APPENDIX G

Environmental Site Assessment

DRAFT
MODIFIED PHASE I ENVIRONMENTAL SITE ASSESSMENT
WATERDOWN EAST-WEST BYPASS
HIGHWAY 6 TO BRANT STREET
HAMILTON/BURLINGTON, ONTARIO

for

CITY OF HAMILTON

PETO MacCALLUM LTD.
45 BURFORD ROAD
HAMILTON, ONTARIO
L8E 3C5
Phone: (905) 561-2231
Fax: (905) 561-6366
Email: hamilton@petomaccallum.com

DRAFT Distribution:
1 cc: Dillon Consulting Limited (+ digital copy)
1 cc: PML Hamilton
1 cc: PML Toronto

PML Ref.: 08HX014
DRAFT Report: 1
March 2009

Peto MacCallum Ltd.
CONSULTING ENGINEERS

March 4, 2009

PML Ref.: 08HX014
Draft Report: 1

Mr. Gary Moore, P. Eng.
City of Hamilton
Transportation Operations and Environmental
Design and Construction
77 James Street North
Suite 320
Hamilton, Ontario
L8R 2K3

Dear Mr. Moore

Draft
Modified Phase I Environmental Site Assessment
Waterdown East-West Bypass
Highway 6 to Brant Street
Hamilton/Burlington, Ontario

This report presents the results of a Modified Phase I Environmental Site Assessment (ESA) recently completed for the proposed Waterdown East-West Bypass project. The subject property (referred to herein as the 'Site') is an irregular parcel of land approximately 9 km in length. It extends from Highway 6, about 750 m north of Parkside Drive, easterly on undeveloped land and a short section of Parkside Drive, before turning south through undeveloped land to Dundas Street East (Hamilton) and then easterly on Dundas Street (Burlington) to Brant Street. Refer to Figure 1 for a plan that shows the overall general alignment of the corridor. It is noted that project north in this report is aligned parallel with Highway 6. Additionally, Dundas Street East (Hamilton) and Dundas Street (Burlington) are both known as Highway 5. 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.

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.

45 Burford Road, Hamilton Ontario L8E 3C6
Tel: (905) 561-2231 Fax: (905) 561-6366
E-mail: hamilton@petomaccallum.com
BARRIE, BRAMPTON, HAMILTON, KITCHENER, TORONTO

A geotechnical investigation was also conducted for the Site; the results of which were reported in our draft report PML Ref. 08HF022, Report 1 dated December 12, 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 screening was to check the environmental quality of the soil at selected borehole locations, to provide recommendations for handling, disposal and/or off site re-use options for excess material generated during the proposed construction.

The Site is situated within a rural, residential 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 mostly residential and agricultural land and a few commercial and industrial properties.

The Modified Phase I ESA identified several 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 a majority of the Site and surrounding lands for agricultural purposes; 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 the CP Rail Line that crosses the Parkside Drive alignment east of Grindstone Creek; there is a potential for contamination from the possible use of slag ballast as well as possible spills from rail cars, which may include metals, Volatile Organic Compounds (VOCs), Polycyclic Aromatic Hydrocarbons (PAHs) and Petroleum Hydrocarbons (PHCs).

PSC 4

The presence of petroleum pipelines crossing the Site; there is a potential for contamination in the event of pipeline leaks, spills or discharges, which may include metals, VOCs and PHCs.

PSC 5

Industrial operations at the Opta Minerals property and the storage of industrial wastes and material from site remediations; depending on waste handling/storage practices, presence of aboveground storage tanks/underground storage tanks (ASTs/USTs) and chemicals used/stored at the property there is a potential for contamination including metals and inorganic parameters, VOCs, PHCs, Polychlorinated Biphenyls (PCBs) and PAHs.

PSC 6

The operation of at least five former and two current gas stations on Dundas Street East; in the event of spills, leaks or discharges there is a potential for contamination such as metals, VOCs and PHCs.

PSC 7

The presence of a contractors yard on Dundas Street; there is a potential for contamination from the maintenance and storage of heavy equipment and fuel storage including metals, VOCs and PHCs.

Regarding PSC 1, the potential for pesticide and herbicides residues would be predominantly limited to areas of continued, historic agricultural use 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 respect to PSCs 3 through 7 and given that none of the boreholes advanced during the geotechnical investigation were in these areas, it would be prudent to complete a geoenvironmental soil sampling and chemical testing program to determine if the PSCs have impacted the Site. Alternatively, geoenvironmental evaluation of these areas may be carried out during the construction phase, as the road works pass by the PSC locations.

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 water bodies and since portions of the property are located within an area 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 geoenvironmental screening, indicate that the tested soil samples complied with the background (Table 1 Standards), with the exception of Sodium Adsorption Ration (SAR) in four of the 40 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 SAR in three of the 40 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.

The test results indicate the elevated levels of SAR were limited to the area of three boreholes. Soil in the area of Boreholes 1, 10 and 13 had levels exceeding the Table 1 Standards and the Table 2 and 3 Standards for R/P/I property use. Due to these elevated SAR levels, surplus soils from these areas may only be re-used off Site at I/C/C property use sites.

It is noted that SAR is a physical, nonhealth related parameter typically affecting vegetation and exceedances of this parameter is relevant to soils that must support plant growth. 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 re-used 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 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.

<u>Boreholes 1, 10 and 13</u>

It is recommended that the surplus soils from the area of Boreholes 1, 10 and 13 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 through 9, 11 and 12

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, Boreholes 10 and 11 and in the area of Borehole 13 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 re-use.

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.

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
Hamilton

DS:lad

TABLE OF CONTENTS

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') which is part of the Waterdown East-West Bypass project. The Site is approximately 9 km in length. It extends from Highway 6, about 750 m north of Parkside Drive, easterly on undeveloped land and a short section of Parkside Drive, before turning south through undeveloped land to Dundas Street East (Hamilton) and then easterly on Dundas Street (Burlington) to Brant Street. Refer to Figure 1 for a plan that shows the overall general alignment of the corridor. For the purposes of this report, project north is aligned parallel with Highway 6. Additionally, Dundas Street East (Hamilton) and Dundas Street (Burlington) are both known as Highway 5.

The City of Hamilton is planning to construct a new roadway as well as widen and make improvements to sections of Parkside Drive, Dundas Street East (Hamilton) and Dundas Street (Burlington) 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 proposed new roads and along sections of existing roads, 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 several properties along the section between Highway 6 and where the proposed new road will intersect with Parkside Drive. The properties, where permission was not gained include the property located between 654 Highway 6 and 63 Parkside Drive, the property located between 111 and 157 Parkside Drive, 157 Parkside Drive, the property between the west and east sections of Leisure Park Open Space located east of Centre Road, and the property located between the east section of Leisure Park Open Space and 383 Parkside Drive. Despite accessibility limitations, all areas of the Site were visible from adjacent properties, where permission to access had been acquired.

In addition a program of geoenvironmental screening of soil samples was required for samples obtained from a concurrent geotechnical investigation (PML Ref.: 08HF022). The purpose of the geoenvironmental component was to check the environmental quality of the soil at 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 and City of Burlington on-line interactive mapping services;

- A review of topographic maps located at the McMaster University Lloyd Reeds Map Collection and the Ontario Basic Maps (OBM) ArcIMS Service available at the Geography Network Canada website;

- 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 about 9 km long, as shown on the Site Plans (Drawings 1 to 8), appended. It extends from Highway 6, about 750 m north of Parkside Drive, easterly on undeveloped land and a short section of Parkside Drive, before turning south through undeveloped land to Dundas Street East (Hamilton) and then easterly on Dundas Street (Burlington) to Brant Street. Generally, the topography of the Site was gently rolling with the exception of the eastern end of the Site, which descends the Niagara Escarpment.

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 1950, 1978, 1985 and 1990. Aerial photographs from the year 2002 were obtained from the City of Hamilton and the City of Burlington's online interactive mapping services. 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, approximately half of the Site was situated on vacant agricultural and forested land and half of the Site was located along existing roads from at least 1950 to present. The portion of the Site along Parkside drive has generally been in a rural and residential land use setting, while the portion of the Site along Dundas Street East (Hamilton) and Dundas Street (Burlington) has included some commercial and industrial land use. It is noted that the roads pre date the available aerial photographs (1950).

Aerial photographs for the year 1950 were available for the entire length of the Site. The aerial photographs indicated the section of the Site, which runs from Highway 6 to Parkside Drive, was used for agricultural purposes, with some wooded areas (Figures 2, 3 and 4). The section of the Site which follows Parkside Drive, was used as a two lane road (Figures 4 and 5). The section of

the Site which runs from Parkside Drive to Dundas Street East, was used for agricultural purposes (Figures 5 and 6). The section of the Site which follows Dundas Street East (Hamilton) and Dundas Street (Burlington) was used as a provincial highway (Figures 6 and 7). The Site crossed Borer's Creek twice; just north of Black's Pond (located in the west portion of the Site) and again about 400 m west of Centre Road. The Site crossed Grindstone Creek and the Canadian Pacific (CP) rail line on Parkside Drive, approximately 1.2 and 1.3 km east of Centre Road, respectively. The eastern end of the Site, from approximately 400 m west of Brant Street, travelled down the Niagara Escarpment. A rail yard along the CP rail line, approximately 200 m north of the Site appeared to include industrial operations.

The available 1978 aerial photograph covered only the western end of the Site. The Site was generally vacant and used for agricultural purposes. A large building was shown approximately 200 m south of the Site, opposite Concession 4 West.

Aerial photographs for the year 1985 were available for most of the eastern portion of the Site. The aerial photographs showed similar Site conditions as depicted in 1950. Residential development of land south of the Site at Centre Road was shown.

Aerial photographs for the year 1990 were available for the majority of the Site. The photos showed similar Site conditions as in 1978 and 1985, with a large area of soil stockpiling shown approximately 50 m south of the Site, between 230 and 650 m east of Highway 6.

Aerial photographs for the year 2002 were available for the entire length of the Site and indicated similar Site conditions as shown in previous aerial photographs. Borer's Creek is shown crossing the Site at a third location approximately 180 m east of Centre Road. The section of the Site, which follows the Dundas Street East alignment, crossed a tributary of Grindstone Creek approximately 350 m west of Evans Road and approximately 280 m west of Kerns Road. The area of soil stockpiling shown in 1990 was no longer visible. Institutional development, approximately 300 m south of the Site was shown in one location about 680 m west of Centre Road and about 500 m east of Centre Road in another location. Residential development south of the Site was shown just west of Robson Road and just west of Brant Street. What appeared to be a contractors yard was shown immediately north of the Site just east of Kerns Road.

Commercial properties were shown on the south side of Dundas Street East, approximately 200 and 650 m west of Evans Road, as well as at the northwest corner of the intersection of Dundas Street East and Evans Road.

5.1.2 Topographic and Other Maps

The 1923 topographic map for the west portion of the Site indicated the Site was occupied by existing roadways and by vacant agricultural land, with some forested areas. A gravel pit was shown in the area of the Site just west of the CP rail line. Topographic contours indicated that the grade of the majority of the Site was between elevations 236 to 259 (metric, geodetic). The eastern end of the Site sloped down to about elevation 205 (metric, geodetic), where Dundas Street East travelled down the Niagara Escarpment.

The 2004 Ontario Base Map (OBM) indicated the Site was occupied by existing roadways and by vacant agricultural land, with some forested areas. Topographic contours were generally consistent with what was shown on the 1923 topographic map, with the exception that the eastern end of the Site appeared to be at about elevation 215 (metric, geodetic).

The 1999 topographic map indicated the Site was occupied by existing roadways and by vacant agricultural land, with some forested areas. The Site and neighbouring properties were similar to those of the 2004 OBM. The map indicated an oil pipeline crossed the Site in a north-south direction approximately 930 m east of Highway 6. Another oil pipeline crossed the Site in a north-south direction on Dundas Street East just west of Kerns Road.

Appendix A contains a copy of the 1950 (Figures 2 to 7), 1978 (Figure 8), 1985 (Figures 9 to 12) and 2002 (Figures 13 to 16) aerial photographs depicting the approximate location of the Site. In addition, copies of the 1923 topographic map (Figure 17), the 2004 OBM (Figures 18 to 20) and the 1999 topographic map (Figure 21) depicting the approximate location of the Site are included.

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).

The Site is located on lands north of Parkside Drive from Highway 6, easterly to about 362 Parkside Drive. At which point the Site follows the existing Parkside Drive alignment, easterly to about 503 Parkside Drive, where it turns south toward Dundas Street East. As such, review of the listings for this section of the Site was divided into two sections; the portion of the Site, which is located north of Parkside Drive and includes properties on Highway 6 and Centre Road and the portion of the site, which follows the existing Parkside Drive alignment. According to the directories reviewed, Parkside Drive was not listed in the area of the Site until 1965. From 1965 to 1985, Parkside Drive was divided into Parkside Drive East and Parkside Drive West, bisected by Main Street in Waterdown. Municipal addresses were not listed on Parkside Drive West or the eastern portion of Parkside Drive East, until 1985.

Properties on the north side of Parkside Drive from Highway 6 to 362 Parkside Drive were listed mostly as private individuals. Commercial and industrial listings for this section are presented in Table I, appended.

According to the directories reviewed, Highway 6 was not listed in the area of the Site until 1985. Imperial Mushroom Co. Ltd. was shown at 654 Highway 6 North for the years 1985, 1990 and 1995. Highway 6 is not listed after 1995.

According to the directories reviewed, Centre Road was not listed in the area of the Site until 1965 and municipal addresses were not listed until 1985. Agro Acres Dairy Farm was listed on the east side of Centre Road from 1965 to 1995. The property on the west side of Centre Road, at municipal address 619, was listed as either a private individual or no return from 1985 to 1995. Centre Road was not listed after 1995.

Properties along the existing Parkside Drive alignment from 362 Parkside Drive easterly to 503 Parkside Drive comprised mostly private individuals. Commercial and industrial listings for this section are presented in Table II, appended.

The Site follows the existing Dundas Street East (Hamilton) and Dundas Street (Burlington) alignment from Spring Creek Drive in Waterdown easterly to about 2084 Dundas Street, Burlington. According to the directories reviewed from 1957/58 and 1960, property listings were available for Dundas Street East from Main Street in Waterdown easterly to the town limits and did not include properties in Burlington. From 1965 to 1970 listings for Dundas Street East (Hamilton) and Dundas Street (Burlington) were available for the entire length of the site. From 1975 to 2007 Dundas Street East listings are given from the western limit of the Site to the Waterdown/Burlington border at Kerns Road. East of Kerns Road, properties are listed on Dundas Street, Burlington. Municipal addresses from the western limit of the Site easterly to Kerns Road were not listed until 1985.

Properties in the area of the Site along Dundas Street East in Waterdown and Dundas Street in Burlington were comprised of mostly private individuals. Commercial and industrial listings for this section are presented in Table III, appended.

5.3 Regulatory Information

5.3.1 Brownfields Environmental Site Registry

The MOE on-line Brownfields Environmental Site Registry was accessed on February 2, 2009 to determine if any Records of Site Condition (RSCs) have been filed under Part XV.1 under the Environmental Protection Act (EPA) for the Site. A search of the registry indicated that a RSC was registered for a 40.1 hectare property known as Upcountry Estates. The RSC was filed

under registration No. 38304 on December 12, 2007. The Site passes through a portion of the Upcountry Estates property, which is located between Parkside Drive and Dundas Street East just east of Robson Road. The RSC listing indicated that 188 m^3 of contaminated soil was removed from the Site during remediation. The RSC was filed with no Certificate of Property Use (CPU) and applied the O. Reg. 153/04 Full Depth Generic Site Condition Standards in a potable Ground Water Condition (Table 2) for residential/parkland/institutional type of property use.

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
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.

Review of the maps indicated that the overburden soil along the study corridor primarily consists of Halton Till, a layered deposit of silty clay and clayey silt till. The section north of Parkside Drive is near the boundary between deposits of lacustrine and outwash sand and the Halton Till. The drift thickness varies from 9 to 12 m at Highway 6 and decreases towards the east to 6 to 8 m

where the alignment joins Dundas Street East and is in a bedrock outcrop where it crosses the Niagara Escarpment west of Brant Street. Bedrock along the proposed corridor consists of argillaceous dolostone and shale of the Lockport Formation.

Local surface drainage is directed towards ditches, catch basins, Grindstone Creek and Borer's Creek. Regionally, the inferred ground water flow is to the south toward Hamilton Harbour/Lake Ontario. Borer's Creek crosses the Site at three locations, Grindstone Creek crosses the Site on Parkside Drive, tributaries of Grindstone Creek cross the Site at two locations on Dundas Street East and multiple drainage swales cross the Site at various locations.

The subsurface stratigraphy revealed in the boreholes drilled during the geotechnical investigation indicated the subsurface soils generally comprised topsoil or fill overlying predominantly sand and/or silty soils overlying/interlayered with silt till or clay till. Bedrock was encountered at depths of 2.6 to 12.8 m below grades. Fill was encountered in four of the thirteen boreholes to depths of 0.1 to 2.1 m below grades. Charcoal and slag were identified within the fill in one borehole.

Topographic features adjacent to the Site include:

- Borer's Creek crossings between Highway 6 and Parkside Drive.
- Wood lot crossing east of Centre Road.
- Pedestrian walkway crossing east of Centre Road.
- Grindstone Creek crossing on Parkside Drive.
- Tributaries of Grindstone Creek crossing on Dundas Street East.
- A rock cut west of Brant Street.

6. SITE VISIT

6.1 General

The Site was visited on December 15, 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 8 (Site Plan) for a depiction of the Site. Conditions at the time of PML's visit were overcast and windy with periods of rain and cool. 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, as discussed in the terms of reference.

6.2 Exterior Observations

6.2.1 Property Use

The Site generally comprised vacant agricultural land and woodland from the western extent at Highway 6 to where it meets Parkside Drive, just west of Grindstone Creek. The Site followed the existing Parkside Drive alignment from this point easterly until it turned to the south and entered vacant agricultural land between Parkside Drive and Dundas Street East, just east of Robson Road. The Site then followed the existing Dundas Street East (Hamilton) and Dundas Street (Burlington) alignment easterly to Brant Street. The Site was approximately 9 km long and comprised mixed uses (transportation corridor, agricultural land, residential properties and some commercial uses).

6.2.2 Topographic, Geologic and Hydrogeologic Conditions

Topographic contours indicated that the grade of the majority of the Site was between elevations 236 to 259 (metric, geodetic). The eastern end of the Site sloped down to about elevation 215 (metric, geodetic), where Dundas Street descended the Niagara Escarpment.

As previously discussed, the overburden comprised sand and clay and silt till. Bedrock at the Site comprised primarily dolostone, with some limestone and shale. Surface drainage of the Site was provided by overland flow into ditches along Parkside Drive, Dundas Street East (Hamilton) and Dundas Street (Burlington) as well as Borer's Creek, 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 Borer's Creek).

6.2.3 Hazardous Materials

No hazardous materials were observed on Site. Pole mounted transformers were observed along Parkside Drive, Dundas Street East (Hamilton) and Dundas Street (Burlington). 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 Pipelines

An Imperial Oil and Sun-Canadian Products Pipeline corridor crossed the Site at 111 Parkside Drive about 930 m east of Highway 6. An Enbridge pipeline also crossed the Site on the west side of Kerns Road. A telephone conversation with Imperial Oil Staff indicated that the pipeline corridor at 111 Parkside Drive consists of three 150 mm pipelines used for distribution of various refined oil products. The Imperial Oil staff also indicated that the Enbridge Pipeline is a crude oil pipeline.

6.2.6 Pits and Lagoons

No pits or lagoons were noted on Site.

6.2.7 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.

6.2.8 Stressed Vegetation

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

6.2.9 Fill

No significant areas of fill were observed on Site. Portions of the Site along Dundas Street East were somewhat higher in elevation than the surrounding farmlands and it is likely that grading and filling have taken place within the road allowances along both Parkside Drive and Dundas Street East. Fill is also likely present in the abutment areas located at the bridge over Grindstone Creek.

6.2.10 Watercourses, Ditches or Standing Water

As previously indicated, Borer's Creek crossed the Site at three locations between Highway 6 and Parkside Drive, Grindstone Creek crossed the Site just west of the CP Rail line and tributaries of Grindstone Creek crossed the Site at two locations on Dundas Street East. Multiple drainage swales crossed the Site in the vacant agricultural areas.

6.2.11 Waste Disposal

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

6.2.12 Roads, Parking Facilities and Rights of Way

Portions of the Site comprise Parkside Drive, Dundas Street East (Hamilton) and Dundas Street (Burlington). The Site also crosses Centre Road and a pedestrian walkway east of Centre Road.

6.2.13 Noises, Odours or Vibrations

No unusual noises, odours or vibrations were detected during the Site visit on December 15, 2008 between 9:30 a.m. and 4:00 p.m. other than traffic noise, which can be expected from vehicular traffic on Parkside Drive and Dundas Street East. Additional noise and vibrations can be expected from the CP Rail line.

6.3 Adjacent Land Uses

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

Properties adjacent to the western portion of the Site, from Highway 6 to Parkside Drive consisted primarily of vacant agricultural land or woodland. Some notable exceptions were Highway 6, located west of the west end of the Site and Centre Road, which bisects the planned road alignment. A commercial scale mushroom farming operation was located south of the west end of the Site at 654 Highway 6.

Where the Site meets Parkside Drive it crossed the Connon Nursery property at 383 Parkside Drive. A former electrical substation was located south of the Site at the east end of Wellington Street, which is west of Grindstone Creek. The former Waterdown substation no longer contained equipment, however foundations and a chain link fence were still present.

Properties adjacent to the portion of the Site which follows the Parkside Drive alignment are generally vacant, agricultural or residential lands. Some notable exceptions are the Opta Minerals industrial property, located north of the Site at 407 Parkside Drive, a municipal pumping station, located south of the Site just west of Spring Creek Drive and the Arrowhon Natural Area, located south of the Site west of Boulding Avenue.

A review of the Opta Minerals website indicated that the property is used to process and manufacture abrasives for the sandpaper and sandblasting industry. A Certificate of Approval has been granted to Opta Minerals by the Ontario Ministry of the Environment and covers the

receiving, storage, and processing of hazardous and non-hazardous solid industrial by-products as well as excess materials from site remediation projects.

Properties adjacent to the portion of the Site, which follows the Dundas Street East (Hamilton) and Dundas Street (Burlington) alignment comprised mostly vacant agricultural land and residential properties. Some notable exceptions include a Sunoco gas station, located south of the Site at 490 Dundas Street East, a commercial plaza, located south of the Site at 526-30 Dundas Street East, a Pioneer gas station outlet, located north of the Site at 553 Dundas Street East and a contractors yard, located north of the Site at 1041 Dundas Street. The commercial plaza at 526-30 Dundas Street East included the Rose Hill Liquidation Centre and a drive through Tim Hortons.

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 a majority of the Site and surrounding lands for agricultural purposes; 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 the CP Rail Line that crosses the Parkside Drive alignment east of Grindstone Creek; there is a potential for contamination from the possible use of slag ballast as well as

possible spills from rail cars, which may include metals, Volatile Organic Compounds (VOCs), Polycyclic Aromatic Hydrocarbons (PAHs) and Petroleum Hydrocarbons (PHCs).

PSC 4

The presence of petroleum pipelines crossing the Site; there is a potential for contamination in the event of pipeline leaks, spills or discharges, which may include metals, VOCs and PHCs.

PSC 5

Industrial operations at the Opta Minerals property and the storage of industrial wastes and material from site remediations; depending on waste handling/storage practices, presence of aboveground storage tanks/underground storage tanks (ASTs/USTs) and the storage/use of chemicals there is a potential for contamination including metals and inorganic parameters, VOCs, PHCs, Polychlorinated Biphenyls (PCBs) and PAHs.

PSC 6

The operation of at least five former and two current gas stations on Dundas Street East; in the event of spills, leaks or discharges there is a potential for contamination such as metals, VOCs and PHCs.

PSC 7

The presence of a contractors yard on Dundas Street; there is a potential for contamination from the maintenance and storage of heavy equipment and fuel storage including metals, VOCs and PHCs.

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 seven PSCs 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 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 respect to PSCs 3 through 7 and given that none of the boreholes advanced during the geotechnical investigation were in these areas, it would be prudent to complete a geoenvironmental soil sampling and chemical testing program to determine if the PSCs have impacted the Site. Alternatively, geoenvironmental evaluation of these areas may be carried out during the construction phase, as the road works pass by the PSC locations.

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 water bodies 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 the 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. Forty samples were analyzed for pH and metal parameters in accordance with the GSTP. A list of all samples submitted for analysis is included Table IV.

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 V, appended. The Site is considered Sensitive under O. Reg. 153/04 due to Borer's Creek crossing the Site at three locations, Grindstone Creek crossing the Site, and tributaries of Grindstone Creek crossing the Site at two locations. Additionally, the eastern portion of the Site is located within the Niagara Escarpment World Biosphere Reserve, which is an environmentally sensitive area according to the Niagara Escarpment Plan.

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 Parkside Drive and Dundas Street 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 re-use 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 VI. 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 Highway 6 at Municipal No. 654 (at the intersection of Highway 6 and the west end of the proposed new road alignment)	BH1 SS3	Grey silty sand	SAR
South of Parkside Drive at Municipal No. 497 (at the intersection of Parkside Drive and the proposed new road, heading south toward Dundas Street East)	BH10 SS1	Dark brown clayey silt topsoil	SAR
South of Parkside Drive at Municipal No. 497(at the intersection of Parkside Drive and the proposed new road, heading south toward Dundas Street East)	BH10 SS2	Brown silt	SAR
South of Dundas Street at Municipal No. 526 Dundas Street East	BH13 SS3	Grey sandy clayey silt till	SAR

Note: 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 Highway 6 at Municipal No. 654 (at the intersection of Highway 6 and the west end of the proposed new road alignment)	BH1 SS3	Grey silty sand	SAR
South of Parkside Drive at Municipal No. 497 (at the intersection of Parkside Drive and the proposed new road, heading south toward Dundas Street East)	BH10 SS2	Brown silt	SAR
South of Dundas Street at Municipal No. 526 Dundas Street East	BH13 SS3	Grey sandy clayey silt till	SAR

Note: SAR – Sodium Adsorption Ratio

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.

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 BH1 SS1 and BH1 SS1-1, samples BH6 SS2 and BH6 SS2-1, and samples BH11 SS4 and BH11 SS4-1 were 3.6, 6.1 and 5.6% 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 SAR in four of the forty 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 SAR in three of the forty tested samples.

The results of the chemical testing indicate the concentrations of the tested parameters in all forty samples complied with the Table 2 and 3 Standards for I/C/C property use.

The test results indicate the elevated levels of SAR were limited to the area of three boreholes located near Highway 6 (BH1), Parkside Drive (BH 10) and Dundas Street East (BH 13).

It is noted that SAR is a physical, nonhealth related parameter typically affecting vegetation and exceedances of this parameter is relevant to soils that must support plant growth. 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 re-used 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 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, 10 and 13

It is recommended that the surplus soils from the area of Boreholes 1, 10 and 13 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 through 9, 11 and 12

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, Boreholes 10 and 11 and in the area of Borehole 13 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 re-use.

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 David Smith, BSc. who has been trained to conduct Phase I ESAs in accordance with the CSA Standard. Mr. Smith 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. Mr. Smith 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 over 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

David Smith, BSc.
Project Supervisor, Geoenvironmental Services

DRAFT

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

DS/MAK:lad

REFERENCES

AERIAL PHOTOGRAPHS:

FIGURE	YEAR	PHOTO SCALE (Approx.)	SOURCE
2 through 7	1950	1:10,000	McMaster University Lloyd Reeds Map Library
8	1978	1:10,000	McMaster University Lloyd Reeds Map Library
9 through 12	1985	1:5,000	McMaster University Lloyd Reeds Map Library
13 through 15	2002	20cm Resolution	City of Hamilton Online Interactive Mapping Service
16	2002	20cm Resolution	City of Burlington Online Interactive Mapping Service

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:

Chapman, L.J., and Putnam, D.F., 1984: The Physiography of Southern Ontario; Ontario. Ontario Research Foundation.

M2336; Paleozoic geology, Hamilton, southern Ontario; B.A. Liberty, I.J. Bond, P.G. Telford; Ontario Ministry of Northern Development and Mines, Ontario Geological Survey; 1976; Scale: 1:50 000

P0495; Hamilton sheet, southern Ontario, drift thickness series; M.A. Vos; Ontario Ministry of Northern Development and Mines, Ontario Geological Survey; 1968; Scale: 1:63 360

M2509; Quaternary geology, Hamilton area, southern Ontario; P.F. Karrow; Ontario Ministry of Northern Development and Mines, Ontario Geological Survey; 1987; Scale: 1:50 000

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

Commercial and Industrial Properties Listed on the North Side of Parkside Drive between Highway 6 and 362 Parkside Drive

ADDRESS	YEAR	OCCUPANT
East of Highway 6		
None listed (Parkside Drive West)	1965	Braeheid Sod Supply
None listed (Parkside Drive West)	1965	J.W. Matheson TV Antenna Installer
None listed (Parkside Drive West)	1970	Mac's Variety
None listed (Parkside Drive West)	1970	Centennial Crane
None listed (Parkside Drive West)	1975 to 1980	Phillip's Variety
None listed (Parkside Drive)	1985 to 1995	Waterdown Nursery
11 Parkside Drive	1985 to 1995	New Style Gardening Limited
35 Parkside Drive	1985 to 1995	Waterdown Garden Supply
	1990 to 2007	Four Seasons Lawn Care
207 Parkside Drive	2005	JC's Hot Bagels
	2005 to 2007	YMCA of Waterdown
	2005 to 2007	Active Centre for Therapy - YMCA
	2007	Waterdown Café and Catering
215 Parkside Drive	1995 to 2007	Waterdown District Children's Centre
	1995 to 2007	Waterdown District Secondary School
	2005 to 2007	Allan A Greenleaf School
	2005 to 2007	Waterdown Public School
229 Parkside Drive	1990 to 1995	John W. Matheson Satellite and Antennas
251 Parkside Drive	1985	Gray's Trucking
281 Parkside Drive	2005	Chase Realty Inc.
285 Parkside Drive	1990	Shelton Variety
	1995 to 2007	Parkside Convenience
	2000 to 2007	Waterdown Acupuncture Clinic
287 Parkside Drive	1985	Philip's Variety
Main Street North Intersects		
None listed (Parkside Drive East)	1965	Schneider's Recreation Club
291 Parkside Drive	1985 to 2007	Ridgeway Florist
299 Parkside Drive East	1970 to 1980	Schneider's Recreation Club
361 Parkside Drive	1985	Schneider's Recreation Club

Table II

Commercial and Industrial Properties Listed on Parkside Drive between 362 Parkside Drive and 503 Parkside Drive

ADDRESS	YEAR	OCCUPANT
CP Rail Line		
None listed (Parkside Drive East)	1965 to 1970	WR Barnes Co. Ltd. – Sand & Gravel
None listed (Parkside Drive East)	1970	J.W. Matheson TV Antenna Installer
None listed (Parkside Drive East)	1970	CP Freight Office
None listed (Parkside Drive East)	1970	Walnut Ranch Ltd., Animal Disposal
407 Parkside Drive	1990 to 1995	Canada Talc Ltd.
	1990 to 1995	WR Barnes Co. Ltd.
	1990 to 1995	Barcast Division of WR Barnes Co. Ltd.
	2000	Barnes Environmental Inc.
	2005 to 2007	Barcast Division of Barnes Environmental Inc.
	2005 to 2007	Opta Minerals
411 Parkside Drive	1985	Canada Talc Ltd.
	1985	WR Barnes Co. Ltd. – Sand & Gravel
	1985	Barcast Division of WR Barnes Co. Ltd.
417 Parkside Drive	1990	Complete Financial Services
453 Parkside Drive	1985 to 1995	Albert Jagt Burner Service/Heating

Table III

Commercial and Industrial Properties Listed on Dundas Street East (Hamilton) an Dundas Street (Burlington) from Spring Creek Drive, Waterdown to 2084 Dundas Street, Burlington

ADDRESS	YEAR	OCCUPANT
Spring Creek Drive		
None listed (Dundas East, North Side)	1965 to 1970	K & J's Restaurant
None listed (Dundas East, North Side)	1965 to 1970	J. Gelderman, Landscaper
None listed (Dundas East, South Side)	1965 to 1975	Jack Selkirk Service Station
None listed (Dundas East, North Side)	1970	Corrie Hollie Farms
None listed (Dundas East, North Side)	1970 to 1980	Gay Meadows Kennels
None Listed (Dundas/Hwy. 5, North Side)	1980	Clear Creek Farms
None Listed (Dundas/Hwy. 5, North Side)	1980	The Olde Wagon Wheel Restaurant
None Listed (Dundas/Hwy. 5, North Side)	1980	BP Gas Bar
None Listed (Dundas/Hwy. 5, North Side)	1980	Novak Landscaping
None Listed (Dundas/Hwy. 5, North Side)	1980	Desendel's Farm Produce Limited
490 Dundas East (Hwy. 5)	1990	D & M Sunoco Gas Bar
	1995	AL Hounsome & Sons Fuels Ltd.
	2000 to 2007	Waterdown Gas Bar & Propane
513 Dundas East	1985 to 2000	Notrarianni Investments Limited
526 Dundas Street East	1995	Artistic Pools & Spas
	1995	Highway 5 Market
	2000	Flamborough Construction Ltd.
	2005 to 2007	Rose-Hill Liquidation Outlet
	2005 to 2007	Tim Horton's Donuts
	2005 to 2007	Moe's Tavern
	2005 to 2007	Crossroads Equipment
	2005 to 2007	4 Play Games Distribution
	2007	Louie's Siding
531 Dundas East	1985 to 1995	Waterdown Retail Poultry Farm
545 Dundas East	1985	Gay Meadows Kennels
553 Dundas East	1985 to 2000	Petro Canada Gas Bar
	1985 to 1995	Three Sister Food Service Ltd.
	2005 to 2007	Pioneer Petroleums
563 Dundas East (Hwy. 5)	1990 to 2000	Flamboro Tree & Lawn Care
581 Dundas East (Hwy. 5)	1990	Forest Fence & Patio

Table III

Commercial and Industrial Properties Listed on Dundas Street East (Hamilton) an Dundas Street (Burlington) from Spring Creek Drive, Waterdown to 2084 Dundas Street, Burlington

ADDRESS	YEAR	OCCUPANT
601 Dundas East (Hwy. 5)	1990 to 2007	Novak Landscaping Limited
606 Dundas Street East	2000	Bethel Christian Reformed Church
	2007	Camp Mini-Yo-We
1041 Dundas (Hwy. 5)	1975	BM Lillycrop Farm Equipment
	1980	Pat's Welding
	1990 to 1995	Lee-Mar Equipment Inc.
1107 Dundas (Hwy. 5)	1985	Holton Fine Furniture
1215 Dundas (Hwy. 5)	1975 to 1990	Rehoboth Dutch Christian Reformed Church
1225 Dundas Street (Hwy. 5)	1995	Rehoboth Dutch Christian Reformed Church
1237 Dundas East	1970	AS Campbell Carpenter
1245 Dundas (Hwy. 5)	1975 to 1980	Citizen's Cable TV Ltd.
1286 Dundas St. (Hwy. 5)	1995	Spring Water Ice Ltd.
1320 Dundas (Hwy. 5)	1990 to 1995	Hall Landscaping & Design
1322 Dundas (Hwy. 5)	1985 to 1995	Beaufort Reservoir
1348 Dundas East	1965	Gause Studio
1358 Dundas East	1970	Howard Lighting and Design Limited

TABLE IV

Soil Samples Submitted for Chemical Testing

LOCATION	SAMPLE ID	APPROX. DEPTH (m)	DESCRIPTION FROM BOREHOLE LOG	TYPE OF CHEMICAL ANALYSIS
Borehole 1	BH1 SS1	0.0 – 0.6	Dark brown sandy clayey silt topsoil	Metals and inorganic parameters
Borehole 1	BH1-1 SS1 (DUPLICATE)	0.0 – 0.6	Dark brown sandy clayey silt topsoil	Metals and inorganic parameters
Borehole 1	BH1 SS2	0.8 – 1.2	Brown silty sand, trace clay	Metals and inorganic parameters
Borehole 1	BH1 SS3	1.5 – 2.0	Grey silty sand with partings of brown clayey silt	Metals and inorganic parameters
Borehole 1	BH1 SS5	3.1 – 3.5	Brown clayey silt till, some sand and gravel	Metals and inorganic parameters
Borehole 2	BH2 SS2	0.8 – 1.2	Brown clayey silt, some sand, trace organics	Metals and inorganic parameters
Borehole 2	BH2 SS3	1.5 – 2.0	Brown to reddish brown clayey silt till, trace sand and gravel with layers of sand, red shale fragments	Metals and inorganic parameters
Borehole 3	BH3 SS1	0.0 – 0.6	Dark brown silty sand topsoil	Metals and inorganic parameters
Borehole 3	BH3 SS2	0.8 – 1.2	Brown silty clay till, trace sand with bluish grey fissures	Metals and inorganic parameters
Borehole 3	BH3 SS4	2.3 – 2.7	Brown, fine to medium grained sand	Metals and inorganic parameters
Borehole 4	BH4 SS1	0.0 – 0.6	Brown silty sand with brown clayey silt layers	Metals and inorganic parameters

TABLE IV

Soil Samples Submitted for Chemical Testing

LOCATION	SAMPLE ID	APPROX. DEPTH (m)	DESCRIPTION FROM BOREHOLE LOG	TYPE OF CHEMICAL ANALYSIS
Borehole 4	BH4 SS2	0.8 – 1.2	Brown silty sand with brown clayey silt layers	Metals and inorganic parameters
Borehole 4	BH4 SS6	4.6 – 5.0	Grey clayey silt till, some sand, gravel and cobbles	Metals and inorganic parameters
Borehole 5	BH5 SS1B	0.3 – 0.6	Brown silty sand interlayered with silt	Metals and inorganic parameters
Borehole 5	BH5 SS4	3.1 – 3.5	Grey clayey silt till, trace sand and gravel	Metals and inorganic parameters
Borehole 6	BH6 SS1	0.0 – 0.6	Black clayey silt topsoil	Metals and inorganic parameters
Borehole 6	BH6 SS2	0.8 – 1.2	Reddish brown clayey silt till, some sand and gravel	Metals and inorganic parameters
Borehole 6	BH6-1 SS2 (DUPLICATE)	0.8 – 1.2	Reddish brown clayey silt till, some sand and gravel	Metals and inorganic parameters
Borehole 6	BH6 SS4	2.3 – 2.7	Grey silt till, some sand and gravel, with sand layers	Metals and inorganic parameters
Borehole 7	BH7 SS1B	0.2 – 0.6	Brown silty sand	Metals and inorganic parameters
Borehole 7	BH7 SS2	0.8 – 1.2	Brown silty sand	Metals and inorganic parameters
Borehole 7	BH7 SS4	2.3 – 2.7	Reddish brown silty sand	Metals and inorganic parameters

TABLE IV

Soil Samples Submitted for Chemical Testing

LOCATION	SAMPLE ID	APPROX. DEPTH (m)	DESCRIPTION FROM BOREHOLE LOG	TYPE OF CHEMICAL ANALYSIS
Borehole 8	BH8 SS1B	0.1 – 0.6	Reddish brown sandy silt fill, trace gravel	Metals and inorganic parameters
Borehole 8	BH8 SS2	0.8 – 1.2	Brown sand and gravel	Metals and inorganic parameters
Borehole 8	BH8 SS3B	1.7 – 2.0	Reddish brown clayey silt till, trace sand and gravel, with red shale fragments and layers of silt	Metals and inorganic parameters
Borehole 9	BH9 SS1	0.0 – 0.6	Brown, sandy silt fill, some gravel, with cobbles and concrete pieces	Metals and inorganic parameters
Borehole 9	BH9 SS3	1.5 – 2.0	Grey sandy silt fill, some gravel, with cobbles, concrete pieces, charcoal and slag	Metals and inorganic parameters
Borehole 9	BH9 SS4	2.3 – 2.6	Grey clayey silt alluvium with organics	Metals and inorganic parameters
Borehole 9	BH9 SS5	3.1 – 3.5	Brown sandy silt till, some sand and gravel, trace clay	Metals and inorganic parameters
Borehole 10	BH10 SS1	0.0 – 0.5	Dark brown clayey silt topsoil with organics	Metals and inorganic parameters
Borehole 10	BH10 SS2	0.8 – 1.2	Brown silt, trace clay and sand with thin layers of brown silty clay	Metals and inorganic parameters
Borehole 10	BH10 SS4	2.3 – 2.7	Grey clayey silt, some sand and gravel	Metals and inorganic parameters
Borehole 11	BH11 SS1	0.0 – 0.6	Dark brown clayey silt topsoil, medium organic	Metals and inorganic parameters

TABLE IV

Soil Samples Submitted for Chemical Testing

LOCATION	SAMPLE ID	APPROX. DEPTH (m)	DESCRIPTION FROM BOREHOLE LOG	TYPE OF CHEMICAL ANALYSIS
Borehole 11	BH11 SS2	0.8 – 1.2	Brown clayey silt till, trace sand and gravel with red shale fragments	Metals and inorganic parameters
Borehole 11	BH11 SS4	2.3 – 2.7	Grey clayey silt till, trace sand and gravel with red shale fragments and thin partings of silt	Metals and inorganic parameters
Borehole 11	BH11-1 SS4 (DUPLICATE)	2.3 – 2.7	Grey clayey silt till, trace sand and gravel with red shale fragments and thin partings of silt	Metals and inorganic parameters
Borehole 12	BH12 SS1B	0.2 – 0.6	Brown clayey silt till, trace sand and gravel with red shale fragments	Metals and inorganic parameters
Borehole 12	BH12 SS4	2.3 – 2.7	Brown clayey silt till, some sand and gravel with red shale fragments	Metals and inorganic parameters
Borehole 13	BH13 SS1	0.0 – 0.6	Dark brown clayey silt topsoil fill with pieces of asphalt and concrete	Metals and inorganic parameters
Borehole 13	BH13 SS3	1.5 – 2.0	Grey sandy clayey silt till, some gravel	Metals and inorganic parameters

TABLE V

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.*

TABLE VI

Chemical Test Results

Predominant Soil Type					Dark Brown Sandy Clayey Silt Topsoil	Dark Brown Sandy Clayey Silt Topsoil	Brown Silty Sand	Grey Silty Sand	Brown Clayey Silt Till	Brown Clayey Silt	Brown to Reddish Brown Clayey Silt Till	Dark Brown Silty Sand Topsoil	Brown Silty Clay Till	Brown Sand	Brown Silty Sand	Brown Silty Sand	Grey Clayey Silt 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)**	**BH1 SS1**	**BH1-1 SS1 (Duplicate)**	**BH1 SS2**	**BH1 SS3**	**BH1 SS5**	**BH2 SS2**	**BH2 SS3**	**BH3 SS1**	**BH3 SS2**	**BH3 SS4**	**BH4 SS1**	**BH4 SS2**	**BH4 SS6**
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	3.4	3.4	2.3	4.4	4.0	3.2	5.1	3.6	6.8	2.4	2.3	5.5	5.1
Barium	µg/g	210	(1000) 750	(2000) 1500	74.1	79.0	25.5	65.2	87.3	64.5	44.9	22.9	89.7	25.3	30.4	63.2	83.9
Beryllium	µg/g	1.2	1.2	1.2	0.5	0.5	0.2	0.5	0.4	0.6	0.5	0.2	1.0	0.3	0.4	0.7	0.4
Cadmium	µg/g	1	12	12	0.3	0.3	<0.2	<0.2	0.2	0.3	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.3
Chromium	µg/g	71	(1000) 750	(1000) 750	16.1	16.4	6.6	13.2	12.8	21.6	14.5	5.9	29.2	6.5	10.2	21.0	12.2
Cobalt	µg/g	21	(50) 40	(100) 80	5.7	5.9	5.6	7.5	7.1	6.4	8.8	2.6	15.4	4.5	4.9	13.1	7.0
Copper	µg/g	85	(300) 225	(300) 225	20.5	19.1	22.6	23.7	30.0	24.2	38.2	8.9	45.9	22.8	10.4	48.9	24.6
Lead	µg/g	120	200	1000	19.3	18.5	8.4	8.4	8.3	9.8	27.6	8.5	15.8	6.0	8.2	13.7	8.3
Mercury	µg/g	0.23	10	10	0.051	0.059	<0.011	<0.011	<0.011	0.074	0.013	0.017	0.036	<0.011	0.038	0.029	<0.011
Molybdenum	µg/g	2.5	40	40	<0.3	0.3	<0.3	<0.3	0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	0.3
Nickel	µg/g	43	(200) 150	(200) 150	12.1	11.9	10.0	16.3	14.0	15.1	18.2	5.8	34.7	9.9	9.7	25.7	13.5
Selenium	µg/g	1.9	10	10	0.8	0.8	<0.4	0.4	<0.4	0.7	<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	24.7	24.5	11.4	19.2	16.5	35.9	21.8	11.0	37.8	10.6	17.8	26.9	17.1
Electrical Conductivity (EC)	(mS/cm)	0.57	0.70	1.4	0.237	0.267	0.165	0.409	0.380	0.143	0.109	0.046	0.055	0.032	0.089	0.050	0.202
Sodium Adsorption Ratio (SAR)	NA	2.4	5.0	12	1.67	1.85	1.60	***5.19***	2.27	0.351	0.126	0.145	0.382	0.301	0.080	0.203	0.210
pH (pH Units)	NA	-	-	-	7.94	8.04	8.63	8.70	8.56	7.55	8.31	6.58	7.12	7.45	6.76	6.62	8.41

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 VI (Continued)

Chemical Test Results

Predominant Soil Type					Brown Silty Sand	Grey Clayey Silt Till	Black Clayey Silt Topsoil	Reddish Brown Clayey Silt Till	Reddish Brown Clayey Silt Till	Grey Silt Till	Brown Silty Sand	Brown Silty Sand	Reddish Brown Silty Sand	Reddish Brown Sandy Silt Fill	Brown Sand and Gravel	Reddish Brown Clayey Silt Till	Brown Sandy Silt Fill
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 SS1B**	**BH5 SS4**	**BH6 SS1**	**BH6 SS2**	**BH6-1 SS2 (Duplicate)**	**BH6 SS4**	**BH7 SS1B**	**BH7 SS2**	**BH7 SS4**	**BH8 SS1B**	**BH8 SS2**	**BH8 SS3B**	**BH9 SS1**
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	6.6	4.5	2.7	4.5	5.2	2.6	3.4	6.6	4.4	6.2	7.1	4.7	4.7
Barium	µg/g	210	(1000) 750	(2000) 1500	84.6	80.3	80.8	55.7	61.6	37.5	35.3	39.3	21.8	66.8	45.5	81.6	58.8
Beryllium	µg/g	1.2	1.2	1.2	0.8	0.6	0.4	0.5	0.6	<0.2	0.3	0.6	0.3	0.6	0.4	0.8	0.3
Cadmium	µg/g	1	12	12	<0.2	<0.2	0.4	<0.2	<0.2	0.3	<0.2	<0.2	<0.2	0.2	<0.2	<0.2	0.2
Chromium	µg/g	71	(1000) 750	(1000) 750	18.9	18.5	12.3	13.7	15.3	6.6	8.1	14.8	8.6	15.4	10.4	21.9	10.2
Cobalt	µg/g	21	(50) 40	(100) 80	9.3	11.0	4.5	9.0	9.9	3.8	5.6	9.7	6.2	7.8	7.2	13.9	5.5
Copper	µg/g	85	(300) 225	(300) 225	55.5	38.2	15.3	24.9	27.7	15.0	20.5	61.8	35.2	43.9	57.3	36.8	27.1
Lead	µg/g	120	200	1000	15.7	8.5	18.7	7.5	9.6	6.1	9.6	18.4	10.0	14.2	17.2	10.6	30.8
Mercury	µg/g	0.23	10	10	0.037	0.011	0.039	<0.011	<0.011	<0.011	0.023	0.042	<0.011	0.035	0.016	0.013	0.030
Molybdenum	µg/g	2.5	40	40	<0.3	0.3	<0.3	<0.3	0.3	<0.3	<0.3	<0.3	<0.3	<0.3	0.4	<0.3	<0.3
Nickel	µg/g	43	(200) 150	(200) 150	20.3	22.9	9.1	17.7	20.5	6.2	10.1	20.3	10.6	18.6	12.8	29.3	11.7
Selenium	µg/g	1.9	10	10	0.6	<0.4	0.5	<0.4	<0.4	<0.4	<0.4	0.5	0.4	0.6	<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	29.3	25.0	17.9	19.3	21.9	10.3	14.1	21.6	14.0	25.4	18.7	29.3	16.3
Electrical Conductivity (EC)	(mS/cm)	0.57	0.70	1.4	0.203	0.150	0.211	0.232	0.252	0.241	0.115	0.097	0.083	0.215	0.180	0.137	0.207
Sodium Adsorption Ratio (SAR)	NA	2.4	5.0	12	0.107	0.160	0.649	1.69	1.77	1.02	0.251	0.132	0.118	0.386	0.314	0.233	0.448
pH (pH Units)	NA	-	-	-	7.76	8.46	8.01	8.41	8.35	8.78	7.87	7.45	8.32	7.85	8.35	8.30	8.26

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 VI (Continued)

Chemical Test Results

Predominant Soil Type					Grey Sandy Silt Fill	Grey Clayey Silt Alluvium	Brown Sandy Silt Till	Dark Brown Clayey Silt Topsoil	Brown Silt	Grey Clayey Silt	Dark Brown Clayey Silt Topsoil	Brown Clayey Silt Till	Grey Clayey Silt Till	Grey Clayey Silt Till	Brown Clayey Silt Till	Brown Clayey Silt Till	Dark Brown Clayey Silt Topsoil Fill	Grey Sandy Clayey Silt 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)**	BH9 SS3	BH9 SS4	BH9 SS5	BH10 SS1	BH10 SS2	BH10 SS4	BH11 SS1	BH11 SS2	BH11 SS4	BH11-1 SS4 (Duplicate)	BH12 SS1B	BH12 SS4	BH13 SS1	BH13 SS3
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	<0.8
Arsenic	µg/g	17	(25) 20	(50) 40	4.7	5.0	3.5	3.8	2.5	3.4	4.2	5.3	3.3	4.0	6.1	4.6	4.9	4.8
Barium	µg/g	210	(1000) 750	(2000) 1500	42.6	99.3	50.3	74.6	28.0	48.7	119	85.6	74.6	90.8	113	68.5	145	98.7
Beryllium	µg/g	1.2	1.2	1.2	0.2	0.7	0.3	0.5	0.2	0.4	0.7	0.6	0.4	0.5	1.1	0.3	0.8	0.5
Cadmium	µg/g	1	12	12	0.3	<0.2	<0.2	0.3	<0.2	0.4	0.3	<0.2	<0.2	0.8	<0.2	<0.2	0.3	<0.2
Chromium	µg/g	71	(1000) 750	(1000) 750	7.4	23.9	8.4	16.5	8.0	11.6	21.5	19.1	14.7	17.0	25.5	9.1	22.5	17.5
Cobalt	µg/g	21	(50) 40	(100) 80	4.6	10.9	5.6	7.9	4.3	6.9	11.1	12.2	8.2	9.4	15.5	5.9	12.0	10.9
Copper	µg/g	85	(300) 225	(300) 225	26.4	25.5	29.4	23.0	19.8	29.5	33.1	37.6	28.9	32.2	57.0	26.9	27.0	42.6
Lead	µg/g	120	200	1000	17.4	12.2	8.4	18.4	5.2	7.7	17.5	11.1	8.1	9.6	14.4	12.1	22.4	13.3
Mercury	µg/g	0.23	10	10	0.018	0.042	<0.011	0.045	<0.011	<0.011	0.043	0.018	0.012	0.012	0.037	<0.011	0.046	0.015
Molybdenum	µg/g	2.5	40	40	<0.3	<0.3	<0.3	0.4	<0.3	<0.3	0.3	<0.3	<0.3	<0.3	<0.3	0.3	0.6	0.3
Nickel	µg/g	43	(200) 150	(200) 150	8.3	22.9	11.8	13.8	7.9	13.5	21.2	26.8	18.0	20.2	31.8	11.4	25.2	22.5
Selenium	µg/g	1.9	10	10	0.5	0.4	<0.4	0.7	<0.4	<0.4	0.6	<0.4	<0.4	0.4	0.5	<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	<0.2
Vanadium	µg/g	91	(250) 200	(250) 200	12.5	30.5	13.8	26.3	15.3	16.9	31.4	24.7	20.6	24.2	34.1	13.9	30.8	23.8
Electrical Conductivity (EC)	(mS/cm)	0.57	0.70	1.4	0.248	0.288	0.208	0.249	0.46	0.216	0.267	0.193	0.190	0.185	0.126	0.153	0.220	0.275
Sodium Adsorption Ratio (SAR)	NA	2.4	5.0	12	0.236	1.43	1.83	**3.21**	***7.64***	0.815	0.321	0.308	0.223	0.223	0.267	0.182	0.419	***7.06***
pH (pH Units)	NA	-	-	-	8.39	8.13	8.24	7.88	8.68	8.45	7.82	8.09	8.37	8.31	6.93	8.26	8.07	8.89

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

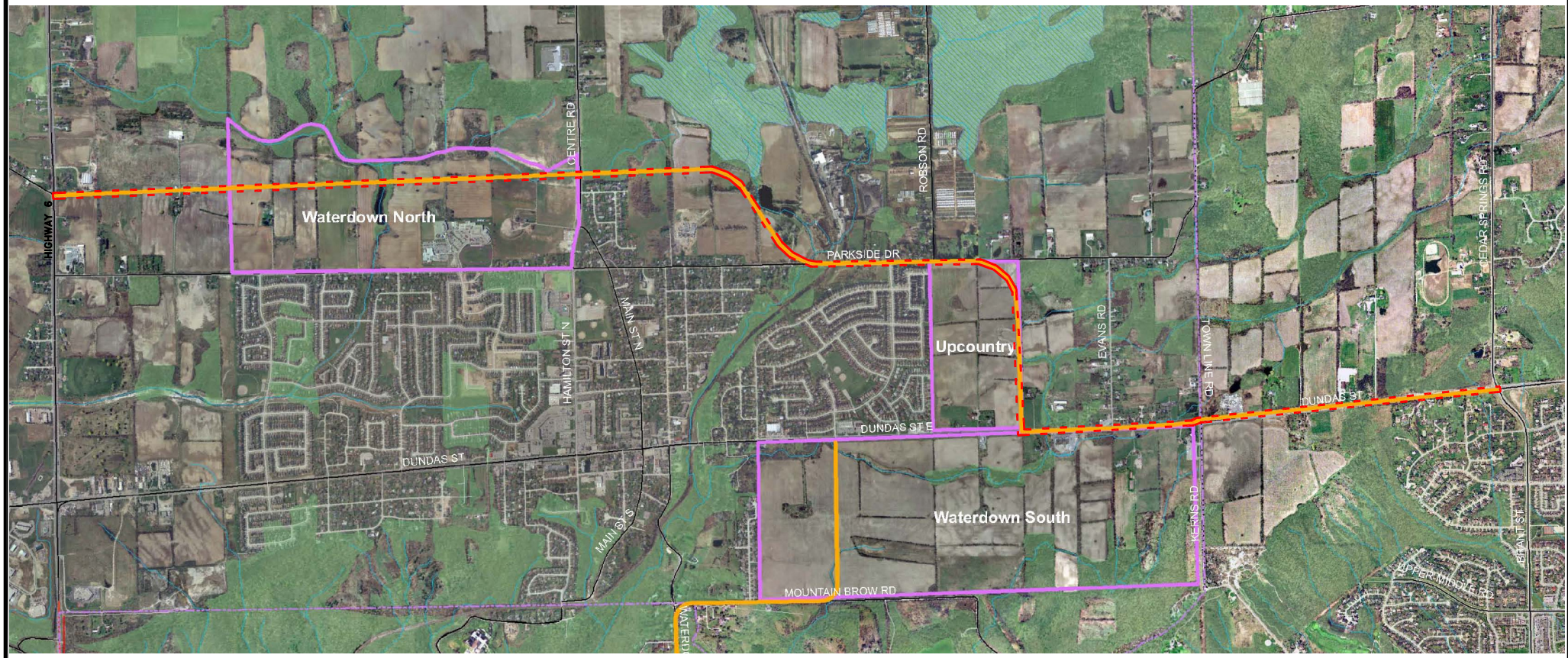
* - O. Reg. 153/04 Table 1 Standards, All Other Types of Property Use

** - 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)

TRUE NORTH

PROJECT NORTH



LEGEND:

APPROXIMATE SITE LIMITS

CITY OF HAMILTON

WATERDOWN EAST–WEST BYPASS
HIGHWAY 6 TO BRANT STREET
HAMILTON/BURLINGTON, ONTARIO

ALIGNMENT KEY PLAN

PML Peto MacCallum Ltd.
CONSULTING ENGINEERS

DRAWN	DD	DATE	SCALE	PML REF.	FIGURE NO.
CHECKED	DS	DEC. 2008	N.T.S.	08HX014	1
APPROVED					

APPENDIX A

Aerial Photographs and Topographic Maps

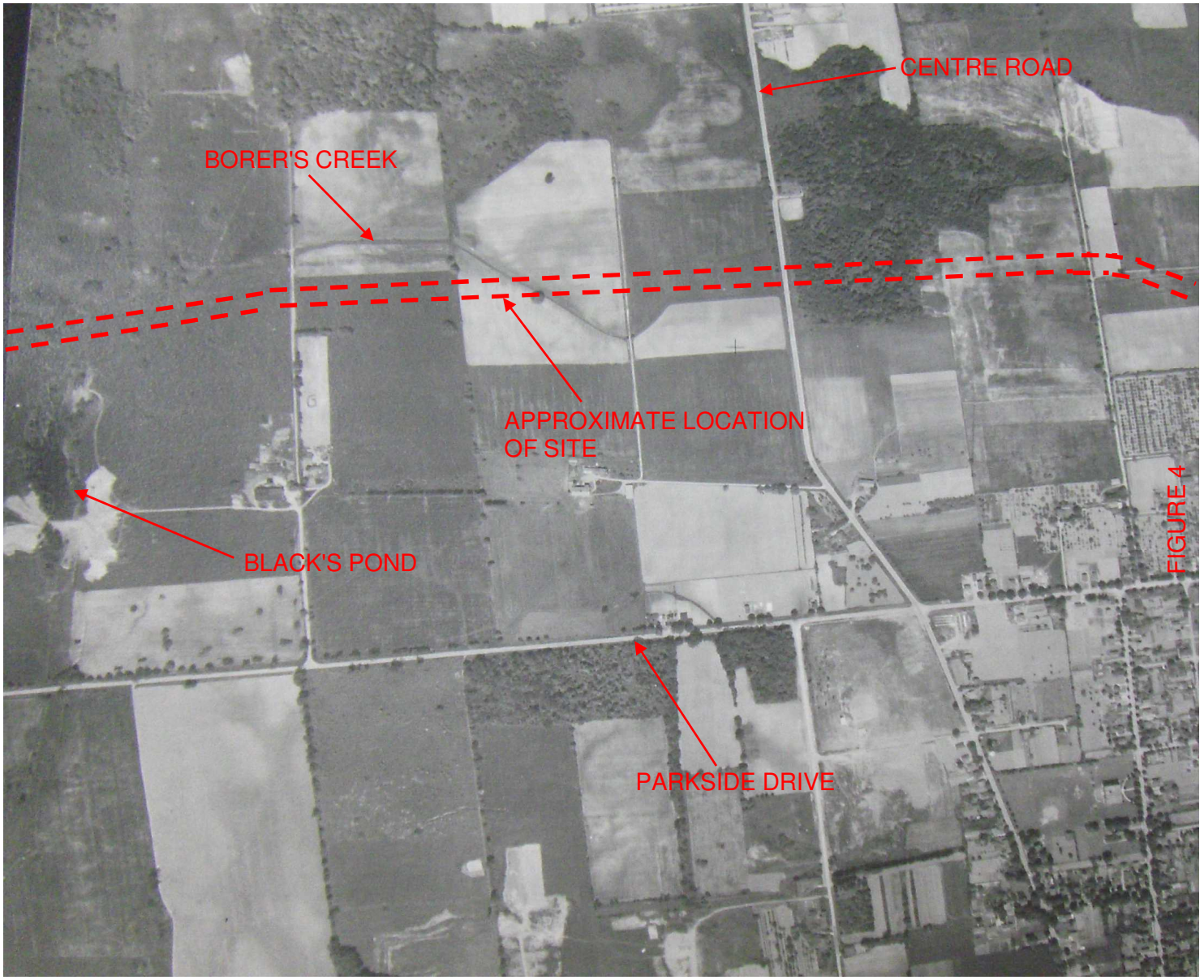
PROJECT

N

FIGURE 3

CITY OF HAMILTON				
MODIFIED PHASE I ENVIRONMENTAL SITE ASSESSMENT				
WATERDOWN EAST-WEST BYPASS HIGHWAY 6 TO BRANT STREET HAMILTON/BURLINGTON, ONTARIO				
	DATE	APPROX. SCALE	PML REF.	FIGURE
1950 AERIAL PHOTOGRAPH	MAR. 2009	1:8,400	08HX014	2

PML Peto MacCallum Ltd.
CONSULTING ENGINEERS

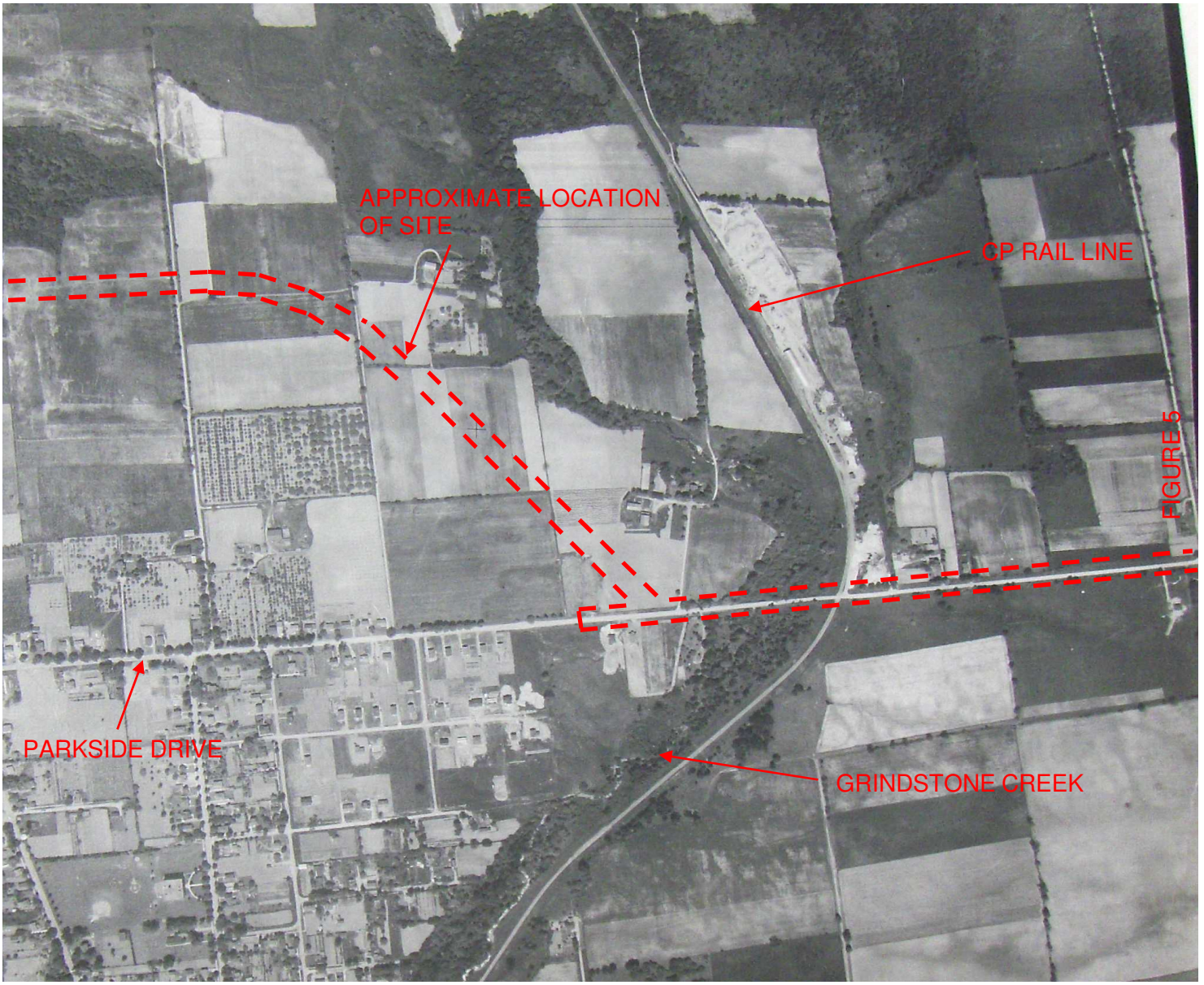


CITY OF HAMILTON				
MODIFIED PHASE I ENVIRONMENTAL SITE ASSESSMENT				
WATERDOWN EAST-WEST BYPASS HIGHWAY 6 TO BRANT STREET HAMILTON/BURLINGTON, ONTARIO				
	DATE	APPROX. SCALE	PML REF.	FIGURE
1950 AERIAL PHOTOGRAPH	MAR. 2009	1:9,000	08HX014	3

PML Peto MacCallum Ltd.
CONSULTING ENGINEERS

PROJECT

N



CITY OF HAMILTON				
MODIFIED PHASE I ENVIRONMENTAL SITE ASSESSMENT				
WATERDOWN EAST-WEST BYPASS HIGHWAY 6 TO BRANT STREET HAMILTON/BURLINGTON, ONTARIO				
	DATE	APPROX. SCALE	PML REF.	FIGURE
1950 AERIAL PHOTOGRAPH	MAR. 2009	1:8,300	08HX014	4

PML Peto MacCallum Ltd.
CONSULTING ENGINEERS

PROJECT

N

CITY OF HAMILTON				
MODIFIED PHASE I ENVIRONMENTAL SITE ASSESSMENT				
WATERDOWN EAST-WEST BYPASS HIGHWAY 6 TO BRANT STREET HAMILTON/BURLINGTON, ONTARIO				
	DATE	APPROX. SCALE	PML REF.	FIGURE
1950 AERIAL PHOTOGRAPH	MAR. 2009	1:8,300	08HX014	5

PML Peto MacCallum Ltd.
CONSULTING ENGINEERS

PROJECT

N

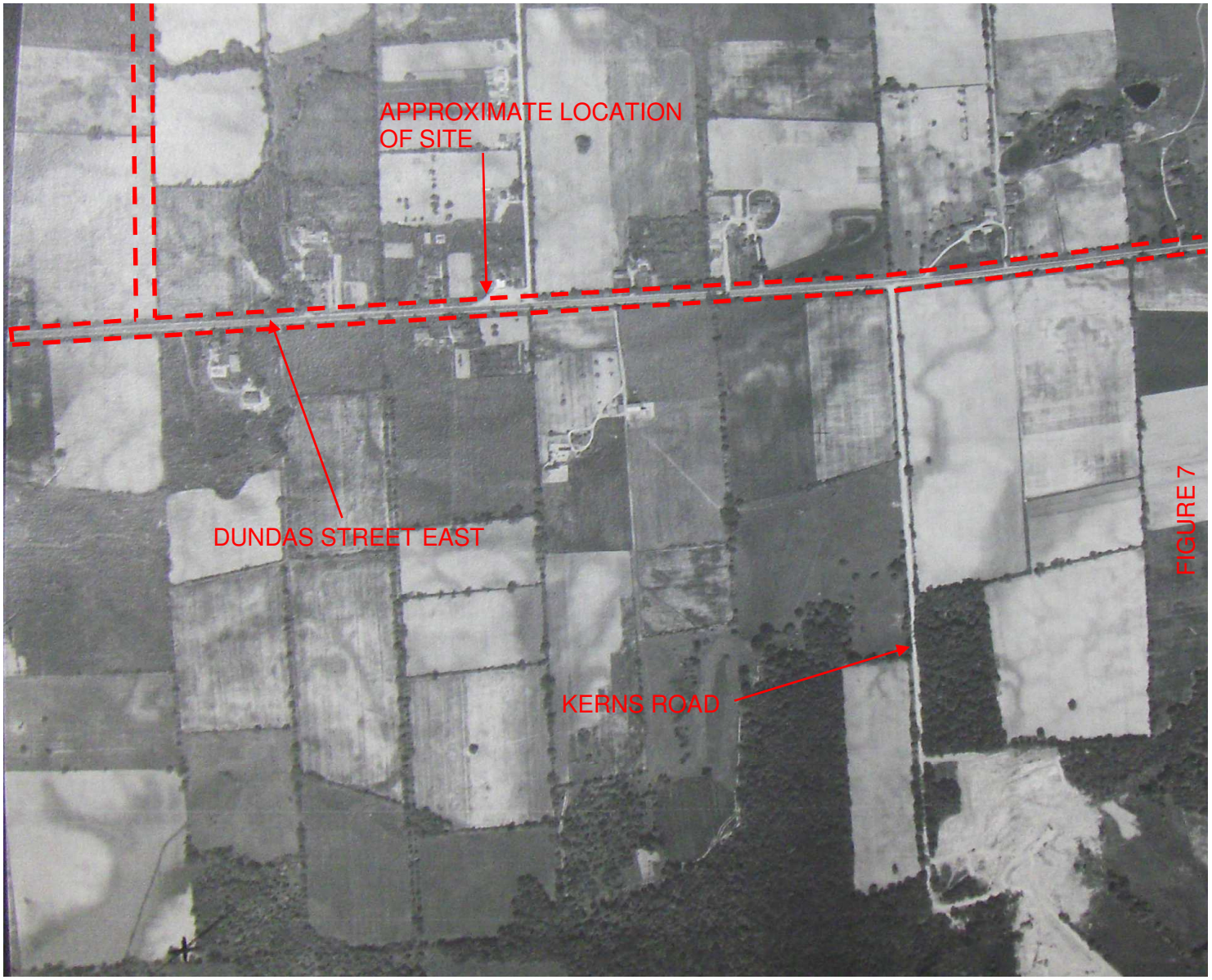


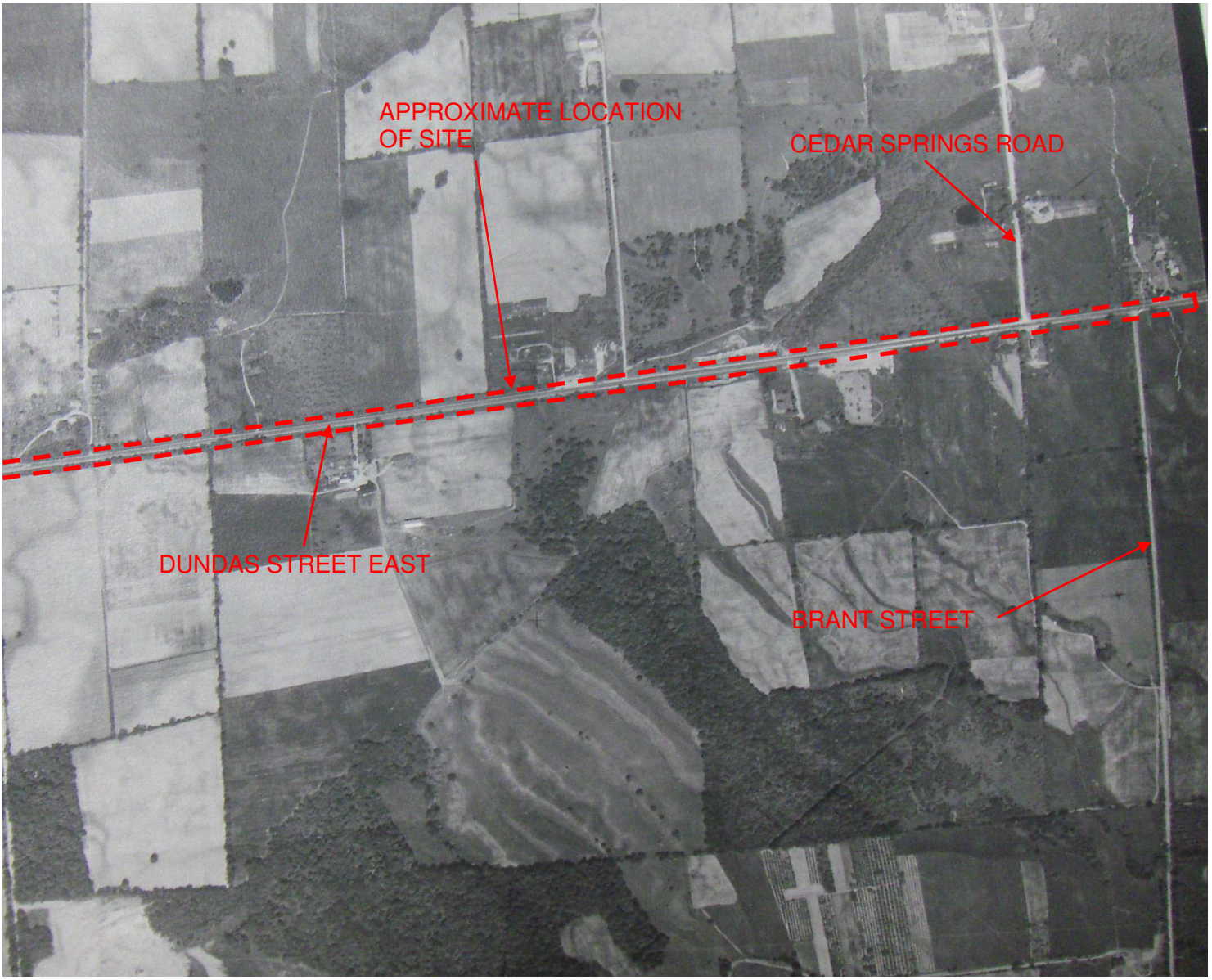
FIGURE 7

CITY OF HAMILTON				
MODIFIED PHASE I ENVIRONMENTAL SITE ASSESSMENT				
WATERDOWN EAST-WEST BYPASS HIGHWAY 6 TO BRANT STREET HAMILTON/BURLINGTON, ONTARIO				
	DATE	APPROX. SCALE	PML REF.	FIGURE
1950 AERIAL PHOTOGRAPH	MAR. 2009	1:7,900	08HX014	6

PML Peto MacCallum Ltd.
CONSULTING ENGINEERS

PROJECT

N

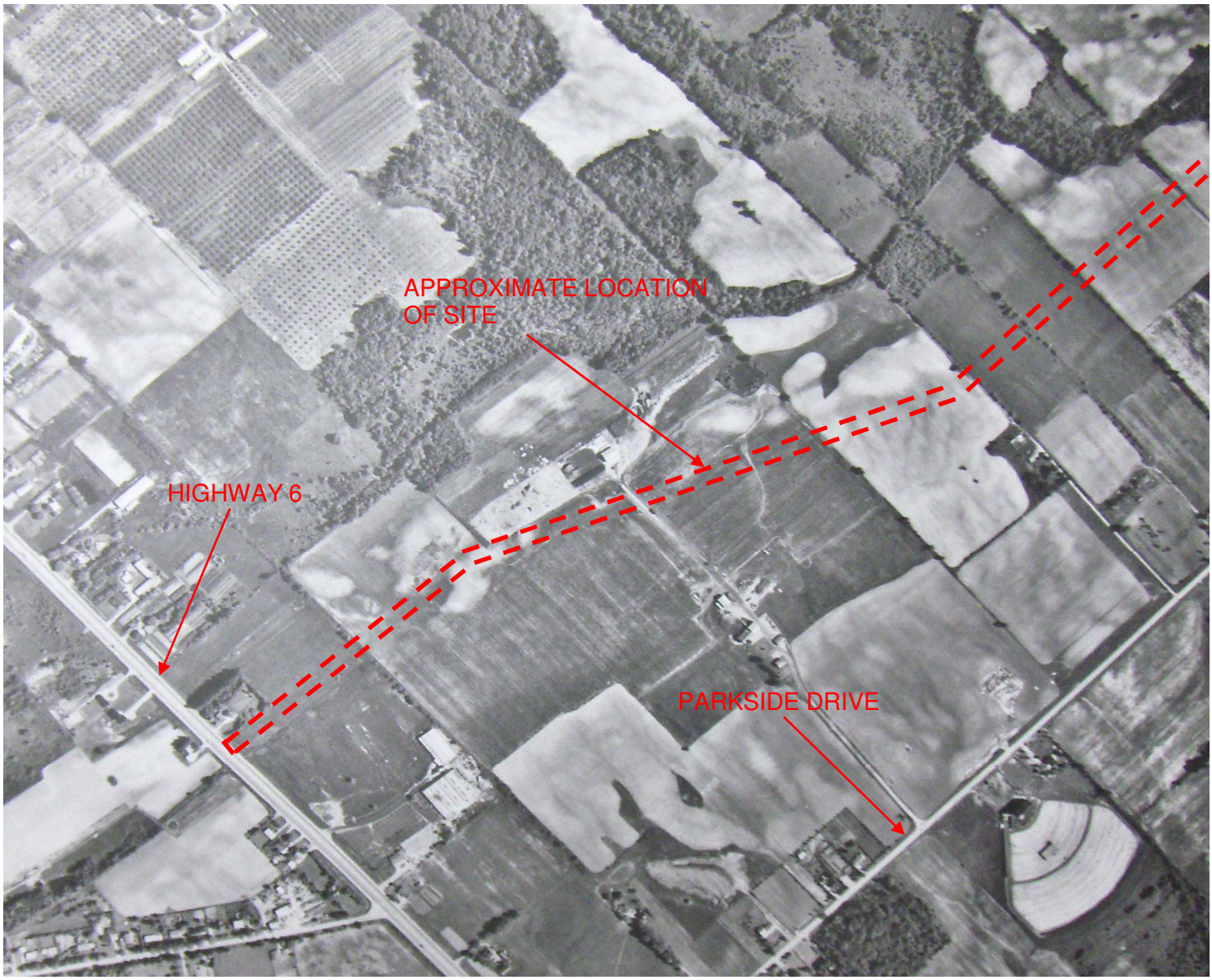


CITY OF HAMILTON				
MODIFIED PHASE I ENVIRONMENTAL SITE ASSESSMENT				
WATERDOWN EAST-WEST BYPASS HIGHWAY 6 TO BRANT STREET HAMILTON/BURLINGTON, ONTARIO				
	DATE	APPROX. SCALE	PML REF.	FIGURE
1950 AERIAL PHOTOGRAPH	MAR. 2009	1:9,800	08HX014	7

PML Peto MacCallum Ltd.
CONSULTING ENGINEERS

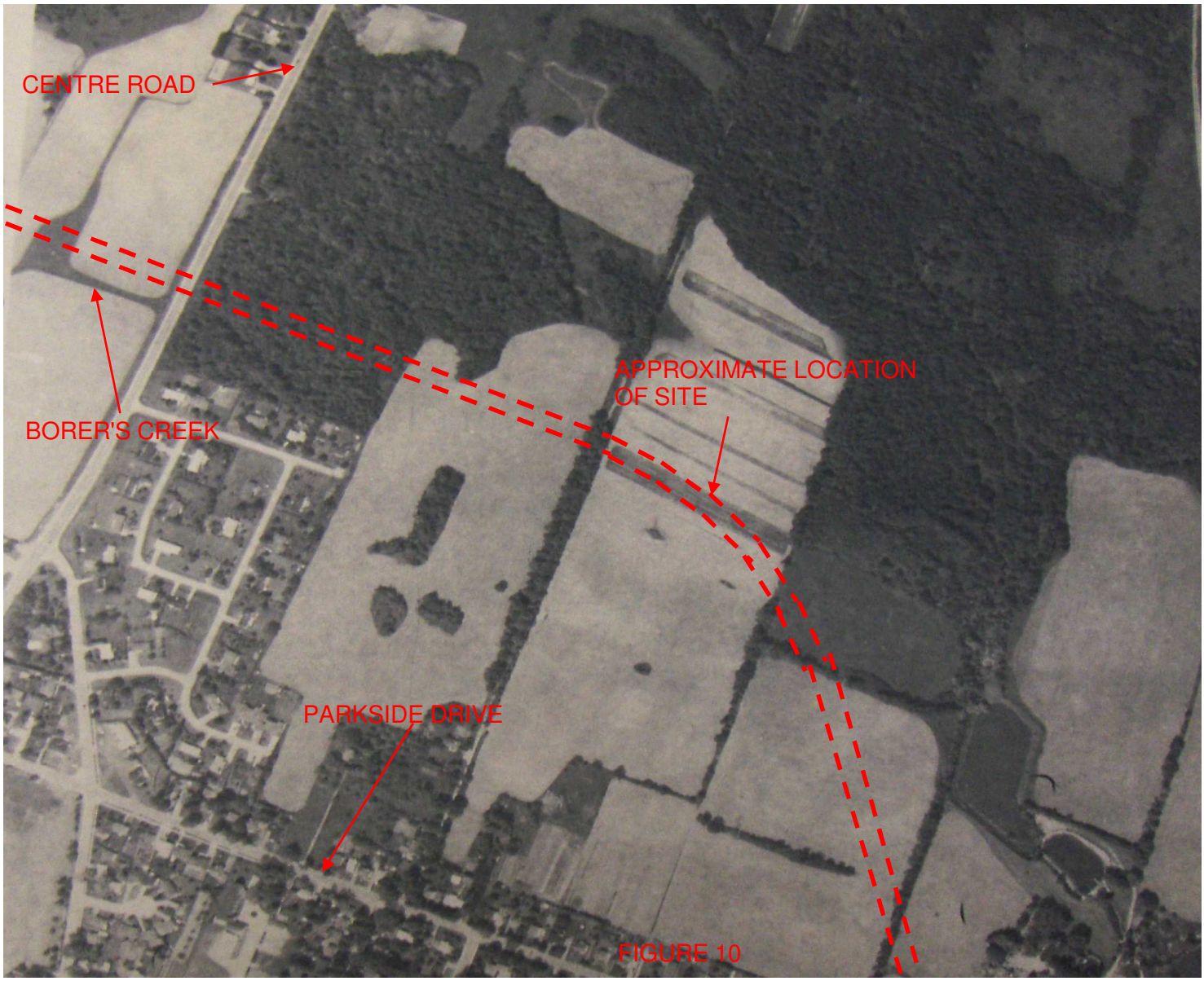
PROJECT

N



CITY OF HAMILTON				
MODIFIED PHASE I ENVIRONMENTAL SITE ASSESSMENT				
WATERDOWN EAST-WEST BYPASS HIGHWAY 6 TO BRANT STREET HAMILTON/BURLINGTON, ONTARIO				
	DATE	APPROX. SCALE	PML REF.	FIGURE
1978 AERIAL PHOTOGRAPH	MAR. 2009	1:8,900	08HX014	8

PML Peto MacCallum Ltd.
CONSULTING ENGINEERS

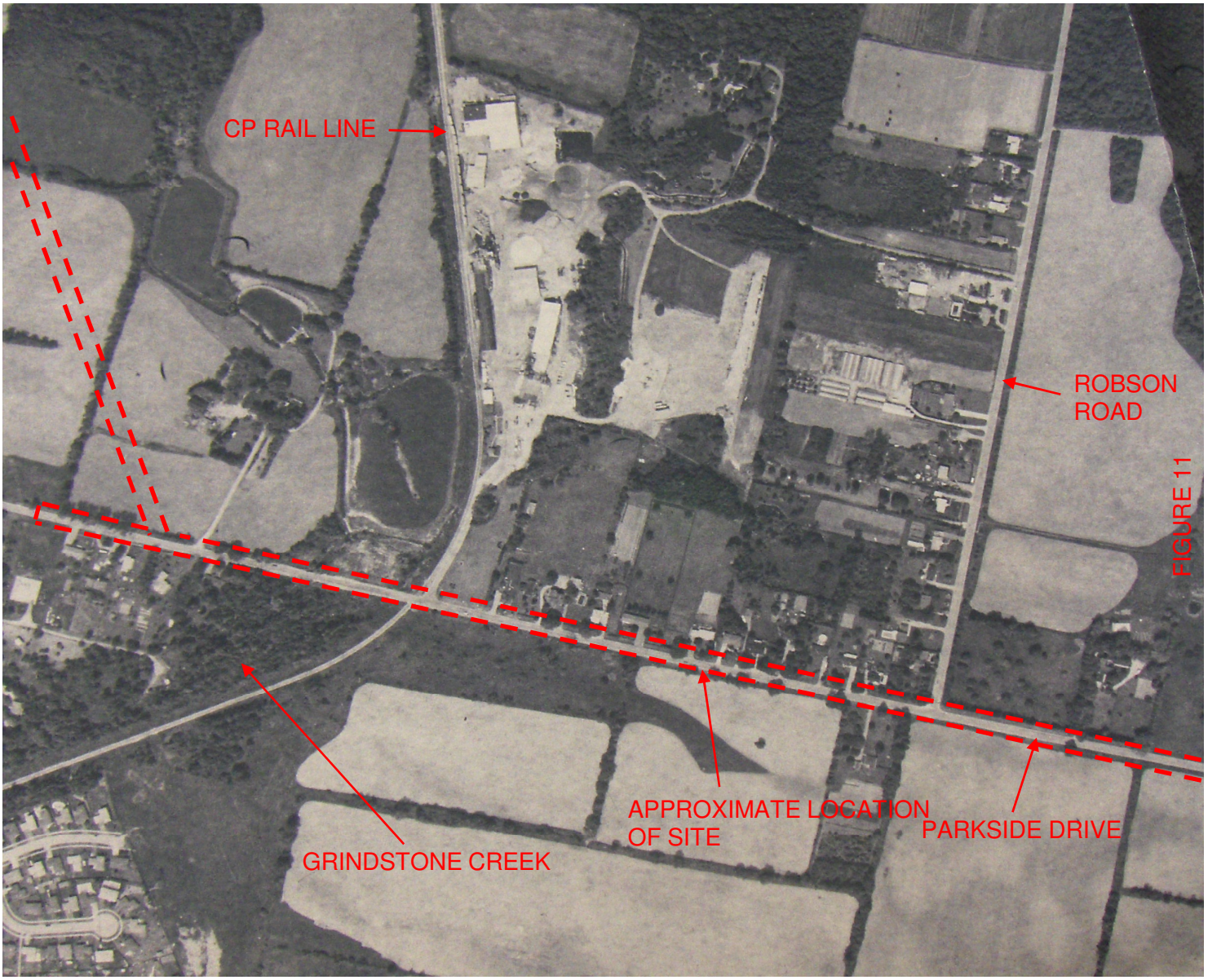


CITY OF HAMILTON				
MODIFIED PHASE I ENVIRONMENTAL SITE ASSESSMENT				
WATERDOWN EAST-WEST BYPASS HIGHWAY 6 TO BRANT STREET HAMILTON/BURLINGTON, ONTARIO				
	DATE	APPROX. SCALE	PML REF.	FIGURE
1985 AERIAL PHOTOGRAPH	MAR. 2009	1:6,400	08HX014	9

PML Peto MacCallum Ltd.
CONSULTING ENGINEERS

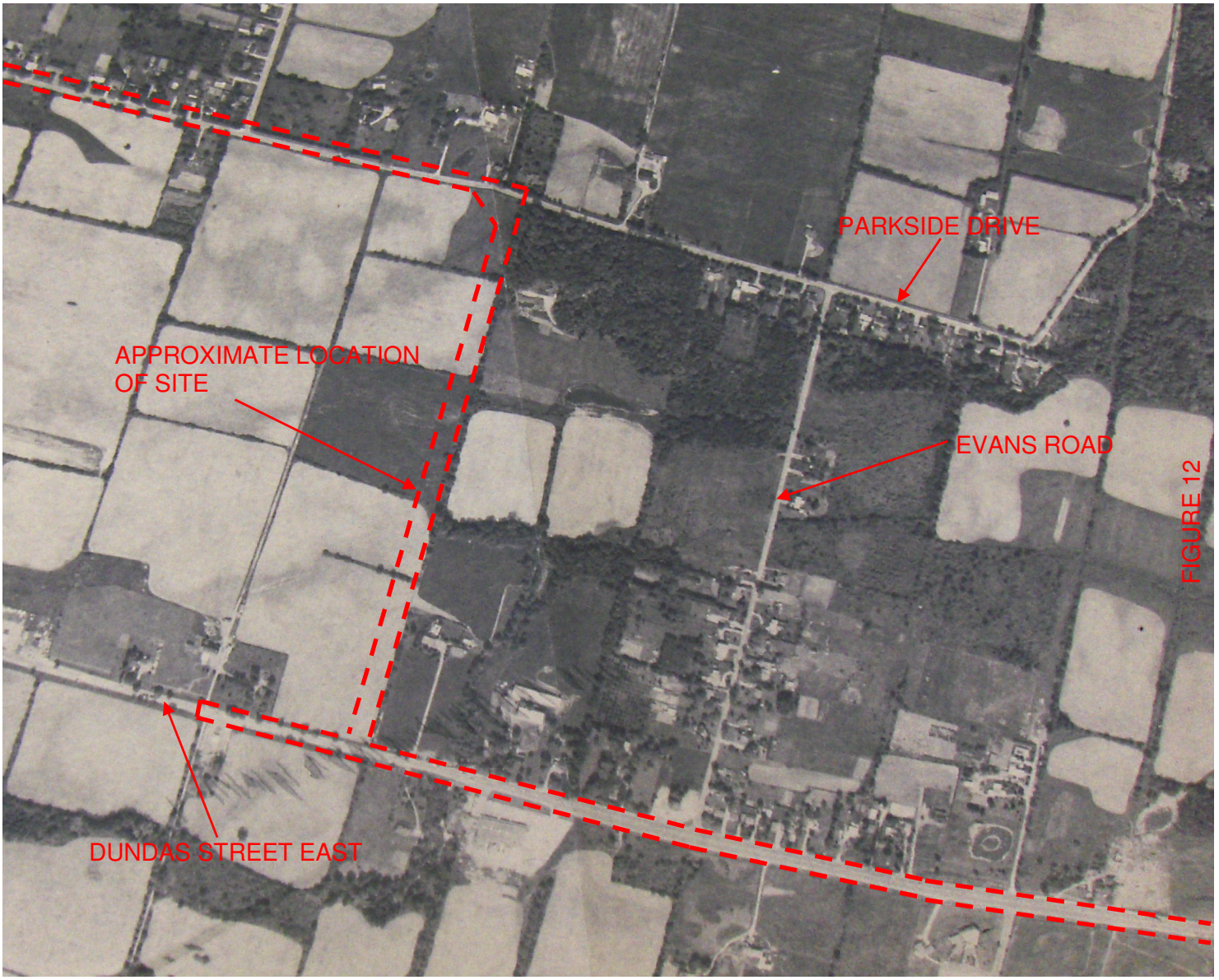
PROJECT

N



CITY OF HAMILTON				
MODIFIED PHASE I ENVIRONMENTAL SITE ASSESSMENT				
WATERDOWN EAST-WEST BYPASS HIGHWAY 6 TO BRANT STREET HAMILTON/BURLINGTON, ONTARIO				
	DATE	APPROX. SCALE	PML REF.	FIGURE
1985 AERIAL PHOTOGRAPH	MAR. 2009	1:6,200	08HX014	10

PML Peto MacCallum Ltd.
CONSULTING ENGINEERS

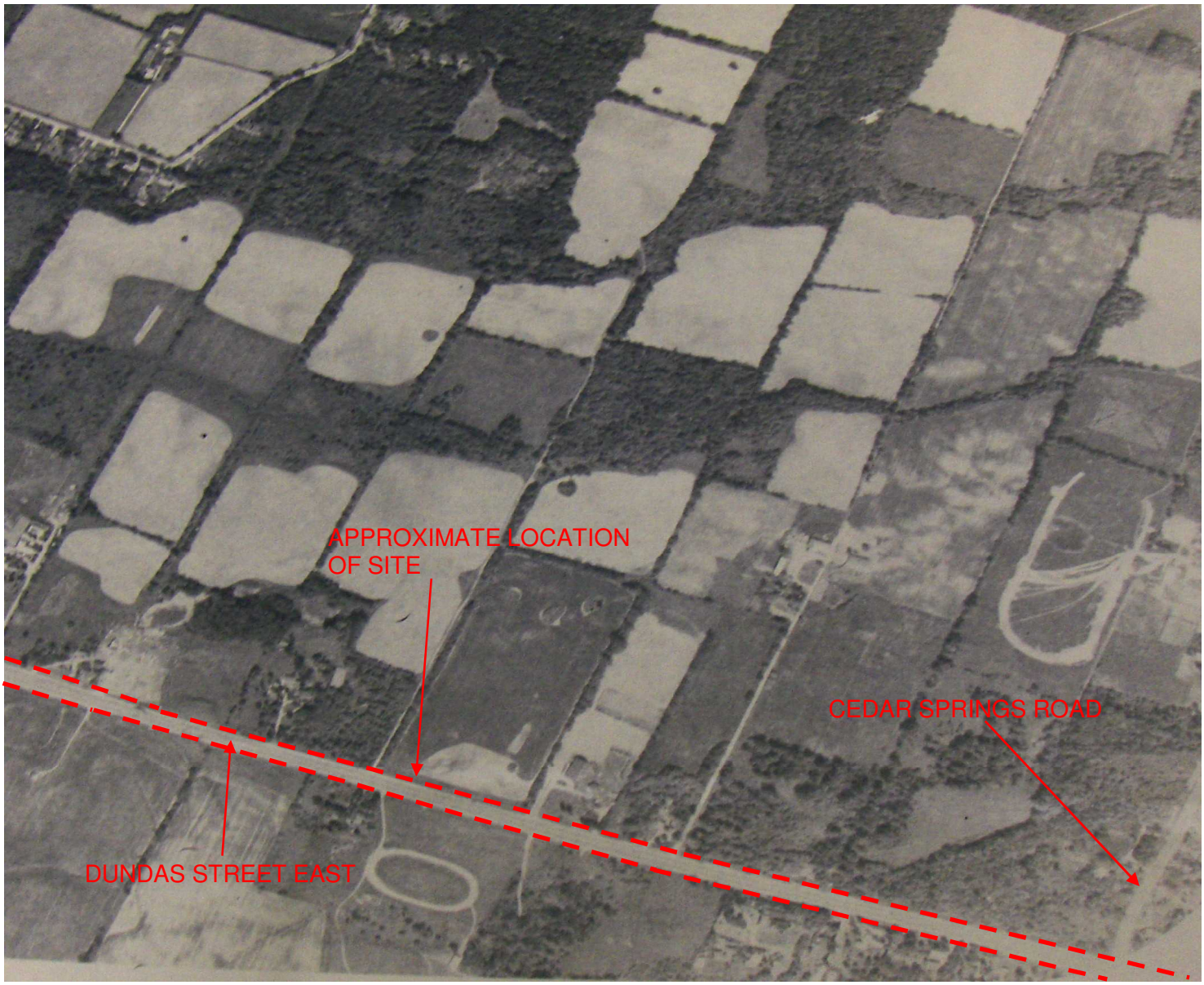


CITY OF HAMILTON				
MODIFIED PHASE I ENVIRONMENTAL SITE ASSESSMENT				
WATERDOWN EAST-WEST BYPASS HIGHWAY 6 TO BRANT STREET HAMILTON/BURLINGTON, ONTARIO				
1985 AERIAL PHOTOGRAPH	DATE	APPROX. SCALE	PML REF.	FIGURE
	MAR. 2009	1:9,400	08HX014	11

PML Peto MacCallum Ltd.
CONSULTING ENGINEERS

PROJECT

N

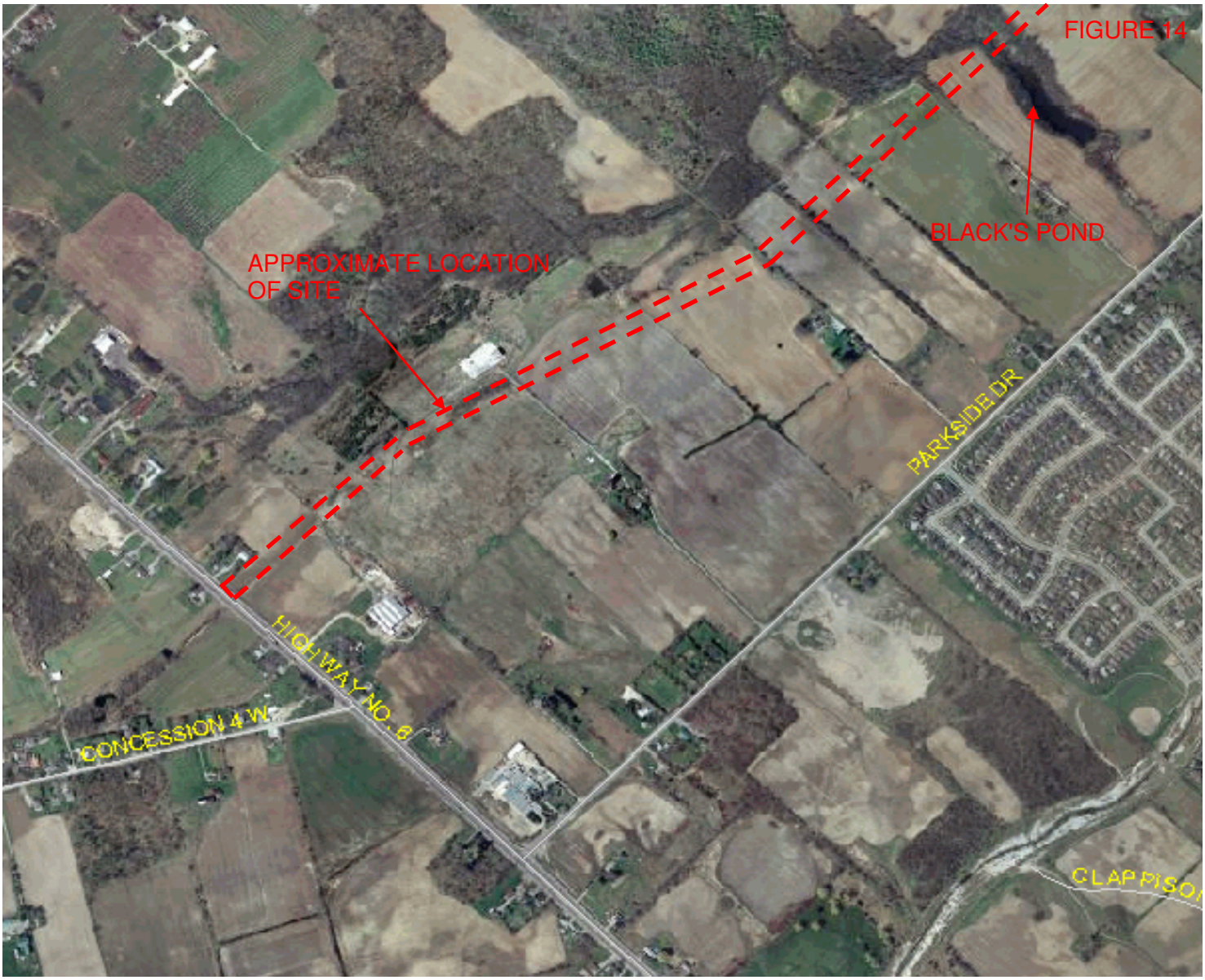


CITY OF HAMILTON				
MODIFIED PHASE I ENVIRONMENTAL SITE ASSESSMENT				
WATERDOWN EAST-WEST BYPASS HIGHWAY 6 TO BRANT STREET HAMILTON/BURLINGTON, ONTARIO				
	DATE	APPROX. SCALE	PML REF.	FIGURE
1985 AERIAL PHOTOGRAPH	MAR. 2009	1:9,100	08HX014	12

PML Peto MacCallum Ltd.
CONSULTING ENGINEERS

PROJECT

N

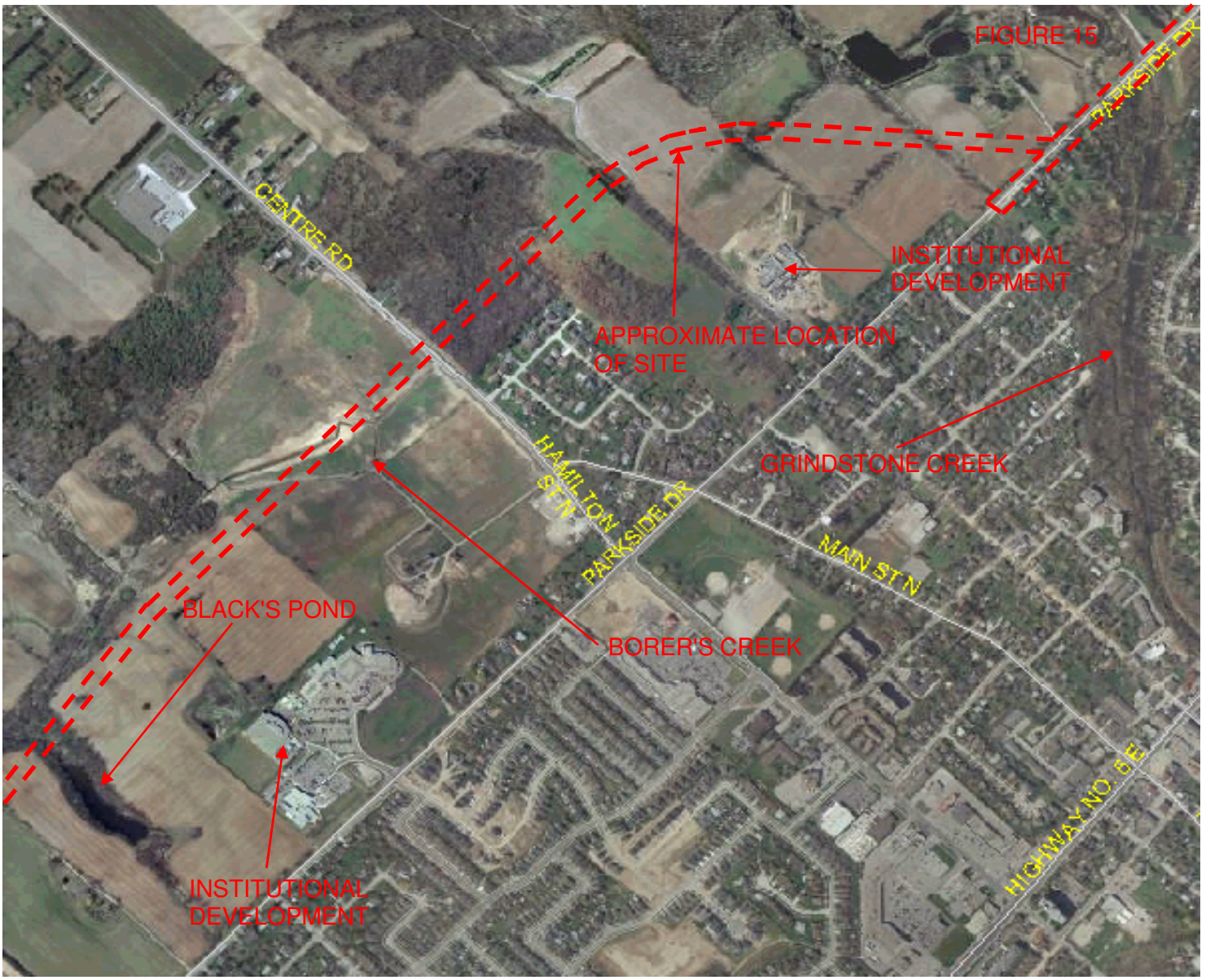


CITY OF HAMILTON				
MODIFIED PHASE I ENVIRONMENTAL SITE ASSESSMENT				
WATERDOWN EAST-WEST BYPASS HIGHWAY 6 TO BRANT STREET HAMILTON/BURLINGTON, ONTARIO				
	DATE	APPROX. SCALE	PML REF.	FIGURE
2002 AERIAL PHOTOGRAPH	MAR. 2009	1:11,200	08HX014	13

PML Peto MacCallum Ltd.
CONSULTING ENGINEERS

PROJECT

N



CITY OF HAMILTON				
MODIFIED PHASE I ENVIRONMENTAL SITE ASSESSMENT				
WATERDOWN EAST-WEST BYPASS HIGHWAY 6 TO BRANT STREET HAMILTON/BURLINGTON, ONTARIO				
	DATE	APPROX. SCALE	PML REF.	FIGURE
2002 AERIAL PHOTOGRAPH	MAR. 2009	1:11,500	08HX014	14

PML Peto MacCallum Ltd.
CONSULTING ENGINEERS

PROJECT

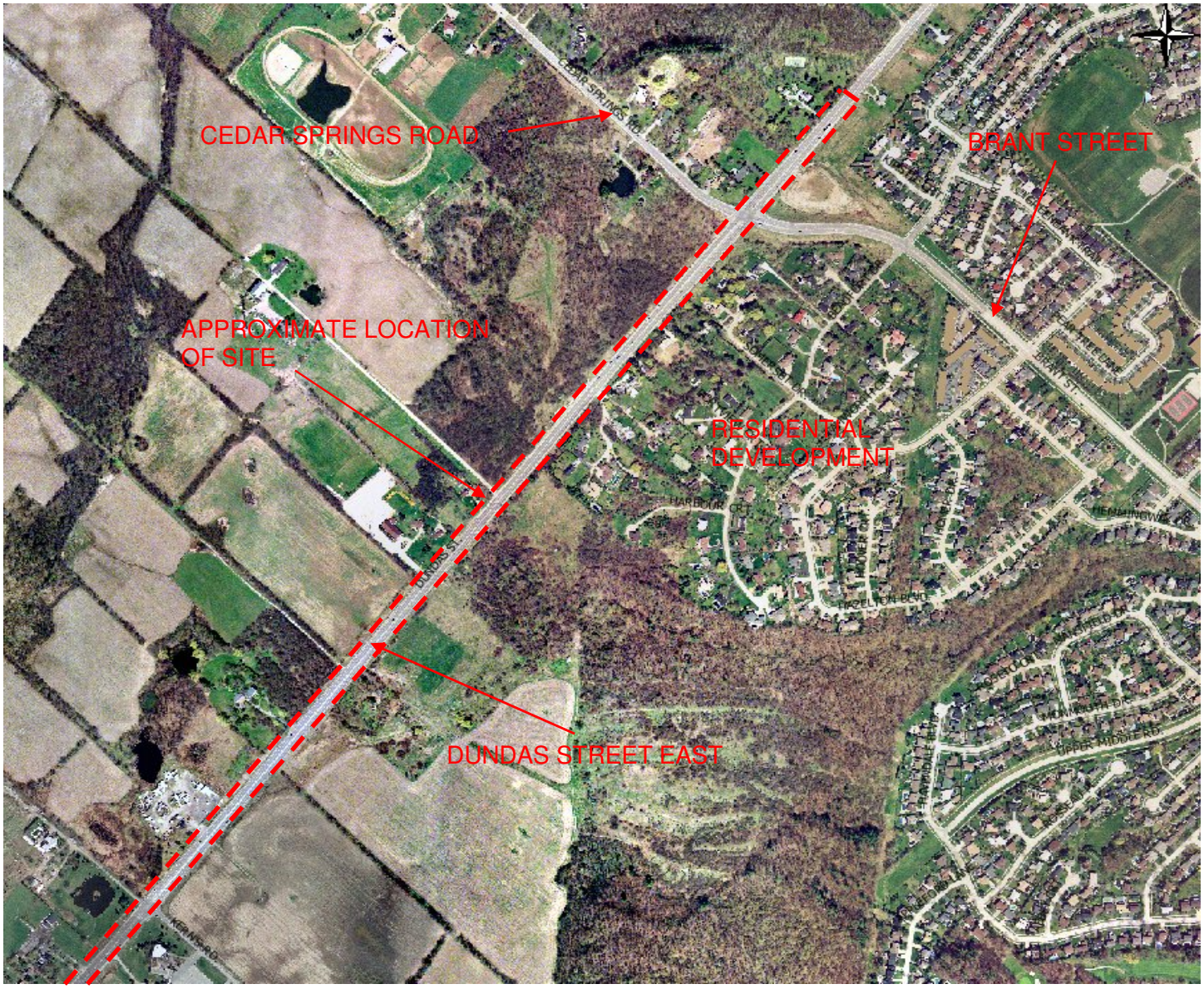
N

CITY OF HAMILTON			
MODIFIED PHASE I ENVIRONMENTAL SITE ASSESSMENT			
WATERDOWN EAST-WEST BYPASS HIGHWAY 6 TO BRANT STREET HAMILTON/BURLINGTON, ONTARIO			
2002 AERIAL PHOTOGRAPH			
DATE	APPROX. SCALE	PML REF.	FIGURE
MAR. 2009	1:11,700	08HX014	15

PML Peto MacCallum Ltd.
CONSULTING ENGINEERS

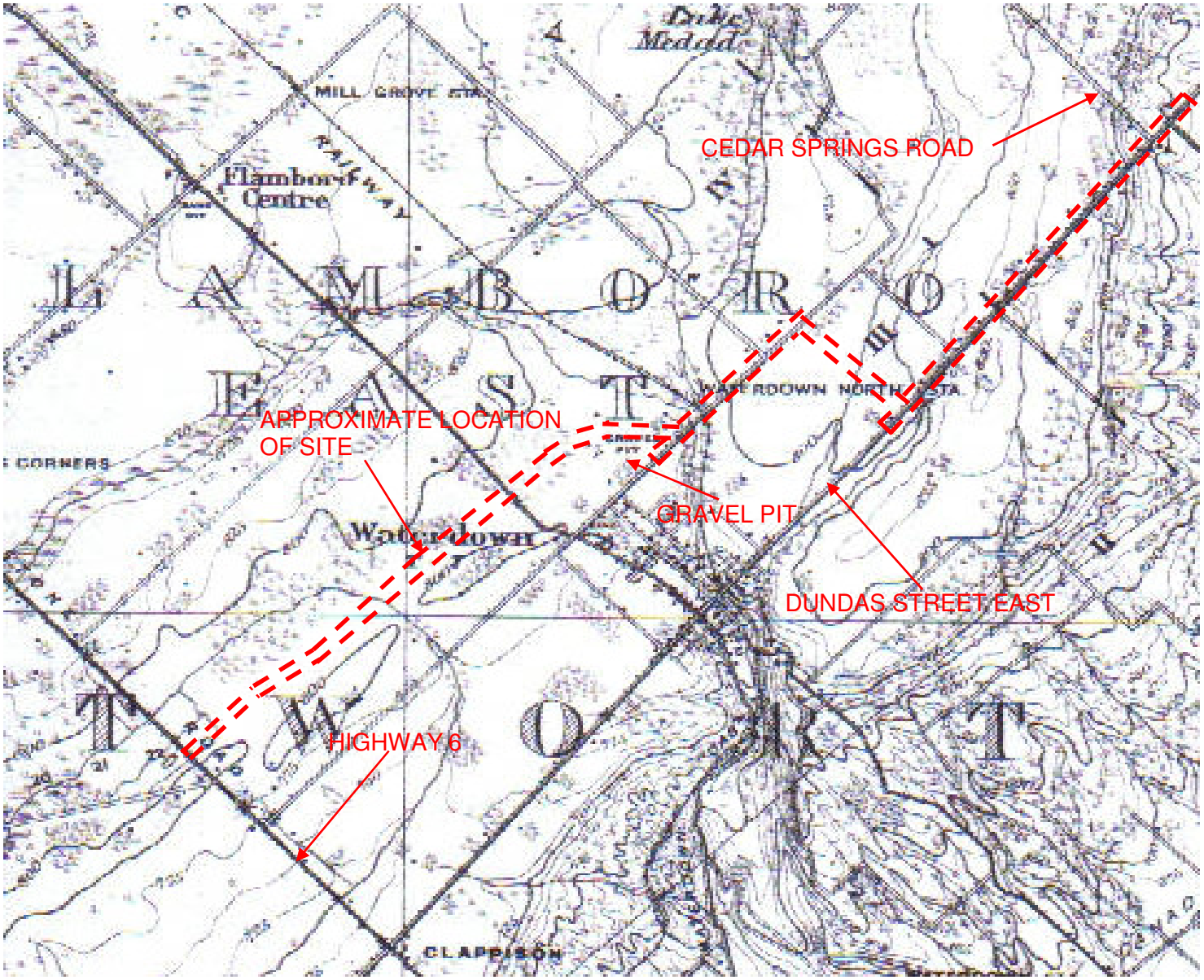
PROJECT

N



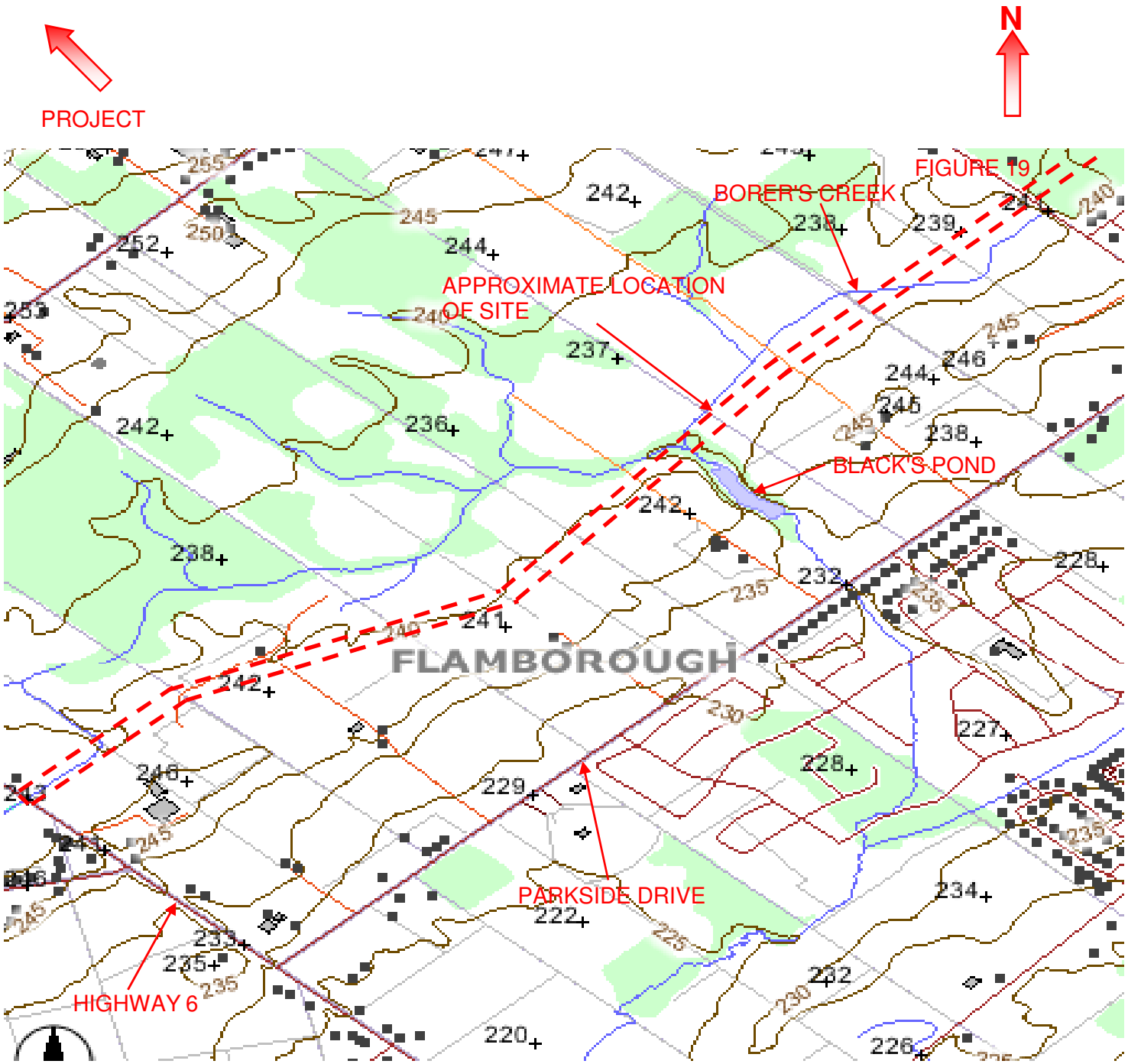
CITY OF HAMILTON				
MODIFIED PHASE I ENVIRONMENTAL SITE ASSESSMENT				
WATERDOWN EAST-WEST BYPASS HIGHWAY 6 TO BRANT STREET HAMILTON/BURLINGTON, ONTARIO				
	DATE	APPROX. SCALE	PML REF.	FIGURE
2002 AERIAL PHOTOGRAPH	MAR. 2009	1:11,100	08HX014	16

PML Peto MacCallum Ltd.
CONSULTING ENGINEERS



CITY OF HAMILTON				
MODIFIED PHASE I ENVIRONMENTAL SITE ASSESSMENT				
WATERDOWN EAST-WEST BYPASS HIGHWAY 6 TO BRANT STREET HAMILTON/BURLINGTON, ONTARIO				
	DATE	SCALE	PML REF.	FIGURE
1923 TOPOGRAPHIC MAP	MAR. 2009	1:40,300	08HX014	17

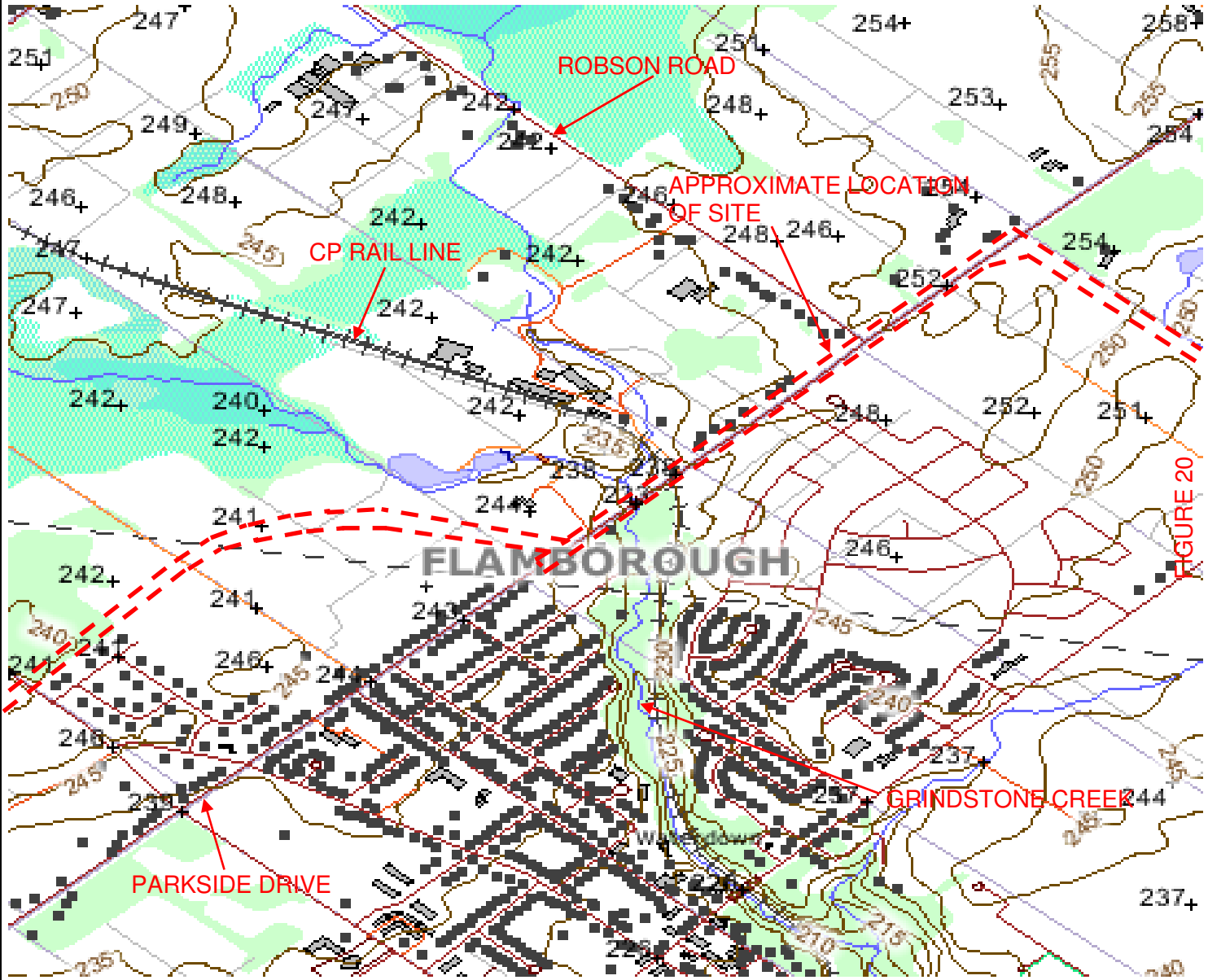
PML Peto MacCallum Ltd.
CONSULTING ENGINEERS



CITY OF HAMILTON			
MODIFIED PHASE I ENVIRONMENTAL SITE ASSESSMENT			
WATERDOWN EAST-WEST BYPASS HIGHWAY 6 TO BRANT STREET HAMILTON/BURLINGTON, ONTARIO			
2004 ONTARIO BASE MAP			

Peto MacCallum Ltd.
CONSULTING ENGINEERS

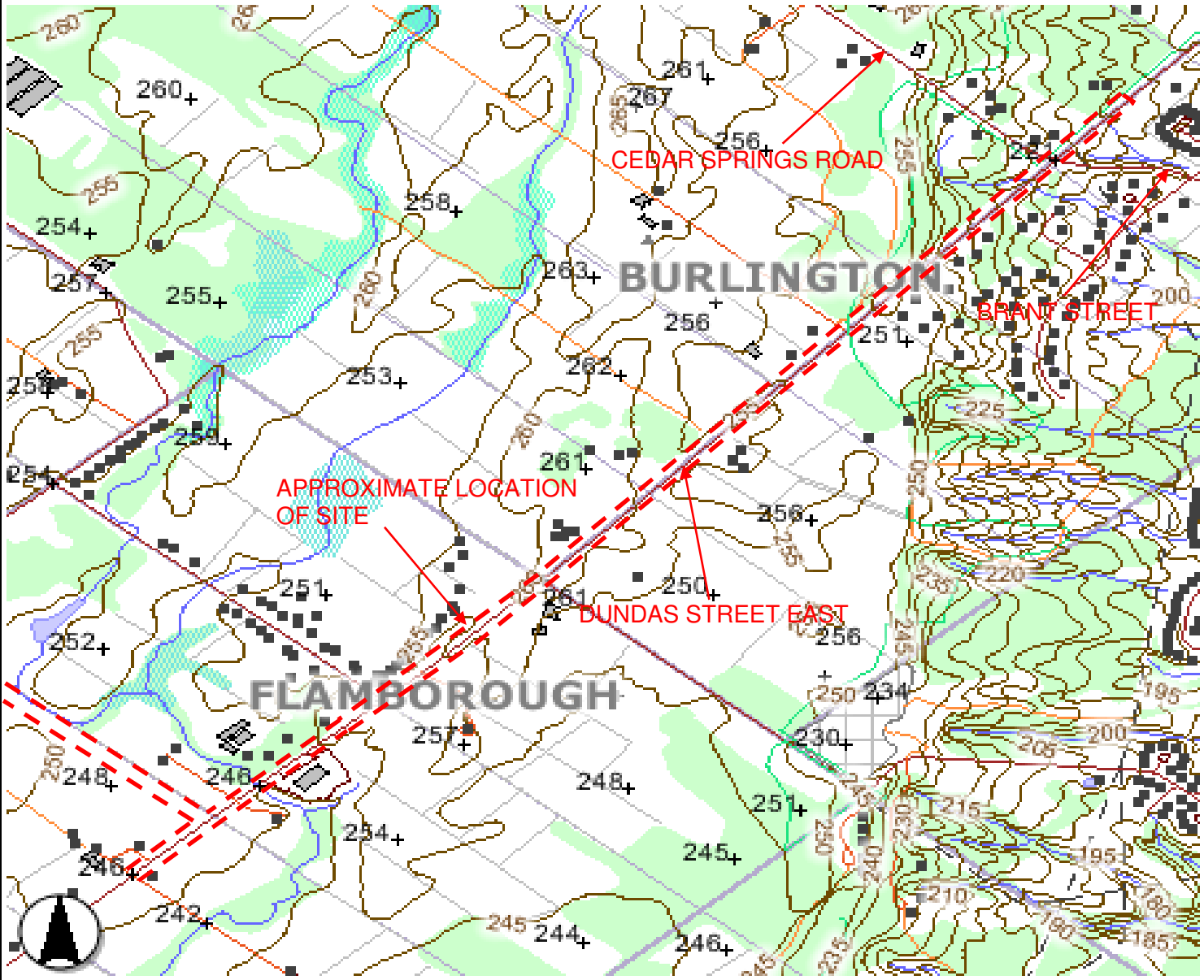
DATE	SCALE	PML REF.	FIGURE
MAR. 2009	1:14,000	08HX014	18



CITY OF HAMILTON			
MODIFIED PHASE I ENVIRONMENTAL SITE ASSESSMENT			
WATERDOWN EAST-WEST BYPASS HIGHWAY 6 TO BRANT STREET HAMILTON/BURLINGTON, ONTARIO			
2004 ONTARIO BASE MAP			

Peto MacCallum Ltd.
CONSULTING ENGINEERS

DATE	SCALE	PML REF.	FIGURE
MAR. 2009	1:14,000	08HX014	19

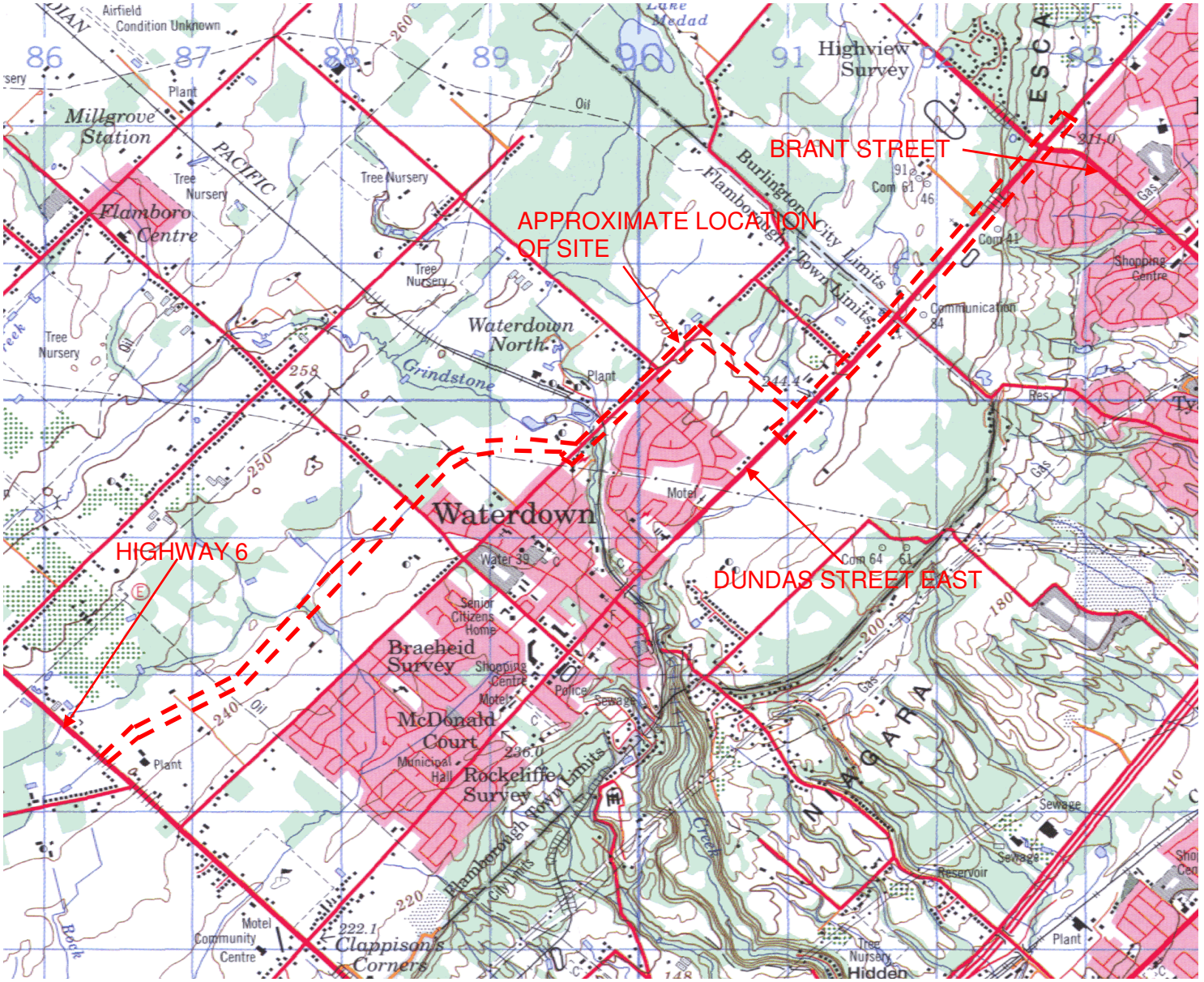


CITY OF HAMILTON			
MODIFIED PHASE I ENVIRONMENTAL SITE ASSESSMENT			
WATERDOWN EAST-WEST BYPASS HIGHWAY 6 TO BRANT STREET HAMILTON/BURLINGTON, ONTARIO			
	DATE	SCALE	PML REF.	FIGURE
2004 ONTARIO BASE MAP	MAR. 2009	1:14,000	08HX014	20

PML Peto MacCallum Ltd.
CONSULTING ENGINEERS

PROJECT

N



CITY OF HAMILTON			
MODIFIED PHASE I ENVIRONMENTAL SITE ASSESSMENT			
WATERDOWN EAST-WEST BYPASS HIGHWAY 6 TO BRANT STREET HAMILTON/BURLINGTON, ONTARIO			
1999 TOPOGRAPHIC MAP			
DATE	**SCALE**	**PML REF.**	**FIGURE**
MAR. 2009	**1:45,600**	**08HX014**	**21**

PML Peto MacCallum Ltd.
CONSULTING ENGINEERS

APPENDIX B

Site Photographs

Photograph 1 – View looking east from Highway 6 at typical agricultural Site conditions.

Photograph 2 – View looking southeast at typical Site conditions at the Connon Nursery property located at 383 Parkside Drive.

Photograph 3 – View looking west along Parkside Drive including the Grindstone Creek valley.

Photograph 4 – View looking north from Parkside Drive at the CP Rail Line. The Opta Minerals property is located beyond the rail line.

Photograph 5 – View looking east along Dundas Street East including the Sunoco Gas Station located at 490 Dundas Street East.

Photograph 6 – View looking west along Dundas Street East including the Pioneer Gas Station located at the northwest corner of the intersection of Evans Road and Dundas Street East.

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: 08HX014

AGAT WORK ORDER: 08T301849

SOIL ANALYSIS REVIEWED BY: Jacky Takeuchi, BScH (Chem Eng), BSc (Bio), C.Chem, Laboratory Manager

DATE REPORTED: Nov 07, 2008

PAGES (INCLUDING COVER): 11

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.

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.caeal.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, ONTARIO
L4Z 1Y2

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

Certificate of Analysis

AGAT WORK ORDER: 08T301849

PROJECT NO: 08HX014

CLIENT NAME: PETO MACCALLUM LIMITED

ATTENTION TO: Danika Durish

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

DATE SAMPLED: Oct 28, 2008 | **DATE RECEIVED: Oct 31, 2008** | **DATE REPORTED: Nov 07, 2008** | **SAMPLE TYPE: Soil**

	Unit	G / S	RDL	BH1 SS1 1132801	BH1 SS2 1132803	BH1 SS3 1132805	BH1 SS5 1132806	BH2 SS2 1132807	BH2 SS3 1132808	BH3 SS1 1132809	BH3 SS2 1132810
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	3.4	2.3	4.4	4.0	3.2	5.1	3.6	6.8
Barium	µg/g	210	0.2	74.1	25.5	65.2	87.3	64.5	44.9	22.9	89.7
Beryllium	µg/g	1.2	0.2	0.5	0.2	0.5	0.4	0.6	0.5	0.2	1.0
Cadmium	µg/g	1.0	0.2	0.3	<0.2	<0.2	0.2	0.3	<0.2	<0.2	<0.2
Chromium	µg/g	71	0.3	16.1	6.6	13.2	12.8	21.6	14.5	5.9	29.2
Cobalt	µg/g	21	0.2	5.7	5.6	7.5	7.1	6.4	8.8	2.6	15.4
Copper	µg/g	65	0.2	20.5	22.6	23.7	30.0	24.2	38.2	8.9	45.9
Lead	µg/g	120	0.3	19.3	8.4	8.4	8.3	9.8	27.6	8.5	15.8
Molybdenum	µg/g	2.5	0.3	<0.3	<0.3	<0.3	0.3	<0.3	<0.3	<0.3	<0.3
Nickel	µg/g	43	0.3	12.1	10.0	16.3	14.0	15.1	18.2	5.8	34.7
Selenium	µg/g	1.9	0.4	0.6	<0.4	0.4	<0.4	0.7	<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	24.7	11.4	19.2	16.5	35.9	21.8	11.0	37.8
Mercury	µg/g	0.23	0.011	0.051	<0.011	<0.011	<0.011	0.074	0.013	0.017	0.036
Electrical Conductivity (2:1)	mS/cm	0.57	0.002	0.237	0.165	0.409	0.380	0.143	0.109	0.046	0.055
Sodium Adsorption Ratio (2:1)	N/A	2.4	N/A	1.67	1.60	5.19	2.27	0.351	0.126	0.145	0.382
pH (2:1)	N/A		N/A	7.94	8.63	8.70	8.56	7.55	8.31	6.56	7.12

Certified By: Jody Takenaka

AGAT Laboratories

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
L4Z 1Y2

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

Certificate of Analysis

AGAT WORK ORDER: 08T301849

PROJECT NO: 08HX014

CLIENT NAME: PETO MACCALLUM LIMITED

ATTENTION TO: Danika Durish

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

DATE SAMPLED: Oct 28, 2008 | **DATE RECEIVED: Oct 31, 2008** | **DATE REPORTED: Nov 07, 2008** | **SAMPLE TYPE: Soil**

	Unit	G / S	RDL	BH3 SS4 1132811	BH4 SS1 1132812	BH4 SS2 1132813	BH4 SS6 1132814	BH5 SS1B 1132815	BH5 SS4 1132816	BH6 SS1 1132819	BH6 SS2 1132820
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	2.4	2.3	5.5	5.1	6.6	4.5	2.7	4.5
Barium	µg/g	210	0.2	25.3	30.4	63.2	83.9	84.6	80.3	80.8	55.7
Beryllium	µg/g	1.2	0.2	0.3	0.4	0.7	0.4	0.8	0.6	0.4	0.5
Cadmium	µg/g	1.0	0.2	<0.2	<0.2	<0.2	0.3	<0.2	<0.2	0.4	<0.2
Chromium	µg/g	71	0.3	6.5	10.2	21.0	12.2	18.9	18.5	12.3	13.7
Cobalt	µg/g	21	0.2	4.5	4.9	13.1	7.0	9.3	11.0	4.5	9.0
Copper	µg/g	85	0.2	22.8	10.4	48.9	24.6	55.5	38.2	15.3	24.9
Lead	µg/g	120	0.3	6.0	8.2	13.7	8.3	15.7	8.5	18.7	7.5
Molybdenum	µg/g	2.5	0.3	<0.3	<0.3	<0.3	0.3	<0.3	0.3	<0.3	<0.3
Nickel	µg/g	43	0.3	9.9	9.7	25.7	13.5	20.3	22.9	9.1	17.7
Selenium	µg/g	1.9	0.4	<0.4	<0.4	<0.4	<0.4	0.6	<0.4	0.5	<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	10.6	17.8	26.9	17.1	29.3	25.0	17.9	19.3
Mercury	µg/g	0.23	0.011	<0.011	0.038	0.029	<0.011	0.037	0.011	0.039	<0.011
Electrical Conductivity (2:1)	mS/cm	0.57	0.002	0.032	0.089	0.050	0.202	0.203	0.150	0.211	0.232
Sodium Adsorption Ratio (2:1)	N/A	2.4	N/A	0.301	0.080	0.203	0.210	0.107	0.160	0.649	1.69
pH (2:1)	N/A		N/A	7.45	6.76	6.62	8.41	7.76	8.46	8.01	8.41

Certified By: Jacky Takeuchi

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: 08T301849
PROJECT NO: 08HX014

CLIENT NAME: PETO MACCALLUM LIMITED

ATTENTION TO: Danika Durish

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

DATE SAMPLED: Oct 28, 2008 | **DATE RECEIVED: Oct 31, 2008** | **DATE REPORTED: Nov 07, 2008** | **SAMPLE TYPE: Soil**

	Unit	G / S	RDL	BH6 SS4 1132821	BH7 SS1B 1132822	BH7 SS2 1132823	BH8 SS1B 1132824	BH8 SS2 1132825	BH8 SS3B 1132826	BH9 SS1 1132828	BH9 SS3 1132829
Antimony	µg/g	1.3	0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Arsenic	µg/g	120	0.3	2.6	3.4	6.6	6.2	7.1	4.7	4.7	4.7
Barium	µg/g	210	0.2	37.5	35.3	39.3	86.8	45.5	81.6	58.8	42.8
Beryllium	µg/g	1.2	0.2	<0.2	0.3	0.6	0.6	0.4	0.8	0.3	0.2
Cadmium	µg/g	1.0	0.2	0.3	<0.2	<0.2	0.2	<0.2	<0.2	0.2	0.3
Chromium	µg/g	71	0.3	6.6	8.1	14.8	15.4	10.4	21.9	10.2	7.4
Cobalt	µg/g	21	0.2	3.8	5.6	9.7	7.8	7.2	13.9	5.5	4.6
Copper	µg/g	85	0.2	15.0	20.5	61.6	43.9	57.3	36.6	27.1	26.4
Lead	µg/g	120	0.3	6.1	9.6	16.4	14.2	17.2	10.6	33.8	17.4
Molybdenum	µg/g	2.5	0.3	<0.3	<0.3	<0.3	<0.3	0.4	<0.3	<0.3	<0.3
Nickel	µg/g	43	0.3	5.2	10.1	20.3	18.6	12.8	29.3	11.7	8.3
Selenium	µg/g	1.9	0.4	<0.4	<0.4	0.5	0.6	<0.4	<0.4	<0.4	0.5
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	10.3	14.1	21.6	25.4	18.7	29.3	16.3	12.5
Mercury	µg/g	0.23	0.011	<0.011	0.023	0.042	0.035	0.016	0.013	0.030	0.018
Electrical Conductivity (2:1)	mS/cm	0.57	0.002	0.241	0.115	0.097	0.215	0.180	0.137	0.207	0.248
Sodium Adsorption Ratio (2:1)	N/A	2.4	N/A	1.02	0.251	0.132	0.386	0.314	0.233	0.448	0.236
pH (2:1)	N/A		N/A	8.78	7.87	7.45	7.85	8.35	8.30	8.26	8.39

Certified By: Jacky Takewski

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: 08T301849

PROJECT NO: 08HX014

CLIENT NAME: PETO MACCALLUM LIMITED

ATTENTION TO: Danika Durish

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

DATE SAMPLED: Oct 28, 2008 | **DATE RECEIVED: Oct 31, 2008** | **DATE REPORTED: Nov 07, 2008** | **SAMPLE TYPE: Soil**

	Unit	G / S	RDL	BH9 SS4 1132830	BH9 SS5 1132831	BH10 SS1 1132832	BH10 SS2 1132833	BH10 SS4 1132834	BH11 SS1 1132835	BH11 SS2 1132836	BH11 SS4 1132837
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	120	0.3	5.0	3.5	3.8	2.5	3.4	4.2	5.3	3.3
Barium	µg/g	210	0.2	99.3	50.3	74.6	28.0	48.7	119	85.6	74.3
Beryllium	µg/g	1.2	0.2	0.7	0.3	0.5	0.2	0.4	0.7	0.6	0.4
Cadmium	µg/g	1.0	0.2	<0.2	<0.2	0.3	<0.2	0.4	0.3	<0.2	<0.2
Chromium	µg/g	71	0.3	23.9	8.4	16.5	8.0	11.6	21.5	19.1	14.7
Cobalt	µg/g	21	0.2	10.9	5.6	7.9	4.3	6.9	11.1	12.2	8.2
Copper	µg/g	92	0.2	25.5	29.4	23.0	19.8	29.5	33.1	37.6	26.9
Lead	µg/g	120	0.3	12.2	8.4	18.4	5.2	7.7	17.5	11.1	8.1
Molybdenum	µg/g	2.5	0.3	<0.3	<0.3	0.4	<0.3	<0.3	0.3	<0.3	<0.3
Nickel	µg/g	43	0.3	22.9	11.8	13.8	7.9	13.5	21.2	26.8	18.0
Selenium	µg/g	1.9	0.4	0.4	<0.4	0.7	<0.4	<0.4	0.5	<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	30.5	13.8	26.3	15.3	16.9	31.4	24.7	20.6
Mercury	µg/g	0.23	0.011	0.042	<0.011	0.045	<0.011	<0.011	0.043	0.018	0.012
Electrical Conductivity (2:1)	mS/cm	0.57	0.002	0.288	0.208	0.249	0.460	0.216	0.267	0.193	0.190
Sodium Adsorption Ratio (2:1)	N/A	2.4	N/A	1.43	1.83	**3.21**	**7.64**	0.815	0.321	0.308	0.225
pH (2:1)	N/A		N/A	8.13	8.24	7.88	8.68	8.45	7.82	8.09	8.37

Certified By: Jacky Takenaka

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: 08T301849

PROJECT NO: 08HX014

CLIENT NAME: PETO MACCALLUM LIMITED

ATTENTION TO: Danika Durish

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

DATE SAMPLED: Oct 28, 2008 | **DATE RECEIVED: Oct 31, 2008** | **DATE REPORTED: Nov 07, 2008** | **SAMPLE TYPE: Soil**

	Unit	G / S	RDL	BH12 SS1B 1132839	BH12 SS4 1132841	BH13 SS1 1132842	BH13 SS3 1132843	BH1-1 SS1 1132845	BH6-1 SS2 1132847	BH11-1 SS4 1132852	BH7 SS4 1135345
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	120	0.3	6.1	4.6	4.9	4.8	3.4	5.2	4.0	4.4
Barium	µg/g	210	0.2	113	68.5	145	98.7	79.0	81.6	90.8	21.8
Beryllium	µg/g	1.2	0.2	1.1	0.3	0.8	0.5	0.5	0.6	0.5	0.3
Cadmium	µg/g	1.9	0.2	<0.2	<0.2	0.3	<0.2	0.3	<0.2	0.8	<0.2
Chromium	µg/g	71	0.3	25.5	9.1	22.5	17.5	16.4	15.3	17.0	8.6
Cobalt	µg/g	21	0.2	15.5	5.9	12.0	10.9	5.9	9.9	9.4	6.2
Copper	µg/g	85	0.2	57.0	26.9	27.0	42.6	19.1	27.7	32.2	35.2
Lead	µg/g	120	0.3	14.4	12.1	22.4	13.3	18.5	9.6	9.6	10.0
Molybdenum	µg/g	2.5	0.3	<0.3	0.5	0.6	0.3	0.3	0.3	<0.3	<0.3
Nickel	µg/g	43	0.3	31.8	11.4	25.2	22.5	11.9	20.5	20.2	10.6
Selenium	µg/g	1.9	0.4	0.5	<0.4	0.4	<0.4	0.8	<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	34.1	13.9	30.8	23.8	24.5	21.9	24.2	14.0
Mercury	µg/g	0.23	0.011	0.037	<0.011	0.046	0.015	0.059	<0.011	0.012	<0.011
Electrical Conductivity (2:1)	mS/cm	0.57	0.002	0.126	0.153	0.220	0.275	0.267	0.252	0.135	0.083
Sodium Adsorption Ratio (2:1)	N/A	2.4	N/A	0.267	0.182	0.419	7.06	1.85	1.77	0.223	0.116
pH (2:1)	N/A		N/A	8.93	8.26	8.07	8.89	8.04	8.35	8.31	8.32

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to T1(All)

Certified By: Jody Takeuchi

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

Guideline Violation

AGAT WORK ORDER: 08T301849

PROJECT NO: 08HX014

CLIENT NAME: PETO MACCALLUM LIMITED

ATTENTION TO: Danika Durish

SAMPLE ID	GUIDELINE	ANALYSIS PACKAGE	PARAMETER	GUIDEVALUE	RESULT
1132805	T1(All)	O. Reg. 153 Metals & Inorganics in Soil - Table 1	Sodium Adsorption Ratio (2:1)	2.4	5.19
1132832	T1(All)	O. Reg. 153 Metals & Inorganics in Soil - Table 1	Sodium Adsorption Ratio (2:1)	2.4	3.21
1132833	T1(All)	O. Reg. 153 Metals & Inorganics in Soil - Table 1	Sodium Adsorption Ratio (2:1)	2.4	7.64
1132843	T1(All)	O. Reg. 153 Metals & Inorganics in Soil - Table 1	Sodium Adsorption Ratio (2:1)	2.4	7.06

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

Quality Assurance

CLIENT NAME: PETO MACCALLUM LIMITED

AGAT WORK ORDER: 08T301849

PROJECT NO: 08HX014

ATTENTION TO: Danika Durish

Soil Analysis

RPT Date: Nov 07, 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
O. Reg. 153 Metals & Inorganics in Soil - Table 1															
Antimony (µg/g)	1	1132801	< 0.8	< 0.8	0.0%	< 0.8	104%	70%	130%	90%	80%	120%	88%	70%	130%
Arsenic (µg/g)	1	1132801	3.4	3.4	0.0%	< 0.3	105%	90%	110%	104%	90%	110%	97%	70%	130%
Barium (µg/g)	1	1132801	74.1	76.7	3.4%	< 0.2	109%	90%	110%	106%	90%	110%	101%	70%	130%
Beryllium (µg/g)	1	1132801	0.5	0.5	0.0%	< 0.2	89%	80%	120%	98%	90%	110%	95%	70%	130%
Cadmium (µg/g)	1	1132801	0.3	0.3	0.0%	< 0.2	109%	90%	110%	98%	90%	110%	102%	70%	130%
Chromium (µg/g)	1	1132801	16.1	16.6	3.1%	< 0.3	108%	90%	110%	105%	90%	110%	98%	70%	130%
Cobalt (µg/g)	1	1132801	5.7	5.8	1.7%	< 0.2	107%	80%	120%	107%	90%	110%	95%	70%	130%
Copper (µg/g)	1	1132801	20.5	19.7	4.0%	< 0.2	103%	90%	110%	108%	90%	110%	101%	70%	130%
Lead (µg/g)	1	1132801	19.3	19.9	3.1%	< 0.3	108%	90%	110%	105%	90%	110%	99%	70%	130%
Molybdenum (µg/g)	1	1132801	< 0.3	0.5		< 0.3	107%	80%	120%	110%	90%	110%	108%	70%	130%
Nickel (µg/g)	1	1132801	12.1	12.0	0.8%	< 0.3	111%	80%	120%	105%	90%	110%	99%	70%	130%
Selenium (µg/g)	1	1132801	0.8	0.7	13.3%	< 0.4	92%	90%	110%	101%	90%	110%	98%	70%	130%
Silver (µg/g)	1	1132801	< 0.2	< 0.2	0.0%	< 0.2	109%	90%	110%	92%	90%	110%	101%	70%	130%
Vanadium (µg/g)	1	1132801	24.7	24.5	0.8%	< 0.2	104%	90%	110%	106%	90%	110%	99%	70%	130%
Mercury (µg/g)	1	1132801	0.051	0.051	0.0%	< 0.011	102%	90%	110%	102%	90%	110%	103%	70%	130%
Electrical Conductivity (2:1) (mS/cm)	1	1132810	0.055	0.055	0.0%	< 0.002	100%	90%	110%						
Sodium Adsorption Ratio (2:1) (N/A)	1	1132810	0.382	0.426	10.9%	N/A									
pH (2:1) (N/A)	1	1132810	7.12	7.15	0.4%	N/A	100%	90%	110%						
O. Reg. 153 Metals & Inorganics in Soil - Table 1															
Antimony (µg/g)	1	1132813	< 0.8	< 0.8	0.0%	< 0.8	108%	90%	110%	90%	90%	110%	89%	70%	130%
Arsenic (µg/g)	1	1132813	5.5	5.8	5.3%	< 0.3	103%	90%	110%	99%	90%	110%	97%	70%	130%
Barium (µg/g)	1	1132813	63.2	65.9	4.2%	< 0.2	116%	80%	120%	101%	90%	110%	101%	70%	130%
Beryllium (µg/g)	1	1132813	0.7	0.8	13.3%	< 0.2	105%	80%	120%	89%	80%	120%	88%	70%	130%
Cadmium (µg/g)	1	1132813	< 0.2	< 0.2	0.0%	< 0.2	109%	90%	110%	101%	90%	110%	103%	70%	130%
Chromium (µg/g)	1	1132813	21.0	22.3	6.0%	< 0.3	100%	80%	120%	102%	90%	110%	104%	70%	130%
Cobalt (µg/g)	1	1132813	13.1	13.5	3.0%	< 0.2	107%	80%	120%	101%	90%	110%	98%	70%	130%
Copper (µg/g)	1	1132813	48.9	49.9	2.0%	< 0.2	105%	90%	110%	103%	90%	110%	94%	70%	130%
Lead (µg/g)	1	1132813	13.7	14.2	3.6%	< 0.3	110%	90%	110%	104%	90%	110%	99%	70%	130%
Molybdenum (µg/g)	1	1132813	< 0.3	< 0.3	0.0%	< 0.3	112%	80%	120%	109%	80%	120%	109%	70%	130%
Nickel (µg/g)	1	1132813	25.7	26.8	4.2%	< 0.3	112%	80%	120%	96%	90%	110%	97%	70%	130%
Selenium (µg/g)	1	1132813	< 0.4	0.5		< 0.4	94%	80%	120%	97%	90%	110%	95%	70%	130%
Silver (µg/g)	1	1132813	< 0.2	< 0.2	0.0%	< 0.2	95%	90%	110%	105%	90%	110%	101%	70%	130%
Vanadium (µg/g)	1	1132813	26.9	29.3	8.5%	< 0.2	115%	80%	120%	100%	90%	110%	99%	70%	130%
Mercury (µg/g)	1	1132813	0.029	0.029	0.0%	< 0.011	102%	90%	110%	108%	90%	110%	105%	70%	130%

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.caeal.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

Quality Assurance

CLIENT NAME: PETO MACCALLUM LIMITED

AGAT WORK ORDER: 08T301849

PROJECT NO: 08HX014

ATTENTION TO: Danika Durish

Soil Analysis (Continued)

RPT Date: Nov 07, 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	1132822	0.115	0.118	2.6%	< 0.002	100%	90%	110%						
Sodium Adsorption Ratio (2:1) (N/A)	1	1132822	0.251	0.247	1.6%	N/A									
pH (2:1) (N/A)	1	1132822	7.87	7.84	0.4%	N/A	100%	90%	110%						
O. Reg. 153 Metals & Inorganics in Soil - Table 1															
Antimony (µg/g)	1	1132825	< 0.8	< 0.8	0.0%	< 0.8		90%	110%		80%	120%		70%	130%
Arsenic (µg/g)	1	1132825	7.1	7.2	1.4%	< 0.3		90%	110%		90%	110%		70%	130%
Barium (µg/g)	1	1132825	45.5	48.2	5.8%	< 0.2		90%	110%		90%	110%		70%	130%
Beryllium (µg/g)	1	1132825	0.4	0.4	0.0%	< 0.2		80%	120%		90%	110%		70%	130%
Cadmium (µg/g)	1	1132825	< 0.2	< 0.2	0.0%	< 0.2		90%	110%		90%	110%		70%	130%
Chromium (µg/g)	1	1132825	10.4	11.3	8.3%	< 0.3		90%	110%		90%	110%		70%	130%
Cobalt (µg/g)	1	1132825	7.2	7.2	0.0%	< 0.2		90%	110%		90%	110%		70%	130%
Copper (µg/g)	1	1132825	57.3	58.6	2.2%	< 0.2		90%	110%		90%	110%		70%	130%
Lead (µg/g)	1	1132825	17.2	18.8	8.9%	< 0.3		90%	110%		70%	130%		70%	130%
Molybdenum (µg/g)	1	1132825	0.4	0.4	0.0%	< 0.3		90%	110%		90%	110%		70%	130%
Nickel (µg/g)	1	1132825	12.8	13.2	3.1%	< 0.3		90%	110%		90%	110%		70%	130%
Selenium (µg/g)	1	1132825	< 0.4	< 0.4	0.0%	< 0.4		80%	120%		90%	110%		70%	130%
Silver (µg/g)	1	1132825	< 0.2	< 0.2	0.0%	< 0.2		90%	110%		90%	110%		70%	130%
Vanadium (µg/g)	1	1132825	18.7	19.8	5.7%	< 0.2		90%	110%		90%	110%		70%	130%
Mercury (µg/g)	1	1132825	0.016	0.015	6.5%	< 0.011		90%	110%		90%	110%		70%	130%
Electrical Conductivity (2:1) (mS/cm)	1	1132833	0.460	0.458	0.4%	< 0.002		90%	110%						
Sodium Adsorption Ratio (2:1) (N/A)	1	1132833	7.64	7.65	0.1%	N/A									
pH (2:1) (N/A)	1	1132833	8.68	8.66	0.2%	N/A		90%	110%						
O. Reg. 153 Metals & Inorganics in Soil - Table 1															
Antimony (µg/g)	1	1132836	< 0.8	< 0.8	0.0%	< 0.8		90%	110%		80%	120%		70%	130%
Arsenic (µg/g)	1	1132836	5.3	5.6	5.5%	< 0.3		90%	110%		90%	110%		70%	130%
Barium (µg/g)	1	1132836	85.8	89.0	3.9%	< 0.2		90%	110%		90%	110%		70%	130%
Beryllium (µg/g)	1	1132836	0.6	0.7	15.4%	< 0.2		80%	120%		90%	110%		70%	130%
Cadmium (µg/g)	1	1132836	< 0.2	< 0.2	0.0%	< 0.2		90%	110%		90%	110%		70%	130%
Chromium (µg/g)	1	1132836	19.1	20.4	6.6%	< 0.3		90%	110%		90%	110%		70%	130%
Cobalt (µg/g)	1	1132836	12.2	12.8	4.8%	< 0.2		90%	110%		90%	110%		70%	130%
Copper (µg/g)	1	1132836	37.6	38.8	3.1%	< 0.2		90%	110%		90%	110%		70%	130%
Lead (µg/g)	1	1132836	11.1	11.3	1.8%	< 0.3		90%	110%		70%	130%		70%	130%
Molybdenum (µg/g)	1	1132836	0.3	0.3	0.0%	< 0.3		90%	110%		90%	110%		70%	130%
Nickel (µg/g)	1	1132836	26.8	28.2	5.1%	< 0.3		90%	110%		90%	110%		70%	130%

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.caeal.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

Quality Assurance

CLIENT NAME: PETO MACCALLUM LIMITED

AGAT WORK ORDER: 08T301849

PROJECT NO: 08HX014

ATTENTION TO: Danika Durish

Soil Analysis (Continued)

RPT Date: Nov 07, 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
Selenium (µg/g)	1	1132836	< 0.4	< 0.4	0.0%	< 0.4		80%	120%		90%	110%		70%	130%
Silver (µg/g)	1	1132836	< 0.2	< 0.2	0.0%	< 0.2		90%	110%		90%	110%		70%	130%
Vanadium (µg/g)	1	1132836	24.7	26.6	7.4%	< 0.2		90%	110%		90%	110%		70%	130%
Mercury (µg/g)	1	1132836	0.018	0.018	0.0%	< 0.011		90%	110%		90%	110%		70%	130%
Electrical Conductivity (2:1) (mS/cm)	1	1132847	0.252	0.253	0.4%	< 0.002		90%	110%						
Sodium Adsorption Ratio (2:1) (N/A)	1	1132847	1.77	1.79	1.1%	N/A									
pH (2:1) (N/A)	1	1132847	8.35	8.33	0.2%	N/A		90%	110%						

Certified By: Jonky Takewski

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.caeal.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: 08T301849

PROJECT NO: 08HX014

ATTENTION TO: Danika Durish

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Soil Analysis			
Antimony	MET 1003	EPA SW-846 3050 & 6020	ICP-MS
Arsenic	MET 1003	EPA SW-846 3050 & 6020	ICP-MS
Barium	MET 1003	EPA SW-846 3050 & 6020	ICP-MS
Beryllium	MET 1003	EPA SW-846 3050 & 6020	ICP-MS
Cadmium	MET 1003	EPA SW-846 3050 & 6020	ICP-MS
Chromium	MET 1003	EPA SW-846 3050 & 6020	ICP-MS
Cobalt	MET 1003	EPA SW-846 3050 & 6020	ICP-MS
Copper	MET 1003	EPA SW-846 3050 & 6020	ICP-MS
Lead	MET 1003	EPA SW 846 3050B & 6020	ICP-MS
Molybdenum	MET 1003	EPA SW-846 3050 & 6020	ICP-MS
Nickel	MET 1003	EPA SW-846 3050 & 6020	ICP-MS
Selenium	MET 1003	EPA SW-846 3050 & 6020	ICP-MS
Silver	MET 1003	EPA SW-846 3050 & 6020	ICP-MS
Vanadium	MET 1003	EPA SW-846 3050 & 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: 6°
AGAT Job Number: 08T301849
Notes:

Client Information

Company: Peto MacCallum Ltd
Contact: Danika Dush
Address: 45 Burford Road
Hamilton, ON L8E 3C6
Phone: 905-561-2231 Fax: 905-561-6366
PO #:
Client Project #: 08-11X014
AGAT Quotation #:

Report Information - reports to be sent to:

1. Name: Danika Dush
Email: ddush@petomaccallum.com
2. Name: Melissa King
Email: mking@petomaccallum.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):

Regulatory Guideline Required

☒ Reg 153 Table (Indicate one)
☐ Ind/Comm
☐ 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 (including Hg & Cr6)	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
BH1 SS1	Oct 28/08	8:5pm	Soil	1												X
BH1 SS2	↓	↓	↓	↓												X
BH1 SS3																X
BH1 SS5																X
BH2 SS2																X
BH2 SS3																X
BH3 SS1																X
BH3 SS2																X
BH3 SS4																X
BH4 SS1																X
BH4 SS2A																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)	Date/Time	Samples Received By (print name & sign)	Date/Time
Danika Dush	Oct 30/08		Oct 31 1pm
Samples Relinquished By (print name & sign)	Date/Time	Samples Received By (print name & sign)	Date/Time
			3:30

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

NO: 44375

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: 10°
AGAT Job Number: 08T301849
Notes:

Client Information

Company: Pelo MacCallum Ltd
Contact: Danka Dunsh
Address: 45 Burford Road
Hamilton, ON L8E 3L6
Phone: 905 561 2231 Fax: 905 561 6306
PO #:
Client Project #: 08HX014
AGAT Quotation #:

Report Information - reports to be sent to:

1. Name: Danka Dunsh
Email: ddunsh@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):

Regulatory Guideline Required

☒ Reg 153 Table (Indicate one)
☐ Ind/Com
☐ Res/Park
☐ Ag
☐ Med/Fine
☒ Coarse
☐ Sewer Use
Region (Indicate one)
All other
☐ 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 & CrVI)	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, Hg, EC, SAR, pH)
BH4 SS2	Oct 28/08	8:5pm	SOIL	1												X
BH4 SS6																X
BH5 SS1B																X
BH5 SS4																X
BH6 SS1																X
BH6 SS2																X
BH6 SS4																X
BH7 SS1B	Oct 29/08															X
BH7 SS2																X
BH7 SS4																X
BH8 SS1B																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): Danka Dunsh
Date/Time: Oct 30/08 4pm
Samples Received By (print name & sign):
Date/Time: Oct 31/08 1:44
Samples Relinquished By (print name & sign):
Date/Time:
Samples Received By (print name & sign):
Date/Time: 3:30

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

NO: 44373

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: 16°C
AGAT Job Number:
Notes:

Client Information

Company: Pello MacCallum Ltd
Contact: Danika Dunsh
Address: 43 Burford Road
Hamilton, ON L8E 3C6
Phone: 905-561-2231 Fax: 905-561-6324
PO #:
Client Project #: 08H-X014
AGAT Quotation #:

Report Information - reports to be sent to:

1. Name: Danika Dunsh
Email: ddunsh@pellomaccallum.com
2. Name: Melissa King
Email: mking@pellomaccallum.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):

Regulatory Guideline Required

☒ Reg 153 Table 1 (Indicate one)
☐ Ind/Comm
☐ 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 (metals + B, U)	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, Sn, Hg, EC, SAR, pH)
BH16 SS2	Oct 27/08	9am-5pm	Soil	1												X
BH16 SS3B				1												X
BH16 SS1				1												X
BH16 SS3				1												X
BH16 SS4				1												X
BH16 SS5				1												X
BH17 SS1				1												X
BH17 SS2				1												X
BH17 SS4				1												X
BH18 SS1				1												X
BH18 SS2				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)	Date/Time	Samples Received By (print name & sign)	Date/Time
Danika Dunsh	Oct 30/08		
Samples Relinquished By (print name & sign)	Date/Time	Samples Received By (print name & sign)	Date/Time
			2:30

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

NO: 44374

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: 10°
AGAT Job Number:
Notes:

Client Information

Company: Peto MacCallum Ltd
Contact: Danika Dunsh
Address: 45 Burford Road
Hamilton ON L8E 3C6
Phone: 905-561-2231 Fax: 905-561-6360
PO #:
Client Project #: 081-X014
AGAT Quotation #:

Report Information - reports to be sent to:

1. Name: Danika Dunsh
Email: ddunsh@petomaccallum.com
2. Name: Melissa King
Email: mking@petomaccallum.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):

Regulatory Guideline Required

☒ Reg 153 Table (Indicate one) 1
☐ 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 (Hg)	CCME Fractions 1 to 4	VOCs	PAHs	PCBs	TCLP Metals/Inorganics	TCLP	Storm Sewer Use	Sanitary Sewer Use	(Ba, Be, Cd, Co, Cu, Pb, Mo, Ni, Ag, V, Na, Se, Sb, Hg, EC, SAR, pH)				
BH12 SS4	Oct 27/08	5pm	Soil	1												X				
BH6 SS1B				1												X				
BH12 SS4				1												X				
BH8 SS1				1												X				
BH13 SS3				1												X				
BH1 SS1	Oct 28/08			1												X				
BH10 SS2				1												X				
BH11 SS4	Oct 27/08			1												X				
TOTAL # OF CONTAINERS				8																

*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 Dunsh	Oct 27/08 4pm		
Samples Relinquished By (print name & sign)	Date/Time	Samples Received By (print name & sign)	Date/Time

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

NO: 44376

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.