October 29, 2024

(via email)

City of Hamilton
Hamilton City Hall
71 Main Street West
Hamilton ON L8P 4Y5

Attention: Greg Tedesco
Senior Project Manager, Housing Services Projects & Initiatives
Housing Services Division

Subject: **Barton-Tiffany Lands – Zone B**
Environmental Risk Management Measures For Temporary Shelter Housing
Englobe reference: 09-02410660.000.0101-EN-L-0001-00

Dear Mr. Tedesco:

In response to your request email dated October 7, 2024 and subsequent communications, Englobe Corp. (Englobe) is pleased to provide this report to the City of Hamilton ('the Client').

1 Background

Englobe was engaged by the Client to review a Phase I Environmental Site Assessment report (Phase I ESA) and identify potential human health risk management measures that could be implemented for a proposed use of vacant lands as temporary emergency shelter housing for unsheltered individuals. The vacant lands are part of a redevelopment area known as Barton-Tiffany Redevelopment area, located in north-central Hamilton, that is owned by the Client. The lands to be evaluated in this project are located west of Tiffany Street and north of Barton Street West, specifically those bounded by Barton Street West, Hess Street North, Stuart Street and Caroline Street North (the 'Subject Lands').

The Client is considering use of a portion of the Subject Lands for installing temporary modular shelter-housing units and support services structures for unsheltered individuals (Shelter Site). The Subject Lands are currently vacant of any permitted land use, and are occupied in a few areas by tent encampments. The drawing in Appendix A illustrates the location and boundaries of the Subject Lands.

2 Previous Environmental Report Review

Englobe reviewed a Phase I ESA report prepared for the Tiffany-Barton redevelopment area, dated February 8, 2018, prepared by Amec Foster Wheeler Environment & Infrastructure (Amec FW). The Subject Lands are identified in the Phase I ESA as 'Zone B' of the larger Barton-Tiffany Redevelopment area assessed in the Phase I ESA.

The Phase I ESA identified a history of industrial land uses on a majority of the lands in Zone B, and parts which had a history of residential in use. Buildings occupied this block historically including buildings associated with the Hamilton Iron and Metal Company at 239 Caroline Street North, B&M Metal Recycling and Gartshore-Thomson Pipe & Foundry Company at 228 Hess Street North, residential properties located at 162-182 Barton Street West, and a gasoline station located in the southwest corner of Zone B at 198 Barton Street West. The industrial and commercial occupants of these properties are known to have occupied the lands until the mid to late 1990s. At the time of the Phase I ESA the Zone B lands were vacant of buildings, which had previously been demolished to the foundations.

The Phase I ESA identified potential contaminating activities (PCAs) associated with the Subject Lands within Zone B and associated with surrounding lands off-site from Zone B. The PCAs are summarized in Table 1 below. PCAs are considered potential sources of contaminants that could remain in soil or groundwater on the Subject Lands.

Table 1: Potential Contaminating Activities On-Site and Off-Site of Zone B

On-Site PCAs	Off-Site PCAs
• Rail sidings	• Rail yards, tracks and spurs, including storage of treated wood products
• Automobile servicing, salvage, body repair, painting, fueling including gasoline storage	• Storage, maintenance, fuelling and repair of equipment, vehicles, including gasoline storage, auto body shops
• Plastics processing	• Iron and steel manufacturing and processing
• Salvage yard	• Chemical manufacturing and processing, coal gasification
• Metal processing, fabrication	• Rubber and asbestos processing
• Metal foundry	• Electricity generation and transformer use
• Transformer manufacturing	• Metal fabrication, recyclers
• Storage and/or use of tar, coal and coke	• Metal treatment and coating
• Confirmed presence of hazardous dust	• Commercial trucking and terminals
• Importation of fill of unknown quality	• Confirmed groundwater contamination

Notes
PCA = Potential contaminating activities

3 Potential Human Health Environmental Concerns

Based on the identified PCAs, the Phase I ESA identified multiple Areas of Potential Environmental Concern (APECs) on the Subject Lands (Zone B). Some of the APECs relate to PCAs associated with the Zone B Subject Lands and some with off-site properties surrounding Zone B. The locations of the APECs identified in the Phase I ESA report are shown in Appendix B.

All parts of the Subject Lands have one or more associated APECs, which combined have typical Contaminants of Potential Concern (COPCs) that could be present in one or more environmental media on the Subject Lands. These environmental media impacted with COPCs may include soil, groundwater, surface water (ponded or flowing precipitation runoff), soil gases (contaminant vapour), outdoor air and organisms (plants, fungi and animals). Indoor air is a potential impacted media for shelter housing units or support structures that would be established at the shelter housing site on the Subject Lands.

The types of COPCs identified as potentially present on the Subject Lands include: volatile organic compounds (VOCs); petroleum hydrocarbon compounds (PHCs); polychlorinated biphenyls (PCBs); heavy metals, other metals and inorganic compounds; polycyclic aromatic hydrocarbons (PAHs); chlorophenols and acid-base-neutral group compounds; Dioxins and Furans (PCDDs/PCDFs). Englobe understands that information on the actual distribution and concentrations of any of the COPCs actually present at the Subject Lands is likely to be partially determined, and not sufficient for completion of a Human Health Risk Assessment within a timeline useful for Clients' proposed implementation of the shelter housing. Therefore, the anticipated approach to mitigate human health concerns for implementation of shelter housing is to implement risk management measures (RMM) suitable to block potentially operable exposure pathways at the Subject Lands.

4 Site Reconnaissance Observations

An Englobe environmental engineer, Mr. Kemmy Hunter, completed a site reconnaissance visit of the Subject Lands on October 18, 2024. The purpose of the visit was to view and gain an understanding of the site conditions, take photographs and meet with the Client representative, Mr. Greg Tedesco. Appendix C provides selected photos of the Subject Lands with a grid map used to reference the photo locations.

The Subject Lands are mostly vacant, with a few remnants of perimeter fence, remnants of demolished structures (floor slabs, short retaining walls, a truck weigh scale platform), areas of asphalt pavement and visible sections of track from two former rail sidings. The south area of the site fronting on Barton Street West (photo grid sections A-1, B-1, C-1) includes areas of pavement and concrete slabs with the remainder mostly grass cover. Trees are present in rows along the line between grid rows 1 and 2, around the perimeter of the north half of the Subject Lands, and at a few other individual locations. Some tent encampments are present mostly along the north edge of grid sections A-1 and B-1 in the areas of trees, with other individual tents in section A-3 (not photographed) and in section B-5.

An area of raised ground level from reported infill following building demolition, is present in grid rows 3, 4 and 5, east from the middle of grid column A and extending north part way through grid row 5. Areas of bare soil with minimal vegetation are present in most of grid section C-4 to C-5 and parts of sections B-3, B-4, B-5 and C-3, with erosion prominent in the north-sloping parts of the fill area in section C-5. Previous heavy weed and shrub growth had been cut and removed by the City in the grid rows 2 through 5. Outside of the above-noted areas of concrete and pavement, the ground surface cover in the grid rows 2 through 5 varied from bare ground and gravel to sparse weeds and grass to full cover of weeds and grass. Several slight depressions in the terrain were present in grid sections B-3 and C-3, where surface water was ponded, or had been ponded and dried up or infiltrated.

A former gravel entrance road from Hess Street North is present at the southwest corner of grid A3, sloping up to the north and then continuing east through section A-3 then turns southeast. A former entrance gate off of Stuart Street and paved access road is present near the north-east corner of grid section B-5, with the pavement remnants visible turning to the west and extending beneath the raised fill areas south of the entrance and road remnants. Separate areas of asphalt pavement or concrete former building slabs on grade are present at several locations shown in the photographs in Appendix C. The asphalt areas were slightly to moderately jointed and cracked while the concrete slabs varied from moderately to extensively jointed and cracked.

Several groundwater monitoring wells with above-grade protective casings were observed on the Subject Lands, including grid sections A-1, A-2, A-4, A-5, B-1, B-2, B-3, B-5, C-1, C-2, C-3 and C-5, some of which are show in the Appendix C photos.

5 Human Health Risk Management Measures

In the absence of a completed risk assessment evaluating human health risks for the proposed shelter housing site at the Subject Lands, risk management measures (RMM) are necessary to provide mitigation of the health risks. Since the distribution and depths of COPCs at the Subject Lands has not been determined and APECs with the significant potential for the presence on COPCs are present across the entire Subject Lands, RMM will need to be implemented throughout the portion of the site that will be used as a shelter housing site. To be the most effective, the RMM are intended to block exposure pathways by which humans at the site may come in contact with the COPCs that may be present. The exposure pathways to be blocked for human receptors are summarized in Table 2 below. These exposure pathways also consider exposure to pets of the shelter housing residents.

Englobe understands that the construction methods for the temporary shelter housing site are not anticipated to require installation of underground services or other need for excavations such as trenches. However, pathways associated with construction excavations, or other construction ground disturbance, are noted in Table 2 for completeness of the pathways evaluation and identification of RMM that could be required.

Table 2: Human Health Exposure Pathways

Pathway	Environmental Media	Potential Opportunities for Exposure
Direct Contact	Soil	Exposed surface soil and soil exposed by surface water runoff, groundwater seepage, human and animal activities. Construction worker exposure to soil below surface during excavations or site grading.
	Groundwater	Groundwater seepage if near surface, including capillary action. If shelter residents access existing monitoring wells to use as a water source. Construction worker exposure to groundwater below surface during excavations or site grading.
	Vapour skin contact	COPCs volatilization to soil gas from soil or groundwater and contact via migration of soil gas to outdoor air or indoor air, or to a construction trench/excavation.
	Surface Water	Precipitation runoff impacted by COPCs from contact with soil.
Incidental ingestion	Soil, Groundwater, Surface Water	During eating, drinking or smoking after skin contact with the media.
Ingestion	Groundwater	If groundwater from site wells is used as potable water by shelter residents.
	Surface Water (pets)	Precipitation runoff impacted by COPCs from contact with soil.
	Edible Plants, Fungi	Shelter residents harvesting native or cultivated edible materials.
	Edible Plants, Fungi or small animals (by pets)	Foraging.
Inhalation	Outdoor Air	Volatile COPCs venting from soil and joints or cracks in pavement or concrete cover, and venting through soil from groundwater. Construction worker exposure to groundwater below surface during excavations.

Pathway	Environmental Media	Potential Opportunities for Exposure
		Non-volatile COPCs in airborne dust from loose soil disturbed by wind or site activity.
	Indoor Air	Infiltration of volatile COPCs venting from soil and joints or cracks in pavement or concrete cover and through soil from groundwater. Infiltration of non-volatile COPCs into shelter units and other enclosed temporary buildings via outdoor airborne dust.

Based on the potential presence throughout the Subject Lands of a wide range of COPC types (volatile and non-volatile), implementation of RMM should be applied to all areas to be used for the shelter housing site. The following typical RMM should be implemented to mitigate the potential human health risks. Some of the RMM are applicable to mitigate environmental human health risks for construction workers during preparation of the Site. Other RMM are applicable to mitigate environmental human health risks for workers, residents, and visitors of the shelter housing site once constructed.

- An engineered capping system placed over the entire shelter housing area. This could include a soft-cap, hard cap or a combination. A soft cap is typically a minimum of 0.5 m of clean soils or granular over a geotextile layer. A hard cap is typically a minimum of 75 mm of asphalt or concrete over 150 mm of granular, placed over a geotextile layer. Existing concrete or paved surfaces would not be practical for use as a hard cap, based on the need for the vapour membrane RMM noted in the next paragraph;
- A water-proof and chemical soil gas (contaminant vapour) resistant membrane installed under the capping system. This typically would include a vapour intrusion rated sheeting material 40 to 60 mil in thickness with suitable properties of low contaminant vapour transmission (by diffusion and advection). The membrane would be installed with sealed seams and associated protective layers, using certified installers and methods specified by the manufacturer;
- Fencing of the remainder of the Subject Lands to block access from the shelter site in order to mitigate potential exposures to COPCs in areas surrounding the shelter site RMMs;
- Engineered surface water drainage within and surrounding the capped area to prevent erosion from runoff in surrounding areas carrying impacted soil into the shelter areas. The storm water drainage should also be designed to prevent erosion soil in capped areas if a soft cap is used;
- Administrative controls such as: inspections to confirm the integrity of the systems and monitor for high-risk activities from the population that could disturb the RMM; decommissioning of on-Site monitoring wells or securing monitoring well covers to prevent access; signage on fencing alerting of potential risks on fenced lands outside the shelter area and at monitoring wells, etc.;
- Administrative controls during construction of the RMM systems, including a Health and Safety Plan with procedures to control construction worker exposures to COPCs, such as use of personal protective equipment, limiting the generation of dust during construction, etc.; and
- Administrative controls during construction of the RMM systems including a soil and water management plan. The plan should have procedures to prevent disturbance of potentially impacted soil, groundwater, ponded water or runoff and manage materials that must be disturbed or removed. Soil, groundwater or surface water in the work areas that requires removal should be tested for COPCs and classified prior to appropriate disposal according to Provincial regulations.

6 Statement of Limitations

The Statement of Limitations enclosed as Appendix D of this report forms an integral part of the Report.

7 Closure

We trust the enclosed meets your present requirements. Should additional information be required, please communicate with the undersigned.

Yours very truly,

Englobe Corp.

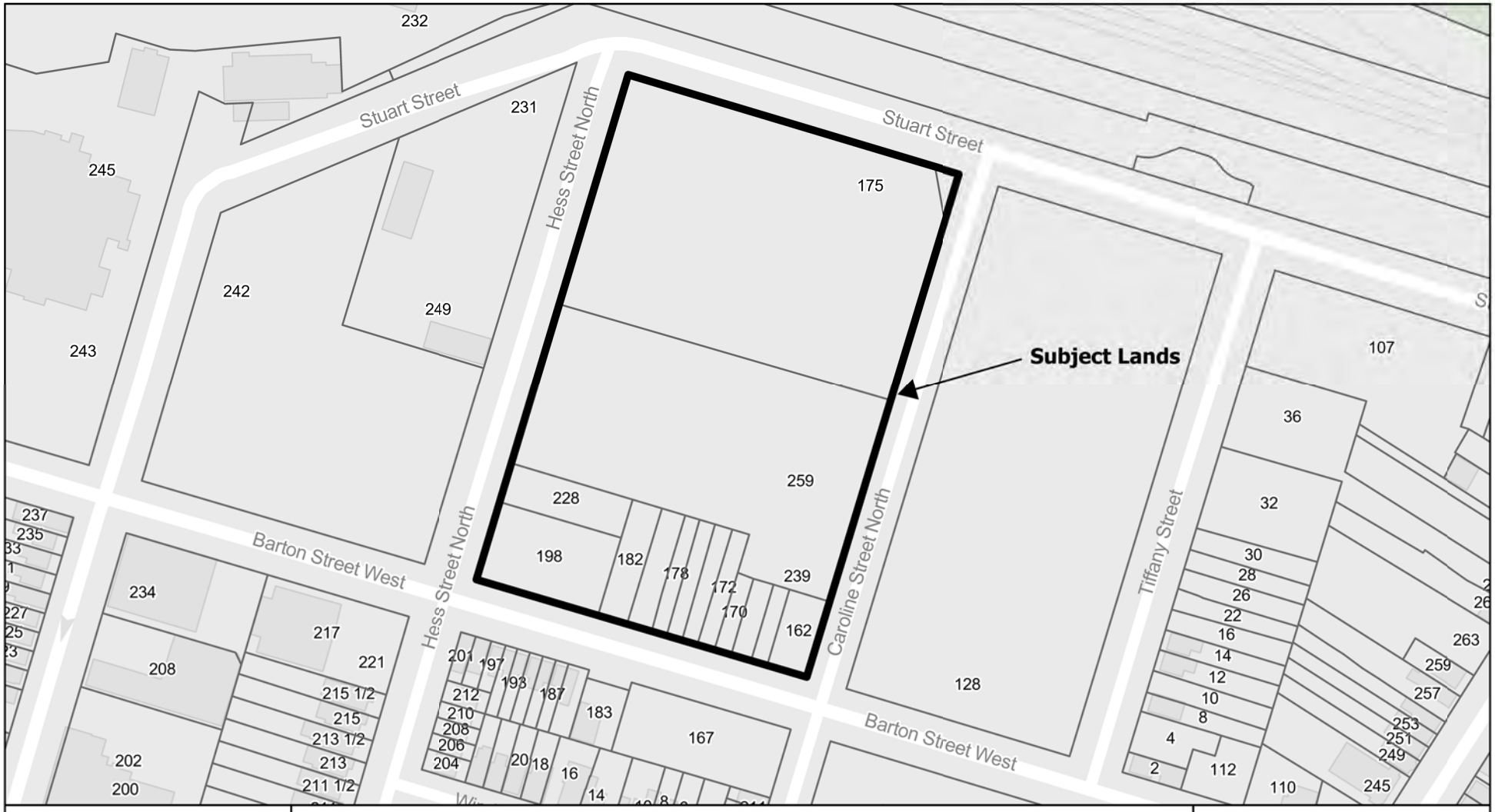
Kemmy Hunter, P.Eng., QP$_{ESA}$
Senior Engineer - Environment

Kevin Bailey, M.A.Sc., P.Eng.
Team Lead - Environmental - Southwest ON

APPENDICES

Appendix A	Drawing of Subject Lands Location and Boundaries
Appendix B	APEC Locations
Appendix C	Site Reconnaissance Photos
Appendix D	Limitations

Appendix A Drawing of Subject Lands Location and Boundaries



Area of subject lands: **6.0 Acres**	**Appendix "C" – Proposed Temporary Outdoor Shelter Site**	N Scale: 1:2,000
	Heritage and Urban Design - GIS Planning and Analysis	9/13/2024

Appendix B APEC Locations

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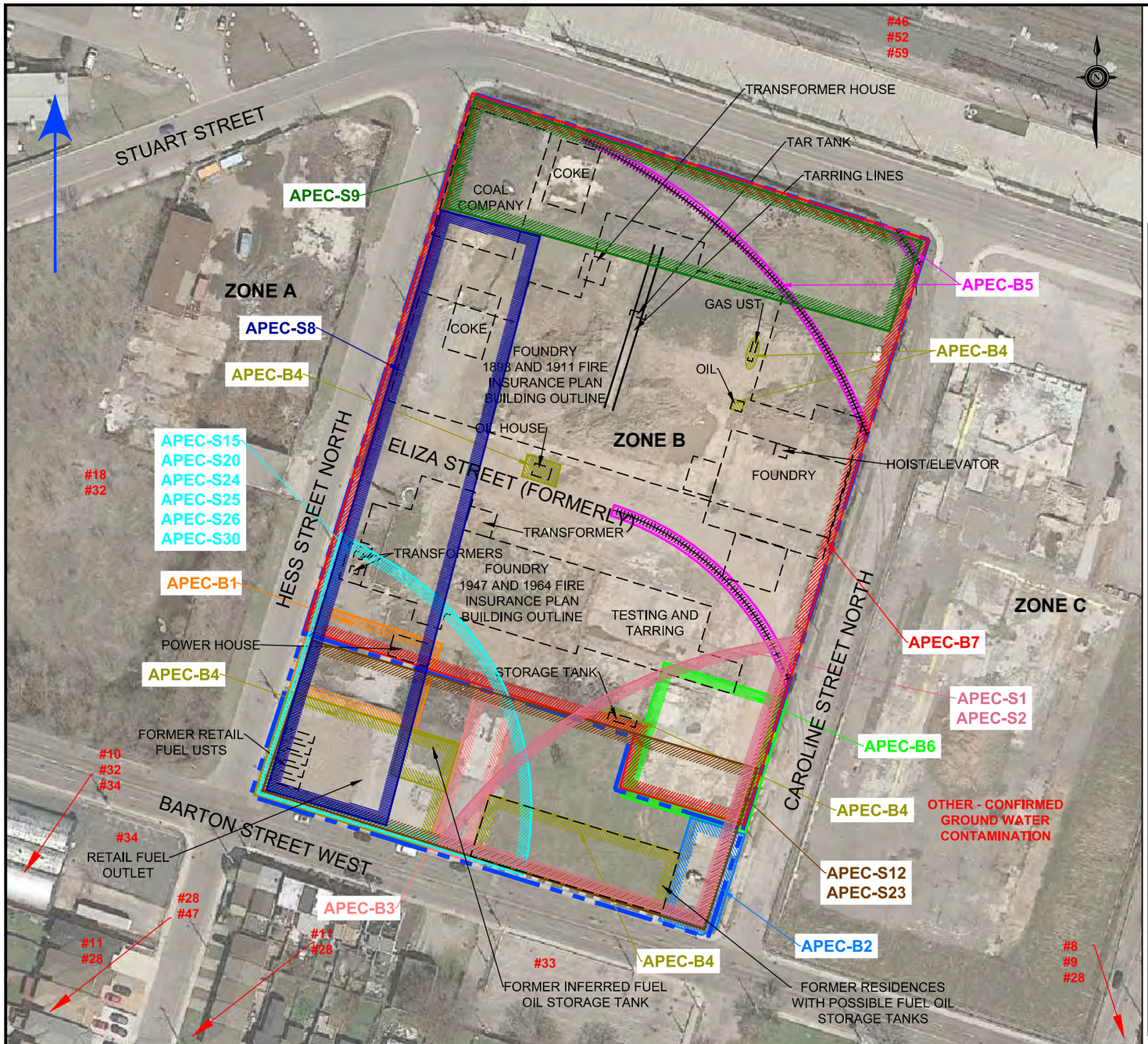

LEGEND:

- PHASE ONE PROPERTY BOUNDARY
- RAIL LINE
- FORMER BUILDING OUTLINE
- AREA OF POTENTIAL ENVIRONMENTAL CONCERN (APEC)
- #30 POTENTIALLY CONTAMINATING ACTIVITY (PCA)
- INFERRED GROUND WATER FLOW DIRECTION

#	POTENTIALLY CONTAMINATING ACTIVITY (PCA)	CONTAMINANT OF POTENTIAL CONCERN
APEC-B1	10 - COMMERCIAL AUTOBODY SHOPS	PHCs, VOCs, Metals, As, Sb, Se, PAHs
	11 - COMMERCIAL TRUCKING AND CONTAINER TERMINALS	
	39 - PAINTS MANUFACTURING, PROCESSING AND BULK STORAGE	
	OTHER – BULK COAL AND COKE STORAGE	
APEC-B2	10 - COMMERCIAL AUTOBODY SHOPS	PHCs, VOCs, Metals, As, Sb, Se
APEC-B3	10 - COMMERCIAL AUTOBODY SHOPS	PHCs, VOCs, Metals, As, Sb, Se
APEC-B4	28 - GASOLINE AND ASSOCIATED PRODUCTS STORAGE IN FIXED TANKS	PHCs, Metals (Lead), PAHs, BTEX
APEC-B5	46 - RAIL YARDS, TRACKS AND SPURS	PHCs, Metals, As, Sb, Se, Cr (VI), BTEX, CPs
APEC-B6	43 - PLASTICS (INCLUDING FIBREGLASS) MANUFACTURING AND PROCESSING	VOCs, PHCs, Metals, As, Sb, Se, Cr (VI), ABNs, CPs, PCBs, PAHs
	49 - SALVAGE YARD, INCLUDING AUTOMOBILE WRECKING	
APEC-B7	30 - IMPORTATION OF FILL MATERIAL OF UNKNOWN QUALITY	VOCs,PHCs, Metals, As, Sb, Se, Cr (VI), EC, SAR, PCBs, PAHs, ABNs, CPs, Dioxins/Furans, PCDDs/PCDFs
	32 - IRON AND STEEL MANUFACTURING AND PROCESSING	
	34 - METAL FABRICATION	
	49 - SALVAGE YARD, INCLUDING AUTOMOBILE WRECKING	
	55 - TRANSFORMER MANUFACTURING, PROCESSING AND USE	
	OTHER - TARRING (INCLUDING TAR TANK AND PIPING)	
	OTHER - BULK COAL AND COKE STORAGE	
	OTHER – HAZARDOUS DUST CONFIRMED BY TCLP	
APEC S1	8 - CHEMICAL MANUFACTURING, PROCESSING AND BULK STORAGE	Metals, As, Sb, Se, Cr (VI), VOCs, PHCs, ABNs, CPs, PAHs, pH
	9 - COAL GASIFICATION	
	28 - GASOLINE AND ASSOCIATED PRODUCTS STORAGE IN FIXED TANKS	
APEC S2	OTHER – CONFIRMED GROUND WATER CONTAMINATION	PHCs, PAHs, VOCs, CPs, ABNs
APEC S8	32 - IRON AND STEEL MANUFACTURING AND PROCESSING	VOCs, PHCs, Metals, As, Sb, Se, Cr (VI), PAHs, PCBs, Dioxins/Furans, PCDDs/PCDFs
	18 - ELECTRICITY GENERATION, TRANSFORMATION AND POWER STATIONS	
APEC S9	46 - RAIL YARDS, TRACKS AND SPURS	VOCs, PHCs, Metals, As, Sb, Se, Cr (VI), PCBs, PAHs, ABNs, CPs
	52 - STORAGE, MAINTENANCE, FUELLING AND REPAIR OF EQUIPMENT, VEHICLES, AND MATERIAL USED TO MAINTAIN TRANSPORTATION SYSTEM	
	59 - WOOD TREATING AND PRESERVATIVE FACILITY AND BULK STORAGE OF TREATED AND PRESERVED WOOD PRODUCTS	
APEC S12	33 - METAL TREATMENT, COATING, PLATING AND FINISHING	VOCs, Metals, As, Sb, Se, Cr (VI), PHCs, PAHs
APEC S15	34 - METAL FABRICATION	VOCs, Metals, As, Sb, Se, Cr (VI), PHCs, PAHs
APEC S20	11 - COMMERCIAL TRUCKING AND CONTAINER TERMINALS	PHCs, Metals, As, Sb, Se, BTEX
	28 - GASOLINE AND ASSOCIATED PRODUCTS STORAGE IN FIXED TANKS	
APEC S23	11 - COMMERCIAL TRUCKING AND CONTAINER TERMINALS	PHCs, Metals, As, Sb, Se, BTEX
	28 - GASOLINE AND ASSOCIATED PRODUCTS STORAGE IN FIXED TANKS	
APEC S24	34 - METAL FABRICATION	PHCs, Metals, As, Sb, Se, VOCs
APEC S25	10 - COMMERCIAL AUTOBODY SHOPS	PHCs, Metals, As, Sb, Se, Cr (VI), VOCs
APEC S26	32 - IRON AND STEEL MANUFACTURING AND PROCESSING	VOCs, PHCs, Metals, As, Sb, Se, Cr (VI), PAHs, Dioxins/Furans, PCDDs/PCDFs
APEC S30	28 - GASOLINE AND ASSOCIATED PRODUCTS STORAGE IN FIXED TANKS	VOCs, PHCs, Metals, As, Sb, Se
	47 - RUBBER MANUFACTURING AND PROCESSING	

REFERENCE:
BASE MAP COURTESY GOOGLE EARTH.

0 10 30 60m
SCALE 1:1,250

CLIENT:
CITY OF HAMILTON

Amec Foster Wheeler
Environment & Infrastructure
3450 Harvester Road, Suite 100
Burlington, Ontario L7N 3W5

amec foster wheeler

DWN BY: ZF
CHK'D BY: TS
DATUM: NAD 83
PROJECTION: UTM ZONE 17T
SCALE: AS SHOWN

PROJECT: PHASE I ENVIRONMENTAL SITE ASSESSMENT

TITLE: CONCEPTUAL SITE MODEL - AREAS OF POTENTIAL ENVIRONMENTAL CONCERN
162, 166, 168, 170, 172, 174, 176, 178, 180, 182 AND 198 BARTON STREET WEST, 239 CAROLINE STREET NORTH, AND 228 HESS STREET NORTH, HAMILTON, ONTARIO

DATE: JANUARY 2018
PROJECT NO: TB171019
REV. NO.: A
FIGURE No. 4B

R:\2017\Projects_Other\TB171019_City of Hamilton\TB171019.dwg – Figure 4_B – Feb. 08, 2018 3:59pm – zhanna.furman

Appendix C Site Reconnaissance Photos

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Reference Grid for Site Recon Photo Locations

Grid A-1 view from SE corner looking West

Grid A-1 view from NW corner looking SE

Grid A-2 view from West side looking SE

Grid A-3 view from NE corner looking SW

Grid A-4 view from SE corner looking NW

Grid A-5 view from NW corner looking SE

Grid B-1 view from South side looking North

Grid B-2 view from NE corner looking SW

Grid B-3 view from NE Corner looking South

Grid B-3 view from NE looking West

Grid B-4 view from SE looking NW

Grid B-5 view from East side looking West

Grid C-1 view from NE corner looking SW

Grid C-2 view from SW corner looking NE

Grid C-3 view from NE Corner looking SW

Grid C-4 view from SW corner looking NE

Grid C-5 view from SW corner looking NE

Grid C-5 view from West side looking East

Appendix D Limitations

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STATEMENT OF LIMITATIONS

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