DS CONSULTANTS LTD.
Geotechnical ◆ Environmental ◆ Materials ◆ Hydrogeology

Project No: 20-117-100 **July 8, 2024**

The Branthaven Development Corporation
720 Oval Court
Burlington, Ontario
L7L 6A9

Attention: Mr. Thomas Kastelic
Re: Remedial Action Plan
720, 735, 740 Oval Court, 5135 and 5155 Fairview Road, Burlington, Ontario

DS Consultants Ltd. (DS) was retained by the Branthaven Development Corp. to develop a Remedial Action Plan (RAP) for the lands associated with the municipal addresses of 720, 735, 740 Oval Court, 5135 and 5155 Fairview Road, Burlington, Ontario (collectively referred to as the "Site" or the "Subject Property"). It is understood that the Site is currently occupied by various commercial/industrial lots and will be re-developed with eight (8) high-rise buildings ranging between 11 and 30 storeys for mixed residential and commercial use. It is further understood that the future redevelopment will occur in six (6) phases as follows:

1. Phase 1-Building A;
2. Phase 2A/2B- Buildings B&C;
3. Phase 3- Building D;
4. Phase 4-Buildings E & F;
5. Phase 5-Building G; and
6. Phase 6-Building H.

Three (3) levels of underground parking (P3) are proposed for each of the development phases. Based on the information provided, the P3 floor slab for the proposed buildings is proposed to range from 90.50 to 91.96 masl.

DS previously completed Phase One and Two Environmental Site Assessments for the Subject Property. A review of the previous reports, and the results of the Phase Two ESAs completed by DS, indicated that soils exceeding the applicable Site Conditions Standards are present on the Site within three discrete areas. This RAP has been prepared to outline the proposed scope of work and associated soil verification sampling associated with the proposed remedial excavations.

DS recommended remedial excavation be undertaken to remove the impacted soils, as follows:

- Remedial Excavation 1: Elevated concentrations of PAHs were identified within soil associated with a soil berm placed north of the building at 735 Oval Court (northern portion of the Site). The

impact was vertically delineated to a depth of 1.6 mbgs, and horizontally was limited to an area of approximately 200 m^2.

- Remedial Excavation 2: Elevated concentrations of metals (cadmium, lead and zinc) were identified within the surficial soils of the southwestern parking lot at 735 Oval Court (eastern portion of the Site). The impacts were not vertically delineated and are inferred to extend to bedrock (1.5 mbgs), and extend horizontally to an approximate area of 3,700 m^2.
- Remedial Excavation 3: Elevated concentrations of zinc, pH and PAHs were identified within the fill material associated with the parking areas of 740, 720 Oval Court and 5135 Fairview Street, located in the southern portion of the Site. The impacted soil was anticipated to extend to bedrock depth (1.8 mbgs) and span an approximate area of 9,050 m^2.

It is further understood that the southwestern portion of lands at the Site, inclusive of a portion of Remedial Excavation 3, will be conveyed to the City of Burlington to form part of the floodplain and associated stormwater management works associated with Appleby Creek. A standalone RSC will be filed for these lands prior to conveyance.

The proposed remedial excavations will facilitate the removal of metal, pH and PAH impacted soils. Confirmatory soil sampling will be undertaken in accordance with O. Reg 153/04 to verify that the soil not meeting the SCS has been removed, in addition to the further detail outlined below.

This RAP has been prepared to outline the proposed scope of work and associated soil verification sampling associated with the proposed remedial excavations.

1. Background

The Site is a 4.6 hectare (11.3 acre) parcel of land situated within mixed residential, commercial and parkland neighborhood in the City of Burlington, Ontario. The Site is located on the northwest and northeast corners of the intersections of Fairview Street and Oval Court, and was occupied as follows at the time of this investigation:

- A single large industrial building (Site Building A) located at 735 Oval Court was occupied by the Samuel Packaging Systems Group – a packaging company. A single large commercial building located at 5155 Fairview Court (Site Building B) was occupied by multiple companies at the time of this investigation, including AZX Sport (a commercial sporting equipment manufacturer) and Direct Access Digital (a commercial marketing company). Both Site Building A and Site Building B were utilized for industrial purposes at the time of this assessment.
- The Property located at 5135 Fairview Street currently includes a rectangular shaped, one-storey, 818 m^2 concrete construction building surrounded by a fenced asphalt parking lot (Site Building C). The Site Building is currently used as a corporate head office and private events venue.
- Site Building E is located at 740 Oval Court and is comprised of a two-storey office building with attached single storey warehouse and manufacturing facility occupied by Zeton Inc. Site Building

D was located at 720 Oval Court and is comprised of a single-storey commercial building occupied by Branthaven Homes (Corporate Head Office, Site Building D).

The Site was first developed in 1990 for commercial purposes at 735 Oval Court. 720 and 740 Oval Court were first developed in 2001 and 5135 Fairview Street in 2004 for commercial purposes.

DS has completed the following investigations for the Site:

- *"Phase One Environmental Site Assessment, 720 & 740 Oval Court, Burlington, ON"* dated June 16, 2020, prepared for the Branthaven Development Corporation;
- *"Phase One Environmental Site Assessment, 735 Oval Court and 5155 Fairview Street, Burlington, ON"* dated July 22, 2020, prepared for the Branthaven Development Corporation;
- *"Phase One Environmental Site Assessment, 5135 Fairview Street, Burlington, ON"* dated July 20, 2020, prepared for the Branthaven Development Corporation;
- *"Phase Two Environmental Site Assessment, 720 & 740 Oval Court, Burlington, ON"* dated March 25, 2021, prepared for the Branthaven Development Corporation;
- *"Phase Two Environmental Site Assessment, 735 Oval Court and 5155 Fairview Street, Burlington, ON"* dated March 19, 2021, prepared for the Branthaven Development Corporation;
- *"Phase Two Environmental Site Assessment, 5135 Fairview Street, Burlington, ON"* dated March 31, 2021, prepared for the Branthaven Development Corporation;
- *"Supplementary Slope Stability Study, Proposed Residential Development, 5135 Fairview Street and 720-740 Oval Court, Burlington, Ontario"* dated August 31, 2023, prepared for Branthaven Development, and;
- *"Hydrogeological Investigation, 720, 735 & 740 Oval Court and 5135 & 5155 Fairview Road, Burlington, Ontario"* dated April 26, 2023, prepared for Branthaven Development.

As part of the above-listed assessment historic investigations completed by others were reviewed and considered:

- *Phase One Environmental Site Assessment, 5155 Fairview Street, Burlington, Ontario",* prepared for 1062211 Ontario Ltd., prepared by Terraprobe Inc, dated July 9, 2012*; and*
- *"Geotechnical Investigation, 5155 Fairview Street, Burlington, Ontario",* prepared for 1602211 Ontario Inc., prepared by Terraprobe Inc, dated October 23, 2013; *and*
- *"Preliminary Geotechnical Investigation, 735 Oval Court, Burlington, Ontario",* prepared for Branthaven Development Corp., prepared by Bendigo Consulting Inc, dated May 31, 2018; *and*
- *"Phase I Environmental Site Assessment, 735 Oval Court, Burlington, Ontario",* prepared for Branthaven Development Corp., prepared by Bendigo Consulting Inc, dated June 8, 2018,
- *"Phase Two Environmental Site Assessment, 735 Oval Court, Burlington, Ontario",* prepared for Branthaven Development Corp, prepared by Wood Environmental & Infrastructure Solutions, dated December 14, 2018, and;

- *"Phase I Environmental Site Assessment, 740 Oval Court, Burlington, Ontario",* prepared for Branthaven Development Corp, prepared by Bendigo Consulting Inc., dated September 2018; *and*
- *"Preliminary Geotechnical Investigation, 740 Oval Court, Burlington, Ontario",* prepared for Branthaven Development Corp, prepared by Bendigo Consulting Inc., dated December 17, 2018; *and*
- *"Phase Two Environmental Site Assessment, 740 Oval Court, Burlington, Ontario",* prepared for Branthaven Development Corp., prepared by Wood Environmental & Infrastructure Solutions, dated December 20, 2018.
- *"Hydrogeological Investigation, 720, 735 & 740 Oval Court and 5135 & 5155 Fairview Street, Burlington, Ontario, L7L 6A9"*, prepared for the Branthaven Development Corp., prepared by DS Consultants Ltd., dated August 17, 2020.

These reports were assessed the presence of known or suspected PCAs and APECs, and to determine if soil and/or groundwater impacts on the Site, and within the Phase One Study Area.

Based on the information reviewed by DS, the location of the Site, and the proposed future land use (residential), the most applicable Site Condition Standards as defined by the Ministry of the Environment, Conservation, and Parks (MECP) in the document "*Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act*", dated April 15, 2011 were considered to be:

- Table 1 SCS: Full Depth Generic Site Condition Standards for Residential/Parkland/Institutional Use with coarse-textured soils, herein referred to as the "Table 1 SCS", applicable to the western portion of the Site, and;
- Table 7 SCS: Generic Site Condition Standards for Shallow Soils in a Non-Potable Ground Water Condition for Residential/Parkland/Institutional Use with coarse-textured soils, herein referred to as the "Table 7 SCS", applicable to the eastern portion of the Site.

The selection of the Table 1 and Table 7 SCS are considered appropriate based on the following rationale:

- The western portion of the Site (namely 5155 Fairview, 720 and 740 Oval Court) adjoins an Area of Natural Significance: Appleby Creek, which was identified in the Halton Region official plan as a Key Feature within the Regional Natural Heritage Systems in the Official Plan Map 1G. In accordance with Section 41 of O.Reg 153/04, the MECP Table 1 Site Condition Standards (SCS) are applicable to the portions of the Site which are located within 30 m of the Areas of Natural Significance.
- The eastern portion of the Site is not considered to be environmentally sensitive, as defined under O.Reg. 153/04 (as amended);
- The City of Burlington obtains its potable water from Lake Ontario, and does not rely on groundwater as a potable water source;
- The proposed future use of the Site will be residential;

- The eastern portion of the Site is not located within 30 m of a water body;
- The pH of the soils analyzed during the Phase Two ESAs are within the accepted range specified under O.Reg. 153/04 (as amended); and
- Bedrock was encountered within 2 metres of the ground surface, as such the Site is considered to be a shallow soils property.

The applicable areas on the Site to which each of the respective SCS are applicable are presented on Figure 2, as defined by a 30 m extent from the Appleby Creek Natural Heritage System.

A summary of the pertinent details of the Phase Two ESAs completed is provided in the table below:

Table E-1: Summary of Phase Two ESA Scope

735 Oval Court and 5155 Fairview Street				
Completed by	**Boreholes & Wells**	**Parameters**	**Soil Samples**	**Groundwater Samples**
DS Consultants (2021)	15 Boreholes 6 Wells (0.5 – 15.5 mbgs)	Metals and ORPs	12	6
		PHCs (F1 to F4) and BTEX	5	6
		VOCs	5	8
		PAHs	7	7
		OC Pesticides	1	-
Wood (2018)	9 Boreholes 4 Wells (7.6 mbgs)	Metals and ORPs	10	3
		PHCs (F1 to F4) and BTEX	9	5
		VOCs	9	5
		PAHs	7	-
		OC Pesticides	5	-
5135 Fairview Street				
DS Consultants (2021)	4 Boreholes & Wells (4.5 to 15.5 mgbs)	Metals and ORPs	8	10
		PHCs (F1 to F4) and BTEX	17	6
		VOCs	5	8
		PAHs	5	3
		OC Pesticides	1	-
Wood (2018)	6 Boreholes 3 Wells (7.7 mbgs)	Metals and ORPs	6	3
		PHCs (F1 to F4) and BTEX	4	3
		VOCs	4	3
		PAHs	6	-
		OC Pesticides	3	-
720 and 740 Oval Court				
DS Consultants	15 Boreholes 5 Wells (0.6 to 15.5 mbgs)	Metals and ORPs	8	10
		PHCs (F1 to F4) and BTEX	17	6
		VOCs	5	8
		PAHs	5	3
		OC Pesticides	2	-

The Phase Two ESAs identified exceedances of the applicable Site Condition Standards in soil. The impacts can be generally classified into three discrete areas, which is discussed in further detail in Section 3.3.

Table E-2: Summary of Soil Analytical Results

Sample ID	Sample Depth (mbgs)	Parameter	Units	Table 1/7 SCS	Reported Value
BH19-10 SS1	0 – 0.6	SAR*	µg/g	2.4	**2.7**
BH19-14A SS1	0-0.6	EC*	µg/g	0.7	**0.74**
BH19-11 SS1	0 – 0.6	EC*	µg/g	0.57	**1.2**
		SAR*	µg/g	2.4	**8.8**
BH19-3 SS1	0-0.6	EC*	µg/g	0.57	**0.73**
		SAR*	µg/g	2.4	**10.2**
BH19-6 SS1	0-0.6	EC*	µg/g	0.57	**2.3**
		SAR*	µg/g	2.4	**4.2**
BH19-7 SS1	0-0.6	EC*	µg/g	0.57	**1.3**
		SAR*	µg/g	2.4	**11.7**
BH19-8 SS1	0-0.6	EC*	µg/g	0.57	**2.3**
		SAR*	µg/g	2.4	**12.8**
TS3	0-0.6	PHC F4**	µg/g	120	**124**
TS4	0-0.6	PHC F4**	µg/g	120	**129**
Remedial Excavation 1					
TP2	0.75	Acenaphthene	µg/g	0.17	**0.81**
		Anthracene	µg/g	0.67	**0.89**
		Fluoranthene	µg/g	0.69	**5.1**
		Benz(a)anthracene	µg/g	0.5	**2.3**
		Benzo(b)fluoranthene	µg/g	0.78	**5.4**
		Benzo(k)fluoranthene	µg/g	0.78	**2.1**
		Benzo(a)pyrene	µg/g	0.3	**3.3**
		Indeno(1,2,3-cd) pyrene	µg/g	0.38	**2.5**
		Dibenz(a,h)anthracene	µg/g	0.1	**0.28**
Remedial Excavation 2					
BH19-17 SS1	0-0.6	Cadmium	µg/g	1.2	**1.7**

		Zinc		340	**740**
BH19-2 SS1	0-0.6	Lead	µg/g	120	**140**
		Zinc		340	**810**
Remedial Excavation 3					
BH19-9B SS1	0 – 0.6	Acenaphthene	µg/g	0.072	< 0.1
		Acenaphthylene	µg/g	0.093	< 0.1
		Naphthalene	µg/g	0.09	< 0.1
BH19-11 SS1	0 – 0.6	Anthracene	µg/g	0.16	**0.24**
		Benz(a)anthracene	µg/g	0.36	**0.75**
		Benzo(a)pyrene	µg/g	0.3	**0.74**
		Benzo(b+j)fluoranthene	µg/g	0.47	**0.91**
		Fluoranthene	µg/g	0.56	**1.53**
		Indeno(1,2,3-cd)pyrene	µg/g	0.23	**0.29**
		Pyrene	µg/g	1	**1.38**
BH19-26 SS1* (SDUP5135A)	0-0.6	Benz(a)anthracene	µg/g	0.36	**0.6**
		Benzo(a)pyrene	µg/g	0.3	**0.61**
		Benzo(b+j)fluoranthene	µg/g	0.47	**0.71**
		Fluoranthene	µg/g	0.56	**1.36**
		Indeno(1,2,3-cd)pyrene	µg/g	0.23	**0.3**
		Pyrene	µg/g	1	**1.2**
BH19-26 SS1* (SDUP5135B)	0-0.6	Acenaphthene	µg/g	0.072	**0.15**
		Anthracene	µg/g	0.16	**0.88**
		Benz(a)anthracene	µg/g	0.36	**3.9**
		Benzo(a)pyrene	µg/g	0.3	**3.3**
		Benzo(b+j)fluoranthene	µg/g	0.47	**4.18**
		Benzo(g,h,i)perylene	µg/g	0.68	**1.34**
		Benzo(k)fluoranthene	µg/g	0.48	**2.08**
		Chrysene	µg/g	2.8	**3.28**
		Dibenz(a,h)anthracene	µg/g	0.1	**0.38**
		Fluoranthene	µg/g	0.56	**6.67**
		Fluorene	µg/g	0.12	**0.2**
		Indeno(1,2,3-cd)pyrene	µg/g	0.23	**1.35**

		Phenanthrene	µg/g	0.69	**2.12**
		Pyrene	µg/g	1	**6.08**
BH2 SS1	0.3 – 0.6	pH	-	5-9***	**9.81**
BH19-3 SS1	0-0.6	Zinc	µg/g	290	**370**
BH19-6 SS1	0-0.6	pH	-	5-9***	**11.18**
		Benzo(a)pyrene	µg/g	0.3	**0.44**
		Benzo(b+j)fluoranthene	µg/g	0.47	**0.63**
		Fluoranthene	µg/g	0.56	**0.88**
BH19-7 SS1	0-0.6	pH	-	5 to 9***	**11.31**
		Benz(a)anthracene	µg/g	0.36	**0.56**
		Benzo(a)pyrene	µg/g	0.3	**0.55**
		Benzo(b+j)fluoranthene	µg/g	0.47	**0.93**
		Fluoranthene	µg/g	0.56	**1.52**
		Indeno(1,2,3-cd)pyrene	µg/g	0.23	**0.27**
		Pyrene	µg/g	1	**1.29**
BH19-8 SS1	0-0.6	pH	-	5-9***	**10.14**

*The soil impacts for EC and SAR, are considered to be related to the application of de-icing agents during winter for pedestrian and vehicular safety purposes. Per the exemption set out in Section 49.1 of O. Reg 153/04, the applicable SCS related to these parameters is not considered to be exceeded for the purposes of filing an RSC and no remedial action is required.

**PHC impacted soil was identified within the vicinity of two on-site transformers (TS3 and TS4). Verification soil sampling completed within 1m of both TS3 and TS4 indicated PHC concentration in soil which met the MECP Table 1 SCS. Per Section 48(2) of O. Reg 153/04; *"If two or more samples of soil or sediment are taken from sampling points at the same sampling location that are at the same depth on, in or under the property, the property meets a standard mentioned in subsection (1) if the average of the sampling results meets the standard and in no other circumstances*". The combined average PHC analysis results of the three verification soil samples taken at the same depth within 1 m of TS3 and TS4 met the MECP Table 1 SCS. Thus, in terms of Section 48 (2), the soils associated with TS3 and TS4 are considered to meet the Table 1 SCS and no PHC impacted soil is considered to be present on the Site.

***Section 41 of O. Reg 153/04 identifies a requirement for surficial soils to be associated with a pH of between 5 to 9 units.

As indicated in the table above, three remedial excavations are proposed to remove the impacted soils. Remedial Excavation 1 will be located within the northern portion of the Site associated with elevated concentrations of PAHs, Remedial Excavation 2 will be located within the eastern portion of the site associated with elevated concentrations of metals, and Remedial Excavation 3 will be located within the southern portion of the Site associated with elevated concentrations of zinc, PAHs, and pH in soil.

The Phase Two ESAs identified the following exceedances of the applicable Site Condition Standards in groundwater:

Table E-3: Summary of Groundwater Impacts Identified

Sample ID	Well Screen Interval	Parameter	Units	Table 1 Standard	Analytical Result
BH19-10	1.16 - 4.46	Chloride*	µg/L	790 000	**1 100 000**

Sample ID	Well Screen Interval (mbgs)	Parameter	Units	Table 1 SCS	Reported Value	
					July 2020	November 2020
BH19-3	12.44-15.54	Boron (Total)	µg/L	1700	**5190**	**6150**
		Chloride	µg/L	790000	**3 200 000**	-
		Sodium	µg/L	490000	**1 720 000**	**1 550 000**
BH19-4	12.44-15.54	Boron (Total)	µg/L	1700	**3080**	**4800**
BH19-6	1.5-4.6	Chloride	µg/L	790000	**890 000**	-
		Uranium	µg/L	8.9	**19.2**	0.22
		Vanadium	µg/L	3.9	1.39	**17.5**
BH19-8	1.5-4.6	Chloride	µg/L	790000	**2 000 000**	-
		Sodium	µg/L	490000	**925 000**	**530 000**
		Uranium	µg/L	8.9	**16**	0.24
		Vanadium	µg/L	3.9	1.65	**32.5**

*The groundwater impacts for chloride are considered to be related to the application of de-icing agents during winter for pedestrian and vehicular safety purposes. Per the exemption set out in Section 49.1 of O. Reg 153/04, the applicable SCS related to this parameter is not considered to be exceeded for the purposes of filing an RSC and no remedial action is required.

It is noted that groundwater containing elevated concentrations of metals (boron, vanadium and uranium) was identified across the western portion of the Site. The screens of all of the impacted wells were located partially or wholly within the shallow shale bedrock. Surficial soil sampling associated with fill material at each of the impacted wells indicated low or non-detect concentrations of boron, vanadium and uranium present, and all surficial soil samples met the MECP Table 1 SCS for soil. Based on the aforementioned considerations, the elevated groundwater concentrations are attributed to natural background conditions associated with the bedrock geology, and not contamination as defined under the EPA, as such remediation and/or Risk Assessment of the impacted groundwater is not included in this RAP.

2. Uncertainty

The results of the environmental investigations completed to date have identified metal, PAH and pH concentrations in excess of the applicable SCS. The estimated area horizontal and vertical areas of impact are based on the information available at this time. These dimensions are based upon the analysis of soil samples collected from point locations across the Site investigated by DS (and others), and thus cannot be considered to be exact or absolute. The estimated excavation areas outlined in Section 1 above should be considered as a conservative estimate of the extent of impacted soils based on the information available at this time.

3. Scope of Remediation

The purpose of the RAP is to provide a framework for the remediation process including:

- Identification of remedial options and evaluation of the applicability of each remedial option based on Site-specific characteristics;
- Establishment of a final RAP, and;
- Recommendation of selected reclamation activities.

3.1. Remediation Objectives

A summary of the remediation objectives with respect to the soil quality on-Site is provided in the following Table.

Table 5-1: Remediation Objectives and Results - Soil

Medium	Contaminants of Concern	CoCs Exceeding Applicable Guidelines	Remediation Objective (Applicable SCS)		Notes
			Table 1	Table 7	
Soil - On-Site	OCPs, Metals, As, Sb, Se, B-HWS, CN-, electrical conductivity, Cr (VI), Hg, low or high pH, SAR, PHCs, BTEX, VOCs, PAHs	Cadmium	1.2	1.2	Soil impacts were identified within three distinct areas on the Site, namely: northern, eastern and western portions. Impacts are estimated to range in depth from 1.5 to 1.8 mbgs, or to the depth of the bedrock (whichever is shallower).
		Lead	120	120	
		Zinc	290	340	
		pH	5-9*	5-9*	
		Acenaphthene	0.072	7.9	
		Acenaphthylene	0.093	0.15	
		Anthracene	0.16	0.67	
		Benz(a)anthracene	0.36	0.5	
		Benzo(b)fluoranthene	0.47	0.78	
		Benzo(k)fluoranthene	0.48	0.78	
		Benzo(a)pyrene	0.3	0.3	
		Benzo(b+j)fluoranthene	0.47	0.78	
		Chrysene	2.8	7	
		Dibenz(a,h)anthracene	0.1	0.1	
		Fluoranthene	0.56	0.69	
		Fluorene	0.12	62	
		Indeno(1,2,3-cd) pyrene	0.23	0.38	
		Naphthalene	0.09	0.6	

Medium	Contaminants of Concern	CoCs Exceeding Applicable Guidelines	Remediation Objective (Applicable SCS)		Notes
			Table 1	Table 7	
		Phenanthrene	0.69	6.2	
		Pyrene	1	78	

3.2. Remedial Option Selection

There are multiple factors to consider when assessing the optimal remedial approach to a given property. Of paramount importance is ensuring the well-being of human receptors, as well as ecological receptors. The MECP regulates the implementation of remedial technologies in Ontario, and as such the potential risk to human and ecological receptors are taken into consideration inherently. Other practical considerations include the duration to accomplish the remedial objective (Table 1 SCS and Table 7 SCS), and the cost to implement the selected approach.

Lead, cadmium and zinc are periodic table elements which cannot be further degraded through chemical or physical processes. PAHs are hydrophobic in nature, and have limited mobility once adsorbed on to soil. In consideration of these facts, and the limited depth of the impacts in soil, as well as the limited depth of soil relative to bedrock, it was determined that remediation through physical removal and disposal of the impacted soil was the optimal solution with respect to the aforementioned considerations of safety, time and cost.

Based on the current understanding of Site Conditions, the contaminant of concern, location, approximate area, depth and volume of impacted soil are estimated as follows:

- Remedial Excavation 1: PAH impacted soil, northern portion of the Site, 200 m^2, 1.6 mbgs, 320 m^3;
- Remedial Excavation 2: metals (cadmium, lead and zinc), 3,700 m^2, 1.5 mbgs, 5,550 m^3, and;
- Remedial Excavation 3: zinc, pH and PAHs, southern portion of the Site, 9,050 m^2, 1.8 mbgs and 16,290 m^3.

3.3. Implementing the Remedial Action Plan

In generality the following implementation schedule is noted:

- Remedial Excavation 1 and 2 (Zone A) will be completed prior to demolition of the building located at 735 Oval Court, as part of the first phase of development.
- Remedial Excavation 2 spans the parking lot of 735 Oval Court and 5155 Fairview Street, as such this remedial excavation will be completed in two phases due to separate ownership of land which may result in differing development timing as follows:
    - Remedial Excavation Zone A will be located within the parking lot of 735 Oval Court
    - Remedial Excavation Zone B will be located within the parking lot associated with 5155 Fairview Street

- Note that Remedial Excavation 3 will be divided into three (3) separate Zones as follows:
    - Excavation 3, Zone A will be within the footprint of the future conveyance lands. It is understood that the client has requested approvals from the City of Burlington to transform the conveyance lands closely associated with Appleby Creek (identified as the proposed land conveyance on Figure 1). These works will involve namely: removal of all asphalt, grading, and culvert replacement. The excavation of Zone A will be completed concurrently with the transformation of the conveyance lands. Upon completion of the remedial efforts within Excavation 3, Zone A, with associated post cleanup verification sampling, the RSC process for the conveyance lands will commence.
    - Excavation 3, Zone B contains the remaining balance of lands (excluding the proposed conveyance) located at Remedial Excavation 3 at 720 Oval Court.
    - Excavation 3, Zone C contains the remaining balance of lands (excluding the proposed conveyance) located at 5135 Fairview Street
    - The remainder of Remedial Excavation 3 (Zone B and C, within the lands not subject to conveyance) will be completed after Zone A, in conjunction with the demolition program associated with the separate existing buildings in this area, and not necessarily in concert.

This RAP will be implemented as soon as practicable with respect to obtaining municipal approval for the execution of this work plan, and in consideration of other activities to be completed with respect to the planned conveyance.

3.4. Health and Safety Plan

During completion of the remedial excavation program, a daily tailgate meeting will be completed to identify any Site specific hazards observed. A Job Safety Analysis will be completed to identify the potential hazards associated with the fieldwork. Potential hazards to be anticipated with the work include:

- Handling of impacted soils
- Inclement weather conditions
- Working in proximity to heavy machinery

The field staff's acknowledgement of the health and safety plan and the topics identified during the tailgate meetings will be recorded.

3.5. Sampling and Analysis

3.5.1. Pre-Remediation

A preliminary delineation of the impacted soils associated with each remedial excavation has already been completed. It should be noted that the extent of the remediation areas should be considered as an estimate

of the extent of impacted soils based on the information available at this time and should not be interpreted as exact planes of a change in soil compliance with the applicable SCS.

Supplementary investigation of the extent of the impacted area associated with Remedial Excavation 3 is recommended during completion of the conveyance land transformation, after removal of asphalt, to further refine the required extent of the planned remedial activities. No further supplementary delineation is recommended for Remedial Excavation 1 and 2 prior to completion of work.

It is recommended that Toxicity Characterization Leaching Procedure (TCLP) testing be completed in advance to confirm the excavated soils associated with each remedial excavation can be classified as non-hazardous for the purposes of future soil disposal at a licensed waste disposal facility or Class 1 Soil Management Facility (if beneficial off-site re-use is not possible).

3.5.2. Post-Remediation

The soil impacts identified may be managed through excavation and off-site disposal followed by confirmatory soil sampling in accordance with the requirements of O.Reg. 153/04 (as amended).

Verification sampling for each excavation (and also for the conveyance lands separately) would need to be completed as per the dimensional requirements specified in O. Reg 153/04 outlined in the table below:

Floor Area (m^2)	Number of Floor Samples	Number of Sidewall Samples*
<25	2	2
>25-50	2	3
>50-100	3	3
>100-250	3	5
>250-500	4	6
>500-750	4	7
>750-1000	5	8

*Per O. Reg 153/04 sidewall samples shall not all be taken from the same wall and will be screened using visual, olfactory and soil headspace vapour sampling in order to determine worst-case representation.

Confirmatory soil samples will collected from the maximum extent of the remedial excavation. Per the requirements of O.Reg 153/04 (as amended), confirmatory soil samples will be selected based on soil screening samples collected. The screening samples collected will be inspected and examined to assess soil type, and possible chemical contamination by visual and olfactory observations.

Confirmatory samples will be submitted for chemical analysis from locations judged by the assessor to be most likely to exhibit the highest concentrations of contaminants based on several factors including (i) visual or olfactory observations, (ii) sample location, depth, and soil type. Organic vapour headspace reading is not considered relevant for screening based on the nature of the impacting contaminants.

Should any of the wall or floor samples indicate the presence of impacted soil additional excavation and verification soil sampling would be required until the floor and all of the walls are considered to be verified as not impacted.

3.5.3. Quality Assurance and Quality Control Measures

All soil verification sampling events will incorporate the following QA/QC measures:

- Where possible soil samples will be extracted directly from the excavation, or from the interior of the sampler rather than from areas in contact with the sampler casing;
- Use of dedicated and disposable nitrile gloves for the handling of soil samples. A new set of gloves was used for each sample;
- All soil samples will be transferred directly into laboratory-supplied containers;
- Storage and transportation of soil samples to the laboratory under refrigerated conditions;
- Maintenance of chain of custody protocols from the time of sampling to delivery of the samples to the laboratory;
- Collection of field duplicate samples at the frequency specified under O.Reg. 153/04 (as amended), and;
- Laboratory implemented QA/QC protocols including method blanks, internal laboratory duplicates, surrogate spike samples, matrix spike samples, and standard reference materials.

4. Waste Soil Management

The contractor retained by the Client to complete the remedial excavation works will be responsible for the excavation and removal of the impacted topsoil. The earthworks associated with this remedial action plan are to be completed under the direct supervision of DS Consultants Ltd.

The shallow soils within the delineated zone of impacts are to be stripped and can either be temporarily stockpiled, or direct loaded for disposal at a licensed waste disposal facility or Class 1 Soil Management Facility.

The option for stockpiling of the soil will allow for chemical testing of the stockpiled soil, as there are concentrations of contaminants which exceed the Table 1 SCS or Table 7 SCS applicable to the Subject Property, however are below the Table 2.1 RPI Excess Soil Quality Standards (ESQS) which would be applicable to off-Site re-use Sites.

Chemical analysis of the stockpile would be completed at the frequencies outlined under Ontario Regulation 406/19 based on the volume of topsoil within the stockpile. Through the completion of the stockpile sampling, soils which are found to satisfy the Table 2.1 RPI or ICC ESQS may be considered suitable for beneficial re-use at an off-site location, but must be removed from the Subject Property. Any

soils confirmed to exceed the Table 2.1 ESQS would require disposal at a licensed waste disposal facility or Class 1 Soil Management Facility.

It is not anticipated based on the bulk analysis soil concentrations that any of the soil will be classified as hazardous waste. In the event that the TCLP testing identifies leachate concentrations which exceed the O.Reg. 347 Schedule 4 criteria, the material will require disposal accordingly at a facility licensed to received hazardous waste.

4.1. Soil Waste Export Protocols

Prior to commencing soil export, a suitable re-use Site or waste disposal Site must be identified in accordance with Ontario Regulation 406/19. The intended receiver shall be provided with a copy of the Phase Two ESA Report which identifies the contaminant concentrations identified.

The earthworks contractor will be responsible for identifying potential receiving sites, and will be required to confirm potential receivers in advance. DS will then prepare an Excess Soil Destination Assessment Report in accordance with the requirements of O.Reg. 406/19.

Written acceptance of the material shall be required from the receiver prior to commencing export.

It is recommended that a tracking system be implemented for the duration of topsoil export. Hauling records will be required per the requirements of Ontario Regulation 406/19.

4.2. Hours of Operation

The standard hours of operation for the earthworks will be limited to Monday to Friday, between the hours of 7:00 am and 7:00 pm (excluding holidays). The hauling and unloading operation may be halted due to inclement weather including but not limited to heat warnings, rain and high winds. The hauling and unloading operation will be conducted in a safe and environmentally friendly manner in which the safety and concerns of the neighbouring properties and the public are taken into consideration. The site is to be barricaded when the earthworks contractor is not present to prevent unauthorized entry and/or illegal dumping.

4.3. Dust and Noise Control

Earthworks operations during redevelopment will involve excavation and loading of excess soil for off-site disposal and/or beneficial re-use.

During windy conditions, earthworks activities that generate greater levels of dust should be avoided. In the event that excessive dust is generated, a water flushing truck will be mobilized to the Site. During periods of dry weather, where dust generation is typically at its peak, the Site access point may be sprayed with a dust suppressant to minimize the air-borne dust travel.

In order to mitigate soil trackout to the municipal roads, a construction access mud mat will be constructed at the current driveway entering the Site. The mud mat is expected to minimize soil trackout onto the municipal roadways. Street cleaning will be completed, as necessary.

4.4. Traffic and Transportation Management

The construction site entrances will follow the existing entrances to the Site, currently fronting Oval Court.

Traffic controls will be developed and implemented as part of the Site preparation and general earthworks operations. Controls may include limiting the hours of operation to non-peak traffic flow hours and using flag persons. Other actions may also be taken in order to manage potential concerns (e.g. associated with weather conditions).

4.5. Visual Inspection of Exported Material

During the future excavation activities, the soil will be visually inspected by the for evidence of potential environmental concerns such as odour, staining or debris. Any soils observed to contain objectionable materials will be segregated for further assessment and managed accordingly.

4.6. Temporary Soil Management

Temporary stockpiling may be required as construction progresses, however it is anticipated that the majority of the excavated soils will be loaded directly for off-site removal. In order to minimize the potential for erosion and dust generation, limiting the duration of time material is stockpiled on Site is recommended. However in the event that temporary stockpiling is required, it will be managed in accordance with the requirements detailed under the document "*Rules for Soil Management and Excess Soil Quality Standards*" (MECP, 2022). Coordination of stockpiling locations with the environmental consultant will be undertaken as stockpiling is not permitted in environmentally sensitive areas and Conservation Authority regulated areas, which are present on the Site.

Temporarily stockpiled material should be loaded for off-site removal as soon as feasible. To minimize dust generated during site activities, use of water or other suitable dust suppressants on stockpiles and work areas may be necessary.

5. Closure

Thank for you the opportunity to have been of service on this project. Should you have any questions regarding the findings of this investigation please do not hesitate to contact the undersigned.

Sincerely,

DS Consultants Ltd.





Kirstin Olsen, MSc.	Patrick Fioravanti, B.Sc., P.Geo., QP_{ESA}
Senior Project Manager	Vice President – Environmental Services

6. Limitations

This RAP was prepared for the sole use of the Branthaven Development Corporation for the properties located at 720, 735, 740 Oval Court, 5135 and 5155 Fairview Street, Burlington, Ontario. The information presented in this report is based on information contained within the reports provided to DS. The material in this report reflects DS' judgment in light of the information available at the time of report preparation. This report may not be relied upon by any other person or entity without the written authorization of DS Consultants Ltd. The scope of services performed in the execution of this investigation may not be appropriate to satisfy the needs of other users, and any use or reuse of this documents or findings, conclusions and recommendations represented herein, is at the sole risk of said users.

The information and conclusions presented in this report are professional opinions in accordance with generally accepted engineering and scientific practices based on a cursory historical search, visual observations and limited information provided by persons knowledgeable about past and current activities on this site. The work completed as per the scope of work is considered sufficient in detail to form a reasonable basis for the findings presented in this report. As such, DS Consultants Ltd. cannot be held responsible for environmental conditions at the site that was not apparent from the available information.

7. Qualifications of the Assessors

Mr. Patrick (Rick) Fioravanti, B.Sc., P.Geo., QP_{ESA}

Mr. Fioravanti is the Vice President of Environmental Services with DS Consultants Limited. Patrick holds an Honours Bachelor of Science with distinction in Toxicology from the University of Guelph and is a practicing member of the Association of Professional Geoscientists of Ontario (APGO). Patrick has over a decade of environmental consulting experience and has conducted and/or managed hundreds of projects in his professional experience. Patrick has extensive experience conducting Phase One and Phase Two Environmental Site Assessments in support of brownfields redevelopment in urban settings, and been involved in numerous remediation projects, supported many risk assessments, and successfully filed Records of Site Condition with the Ministry of Environment, Conservation and Parks. He has conducted work across southern and eastern Ontario, and Quebec in his professional experience. Patrick is

considered a Qualified Person to conduct Environmental Site Assessments as defined by Ontario Regulation 153/04 (as amended).

Ms. Kirstin Olsen, M.Sc., C.E.T.

Ms. Olsen is a Senior Project Manager in the Environmental Services Department at DS Consultants Limited. Ms. Olsen has a bachelor's degree in Animal, Plant and Environmental Science, as well as a Master of Science Degree in Environmental Science, Ecology and Conservation from the University of the Witwatersrand. Ms. Olsen has personally completed over three hundred detailed environmental assessments across a wide array of scientific disciplines including: Phase One & Two Environmental Site Assessments, Remedial Excavation & Injection Oversight, Hydrogeological Investigations, EASR Registration/PTTW Application, Aquatic Ecological Delineation, Assessment & Planning, Toxicological, Soil & Water Impact and Risk Assessment, as well as Environmental Construction Monitoring & Performance Auditing.

Figures



Legend

- Property Boundary
- Borehole - DS
- Borehole - Wood
- Monitoring Well - DS
- Monitoring Well - Wood
- Test Pit - Wood
- Soil Concentration Exceeds Applicable Standards
- Remedial Excavation 1
- Remedial Excavation 2 Zone A
- Remedial Excavation 2 Zone B
- Remedial Excavation 3 Zone A
- Remedial Excavation 3 Zone B
- Remedial Excavation 3 Zone C
- Proposed Land Conveyance

DS CONSULTANTS LTD.
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Client: THE BRANTHAVEN DEVELOPMENT CORPORATION

Project: REMEDIAL ACTION PLAN
720 and 740 Oval Court, 735 Oval Court and 5155 Fairview Street, 5135 Fairview Street Burlington, ON

Title: **SOIL CHARACTERIZATION**

N

Size:	Approved By:	R.F	Drawn By:	P.P	Date:	July 2024
11x17	Scale:	As Shown	Project No.:	20-117-100	Figure No.:	1
Rev. 0	Image/Map Source: *Google Satellite Image*					

J:\-GIS\2020 PROJECTS\20-117-100 Enviro. Hydro\1-QGIS\ENV\Figure 1 - Soil Characterization.qgs Jul-08 13:27



J:\-GIS\2020 PROJECTS\20-117-100 Enviro. Hydro\1-QGIS\ENV\Figure 2 - Site Condition Standards.qgs Jul-03 10:58

Legend

- Property Boundary
- Borehole - DS
- Borehole - Wood
- Monitoring Well - DS
- Monitoring Well - Wood
- Test Pit - Wood
- Soil Concentration Exceeds Applicable Standards
- Appleby Creek Natural Heritage System
- Table 1 RPIICC Site Condition Standards
- Table 3 RPI Site Condition Standards

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Project: REMEDIAL ACTION PLAN
720 and 740 Oval Court, 735 Oval Court and 5155 Fairview Street, 5135 Fairview Street Burlington, ON

Title: **SITE CONDITION STANDARDS**

N

Size:	Approved By:	R.F	Drawn By:	P.P	Date:	July 2024
11x17	Scale:	As Shown	Project No.:	20-117-100	Figure No.:	2
Rev. 0	Image/Map Source: *Google Satellite Image*					