Township of Malahide

9450 Springfield Road
Township of Malahide, Ontario

Phase II Environmental Site Assessment Report

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EXECUTIVE SUMMARY

LVM, a division of EnGlobe Corp. (LVM) was retained by the Township of Malahide (hereafter referred to as the "Township" or the "Client") to conduct a Phase II Environmental Site Assessment (ESA) of the former Aylmer Meat Packers facility located at 9450 Springfield Road in the Township of Malahide, Ontario (hereinafter referred to as the "Site" or the "subject property").

It is LVM’s understanding that the Phase II ESA was commissioned by the client for due diligence purposes, in relation to the potential vesting of the subject property by the Client due to municipal tax arrears and in response to the findings of a Phase I ESA conducted by LVM in October 2014. The Phase II ESA was completed in general accordance with guidelines/standards defined in CSA Standard Z769-00. It is LVM’s understanding that a Record of Site Condition (RSC) as defined in Regulation 153/04 of the Ontario Environmental Protection Act (as amended) (O. Reg. 153/04), is not required.

Background

A Phase I ESA, previously completed by LVM in October 2014, identified evidence of issues interpreted by LVM to represent a potential for environmental contamination to soil and groundwater located on the subject property, summarized as follows:

1. The previous operator of the facility, Aylmer Meat Packers, was convicted of six (6) charges in 2002 of “disposal of abattoir waste water on non-approved land” and “non-approved storage of waste”. Anecdotal information indicates that waste materials were improperly disposed of (i.e. sprayed) on the rear of the subject property and the adjacent property to the north of the subject property.

2. One 10,000-litre capacity aboveground fuel storage tank (AST) was observed outdoors to the south of the garage building. This AST has been partially painted historically, and the potential for leakage or spillage was difficult to ascertain at the time of the site reconnaissance, however no evidence of significant leakage was observed on the underlying ground surface. A partially disassembled fuel pump was observed immediately west of the AST.

3. A large liquid waste underground storage tank (UST) was observed outdoors to the south of the main building. A visual inspection of the interior of the tank, through its access hatch, indicates that it is full of watery liquid. LVM was unable to establish the physical condition of the UST, however based on observations made during the site reconnaissance, the tank does not have the appearance of a standard sewage/biowaste holding tank. It is possible that this tank is the “non-approved storage of waste” tank noted in the 2002 conviction. No evidence of tank discharge outlets or septic tile beds/fields was observed.

4. A pipe extending from the ground surface, interpreted to be a fill pipe for an underground storage tank, was observed outdoors to the north of the main building. A visual inspection of the interior of the UST, from the ground surface, indicated that it contained an unknown
watery liquid. No secondary piping was observed in the area of this UST, including no vent piping commonly associated with USTs.

5. A larger (4 inch) steel pipe extending from the ground surface was observed outdoors between the garage and the main building. This pipe is interpreted by LVM also to be indicative of a potential UST, or an underground vault. No secondary piping was observed in the area of this UST; however dense overgrowth limited a full inspection of the area.

6. A 200-litre capacity motor oil drum was observed in the garage building, which was in poor physical condition and was leaking its contents onto the underlying concrete floor surface.

7. Sumps located in the processing areas of the main building were noted to contain residual waste/sludge, the origin/nature of which is uncertain, and which may require off-site disposal.

The Phase I ESA recommended that, in order to establish whether the above-noted issues have impacted the environmental quality of soils and/or groundwater on the subject property, that a Phase II ESA be completed for the Site, consisting of the following components:

- Further review be conducted into the existing infrastructure on-site, specifically the waste management facilities, routing of underground piping, the possibility of an on-site sewage septic system, etc., in order to establish the likelihood that such systems have properly mitigated the environmental risk of operations previously conducted on-site.

- Investigation work, consisting of ferromagnetic studies and/or test-pits, in the vicinity of the USTs to confirm the location, size and potentially the purposes/nature of each tank, and any possible piping connected to such tanks.

- The sampling and analyses of soil and groundwater on the subject property at locations where contamination is suspected, and the evaluation of the results of such analyses against applicable provincial soil and groundwater quality criteria.

- Sampling of the liquid contents of the USTs, and their chemical and biological analyses, for the purposes of their off-site disposal.

- Sampling of the contents of the interior sump pits, and their chemical and biological analyses, for the purposes of their off-site disposal.

LVM also recommended that consideration be given to carrying out a survey of the building facility for asbestos-containing materials, in accordance with the requirements of Regulation 278/05 of the Occupational Health and Safety Act. This work was not included in the scope of the Phase II ESA.

Methodology

Based on instruction received from the Township, the Phase II ESA work program conducted by LVM consisted of the following work:

- A two-segment subsurface investigation program consisting of the excavation of test-pits around the existing USTs (8 test-pits) and along the fill berm along the south property boundary (2 test-pits), the advancement of twelve (12) boreholes at various locations on the subject property, and the installation of groundwater monitoring wells at three (3)
borehole locations. Where possible the test-pits were dug along all sides of the USTs to expose the walls and any piping. Boreholes were advanced and soil samples were collected at twelve (12) sampling locations on the subject property, as illustrated on Drawing 3. Boreholes extended to depths ranging from 3.0 to 7.6 metres below ground surface (mbgs).

- A soil and groundwater sample chemical testing program to assess the environmental quality of soil and groundwater on the subject property.
- Sampling of the liquid contents of the USTs and submission for chemical analyses.
- Further inspection of the interior dry-sumps and submission of samples for chemical analyses, where deemed necessary.

Soil samples were selected for analysis based on the proposed analytical program, field observations and subsurface conditions encountered. Selected soil and groundwater samples were analyzed for one or more of the following contaminants of concern, based on the findings of the previous Phase I ESA:

- Petroleum Hydrocarbon Compounds (PHC), F1 to F4 fractions inclusive including the fuel-related compounds Benzene, Toluene, Ethylbenzene and Xylenes (BTEX);
- The list of Volatile Organic Compounds (VOCs) referenced in O. Reg. 153/04;
- The list of Metals and Inorganic compounds referenced in O. Reg. 153/04;
- Nitrogen compounds including Nitrate, Nitrate and Ammonia.

For the purposes of this Phase II ESA, the above-noted parameters are referred to as the ‘contaminants of concern’ and/or the ‘targeted compounds’.

**Soil and Groundwater Quality Assessment Criteria**

In evaluating the soil and groundwater analytical results, use was made of site assessment standards/criteria interpreted by LVM to be applicable to the subject property and which are defined in O. Reg. 153/04. For the purposes of this Phase II ESA, ‘impaired soil’ and/or ‘impaired groundwater’ is defined as soil or groundwater containing any one or more of the parameters analyzed, at concentrations exceeding these criteria/standards.

**Findings**

**Test-Pits, Boreholes and Monitoring Wells**

Ten (10) test-pits (TP) and twelve (12) boreholes (BH) were advanced on the subject property; and three (3) monitoring wells (MW) were installed at three of the borehole locations. The test-pits were terminated at 2.3 metres below ground surface (mbgs) and the boreholes were terminated at depths ranging from 3.0 mbgs to 7.6 mbgs.

Subsurface conditions encountered were similar at most test-pit and borehole locations. Specifically, a thin surface layer of topsoil, concrete and/or fill materials overlying native fine to medium sand was common.
The topsoil and/or fill materials extended to depths ranging from 0.3 mbgs to 1.5 mbgs. At two borehole locations the fill materials contained traces of crushed brick.

At all ten (10) test-pit and twelve (12) borehole locations the fill and topsoil materials were underlain by fine sand which became progressively coarser below 3.0 mbgs.

During the advancement of borehole MW02, slight staining of the native sand was observed at the interface between the damp and saturated zones, at a depth of approximately 1.5 to 2.4 mbgs. However, no odours or elevated soil vapour readings were detected in the soil which had been sampled at these depths. No other evidence of environmental impacts to fill or native soil was observed during the advancement of the test-pits or boreholes, and the sampling of soils. Soil samples were screened for organic vapours, appearance, odour and location in the soil profile, and based on these factors; samples were submitted to the laboratory for analyses of specific chemical parameters.

The monitoring wells were developed, purged and sampled, and the samples were submitted to the laboratory for analyses of specific chemical parameters. Groundwater was measured in the monitoring wells at depths ranging from approximately 1.40 to 1.52 mbgs. Based on a Site survey and the measured water levels in the monitoring wells, the direction of local groundwater flow was determined to be northeasterly.

Underground Storage Tanks and Interior Dry-Sumps

Liquid was also sampled from three underground storage tanks which were previously identified on the subject property during the Phase I ESA, and was subsequently submitted to the lab for analyses. Material was obtained from the bottom of dry-sumps located inside the building(s) and examined. A sample of material from the dry- sump with the poorest appearance was submitted to the lab for analyses.

Evaluation of Chemical Test Results

Soils
Where sampled and analyzed on the subject property in conjunction with this Phase II ESA, the targeted compounds either were not detected in samples of soils/fill materials submitted for analysis, or were detected but at concentrations which do not exceed the O. Reg. 153/04 Soil Standards which are interpreted by LVM to be applicable to the subject property.

Groundwater
Where sampled and analyzed on the subject property in conjunction with this Phase II ESA, the targeted compounds either were not detected in groundwater sampled from the monitoring wells and submitted for analysis, or were detected but at concentrations which do not exceed the applicable O. Reg. 153/04 Groundwater Standards which are interpreted by LVM to be applicable to the subject property.

The O. Reg. 153/04 Groundwater Standards do not reference a criteria for Nitrogen Compounds in groundwater. Accordingly, given the use of groundwater in the vicinity of the subject property for drinking water (water supply wells), concentrations of Nitrogen Compounds detected in
groundwater were evaluated against the Ontario Drinking Water Quality Standards (ODWQS). The concentration of Nitrate Nitrogen in groundwater sampled from well location MW03 slightly exceeds the ODWQS criteria (i.e. 10.8 mg/L detected vs. criteria of 10.0 mg/L).

**Storage Tank Water**

Liquid from each underground storage tank identified during the Phase I ESA was sampled and analysed. The targeted compounds either were not detected in the samples of storage tank water submitted for analysis, or were detected but at concentrations which do not exceed the O. Reg. 153/04 Standards groundwater criteria and/or the Ontario Drinking Water Guidelines.

**Interior Sump**

The reported concentration of PHC (F3 fraction) detected in material obtained from an interior dry-sump pit exceeds the applicable O. Reg. 153/04 Standards soil criteria. Given the location of the dry-sump in the killing and processing room, there is a potential that the elevated PHC F3 fraction may be the result of biogenic hydrocarbon sources rather than fuel or oil. Other targeted compounds either were not detected in the samples of material obtained from an interior dry-sump pit, or were detected but at concentrations which do not exceed the applicable O. Reg. 153/04 Standards soil criteria.

**Conclusions and Recommendations**

The soil/material at the bottom of an interior dry-sump is impacted with PHC (F3 fraction). Given the sump is constructed of concrete walls and base, this petroleum-impacted material is not anticipated to impact the soil or groundwater on the Site, however this material should be removed, transported and disposed of off-site when possible.

The concentration of Nitrate Nitrogen in groundwater sampled from well location MW03 exceeds the ODWQS. LVM recommends the re-sampling and analysis of groundwater from well location MW03 in order to confirm this finding. Consideration should also be given to the sampling of water produced from the water supply well located on-site.

Except as noted above, based on the findings of this Phase II ESA, LVM concludes that, where sampled and analyzed, soils and groundwater on the subject property have not been impaired with the potential contaminants of concern identified by the Phase I ESA, when evaluated against the soil and groundwater criteria interpreted by LVM to be applicable to the subject property. As well, liquid sampled from the inground storage tanks on-site was determined to meet O. Reg. 153/04 Table 1 (background) groundwater criteria and the Ontario Drinking Water Standards and accordingly can be managed as clean water.

Accordingly, based on the Phase II ESA work completed, it appears that the issues identified by the Phase I ESA to represent a potential for environmental contamination have not significantly impaired the environmental quality of soil and/or groundwater on the subject property.

LVM recommends that the groundwater monitoring wells installed on the subject property be properly decommissioned within 180 days of their installation, in accordance with the requirements of Regulation 903 of the Ontario Water Resources Act.