APPENDIX G

Environmental Site Assessment

DRAFT
MODIFIED PHASE I ENVIRONMENTAL SITE ASSESSMENT
WATERDOWN ROAD WIDENING
HIGHWAY 403 TO DUNDAS STREET EAST
HAMILTON/BURLINGTON, ONTARIO

for

CITY OF HAMILTON

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December 15, 2008

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Dear Mr. Moore

Draft Modified Phase I Environmental Site Assessment
Waterdown Road Widening
Highway 403 to Dundas Street East
Hamilton/Burlington, Ontario

This report presents the results of a Modified Phase I Environmental Site Assessment (ESA) recently completed for the proposed Waterdown Road widening project. The subject property (referred to herein as the 'Site') comprises an irregular parcel of land that includes the existing Waterdown Road alignment from Craven Avenue northerly about 2.4 km to Mountain Brow Road East, an approximate 800 m long section of the existing Mountain Brow Road East alignment between Waterdown Road and a future arterial road that will extend from Mountain Brow Road East to Dundas Street East. Authorization to proceed with this project was provided by the City of Hamilton under Purchase Order HAMTN-0000043155. This executive summary must be read in conjunction with the attached full report.

A copy of the Alignment Key Plan is shown on Figure 1, appended.

This Modified Phase I ESA was conducted to evaluate the potential for contaminants to exist on the Site, as associated with the proposed road widening and arterial road construction alignment as well as to document present land uses. The assessment must be viewed as a mechanism that may assist in reducing rather than eliminating the uncertainty of encountering environmental contaminants during future use of the property. The assessment was patterned after the Phase I ESA protocols outlined in CSA Standard Z768-01, as adopted into Ontario Regulation 153/04 (O. Reg. 153/04), and is subject to the Statement of Limitations that is included with this report (Appendix D) and which must be read in conjunction with the report.

A geotechnical investigation was also conducted for the Site; the results of which were reported in our draft report PML Ref. 08HF021, Report 1 dated November 20, 2008. As part of the Modified Phase I ESA and in conjunction with the geotechnical investigation, a program of geoenvironmental screening of soil samples was completed. The purpose of the environmental screening was to check the environmental quality of the soil at selected borehole locations, to provide recommendations for handling, disposal and/or off site reuse options for excess material generated during the proposed construction.

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The Site is situated within a rural and agricultural area. Adjoining lands are used for residential and agricultural purposes with some scattered commercial uses.

The results of the records review, Site visit and interviews indicate that historically the Site has been a municipal road and/or agricultural land and has been surrounded by residential and agricultural land with Dundas Street East located to the north and North Service Road located to the south.

The Modified Phase I ESA identified three potential sources of contamination (PSC) at the time of this assessment that could impact the Site, as follows:

PSC 1

The historical and existing use of portions of the Site and surrounding lands for agricultural purposes, including the proposed Mid-Block Road alignment and the proposed section of Waterdown Road north of Flatt Road; there is the potential for contamination from pesticide and herbicide residues.

PSC 2

The potential for surface and/or subsurface contamination from road runoff including metals, pH and organic compounds, and compounds such as salt deposited on the road.

PSC 3

The presence of a closed landfill site (Burlington Landfill) located on King Road, about 1.6 km east of Waterdown Road and 900 m south of Mountain Brow Road East.

Regarding PSC 1, the potential for pesticide and herbicides residues would be predominantly limited to areas of continued, historic agricultural use, such as the proposed Mid-Block Road alignment, the proposed section of Waterdown Road north of Flatt Road and areas along the roadways that may have been sprayed for weed control. Based on our experience with similar projects however, elevated levels of pesticides and herbicides are not usually encountered above the applicable standards. In this regard, sampling and testing for pesticides/herbicides is not warranted at this time.

Regarding PSC 2, the potential for contamination from metals, pH and salt has been assessed as part of the geoenvironmental screening component of this project. Further comments in this regard are presented in subsequent paragraphs. In addition, no visual or olfactory evidence of contamination such as petroleum hydrocarbons (gas, diesel, oils) was noted in the samples obtained from the boreholes.

With regards to PSC 3, the Burlington Landfill is located in a downgradient direction relative to the Site. The landfill is separated from the Site by roadways and utility infrastructures which may act as hydrogeologic barriers/intercepts, and in this regard the former landfill is considered unlikely to impact the Site.

It is noted that the Site is considered an "environmentally sensitive site" according to Section 41 of O. Reg. 153/04 due to it's proximity to a water body and since portions of the property are located within areas of natural significance.

The results of chemical analyses, completed in accordance with the City of Hamilton "Geoenvironmental Sampling and Testing Protocol", Revision 4, dated September 2007 as part of the environmental screening, indicate that the tested soil samples complied with the background (Table 1 Standards), with the exception of Electrical Conductivity (EC) and/or Sodium Adsorption Ration (SAR) in 13 of the 25 tested samples.

When compared to the MOE Table 2 Standards (potable ground water condition) and the Table 3 Standards (nonpotable ground water condition) for residential/parkland/institutional (R/P/I) property use, the measured concentrations of the tested parameters met the Standards, with the exception of EC and/or SAR in 10 of the 25 samples.

When compared to the MOE Table 2 Standards (potable ground water condition) and the Table 3 Standards (nonpotable ground water condition) for industrial/commercial/community (I/C/C) property use, the measured concentrations of the tested parameters met the Standards, with the exception of EC and/or SAR in 8 of the 25 samples.

It is noted that EC and SAR are physical, nonhealth related parameters typically affecting vegetation and exceedances of these parameters are relevant to soils that must support plant growth. Elevated EC and SAR levels are usually an indication of salts within the soil, and may include de-icing salts. Where a site condition standard is exceeded solely because a substance has been used on a highway for purposes of keeping traffic safe under conditions of snow and ice, the applicable site condition standard is deemed not to be exceeded. Accordingly, the surplus site material can be reused on site and in locations where paved surfaces are to be constructed and continued de-icing salt application can be expected to occur for traffic safety. In this regard, it is PML's opinion the elevated levels of EC and SAR should not pose an environmental concern to the road widening and construction activities at the Site. Reference is made to O. Reg. 153/04, s. 48 (3) and O. Reg. 339 s. 2 for a full outline of the regulations regarding soils impacted by de-icing salt.

Boreholes 1, 5, 6, 7, 8, and 9

It is recommended that the surplus soils from the area of Boreholes 1, 5, 6, 7, 8, and 9 be re-used on Site. If however, off site removal of surplus soils is required from these areas, certain handling restrictions will apply. Specifically, the soils may only be used at another roadway project, provided the following conditions are met:

- Table 2 or 3 Full Depth Generic Site Condition Standards are applicable to the receiving site, as confirmed by the environmental consultant;
- All analytical results and environmental assessment reports have been fully disclosed to the receiving site owners/authorities and they have agreed to receive the material;

- Transportation and placement of the fill is monitored by the environmental consultant to check the material is appropriately placed at the pre-approved site;
- Use of the fill is approved from a geotechnical perspective at the receiving site;
- The surplus soils are re-used where paved surfaces are to be constructed and continued de-icing salt application can be expected to occur for traffic safety, and
- The fill material is not placed within 30 m of a water body or an area of natural significance, as defined in O. Reg. 153/04.

Boreholes 2, 3 and 4

The results of chemical testing from all other samples tested met the Table 1 Standards. In this regard, off site re-use of the surplus soils from these areas is acceptable, provided the following conditions are met:

- All analytical results and environmental assessment reports have been fully disclosed to the receiving site owners/authorities and they have agreed to receive the material;
- Delineation of the 'clean' limits between Boreholes 1 and 2 and Boreholes 4 and 5 is completed;
- Transportation and placement of the fill is monitored by the environmental consultant to check the material is appropriately placed at an appropriate site; and
- Use of the fill is approved from a geotechnical perspective at the receiving site.

Depending on the volume of surplus fill generated during construction, additional sampling and chemical testing may be required in order to confirm the continuity of the environmental quality of the excavated material, prior to off site reuse.

We trust the information presented in this report is sufficient for your present purposes. If you have any questions, please do not hesitate to contact our office.

Sincerely

Peto MacCallum Ltd.

DRAFT

Melissa King, P.Geo.
Manager, Geoenvironmental Services
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1. INTRODUCTION

Peto MacCallum Ltd. (PML) was retained by Mr. Gary Moore on behalf of the City of Hamilton, Transportation Operations and Environmental Department, to conduct a Modified Phase I Environmental Site Assessment (ESA) for an irregular parcel of land (referred to herein as the 'Site') that includes the existing Waterdown Road alignment from Craven Avenue northerly about 2.4 km to Mountain Brow Road East, an approximate 800 m long section of the existing Mountain Brow Road East alignment between Waterdown Road and a future arterial road that will extend from Mountain Brow Road East to Dundas Street East in Burlington and Hamilton (Waterdown), Ontario. For the purposes of this report, Waterdown Road tends in a north/south direction.

The Site is about 4 km long as shown on Figure 1 (Alignment Key Plan), appended.

The City of Hamilton is planning to widen Waterdown Road and construct an arterial road and this report was requested for due diligence purposes. PML also understands that a Record of Site Condition (RSC) in accordance with Ontario Regulation 153/04 (O. Reg. 153/04) is not required.

2. TERMS OF REFERENCE

This Modified Phase I ESA was conducted to assess the potential sources of contamination along the road widening allowance and arterial road construction alignment as well as to document present land uses. The nature of a Phase I ESA, by definition, is a nonintrusive site examination of “readily accessible features”. Therefore, the Phase I assessment does not quantify the chemical or physical quality of the exposed or inaccessible features such as materials within building components, beneath buildings or buried on Site. In this regard, the assessment must be viewed as a mechanism that may assist in reducing, rather than eliminating the uncertainty of encountering environmental contaminants during future use of the property. The assessment is subject to the Statement of Limitations that is included with this report and which must be read in conjunction with the report (Appendix D).

It is noted that PML was unable to walk certain areas of the Site due to accessibility limitations; specifically PML was unable to gain permission to walk the Site on the proposed Mid-Block Road between Mountain Brow Road East and Dundas Street East.

In addition a program of geoenvironmental screening of soil samples was required for samples obtained from a concurrent geotechnical investigation (PML Ref.: 08HF021). The purpose of the geoenvironmental component was to check the environmental quality of the soil the geotechnical borehole locations to check if the soil meets O. Reg. 153/04 standards for various land uses to provide recommendations for on site or off site re-use and/or disposal of surplus soils that may be generated during construction.

It should be noted that ground water sampling and testing was not part of the Terms of Reference for this assignment and the environmental sampling and testing was conducted as a limited screening program. Soil or ground water impairment that has not been identified by the screening program may exist at the Site.

3. SCOPE OF WORK

This assessment was patterned after the Phase I ESA protocols outlined in CSA Standard Z768-01, as adopted into O. Reg. 153/04. The Modified Phase I ESA work involved the following tasks to assess the Site's physical and environmental setting and to document past and present land use activities:

1. Historical review of records to collect data about past activities at the Site and general vicinity that could be interpreted as contributing to existing or potential contamination including:

- A review of historical aerial photographs obtained from the McMaster University Lloyd Reeds Map Collection, the City of Hamilton website and Google Earth™;
- A review of topographic maps located at the McMaster University Lloyd Reeds Map Collection;
- A review of available Fire Insurance Plans from the McMaster University Lloyd Reeds Map Collection;

- A review of Street Directories from the McMaster University Lloyd Reeds Map Collection;

- A review of the Ontario Ministry of the Environment and Energy (MOEE) Inventories including Active and Closed Waste Disposal Sites; Municipal Coal Gasification Plant Sites; Industrial Sites Producing or Using Coal Tar and Related Tars in Ontario; Coal Tar Site Investigations 1986-1995 and Polychlorinated Biphenyl (PCB) Storage Sites;

- A review of the MOE online Brownfields Environmental Site Registry;

- A review of aerial photographs, geologic maps, topographic maps, fire insurance plans, reports and publications available in PML's database.

2. A Site reconnaissance by a qualified Geoscience Technologist to assess current Site conditions and the presence of any visual indications or olfactory evidence of potential contamination.

3. A program of chemical testing of soil samples obtained from the concurrent geotechnical investigation, completed in accordance with the City of Hamilton "Geoenvironmental Sampling and Testing Protocol", Revision 4, dated September 2007.

4. Preparation of this report, discussing the information gathered and the corresponding conclusions and recommendations.

4. SITE DESCRIPTION

4.1 Site and Area Characteristics

The Site is generally an irregular parcel of land and about 4 km long, as shown on the Site Plans (Drawings 1 to 12), appended. The Site follows the existing Waterdown Road alignment from Craven Avenue northerly about 2.4 km to Mountain Brow Road East, an approximate 800 m long section of the existing Mountain Brow Road East alignment between Waterdown Road and a future arterial road that will extend from Mountain Brow Road East to Dundas Street East. Generally, the topography of the Site was gently rolling.

5. RECORDS REVIEW

5.1 Aerial Photographs, Topographic and Other Maps

5.1.1 Aerial Photographs

Aerial photographs were obtained from the McMaster University Lloyd Reeds Map Collection for the years 1953, 1963, 1985 and 2000. These photos were reviewed in order to assess the evolution and development on and around the Site. In general, the information displayed on the photographs indicated that historically the Site was a municipal road and agricultural land, and was generally situated within an agricultural setting with forested areas and residential dwellings from at least 1953 to present. It is noted that the road pre dates the available aerial photographs (1953).

Aerial photographs for the year 1953 were available for the section of the Site between North Service Road and about 120 m north of Flatt Road. The aerial photographs indicated the Site was used as a two lane roadway and for agricultural purposes. North Service Road and Highway 403 were not yet constructed. Waterdown Road continued to the north and south, and was surrounded to the east and west by agricultural land, forested areas and/or scattered residential dwellings. The Canadian National Railway (CNR) was located about 200 m to the south of the Site. Approximately 110 m to the west of Waterdown Road and 160 m north of the CNR was a disturbed area (possible stockpile of fill).

A 1963 aerial photograph was available for a 450 m section just north of North Service Road. The Site and surrounding properties were similar to the 1953 aerial photograph and indicated the Site was used as a two lane roadway and for agricultural purposes. Waterdown Road continued north and south and was surrounded to the east and west by agricultural land, forested areas and/or scattered residential dwellings. The CNR was located about 200 m to the south of the Site. Approximately 110 m to the west of Waterdown Road and 160 m north of the CNR was a disturbed area (possible stockpile of fill).

Aerial photographs for the year 1985 were available for Waterdown Road from approximately 1.9 km south of Mountain Brow Road East and an approximate 800 m long section of the existing

Mountain Brow Road East alignment between Waterdown Road and the future arterial road that will extend from Mountain Brow Road East to Dundas Street East. The aerial photographs indicated the Site was occupied by a two lane roadway and by agricultural land. To the east and west of Waterdown Road and to the north and south of Mountain Brow Road East were residential dwellings, agricultural land and/or forested areas. To the north of the future arterial road was Dundas Street East followed by Burke Street, residential dwellings and a commercial plaza. Approximately 290 m west of Waterdown Road was Grindstone Creek, and along the north portion of the Site near Dundas Street East was a tributary of Grindstone Creek that crossed in an east/west direction. Approximately 1.6 km east of Waterdown Road and 900 m south of Mountain Brow Road East was the Burlington Landfill.

Aerial photographs for the year 2000 were available for Waterdown Road from approximately 1.4 km south of Mountain Brow Road East, along an approximate 800 m long section of the existing Mountain Brow Road East alignment between Waterdown Road and the future arterial road. The aerial photograph indicated the Site was similar to the 1985 aerial photographs.

5.1.2 Topographic and Other Maps

The 1923 topographic map indicated the Site was occupied by a two lane roadway and by agricultural land. To the east and west of Waterdown Road and to the north and south of Mountain Brow Road East were scattered residential dwellings, agricultural land and/or forested areas. To the north of the future arterial road was Dundas Street East followed by agricultural land. Approximately 290 m west of Waterdown Road was Grindstone Creek. Along the north portion of the Site near Dundas Street East was a tributary of Grindstone Creek that crossed in an east/west direction. Topographic contours indicated that the grade of the Site was about 250 (metric, geodetic) in the north portion of the Site (future arterial road near Dundas Street East) and sloped down to about 107 (metric, geodetic) in the south portion of the Site (near North Service Road).

The 1982 Ontario Base Map (OBM) indicated the Site was occupied by a two lane roadway and by agricultural land. To the east and west of Waterdown Road and to the north and south of Mountain Brow Road East were scattered residential dwellings, agricultural land and/or forested areas. To the north of the future arterial road was Dundas Street East followed by residential

dwellings. Two hydro corridors crossed Waterdown Road; one about 100 m south of Ireson Road and the second about 250 m north of Craven Road. Approximately 290 m west of Waterdown Road was Grindstone Creek and approximately 270 m northwest of Mountain Brow Road East was the CPR. Along the north portion of the Site near Dundas Street East was a tributary of Grindstone Creek that crossed in an east – west direction. Topographic contours indicated that the grade of the Site was about 245 (metric, geodetic) in the north portion of the Site (future arterial road near Dundas Street East) and sloped down to about 120 (metric, geodetic) in the south portion of the Site (near North Service Road).

The 1999 topographic map indicated the Site was occupied by a two lane roadway and by agricultural land. The Site and neighbouring properties were similar to those of the 1982 OBM. The map indicated a gas pipe line crossed Waterdown Road approximately 700 m south of Mountain Brow Road East, and a reservoir was located about 600 m north of North Service Road along Waterdown Road.

Appendix A contains a copy of the 1953, 1963, 1985 and 2000 aerial photographs depicting the approximate location of the Site (included as Figures 2 through 9 respectively). In addition, copies of the 1923 topographic map, the 1982 OBM and the 1999 topographic map depicting the approximate location of the Site are included as Figures 10 through 13, respectively.

5.2 Property Use Records

5.2.1 Fire Insurance Plans

Fire Insurance Plans were researched at the McMaster University Lloyd Reeds Map Collection. No plans were available for the Site.

5.2.2 Directories

Street directories were reviewed at the McMaster University Lloyd Reeds Map Collection at approximately five-year intervals between 1957/1958 and 2007 for the City of Burlington and the City of Hamilton (Flamborough/Waterdown).

According to the directories reviewed from 1957/1958, Waterdown Road north of North Service Road to Mountain Brow Road East was not listed. From 1960 to 2007, the properties along Waterdown Road from North Service Road to Mountain Brow Road East were listed as occupied by private individuals and some commercial businesses, as follows:

ADDRESS	YEAR	OCCUPANT
North Service Road		
1240 Waterdown Road	1970	Storage
	1975	Cook's Welding
	1980 to 2007	Cook's Custom Hitches Ltd.
1308 Waterdown Road	1990 to 1995	Mandy's Hair Fashions
1312 Waterdown Road	2005 to 2007	C.J.'s Mobile Welding and Fabricating
1320 Waterdown Road	1985 to 1990	Derek's Mobile T.V Service and Appliances
1376 Waterdown Road	1985 to 2007	Waterdown Road Reservoir
1621 Waterdown Road	1975	Name not provided
1629 Waterdown Road	1970	Record Planning and Equipment Limited
	1975	Name not provided
1651 Waterdown Road	1975	Name not provided
1681 Waterdown Road	2000	Mosaic Imaging
1691 Waterdown Road	1990	Edwards Home Improvement
1712 Waterdown Road	2005 to 2007	Community Resource Services
1724 Waterdown Road	1990 to 1995	Morley A Klodt Rototilling
1734 Waterdown Road	1960 to 1965	Schien Construction Limited
1803 Waterdown Road	1970 to 1975	R. King Freezer Service
1822 Waterdown Road	1980 to 1990	Bender's Greenhouses
Mountain Brow Road East		

According to the directories reviewed from 1957/1958, Mountain Brow Road East was not listed. From 1957/1958 to 2007, the properties on the north and south side of Mountain Brow Road East were listed as occupied by private individuals and by Melnik Construction Limited in 1985 (342 Mountain Brow Road East).

5.3 Regulatory Information

5.3.1 Brownfields Environmental Site Registry

The MOE on-line Brownfields Environmental Site Registry was accessed on July 10, 2008 and November 17, 2008 to determine if any RSCs have been filed under Part XV.1 under the

Environmental Protection Act (EPA) for the Site. A search of the registry indicated that no records were found for the Site.

5.3.2 Inventories Review

Various inventories available through the MOEE (now MOE) were reviewed with the following results:

INVENTORY	RESULTS
Coal Gasification Plant Waste Sites in Ontario, Volume 1, 1987	No facilities within 500 m radius of Site
Industrial Sites Producing or Using Coal Tar in Ontario, Volumes I and II, 1988	No facilities within 500 m radius of Site
Coal Tar Site Investigations 1986-1995	No facilities within 500 m radius of Site
Waste Disposal Site, 1991	No closed or active facilities within 500 m of Site according to the inventories. The Burlington Landfill was not listed in the inventory but was located on King Street, about 1.6 km east of Waterdown Road and 900 m south of Mountain Brow Road East (downgradient) according to a 1985 aerial photograph. According to the Region of Halton, the landfill is closed and was formerly used for municipal waste.
PCB Storage Sites, 1993	No facilities within 500 m radius of Site

5.4 Previous Reports

No previous environmental reports for the Site were provided to PML for our review.

5.5 Physiographic, Geologic and Hydrogeologic Setting

Geologic maps and publications illustrating physiography, Paleozoic and Quaternary geology, as well as bedrock topography were available in PML's files for review.

Based on Ontario Department of Mines and Northern Affairs Map 2226, Quaternary Geology of the South Central Portion of Southern Ontario, the surficial geology at the Site is comprised of escarpments and till moraines. The Site is situated within the Flamborough Plain Physiographic

Region in the escarpment area. There is little overburden on the bedrock, apart from drumlins, which are either glacial till or sand and gravel. Bedrock along the Waterdown Road section is red shale of the Queenston Formation. Along Mountain Brow Road East the bedrock consists of interbedded limestone, dolostone and sandstone of the Clinton and Cataract Groups. Lockport argillacious dolomite and shale is predominantly north of Mountain Brow Road East.

Local surface drainage is directed towards ditches, catch basins, Grindstone Creek and Falcon Creek. Regionally, the inferred ground water flow to the south toward Hamilton Harbour/Lake Ontario. A tributary of Grindstone Creek crosses the north portion of the Site, just south of Dundas Street East.

The subsurface stratigraphy revealed in the boreholes drilled during the geotechnical investigation indicated the subsurface soils generally comprised topsoil or a flexible pavement structure (asphaltic concrete and Granular A type crushed limestone base/sub-base), underlain by fill and native silty clay or clay till. Bedrock was identified near the south limit of Waterdown Road and on Mountain Brow Road East.

Topographic features adjacent to the Site include:

- A deep ravine located on the east side of Waterdown Road south of Flatt Road.
- Drainage swales/gulley in the agricultural land on the west side of Waterdown Road, north of Flatt Road.
- A rock cut on Mountain Brow Road East, east of the Waterdown Road intersection.
- A drainage swale north of Mountain Brow Road East.
- A Grindstone Creek Tributary south of Dundas Street East.

6. SITE VISIT

6.1 General

The Site was visited on August 25, 2008. During PML's visit, the Site being assessed as well as the adjacent properties were observed for signs or conditions of existing or potential contamination that may adversely impact the Site from a geoenvironmental viewpoint. Reference is made to the accompanying Alignment Key Plan (Figure 1) and Drawings 1 through 12 (Site Plan) for a depiction of the Site. Conditions at the time of PML's visit were a mixture of sun and cloud and hot. Selected photographs taken at the time of PML's visit are included in Appendix B. It should be noted that PML was unable to walk certain areas of the Site due to accessibility limitations; specifically PML was unable to gain permission to walk the Site on the proposed Mid-Block Road between Mountain Brow Road East and Dundas Street East.

6.2 Exterior Observations

6.2.1 Property Use

The Site follows the existing Waterdown Road alignment from Craven Avenue northerly about 2.4 km to Mountain Brow Road East, an approximate 800 m long section of the existing Mountain Brow Road East alignment between Waterdown Road and a future arterial road that will extend from Mountain Brow Road East to Dundas Street East. The Site is approximately 4 km long and comprises mixed uses (transportation corridor, agricultural land, residential properties and some commercial uses).

6.2.2 Topographic, Geologic and Hydrogeologic Conditions

Based on topographic maps, the grade of the Site was about 245 (metric, geodetic) in the north portion of the Site (proposed Mid-Block Road near Dundas Street East) and sloped down to about 120 (metric, geodetic) in the south portion of the Site (near North Service Road). Generally, the tableland in this area was gently rolling.

As previously discussed, the overburden comprises silty clay and/or clay till. Bedrock along the Waterdown Road section is red shale of the Queenston Formation. Surface drainage of the Site is provided by overland flow into ditches along Waterdown Road, Mountain Brow Road East and Dundas Street East as well as the tributary of Grindstone Creek and drainage swales.

Ground water flow is expected to be south toward the Niagara Escarpment and Lake Ontario with components to the east and west (Grindstone Creek and Falcon Creek).

6.2.3 Hazardous Materials

No hazardous materials were observed on Site. Pole mounted transformers were observed along Waterdown Road. Mr. Gerry Smallegange, Chief Operating Officer of Burlington Hydro Inc. indicated the City of Burlington has a program that is in its final year for Polychlorinated Biphenyl (PCB) removal and identification for all transformers in Burlington. According to Hamilton Hydro, nearly all PCBs have been removed from their system including all transformers. Those that are remaining have been tested and are below acceptable standards.

6.2.4 Storage Tanks and Containers

No storage tanks and/or containers were observed on Site.

6.2.5 Pits and Lagoons

No pits or lagoons were noted on Site.

6.2.6 Stained Materials

Examination of the visible ground surface did not reveal the presence of any staining or any unusual discolouration of the ground surface other than typical minor oil staining from vehicles.

6.2.7 Stressed Vegetation

No obvious evidence of distress on bushes and grass/weeds was noted at the Site.

6.2.8 Fill

A grass covered berm was noted along the west property limit at the Municipality of Halton Water Reservoir building located at 1376 Waterdown Road. No other obvious areas of fill were observed on Site.

6.2.9 Watercourses, Ditches or Standing Water

As previously indicated, a tributary of Grindstone Creek crossed the north portion of the Site, just south of Dundas Street East.

Ditches along Waterdown Road, Mountain Brow Road East and Dundas Street East and drainage swales/gullies were located in the agricultural land on the west side of Waterdown Road (north of Flatt Road) and north of Mountain Brow Road East. A deep ravine was located on the east side of Waterdown Road south of Flatt Road.

6.2.10 Waste Disposal

Domestic waste is not generated at the Site; adjacent properties however, are serviced by a municipal garbage collection system.

6.2.11 Roads, Parking Facilities and Rights of Way

The Site comprised two roads (Waterdown Road and Mountain Brow Road East).

6.2.12 Noises, Odours or Vibrations

No unusual noises, odours or vibrations were detected during the Site visit on August 25, 2008 between 9:30 a.m. and 1:00 p.m. other than traffic noise, which can be expected from vehicular traffic on Waterdown Road, Mountain Brow Road East, Dundas Street East, North Service Road and Highway 403. Additional noise and vibrations can be expected from a Model Airplane Airport and the CNR. The Model Airplane Airport was located in Bayview Park on King Road, about 2 km east of Waterdown Road, and 750 m north of North Service Road and the CNR was located about 200 m south of the Site.

A 'mothball-like' odour was noted within the air on Waterdown Road between Craven Road and 1390 Waterdown Road (residential dwelling).

6.3 Adjacent Land Uses

During the Site visit, a brief inspection of the surrounding properties was conducted from the limits of the Site.

Immediately north of the Site (at Mid Block Road) was Dundas Street East, Burke Street and the Artesian Well Plaza at 419 Dundas Street East. To the north of Waterdown Road and Mountain Brow Road East were Mill Street South, residential dwellings, Flanders Drive and agricultural land.

East of the Site were residential dwellings, grassed fields, agricultural fields, hydro lines, Sassafras Woods, Waterdown Escarpment Woods and the Bruce Trail (just south of Mountain Brow Road East). Approximately 1 km east of Waterdown Road is Falcon Creek.

To the west of the Site (along Waterdown Road) were residential dwellings, grassed fields, agricultural fields, Mac's Metal Works at 1240 Waterdown Road, Slager Construction Limited at 29 Panin Road, the Regional Municipality of Halton Water Reservoir Building at 1376 Waterdown Road and hydro lines. To the west of the Site (at Mid Block Road) was agricultural land and a residential farm dwelling.

South of the Site (at Waterdown Road) was Highway 403 followed by the CNR.

No AST, USTs or chemical storage areas were noted from the limits of the Site.

7. MODIFIED PHASE I ESA FINDINGS

Based on the findings of the Site history review, Site reconnaissance and previous experience, some potential sources of contamination (PSC) of the surface and subsurface were identified at the time of this assessment and have been evaluated through professional judgement of the information collected. The sources are not listed in any order of significance:

PSC 1

The historical and existing use of portions of the Site and surrounding lands for agricultural purposes, including the proposed Mid-Block Road alignment and the proposed section of Waterdown Road north of Flatt Road; there is the potential for contamination from pesticide and herbicide residues.

PSC 2

The potential for surface and/or subsurface contamination from road runoff including metals, pH and organic compounds, and compounds such as salt deposited on the road.

PSC 3

The presence of a closed landfill site (Burlington Landfill) located on King Road, about 1.6 km east of Waterdown Road and 900 m south of Mountain Brow Road East.

8. MODIFIED PHASE I CONCLUSIONS

This Modified Phase I ESA was conducted to assess the potential sources of contamination along the road widening allowance and arterial road construction alignment as well as to document present land uses. There were three PSC's identified as indicated above.

Regarding PSC 1, the potential for pesticide and herbicides residues would be predominantly limited to areas of continued, historic agricultural use, such as the proposed Mid-Block Road alignment, the proposed section of Waterdown Road north of Flatt Road and areas along the roadways that may have been sprayed for weed control. Based on our experience with similar projects however, elevated levels of pesticides and herbicides are not usually encountered above the applicable standards. In this regard, sampling and testing for pesticides/herbicides is not warranted at this time.

Regarding PSC 2, the potential for contamination from metals, pH and salt has been assessed as part of the geoenvironmental screening component of this project. Further comments in this regard are presented in subsequent paragraphs. In addition, no visual or olfactory evidence of

contamination such as petroleum hydrocarbons (gas, diesel, oils) was noted in the samples obtained from the boreholes.

With regards to PSC 3, the Burlington Landfill is located in a downgradient direction relative to the Site. The landfill is separated from the Site by roadways and utility infrastructures which may act as hydrogeologic barriers/intercepts, and in this regard the former landfill is considered unlikely to impact the Site.

It is noted that the Site is considered an "environmentally sensitive site" according to Section 41 of O. Reg. 153/04 due to it's proximity to a water body and since portions of the property are located within areas of natural significance.

9. GEOENVIRONMENTAL SCREENING

As a result of the proposed on site construction activities, PML understands that surplus soil will be generated; the volume of which is unknown at this time. A program of geoenvironmental screening chemical testing was required to check the environmental quality of the soil at selected borehole locations to check if the soil meets O. Reg. 153/04 standards for residential/ parkland/institutional (R/P/I) and industrial/commercial/ community (I/C/C) land use to provide recommendations for on site or off site re-use and/or disposal of excess soils generated during construction.

9.1 Chemical Testing

Representative soil samples collected during the concurrent geotechnical investigation were returned to our laboratory for detailed visual examination. Samples were then reviewed and selected for chemical testing in accordance with the City of Hamilton "Geoenvironmental Sampling and Testing Protocol" (GSTP), Revision 4, dated September 2007. The samples were sent to AGAT Laboratories Limited (AGAT), a Canadian Association for Laboratory Accreditation Inc. (CALA) accredited laboratory in Mississauga, Ontario. The chemical analyses conducted by AGAT were in general accordance with the O. Reg. 153/04 Protocol for Analytical Methods Used

in the Assessment of Properties under Part XV.1 of the Environmental Protection Act dated March 9, 2004.

The rationale for sample selection was based on the City of Hamilton GSTP. Twenty-five samples were analyzed for pH and metal parameters in accordance with the GSTP. A summary listing of all samples submitted for analysis is included Table I.

9.2 Pertinent Regulatory Standards

9.2.1 Site Sensitivity

To assess the Site Sensitivity, Section 41 of O. Reg. 153/04 was evaluated as outlined in Table III, appended. The Site is considered Sensitive under O. Reg. 153/04 due to a tributary of Grindstone Creek crossing along the north portion of the Site south of Dundas Street East, and since portions of the property are located within areas of natural significance (Sassafras Woods and Waterdown Escarpment Woods) per Halton Region Planning & Public Works Environmentally Sensitive Area Maps No. 4 and 5.

In general, the applicable environmental quality guidelines depend on the site location, land use, soil texture and source of potable water at the investigation site. Since Waterdown Road and Mountain Brow Road East are transportation corridors in the Cities of Burlington and Hamilton, the Background and Generic Criteria of the O. Reg. 153/04, Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act dated March 9, 2004 (Standards) were selected to assess the laboratory test data for soil management purposes.

Based on factors including Site sensitivity, intended future land use as a transportation corridor, ground water usage and soil texture; the O. Reg. 153/04 Full Depth Background Site Condition Standards (Table 1) for All Other Types of Property Use were used to assess the data for on Site re-use of the surplus excavated material, and for off Site reuse with no environmental restrictions.

The Full Depth Generic Site Condition Standards in a Nonpotable and a Potable Ground Water Condition (Table 2 and 3) for R/P/I Property Use and I/C/C Property Use were used to assess the data for off site re-use and/or disposal of surplus soil.

9.3 Analytical Findings

The results of the laboratory tests are provided in Table II. The Certificates of Analysis are included in Appendix C.

9.3.1 On Site Re-use and Unrestricted Off Site Re-use (Table 1 Standards)

The measured concentrations of the tested parameters complied with the Table 1 Standards except at the following locations:

LOCATION	SAMPLE	MATERIAL COMPOSITION	PARAMETERS
East of Flatt Road on Waterdown Road	BH1 SS2	Blackish grey silty clay	EC and SAR
East of Flatt Road on Waterdown Road	BH1 SS4	Brown to reddish brown silty clay till	EC and SAR
East of Flatt Road on Waterdown Road	BH1 SS5	Brown to reddish brown silty clay till	EC and SAR
East of Flatt Road on Waterdown Road	BH1 SS7	Weathered red shale	SAR
East of 1934 Waterdown Road	BH5 SS2 Remainder	Brown silty clay fill	SAR
East of 1934 Waterdown Road	BH5 SS3	Brown silty clay till, some sand and gravel, with pieces of red shale	SAR
Southeast corner of intersection at Waterdown Road and Mountain Brow Road East	BH6 SS1	Grey sand and gravel fill	EC and SAR
Southeast corner of intersection at Waterdown Road and Mountain Brow Road East	BH6 SS1-1 (Duplicate)	Grey sand and gravel fill	EC and SAR
South of 1 Flanders Drive along Mountain Brow Road East	BH7 SS2	Brown silty clay	EC and SAR
South of 1 Flanders Drive along Mountain Brow Road East	BH7 SS5	Brown silty clay	SAR
At Station 60+600 on Mountain Brow Road East	BH8 SS2	Brown silty clay till	EC and SAR
At Station 70+010 at intersection of Mountain Brow Road East and Mid-Block Road	BH9 SS2	Grey silty clay till	EC and SAR
At Station 70+010 at intersection of Mountain Brow Road East and Mid-Block Road	BH9 SS2-1 (Duplicate)	Grey silty clay till	EC and SAR

Note:
EC – Electrical Conductivity
SAR – Sodium Adsorption Ratio

9.3.2 Off Site Re-use (Table 2 and 3 Standards for R/P/I Property Use)

The measured concentration of the tested parameters complied with the Table 2 and 3 Standards for R/P/I Property Use except at the following locations:

LOCATION	SAMPLE	MATERIAL COMPOSITION	PARAMETERS
East of Flatt Road on Waterdown Road	BH1 SS2	Blackish grey silty clay	EC and SAR
East of Flatt Road on Waterdown Road	BH1 SS4	Brown to reddish brown silty clay till	EC and SAR
East of Flatt Road on Waterdown Road	BH1 SS5	Brown to reddish brown silty clay till	EC
East of 1934 Waterdown Road	BH5 SS2 Remainder	Brown silty clay fill	SAR
Southeast corner of intersection at Waterdown Road and Mountain Brow Road East	BH6 SS1	Grey sand and gravel fill	EC and SAR
Southeast corner of intersection at Waterdown Road and Mountain Brow Road East	BH6 SS1-1 (Duplicate)	Grey sand and gravel fill	EC and SAR
South of 1 Flanders Drive along Mountain Brow Road East	BH7 SS2	Brown silty clay	EC and SAR
At Station 60+600 on Mountain Brow Road East	BH8 SS2	Brown silty clay till	EC and SAR
At Station 70+010 at intersection of Mountain Brow Road East and Mid-Block Road	BH9 SS2	Grey silty clay till	EC and SAR
At Station 70+010 at intersection of Mountain Brow Road East and Mid-Block Road	BH9 SS2-1 (Duplicate)	Grey silty clay till	EC and SAR

9.3.3 Off Site Re-use (Table 2 and 3 Standards for I/C/C Property Use)

The measured concentration of the tested parameters complied with the Table 2 and 3 Standards for I/C/C Property Use except at the following locations:

LOCATION	SAMPLE	MATERIAL COMPOSITION	PARAMETERS
East of Flatt Road on Waterdown Road	BH1 SS2	Blackish grey silty clay	EC and SAR
East of Flatt Road on Waterdown Road	BH1 SS4	Brown to reddish brown silty clay till	EC and SAR
Southeast corner of intersection at Waterdown Road and Mountain Brow Road East	BH6 SS1	Grey sand and gravel fill	EC and SAR

LOCATION	SAMPLE	MATERIAL COMPOSITION	PARAMETERS
Southeast corner of intersection at Waterdown Road and Mountain Brow Road East	BH6 SS1-1 (Duplicate)	Grey sand and gravel fill	EC and SAR
South of 1 Flanders Drive along Mountain Brow Road East	BH7 SS2	Brown silty clay	EC and SAR
At Station 60+600 on Mountain Brow Road East	BH8 SS2	Brown silty clay till	EC and SAR
At Station 70+010 at intersection of Mountain Brow Road East and Mid Block Road	BH9 SS2	Grey silty clay till	EC and SAR
At Station 70+010 at intersection of Mountain Brow Road East and Mid Block Road	BH9 SS2-1 (Duplicate)	Grey silty clay till	EC

9.4 QA/QC Data

Analytical test QA/QC data is included with the Certificates of Analysis provided in Appendix C. The data also included laboratory duplicates, which are part of the laboratory QC protocol.

As well, PML prepared three blind replicate soil samples. The acceptable, maximum relative percent difference (RPD) for replicate samples BH4 SS4 and BH4 SS4-1, samples BH6 SS1 and BH6 SS1-1, and samples BH9 SS2 and BH9 SS2-1 were 8.3, 5.6 and 14.5% RPD, respectively.

9.5 Assessment of Analytical Findings and Conclusions

The purpose of the geoenvironmental component of the study was to check the environmental quality of the soil at the borehole locations to check if the soil meets O. Reg. 153/04 standards for R/P/I and I/C/C land use to provide recommendations for on Site or off Site re-use and/or disposal.

As noted in Section 9.3, the results of the chemical testing indicate the concentrations of the tested parameters complied with the Table 1 Standards, with the exception of EC and/or SAR in 13 of the 25 tested samples.

When compared to the Table 2 and 3 Standards for R/P/I property use the measured concentrations of the tested parameters met the Standards, with the exception of EC and/or SAR in 10 of the 25 tested samples.

The results of the chemical testing indicate the concentrations of the tested parameters complied with the Table 2 and 3 Standards for I/C/C property use, with the exception of EC and/or SAR in 8 of the 25 tested samples.

The test results indicate the elevated levels of EC and SAR were limited to two general areas at the Site, as follows.

- Five of the six boreholes were located along Mountain Brow Road East and on Waterdown Road between Horning Road and Mountain Brow Road East (Boreholes 5, 6, 7, 8, and 9). The distribution of these boreholes may indicate heavier application of de-icing salts in these areas.
- Borehole 1 located on Waterdown Road near Flatt Road.

It is noted that EC and SAR are physical, nonhealth related parameters typically affecting vegetation and exceedances of these parameters are relevant to soils that must support plant growth. Elevated EC and SAR levels are usually an indication of salts within the soil, and may include de-icing salts. Where a site condition standard is exceeded solely because a substance has been used on a highway for purposes of keeping traffic safe under conditions of snow and ice, the applicable site condition standard is deemed not to be exceeded. Accordingly, the surplus site material can be reused on site and in locations where paved surfaces are to be constructed and continued de-icing salt application can be expected to occur for traffic safety. In this regard, it is PML's opinion the elevated levels of EC and SAR should not pose an environmental concern to the road widening and construction activities at the Site. Reference is made to O. Reg. 153/04, s. 48 (3) and O. Reg. 339 s. 2 for a full outline of the regulations regarding soils impacted by de-icing salt.

Boreholes 1, 5, 6, 7, 8, and 9

It is recommended that the surplus soils from the area of Boreholes 1, 5, 6, 7, 8, and 9 be re-used on Site. If however, off site removal of surplus soils is required from these areas, certain handling restrictions will apply. Specifically, the soils may only be used at another roadway project, provided the following conditions are met:

- Table 2 or 3 Full Depth Generic Site Condition Standards are applicable to the receiving site, as confirmed by the environmental consultant;
- All analytical results and environmental assessment reports have been fully disclosed to the receiving site owners/authorities and they have agreed to receive the material;
- Transportation and placement of the fill is monitored by the environmental consultant to check the material is appropriately placed at the pre-approved site;
- Use of the fill is approved from a geotechnical perspective at the receiving site;
- The surplus soils are re-used where paved surfaces are to be constructed and continued de-icing salt application can be expected to occur for traffic safety, and
- The fill material is not placed within 30 m of a water body or an area of natural significance, as defined in O. Reg. 153/04.

Boreholes 2, 3 and 4

The results of chemical testing from all other samples tested met the Table 1 Standards. In this regard, off site re-use of the surplus soils from these areas is acceptable, provided the following conditions are met:

- All analytical results and environmental assessment reports have been fully disclosed to the receiving site owners/authorities and they have agreed to receive the material;
- Delineation of the 'clean' limits between Boreholes 1 and 2 and Boreholes 4 and 5 is completed;

- Transportation and placement of the fill is monitored by the environmental consultant to check the material is appropriately placed at an appropriate site; and
- Use of the fill is approved from a geotechnical perspective at the receiving site.

Depending on the volume of surplus fill generated during construction, additional sampling and chemical testing may be required in order to confirm the continuity of the environmental quality of the excavated material, prior to off site reuse.

It should be noted that the soil conditions between and beyond the sampled locations may differ from those encountered during this assignment. PML should be contacted if impacted soil conditions become apparent during future development to further assess and appropriately handle the materials, if any, and evaluate whether modifications to the conclusions documented in this report are necessary.

10. QUALIFICATIONS OF ENVIRONMENTAL CONSULTANT

This report was completed by Danika Durish, BSc. who has been trained to conduct Phase I ESAs in accordance with the CSA Standard. Ms. Durish is an environmental geoscience technologist with seven years experience specializing in Phase I and II ESAs, site remediation, ground water and soil sampling, excavation monitoring, underground and aboveground storage tank removals and preparation of Records of Site Condition. Ms. Durish has completed numerous Phase I ESAs for commercial, industrial, and residential clients for a wide variety of project types (industrial complexes, commercial developments, entertainment and institutional buildings, and residential development).

This report was reviewed by Melissa King, P.Geo., a Professional Geoscientist registered with the Association of Professional Geoscientists of Ontario. Ms. King has ten years of interdisciplinary professional experience specializing in geoenvironmental and hydrogeologic investigations and project management. Her main areas of expertise include Phase I and Phase II ESAs, site cleanup/remediation planning and supervision, waste management, underground storage tank and aboveground storage tank removals, site remediation, Risk Assessment, Records of Site Condition and hydrogeologic investigations. Ms. King is Manager of Geoenvironmental Services

in PML's Hamilton branch office. She has completed hundreds of Phase I ESAs for commercial, industrial, and residential clients for a wide variety of project types (industrial complexes, commercial developments, entertainment and institutional buildings, and residential development).

Executive review of this report was completed by Dennis W. Kerr, MEng., P.Eng.

Peto MacCallum Ltd. was established in 1973 as a result of the merger of Peto Associates Ltd., founded in 1956, and the Ontario division of Racey MacCallum and Associates Limited, chartered in 1952. Peto MacCallum Ltd. is a consulting engineering firm that specializes in the fields of geoenvironmental, hydrogeological and geotechnical engineering, building sciences, construction supervision/inspection and materials engineering/testing. Personnel in our four branch offices form a network of full time dedicated environmental professionals.

We trust the information presented in this report is sufficient for your present purposes. If you have any questions, please do not hesitate to contact our office.

Sincerely

Peto MacCallum Ltd.

DRAFT

Danika Durish, BSc.
Project Supervisor
Geoenvironmental Services

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Melissa King, P.Geo.
Manager, Geoenvironmental Services
Hamilton

DD/MAK:lad

REFERENCES

AERIAL PHOTOGRAPHS:

FIGURE	YEAR	PHOTO SCALE (Approx.)	SOURCE
1	1953	1:5,350	McMaster University Lloyd Reeds Map Library
2	1953	1:4,880	McMaster University Lloyd Reeds Map Library
3	1963	1:4,370	McMaster University Lloyd Reeds Map Library
4	1985	1:13,775	McMaster University Lloyd Reeds Map Library
5	1985	1:8,535	McMaster University Lloyd Reeds Map Library
6	2000	1:7,255	McMaster University Lloyd Reeds Map Library
7	2000	1:5,435	McMaster University Lloyd Reeds Map Library
8	2000	1:6,625	McMaster University Lloyd Reeds Map Library

TOPOGRAPHIC AND OTHER MAPS:

Department of Energy, Mines and Resources, 1923 Topographic Map, Hamilton – Ontario, Scale 1:63,360, McMaster University Lloyd Reeds Map Library.

Department of Energy, Mines and Resources, 1982 Ontario Base Map, Hamilton – Ontario, Scale 1:10,000, McMaster University Lloyd Reeds Map Library.

Department of Energy, Mines and Resources, 1999 Topographic Map, Hamilton – Ontario, Scale 1:50,000, McMaster University Lloyd Reeds Map Library.

MINISTRY OF THE ENVIRONMENT AND ENERGY:

Year	Source
1987	Inventory of Coal Gasification Plant Waste Sites in Ontario, Volume I
1988	Inventory of Industrial Sites Producing or Using Coal Tar and Related Tars in Ontario, Volume I and Volume II
1991	Waste Disposal Site Inventory
1993	Ontario Inventory of PCB Storage Sites
1986 - 1995	Coal Tar Site Investigations

PHYSIOLOGIC, GEOLOGIC AND HYDROLOGIC SETTING:

Ayres, L.D., Lumbers, S.B., Milne, V.G. and Robeson D.W., 1970: Ontario Ministry of Northern Development and Mines Map 2555, East-Central Sheet; Ontario Department of Mines and Northern Affairs.

PUBLICATIONS:

Canadian Standards Association
Standard Z768-01 Environmental Technology
Phase I Environmental Site Assessment

American Society for Testing and Materials Standard E1527-00
Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process

O. Reg. 153/04, Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, Queen's Printer for Ontario, 2004

TABLE I

Soil Samples Submitted for Chemical Testing

Location	Sample ID	Approx. Depth (m)	Description From Borehole Log	Type of Chemical Analysis
Borehole 1	BH 1 SS2	0.8 – 1.2	Blackish grey silty clay, some sand and gravel	pH and metal parameters
Borehole 1	BH1 SS4	2.3 – 2.7	Brown to reddish brown silty clay till, some sand and gravel with partings of grey silt	pH and metal parameters
Borehole 1	BH1 SS5	3.0 – 3.5	Brown to reddish brown silty clay till, some sand and gravel with partings of grey silt	pH and metal parameters
Borehole 1	BH1 SS7	4.6 – 5.0	Weathered red shale	pH and metal parameters
Borehole 2	BH2 SS1	0.0 – 0.6	Dark brown silty clay topsoil with rootlets	pH and metal parameters
Borehole 2	BH2 SS2	0.8 – 1.2	Brown silty clay till, some sand and gravel	pH and metal parameters
Borehole 3	BH3 SS3	1.5 – 2.0	Brown silty clay, some sand and gravel	pH and metal parameters
Borehole 3	BH3 SS4	2.3 – 2.7	Brown silty clay, some sand and gravel, layers of brown silt	pH and metal parameters
Borehole 3	BH3 SS5 REMAINDER	3.3 – 3.5	Brown silty clay, some sand and gravel, layers of brown silt	pH and metal parameters
Borehole 4	BH4 SS3	1.5 – 2.0	Brown to reddish brown silty clay, some sand and gravel	pH and metal parameters
Borehole 4	BH4 SS4	2.3 – 2.7	Brown to reddish brown silty clay, some sand and gravel	pH and metal parameters

TABLE I

Soil Samples Submitted for Chemical Testing

Location	Sample ID	Approx. Depth (m)	Description From Borehole Log	Type of Chemical Analysis
Borehole 4	BH4 SS4-1 (DUPLICATE)	2.3 – 2.7	Brown to reddish brown silty clay, some sand and gravel	pH and metal parameters
Borehole 5	BH5 SS2 REMAINDER	0.8 – 1.2	Brown silty clay fill, some sand and gravel	pH and metal parameters
Borehole 5	BH5 SS3	1.5 – 2.0	Brown silty clay till, some sand and gravel, with pieces of red shale	pH and metal parameters
Borehole 5	BH5 SS6	4.6 – 5.0	Greyish brown silty clay till, some sand and gravel, with pieces of red shale	pH and metal parameters
Borehole 6	BH6 SS1	0.0 – 0.6	Grey sand and gravel fill, some silt	pH and metal parameters
Borehole 6	BH6 SS1-1 (DUPLICATE)	0.0 – 0.6	Grey sand and gravel fill, some silt	pH and metal parameters
Borehole 6	BH6 SS5	3.1 – 3.5	Brown silty clay, some sand and gravel	pH and metal parameters
Borehole 6	BH6 SS6	3.8 – 4.3	Brown silty clay, some sand and gravel	pH and metal parameters
Borehole 6	BH6 SS10 REMAINDER	7.7 – 8.1	Weathered red shale	pH and metal parameters
Borehole 7	BH7 SS2	0.5 – 0.9	Brown silty clay, trace sand and gravel	pH and metal parameters
Borehole 7	BH7 SS5	2.7 – 3.2	Brown silty clay, trace sand and gravel with particles of shale and partings of silt	pH and metal parameters

TABLE I

Soil Samples Submitted for Chemical Testing

Location	Sample ID	Approx. Depth (m)	Description From Borehole Log	Type of Chemical Analysis
Borehole 8	BH8 SS2	0.8 – 1.2	Brown silty clay till, some sand and gravel	pH and metal parameters
Borehole 9	BH9 SS2	0.8 – 1.2	Grey silty clay till, trace sand and gravel	pH and metal parameters
Borehole 9	BH9 SS2-1 (DUPLICATE)	0.8 – 1.2	Grey silty clay till, trace sand and gravel	pH and metal parameters

TABLE II

Chemical Test Results

Soil Type					Blackish Grey Silty Clay	Brown to Reddish Brown Silty Clay Till	Brown to Reddish Brown Silty Clay Till	Weathered Red Shale	Dark Brown Silty Clay	Brown Silty Clay Till	Brown Silty Clay	Brown Silty Clay	Brown Silty Clay	Brown to Reddish Brown Silty Clay	Brown to Reddish Brown Silty Clay	Brown to Reddish Brown Silty Clay
Sample Identification		***O. Reg. 153/04 Table 1 (µg/g)**	****O. Reg. 153/04 Table 2 and 3 (µg/g)**	*****O. Reg. 153/04 Table 2 and 3 (µg/g)**	**BH1 SS2**	**BH1 SS4**	**BH1 SS5**	**BH1 SS7**	**BH2 SS1**	**BH2 SS2**	**BH3 SS3**	**BH3 SS4**	**BH3 SS5 Remainder**	**BH4 SS3**	**BH4 SS4**	**BH4 SS4-1 (Duplicate)**
Parameter	**Units**															
Antimony	µg/g	1	13	(44) 40	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Arsenic	µg/g	17	(25) 20	(50) 40	5.2	3.1	3.3	4.0	3.5	3.6	3.7	3.1	2.4	5.0	4.1	4.0
Barium	µg/g	210	(1000) 750	(2000) 1500	91.9	131	89.6	177	82.1	125	117	57.8	70.6	127	115	161
Beryllium	µg/g	1.2	1.2	1.2	0.6	0.6	0.5	1.0	0.7	0.8	0.7	0.4	0.5	0.8	0.8	0.7
Cadmium	µg/g	1	12	12	0.4	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Chromium	µg/g	71	(1000) 750	(1000) 750	17.4	21	11.8	24.3	21.9	25.3	21.8	11.4	16.5	23.9	22.5	20.8
Cobalt	µg/g	21	(50) 40	(100) 80	9.2	10.4	8.2	16.4	10.9	11.8	10.7	5.7	8.2	13.4	12.4	12.3
Copper	µg/g	85	(300) 225	(300) 225	40.3	25.7	11.6	10.3	21.9	26.2	27.8	17.4	22.9	32.5	26.9	30.3
Lead	µg/g	120	200	1000	51.4	9.4	4.2	4.8	19.8	11.0	10.1	6.3	8.4	11.5	9.5	9.7
Mercury	µg/g	0.23	10	10	0.03	0.014	<0.011	<0.011	0.024	0.02	0.013	<0.011	<0.011	0.014	0.012	0.011
Molybdenum	µg/g	2.5	40	40	0.5	<0.3	<0.3	0.6	<0.3	<0.3	<0.3	<0.3	<0.3	0.3	0.4	0.4
Nickel	µg/g	43	(200) 150	(200) 150	18.5	23.0	17.2	37.5	22.0	27.3	23.6	11.7	18.3	29.2	27.5	27.1
Selenium	µg/g	1.9	10	10	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Silver	µg/g	0.42	(25) 20	(50) 40	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Vanadium	µg/g	91	(250) 200	(250) 200	25.3	27.2	14.5	23.4	30.3	33.6	29.7	16.6	22.6	31.0	28.4	25.7
Electrical Conductivity (EC)	(mS/cm)	0.57	0.70	1.4	**2.33**	**2.06**	***0.774***	0.450	0.161	0.172	0.186	0.145	0.271	0.284	0.518	0.465
Sodium Adsorption Ratio (SAR)	NA	2.4	5.0	12	**34.8**	**49.7**	**2.8**	**3.02**	0.288	0.513	0.75	0.518	0.321	1.24	0.418	0.474
pH (pH Units)	NA	-	-	-	8.76	8.91	8.29	8.30	8.05	8.19	8.27	8.38	8.21	8.20	8.10	7.97

Notes:

pH 5-9 < 1.5 m deep; pH 5-11 >1.5 m deep ( ) - Medium/fine textured soil

Bold Text - Exceeds Table 1 Standards

Bold Text, Italics and Underline - Exceeds Table 2 and 3 Standards, Residential/Parkland/Institutional Property Use

Reverse Bold Text - Exceeds Table 2 and 3 Standards, Industrial/Commercial/Community Property Use

* - O. Reg. 153/04 Table 1 Standards, All Other Types of Property Use

** - O. Reg. 153/04 Table 3 Standards, Residential/Parkland/Institutional Property Use, Potable Ground Water (GW)

*** - O. Reg. 153/04 Table 3 Standards, Industrial/Commercial/Community Property Use, Nonpotable Ground Water (GW)

TABLE II (Continued)

Chemical Test Results

Soil Type					Brown Silty Clay Fill	Brown Silty Clay Till	Greyish Brown Silty Clay Till	Grey Sand and Gravel Fill	Grey Sand and Gravel Fill	Brown Silty Clay	Brown Silty Clay	Weathered Red Shale	Brown Silty Clay	Brown Silty Clay	Brown Silty Clay Till	Grey Silty Clay Till	Grey Silty Clay Till
Sample Identification		***O. Reg. 153/04 Table 1 (µg/g)**	****O. Reg. 153/04 Table 2 and 3 (µg/g)**	*****O. Reg. 153/04 Table 2 and 3 (µg/g)**	**BH5 SS2 Remainder**	**BH5 SS3**	**BH5 SS6**	**BH6 SS1**	**BH6 SS1-1 (Duplicate)**	**BH6 SS5**	**BH6 SS6**	**BH6 SS10 Remainder**	**BH7 SS2**	**BH7 SS5**	**BH8 SS2**	**BH9 SS2**	**BH9 SS2-1 (Duplicate)**
Parameter	**Units**																
Antimony	µg/g	1	13	(44) 40	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Arsenic	µg/g	17	(25) 20	(50) 40	4.4	4.6	4.8	5.2	5.6	4.3	3.6	1.4	3.4	3.9	4.0	2.4	4.2
Barium	µg/g	210	(1000) 750	(2000) 1500	79.4	117	96.0	45.3	53.7	111	109	38.8	73.8	103	119	50.8	92.5
Beryllium	µg/g	1.2	1.2	1.2	0.6	0.8	0.8	0.3	0.3	0.6	0.7	0.8	0.7	0.6	0.8	0.4	0.6
Cadmium	µg/g	1	12	12	<0.2	<0.2	<0.2	0.5	0.4	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Chromium	µg/g	71	(1000) 750	(1000) 750	16.5	23.0	20.6	9.2	10.0	18.8	20.5	15.9	21.5	19.2	21.5	10.8	18.5
Cobalt	µg/g	21	(50) 40	(100) 80	9.4	13.2	11.6	4.6	4.8	11	10.8	10.6	12.5	11.0	11.1	5.2	9.3
Copper	µg/g	85	(300) 225	(300) 225	22.7	41.5	40.3	26.2	26.3	45.6	28.4	12.9	22.9	29.4	28.1	18.3	31.8
Lead	µg/g	120	200	1000	10.0	11.0	9.9	78.0	77.6	10.8	9.6	3.5	12.2	11.0	12.5	6.5	12.1
Mercury	µg/g	0.23	10	10	0.015	0.014	0.013	0.017	0.019	0.014	0.017	<0.011	0.029	0.016	0.028	0.018	0.018
Molybdenum	µg/g	2.5	40	40	<0.3	0.3	0.4	1.1	1.2	0.3	0.3	<0.3	<0.3	0.4	<0.3	<0.3	<0.3
Nickel	µg/g	43	(200) 150	(200) 150	19.2	27.0	25.3	10.0	11.2	24.5	24.8	26.1	21.8	24.1	23.4	12.2	21.8
Selenium	µg/g	1.9	10	10	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Silver	µg/g	0.42	(25) 20	(50) 40	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Vanadium	µg/g	91	(250) 200	(250) 200	23.0	37.8	27.1	17.0	18.6	25.4	26.6	15.5	31.0	26.2	29.6	15.6	27.0
Electrical Conductivity (EC)	(mS/cm)	0.57	0.70	1.4	0.448	0.340	0.340	**2.86**	**2.86**	0.306	0.498	0.290	**5.56**	0.568	**2.34**	**1.42**	**1.45**
Sodium Adsorption Ratio (SAR)	NA	2.4	5.0	12	***8.04***	3.70	0.353	**31.2**	**33.10**	1.18	0.478	0.711	**41.1**	**3.6**	**20.8**	**12.6**	***11.7***
pH (pH Units)	NA	-	-	-	8.66	8.51	8.41	8.72	8.41	8.22	8.13	8.89	7.97	8.16	8.23	8.35	8.15

Notes:

pH 5-9 < 1.5 m deep; pH 5-11 >1.5 m deep ( ) - Medium/fine textured soil

Bold Text - Exceeds Table 1 Standards

Bold Text, Italics and Underline - Exceeds Table 2 and 3 Standards, Residential/Parkland/Institutional Property Use

Reverse Bold Text - Exceeds Table 2 and 3 Standards, Industrial/Commercial/Community Property Use

* - O. Reg. 153/04 Table 1 Standards, All Other Types of Property Use

** - O. Reg. 153/04 Table 3 Standards, Residential/Parkland/Institutional Property Use, Potable Ground Water (GW)

*** - O. Reg. 153/04 Table 3 Standards, Industrial/Commercial/Community Property Use, Nonpotable Ground Water (GW)

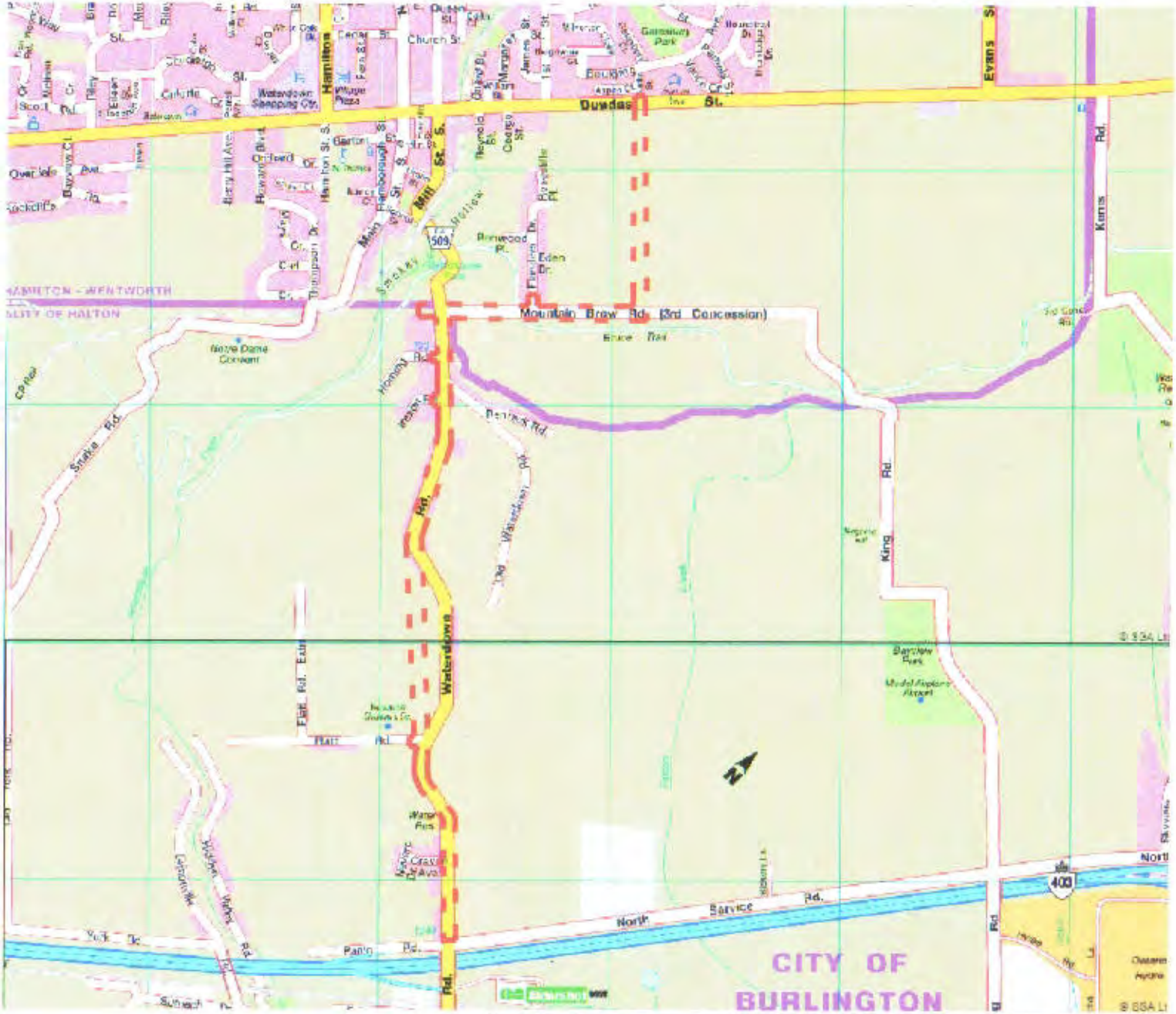
TABLE III

Site Sensitivity Analysis
Site Condition Standards, Environmentally Sensitive Areas
Section 41, Ontario Regulation 153/04

Criteria	Decision for the Subject Site
41. (1) This section applies in relation to a property if,	
(a) the property is within an area of natural significance, or includes or is adjacent to such an area or part of such an area;	**Yes**
(b) the soil at the property has a pH value as follows: (i) for surface soil, less than 5 or greater than 9, (ii) for subsurface soil, less than 5 or greater than 11;	No
(c) the property is a shallow soil property;	No
(d) the property includes or is adjacent to a water body or includes land that is within 30 m of a water body; or	**Yes**
(e) a qualified person is of the opinion that, given the characteristics of the property and the certifications the qualified person would be required to make in a record of site condition in relation to the property as specified in Schedule A, it is appropriate to apply this section to the property.	No

In Section (1) (a) above, "area of natural significance" means any of the following (Section 41 (3)):

1. A provincial park designated by a regulation under the *Provincial Parks Act*.
2. A conservation reserve established under the *Public Lands Act*.
3. An area of natural and scientific interest (life science) identified by the Ministry of Natural Resources as having provincial significance.
4. A wetland identified by the Ministry of Natural Resources as having provincial significance.
5. An area designated by a municipality in its official plan as environmentally significant, however expressed, including designations of areas as environmentally sensitive, as being of environmental concern and as being ecologically significant.
6. An area designated as an escarpment natural area or an escarpment protection area by the Niagara Escarpment Plan under the *Niagara Escarpment Planning and Development Act*.
7. A habitat of endangered or threatened species identified by the Ministry of Natural Resources.
8. Property within an area designated as a natural core area or natural linkage area within the area to which the Oak Ridges Moraine Conservation Plan under the *Oak Ridges Moraine Conservation Act, 2001.*



CITY OF HAMILTON	
WATERDOWN ROAD WIDENING HIGHWAY 403 TO DUNDAS STREET EAST HAMILTON/BURLINGTON, ONTARIO	
ALIGNMENT KEY PLAN	

Peto MacCallum Ltd.
CONSULTING ENGINEERS

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DD	DD	MPL	DEC. 2008	NOT TO SCALE	08HX015	1

TRUE NORTH

PROJECT NORTH

KEY PLAN
BURLINGTON, ONTARIO

LEGEND:

APPROXIMATE SITE LIMITS

REFERENCE:
PLAN REPRODUCED FROM A PDF IMAGE PROVIDED BY DILLON CONSULTING LTD. – PROJECT NO. 089020 IN AN EMAIL DATED AUGUST 13, 2008. BASE MAP DATED 2007.

NOTE:
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50 25 0m 25 50 75 100
SCALE

CITY OF HAMILTON

MODIFIED PHASE I ENVIRONMENTAL SITE ASSESSMENT

WATERDOWN ROAD WIDENING
NORTH SERVICE ROAD TO STATION 40+000
HAMILTON/BURLINGTON, ONTARIO

SITE PLAN

Peto MacCallum Ltd.
CONSULTING ENGINEERS

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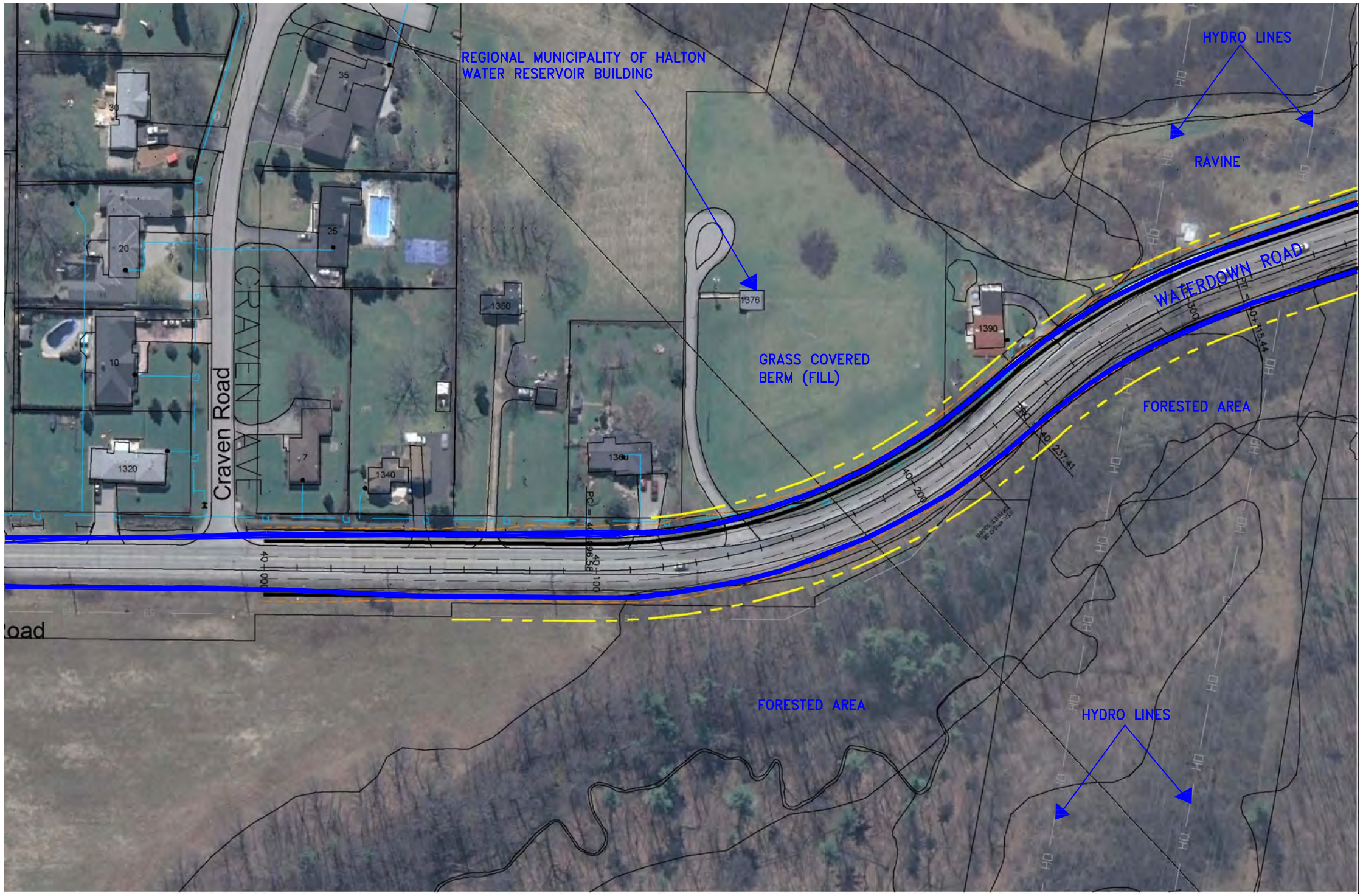
APPROVED				

TRUE NORTH

PROJECT NORTH



KEY PLAN
BURLINGTON, ONTARIO

LEGEND:

APPROXIMATE SITE LIMITS

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50 25 0m 25 50 75 100
SCALE

CITY OF HAMILTON

MODIFIED PHASE I ENVIRONMENTAL SITE ASSESSMENT

WATERDOWN ROAD WIDENING
STATION 40+000 TO STATION 40+355
HAMILTON/BURLINGTON, ONTARIO

SITE PLAN

Peto MacCallum Ltd.
CONSULTING ENGINEERS

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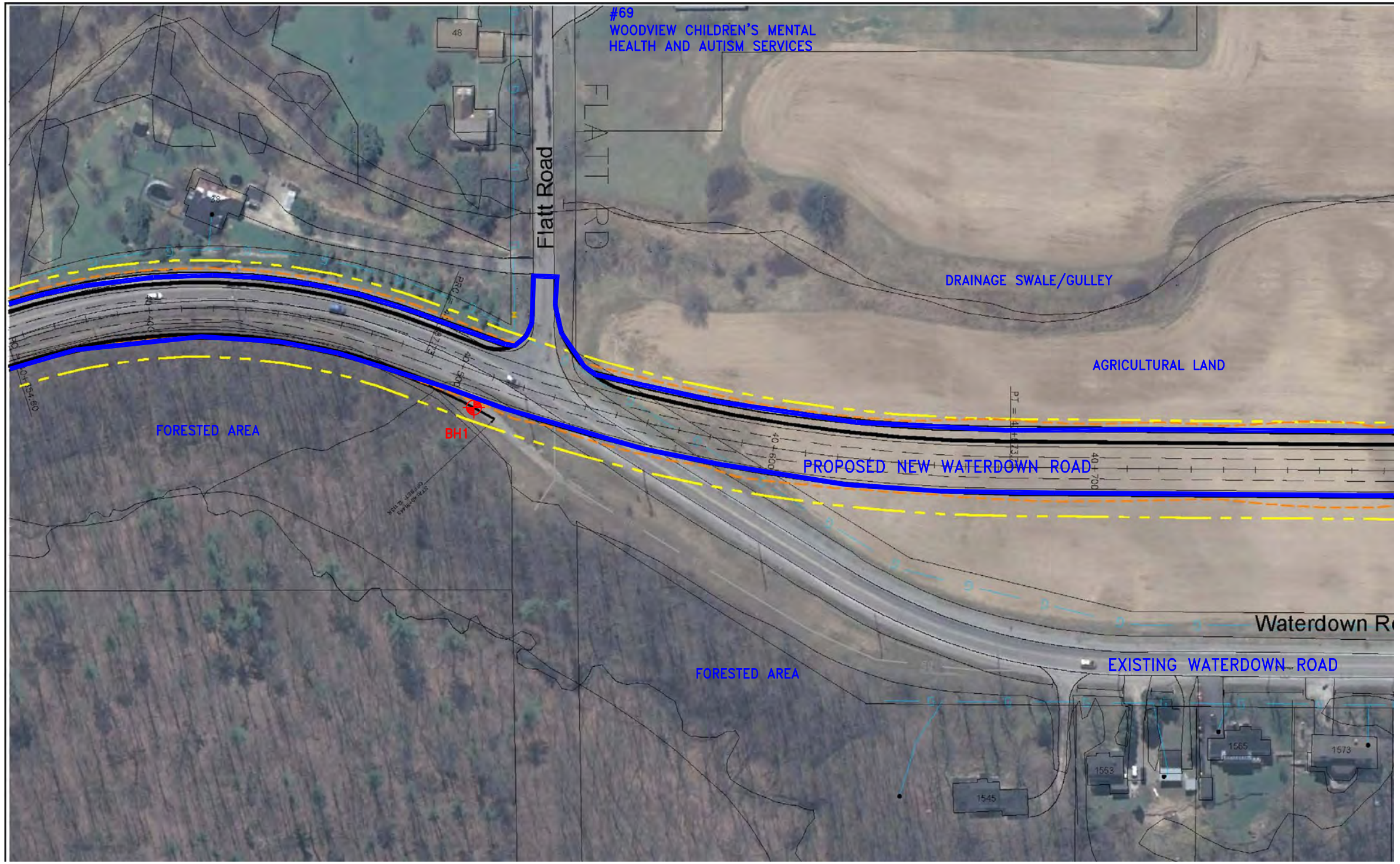
APPROVED					

TRUE NORTH

PROJECT NORTH



KEY PLAN
BURLINGTON, ONTARIO

LEGEND:

APPROXIMATE SITE LIMITS

PML BOREHOLE (BH) LOCATION

REFERENCE:
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50 25 0m 25 50 75 100
SCALE

CITY OF HAMILTON

MODIFIED PHASE I ENVIRONMENTAL SITE ASSESSMENT

WATERDOWN ROAD WIDENING
STATION 40+355 TO STATION 40+780
HAMILTON/BURLINGTON, ONTARIO

SITE PLAN

PML Peto MacCallum Ltd.
CONSULTING ENGINEERS

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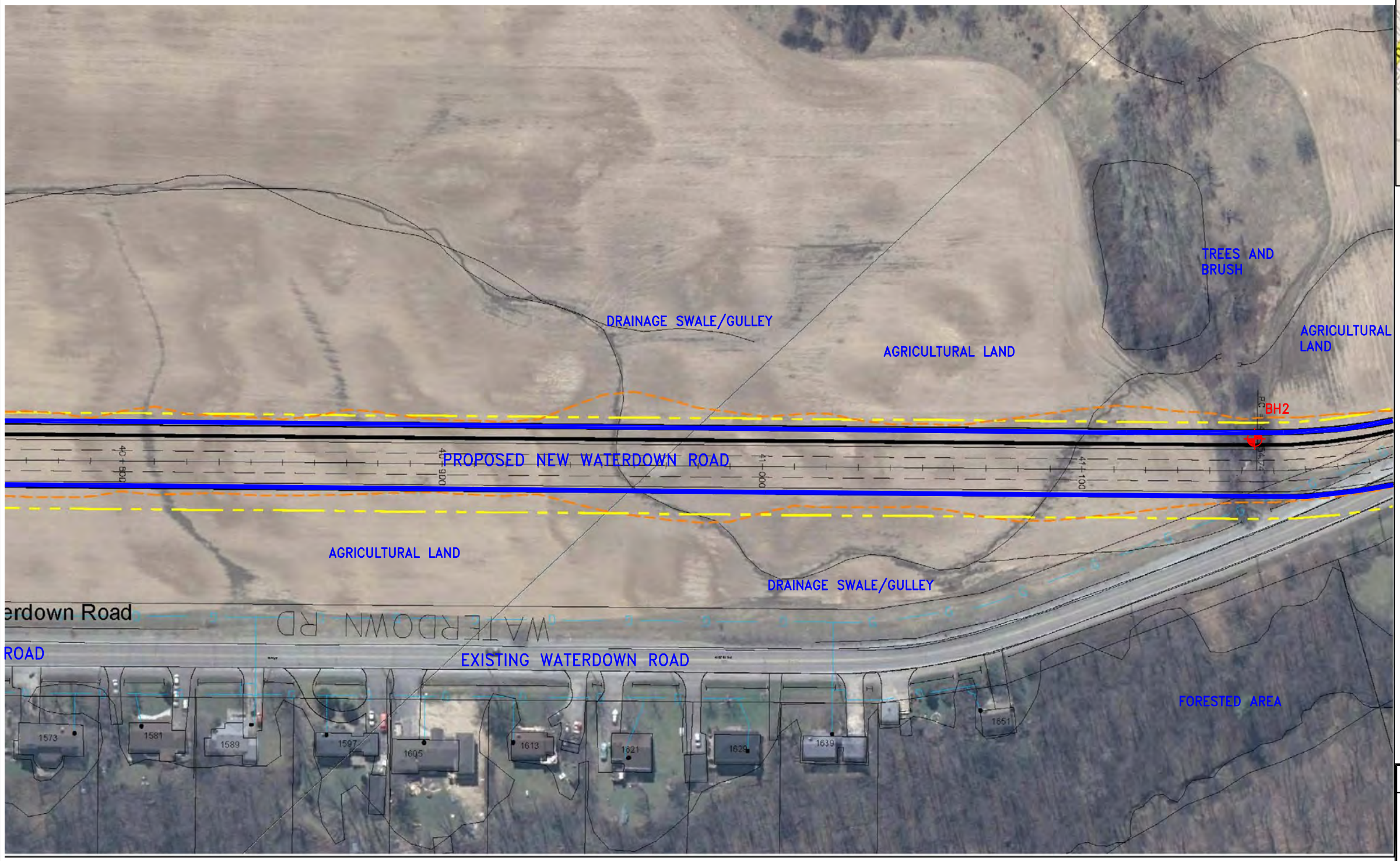
APPROVED					

TRUE NORTH

PROJECT NORTH



KEY PLAN
BURLINGTON, ONTARIO

LEGEND:

APPROXIMATE SITE LIMITS

PML BOREHOLE (BH) LOCATION

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50 25 0m 25 50 75 100
SCALE

CITY OF HAMILTON

MODIFIED PHASE I ENVIRONMENTAL SITE ASSESSMENT

WATERDOWN ROAD WIDENING
STATION 40+780 TO STATION 41+200
HAMILTON/BURLINGTON, ONTARIO

SITE PLAN

Peto MacCallum Ltd.
CONSULTING ENGINEERS

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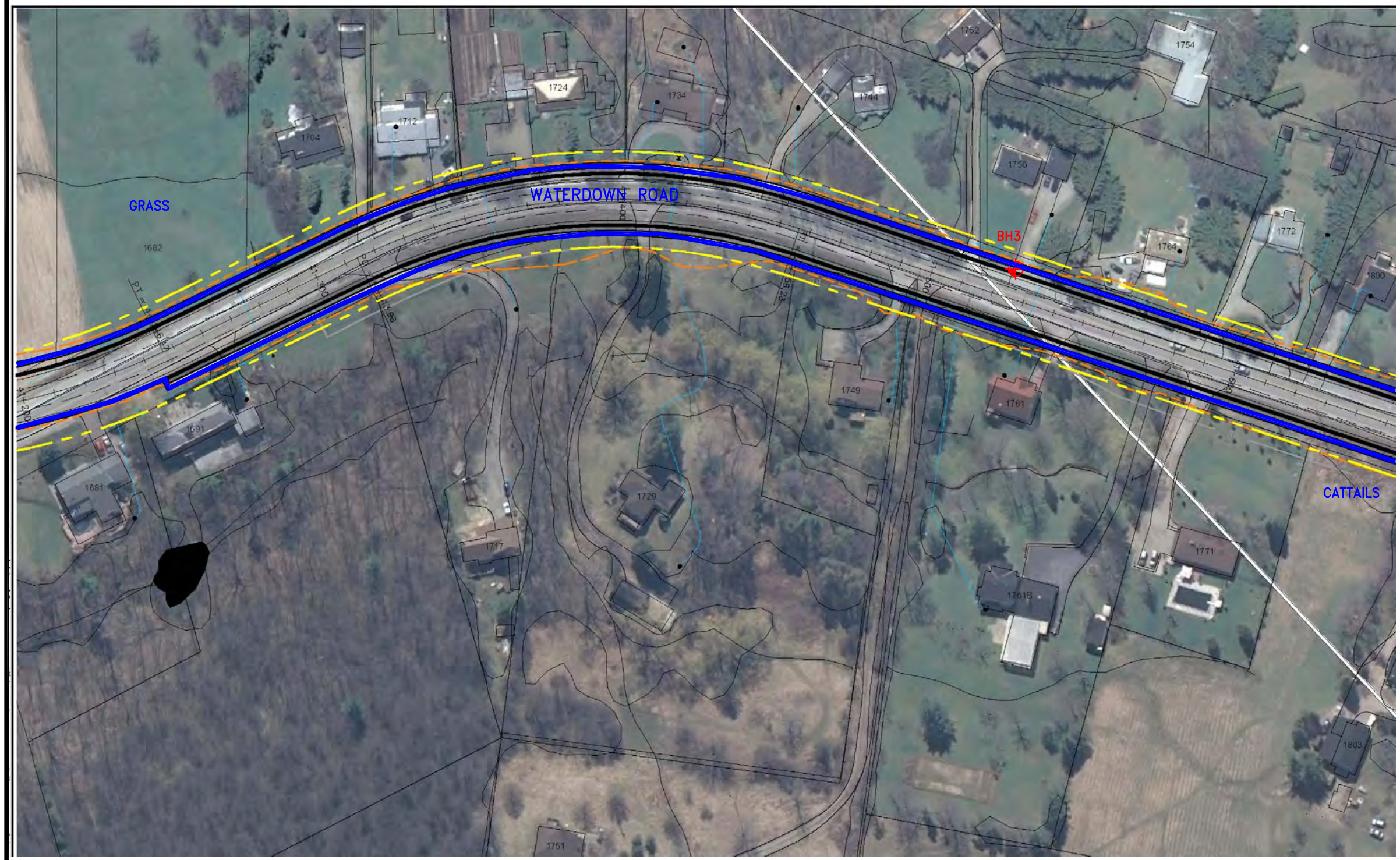
APPROVED					

TRUE NORTH

PROJECT NORTH



KEY PLAN
BURLINGTON, ONTARIO

LEGEND:

APPROXIMATE SITE LIMITS

PML BOREHOLE (BH) LOCATION

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50 25 0m 25 50 75 100
SCALE

CITY OF HAMILTON

MODIFIED PHASE I ENVIRONMENTAL SITE ASSESSMENT

WATERDOWN ROAD WIDENING
STATION 41+200 TO STATION 41+650
HAMILTON/BURLINGTON, ONTARIO

SITE PLAN

Peto MacCallum Ltd.
CONSULTING ENGINEERS

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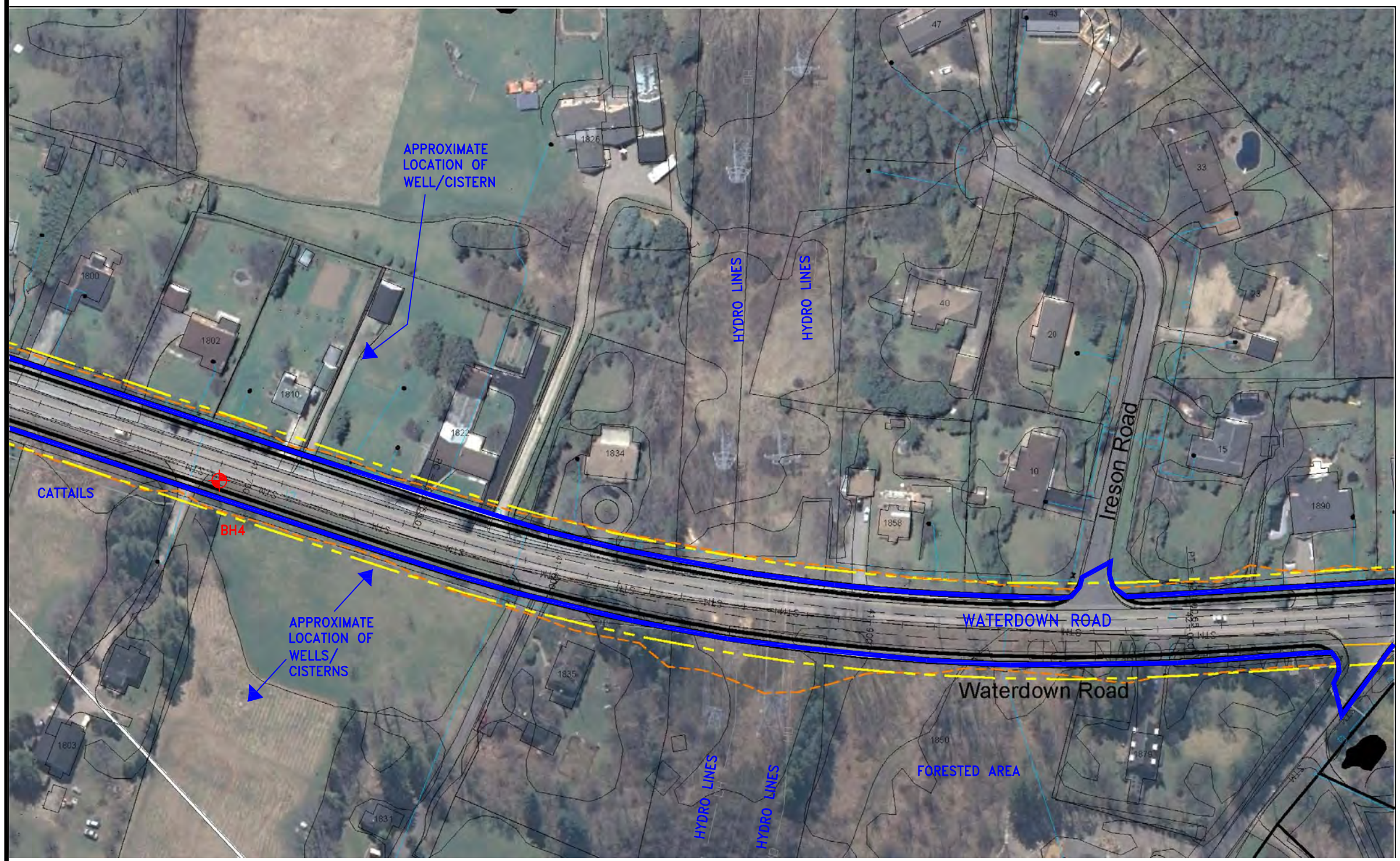
APPROVED				

TRUE NORTH

PROJECT NORTH



50 25 0m 25 50 75 100

SCALE

KEY PLAN
BURLINGTON, ONTARIO

LEGEND:

APPROXIMATE SITE LIMITS

PML BOREHOLE (BH) LOCATION

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CITY OF HAMILTON

MODIFIED PHASE I ENVIRONMENTAL SITE ASSESSMENT

WATERDOWN ROAD WIDENING
STATION 41+650 TO STATION 42+065
HAMILTON/BURLINGTON, ONTARIO

SITE PLAN

PML Peto MacCallum Ltd.
CONSULTING ENGINEERS

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CHECKED	DD	DEC. 2008	AS SHOWN	08HX015	6
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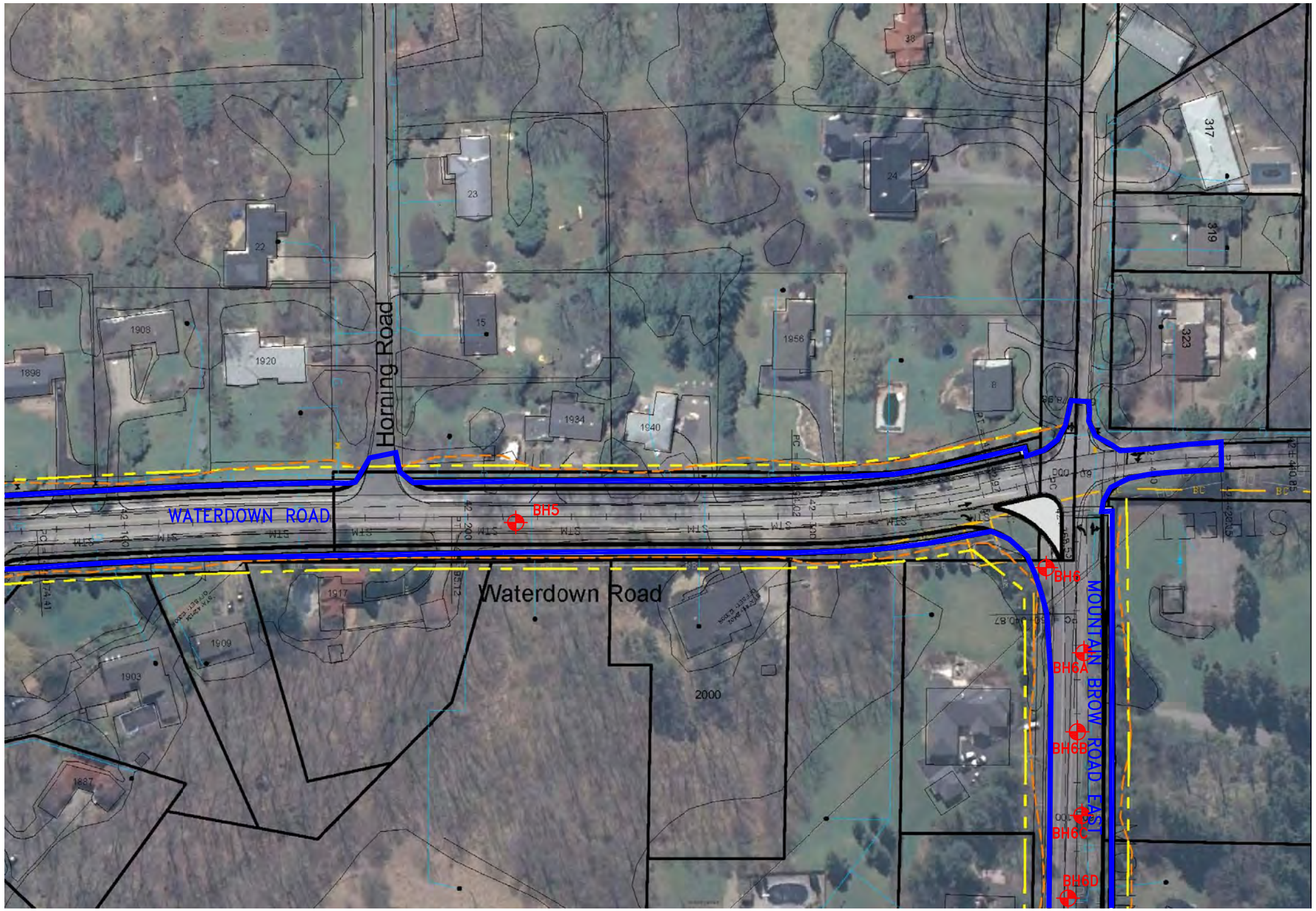
TRUE NORTH

PROJECT NORTH



KEY PLAN
BURLINGTON AND HAMILTON, ONTARIO

LEGEND:

APPROXIMATE SITE LIMITS

PML BOREHOLE (BH) LOCATION

50 25 0m 25 50 75 100
SCALE

REFERENCE:
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CITY OF HAMILTON

MODIFIED PHASE I ENVIRONMENTAL SITE ASSESSMENT

WATERDOWN ROAD WIDENING
STATION 42+065 TO STATION 42+440.85
HAMILTON/BURLINGTON, ONTARIO

SITE PLAN

PML Peto MacCallum Ltd.
CONSULTING ENGINEERS

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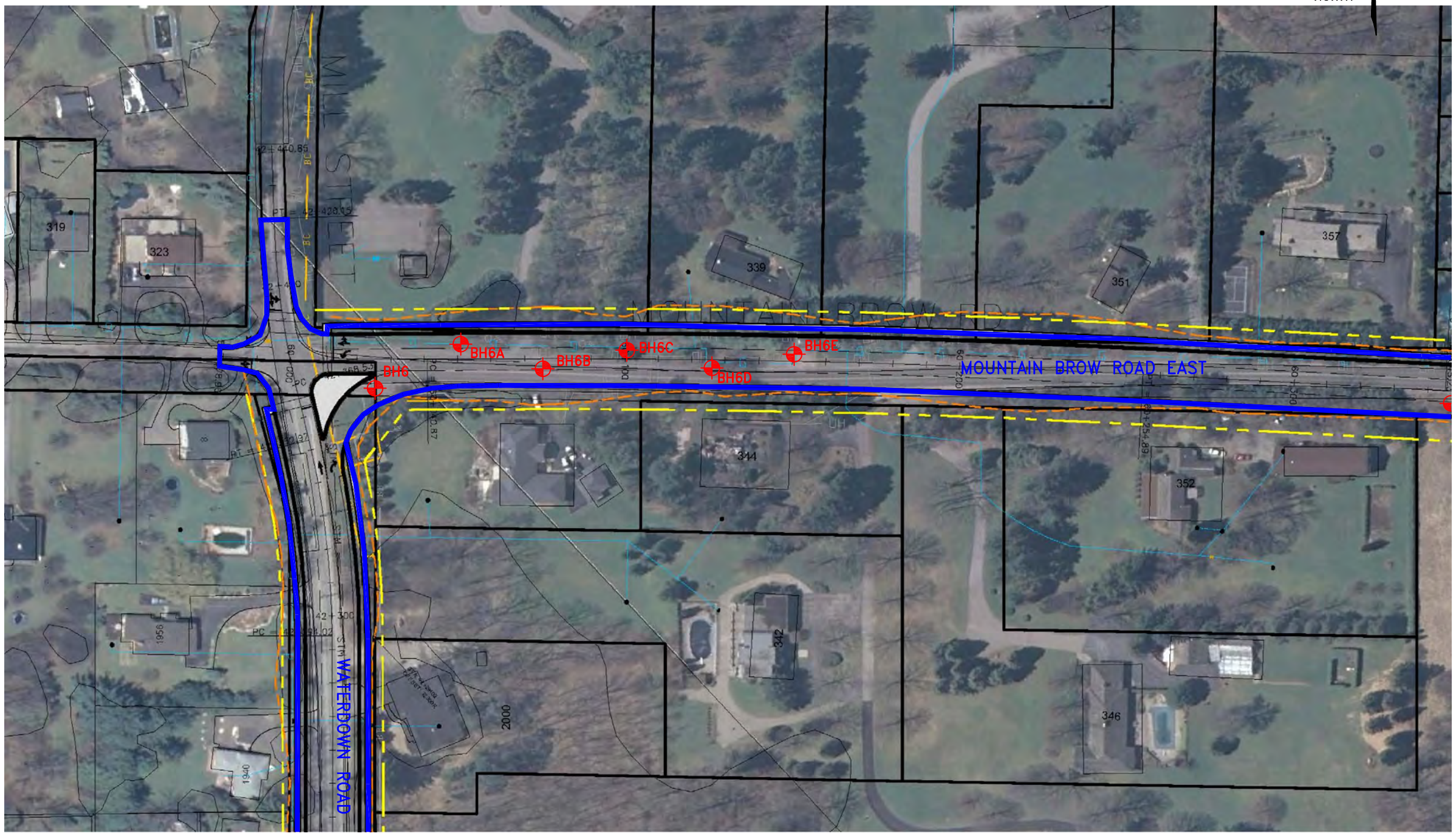
CHECKED	DD	DEC. 2008	AS SHOWN	08HX015	7
APPROVED					

TRUE NORTH

PROJECT NORTH



KEY PLAN
BURLINGTON AND HAMILTON, ONTARIO

LEGEND:

APPROXIMATE SITE LIMITS

PML BOREHOLE (BH) LOCATION

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50 25 0m 25 50 75 100
SCALE

CITY OF HAMILTON

MODIFIED PHASE I ENVIRONMENTAL SITE ASSESSMENT

WATERDOWN ROAD WIDENING
STATION 60+000 TO STATION 60+345
HAMILTON/BURLINGTON, ONTARIO

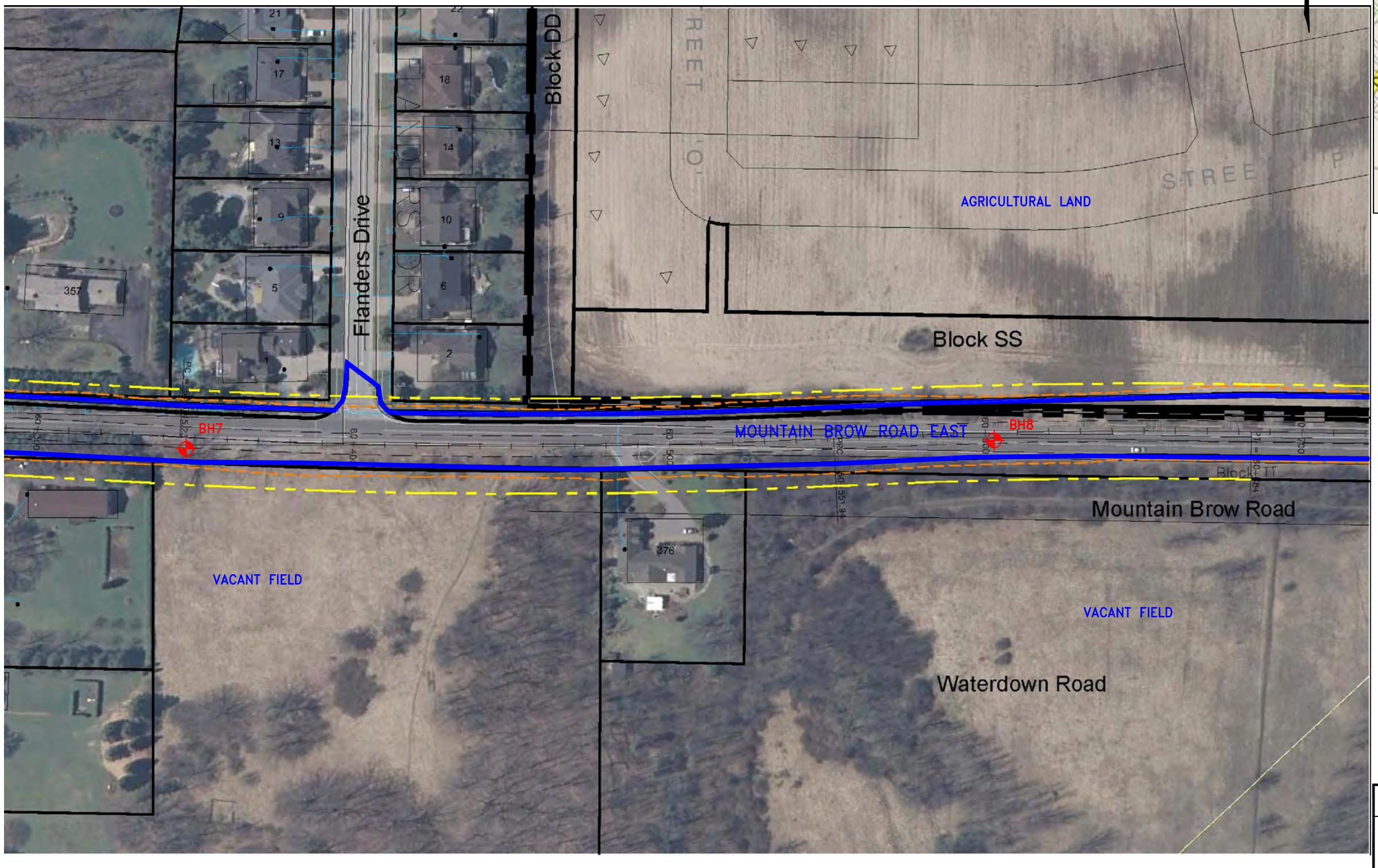
SITE PLAN

PML Peto MacCallum Ltd.
CONSULTING ENGINEERS

DRAWN	TC/DD	DATE	SCALE	PML REF.	DRAWING NO.
CHECKED	DD	DEC. 2008	AS SHOWN	08HX015	8
APPROVED					

TRUE NORTH

PROJECT NORTH



KEY PLAN
HAMILTON, ONTARIO

LEGEND:

APPROXIMATE SITE LIMITS

PML BOREHOLE (BH) LOCATION

REFERENCE:
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50 25 0m 25 50 75 100

SCALE

CITY OF HAMILTON

MODIFIED PHASE I ENVIRONMENTAL SITE ASSESSMENT

WATERDOWN ROAD WIDENING
STATION 60+345 TO STATION 60+720
HAMILTON/BURLINGTON, ONTARIO

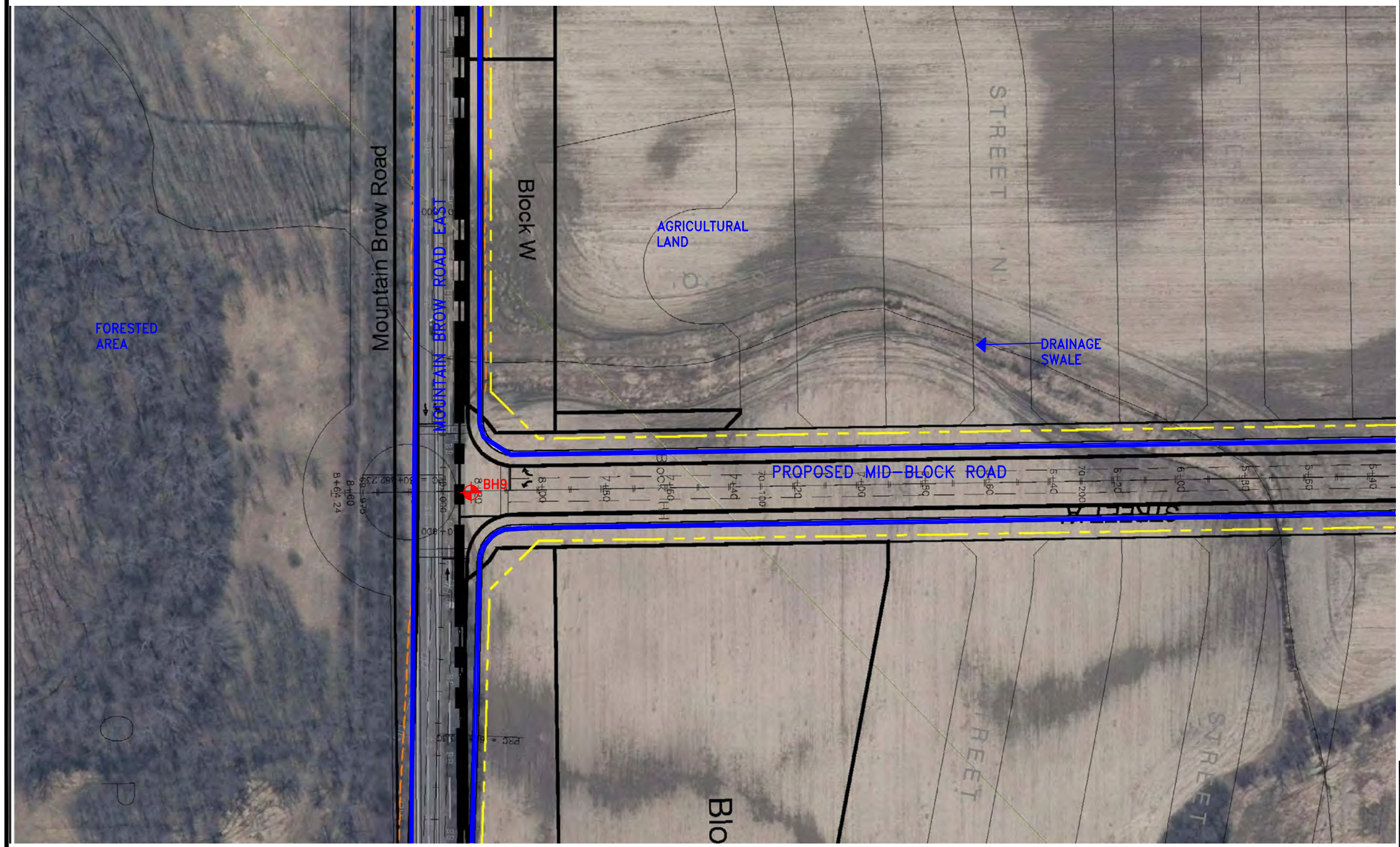
SITE PLAN

PML Peto MacCallum Ltd.
CONSULTING ENGINEERS

DRAWN	TC/DD	DATE	SCALE	PML REF.	DRAWING NO.
CHECKED	DD	DEC. 2008	AS SHOWN	08HX015	9
APPROVED					

TRUE NORTH

PROJECT NORTH



KEY PLAN
HAMILTON, ONTARIO

LEGEND:

APPROXIMATE SITE LIMITS

PML BOREHOLE (BH) LOCATION

REFERENCE:
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50 25 0m 25 50 75 100
SCALE

CITY OF HAMILTON

MODIFIED PHASE I ENVIRONMENTAL SITE ASSESSMENT

WATERDOWN ROAD WIDENING
STATION 70+000 TO 70+295
HAMILTON/BURLINGTON, ONTARIO

SITE PLAN

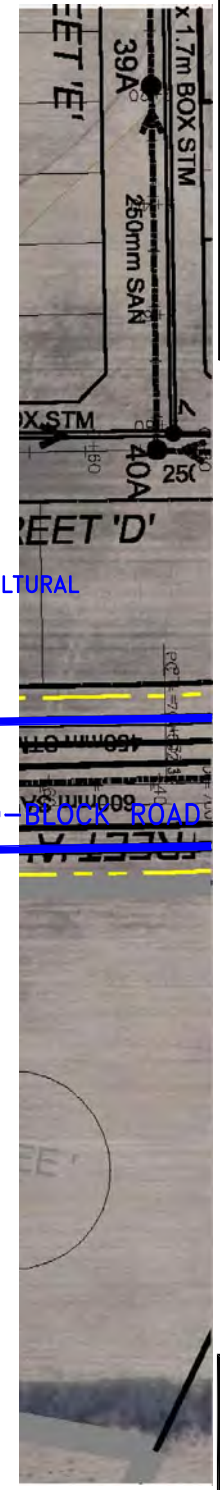
PML Peto MacCallum Ltd.
CONSULTING ENGINEERS

DRAWN	DATE	SCALE	PML REF.	DRAWING NO.
TC/DD	DEC. 2008	AS SHOWN	08HX015	10
CHECKED DD				
APPROVED				

TRUE NORTH

PROJECT NORTH

KEY PLAN
HAMILTON, ONTARIO



AGRICULTURAL LAND

LEGEND:

APPROXIMATE SITE LIMITS

PML BOREHOLE (BH) LOCATION

50 25 0m 25 50 75 100
SCALE

REFERENCE:
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CITY OF HAMILTON

MODIFIED PHASE I ENVIRONMENTAL SITE ASSESSMENT

WATERDOWN ROAD WIDENING
STATION 70+295 TO 70+700
HAMILTON/BURLINGTON, ONTARIO

SITE PLAN

Peto MacCallum Ltd.
CONSULTING ENGINEERS

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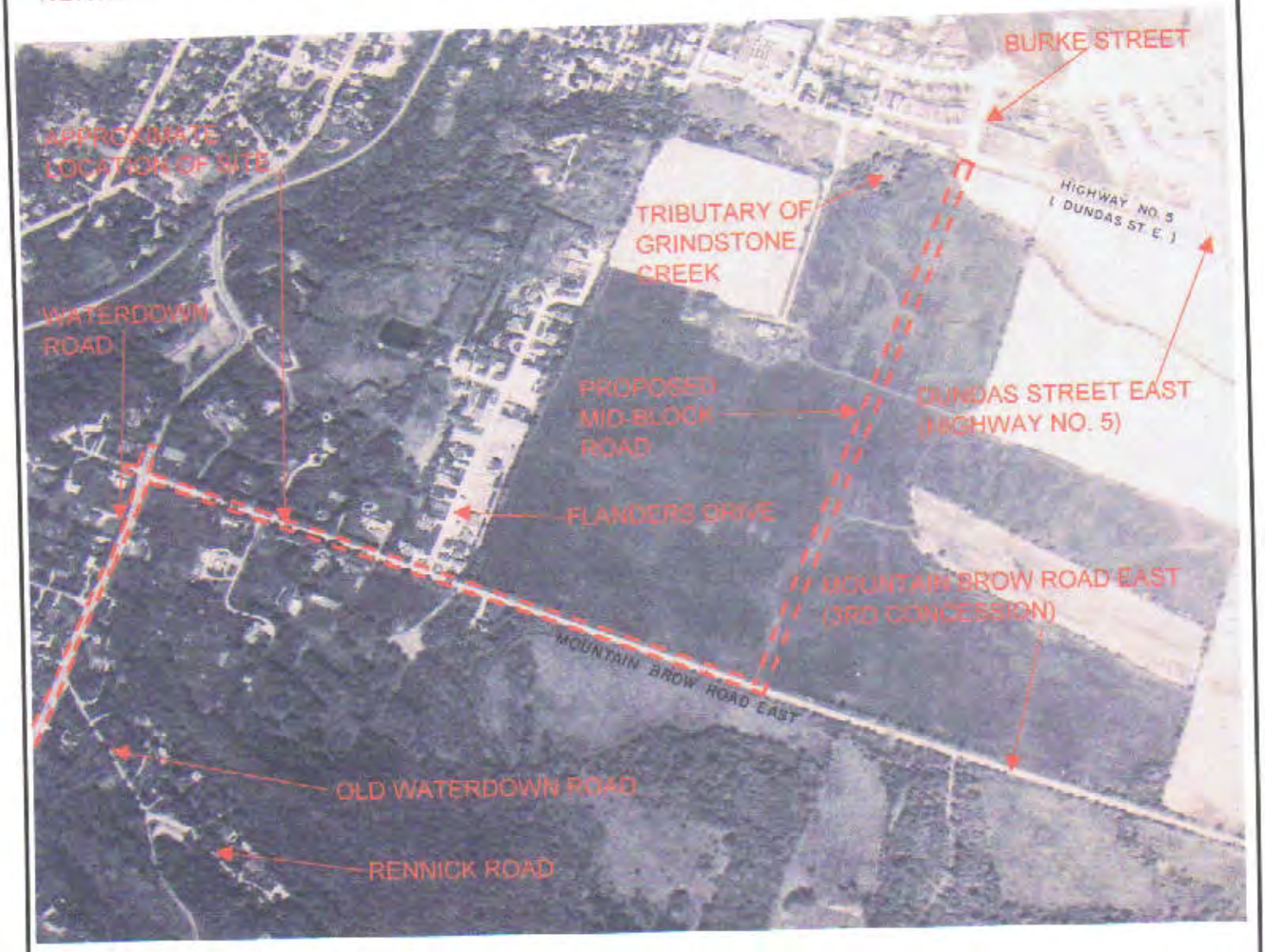
CHECKED	DD	DEC. 2008	AS SHOWN	08HX015	11
APPROVED					



CITY OF HAMILTON

MODIFIED PHASE I ENVIRONMENTAL SITE ASSESSMENT

WATERDOWN ROAD WIDENING
HIGHWAY 403 TO DUNDAS STREET EAST
HAMILTON/BURLINGTON, ONTARIO

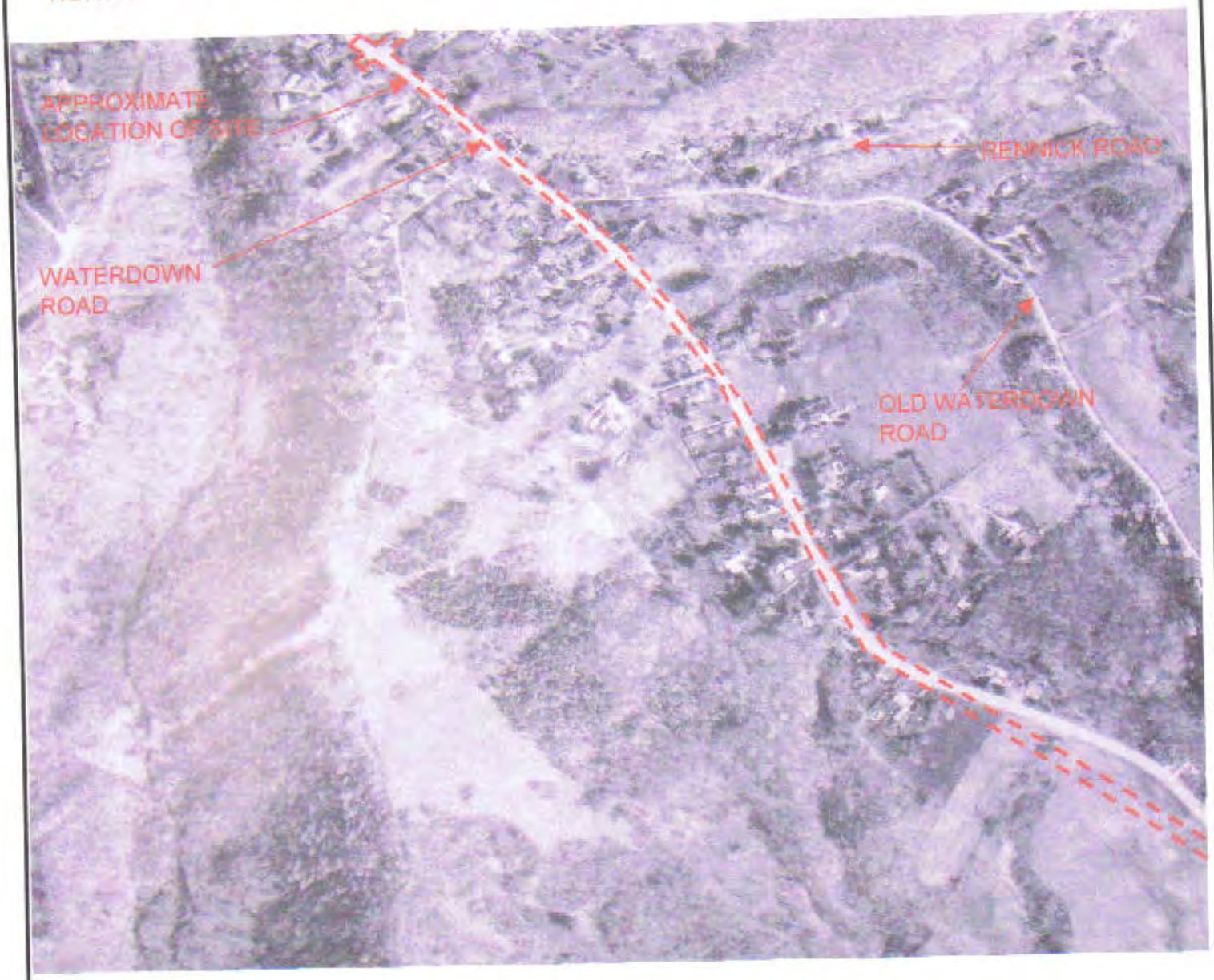
1985 AERIAL PHOTOGRAPH

Peto MacCallum Ltd.
CONSULTING ENGINEERS

DATE	APPROX. SCALE	PML REF.	FIGURE
DEC. 2008	1:8,535	08HX015	6

PROJECT NORTH

TRUE NORTH



CITY OF HAMILTON

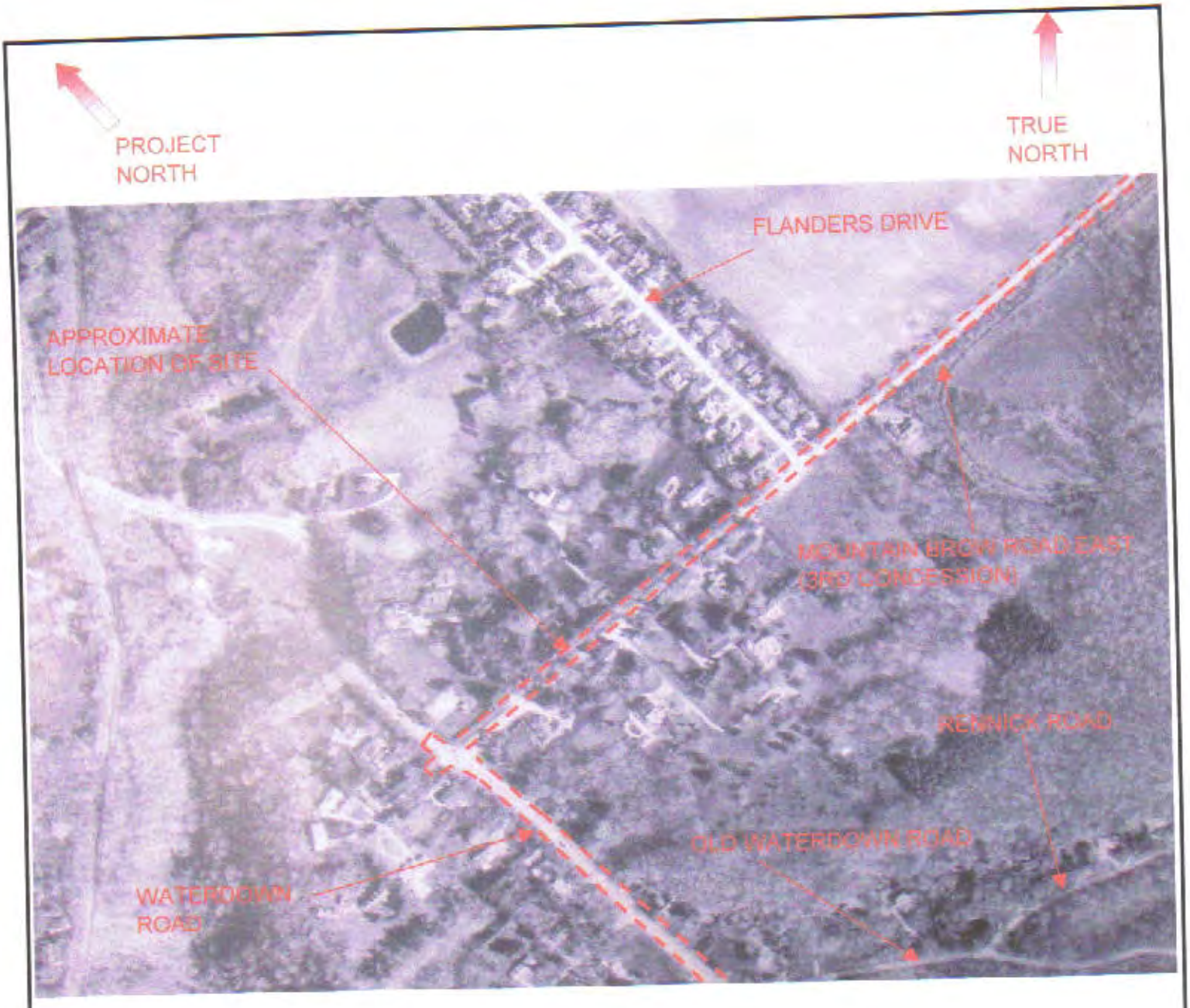
MODIFIED PHASE I ENVIRONMENTAL SITE ASSESSMENT

WATERDOWN ROAD WIDENING
HIGHWAY 403 TO DUNDAS STREET EAST
HAMILTON/BURLINGTON, ONTARIO

2000 AERIAL PHOTOGRAPH

PML Peto MacCallum Ltd.
CONSULTING ENGINEERS

DATE	APPROX. SCALE	PML REF.	FIGURE
DEC. 2008	1:7,255	08HX015	7



CITY OF HAMILTON

MODIFIED PHASE I ENVIRONMENTAL SITE ASSESSMENT

WATERDOWN ROAD WIDENING
HIGHWAY 403 TO DUNDAS STREET EAST
HAMILTON/BURLINGTON, ONTARIO

2000 AERIAL PHOTOGRAPH

PML Peto MacCallum Ltd.
CONSULTING ENGINEERS

DATE	APPROX. SCALE	PML REF.	FIGURE
DEC. 2008	1:5,435	08HX015	8

APPENDIX B

Site Photographs

Photograph 1 – View looking south at the proposed Mid-Block Road and the tributary of Grindstone Creek.

Photograph 2 – View looking west along Mountain Brow Road East from Mid-Block Road.

Photograph 3 – View looking north along Waterdown Road from Horning Road.

Photograph 4 – View looking south along Waterdown Road in the area of 1613 Waterdown Road. The proposed New Waterdown Road is to be located within the agricultural field to the west (right).

APPENDIX C

AGAT Certificates of Analysis

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
L4Z 1Y2

AGAT® Laboratories

TEL: (905) 712-5100
FAX: (905) 712-5122
www.agatlabs.com

CLIENT NAME: PETO MACCALLUM LIMITED
45 BURFORD ROAD
HAMILTON, ON L8E3C5

ATTENTION TO: Danika Durish

PROJECT NO: 08HX015

AGAT WORK ORDER: 08T291548

SOIL ANALYSIS REVIEWED BY: Mike Muneswar, BSc (Chem), Senior Inorganic Analyst

DATE REPORTED: Sep 15, 2008

PAGES (INCLUDING COVER): 9

Should you require any information regarding this analysis please contact your client services representative at (905) 712 5100, or at 1-800-856-6261

*NOTES

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.

AGAT Laboratories (V1)

Member of: Association of Professional Engineers, Geologists and Geophysicists of Alberta (APEGGA)
Western Enviro Agricultural Laboratory Association (WEALA)
Environmental Services Association of Alberta (ESAA)

AGAT Laboratories is accredited to ISO/IEC 17025 by the Canadian Association for Environmental Analytical Laboratories (CAEAL), for specific tests listed on the scope of accreditation. AGAT Laboratories (Mississauga) is also accredited by the Standards Council of Canada (SCC) for specific drinking water tests. Accreditations are location and parameter specific. A complete listing of parameters for each location is available from www.cmal.ca and/or www.scc.ca. The tests in this report may not necessarily be included in the scope of accreditation.

Results relate only to the items tested

AGAT Laboratories
5835 COOPERS AVENUE
MISSISSAUGA, ON
CANADA L4Z 1Y2
PH: (905)712-5100
FAX: (905)712-5122
http://www.agatlabs.com

Certificate of Analysis

AGAT WORK ORDER: 08T291548

PROJECT NO: 08HX015

CLIENT NAME: PETO MACCALLUM LIMITED

ATTENTION TO: Danika Durish

O. Reg. 153 Metals & Inorganics in Soil - Table 1

DATE SAMPLED: Aug 28, 2008 | **DATE RECEIVED: Sep 05, 2008** | **DATE REPORTED: Sep 15, 2008** | **SAMPLE TYPE: Soil**

	Unit	G / S	RDL	BH1 SS2 1067484	BH1 SS4 1067485	BH1 SS5 1067486	BH1 SS7 1067487	BH2 SS1 1067488	BH2 SS2 1067489	BH3 SS3 1067490	BH3 SS4 1067491
Antimony	µg/g	1.0	0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Arsenic	µg/g	17	0.3	5.2	3.1	3.3	4.0	3.5	3.8	3.7	3.1
Barium	µg/g	210	0.2	91.9	131	89.6	177	82.1	125	117	57.8
Beryllium	µg/g	1.2	0.2	0.6	0.8	0.5	1.0	0.7	0.8	0.7	0.4
Cadmium	µg/g	1.0	0.2	0.4	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Chromium	µg/g	71	0.3	17.4	21.0	11.8	24.3	21.9	25.3	21.8	11.4
Cobalt	µg/g	21	0.2	9.2	10.4	8.2	16.4	10.9	11.8	10.7	5.7
Copper	µg/g	85	0.2	40.3	25.7	11.6	10.3	21.9	26.2	27.8	17.4
Lead	µg/g	120	0.3	51.4	9.4	4.2	4.8	19.8	11.0	10.1	6.3
Molybdenum	µg/g	2.5	0.3	0.5	<0.3	<0.3	0.6	<0.3	<0.3	<0.3	<0.3
Nickel	µg/g	43	0.3	18.5	23.0	17.2	37.5	22.0	27.3	23.6	11.7
Selenium	µg/g	1.9	0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Silver	µg/g	0.42	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Vanadium	µg/g	91	0.2	25.3	27.2	14.5	23.4	30.3	33.6	29.7	16.6
Mercury	µg/g	0.23	0.011	0.030	0.014	<0.011	<0.011	0.024	0.020	0.013	<0.011
Electrical Conductivity (2:1)	mS/cm	0.57	0.002	**2.33**	**2.06**	**0.774**	0.450	0.181	0.172	0.186	0.145
Sodium Adsorption Ratio (2:1)	N/A	2.4	N/A	**34.8**	**49.7**	**2.80**	**3.02**	0.288	0.513	0.75	0.518
pH (2:1)	N/A		N/A	8.76	8.91	8.29	8.30	8.05	8.19	8.27	8.38

Certified By:

Results relate only to the items tested

5845 COOPERS AVENUE
MISSISSAUGA, ONTARIO
L4Z 1Y2

AGAT® Laboratories

TEL: (905) 712-5100
FAX: (905) 712-5122
www.agatlabs.com

Quality Assurance

CLIENT NAME: PETO MACCALLUM LIMITED

AGAT WORK ORDER: 08T291548

PROJECT NO: 08HX015

ATTENTION TO: Danika Durish

Soil Analysis (Continued)

RPT Date: Sep 15, 2008			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
Electrical Conductivity (2:1) (mS/cm)	1	1067497	0.448	0.445	0.7%	< 0.002		90%	110%						
Sodium Adsorption Ratio (2:1) (N/A)	1	1067497	8.04	7.97	0.9%	N/A									
pH (2:1) (N/A)	1	1067497	8.66	8.66	0.2%	N/A		90%	110%						
O. Reg. 153 Metals & Inorganics in Soil - Table 1															
Antimony (µg/g)	0	1067515	< 0.8	< 0.8	0.0%	< 0.8		80%	120%		90%	110%		70%	130%
Arsenic (µg/g)	0	1067515	4.0	4.5	11.8%	< 0.3		80%	120%		90%	110%		70%	130%
Barium (µg/g)	0	1067515	119	129	8.1%	< 0.2		90%	110%		90%	110%		70%	130%
Beryllium (µg/g)	0	1067515	0.8	0.8	0.0%	< 0.2		90%	110%		90%	110%		70%	130%
Cadmium (µg/g)	0	1067515	< 0.2	< 0.2	0.0%	< 0.2		90%	110%		90%	110%		70%	130%
Chromium (µg/g)	0	1067515	21.5	23.8	10.2%	< 0.3		90%	110%		90%	110%		70%	130%
Cobalt (µg/g)	0	1067515	11.1	12.3	10.3%	< 0.2		90%	110%		90%	110%		70%	130%
Copper (µg/g)	0	1067515	28.1	31.2	10.5%	< 0.2		90%	110%		90%	110%		70%	130%
Lead (µg/g)	0	1067515	12.5	13.2	5.4%	< 0.3		90%	110%		90%	110%		70%	130%
Molybdenum (µg/g)	0	1067515	< 0.3	< 0.3	0.0%	< 0.3		80%	120%		90%	110%		70%	130%
Nickel (µg/g)	0	1067515	23.4	26.2	11.3%	< 0.3		90%	110%		90%	110%		70%	130%
Selenium (µg/g)	0	1067515	< 0.4	< 0.4	0.0%	< 0.4		80%	120%		90%	110%		70%	130%
Silver (µg/g)	0	1067515	< 0.2	< 0.2	0.0%	< 0.2		80%	120%		90%	110%		70%	130%
Vanadium (µg/g)	0	1067515	28.6	32.6	9.6%	< 0.2		90%	110%		90%	110%		70%	130%
Mercury (µg/g)	1	1067515	0.028	0.027	3.8%	< 0.011		90%	110%		90%	120%		70%	130%
Electrical Conductivity (2:1) (mS/cm)	1	1067517	1.42	1.42	0.0%	< 0.002		90%	110%						
Sodium Adsorption Ratio (2:1) (N/A)	1	1067517	12.6	12.8	1.6%	N/A									
pH (2:1) (N/A)	1	1067517	8.35	8.31	0.5%	N/A		90%	110%						

Certified By:

AGAT QUALITY ASSURANCE REPORT (V1)

AGAT Laboratories is accredited to ISO/IEC 17025 by the Canadian Association for Environmental Analytical Laboratories (CAEAL), for specific tests listed on the scope of accreditation. AGAT Laboratories (Mississauga) is also accredited by the Standards Council of Canada (SCC) for specific drinking water tests. Accreditations are location and parameter specific. A complete listing of parameters for each location is available from www.cacal.ca and/or www.scc.ca. The tests in this report may not necessarily be included in the scope of accreditation.

Results relate only to the items tested

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
L4Z 1Y2

AGAT® Laboratories

TEL: (905) 712-5100
FAX: (905) 712-5122
www.agatlabs.com

Method Summary

CLIENT NAME: PETO MACCALLUM LIMITED

AGAT WORK ORDER: 08T291548

PROJECT NO: 08HX015

ATTENTION TO: Danika Durish

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Soil Analysis			
Antimony	MET 1003	EPA SW-846 3050B & 6020	ICP-MS
Arsenic	MET 1003	EPA SW-846 3050B & 6020	ICP-MS
Barium	MET 1003	EPA SW-846 3050B & 6020	ICP-MS
Beryllium	MET 1003	EPA SW-846 3050B & 6020	ICP-MS
Cadmium	MET 1003	EPA SW-846 3050B & 6020	ICP-MS
Chromium	MET 1003	EPA SW-846 3050B & 6020	ICP-MS
Cobalt	MET 1003	EPA SW-846 3050B & 6020	ICP-MS
Copper	MET 1003	EPA SW-846 3050B & 6020	ICP-MS
Lead	MET 1003	EPA SW-846 3050B & 6020	ICP-MS
Molybdenum	MET 1003	EPA SW-846 3050B & 6020	ICP-MS
Nickel	MET 1003	EPA SW-846 3050B & 6020	ICP-MS
Selenium	MET 1003	EPA SW-846 3050B & 6020	ICP-MS
Silver	MET 1003	EPA SW-846 3050B & 6020	ICP-MS
Vanadium	MET 1003	EPA SW-846 3050B & 6020	ICP-MS
Mercury	MET 1001	EPA SW 846 7471A, 245.5	CVAAS
Electrical Conductivity (2:1)	INOR 1036	McKeague 4.12 & SM 2510 B	EC METER
Sodium Adsorption Ratio (2:1)	INOR 1007	McKeague 4.12 & 3.26 & EPA SW-846 6010B	ICP/OES
pH (2:1)	INOR 1031	McKeague 4.12 & SM 4500-H+ B	pH METER

Results relate only to the items tested

CHAIN OF CUSTODY RECORD

AGAT Laboratories Limited
5623 McAdam Road
Mississauga, Ontario L4Z 1N9
http://webearth.agatlabs.com

Phone: 905-501-9998
Fax: 905-501-0589
Toll free: 800-856-6261
www.agatlabs.com

LABORATORY USE ONLY

Arrival Condition: ☑ Good ☐ Poor (complete "notes")
Arrival Temperature: 70°C
AGAT Job Number: 08T291548
Notes:

Client Information

Company: Pelo MacCallum Ltd
Contact: Danika Durish
Address: 45 Burford Road
Hamilton, ON L8E 3C6
Phone: 905-561-2231 Fax: 905-561-6366
PO #:
Client Project #: 08HX015
AGAT Quotation #:

Report Information - reports to be sent to:

1. Name: Danika Durish
   Email: ddurish@pelomaccallum.com
2. Name: Melissa King
   Email: mking@pelomaccallum.com
3. Name:
   Email:

Notes (i.e. billing, sub-sampling requirements etc.)

Report Format

☐ Single Sample per page
☑ Multiple Samples per page
☐ Results by Fax

Turnaround Time (TAT) Required*

Regular TAT:
☒ 5 to 7 Working Days

Rush TAT: (please provide prior notification)
Rush Surcharges Apply
☐ 3 to 5 days
☐ 48 to 72 Hours
☐ 24 to 48 hours

OR

DATE REQUIRED (Rush surcharges may apply):

25 Sept

Regulatory Guideline Required

☒ Reg 153 Table 1 (Indicate one)
☐ Ind/Com
☐ Res/Park
☐ Ag
All other
☐ Med/Fine ☒ Coarse
☐ Sewer Use
Region
(Indicate one)
☐ Sanitary
☐ Storm
☐ PWQO
☐ Reg 558
☐ CCME
☐ Other (indicate)

Is this a drinking water sample (potable water intended for human consumption)?
☐ Yes ☒ No
If "Yes" please use the Drinking Water Chain of Custody Record

Sample Identification	Date Sampled	Time Sampled	Sample Matrix	# of Containers	Comments Site/ Sample Information	Metals and Inorganics	Metals Scan (including Hg, B, Cr)	CCME Fractions 1 to 4	VOCs	PAHs	PCBs	TCLP Metals/Inorganics	TCLP	Storm Sewer Use	Sanitary Sewer Use	Ba, Be, Cd, Cr	Co, Cu, Pb, Mo	Ni, Ag, N, As	Se, Sb, Hg	EC, SAR, pH			
BH1 SS2	Aug 29 '08	8am-5pm	Soil	1		X																	
BH1 SS4				1		X																	
BH1 SS5				1		X																	
BH1 SS7				1		X																	
BH~~1~~2 SS1				1		X																	
BH~~1~~2 SS2				1		X																	
BH~~1~~3 SS3				1		X																	
BH~~1~~3 SS4				1		X																	
BH~~1~~3 SS5 remainder				1		X																	
BH~~1~~4 SS3				1		X																	
BH~~1~~4 SS4				1		X																	
TOTAL # OF CONTAINERS				11																			

*Samples received after 2:00 PM will be logged in for the next business day. TAT is exclusive of weekends and statutory holidays

Samples Relinquished By (print name & sign)	Date/Time	Samples Received By (print name & sign)	Date/Time
Danika Durish [signature]	Sept 4 08	Guy Squires	Sept 5 10:00
Samples Relinquished By (print name & sign)	Date/Time	Samples Received By (print name & sign)	Date/Time
		[signature]	12:10

Pink Copy - Client
Yellow Copy - AGAT
White Copy - AGAT
Golden Rod - Sample Control

PAGE 1 of 3

NO: 75591

Shelf SR.9...

CHAIN OF CUSTODY RECORD

AGAT Laboratories Limited
5623 McAdam Road
Mississauga, Ontario L4Z 1N9
http://webearth.agatlabs.com

Phone: 905-501-9998
Fax: 905-501-0589
Toll free: 800-856-6261
www.agatlabs.com

LABORATORY USE ONLY

Arrival Condition: ☑ Good ☐ Poor (complete "notes")
Arrival Temperature: 20°C
AGAT Job Number: 08T291548
Notes:

Client Information

Company: Peto MacCallum Ltd
Contact: Danika Durish
Address: 45 Burford Road
Hamilton, ON L8E 3C6
Phone: 905-561-2231 Fax: 905-561-6366
PO #:
Client Project #: 08HX015
AGAT Quotation #:

Report Information - reports to be sent to:

1. Name:
Email:
2. Name:
Email:
3. Name:
Email:

Notes (i.e. billing, sub-sampling requirements etc.)

Report Format

☐ Single Sample per page
☒ Multiple Samples per page
☐ Results by Fax

Turnaround Time (TAT) Required*

Regular TAT:
☒ 5 to 7 Working Days

Rush TAT: (please provide prior notification)
Rush Surcharges Apply
☐ 3 to 5 days
☐ 48 to 72 Hours
☐ 24 to 48 hours

OR

DATE REQUIRED (Rush surcharges may apply):

Regulatory Guideline Required

☒ Reg 153 Table 1 (Indicate one)
☐ Ind/Com
☐ Res/Park
☐ Ag
☐ Med/Fine ☒ Coarse

all other

☐ Sewer Use
Region
(Indicate one)
☐ Sanitary
☐ Storm

☐ PWQO
☐ Reg 558
☐ CCME
☐ Other (indicate)

Is this a drinking water sample (potable water intended for human consumption)?
☐ Yes ☐ No
If "Yes" please use the Drinking Water Chain of Custody Record

Sample Identification	Date Sampled	Time Sampled	Sample Matrix	# of Containers	Comments Site/ Sample Information	Metals and Inorganics	Metals Scan (Ba, Be, Cd, Co, Cu, Pb, Mo, Ni, Ag, V, As, Se, Sb, Hg, EC, SAR, pH)	CCME Fractions 1 to 4	VOCs	PAHs	PCBs	TCLP Metals/Inorganics	TCLP	Storm Sewer Use	Sanitary Sewer Use
BH ~~6~~5 SS2 remainder	Aug 28 '08	8-5 PM	soil	1		X									
BH ~~6~~5 SS3				1		X									
BH ~~6~~5 SS6				1		X									
BH ~~7A~~6 SS1				1		X									
BH ~~7A~~6 SS5				1		X									
BH ~~7A~~6 SS6				1		X									
BH ~~7A~~6 SS10 remainder				1		X									
BH ~~8~~7 SS2	Aug 28 '08			1		X									
BH ~~8~~7 SS5				1		X									
BH ~~9~~8 SS2				1		X									
BH ~~10~~9 SS2	Aug 28 '08			1		X									
TOTAL # OF CONTAINERS				11											

*Samples received after 2:00 PM will be logged in for the next business day. TAT is exclusive of weekends and statutory holidays

Samples Relinquished By (print name & sign)	Date/Time	Samples Received By (print name & sign)	Date/Time
Danika Durish [signature]	Sept 4 '08	[signature] Sept 5e	10:00
Samples Relinquished By (print name & sign)	Date/Time	Samples Received By (print name & sign)	Date/Time
		[signature] "	12:10

Pink Copy - Client
Yellow Copy - AGAT
White Copy - AGAT
Golden Rod - Sample Control

NO: 75592

CHAIN OF CUSTODY RECORD

AGAT Laboratories Limited
5623 McAdam Road
Mississauga, Ontario L4Z 1N9
http://webearth.agatlabs.com

Phone: 905-501-9998
Fax: 905-501-0589
Toll free: 800-856-6261
www.agatlabs.com

LABORATORY USE ONLY

Arrival Condition: ☒ Good ☐ Poor (complete "notes")
Arrival Temperature: 20°C
AGAT Job Number: 08T311548
Notes:

Client Information

Company: PML
Contact: Melissa King
Address: Hamilton
Phone: Fax:
PO #: 08HX015
Client Project #:
AGAT Quotation #:

Report Information - reports to be sent to:

1. Name: mking@petersoncallum.com
Email:
2. Name:
Email:
3. Name:
Email:

Notes (i.e. billing, sub-sampling requirements etc.)

Report Format

☐ Single Sample per page
☒ Multiple Samples per page
☐ Results by Fax

Turnaround Time (TAT) Required*

Regular TAT:
☒ 5 to 7 Working Days

Rush TAT: (please provide prior notification)
Rush Surcharges Apply
☐ 3 to 5 days
☐ 48 to 72 Hours
☐ 24 to 48 hours
OR
DATE REQUIRED (Rush surcharges may apply):

Regulatory Guideline Required

☒ Reg 153 Table 1 (Indicate one)
☒ Ind/Com
☐ Res/Park
☐ Ag
☐ Med/Fine ☐ Coarse
☐ Sewer Use Region (Indicate one) ☐ Sanitary ☐ Storm
☐ PWQO
☐ Reg 558
☐ CCME
☐ Other (indicate)

Is this a drinking water sample (potable water intended for human consumption)? ☐ Yes ☐ No
If "Yes" please use the Drinking Water Chain of Custody Record

Sample Identification	Date Sampled	Time Sampled	Sample Matrix	# of Containers	Comments Site/ Sample Information	Metals and Inorganics	Metals Scan	CCME Fractions 1 to 4	VOCs	PAHs	PCBs	TCLP Metals/Inorganics	TCLP	Storm Sewer Use	Sanitary Sewer Use	Ba, Be, Cd, Cr, Co, Cu, Pb, Mo, Ni, Ag, V, As, Se, Sb, Hg, EC, SAR, pH
BH 4 SS4-1	Aug. 28	8-5	Soil	1		X										
BH 7 SS1-1	Aug. 28	↓	↓	1		X										
BH 9 SS2-1	Aug. 28	↓	↓	1		X										

TOTAL # OF CONTAINERS

*Samples received after 2:00 PM will be logged in for the next business day. TAT is exclusive of weekends and statutory holidays

Samples Relinquished By (print name & sign): Melissa King — Date/Time: Sept 5/08
Samples Received By (print name & sign): — Date/Time: Sept 5 10:00
Samples Relinquished By (print name & sign): — Date/Time:
Samples Received By (print name & sign): — Date/Time: 12:05

Pink Copy - Client
Yellow Copy - AGAT
White Copy - AGAT

PAGE 3 of 3

NO: 60753

Appendix D

Statement of Limitations

STATEMENT OF LIMITATIONS

This report is prepared for and made available for the sole use of the client named. Peto MacCallum Ltd. (PML) hereby disclaims any liability or responsibility to any person or entity, other than those for whom this report is specifically issued, for any loss, damage, expenses, or penalties that may arise or result from the use of any information or recommendations contained in this report. The contents of this report may not be used or relied upon by any other person without the express written consent and authorization of PML.

This report shall not be relied upon for any purpose other than as agreed with the client named without the written consent of PML. It shall not be used to express or imply warranty as to the fitness of the property for a particular purpose. A portion of this report may not be used as a separate entity: that is to say the report is to be read in its entirety at all times.

The report is based solely on the scope of services which are specifically referred to in this report. No physical or intrusive testing has been performed, except as specifically referenced in this report. This report is not a certification of compliance with past or present regulations, codes, guidelines and policies.

The scope of services carried out by PML is based on details of the proposed development and land use to address certain issues, purposes and objectives with respect to the specific site as identified by the client. Services not expressly set forth in writing are expressly excluded from the services provided by PML. In other words, PML has not performed any observations, investigations, study analysis, engineering evaluation or testing that is not specifically listed in the scope of services in this report. PML assumes no responsibility or duty to the client for any such services and shall not be liable for failing to discover any condition, whose discovery would require the performance of services not specifically referred to in this report.

The findings and comments made by PML in this report are based on the conditions observed at the time of PML's site reconnaissance. No assurances can be made and no assurances are given with respect to any potential changes in site conditions following the time of completion of PML's field work. Furthermore, regulations, codes and guidelines may change at any time subsequent to the date of this report and these changes may effect the validity of the findings and recommendations given in this report.

The results and conclusions with respect to site conditions are therefore in no way intended to be taken as a guarantee or representation, expressed or implied, that the Site is free from any contaminants from past or current land use activities or that the conditions in all areas of the Site and beneath or within structures are the same as those areas specifically sampled.

Any investigation, examination, measurements or sampling explorations at a particular location may not be representative of conditions between sampled locations. Soil, ground water, surface water, or building material conditions between and beyond the sampled locations may differ from those encountered at the sampling locations and conditions may become apparent during construction which could not be detected or anticipated at the time of the intrusive sampling investigation.

STATEMENT OF LIMITATIONS

Budget estimates contained in this report are to be viewed as an engineering estimate of probable costs and provided solely for the purposes of assisting the client in its budgeting process. It is understood and agreed that PML will not in any way be held liable as a result of any budget figures provided by it.

The Client expressly waives its right to withhold PML's fees, either in whole or in part, or to make any claim or commence an action or bring any other proceedings, whether in contract, tort, or otherwise against PML in any way connected with advice or information given by PML relating to the cost estimate or Environmental Remediation/Cleanup and Restoration or Soil and Ground Water Management Plan Cost Estimate.

Environmental site assessment studies are performed in different phases by the application of different levels of effort and expense. The phase or phases in this report and the level of effort proposed for this assignment were based solely on PML's understanding of the client's needs as described in the scope of services contained in this report.

This assessment does not wholly eliminate uncertainty regarding the potential for existing or future costs, hazards or losses in connection with the subject property and must be viewed as a mechanism to reduce risk rather than eliminate the risk of contamination concerns.