

REMEDIAL INVESTIGATION WORK PLAN ADDENDUM

Harrison Place
Northwest Corner - Intersection of South & Washburn Street
Lockport, New York

Tax Map ID No.: P/O 109.14-4-20.1

Property County: Niagara

Site No.: C932177

Prepared For:

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FIGURES

Figure 1- RI Locations – Addendum No. 1 RIWP

1.0 – INTRODUCTION

The NYSDEC upon its review of the RI portion of the draft RI/AAR concluded that additional investigation and site characterization were required to define the nature and extent of contamination in the soil and groundwater at the site. Accordingly, the following site locations must be addressed before a remedial alternative analysis and remedial action work plan can be generated:

- The most significant soil and/or saturated solids impacts were identified at depths greater than 12 feet below the ground surface. The existing soil data at these depths is limited and does not fully characterize the horizontal and vertical extent of source area impacts;
- The horizontal extent of the contamination within the overburden groundwater needs to be further defined; and
- The horizontal and vertical extent of contamination within bedrock groundwater needs to be defined.

After comments and responses from September 2021 to January 2022, it was mutually decided that an RIWP addendum would be required to satisfy NYSDEC's comments. This addendum describes the supplemental field investigation intended to further characterize the nature and extent of contamination at this site and eliminate the apparent data gaps.

All work performed under this addendum will be in compliance with the following appendices from the initial approved RIWP of March 2021:

- Appendix A Health and Safety Plan and Community Air Monitoring Program
- Appendix B Quality Assurance/Quality Control Plan
- Appendix C Field Sampling Plan
- Appendix D Citizen Participation Plan

2.0 – ADDITIONAL SOIL BORINGS

To further characterize the horizontal and vertical extent of source area impacts in overburden and saturated soils, borings will be installed proximate to bedrock Monitoring Well BMW2 (see **Figure 1**). Three borings will be initially installed at approximately 10 feet from BMW2 easterly toward BMW1, southerly toward Boring BH-5 and westerly toward BMW3. Borings will be advanced to bedrock (approximately 25 feet below ground surface (bgs)) with a Geoprobe® direct push drill rig. Continuous soil removal and screening using 4-foot sleeves and PID/visual/olfactory methodology will be conducted for each boring. If contaminated soils are observed, a soil sample will be collected for laboratory analysis (estimated one to two samples per boring) and an additional “step-back boring” (10+/- feet) will be installed in the three directions. Additional “step-back” borings will cease either when contamination is not encountered or when it is determined that the location is adequate to install an overburden groundwater monitoring well for further groundwater characterization (e.g., continuous contamination is anticipated in the west direction). All soil samples will be analyzed for target compound list (TCL) volatile organic compounds (VOCs) by Environmental Protection Agency

(EPA) Method 8260C (See **Figure 1** SOB-1, SOB -2 and SOB-5). **Section 3.1** below discusses the installation of overburden monitoring wells.

3.0 – ADDITIONAL GROUNDWATER MONITORING WELLS

Eight new groundwater wells will be installed; three bedrock and five overburden. The proposed location of the new monitoring wells along with the location of the previously installed monitoring wells are provided in **Figure 1**.

Depending upon the contamination observed during well installation, soil samples may be collected based on PID/visual/olfactory screening to confirm clean soils or further characterized impacted soils. All soil samples will be analyzed for TCL VOCs by EPA Method 8260C.

3.1 - OVERBURDEN MONITORING WELLS

Three overburden monitoring wells will be installed within the building. The specific location of monitoring wells SOB-1, SOB-2 and SOB-5 will be determined as described in Section 2.0 and approximately as indicated on **Figure 1**.

The interior overburden monitoring wells will be installed using a Geoprobe® direct push drill rig and constructed of 2-inch nominal inside diameter (ID) schedule 40 polyvinyl chloride (PVC) pipe with threaded connections. The lower sections of the wells will be constructed of 10-foot PVC well screen with 0.010-inch slots. A continuous silica sand pack will be used to backfill around the well screens to about 1 to 2 feet above the screened sections. Hydrated bentonite chips will be used to backfill above the sand pack to approximately 1-foot bgs to create a seal.

Two additional overburden monitoring wells will be installed outside of the building (see **Figure 1**): monitoring well SOB-3 (outside north building wall) and monitoring well SOB-4 (outside the south building wall). Each well will be installed using a conventional truck mounted drill rig and consist of a 2-inch ID, schedule 40 PVC casing equipped with a ten-foot screen or less depending on well depth and solid PVC riser pipe extending to the surface. Screens will span the saturated and vadose zone interface and extend to the bottom of the boring. Filter pack will be placed around the screen to a minimum of 2 feet above the screen and a bentonite seal placed above the sand pack to approximately 1-foot bgs. All overburden monitoring wells will be installed to approximately 10 to 15 feet bgs or top of bedrock.

All monitoring wells will have flush mount protective casings.

3.2 - BEDROCK MONITORING WELLS

Three bedrock monitoring wells will be installed (see **Figure 1**): monitoring well SBR-1 and SBR-2 will be a nested pair exterior to the north building wall and monitoring well SBR-3 installed adjacent existing interior bedrock well BMW3 as a nested pair. The SBR-1 well will be installed to sample groundwater in the upper bedrock formation (Lockport Dolostone). It will be installed in a similar manor to existing RI monitoring well BMW3 using a truck mounted drill rig with 6.25-inch hollow stem augers and rock coring equipment. The augers will be advanced to approximately 6-inches into the bedrock which is at approximately 27 feet bgs. A 4-inch steel casing will be placed within the augers and grouted in place. A 2-inch core barrel will then be used to advance the well into the bedrock. Monitoring well SBR-1 will be advanced

approximately 15 feet into bedrock depending on observed conditions.

Monitoring well SBR-2 and SBR-3 will be installed to sample groundwater in the lower bedrock Rochester shale formation. Rock coring equipment will be used to advance each well through the Lockport dolomite formation to approximately 6-inches into the Rochester shale bedrock which is at approximately 40+ feet bgs. A 4+/- inch steel casing will then be grouted in place from the surface to 6-inches into the Rochester shale formation. A 2-inch core barrel will then be used to advance each well into the Rochester shale bedrock formation to approximately 15 feet depending on observed conditions.

3.3 – DENSE NONAQUEOUS PHASE LIQUID (DNAPL) ASSESSMENT

DNAPL will be assessed using the “1% estimate” that was first suggested by the US Environmental Protection Agency (EPA) in 1992 ⁽¹⁾, that was amended by the EPA in 1993 ⁽²⁾. The “1% estimate” states that chlorinated solvents dissolved in the aqueous phase can be used to indicate the presence of DNAPL if the aqueous concentration is 1% of the solubility for the specific compound. The most widely reported solubility limit for TCE in water is 1,280 mg/L, which means that 12.8 mg/L (1%) or above may indicate DNAPL. However, the EPA and other federal agencies do indicate it is an estimate, and not a definitive indicator of DNAPL. This assessment will be used to estimate locations at which DNAPL is possible, along with field visual inspection of groundwater as it is collected.

All chemical oxidant calculations completed prior to this sampling event for the groundwater treatment program discussed in remedial Alternative 1 of the RI/AAR have accounted for both DNAPL and adsorbed TCE mass, so these data will merely be used to refine the site conceptual model.

(1) United States Environmental Protection Agency (US EPA), Estimating Potential for Occurrence of DNAPL at Superfund Sites. OSWER, Ed. USEPA: 1992.

(2) United States Environmental Protection Agency (US EPA), Evaluation of the Likelihood of DNAPL Presence at NPL Sites, National Results. OSWER, Ed. USEPA: 1993.

4.0 – WELL DEVELOPMENT AND GROUNDWATER SAMPLING

Groundwater samples will be collected from the eight new groundwater wells and the 10 existing groundwater wells to establish a comprehensive set of data within the same period. The 10 existing wells include the four bedrock NYSDEC wells that were installed in 2010 (BR-1 through BR-4). Refer to **Figure 1** for all well locations.

The new wells installed under this addendum will be developed at least 24 hours following installation and will be sampled at least 24 hours following development. Well development and sampling will be in accordance with **Appendix C** - Field Sampling Plan of the initial RIWP. Groundwater depth from the top of the well casings will be measured with an electronic water level indicator. The wells will be developed using a surge block and submersible pump. During development, pH, temperature, specific conductivity, oxidation-reduction potential (ORP), dissolved oxygen (DO), and turbidity will be recorded.

All sample analyses will be in accordance with ASP, Cat B requirements and quality assurance/quality control (QA/QC) requirements of **Appendix B** of the initial RIWP. DUSRs

will be prepared for all samples. All groundwater samples will be analyzed for TCL VOCs by EPA Method 8260C.

5.0 – REPORTING

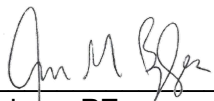
Contaminant concentrations in soil and saturated solids samples will be included in a table and compared to NYSDEC SCOs (Unrestricted, Residential and Restricted Residential). Contaminant concentrations in groundwater samples will also be tabularized and compared to NYSDEC TOGS. A revised **Figure 1** will be generated to indicate final locations of soil borings and monitoring wells along with analytical exceedances.

A revised draft RI/AAR will be prepared to include the data generated from this supplemental field investigation including analytical tables and revised figures along with:

- Purge logs;
- Development logs;
- Boring logs (that include bedrock details such as fractures present, rock-quality designation (RQD) values, and water lost during install); and
- Well construction logs.

6.0 – WORK PLAN CERTIFICATION

Jason M. Brydges certifies that he is currently a New York State registered professional engineer as defined in 6 NYCRR Part 375 and that this Remedial Investigation Work Plan Addendum 1 was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10).



Jason M. Brydges, PE

