals comply with MECP Table 2 Standards

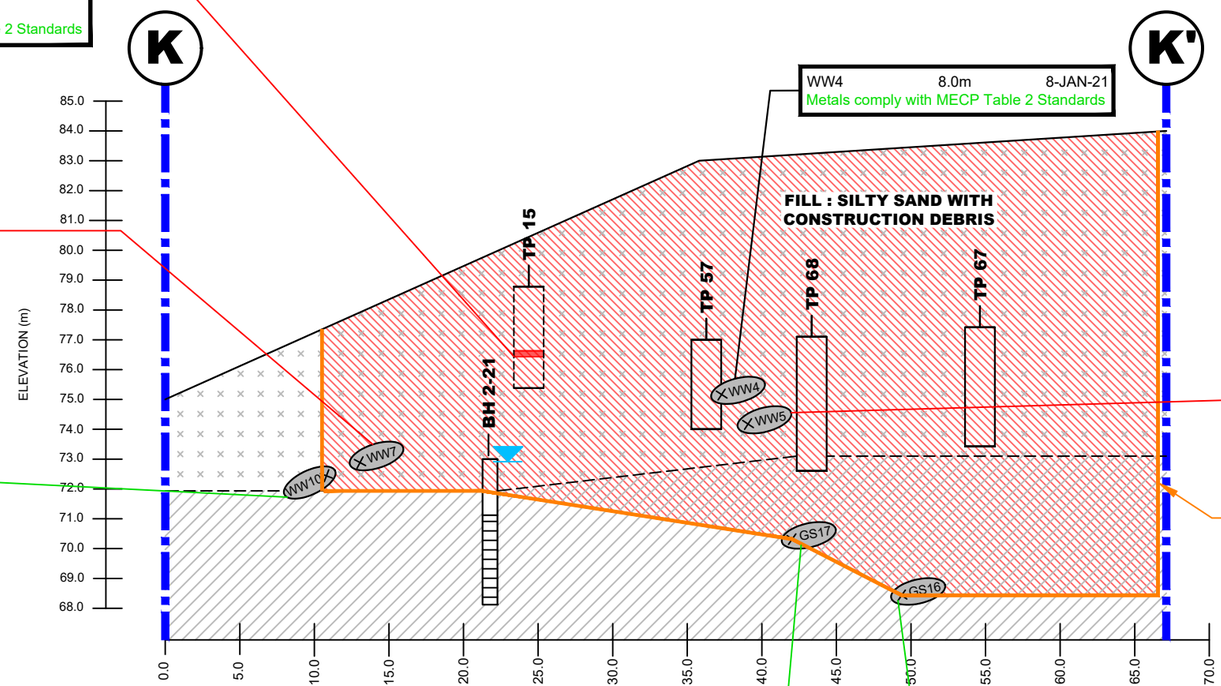
WW4 8.0m 8-JAN-21
Metals comply with MECP Table 2 Standards

WW5	9.0m	8-JAN-21
PARAMETER	RESULT(µg/g)	STANDARD(µg/g)
Lead	133	120

Remaining Metal parameters comply with MECP Table 2 Standards

GS17 13.0m 8-JAN-21
Metals comply with MECP Table 2 Standards

GS16 15.0m 8-JAN-21
Metals comply with MECP Table 2 Standards



LEGEND:

SOIL SAMPLE COMPLIES WITH MECP TABLE 2 STANDARDS

SOIL SAMPLE EXCEEDS MECP TABLE 2 STANDARDS

B6 — ANALYZED SOIL GRAB SAMPLE

APPROXIMATE EXTENT OF SOIL WITH CONCENTRATIONS OF METALS EXCEEDING THE MECP TABLE 2 STANDARDS

CONCENTRATIONS OF NATURALLY OCCURRING METALS EXCEEDING THE SITE CONDITION STANDARDS ARE SHOWN IN GREY AND ARE NOT CONSIDERED TO BE A CONTAMINANT.

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NO.	REVISIONS	DATE	INITIAL

CAIVAN COMMUNITIES

PHASE II - ENVIRONMENTAL SITE ASSESSMENT
RENAUD ROAD AT NAVAN ROAD

OTTAWA, ONTARIO

Title:

CROSS SECTION K-K' - SOIL (METALS)

Scale: AS SHOWN	Date: 03/2022
Drawn by: RCG	Report No.: PE4937-2
Checked by: MB	Dwg. No.: PE4937-4K
Approved by: MB	Revision No.:

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G8	0.41–0.48 m	17-MAY-2020
Parameter	Result(µg/g)	Standard(µg/g)
Cobalt	25.4	22
Vanadium	95.7	86

Remaining Metals parameters comply with MECP Table 2 Standards

TP9-G5	0.8-1.1m	28-MAY-20
PARAMETER	RESULT(µg/g)	STANDARD(µg/g)
Cobalt	27.9	22
Vanadium	125	86

Remaining Metal parameters comply with MECP Table 2 Standards

TP51(2)-G2	1.0-2.0m	10-NOV-20
PARAMETER	RESULT(µg/g)	STANDARD(µg/g)
Vanadium	89.2	86

Remaining Metal parameters comply with MECP Table 2 Standards

G9 0.43–0.51 m 17-MAY-2020
Metals comply with MECP Table 2 Standards

TP24-G1 0.1-0.3m 31-JUL-20
Metals comply with MECP Table 2 Standards

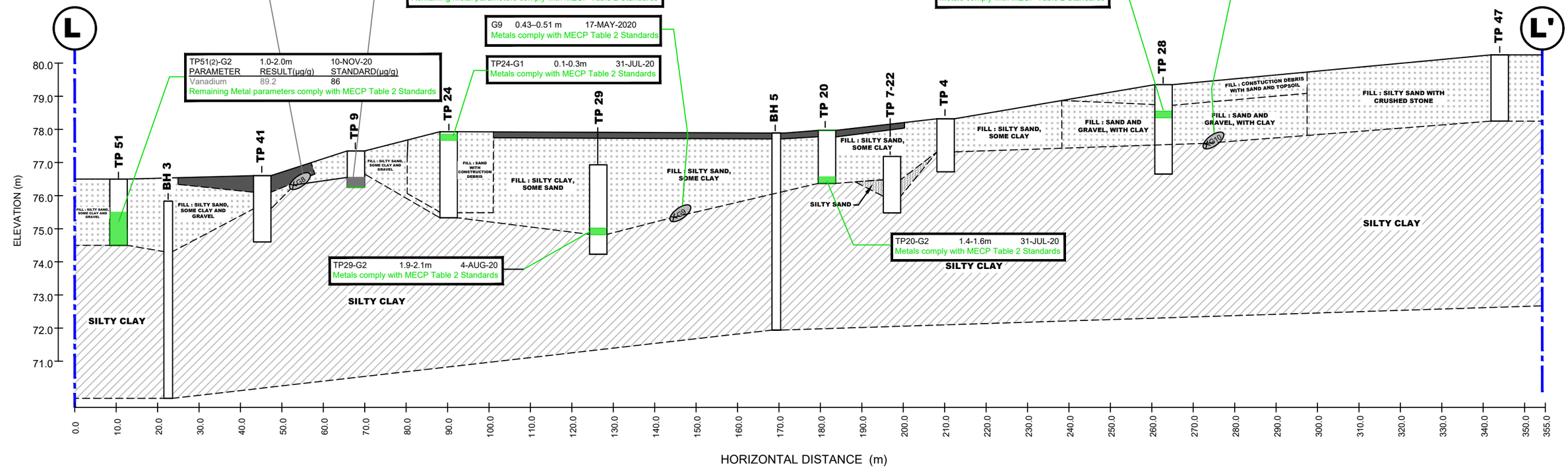
TP28-G2 0.8-1.0m 4-AUG-20
Metals comply with MECP Table 2 Standards

G10	0.41–0.48 m	17-MAY-2020
Parameter	Result(µg/g)	Standard(µg/g)
Vanadium	92.0	86

Remaining Metals parameters comply with MECP Table 2 Standards

TP29-G2 1.9-2.1m 4-AUG-20
Metals comply with MECP Table 2 Standards

TP20-G2 1.4-1.6m 31-JUL-20
Metals comply with MECP Table 2 Standards



APPROXIMATE EXTENT OF SOIL WITH CONCENTRATIONS OF METALS EXCEEDING THE MECP TABLE 2 STANDARDS

CONCENTRATIONS OF NATURALLY OCCURRING METALS EXCEEDING THE SITE CONDITION STANDARDS ARE SHOWN IN GREY AND ARE NOT CONSIDERED TO BE A CONTAMINANT.

LEGEND:

SOIL SAMPLE COMPLIES WITH MECP TABLE 3 STANDARDS

SOIL SAMPLE EXCEEDS MECP TABLE 3 STANDARDS

ANALYZED SOIL GRAB SAMPLE

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NO.	REVISIONS	DATE	INITIAL

CAIVAN COMMUNITIES

PHASE II - ENVIRONMENTAL SITE ASSESSMENT
RENAUD ROAD AT NAVAN ROAD

OTTAWA, ONTARIO

Title:

CROSS SECTION L-L'- SOIL (METALS)

Scale: AS SHOWN	Date: 03/2022
Drawn by: RCG	Report No.: PE4937-2
Checked by: MB	Dwg. No.: PE4937-4L
Approved by: MB	Revision No.:

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NO.	REVISIONS	DATE	INITIAL
0			

CAIVAN COMMUNITIES

PHASE II - ENVIRONMENTAL SITE ASSESSMENT
RENAUD ROAD AT NAVAN ROAD
OTTAWA, ONTARIO

Title:

ANALYTICAL TESTING PLAN - BTEX,PHCs

Stamp:

Scale: 1:1000	Report No.: PE4937
Drawn by: RG	Drawing No.:
Checked by: JC	
Approved by: MB	PE4937-5
Date: 03/2021	Revision No.: 0

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NO.	REVISIONS	DATE	INITIAL
0			

CAIVAN COMMUNITIES

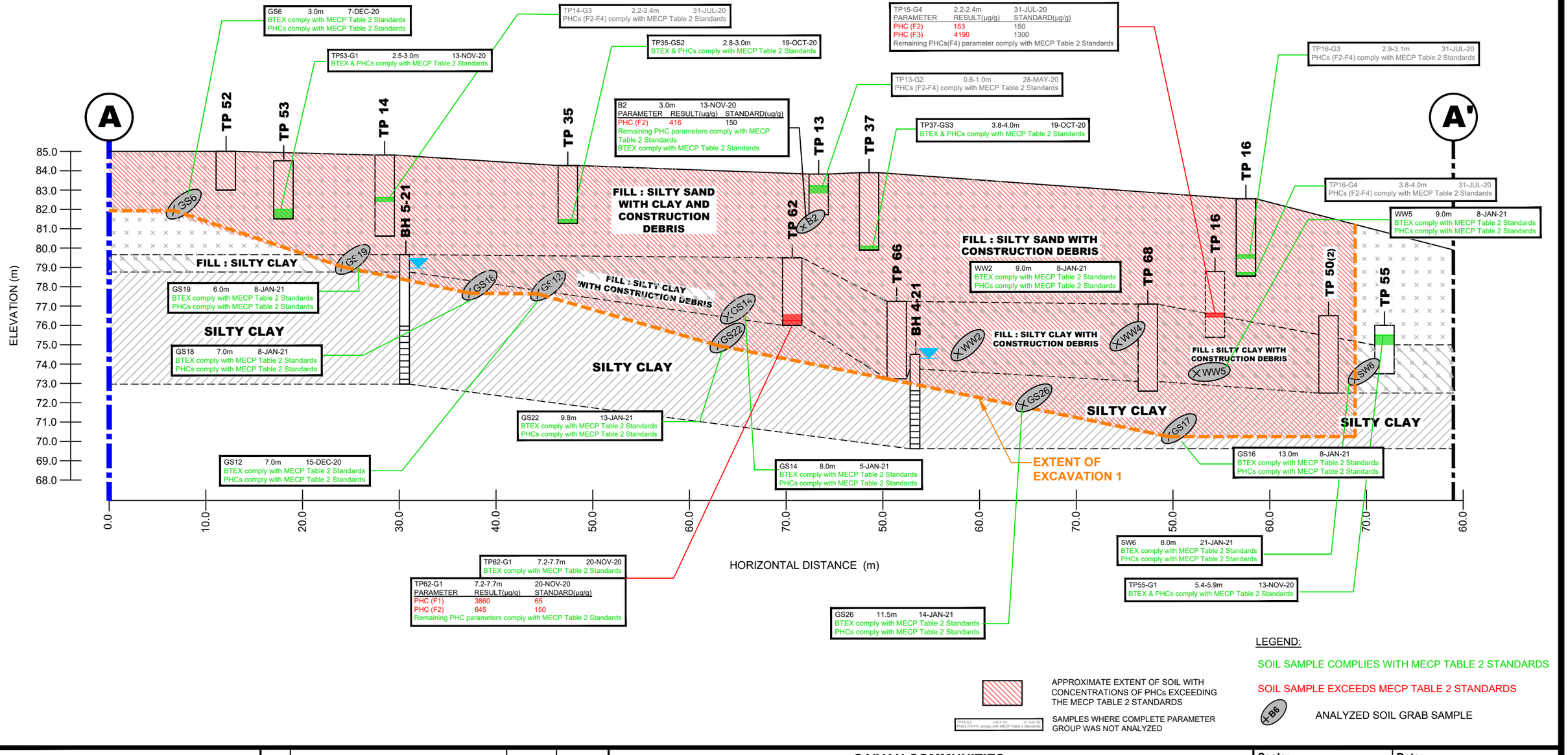
PHASE II - ENVIRONMENTAL SITE ASSESSMENT
RENAUD ROAD AT NAVAN ROAD
OTTAWA, ONTARIO

Title:

REMEDIATION PLAN - EXCAVATION 1 - SOIL(BTEX,PHCs)

Stamp:

Scale:	1:300
Drawn by:	RG
Checked by:	JC
Approved by:	MB
Date:	
Report No.:	PE4937
Drawing No.:	PE4937-5EX1
Revision:	0



LEGEND:

SOIL SAMPLE COMPLIES WITH MECP TABLE 2 STANDARDS

SOIL SAMPLE EXCEEDS MECP TABLE 2 STANDARDS

APPROXIMATE EXTENT OF SOIL WITH CONCENTRATIONS OF PHCs EXCEEDING THE MECP TABLE 2 STANDARDS

ANALYZED SOIL GRAB SAMPLE

SAMPLES WHERE COMPLETE PARAMETER GROUP WAS NOT ANALYZED

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NO.	REVISIONS	DATE	INITIAL

CAIVAN COMMUNITIES

PHASE II - ENVIRONMENTAL SITE ASSESSMENT
RENAUD ROAD AT NAVAN ROAD

OTTAWA, ONTARIO

Title:

CROSS SECTION A-A' - SOIL (BTEX,PHCs)

Scale: AS SHOWN	Date: 03/2022
Drawn by: RCG	Report No.: PE4937-2
Checked by: MB	Dwg. No.: PE4937-5A
Approved by: MB	Revision No.:

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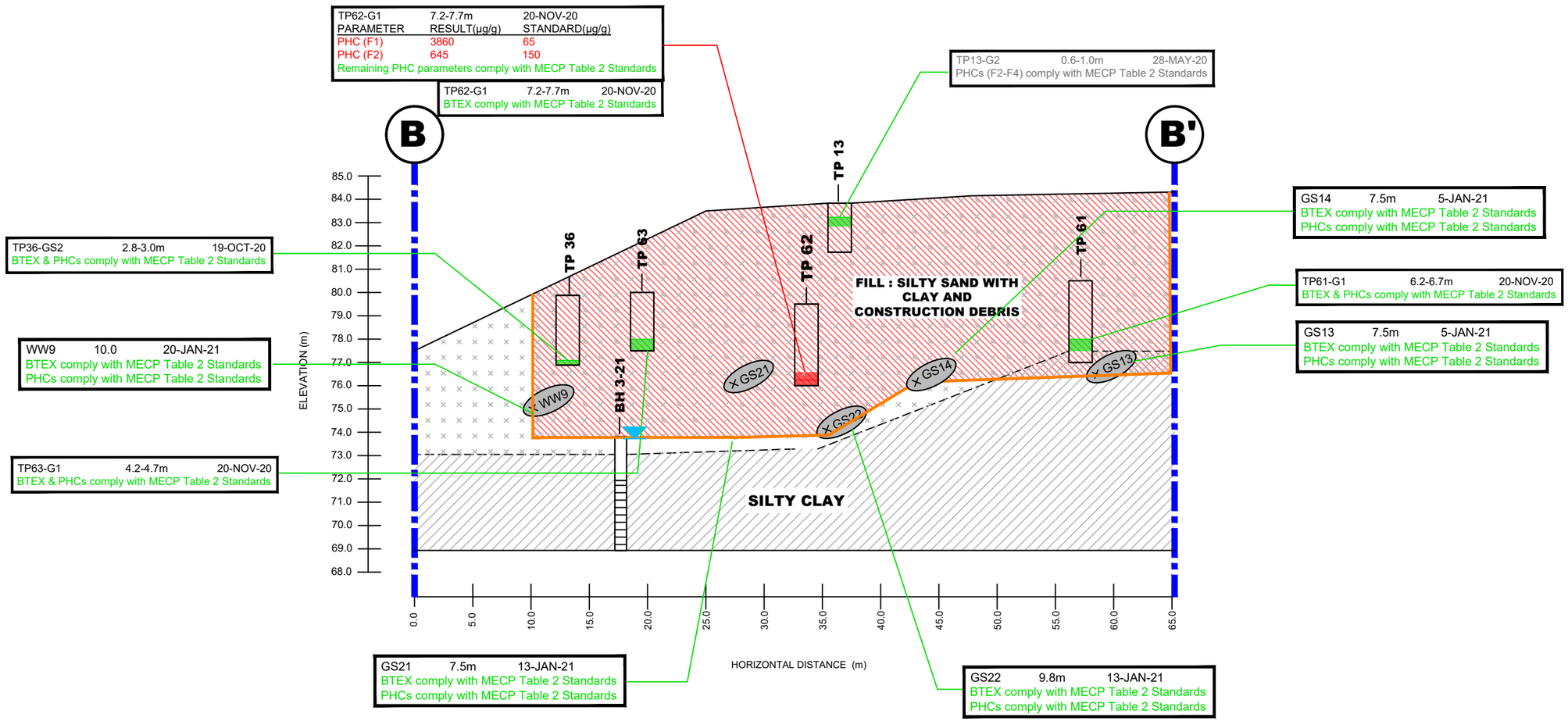

LEGEND:

SOIL SAMPLE COMPLIES WITH MECP TABLE 2 STANDARDS

SOIL SAMPLE EXCEEDS MECP TABLE 2 STANDARDS

APPROXIMATE EXTENT OF SOIL WITH CONCENTRATIONS OF PHCs EXCEEDING THE MECP TABLE 2 STANDARDS

SAMPLES WHERE COMPLETE PARAMETER GROUP WAS NOT ANALYZED

ANALYZED SOIL GRAB SAMPLE

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NO.	REVISIONS	DATE	INITIAL

CAIVAN COMMUNITIES

PHASE II - ENVIRONMENTAL SITE ASSESSMENT
RENAUD ROAD AT NAVAN ROAD

OTTAWA, ONTARIO

Title:

CROSS SECTION B-B' - SOIL (BTEX,PHCs)

Scale: AS SHOWN	Date: 03/2022
Drawn by: RCG	Report No.: PE4937-2
Checked by: MB	Dwg. No.: PE4937-5B
Approved by: MB	Revision No.:

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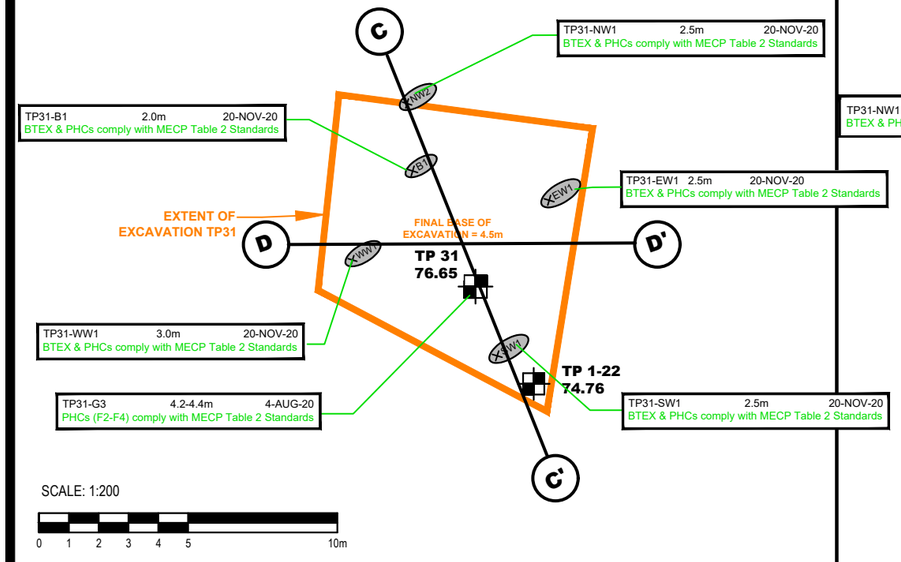
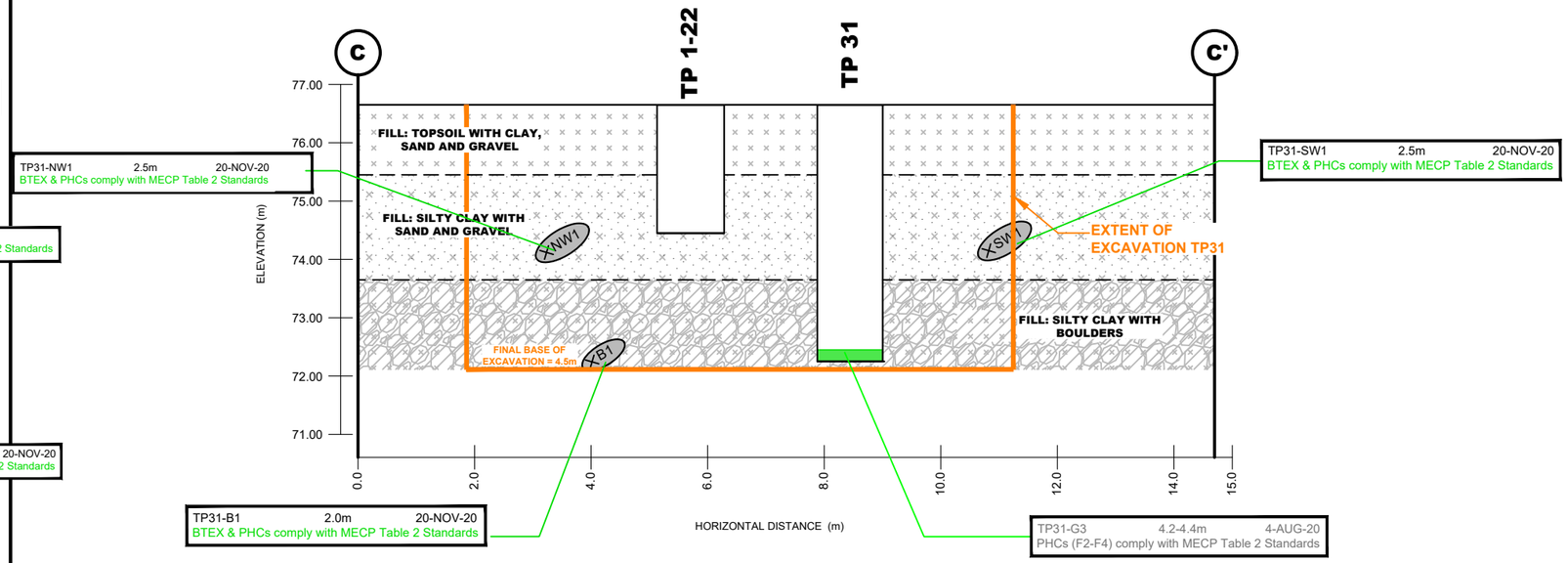
EXCAVATION TP31

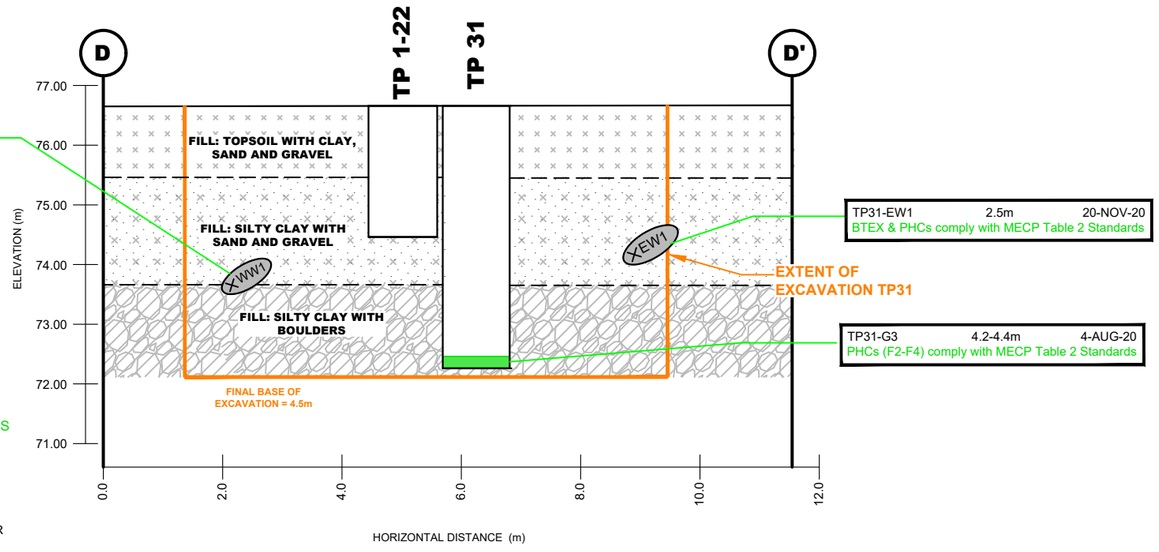
BASE PLAN



CROSS SECTION CC'



CROSS SECTION DD'



LEGEND:

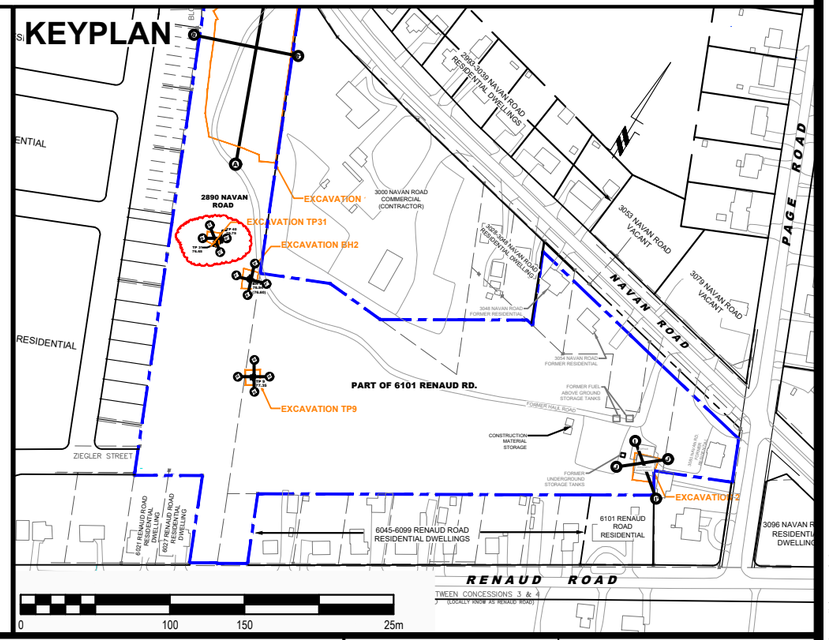
SOIL SAMPLE COMPLIES WITH MECP TABLE 2 STANDARDS

SOIL SAMPLE EXCEEDS MECP TABLE 2 STANDARDS

ANALYZED SOIL GRAB SAMPLE

SAMPLES WHERE COMPLETE PARAMETER GROUP WAS NOT ANALYZED

KEYPLAN



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NO.	REVISIONS	DATE	INITIAL

CAIVAN COMMUNITIES

PHASE II - ENVIRONMENTAL SITE ASSESSMENT
RENAUD ROAD AT NAVAN ROAD

OTTAWA, ONTARIO

Title:

EXCAVATION TP 31 - SOIL(BTEX,PHCs)

Scale: AS SHOWN	Date: 03/2022
Drawn by: YA	Report No.: PE4937-2
Checked by: MB	Dwg. No.: PE4937-5CD
Approved by: MB	Revision No.:

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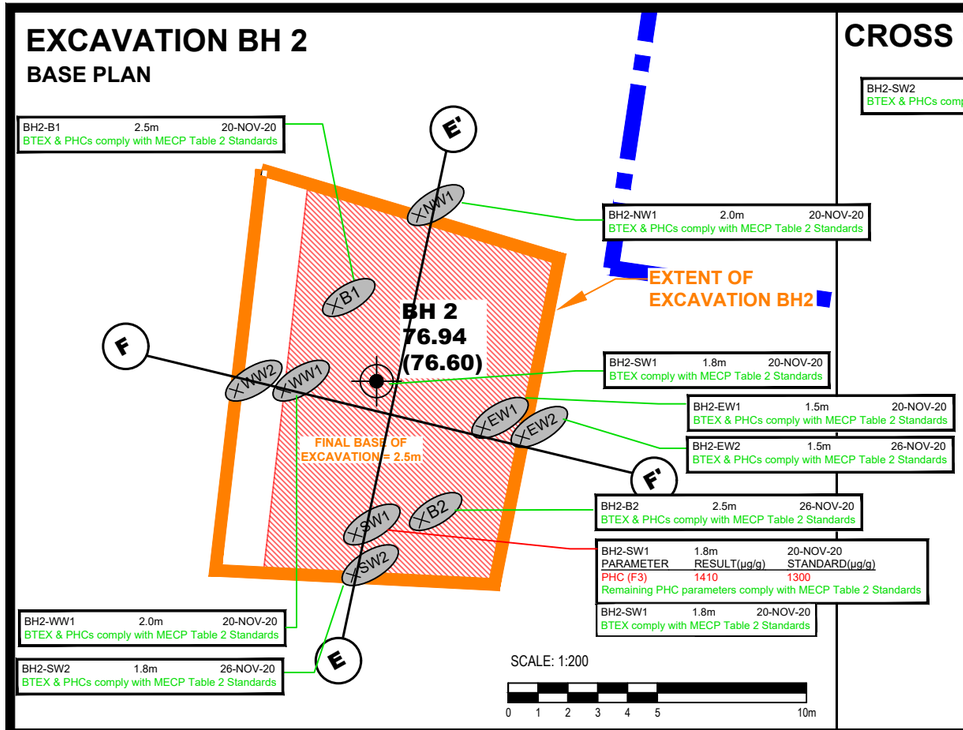
EXCAVATION BH 2

BASE PLAN



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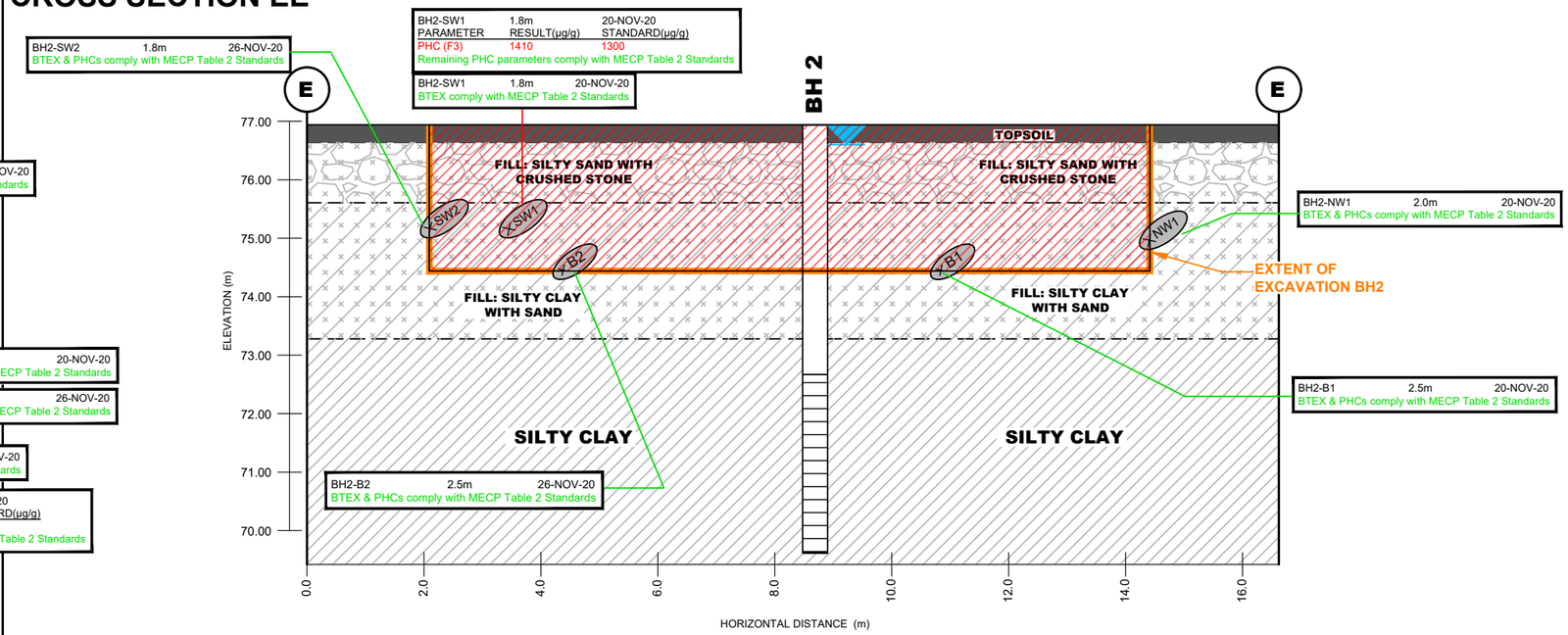

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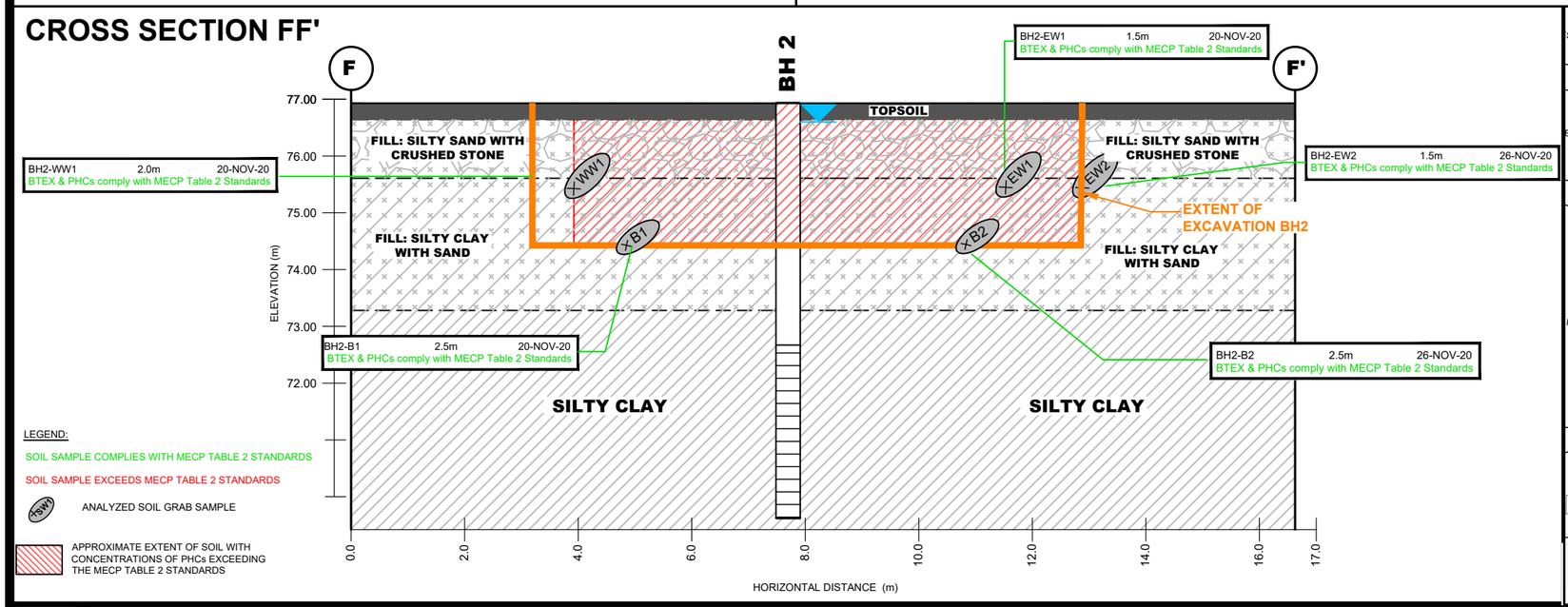

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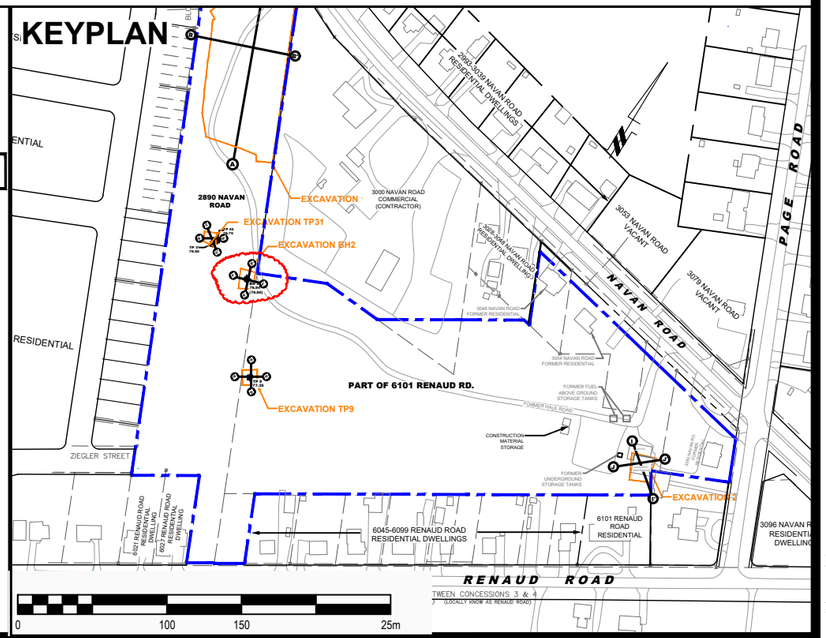

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NO.	REVISIONS	DATE	INITIAL

CAIVAN COMMUNITIES

PHASE II - ENVIRONMENTAL SITE ASSESSMENT
RENAUD ROAD AT NAVAN ROAD

OTTAWA, ONTARIO

Title:

EXCAVATION BH 2 - SOIL(BTEX,PHCs)

Scale: AS SHOWN	Date: 03/2022
Drawn by: YA	Report No.: PE4937-2
Checked by: MB	Dwg. No.: PE4937-5EF
Approved by: MB	Revision No.:

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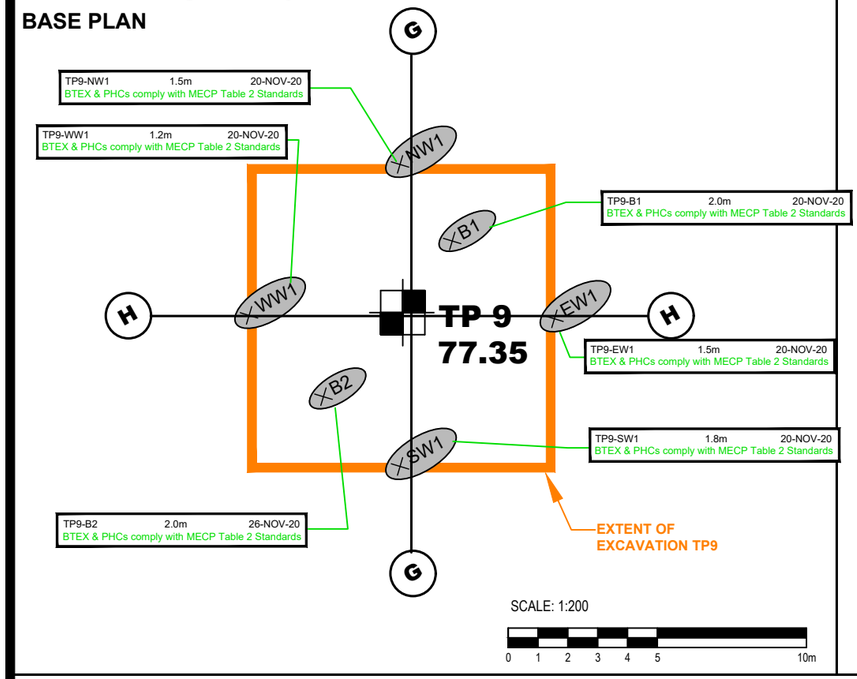
EXCAVATION TP 9

BASE PLAN



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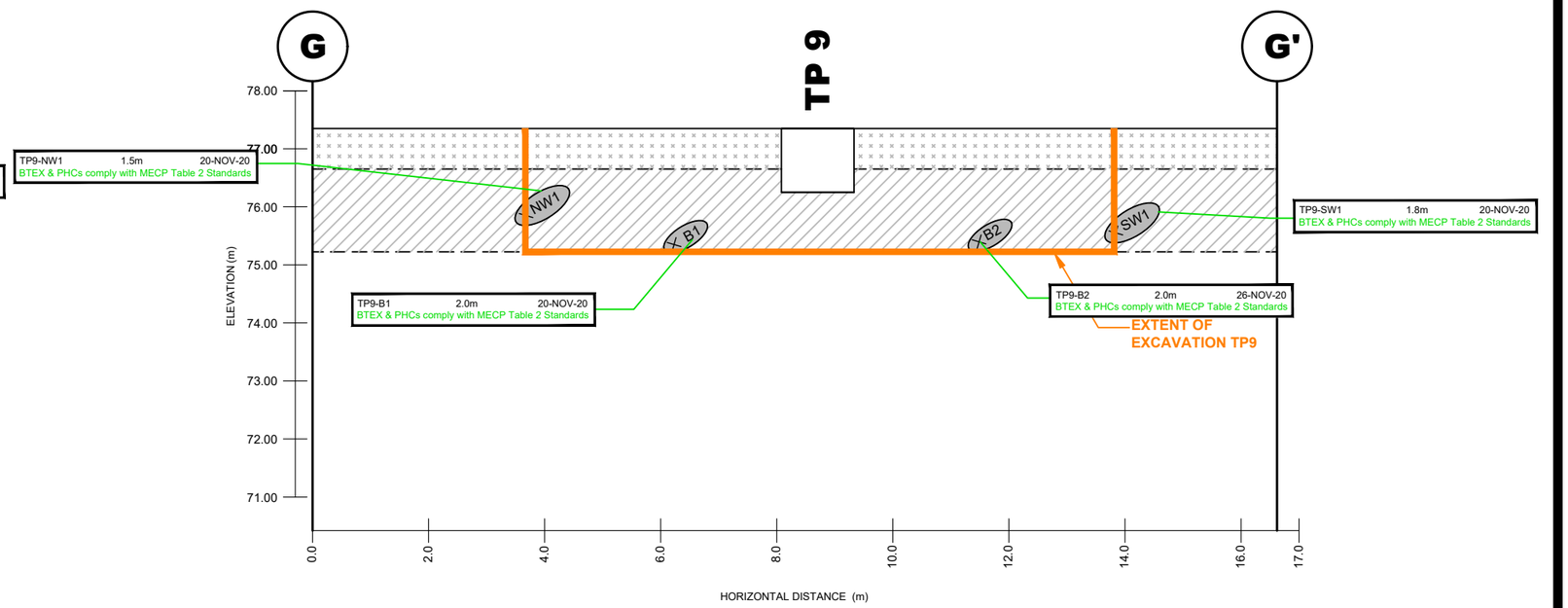

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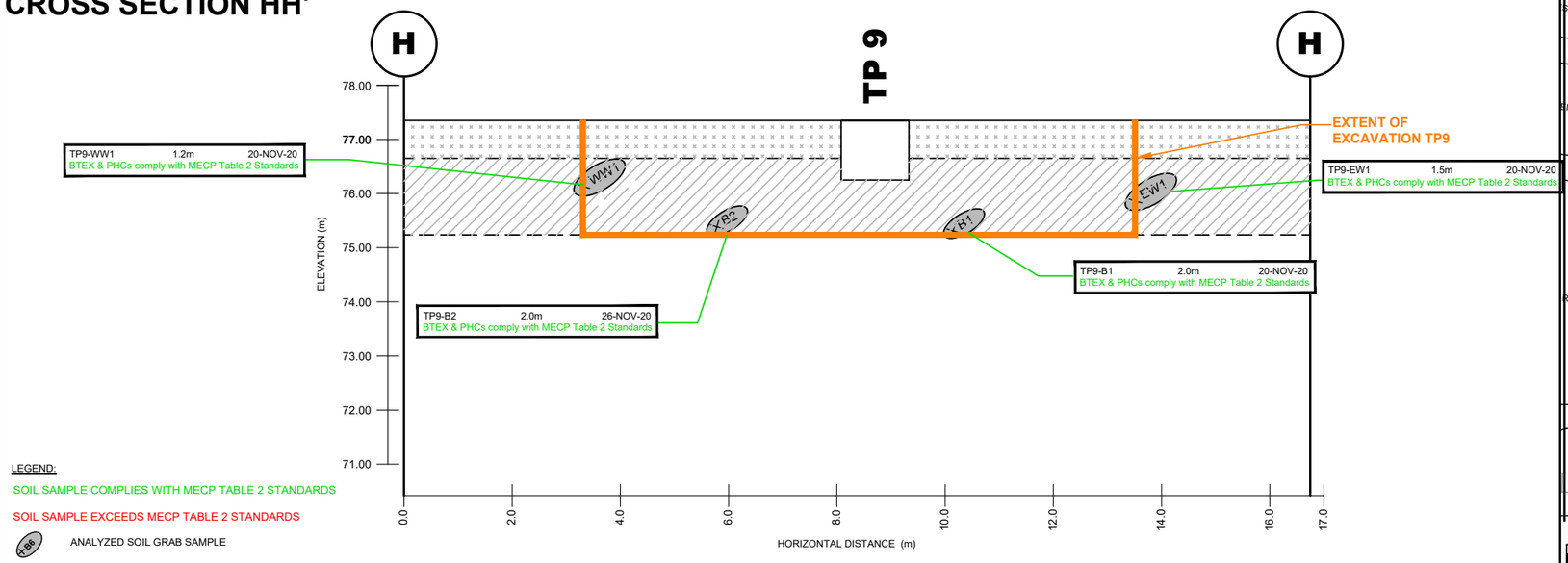


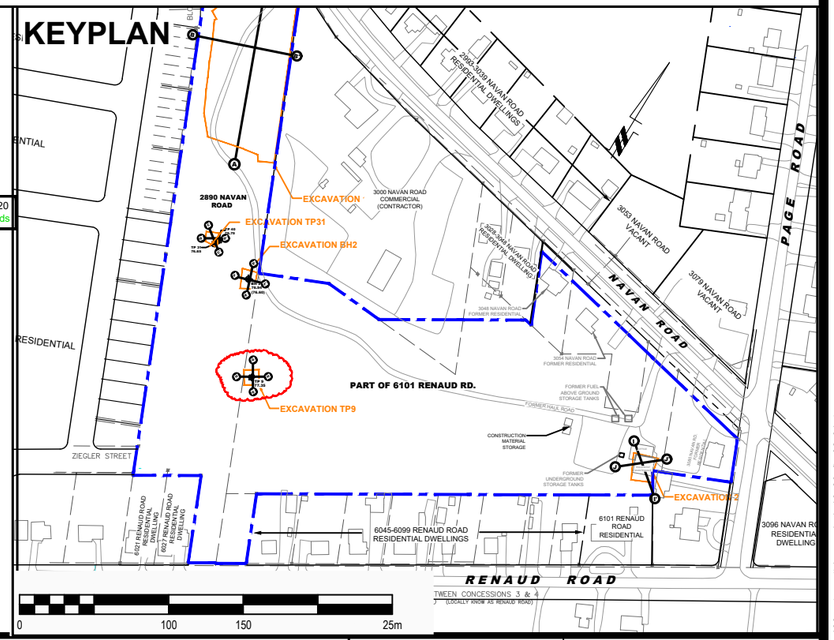
LEGEND:

SOIL SAMPLE COMPLIES WITH MECP TABLE 2 STANDARDS

SOIL SAMPLE EXCEEDS MECP TABLE 2 STANDARDS

X-B6 ANALYZED SOIL GRAB SAMPLE

KEYPLAN



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NO.	REVISIONS	DATE	INITIAL

CAIVAN COMMUNITIES

PHASE II - ENVIRONMENTAL SITE ASSESSMENT
RENAUD ROAD AT NAVAN ROAD

OTTAWA, ONTARIO

Title:

EXCAVATION TP 9 - SOIL(BTEX,PHCs)

Scale: AS SHOWN	Date: 03/2022
Drawn by: YA	Report No.: PE4937-2
Checked by: MB	Dwg. No.: PE4937-5GH
Approved by: MB	Revision No.:

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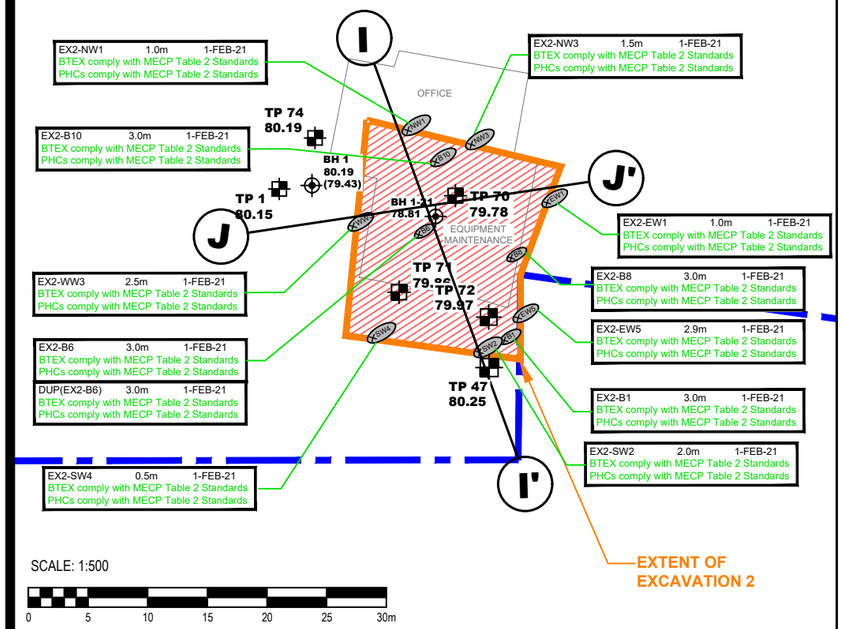
EXCAVATION TP 9

BASE PLAN



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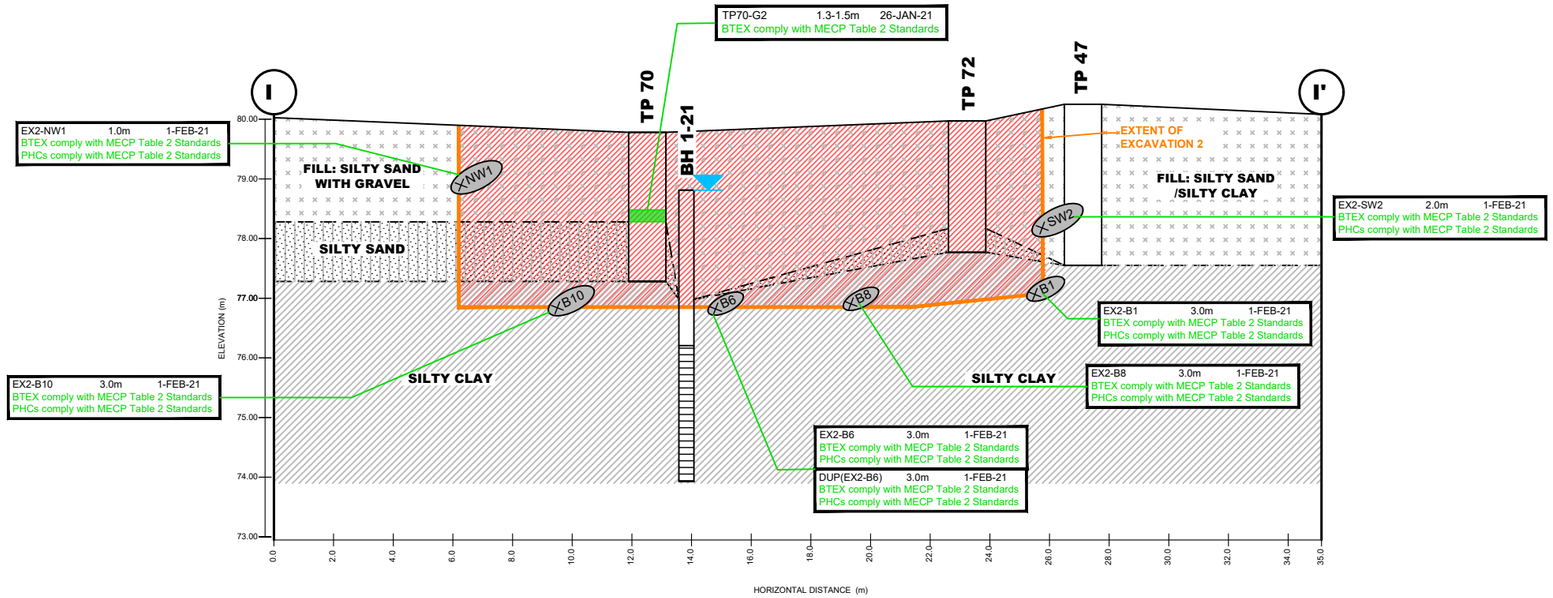

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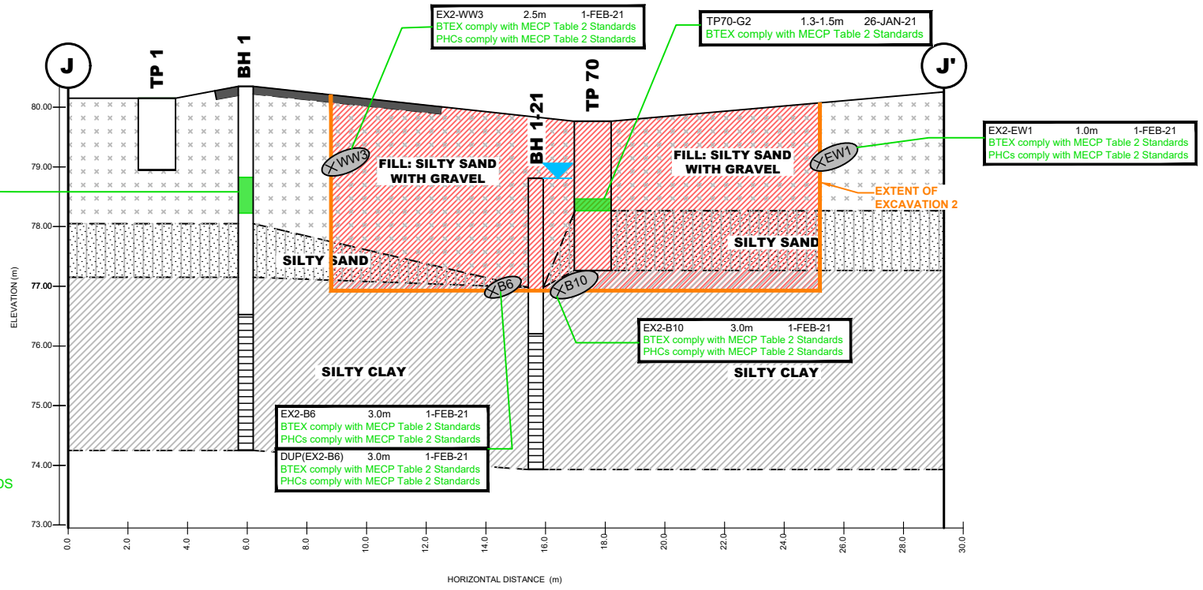


LEGEND:

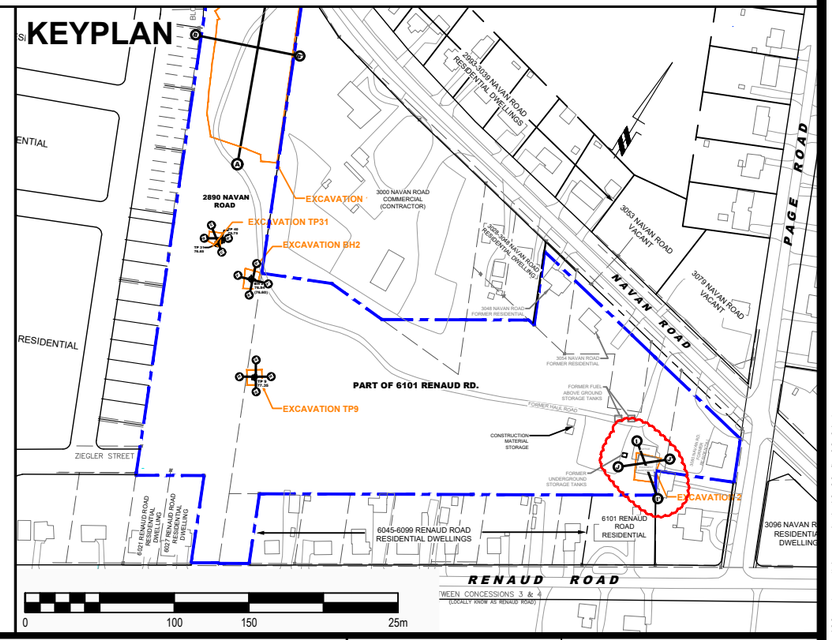
SOIL SAMPLE COMPLIES WITH MECP TABLE 2 STANDARDS

SOIL SAMPLE EXCEEDS MECP TABLE 2 STANDARDS

ANALYZED SOIL GRAB SAMPLE

APPROXIMATE EXTENT OF SOIL WITH CONCENTRATIONS OF PHCs EXCEEDING THE MECP TABLE 2 STANDARDS

KEYPLAN



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NO.	REVISIONS	DATE	INITIAL

CAIVAN COMMUNITIES

PHASE II - ENVIRONMENTAL SITE ASSESSMENT
RENAUD ROAD AT NAVAN ROAD

OTTAWA, ONTARIO

Title:

EXCAVATION 2 - SOIL(BTEX, PHCs)

Scale: AS SHOWN	Date: 03/2022
Drawn by: YA	Report No.: PE4937-2
Checked by: MB	Dwg. No.: PE4937-5IJ
Approved by: MB	Revision No.:

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TP15-G4	2.2-2.4m	31-JUL-20
PARAMETER	RESULT(µg/g)	STANDARD(µg/g)
PHC (F2)	153	150
PHC (F3)	4190	1300
Remaining PHCs(F4) parameter comply with MECP Table 2 Standards		

WW7	5.0	20-JAN-21
PARAMETER	RESULT(ug/g)	STANDARD(ug/g)
PHC (F2)	194	150
PHC (F3)	5060	1300
Remaining PHC parameters comply with MECP Table 2 Standards		
BTEX comply with MECP Table 2 Standards		

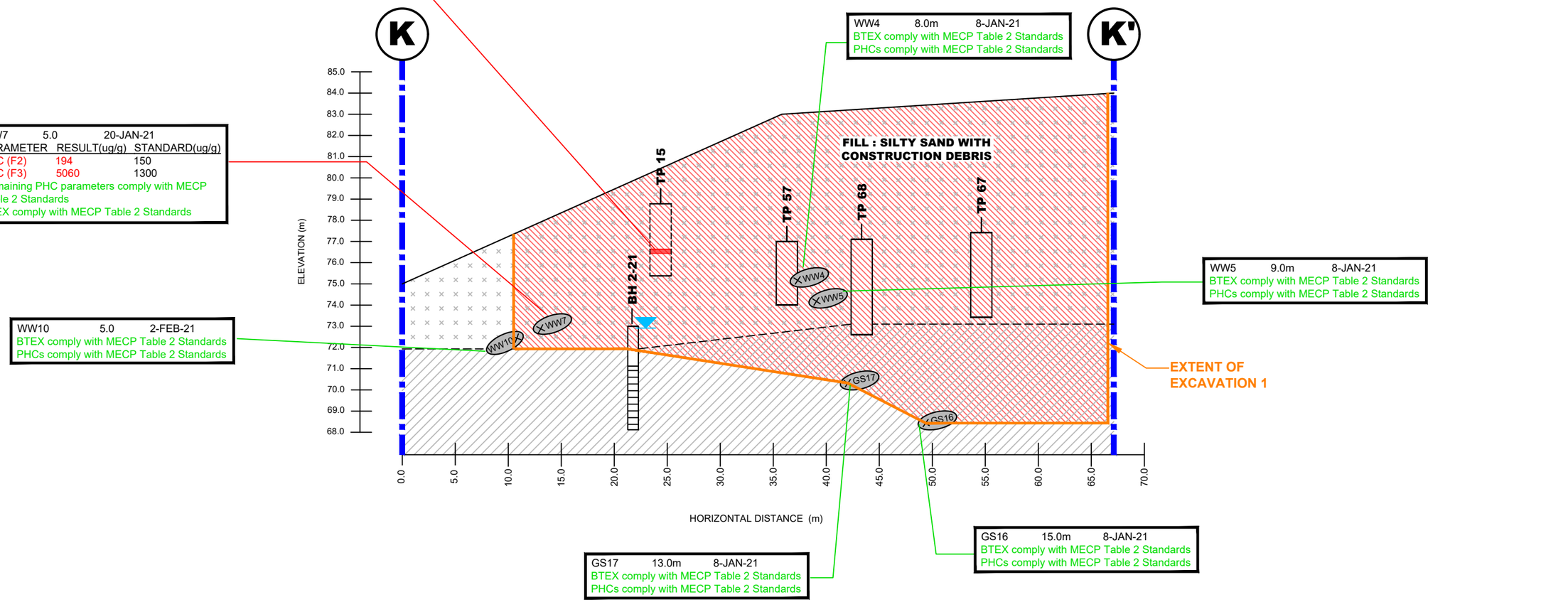
WW10 5.0 2-FEB-21
BTEX comply with MECP Table 2 Standards
PHCs comply with MECP Table 2 Standards

WW4 8.0m 8-JAN-21
BTEX comply with MECP Table 2 Standards
PHCs comply with MECP Table 2 Standards

WW5 9.0m 8-JAN-21
BTEX comply with MECP Table 2 Standards
PHCs comply with MECP Table 2 Standards

GS17 13.0m 8-JAN-21
BTEX comply with MECP Table 2 Standards
PHCs comply with MECP Table 2 Standards

GS16 15.0m 8-JAN-21
BTEX comply with MECP Table 2 Standards
PHCs comply with MECP Table 2 Standards



LEGEND:

SOIL SAMPLE COMPLIES WITH MECP TABLE 2 STANDARDS

SOIL SAMPLE EXCEEDS MECP TABLE 2 STANDARDS

APPROXIMATE EXTENT OF SOIL WITH CONCENTRATIONS OF PHCs EXCEEDING THE MECP TABLE 2 STANDARDS

SAMPLES WHERE COMPLETE PARAMETER GROUP WAS NOT ANALYZED

ANALYZED SOIL GRAB SAMPLE

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NO.	REVISIONS	DATE	INITIAL

CAIVAN COMMUNITIES

PHASE II - ENVIRONMENTAL SITE ASSESSMENT
RENAUD ROAD AT NAVAN ROAD

OTTAWA, ONTARIO

Title:

CROSS SECTION K-K' - SOIL (PHCs)

Scale: AS SHOWN	Date: 03/2022
Drawn by: RCG	Report No.: PE4937-2
Checked by: MB	Dwg. No.: PE4937-5K
Approved by: MB	Revision No.:

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NO.	REVISIONS	DATE	INITIAL
0			

CAIVAN COMMUNITIES

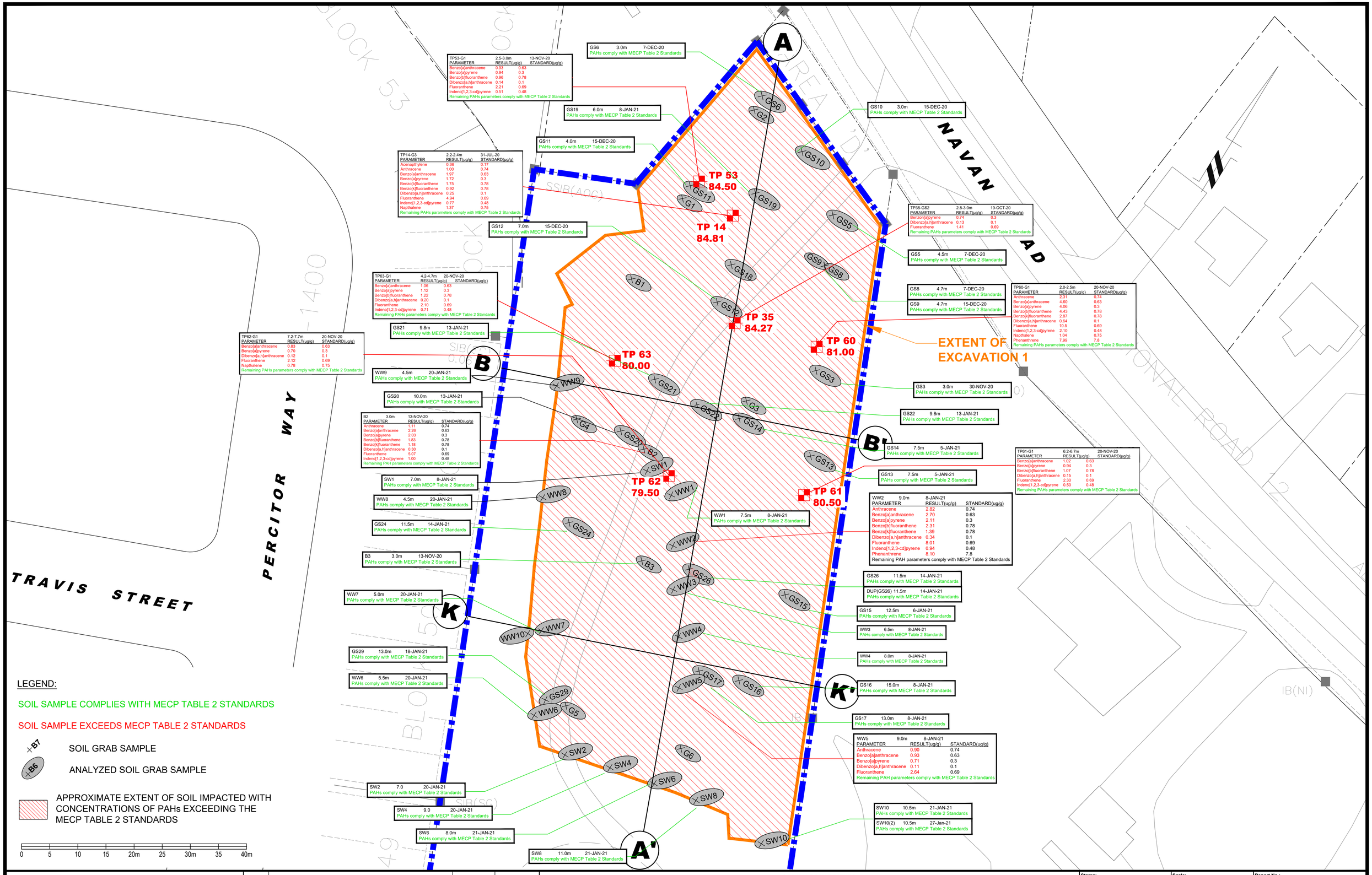
PHASE II - ENVIRONMENTAL SITE ASSESSMENT
RENAUD ROAD AT NAVAN ROAD
OTTAWA, ONTARIO

Title:

ANALYTICAL TESTING PLAN - PAHs

Stamp:

Scale: 1:1000	Report No.: PE4937
Drawn by: RG	Drawing No.: PE4937-6
Checked by: JC	
Approved by: MB	
Date: 03/2021	Revision No.: 0



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NO.	REVISIONS	DATE	INITIAL
0			

CAIVAN COMMUNITIES

PHASE II - ENVIRONMENTAL SITE ASSESSMENT
RENAUD ROAD AT NAVAN ROAD
OTTAWA, ONTARIO

Title:

REMEDIATION PLAN - EXCAVATION 1 - SOIL(PAHs)

Stamp:

Scale:	1:1000
Drawn by:	RG
Checked by:	JC
Approved by:	MB
Date:	
Report No.:	PE4937
Drawing No.:	PE4937-6EX1
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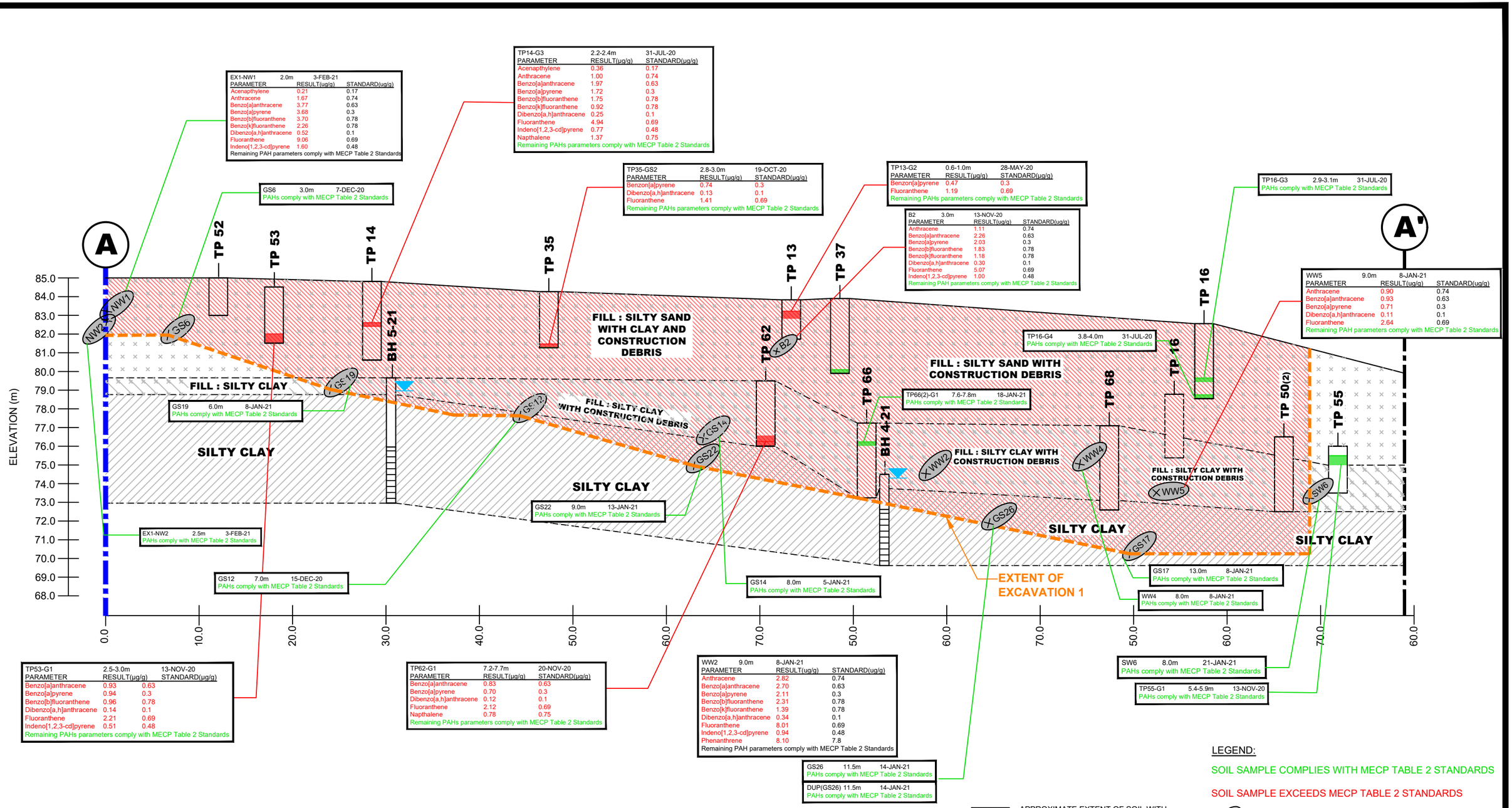

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NO.	REVISIONS	DATE	INITIAL

CAIVAN COMMUNITIES

PHASE II - ENVIRONMENTAL SITE ASSESSMENT
RENAUD ROAD AT NAVAN ROAD

OTTAWA, ONTARIO

Title:

CROSS SECTION A-A' - SOIL (PAHs)

Scale: AS SHOWN	Date: 03/2022
Drawn by: RCG	Report No.: PE4937-2
Checked by: MB	Dwg. No.: PE4937-6A
Approved by: MB	Revision No.:

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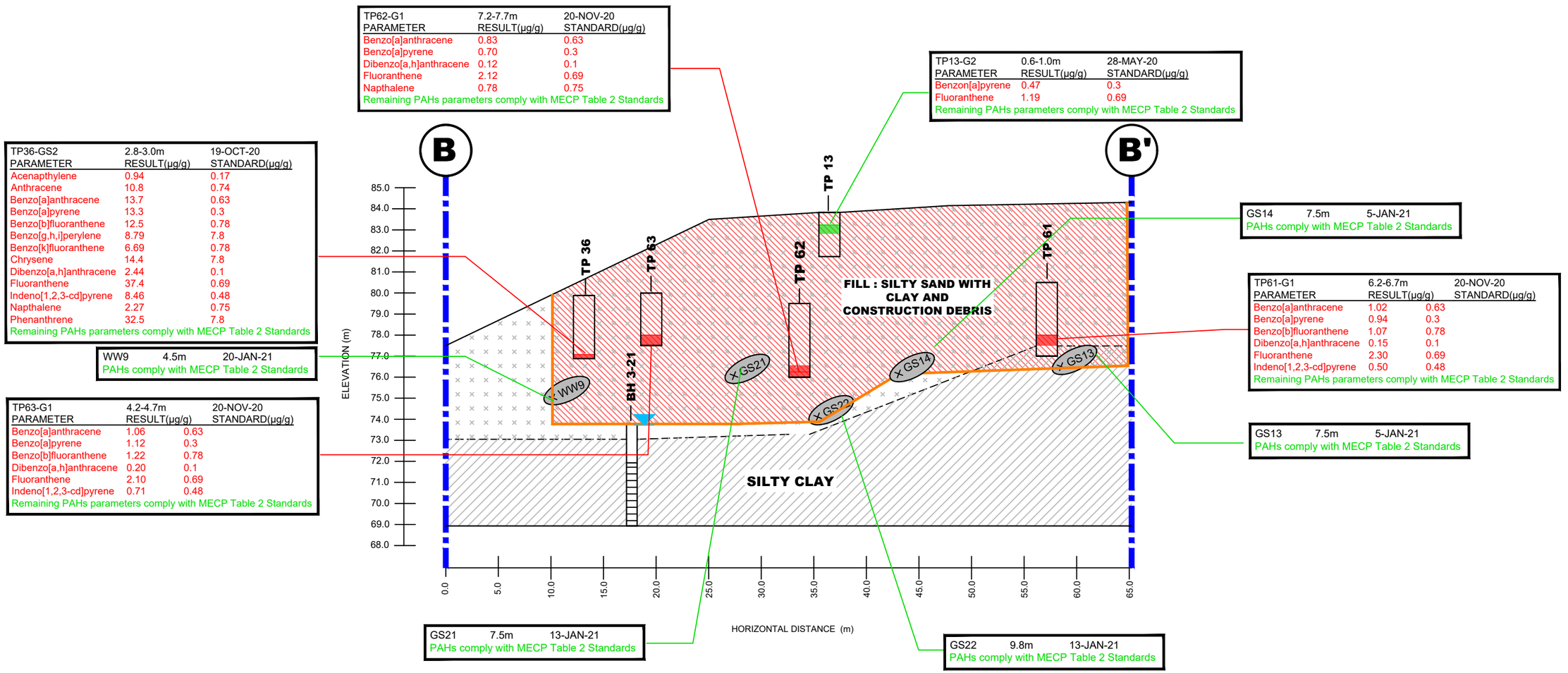

TP62-G1 | 7.2-7.7m | 20-NOV-20

PARAMETER	RESULT(µg/g)	STANDARD(µg/g)
Benzo[a]anthracene	0.83	0.63
Benzo[a]pyrene	0.70	0.3
Dibenzo[a,h]anthracene	0.12	0.1
Fluoranthene	2.12	0.69
Napthalene	0.78	0.75

Remaining PAHs parameters comply with MECP Table 2 Standards

TP13-G2 | 0.6-1.0m | 28-MAY-20

PARAMETER	RESULT(µg/g)	STANDARD(µg/g)
Benzon[a]pyrene	0.47	0.3
Fluoranthene	1.19	0.69

Remaining PAHs parameters comply with MECP Table 2 Standards

TP36-GS2 | 2.8-3.0m | 19-OCT-20

PARAMETER	RESULT(µg/g)	STANDARD(µg/g)
Acenapthylene	0.94	0.17
Anthracene	10.8	0.74
Benzo[a]anthracene	13.7	0.63
Benzo[a]pyrene	13.3	0.3
Benzo[b]fluoranthene	12.5	0.78
Benzo[g,h,i]perylene	8.79	7.8
Benzo[k]fluoranthene	6.69	0.78
Chrysene	14.4	7.8
Dibenzo[a,h]anthracene	2.44	0.1
Fluoranthene	37.4	0.69
Indeno[1,2,3-cd]pyrene	8.46	0.48
Napthalene	2.27	0.75
Phenanthrene	32.5	7.8

Remaining PAHs parameters comply with MECP Table 2 Standards

GS14 7.5m 5-JAN-21
PAHs comply with MECP Table 2 Standards

TP61-G1 | 6.2-6.7m | 20-NOV-20

PARAMETER	RESULT(µg/g)	STANDARD(µg/g)
Benzo[a]anthracene	1.02	0.63
Benzo[a]pyrene	0.94	0.3
Benzo[b]fluoranthene	1.07	0.78
Dibenzo[a,h]anthracene	0.15	0.1
Fluoranthene	2.30	0.69
Indeno[1,2,3-cd]pyrene	0.50	0.48

Remaining PAHs parameters comply with MECP Table 2 Standards

WW9 4.5m 20-JAN-21
PAHs comply with MECP Table 2 Standards

TP63-G1 | 4.2-4.7m | 20-NOV-20

PARAMETER	RESULT(µg/g)	STANDARD(µg/g)
Benzo[a]anthracene	1.06	0.63
Benzo[a]pyrene	1.12	0.3
Benzo[b]fluoranthene	1.22	0.78
Dibenzo[a,h]anthracene	0.20	0.1
Fluoranthene	2.10	0.69
Indeno[1,2,3-cd]pyrene	0.71	0.48

Remaining PAHs parameters comply with MECP Table 2 Standards

GS13 7.5m 5-JAN-21
PAHs comply with MECP Table 2 Standards

GS21 7.5m 13-JAN-21
PAHs comply with MECP Table 2 Standards

GS22 9.8m 13-JAN-21
PAHs comply with MECP Table 2 Standards

LEGEND:

SOIL SAMPLE COMPLIES WITH MECP TABLE 2 STANDARDS

SOIL SAMPLE EXCEEDS MECP TABLE 2 STANDARDS

APPROXIMATE EXTENT OF SOIL WITH CONCENTRATIONS OF PAHs EXCEEDING THE MECP TABLE 2 STANDARDS

ANALYZED SOIL GRAB SAMPLE

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NO.	REVISIONS	DATE	INITIAL

CAIVAN COMMUNITIES

PHASE II - ENVIRONMENTAL SITE ASSESSMENT
RENAUD ROAD AT NAVAN ROAD

OTTAWA, ONTARIO

Title:

CROSS SECTION B-B' - SOIL (PAHs)

Scale: AS SHOWN	Date: 03/2022
Drawn by: RCG	Report No.: PE4937-2
Checked by: MB	Dwg. No.: PE4937-6B
Approved by: MB	Revision No.:

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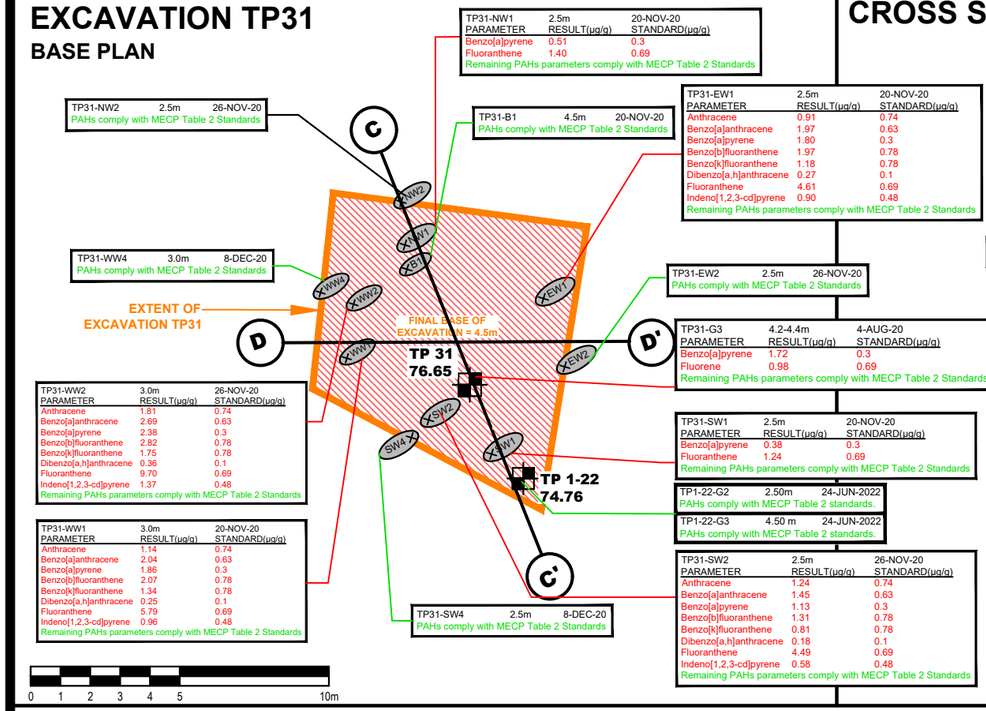
EXCAVATION TP31

BASE PLAN



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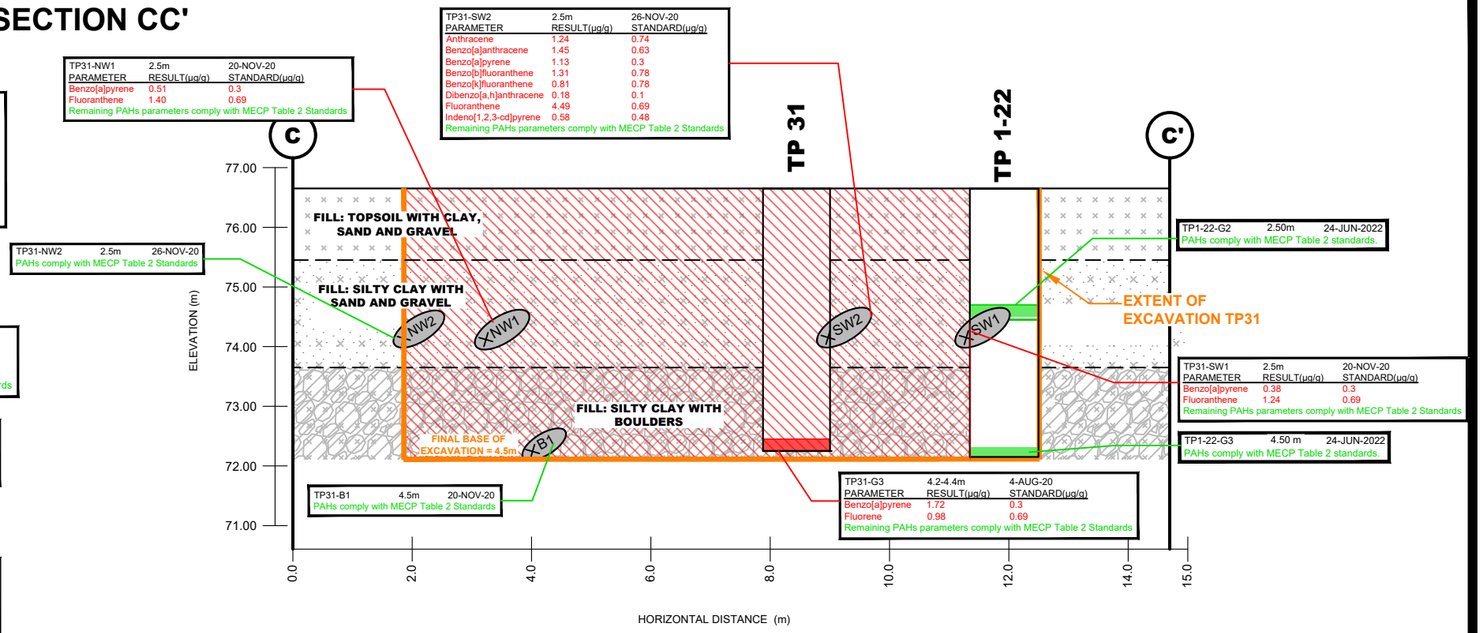

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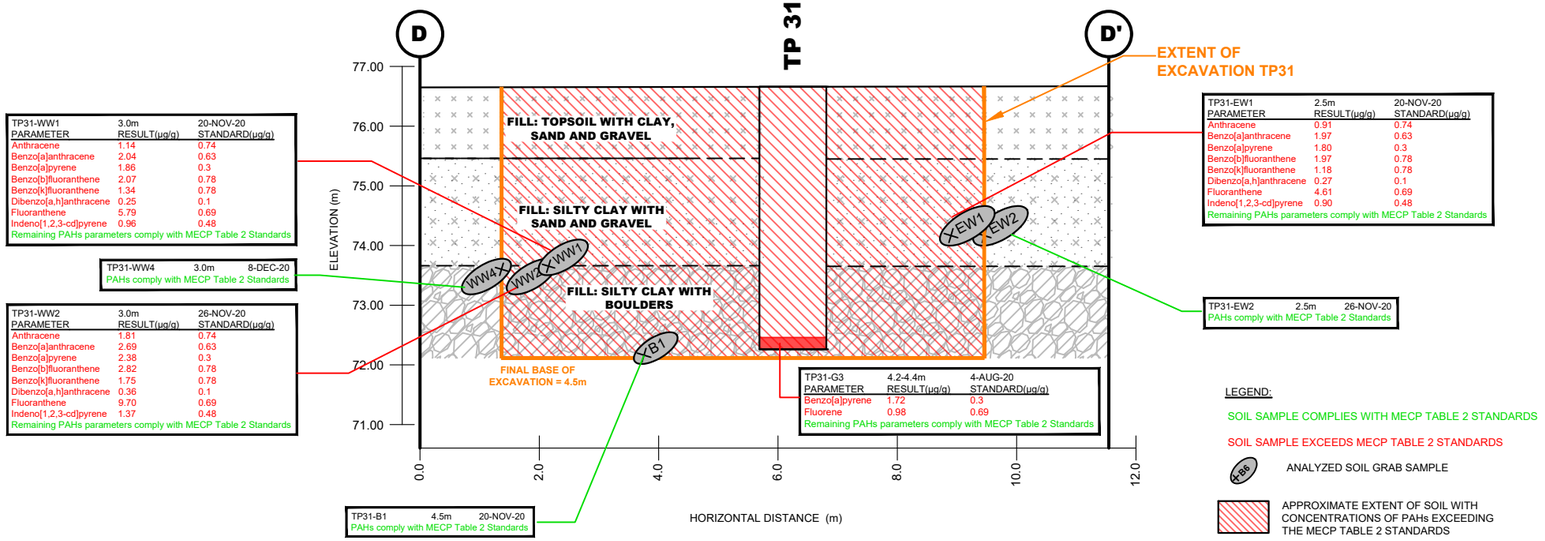


LEGEND:

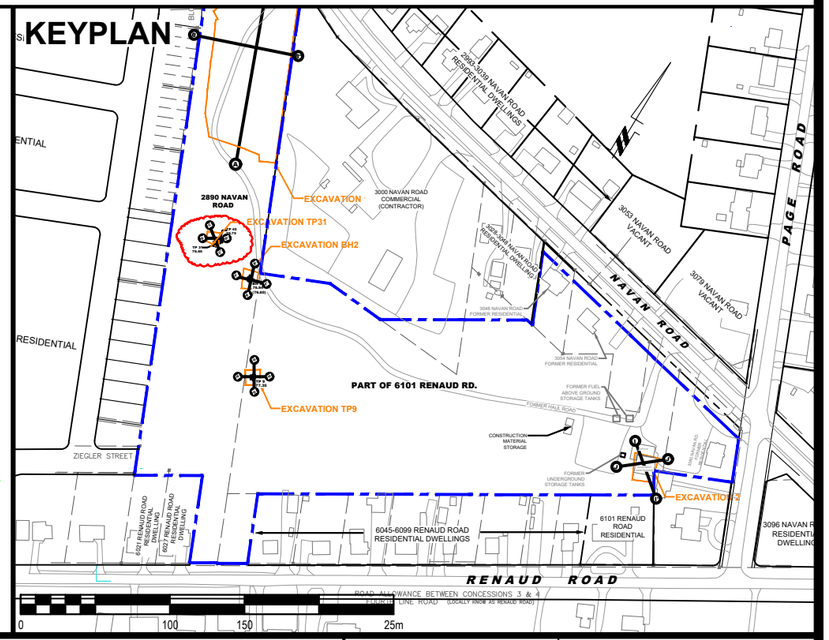
SOIL SAMPLE COMPLIES WITH MECP TABLE 2 STANDARDS

SOIL SAMPLE EXCEEDS MECP TABLE 2 STANDARDS

ANALYZED SOIL GRAB SAMPLE

APPROXIMATE EXTENT OF SOIL WITH CONCENTRATIONS OF PAHs EXCEEDING THE MECP TABLE 2 STANDARDS

KEYPLAN



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NO.	REVISIONS	DATE	INITIAL

CAIVAN COMMUNITIES

PHASE II - ENVIRONMENTAL SITE ASSESSMENT
RENAUD ROAD AT NAVAN ROAD

OTTAWA, ONTARIO

Title:

EXCAVATION TP 31 - SOIL(PAHs)

Scale: AS SHOWN	Date: 03/2022
Drawn by: YA	Report No.: PE4937-2
Checked by: MB	Dwg. No.: PE4937-6CD
Approved by: MB	Revision No.:

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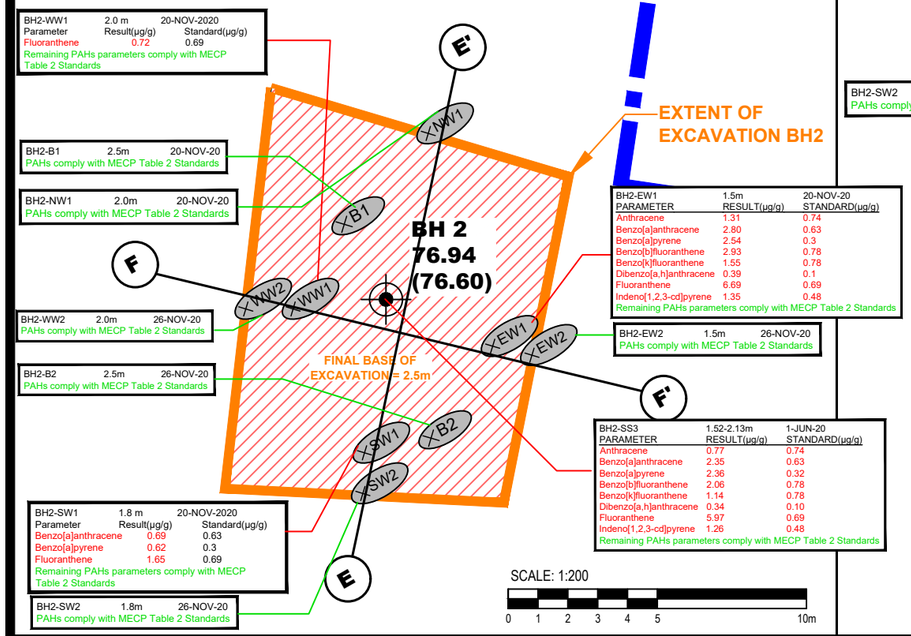
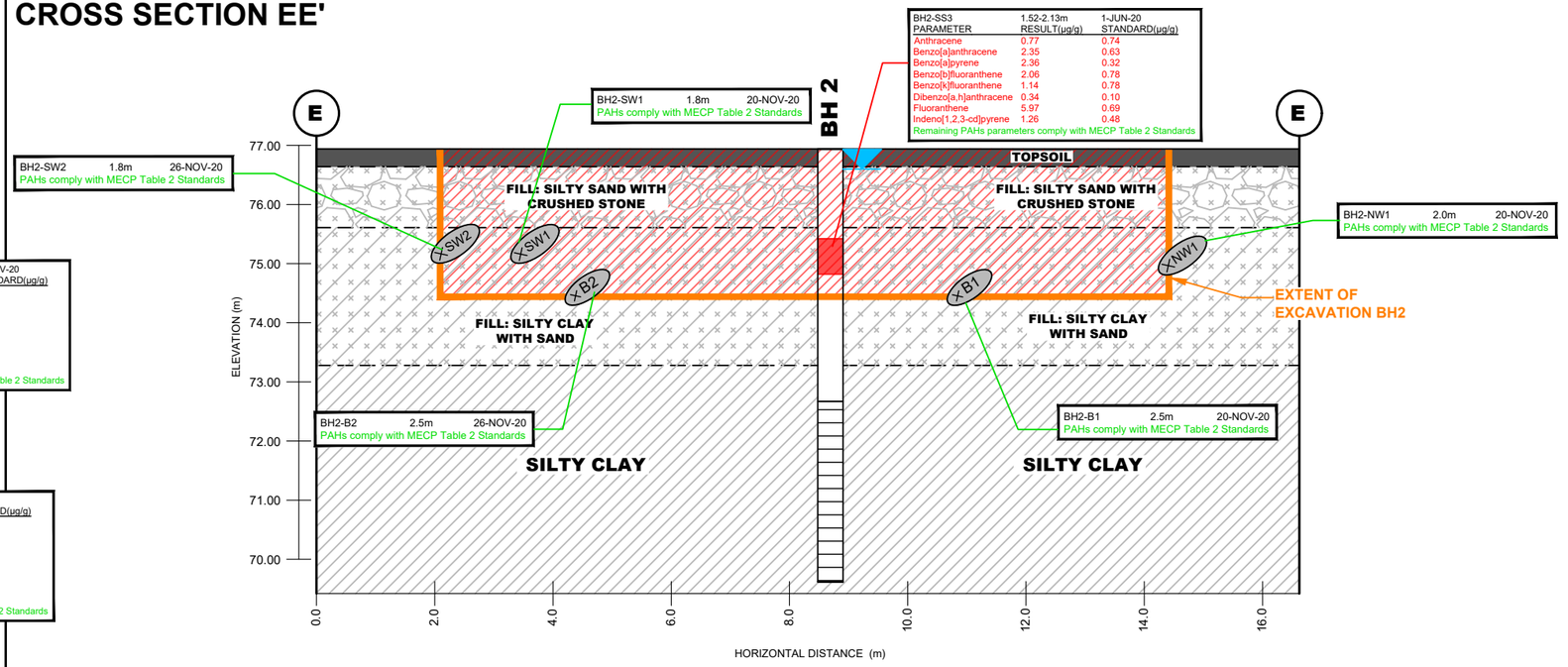
EXCAVATION BH 2

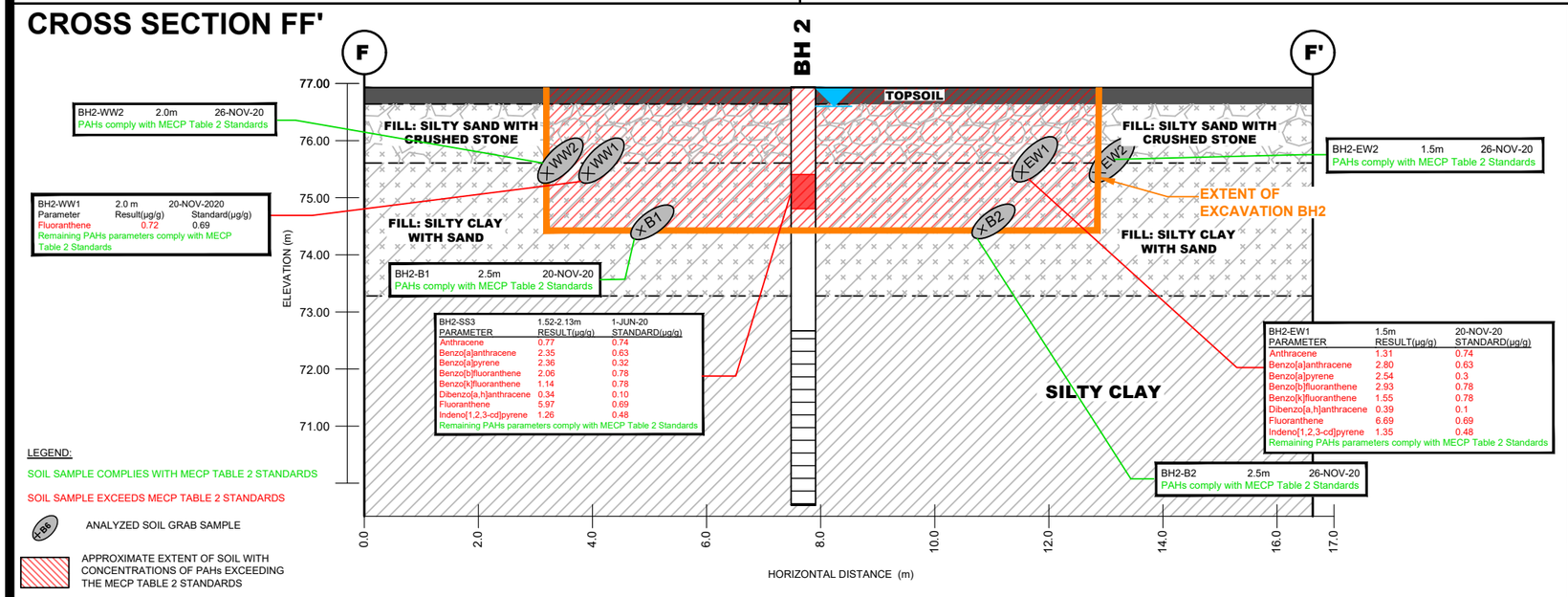
BASE PLAN



CROSS SECTION EE'



CROSS SECTION FF'



LEGEND:

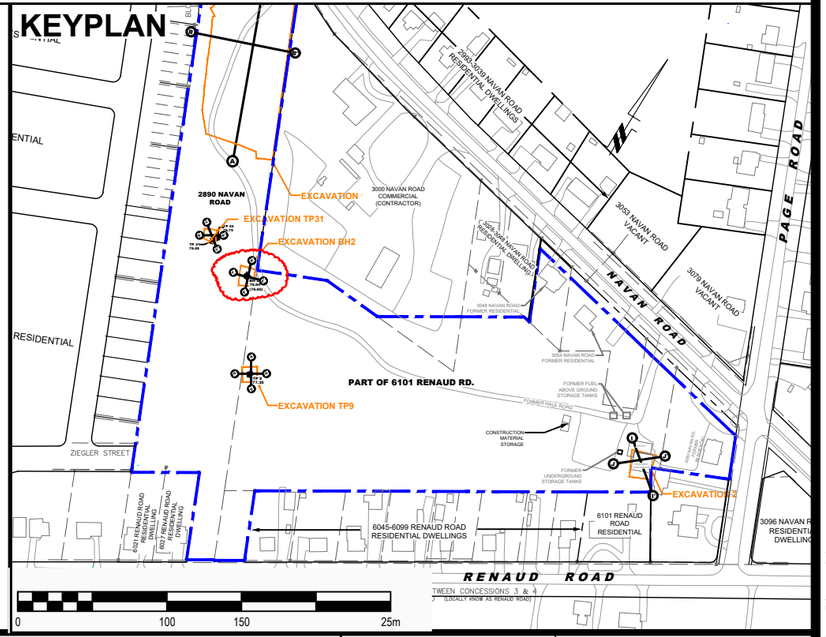
SOIL SAMPLE COMPLIES WITH MECP TABLE 2 STANDARDS

SOIL SAMPLE EXCEEDS MECP TABLE 2 STANDARDS

ANALYZED SOIL GRAB SAMPLE

APPROXIMATE EXTENT OF SOIL WITH CONCENTRATIONS OF PAHs EXCEEDING THE MECP TABLE 2 STANDARDS

KEYPLAN



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NO.	REVISIONS	DATE	INITIAL

CAIVAN COMMUNITIES

PHASE II - ENVIRONMENTAL SITE ASSESSMENT
RENAUD ROAD AT NAVAN ROAD

OTTAWA, ONTARIO

Title:

EXCAVATION BH 2 - SOIL(PAHs)

Scale: AS SHOWN	Date: 03/2022
Drawn by: YA	Report No.: PE4937-2
Checked by: MB	Dwg. No.: PE4937-6EF
Approved by: MB	Revision No.:

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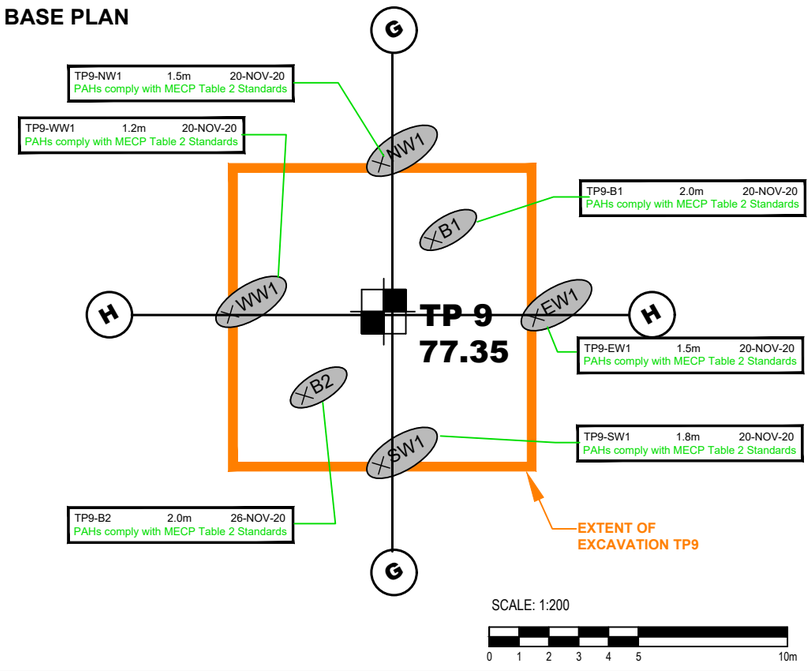
EXCAVATION TP 9

BASE PLAN



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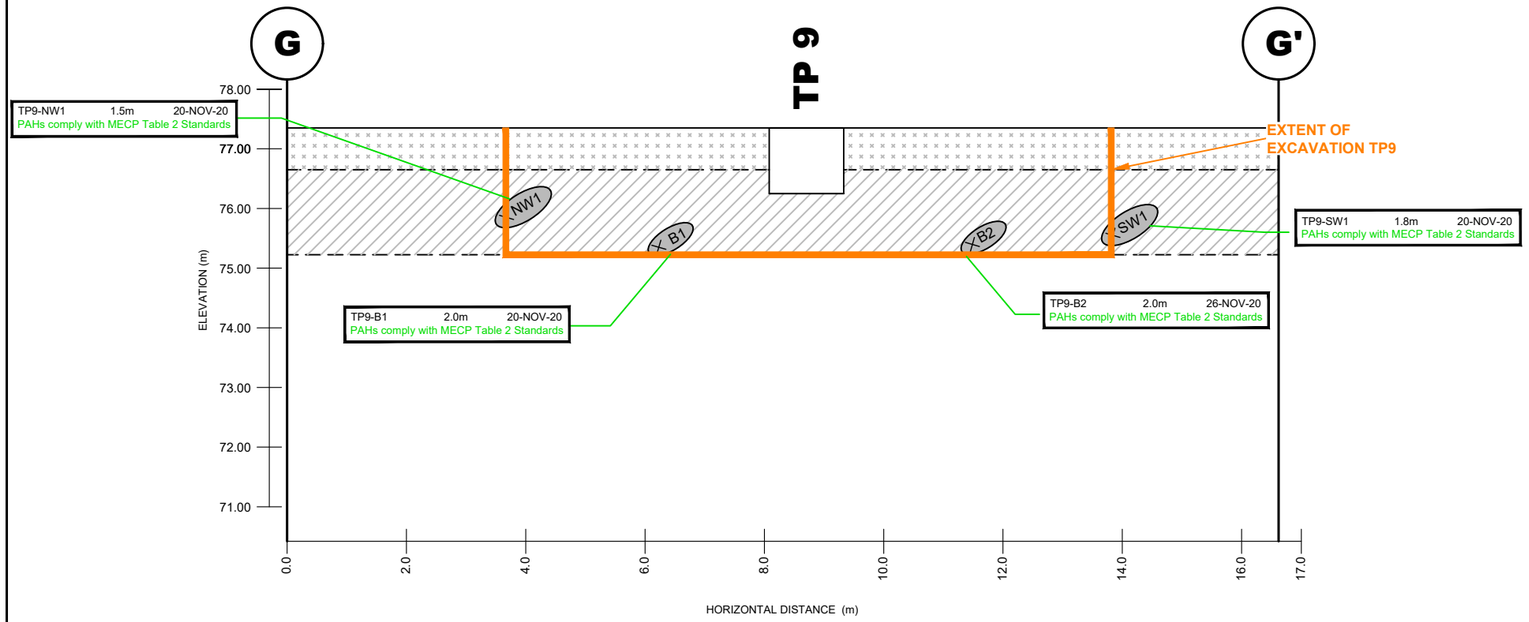

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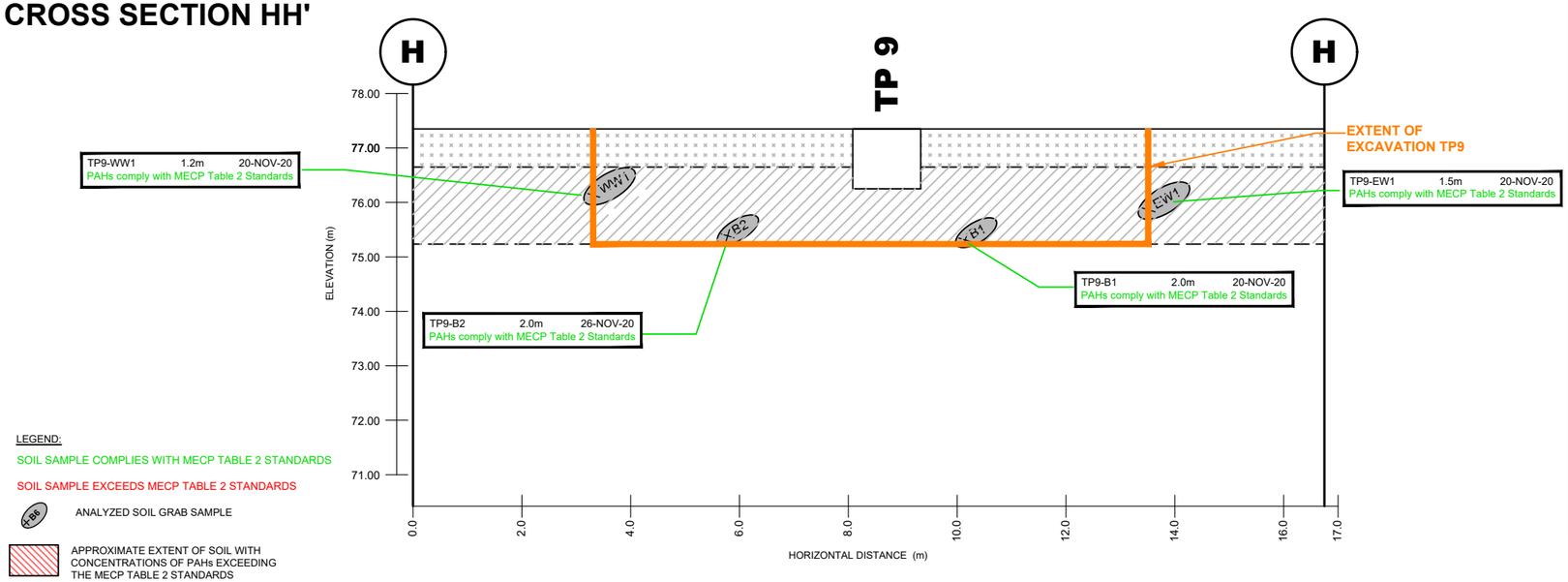


LEGEND:

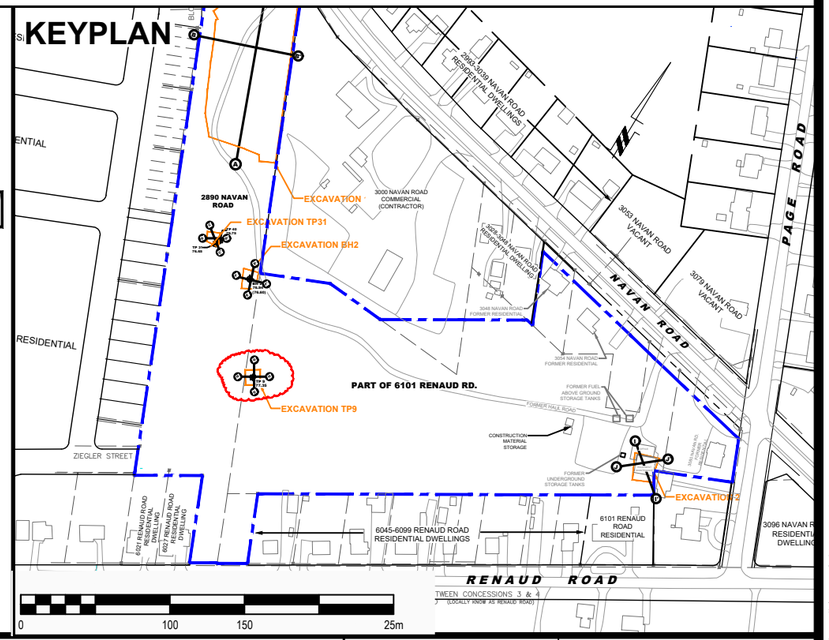
SOIL SAMPLE COMPLIES WITH MECP TABLE 2 STANDARDS

SOIL SAMPLE EXCEEDS MECP TABLE 2 STANDARDS

4+88 ANALYZED SOIL GRAB SAMPLE

APPROXIMATE EXTENT OF SOIL WITH CONCENTRATIONS OF PAHs EXCEEDING THE MECP TABLE 2 STANDARDS

KEYPLAN



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CAIVAN COMMUNITIES

PHASE II - ENVIRONMENTAL SITE ASSESSMENT
RENAUD ROAD AT NAVAN ROAD

OTTAWA, ONTARIO

Title:

EXCAVATION TP 9 - SOIL(PAHs)

Scale: AS SHOWN	Date: 03/2022
Drawn by: YA	Report No.: PE4937-2
Checked by: MB	Dwg. No.: PE4937-6GH
Approved by: MB	Revision No.:

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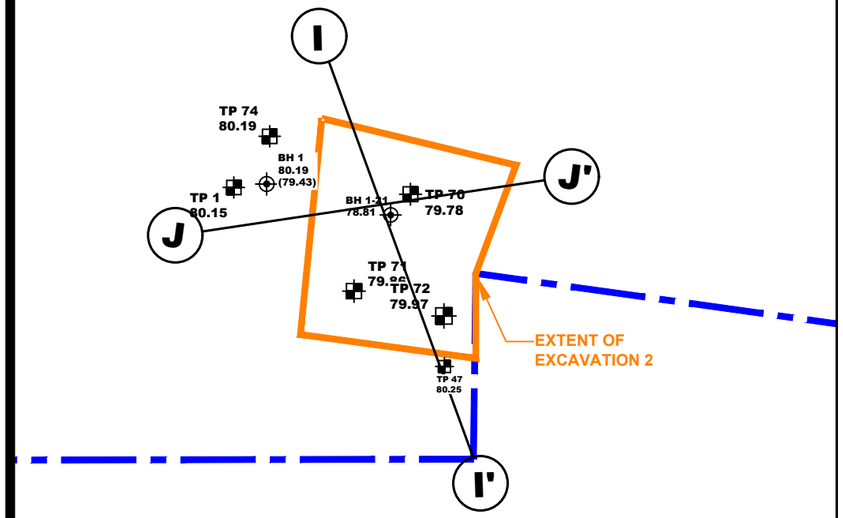
EXCAVATION TP 9

BASE PLAN



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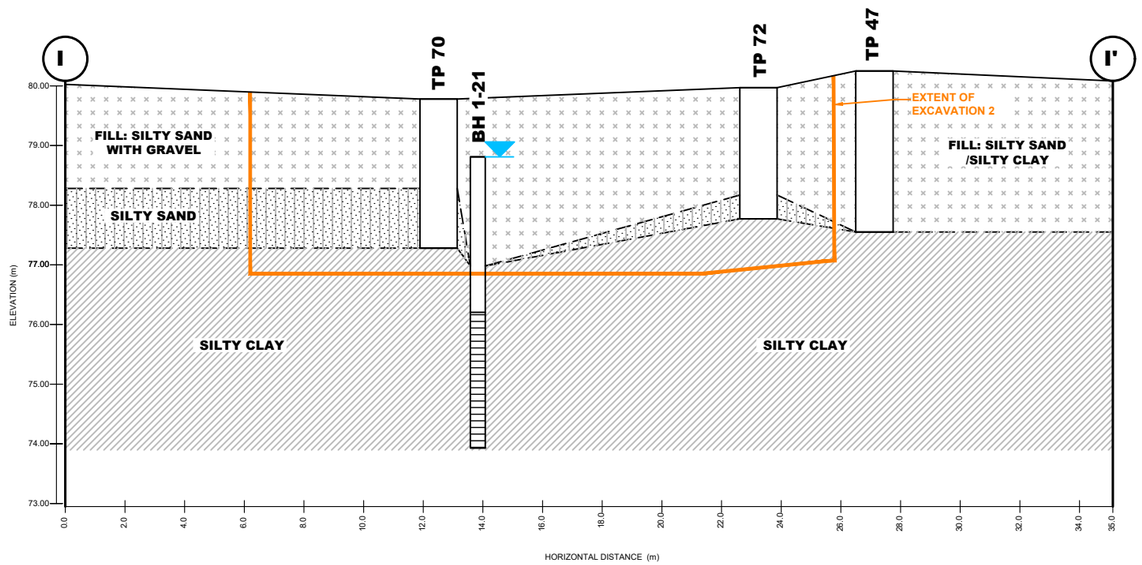
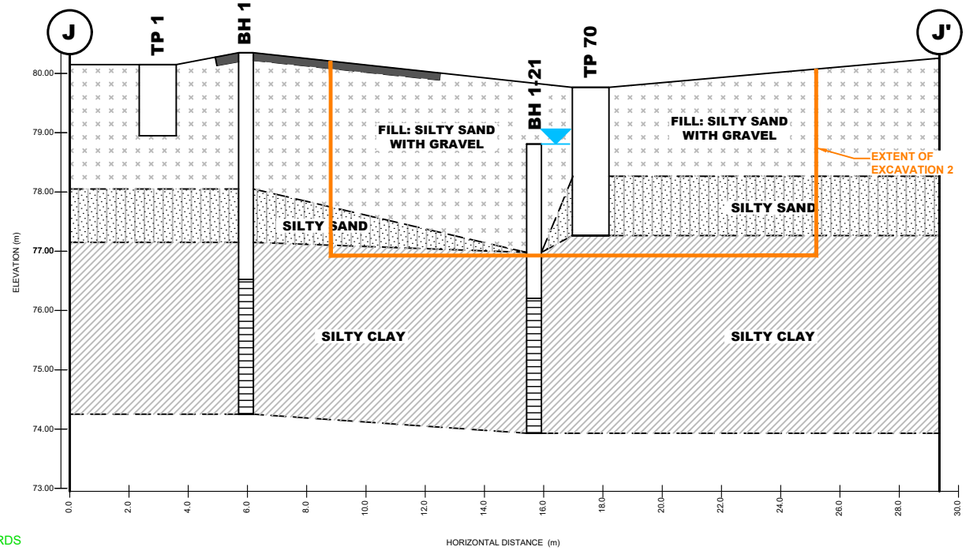


CROSS SECTION JJ'

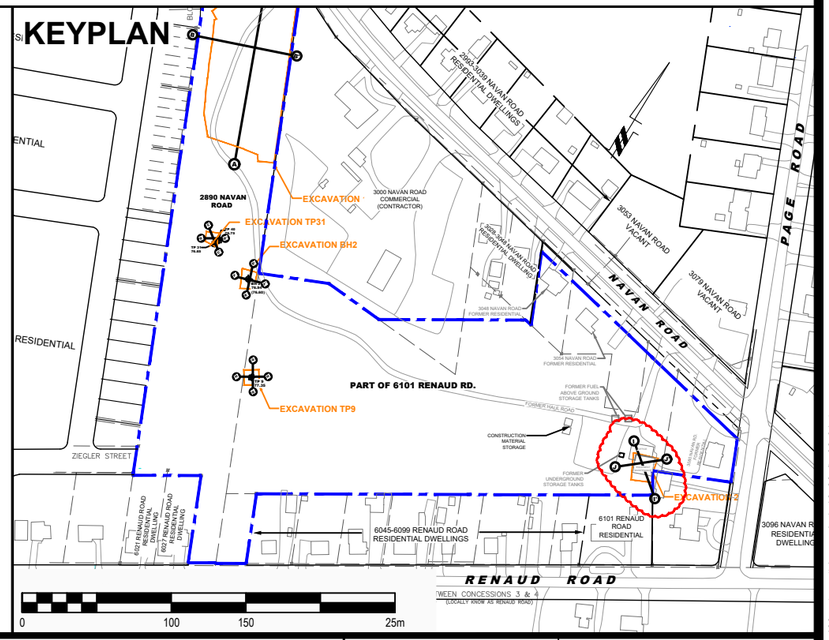


LEGEND:

SOIL SAMPLE COMPLIES WITH MECP TABLE 2 STANDARDS

SOIL SAMPLE EXCEEDS MECP TABLE 2 STANDARDS

KEYPLAN



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CAIVAN COMMUNITIES

PHASE II - ENVIRONMENTAL SITE ASSESSMENT
RENAUD ROAD AT NAVAN ROAD

OTTAWA, ONTARIO

Title:

EXCAVATION 2 - SOIL(PAHs)

Scale: AS SHOWN	Date: 03/2022
Drawn by: YA	Report No.: PE4937-2
Checked by: MB	Dwg. No.: PE4937-6IJ
Approved by: MB	Revision No.:

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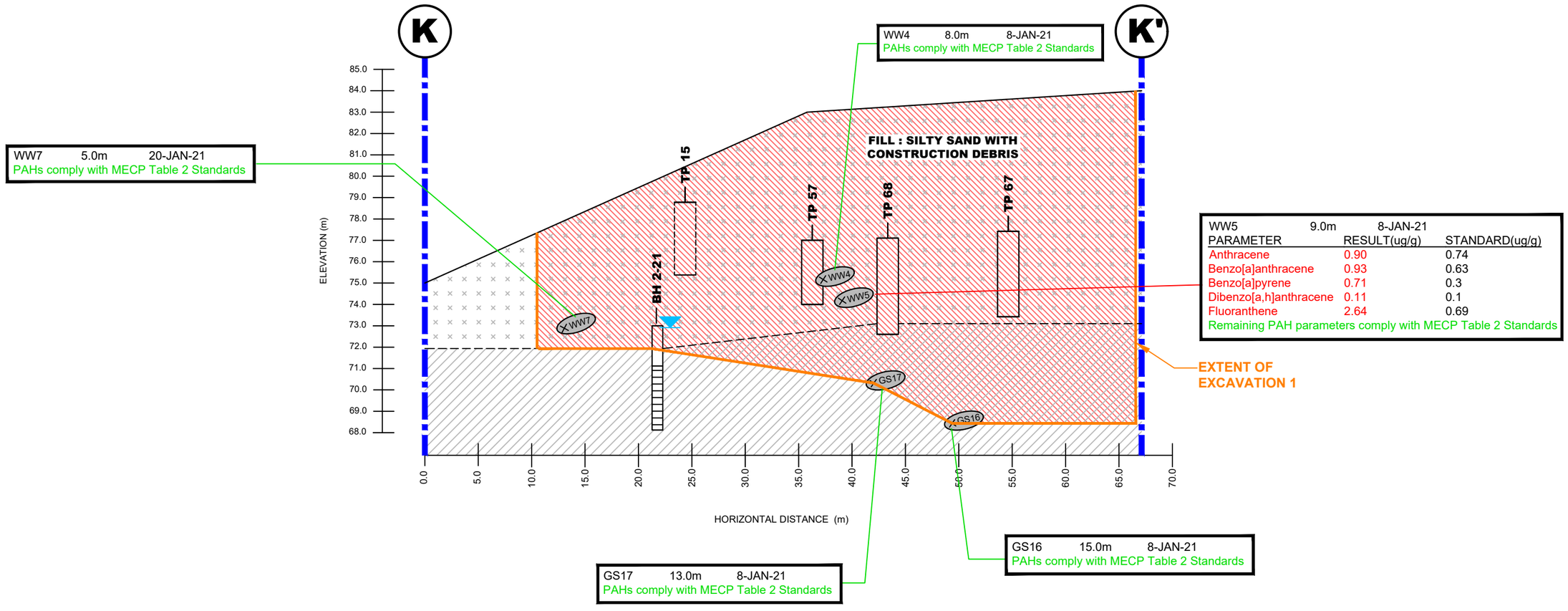

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CAIVAN COMMUNITIES

PHASE II - ENVIRONMENTAL SITE ASSESSMENT
RENAUD ROAD AT NAVAN ROAD

OTTAWA, ONTARIO

Title:

CROSS SECTION K-K' - SOIL (PAHs)

Scale: AS SHOWN	Date: 03/2022
Drawn by: RCG	Report No.: PE4937-2
Checked by: MB	Dwg. No.: PE4937-6K
Approved by: MB	Revision No.:

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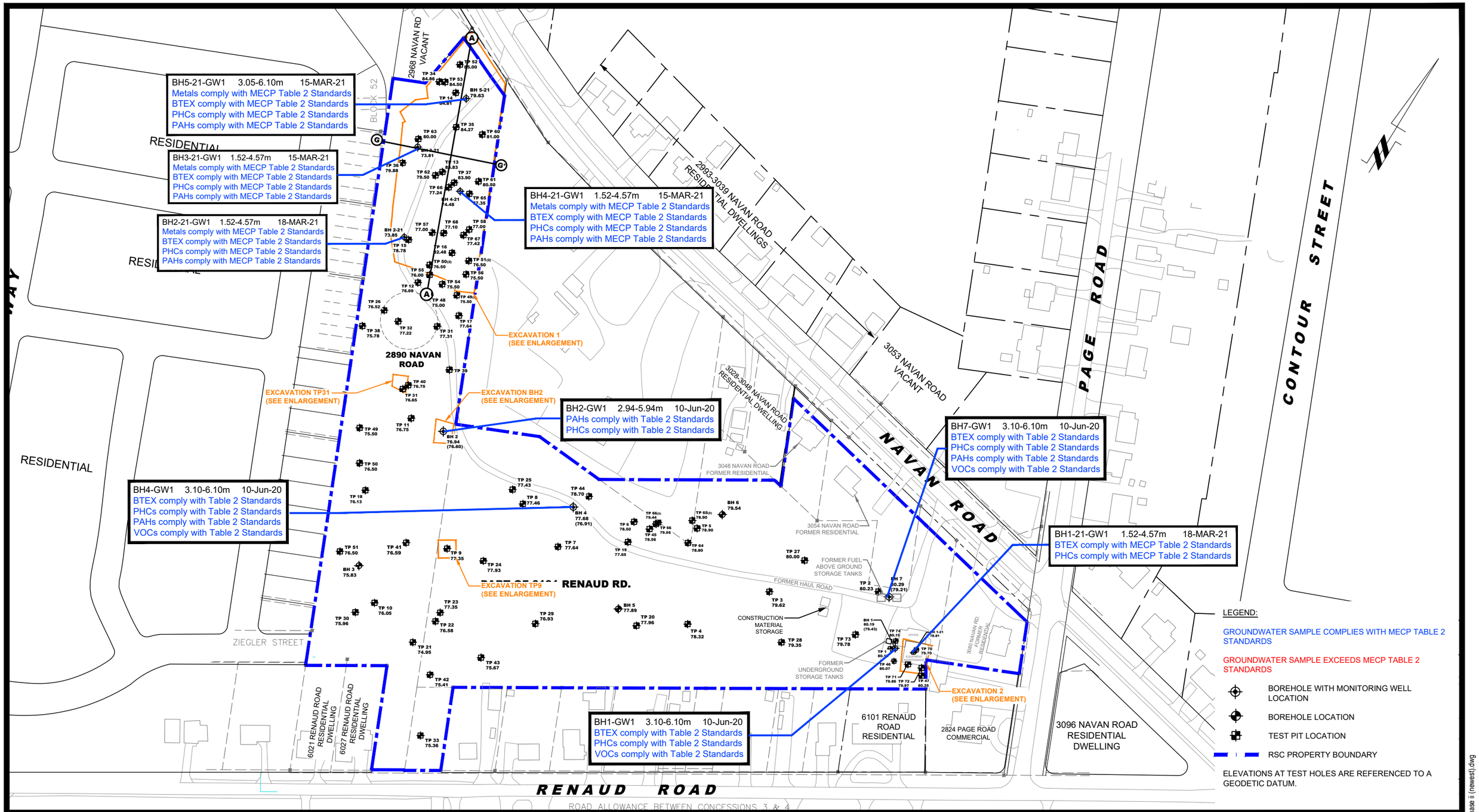

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CAIVAN COMMUNITIES

PHASE II - ENVIRONMENTAL SITE ASSESSMENT
RENAUD ROAD AT NAVAN ROAD

OTTAWA, ONTARIO

Title:

ANALYTICAL TESTING PLAN - GROUNDWATER

Scale: 1:2000	Date: 03/2022
Drawn by: YA	Report No.: PE4937-2
Checked by: MB	Dwg. No.: PE4937-7
Approved by: MB	Revision No.:

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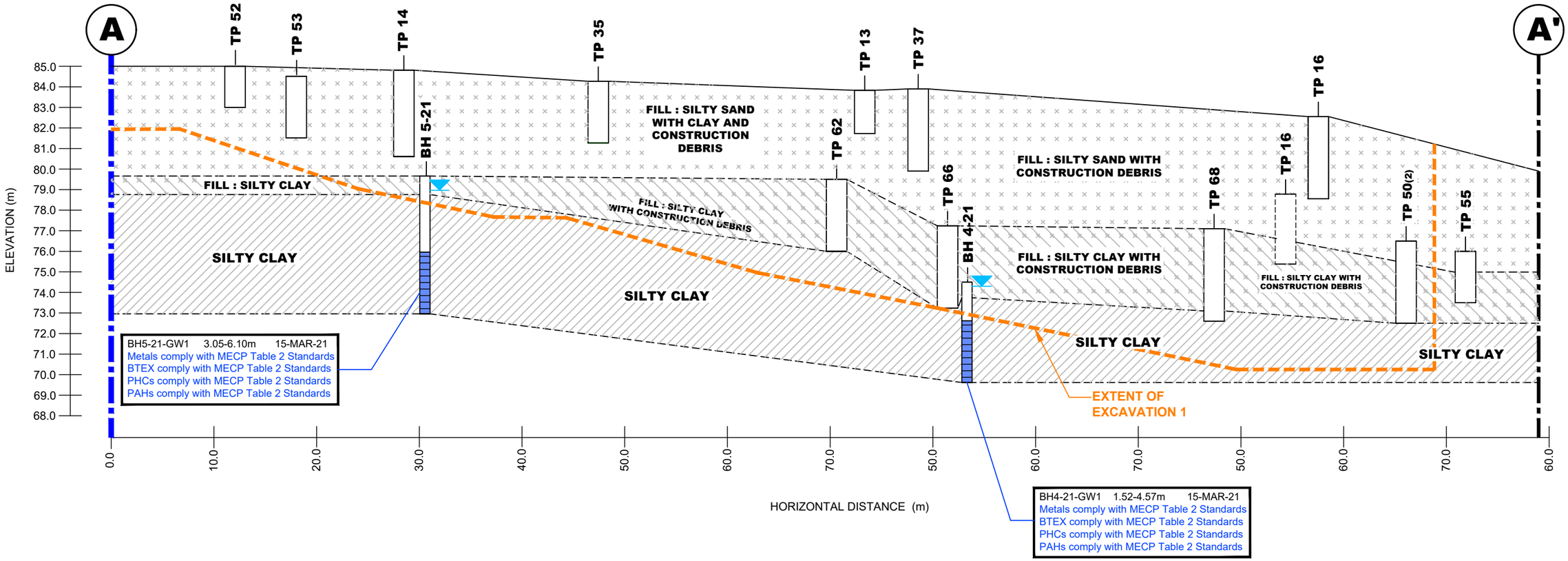

LEGEND:

GROUNDWATER SAMPLE COMPLIES WITH MECP TABLE 2 STANDARDS

GROUNDWATER SAMPLE EXCEEDS MECP TABLE 2 STANDARDS

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CAIVAN COMMUNITIES

PHASE II - ENVIRONMENTAL SITE ASSESSMENT
RENAUD ROAD AT NAVAN ROAD

OTTAWA, ONTARIO

Title:

CROSS SECTION A-A' - GROUNDWATER

Scale: AS SHOWN	Date: 03/2022
Drawn by: RCG	Report No.: PE4937-2
Checked by: MB	Dwg. No.: PE4937-7A
Approved by: MB	Revision No.:

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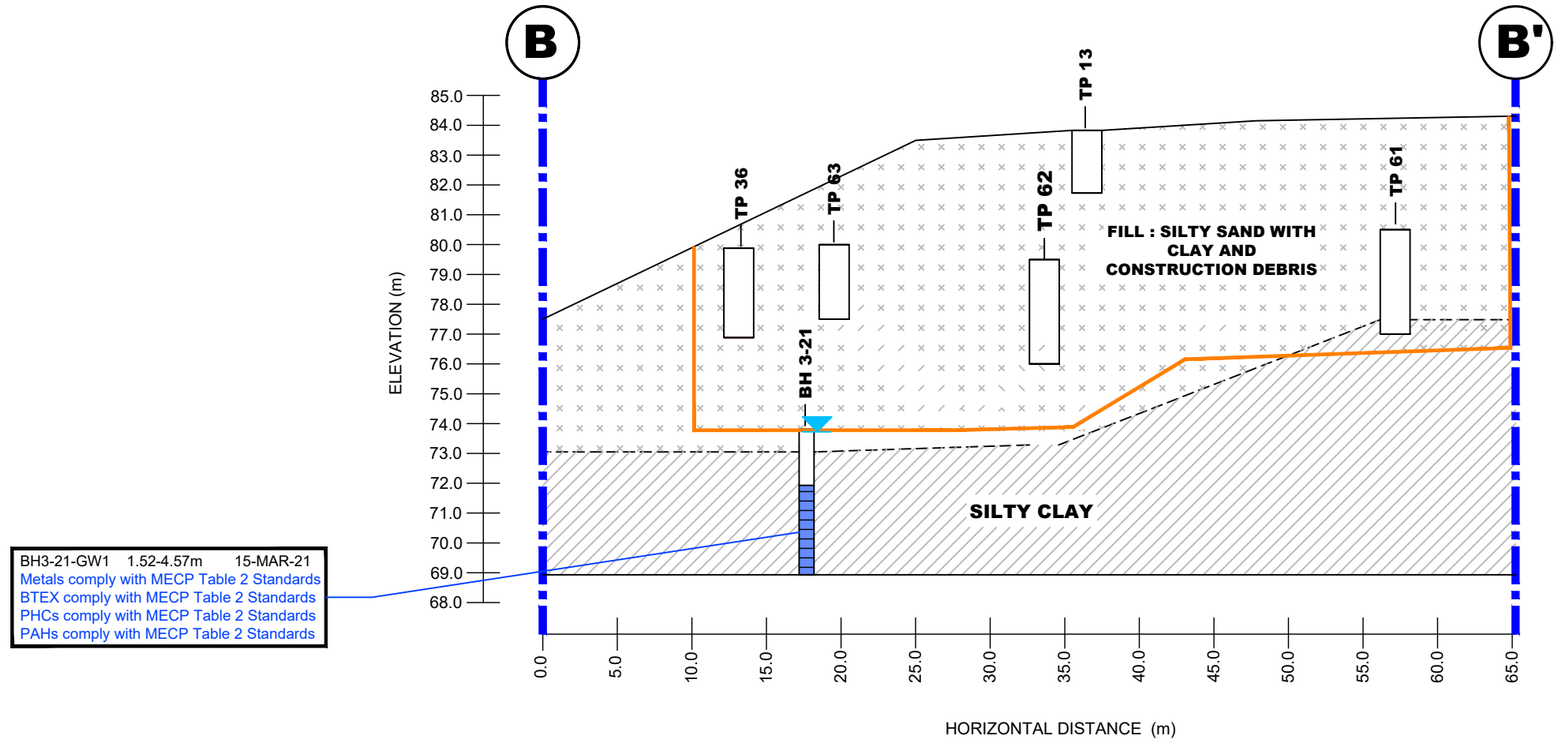

LEGEND:

GROUNDWATER SAMPLE COMPLIES WITH MECP TABLE 2 STANDARDS

GROUNDWATER SAMPLE EXCEEDS MECP TABLE 2 STANDARDS

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CAIVAN COMMUNITIES

PHASE II - ENVIRONMENTAL SITE ASSESSMENT
RENAUD ROAD AT NAVAN ROAD

OTTAWA, ONTARIO

Title:

CROSS SECTION B-B' - GROUNDWATER

Scale: AS SHOWN	Date: 03/2022
Drawn by: RCG	Report No.: PE4937-2
Checked by: MB	Dwg. No.: PE4937-7B
Approved by: MB	Revision No.:

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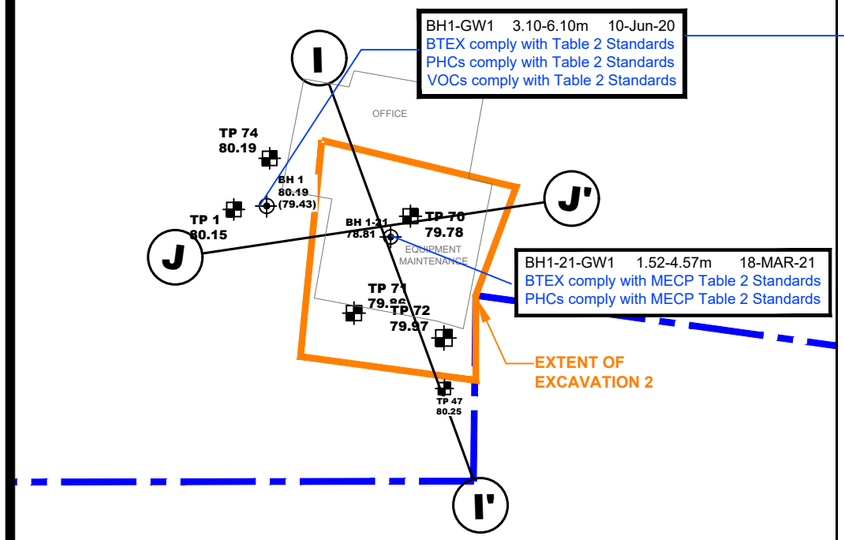
EXCAVATION TP 9

BASE PLAN



SCALE: 1:500

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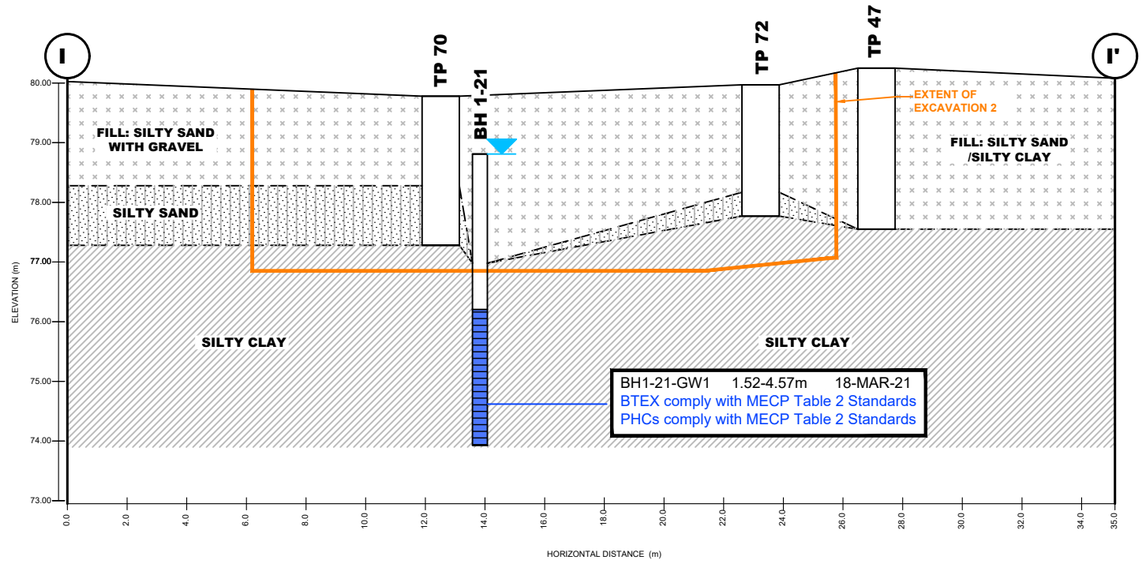
CROSS SECTION II'



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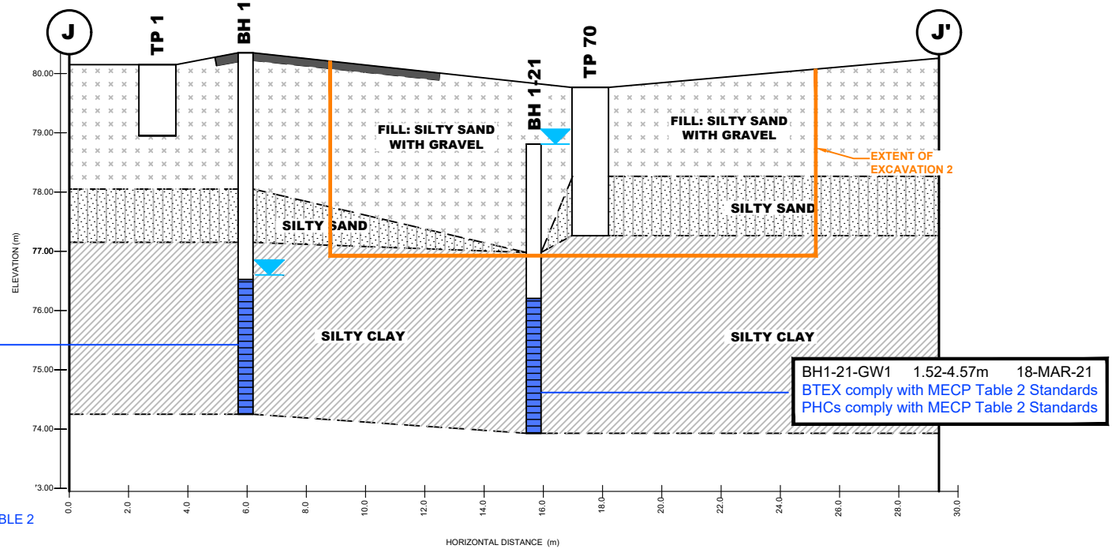


BH1-GW1 3.10-6.10m 10-Jun-20
BTEX comply with Table 2 Standards
PHCs comply with Table 2 Standards
VOCs comply with Table 2 Standards

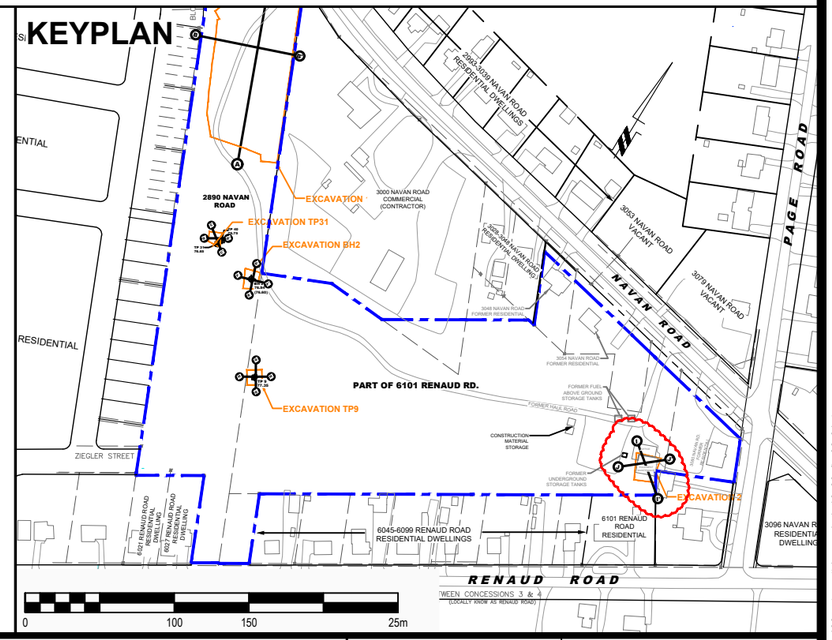
BH1-21-GW1 1.52-4.57m 18-MAR-21
BTEX comply with MECP Table 2 Standards
PHCs comply with MECP Table 2 Standards

LEGEND:

GROUNDWATER SAMPLE COMPLIES WITH MECP TABLE 2 STANDARDS

GROUNDWATER SAMPLE EXCEEDS MECP TABLE 2 STANDARDS

KEYPLAN



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NO.	REVISIONS	DATE	INITIAL

CAIVAN COMMUNITIES

PHASE II - ENVIRONMENTAL SITE ASSESSMENT
RENAUD ROAD AT NAVAN ROAD

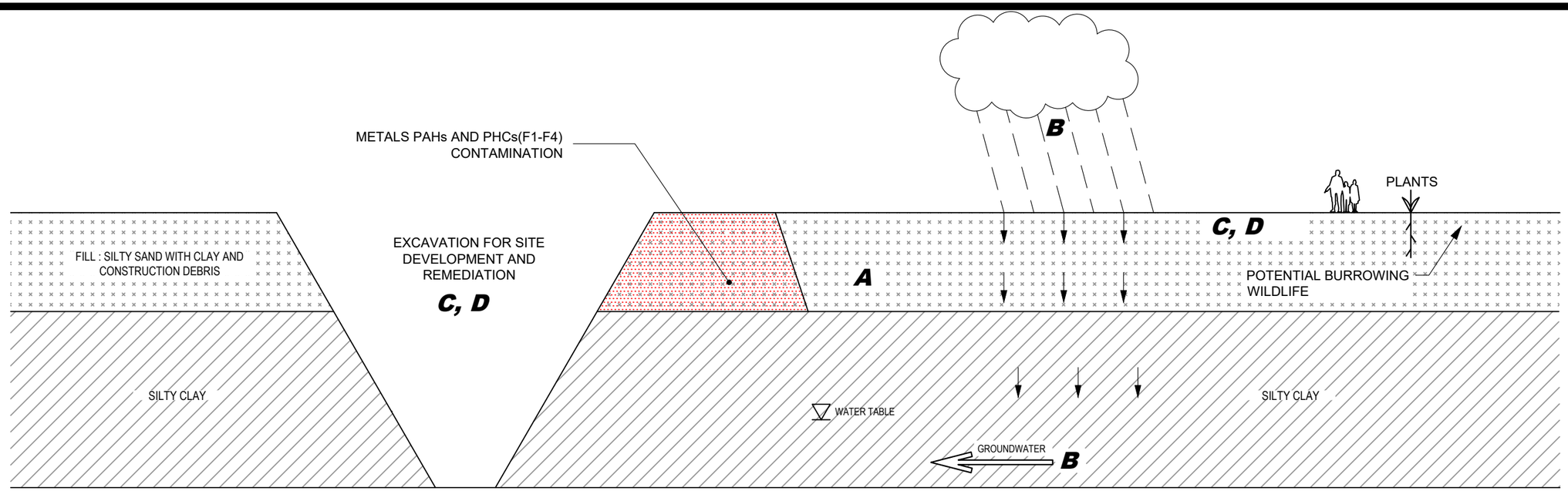
OTTAWA, ONTARIO

Title:

EXCAVATION 2 - GROUNDWATER

Scale: AS SHOWN	Date: 03/2022
Drawn by: YA	Report No.: PE4937-2
Checked by: MB	Dwg. No.: PE4937-7IJ
Approved by: MB	Revision No.:

c:\users\robertg\appdata\local\temp\pe4937-phase ii (newest)_1_16766_fba92c01.dwg



A Contaminant Transport Pathways

Physical transport – one potential contaminant transport pathway is the physical transport from one location to another of impacted soil, either intentionally or unintentionally, by earth moving equipment, vehicle traffic, or pedestrian traffic. The potential for physical transport of contaminants to have occurred on the RSC Property is considered to be low.
Precipitation/Infiltration/Leaching – As precipitation falls on the ground surface and subsequently infiltrates through the soil to the groundwater table, there is the potential for contaminants in the soil phase to enter the groundwater, depending on the solubility of the contaminants.
Impacts to the groundwater were not identified as such, precipitation, infiltration or leaching are not considered to have played a significant role in contaminant transport.

B Human and Ecological Receptors
Human Receptors - Potential human receptors are considered to be limited to construction workers and environmental professionals who may contact the soil during the remediation and/or rehabilitation of the site.
Ecological Receptors – There are no significant potential ecological receptors are present on the Phase II subject site as the property is entirely covered by a building, parking garage and paved areas. No significant potential ecological receptors are present within the study area.

C Receptor Exposure Points
Human Receptors – Prior to remediation, no significant human receptors were identified. Exposure points for human receptors are present during remedial excavations.
Ecological Receptors – In general, the most likely exposure points for ecological receptors include the root zones of plants and the burrows of burrowing wildlife.

D Routes of Exposure
Human Receptors – Routes of exposure during remediation for human receptors (construction works and environmental professionals) include dermal contact, accidental ingestion and inhalation.
Ecological Receptors – Routes of exposure for ecological receptors include ingestion, dermal contact and inhalation. There are no potential ecological receptors apart from small plants and shrubs. Vegetation was stripped as part of the redevelopment of the site and is no longer considered to be present.

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NO.	REVISIONS	DATE	INITIAL

CAIVAN COMMUNITIES
PHASE I - ENVIRONMENTAL SITE ASSESSMENT
RENAUD ROAD AT NAVAN ROAD
KINGSTON, ONTARIO
Title: **CONTAMINANT TRANSPORT DIAGRAM**

Scale: N.T.S.	Date: 04/2022
Drawn by: RCG	Report No.: PE4937-1
Checked by: MB	Dwg. No.: PE4937-8
Approved by: MB	Revision No.: 0

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