

May 30, 2019
File: PE4341-LET.04

Surface Developments

88 Spadina Avenue
Ottawa, Ontario
K1Y 2C1

Attention: **Mr. Jakub Ulak**

Subject: **Response to Site Plan Comments**
City File No. D01-01-18-0012 and D02-02-18-0108
Re: Phase I ESA and Phase II ESA
16 and 20 Hamilton Avenue
Ottawa, Ontario

154 Colonnade Road South
Ottawa, Ontario
Canada, K2E 7J5
Tel: (613) 226-7381
Fax: (613) 226-6344

Geotechnical Engineering
Environmental Engineering
Hydrogeology
Geological Engineering
Materials Testing
Building Science
Archaeological Services

www.patersongroup.ca

Dear Sir,

Paterson Group (Paterson) have prepared this letter in response to the Site Plan Comments issued by the City of Ottawa (City) with regard to the proposed development of 16 and 20 Hamilton Avenue. Specifically, the comments addressed herein pertain to the comments from the Phase I Environmental Site Assessment (Comment 1) and the comments from the Environmental Remediation and Corporate Inventory (ERCI) (Comments 1-3).

Phase I ESA Comment

1. Paterson has reviewed a HLUI response for a property 25m to the north of the subject site. The search area for the HLUI includes the subject site. Based on the information contained in the HLUI response, no new APECs or PCAs were identified as a result of the HLUI search. A copy of the HLUI response is attached.

ERCI Comments

1. A Record of Site Condition (RSC) is required for the subject site and will be filed in conjunction with the redevelopment of the property. At this time an RSC cannot be filed. The remedial action plan for the property is attached.

2. An HLUI for a nearby property is attached to the end of this letter. Based on the information contained within the HLUI response no new APECs or PCAs were identified as a result of the HLUI search.

While the property falls within the groundwater risk management area identified by the City for 3 Hamilton Avenue, the property is not considered to be located within the impacted groundwater plume. Analytical testing of groundwater from the north side of 16 Hamilton Avenue did not identify any VOC impacts above the applicable MECP standards or the laboratory method detection limits. This information, combined with the northerly groundwater flow direction, indicates that no concerns relating to the impacted groundwater plume exist.

Although the Ecolog ERIS report is not for the Phase I ESA property, the study area encompasses the Phase I ESA property and provides valid historical background information.

At this time an RSC is unable to be filed on the basis of the Phase I ESA alone. A Phase II ESA was recommended and completed for the property. It is expected that minor updates to the Phase I ESA will be required as part of the Record of Site Condition submission.

3. During the environmental remediation program, sufficient duplicate samples will be collected to satisfy the requirements of O.Reg. 153/04.

The full requirements of the Phase II ESA report cannot be completed until the soil and groundwater remediation program has been completed for the subject site. Following the completion of a soil and groundwater remediation program, the Phase II ESA will be updated and used to support a Record of Site Condition filing.

Mr. Jakub Ulak
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We trust this information satisfies your requirements.

Paterson Group Inc.



Michael Beaudoin, P.Eng.



Report Distribution:

- Surface Developments.

Attachments:

- HLUI Response
- Remedial Action Plan



File Number: D06-03-18-0090

December 20, 2018

Paterson Group
154 Colonnade Road
Ottawa, ON K2E 7J5

Sent via email [agraham@patersongroup.ca]

Dear Paterson Group,

**Re: Information Request
260 Armstrong Street, Ottawa, Ontario (“Subject Property”)**

Internal Department Circulation

The Planning, Infrastructure and Economic Development Department has the following information in response to your request for information regarding the Subject Property:

- Disposals & Environmental Remediation: The subject property is within the 3 Hamilton Avenue Risk Management Area, please see attached document, 3 *Hamilton Risk Management Area_Dewatering Notification.pdf*.

Search of Historical Land Use Inventory

This acknowledges receipt of the signed Disclaimer regarding your request for information from the City’s Historical Land Use Inventory (HLUI 2005) database for the Subject Property.

A search of the HLUI database revealed the following information:

- There are no activities associated with the Subject Property.

The HLUI database was also searched for activity associated with properties located within 50m of the Subject Property. The search revealed the following:

- There are thirty-two (32) activities associated with properties located within 50m of the Subject Property: Activity Numbers 14688, 5065, 14915, 3087, 1029, 3088, 3445, 13426, 3158, 553, 7164, 181, 8848, 9964, 4368, 1671, 226, 3338,

*Shaping our future together
Ensemble, formons notre avenir*

City of Ottawa
Planning, Infrastructure and Economic
Development Department

110 Laurier Avenue West, 4th Floor
Ottawa, ON K1P 1J1
Tel: (613) 580-2424 ext. 14743
Fax: (613) 560-6006
www.ottawa.ca

Ville d'Ottawa
Services de la planification, de l'infrastructure et
du développement économique

110, avenue Laurier Ouest, 4e étage
Ottawa (Ontario) K1P 1J1
Tél.: (613) 580-2424 ext. 14743
Télééc: (613) 560-6006
www.ottawa.ca

3161, 6201, 474, 2543, 14850, 185, 2003, 690, 2897, 184, 4345, 1919, 6339, 475.

Please note that Activity Numbers 3087, 1029, 3088, 3445, 13246, 3158, 7164, 181, 9964, 4368, 1671, 226, 4345, 1919 have a PIN Certainty of “2”. This identifier acknowledges that there is some uncertainty about the exact location of the land use activity and that the activity may or may not have been located on the Subject Property. All database entries with a PIN Certainty of “2” require independent verification as to their precise location.

A site map has been included to show the location of the Subject Property as well as the location of all the activities noted above, including the HLUI database’s location of the Activity Number with a PIN Certainty of “2”.

Additional information may be obtained by contacting:

Ontario’s Environmental Registry

The Environmental Registry found at <http://www.ebr.gov.on.ca/ERS-WEB-External/> contains "public notices" about environmental matters being proposed by all government ministries covered by the Environmental Bill of Rights. The public notices may contain information about proposed new laws, regulations, policies and programs or about proposals to change or eliminate existing ones. By using key words i.e. name of proponent/owner and the address one can ascertain if there is any information on the proponent and address under the following categories: Ministry, keywords, notice types, Notice Status, Acts, Instruments and published date (all years).

The Ontario Land Registry Office

Registration of real property is recorded in the Ontario Land Registry Office through the Land Titles Act or the Registry Act. Documents relating to title and other agreements that may affect your property are available to the public for a fee. It is recommended that a property search at the Land Registry Office be included in any investigation as to the historic use of your property. The City of Ottawa cannot comment on any documents to which it is not a party.

Court House
161 Elgin Street 4th Floor
Ottawa ON K2P 2K1
Tel: (613) 239-1230
Fax: (613) 239-1422

Please note, as per the HLUI Disclaimer, that the information contained in the HLUI database has been compiled from publicly available records and other sources of information. The HLUI may contain erroneous information given that the records used as sources of information may be flawed. For instance, changes in municipal addresses over time may introduce error. Accordingly, all information from the HLUI database is provided on an “as is” basis with no

representation or warranty by the City with respect to the information's accuracy or exhaustiveness in responding to the request.

Furthermore, the HLUI database and the results of this search in no way confirm the presence or absence of contamination or pollution of any kind. This information is provided on the assumption that it will not be relied upon by any person for any purpose whatsoever. The City of Ottawa denies all liability to any persons attempting to rely on any information provided from the HLUI database.

Please note that in responding to your request, the City of Ottawa does not guarantee or comment on the environmental condition of the Subject Property. You may wish to contact the Ontario Ministry of Environment and Climate Change for additional information.

If you have any further questions or comments, please contact Colette Gorni at 613-580-2424 ext. 14743 or HLUI@ottawa.ca

Sincerely,



Colette Gorni

Per:

Michael Boughton, MCIP, RPP
Senior Planner
Development Review East
Planning Services
Planning, Infrastructure and Economic Development Department

MB/ CG

Attach: 7

cc: File no. D06-03-18-0090




Scale 1: n/a

260 Armstrong Street
Ottawa, ON
File # D06-03-18-0090
Colette Gorni



Overview

ID# = Activity Identification Number

 = Subject Site



3 Hamilton Risk Management Area – Dewatering Notification

This Risk Management Area is known as the Dewatering Notification Zone and is bounded to the North by Scott Street, to the South by Wellington Street, to the West by Huron Avenue and to the East by Carruthers Avenue.

There is a groundwater plume in this area associated with the chlorinated solvent contamination that originated at a non-city owned property municipally known as 3 Hamilton Avenue, currently owned by Honeywell Limited. There is a remedial action plan in place that has been accepted by the MOECC, and is a private undertaking.

Golder Associates Ltd. (Honeywell Ltd.) and the City of Ottawa must first be contacted before undertaking any subsurface work or dewatering activities in the Dewatering Notification Zone.

Golder Associates Ltd.

The contact person is:

Tim Robertson (P.Eng.), Associate
Golder Associates Ltd.
32 Steacie Drive
Kanata, ON K2K 2A9
613.592.9600 Fax: 613.592.9601

Tim.Robertson@golder.com

The alternative contact person is:

Tao Wu, Remediation Portfolio Director
Honeywell – HSER
111 South 34th Street, Building 158
Phoenix, AZ 85034
1+602.231.2015

Tao.Wu@Honeywell.com

City of Ottawa

Environmental Remediation Unit (ERU) contact is:

Rich Barker, Environmental Remediation Advisor
Corporate Real Estate Office
110 Laurier Ave. W., 5th Floor
Ottawa, ON K1P 1J1
tel: 613-580-2424 x12567

Richard.Barker@ottawa.ca

The alternative ERU contact is:

Sue Petrovic, Real Estate Advisor
Corporate Real Estate Office
110 Laurier Ave. W., 5th Floor
Ottawa, ON K1P 1J1
tel: 613-580-2424 x21517

Sue.Petrovic@ottawa.ca



CITY OF OTTAWA
HLUI ID: __679GMK

AREA (Square Metres): 5723.051

Report: RPTC_OT_DEV0122

Run On: 10 Dec 2018 at: 10:27:56

Study Year
1998

PIN
040350148

Multi-NAIC
Y

Multiple Activities
Y

Activity ID: 1671 **Multiple PINS:** Y

PIN Certainty: 2 **Previous Activity ID(s) :** 226

Related PINS: 040350148

Name: BILL BROWNLEE SERVICE STATION

Address: 380 PARKDALE AVENUE, OTTAWA

Facility Type: Gasoline Service Stations

Comments 1:

Comments 2:

Generator Number:

Storage Tanks:

HL References 1: M.1900, M.1910, M.1920, M.1930, M.1940, M.1950

HL References 2:

HL References 3:

NAICS	SIC
447190	633
811199	633
447110	633

Company Name

Bill Brownlee Service Station

Year of Operation

c. 1950



CITY OF OTTAWA

HLUI ID: __679GMK

AREA (Square Metres): 5723.051

Report: RPTC_OT_DEV0122

Run On: 10 Dec 2018 at: 10:27:56

Study Year
1998

PIN
040350148

Multi-NAIC
Y

Multiple Activities
Y

Activity ID: 6201

Multiple PINS: N

PIN Certainty: 1

Previous Activity ID(s) : 474

Related PINS: 040350148

Name: GOW & BAYLIS

Address: 140 PARKDALE AVENUE, OTTAWA

Facility Type: Lumber and Building Materials, Wholesale

Comments 1: Property is the whole block bounded by Parkdale, Hamilton, Armstrong, & the laneway.

Comments 2:

Generator Number:

Storage Tanks:

HL References 1: M.1900, M.1910, M.1920, M.1930, M.1940, M.1950; FIP1901-134-1043,vol2. FIP1912-134-1043,vol2. FIP1922-134-1043,vol2. M.1912. M.1921.

HL References 2:

HL References 3:

NAICS	SIC
321911	254
416310	563
321919	251
416340	563
337110	254
321112	251
321992	254
416320	563
444120	563
321215	254
321920	251
444190	563
321111	251
444110	563

Company Name

Gow & Baylis

Year of Operation

c. 1910-1912



CITY OF OTTAWA
HLUI ID: __679E0H
AREA (Square Metres): 783.091

Report: RPTC_OT_DEV0122
 Run On: 10 Dec 2018 at: 10:30:19

Study Year
1998

PIN
040350138

Multi-NAIC
Y

Multiple Activities
Y

Activity ID: 2543 **Multiple PINS:** N

PIN Certainty: 1 **Previous Activity ID(s) :**

Related PINS: 040350138

Name: CAA NORTH & EAST ONTARIO
Address: 16 HAMILTON AVENUE, OTTAWA
Facility Type: Other Motor Vehicle Services

Comments 1:

Comments 2:

Generator Number: ON0890503

Storage Tanks:

HL References 1:

HL References 2:

HL References 3: 2000 PID

NAICS **SIC**
488410 0

Company Name

CAA NORTH & EAST ONTARIO

Year of Operation

c. 2000



CITY OF OTTAWA

HLUI ID: __679D01

AREA (Square Metres): 457.512

Report: RPTC_OT_DEV0122

Run On: 10 Dec 2018 at: 10:32:01

Study Year
1998

PIN
040350137

Multi-NAIC
Y

Multiple Activities
Y

Activity ID: 2897 Multiple PINS: N

PIN Certainty: 1 Previous Activity ID(s) : 184

Related PINS: 040350137

Name: CANADIAN UNDERFEED COAL BURNERS

Address: 20 HAMILTON AVENUE, OTTAWA

Facility Type: Other Storage and Warehousing Industries

Comments 1: Additional References: FIP1956-313/1-1041. FIP1922-134-041.vol.2. FIP1912-134-1041.vol.2. FIP1948-313-1041. FIP1956-313/1-1041. FIP1922-134-041.vol.2. FIP1912-134-1041.vol.2. FIP1922 shows iron storage building at rear of property.

Comments 2:

Generator Number:

Storage Tanks:

HL References 1: M.1900, M.1910, M.1920, M.1930, M.1940, M.1949, M.1950, M.1957; FIP1948-313-1041.*See Comments For More References.

HL References 2:

HL References 3:

NAICS	SIC
333413	307
333310	307
493120	479
493130	479
493190	479
333416	307

Company Name

Canadian Underfeed Coal Burners

Year of Operation

c. 1922-1950



CITY OF OTTAWA
HLUI ID: __679D01
AREA (Square Metres): 457.512

Report: RPTC_OT_DEV0122

Run On: 10 Dec 2018 at: 10:32:01

Study Year
1998

PIN
040350137

Multi-NAIC
Y

Multiple Activities
Y

Activity ID: 6339 **Multiple PINS:** N

PIN Certainty: 1 **Previous Activity ID(s) :** 475

Related PINS: 040350137

Name: GERARD & STEWART

Address: 20 HAMILTON AVENUE, OTTAWA

Facility Type: Other Storage and Warehousing Industries

Comments 1:

Comments 2:

Generator Number:

Storage Tanks:

HL References 1: FIP1912,134-1041,vol2. FIP1922-134-1041,vol2. M.1921.

HL References 2:

HL References 3:

NAICS	SIC
493120	479
493130	479
493190	479
336350	308
332710	308
333619	308
336310	308

Company Name

Gerard & Stewart

Year of Operation

c. 1922



CITY OF OTTAWA

HLUI ID: __679FAA

AREA (Square Metres): 3533.911

Report: RPTC_OT_DEV0122

Run On: 10 Dec 2018 at: 10:23:29

Study Year
1998

PIN
040350069

Multi-NAIC
Y

Multiple Activities
Y

Activity ID: 14688 Multiple PINS: N
 PIN Certainty: 1 Previous Activity ID(s) : 5065
 Related PINS: 040350069
 Name: VOGUE BRASSIERE INC.
 Address: 7 HINTON AVENUE, OTTAWA
 Facility Type: Children's Clothing Industry
 Comments 1:
 Comments 2:
 Generator Number:
 Storage Tanks:
 HL References 1: SC98
 HL References 2:
 HL References 3: 2001 Employment Survey

NAICS	SIC
0	249
315231	0

Company Name	Year of Operation
VOGUE BRASSIERE INC.	c. 2001
Vogue Brassiere Inc.	c. 1998



CITY OF OTTAWA

HLUI ID: __679FAA

AREA (Square Metres): 3533.911

Report: RPTC_OT_DEV0122

Run On: 10 Dec 2018 at: 10:23:29

Study Year
1998

PIN
040350069

Multi-NAIC
Y

Multiple Activities
Y

Activity ID: 14915 **Multiple PINS:** N

PIN Certainty: 1 **Previous Activity ID(s) :**

Related PINS: 040350069

Name: WONDER FORM DESSOUS INC.

Address: 7 HINTON AVENUE NORTH,

Facility Type: Women's Clothing Industries

Comments 1:

Comments 2:

Generator Number:

Storage Tanks:

HL References 1:

HL References 2:

HL References 3: 2005 Select Phone

NAICS	SIC
315232	0

Company Name

WONDER FORM DESSOUS INC.

Year of Operation

c. 2005



CITY OF OTTAWA

HLUI ID: __679FAA

AREA (Square Metres): 3533.911

Report: RPTC_OT_DEV0122

Run On: 10 Dec 2018 at: 10:23:29

Study Year
1998

PIN
040350069

Multi-NAIC
Y

Multiple Activities
Y

Activity ID: 3088 Multiple PINS: Y

PIN Certainty: 2 Previous Activity ID(s) : 3445

Related PINS: 040340191

Name: CAPITAL WIRE CLOTH MANUFACTURING CO. LIMITED

Address: 4 HAMILTON AVENUE, OTTAWA

Facility Type: Wire and Wire Products Industries

Comments 1: Unit 2

Comments 2:

Generator Number:

Storage Tanks:

HL References 1: M.1900, M.1910, M.1920, M.1930, M.1940, M.1950

HL References 2:

HL References 3:

NAICS	SIC
333990	305
332619	305
331222	305
334512	305

Company Name

Capital Wire Cloth Manufacturing Co. Ltd.

Year of Operation

c. 1920



CITY OF OTTAWA
HLUI ID: __679EC4
AREA (Square Metres): 885.474

Report: RPTC_OT_DEV0122

Run On: 10 Dec 2018 at: 10:25:34

Study Year
1998

PIN
040350145

Multi-NAIC
Y

Multiple Activities
Y

Activity ID: 553 **Multiple PINS:** N

PIN Certainty: 1 **Previous Activity ID(s) :**

Related PINS: 040350145

Name: ADD ELECTRONICS INC.
Address: 233 ARMSTRONG STREET, OTTAWA
Facility Type: Appliance, Television, Radio and Stereo Stores

Comments 1:

Comments 2:

Generator Number:

Storage Tanks:

HL References 1:

HL References 2:

HL References 3: 2001 Employment Survey

NAICS	SIC
443110	0

Company Name

ADD ELECTRONICS INC.

Year of Operation

c. 2001



CITY OF OTTAWA
HLUI ID: __679EC4
AREA (Square Metres): 885.474

Report: RPTC_OT_DEV0122

Run On: 10 Dec 2018 at: 10:25:34

Study Year
1998

PIN
040350145

Multi-NAIC
Y

Multiple Activities
Y

Activity ID: 7164 **Multiple PINS:** Y

PIN Certainty: 2 **Previous Activity ID(s) :** 181

Related PINS: 040350144

Name: J.P. PORTER AND SONS CO. LIMITED

Address: 5 HAMILTON AVENUE, OTTAWA

Facility Type: Other Wood Industries

Comments 1:

Comments 2:

Generator Number:

Storage Tanks:

HL References 1: M.1900, M.1910, M.1920, M.1930, M.1940, M.1950

HL References 2:

HL References 3:

NAICS	SIC
337920	259
321114	259
333519	306
321216	259
321217	259
333511	306
332510	306

Company Name

J.P. Porter and Sons Co. Ltd

Year of Operation

c. 1950



CITY OF OTTAWA

HLUI ID: __679EC4

AREA (Square Metres): 885.474

Report: RPTC_OT_DEV0122

Run On: 10 Dec 2018 at: 10:25:34

Study Year
1998

PIN
040350145

Multi-NAIC
Y

Multiple Activities
Y

Activity ID: 8848 Multiple PINS: N

PIN Certainty: 1 Previous Activity ID(s) :

Related PINS: 040350145

Name: MILLAR DOUG PHOTOGRAPHY

Address: 7 HAMILTON AVENUE, OTTAWA

Facility Type: Photographers

Comments 1:

Comments 2:

Generator Number:

Storage Tanks:

HL References 1:

HL References 2:

HL References 3: 2001 Employment Survey

NAICS	SIC
541920	0

Company Name

MILLAR DOUG PHOTOGRAPHY

Year of Operation

c. 2001



CITY OF OTTAWA
HLUI ID: __679EC4
AREA (Square Metres): 885.474

Report: RPTC_OT_DEV0122

Run On: 10 Dec 2018 at: 10:25:34

Study Year
1998

PIN
040350145

Multi-NAIC
Y

Multiple Activities
Y

Activity ID: 9964

Multiple PINS: N

PIN Certainty: 2

Previous Activity ID(s) : 4368

Related PINS: 040350145

Name: OTTAWA SHOE CO. LIMITED

Address: 233 ARMSTRONG STREET, OTTAWA

Facility Type: Leather and Allied Products Industries

Comments 1: - NE corner of Armstrong & Hamilton Ave. M. 1948 - lists bottler FIP1912, FIP1922 - vacant lot

Comments 2:

Generator Number:

Storage Tanks:

HL References 1: M.1948, M.1956; FIP1912-133-897,vol2; FIP1922-133-897,vol2; FIP1948-311-897; FIP1956-311-1-897

HL References 2:

HL References 3:

NAICS	SIC
316110	171
316210	171
321999	171
316990	171
332999	171

Company Name

Ottawa Shoe Co. Ltd.

Year of Operation

c. 1956

to:	Surface Developments- Mr. Michael Martin - michael@surfacedevelopments.com
re:	Environmental Remedial Action Plan and Cost Estimate Proposed Residential Development - 16 and 20 Hamilton Avenue - Ottawa
date:	November 12, 2018
file:	PE4341-RAP.01R
from:	Michael Beaudoin and Carlos Da Silva

Further to your request and authorization, Paterson Group (Paterson) prepared a remedial action plan and incremental cost estimate for the proposed residential development at the aforementioned property.

It is our understanding that the proposed development will consist of a multi-storey residential and commercial building with one level of underground parking.

Environmental Site Conditions

Background

During a cursory search of historical sources, a number of potentially contaminating activities were noted on the subject site, and surrounding properties, notably the operation of a foundry in the parking area of the subject site. Five boreholes, drilled by others, were located on the subject property, four of which were instrumented with groundwater monitoring well installations. Based on Paterson's knowledge of the area, a Phase II-ESA was immediately recommended.

Assessment

The field portion of the Phase II-ESA was conducted in June and September, 2018. Seven boreholes were drilled in the parking lot of the property and two within the existing building footprint, seven of which were instrumented with groundwater monitoring well installations. Refer to the attached plan for borehole locations. Fill material was encountered at each of the borehole locations, which was noted to contain trace amounts of construction debris, ash, and cinders. The fill extended to approximately 1.5 m below grade.

Soil samples, extracted from the fill layer at different borehole locations, and were submitted for analysis of metals, polycyclic aromatic hydrocarbons (PAHs), petroleum hydrocarbons (PHCs F₁-F₄), and benzene, ethylbenzene, toluene, and xylenes (BTEX). A combination of various metals and/or PAH impacts were identified in the fill material throughout the site.

Groundwater testing was conducted for a combination of metals, PAHs, PHCs, BTEX and/or volatile organic compounds (VOCs). All analytical test parameters were found to be in compliance with the selected standards with the exception of groundwater at Borehole BH3.

Several PAH parameters were found to exceed the site standard at this location.

It is suspected that these soil and groundwater exceedances are related to the former use of the property as a foundry.

Remedial Action Plan Summary

The suggested remedial action plan consists of a generic approach, where an excavation and disposal at an approved waste disposal facility would be undertaken. The following assumptions were used to determine a realistic cost estimate:

- The area marked out on the enclosed plan, has impacted fill from near ground surface, to approximately 1.5m below ground surface, with an estimated volume of 1,600 m³.
- Impacted groundwater was encountered in BH3-18. However it is considered possible that impacted groundwater will be encountered in a larger area.

The proposed development will require a Record of Site Condition (RSC). To meet the conditions of a RSC, the suggested remedial action plan is as follows:

- A remediation program using a full depth approach will be used. This approach will involve an excavation to depths up to 1.5 m below grade, to remove all metal and PAH impacted fill, and to collect, treat and dispose of impacted groundwater from within the boundaries of the subject site.
- Excavated soil will be screened using visual and olfactory observations as well as a portable soil vapour analyser. Field observations will be used in combination with the collection and analysis of verification samples to determine the excavation limits.
- Impacted soil will be placed in trucks and hauled to an approved waste disposal facility.
- To treat the impacted groundwater, a portable treatment system will be installed to treat on-site accumulated groundwater by means of granular activated carbon. Alternatively, impacted groundwater could be removed by a licenced pumping contractor for off-site disposal. Groundwater treatment will continue until the on-site groundwater concentrations are in compliance with the MECP Table 3 standards and/or City of Ottawa sewer use by-law.
- If groundwater requires treatment, a Sanitary Sewer Agreement will be obtained from the City's Sewer Use Program prior to discharging treated groundwater to the municipal sewer system. Testing, reporting and discharge requirements will be carried out in compliance with the agreement.

- Two quarterly groundwater testing events will need to be completed.
- A summary report and RSC will be submitted to the MECP for acknowledgement.

Quantities and Cost Estimate

Estimated quantities would be as follows:

- Volume of impacted fill for disposal at an approved waste disposal facility . 3,200 mt
- Volume of impacted groundwater for remedial treatment 500 m³

The cost estimate (incremental costs) for this approach will be approximately **\$208,000** using **2018 dollars** and is detailed in the table enclosed.

Generic Approach for Entire Site 16 and 20 Hamilton Avenue- Ottawa		
Item and Estimated Quantity	Unit Rate	Estimated Cost
Site preparation prior to commencing excavation operation including required safety signs and mobilization as well as cleaning and maintenance of roadway due to construction activities when removing contaminated soil.	lump sum	\$10,000
Tipping fees for impacted soil at an approved waste disposal facility (approximately 3,200 mt)	\$40/mt	\$128,000
Pumping and treatment of impacted groundwater	Estimated	\$25,000
Contractor Sub-total		\$163,000
Remediation supervision, sample screening, analytical testing, report preparation, meetings and consultation during remediation program, monitoring well installation and remedial report.		\$37,500
RSC reporting requirements and Record of Site Condition		\$7,500
Engineering Sub-total (excluding applicable taxes)		\$45,000
TOTAL (excluding applicable taxes)		\$208,000

Mr. Michael Martin
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File: PE4341-RAP.01R

We trust that this information satisfies your requirements.

Best Regards,

Paterson Group Inc.

Michael Beaudoin, P.Eng.



Carlos P. Da Silva, P.Eng., QP_{ESA}

Paterson Group Inc.

Head Office and Laboratory
154 Colonnade Road South
Ottawa - Ontario - K2E 7J5
Tel: (613) 226-7381 Fax: (613) 226-6344

Northern Office and Laboratory
63 Gibson Street
North Bay - Ontario - P1B 8Z4
Tel: (705) 472-5331 Fax: (705) 472-2334

St. Lawrence Office
993 Princess Street
Kingston - Ontario - K7L 1H3
Tel: (613) 542-7381

#89 HINTON AVENUE NORTH
RESIDENTIAL

#85 HINTON AVENUE NORTH
RESIDENTIAL

#89 HINTON AVENUE NORTH
RESIDENTIAL

#95 HINTON AVENUE NORTH
RESIDENTIAL

#97 HINTON AVENUE NORTH
RESIDENTIAL

BH 4-18 - SS3 (1.52-2.13m) 10-August-2018
PAHs comply with MECP Table 3 Standards

Parameter	Result	Standard (ug/g)
Benzo[a]pyrene	0.41	0.30
Fluoranthene	1.01	0.69
All other PAHs parameters are in compliance with MECP Table 3 Standards		

Parameter	Result	Standard (ug/g)
Acenaphthene	302	7.9
Acenaphthylene	nd (16)	0.15
Anthracene	451	0.67
Benzo[a]anthracene	487	0.5
Benzo[a]pyrene	371	0.30
Benzo[b]fluoranthene	462	0.78
Benzo[g,h,i]perylene	171	6.6
Benzo[k]fluoranthene	258	0.78
Chrysene	511	7.0
Dibenzo[a,h]anthracene	58.5	0.1
Fluoranthene	1730	0.69
Flourene	386	62
Indeno[1,2,3-cd]pyrene	195	0.38
Methylnaphthalene (1&2)	268	0.99
Naphthalene	866	0.6
Phenanthrene	1980	6.2
Pyrene	1270	78

Parameter	Result	Standard (ug/g)
Selenium	2.7	2.4
All other metal parameters comply with MECP Table 3 Standards		
PAHs comply with MECP Table 3 Standards		

BH 4-18
63.83
(59.94)

BH 7-18
63.74

BH 3-18
63.81
(60.62)

BH 6-18
63.63
(60.49)

BH 2-18
64.18
(60.54)

BH 5-18
63.90

BH 1-18
63.92
(60.59)

BH 8-18
63.96
(60.63)

BH 5-18 - SS4 (2.29-2.90m) 10-August-2018
BTEX comply with MECP Table 3 Standards
PHCs comply with MECP Table 3 Standards
PAHs comply with MECP Table 3 Standards

BH 9-18
63.96
(61.29)

BH 6-18 - SS2 (0.76-1.37m) 10-August-2018
PAHs comply with MECP Table 3 Standards

BH 9-18 - SS1 (0.30-0.91m) 7-Sept-2018
Metals comply with MECP Table 3 Standards
BH 9-18 - SS4 (2.13-2.29m) 7-Sept-2018
PHCs comply with MECP Table 3 Standards
BTEX comply with MECP Table 3 Standards

Parameter	Result	Standard (ug/g)
Antimony	41.1	0.6
Copper	913	140
Lead	1070	120
Mercury	0.6	0.27

BH 8-18 - SS5 (1.83-2.44m) 7-Sept-2018
BTEX comply with MECP Table 3 Standards
PHCs comply with MECP Table 3 Standards

Parameter	Result	Standard (ug/g)
Mercury	0.3	0.27
Lead	490	120
Selenium	3.6	2.4
All other metal parameters comply with MECP Table 3 Standards		

Parameter	Result	Standard (ug/g)
Mercury	0.3	0.27
Lead	490	120
Selenium	3.6	2.4
All other metal parameters comply with MECP Table 3 Standards		

HAMILTON AVENUE NORTH

#366 PARKDALE AVENUE
PARKDALE PARK

- LEGEND:
- SOIL PARAMETERS COMPLY WITH MECP TABLE 3 STANDARDS
 - SOIL PARAMETERS EXCEED MECP TABLE 3 STANDARDS
 - BOREHOLE WITH MONITORING WELL LOCATION
 - BOREHOLE LOCATION
 - MONITORING WELL LOCATION BY OTHERS
 - 63.96 GROUND SURFACE ELEVATION (m)
 - (61.29) GROUNDWATER SURFACE ELEVATION (m)
 - BM - TOP SPINDLE OF FIRE HYDRANT LOCATED NEAR THE SOUTHWEST CORNER OF 366 PARKDALE AVENUE. GEODETTIC ELEVATION = 64.86m, AS PER FARLEY, SMITH AND DENNIS SURVEYING LTD.

patersongroup
consulting engineers

154 Colonnade Road South
Ottawa, Ontario K2E 7J5
Tel: (613) 226-7381 Fax: (613) 226-6344

NO.	REVISIONS	DATE	INITIAL
0			

SURFACE DEVELOPMENTS
PHASE II - ENVIRONMENTAL SITE ASSESSMENT
16 AND 20 HAMILTON AVENUE NORTH

OTTAWA, ONTARIO

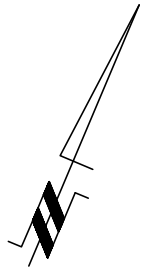
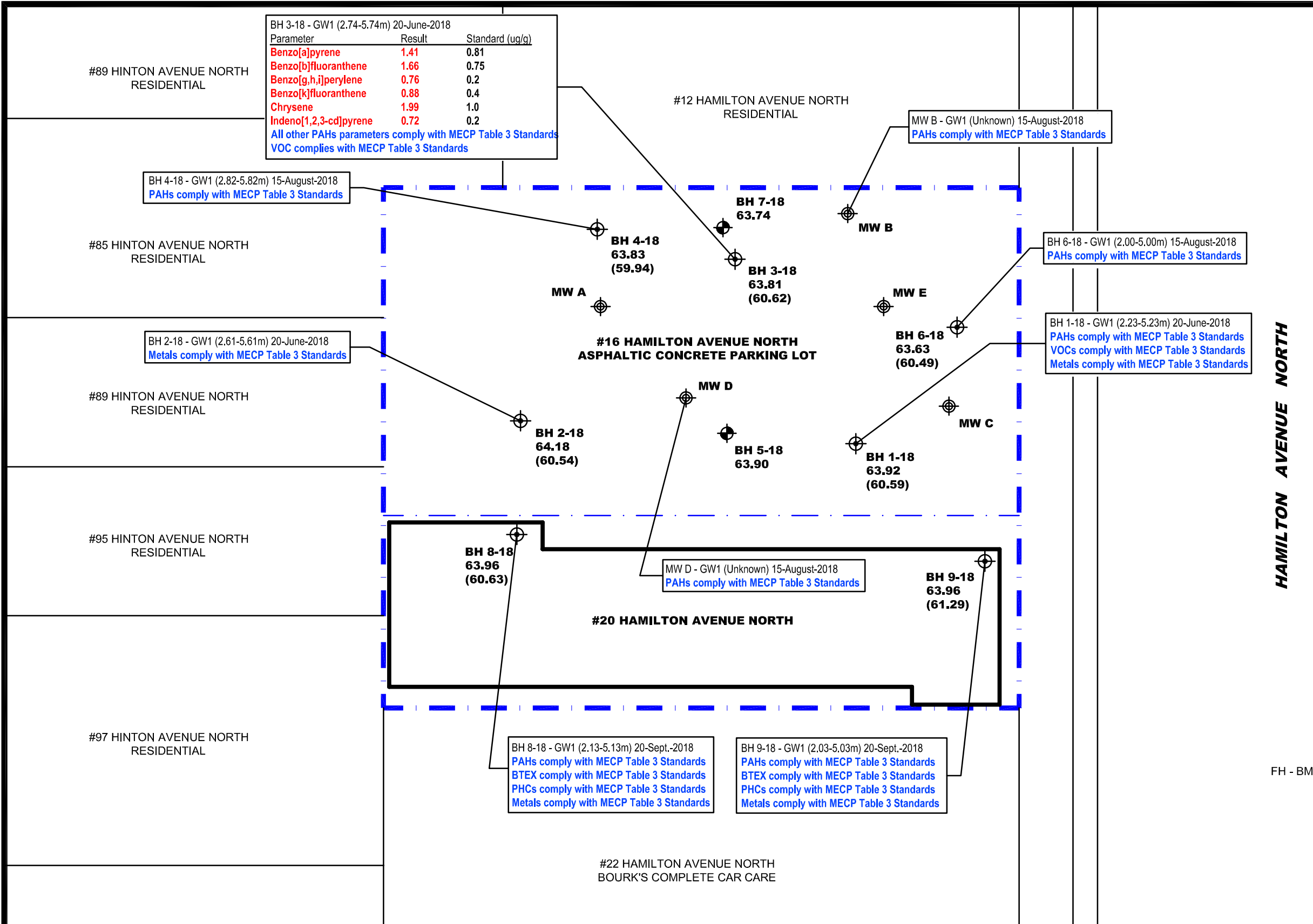
ANALYTICAL TESTING PLAN - SOIL

Scale:	1:250	Date:	08/2018
Drawn by:	MPG	Report No.:	PE4341-1
Checked by:	AM	Dwg. No.:	PE4341-2
Approved by:	MSD	Revision No.:	0

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Parameter	Result	Standard (ug/g)
Benzo[a]pyrene	1.41	0.81
Benzo[b]fluoranthene	1.66	0.75
Benzo[g,h,i]perylene	0.76	0.2
Benzo[k]fluoranthene	0.88	0.4
Chrysene	1.99	1.0
Indeno[1,2,3-cd]pyrene	0.72	0.2

All other PAHs parameters comply with MECP Table 3 Standards
VOC complies with MECP Table 3 Standards



HAMILTON AVENUE NORTH

- LEGEND:**
- GROUNDWATER PARAMETERS COMPLY WITH MECP TABLE 3 STANDARDS
 - GROUNDWATER PARAMETERS EXCEED MECP TABLE 3 STANDARDS
 - BOREHOLE WITH MONITORING WELL LOCATION
 - BOREHOLE LOCATION
 - MONITORING WELL LOCATION BY OTHERS
 - 63.92 GROUND SURFACE ELEVATION (m)
 - (60.59) GROUNDWATER SURFACE ELEVATION (m)
 - BBM - TOP SPINDLE OF FIRE HYDRANT LOCATED NEAR THE SOUTHWEST CORNER OF 366 PARKDALE AVENUE. GEODETIC ELEVATION = 64.86m, AS PER FARLEY, SMITH AND DENNIS SURVEYING LTD.

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SURFACE DEVELOPMENTS
PHASE II - ENVIRONMENTAL SITE ASSESSMENT
16 AND 20 HAMILTON AVENUE NORTH

OTTAWA, ONTARIO

ANALYTICAL TESTING PLAN - GROUNDWATER

Scale:	1:250	Date:	08/2018
Drawn by:	MPG	Report No.:	PE4341-1
Checked by:	MB	Dwg. No.:	PE4341-3
Approved by:	MSD	Revision No.:	0

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