SITE INVESTIGATION WORKPLAN

Phase 1 Construction Area of the River Point District; Manitowoc, Wisconsin

200 North 10th Street (Site 1)
1101 Buffalo Street (Site 2)

BRRTS ID:

02-36-585491	(Open ERP)
02-36-176478	(Closed ERP)
02-36-000408	(Closed ERP)
07-36-583000	(LGU Exemption/ General Property)

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1.0 INTRODUCTION

This Site Investigation Workplan has been prepared on behalf of the City of Manitowoc (hereinafter referred to as the City) and the Community Development Authority of the City of Manitowoc (CDA; current owner) by Stantec Consulting Services Inc. (Stantec) to satisfy ch. NR 700 Wisconsin Administrative Code (WAC) requirements and outline site investigation activities to be performed at the former railroad/industrial property located at 200 North 10th Street ("Site 1") and 1101 Buffalo Street ("Site 2") in the City of Manitowoc, Wisconsin (herein referred to as the Property). Specifically, the purpose of this Site Investigation Workplan is to define the nature, degree, extent, and source(s) of contamination on the Property and to determine the need for (and provide information to support) additional investigation or remedial action where warranted.

2.0 PROPERTY INFORMATION

2.1 PROPERTY LOCATION

The Property is located in the northeast quarter of the northeast quarter of Section 30, Township 19 North, Range 24 East, in the City of Manitowoc, Manitowoc County, Wisconsin. The Property consists of all or portions of nine contiguous parcels of land across Site 1 and Site 2 totaling approximately 7.7 acres and forming the southeast and east-central portions of a larger 21-acre former railroad/industrial peninsula referred to locally as the "River Point District". The location of the 7.7-acre Property and the larger 21-acre River Point District relative to nearby topography is illustrated on Figure 1. The nine parcels comprising the Property and current utility features are shown on the orthophotograph provided as Figure 2 and include Parcel IDs 173000, 173003, 173080, 173090, 173100, 173130, 173140, 173160, and 173170.

A small portion of 1200 Buffalo Street ("Site 5") is also included in the Property area and consists of a single parcel that is shared with Site 1 (Parcel ID 173000). Given the common historical/current use and ownership, this portion of Site 5 will be investigated as a part of Site 1.

The approximate geographic coordinates of the center of the Property in the Wisconsin Transverse Mercator 1991 coordinate system are (X: 707175, Y: 404904); this was determined using the Wisconsin Department of Natural Resources (WDNR) Remediation and Redevelopment Sites Map at a scale of 1 to 495 (WDNR, 2020a).

The Property is located near the City's downtown commercial district and offers a unique opportunity for non-industrial, multi-use redevelopment as a destination area to catalyze meaningful economic growth in the City. The Property constitutes "Phase 1" of three phases of development planned for the River Point District, as illustrated on the River Point Development site plan included as Figure 3. Planned Phase 1 Property development features are detailed on Figure 4 and includes municipal infrastructure, landscaping, a brewery with parking and a patio, an apartment complex, and a restaurant complex with a patio, kayak rental service and space for additional commercial businesses.

The start of Phase 1 construction activities at the Property is scheduled for Spring 2021.

2.2 CONTACT INFORMATION

Contact information for the responsible party and environmental consulting firm are provided below.

RESPONSIBLE PARTY:
Community Development Authority of the City of Manitowoc (Property Owner)
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2.3 PROPERTY HISTORY

General Property Use
Site 1 consists of 6.2 acres of largely vacant former railroad/industrial land. Site 2 consists of 1.5 acres of land that is largely asphalt paved and used for storage/parking by the north-adjoining property owner(s). The Property is zoned Heavy Industrial I-2. Surrounding properties are a mix of vacant land, rights-of-way, commercial and industrial land uses. Parcel numbers and utility features associated with the Property are illustrated on the orthophotograph provided as Figure 2.

Historic Property Use
As described in the Stantec (2019a) Phase I Environmental Site Assessment (ESA), the Property appears undeveloped in 1835. The historic uses and occupancies of Sites 1 and 2 are depicted on Figure 5 and are summarized below.

Site 1 – Northern Portion (Parcel ID 173100)
The Stantec (2019a) Phase I ESA notes the northern portion of Site 1 was developed for bulk petroleum storage/distribution by the "Clarke Oil Company" (presumably a tenant) between 1912 and 1919. Bulk petroleum storage operations expanded between 1919 and 1927, at which point the operation consisted of eight oil tanks and a pump house. Bulk petroleum storage ceased between 1927 and 1946. The owner, Soo Line Minneapolis St. Paul and Sault St. Marie Railroad Company, leased the parcel to "JF Kerscher Co." on May 22, 1950, who constructed a large warehouse at the Property and utilized the Property for a variety of storage/commercial uses. The warehouse was demolished in the later portion of the 20th Century, and the slab was removed in August 2020 as part of planned redevelopment for the Property (Stantec 2020b).

Site 1 – Southern Portion (Parcel IDs 173000, 173003, 173160, 173170)
The southern portion of Site 1 was developed for railroad use by 1895 and remained in railroad use through most of the 20th Century (Stantec 2019a). Site 1 features included multiple spur lines/ferry loading area/sheds/maintenance areas (ex. tool house and wash house identified as "22" and "23", respectively on Figure 5) and depots (ex. freight house and transportation depot identified as "3" and "2", respectively on Figure 5). A building permit was issued to the Soo Line Railroad on 11/24/1980 to raze the former railroad depot, which largely terminated railroad use of the Property, though at least one set of vacant steel rails remained through at least 2004.

Site 2 – Eastern Portion (Parcel IDs 173130, 173080, 173090)
Per Stantec (2019a), a junk yard/metal scrap yard was constructed on and occupied the majority of Site 2 by 1900 and appears to have remained in operation through the later portion of the 20th Century. Identifiable features at the facility have included numerous scrap piles, buildings, and railroad spurs (Figure 5). Orthophotography indicates the junk yard was asphalt paved between 2000 and 2006.

Site 2 – Southwestern Portion (Parcel IDs 173140, 173170)
The southwestern portion of Site 2 was developed for railroad use by 1895, including a railroad roundhouse and multiple spurs/tracks (Stantec, 2019a). Rail operations remained at Site 2 until the early 2000s when the remaining steel rails were removed.

Property Ownership
Historic records indicate the Property was transferred from the Manitowoc Terminal Company to the Manitowoc and Western Railroad Company on July 22, 1895, which is consistent with railroad development in the late 19th Century. Assessor records suggest the Property was later transferred to the Soo Line Railroad Company and ultimately transferred to Wisconsin Central, Ltd. (WCL) sometime during the latter half of the 20th Century. Railroad use of the Property ceased in the 1980s and the Property was decommissioned in the 2000s. The CDA acquired the Property on April 12, 2019 for the purpose of blight elimination and subsequently received a Local Government Unit (LGU) Environmental Liability Exemption from WDNR on March 18, 2019 with a Bureau for Remediation and Redevelopment Site (BRRTS) activity number of 07-36-583000.

Since taking ownership, the CDA has maintained compliance with the required continuing obligations and no records have been identified indicating the CDA is considered potentially liable or known to be affiliated with any other person that is potentially liable for contamination at the Property.

3.0 SUMMARY OF PREVIOUS ENVIRONMENTAL INVESTIGATIONS

SEC Donohue Inc (1992) Phase II ESA, Site 1
A Phase II ESA completed by SEC Donohue Inc in 1992 (SEC Donohue Inc, 1992) identified heavy metal and petroleum impacts using the total recoverable petroleum hydrocarbons method (Environmental Protection Agency Method 9073) on Site 1. Based on evaluation criteria used at the time, WDNR closed the associated Environmental Repair Program (ERP) case, BRRTS activity number 02-36-00408, on April 6, 1993.

Stantec (2019a) Phase I ESA, River Point District
The Stantec (2019a) Phase I ESA performed for the greater River Point District identified the following recognized environmental conditions (RECs) associated with Site 1 and/or Site 2:

- REC 1: Prior Railroad Use
- REC 2: Prior Industrial Use
- REC 3: Residual Impacts to Soil and Groundwater
- REC 4: Apparent Anthropogenic Fill
- REC 5: Storage/Dumping by Adjacent Property Owners
- REC 6: Residual Impacts to Soil and Groundwater from Nearby Properties

Stantec (2020a) Phase II ESA, River Point District
As summarized in the Stantec (2020a) Phase II ESA, between November 14 and November 20, 2018 and under supervision of Stantec, Probe Technologies, Inc (Probe Tech) advanced 46 soil borings at the River Point District property, 25 of which were installed on Sites 1 and 2. On December 10, 2018, a supplemental drilling and sampling event was completed at the River Point District property; Probe Tech advanced 16 soil borings, seven of which were completed on Sites 1 and 2, to confirm the presence and/or depth of fill at the Property. These investigations included sampling soils on the Property for volatile organic compounds (VOCs), polycyclic aromatic hydrocarbons (PAHs), Resource Conservation and Recovery Act (RCRA) metals, polychlorinated biphenyls (PCBs), and/or herbicides. Temporary and permanent groundwater monitoring wells were installed during the Phase II ESA and sampled for VOCs, PAHs, dissolved RCRA metals and/or per- and poly-fluorinated alkyl substances (PFAS). Sample locations and identified impacts are illustrated on Figure 6 and Figure 7. As part of this SIWP, sample IDs from Stantec (2020a) have been updated and revised tables are provided in Appendix B.

Soil. Herbicides were not detected in soil and are no longer considered a constituent of concern (COC) at the Property. PCBs were not detected in soils sampled on Site 1 but were detected in fill on Site 2; this was anticipated due to historical junk yard/metal scrap yard operations on Site 2. Concentrations of PCBs were all less than applicable direct contact standards, with the exception of fill sampled from soil borings SB-79 and SB-80 on Site 2, which exceeded non-industrial direct contact standards. Similar to previous investigations, select VOCs, PAHs, and heavy metals were detected in soil at concentrations greater than applicable NR 720 RCLs and/or BTVs across the Property. The Stantec (2020a) Phase II ESA identified multiple fill units, including a sitewide heterogeneous granular black anthropogenic fill unit of varying quality. Ubiquitous PAH and metals soil impacts were largely attributable to the granular anthropogenic fill across the Property, which is present in thicknesses of up to eight feet in some portions of the River Point District property. Previously documented soil impacts associated with prior bulk petroleum storage on the northeastern portion of Site 1 was also confirmed.

Groundwater. VOCs were detected at concentrations less than their respective ch. NR 140 WAC Preventive Action Limits (PALs) and Enforcement Standards (ESs) on Sites 1 and 2. Dissolved heavy metals were detected in groundwater at concentrations greater than applicable PALs on Sites 1 and 2. Select PAHs were detected at concentrations greater than applicable PALs and/or ESs on Site 1; detected PAHs on Site 2 were all at concentrations less than the PAL. PFAS was detected in groundwater on Sites 1 and 2 at concentrations greater than the proposed individual and combined Perfluoro-n-Octanoic Acid (PFOA) and Perfluorooctane Sulfonate (PFOS) PAL and/or ES; this was also the case for the greater River Point District property.

AECOM (2020) Limited Site Investigation, Site 1
To confirm the presence of COCs in groundwater detected in temporary wells installed and sampled as part of the Stantec (2020a) Phase II ESA, AECOM installed seven ch. NR 141 WAC (NR 141)-compliant groundwater monitoring wells at Site 1. Permanent well locations installed as a part of the AECOM (2020) investigation replaced the Stantec (2020a) temporary well locations in those areas, which were abandoned by AECOM in accordance with NR 141. The permanent wells were sampled for VOCs, PAHs and/or dissolved RCRA metals.

No VOCs were detected at concentrations greater than the PAL or ES in any permanent well sampled as part of the March 2020 event on Site 1. Dissolved heavy metals were present in several wells at concentrations greater than the PAL. PAHs were the only COC present at concentrations greater than the ES measured from the permanent wells installed on Site 1 in March 2020 and were limited to MW-65 installed through the eastern end of the former warehouse slab.

These results generally coincide with the previous Stantec (2020a) Phase II ESA investigation, with concentrations of COCs measured in the AECOM (2020) permanent wells similar to, or less than, those measured in the Stantec (2020a) temporary wells. This is consistent with expectations, as the proper development and purging of NR 141-compliant groundwater monitoring wells mitigates potential bias of elevated PAH and heavy metal constituents that may be present in colloidal materials, as is often seen in temporary well sampling.

Stantec (2020b) Construction Documentation Report, Site 1
Between August 13th and 14th, 2020 and under supervision of Stantec, Veit & Company, Inc. (Veit) completed nine test trenches/pits (TP-1 through TP-9) around the perimeter of building infrastructure in the northeast corner of Site 1 to assess the depth of the footings and footing walls, the presence or absence of remaining petroleum infrastructure (i.e., piping), and determine if residual petroleum contamination was identifiable surrounding the slab features. Soil from three test pits performed along the western end of the slab with suspected contamination (TP-5, TP-6, and TP-7) was screened with a photoionization detector (PID) and sampled for VOCs, PAHs and metals. The analytical results of this sampling are provided in the Stantec (2020c) Phase II ESA for Site 1.

Between August 17th and 19th, 2020, Veit demolished the majority of the former warehouse slab in the northeast corner of Site 1. As part of demolition, Stantec abandoned monitoring well MW-65 per NR 141, which was installed through the eastern portion of the slab. On August 31st, 2020, City of Manitowoc contractor Vinton Construction Co (Vinton) crushed approximately 618 cubic yards of concrete from the former slabs/structures for future reuse; the stockpile of crushed concrete is currently staged on the northwestern portion of Site 1.

Stantec (2020c) Phase II ESA, Site 1
As summarized in the Stantec (2020c) Phase II ESA, on August 24, 2020 and under supervision of Stantec, Horizon Construction and Exploration LLC (Horizon) advanced nine soil borings to a maximum depth of 15 feet in the area of the former warehouse slab in the northeast portion of Site 1. Temporary wells were installed after the completion of each soil boring. Both soil and groundwater were sampled for VOCs, PAHs and/or heavy metals. Sample locations and identified impacts are illustrated on Figure 6 and Figure 7. As part of this SIWP, sample IDs from Stantec (2020a) have been updated and revised tables are provided in Appendix B.

Soil. Soils encountered beneath the former structural impediments in the northeast corner of Site 1 in August 2020 were generally brown fill sand beneath the former slabs (elevated approximately four feet above the natural ground surface), black granular fill present near the natural ground surface, and native sands and clays at depth. Petroleum impacts to soil were identified on western end of the former warehouse slab and were attributed to former bulk storage. Petroleum VOC constituents were present at concentrations greater than the groundwater pathway RCLs in soil borings SB-55 and SB-61, and in Stantec (2020b) test pits TP-5, TP-6, and TP-7. PAHs and heavy metals were detected in anthropogenic fill materials at concentrations greater than health based RCLs and/or BTVs (metals only). As discussed in the Stantec (2020a) Phase II ESA, PAHs and heavy metals are attributed to the ubiquitous fill unit present at varying depths across the River Point District property.

Groundwater. Petroleum impacts attributed to bulk storage were limited to the western end of the former warehouse slab. Petroleum VOCs were present at concentrations greater than the PAL in temporary wells TW-55, TW-61, and TW-62; no VOC constituents in groundwater were present at concentrations greater than their respective ESs. Metals were present in groundwater on Site 1, but at concentrations less than their respective ESs. PAHs were present at concentrations less than the ES in all temporary wells except for TW-55 on the west end of the former warehouse slab on Site 1.

4.0 SUMMARY OF BRRTS CASES AT THE PROPERTY

02-36-000408 W C L - 200 N 10TH ST (Closed ERP)
Petroleum and heavy metal contamination were identified at 200 North 10th Street (Site 1) as part of the SEC Donohue Inc (1992) Phase II ESA, listing "Wisconsin Central Ltd" as the responsible party. Soil samples were analyzed using the total recoverable petroleum hydrocarbons method (Environmental Protection Agency Method 9073) on Site 1. Groundwater was reportedly not encountered as part of the investigation. Based on evaluation criteria used at the time, WDNR closed the case in 1993 with no further remedial action required.

02-36-176478 W C L - TURNTABLE FORMER ROUNDHOUSE (Closed ERP)
This ERP case was opened in 1997 at the southwest corner of 11th Street and Buffalo Street (Sites 1 and 2) when WDNR was notified of contamination in association with operations of a former railroad turntable and roundhouse, listing "Soo Line Railroad" and "Canadian National Railway" as the responsible parties. Contamination from VOCs (chlorinated and petroleum) and PAHs to soil and/or groundwater were identified and delineated in subsequent investigations, and the case was closed in 2007 with continuing obligations to maintain a cap over the former roundhouse area. The area bound by this BRRTS case and associated with "cap maintenance" is depicted on Figures 4 through 10 and includes a portion (northwest) of Site 1 and Site 2 (southwest). WDNR is aware that the proposed redevelopment at this Property includes a portion of the "cap maintenance" area for this BRRTS case and has agreed that a Post-Closure Modification will suffice to address post-development cap conditions (WDNR, 2020b).

02-36-585491 RIVERPOINT DISTRICT (Open ERP)
This ERP case was opened in 2020 after the completed Stantec (2020a) Phase II ESA documenting soil and groundwater sampling results from 2018 through 2019 was received by WDNR documenting contamination from several COCs at the larger River Point District property, including VOCs, PAHs, heavy metals and PFAS. The scope of this Site Investigation Workplan is intended to work towards obtaining closure for this open ERP case for the Property (Phase 1 of the River Point District development). Future phases of work for the River Point District (i.e., Phase 2 and Phase 3; refer to Figure 3) will be investigated separately.

07-36-583000 RAILROAD PROPERTY (FORMER) (LGU/General Property)
This General Property listing documents that as of March 18, 2019 the CDA was granted state LGU environmental liability exemption for the River Point District after acquiring the River Point District for the purpose of blight elimination.

5.0 PHYSIOGRAPHICAL AND GEOLOGICAL SETTING

5.1 PROPERTY TOPOGRAPHY AND SURFACE WATER FLOW

The surface elevation at the Property ranges from approximately 594 to 588 feet above mean sea level (ft amsl), and ground surface decreases radially in an overall southwestern direction towards the Manitowoc River. Based on the topography, stormwater/surface water at the Property infiltrates the ground surface or is conveyed through a storm sewer to the Manitowoc River. The River Point District is bound to the north, west, and south by the Manitowoc River, which flows in an overall easterly direction towards Lake Michigan.

5.2 REGIONAL AND PROPERTY GEOLOGY

The Property is located in the area covered by the Laurentide Ice Sheet during the Wisconsin Glaciation (WGNHS, 2011) and is underlain by Silurian age bedrock of the Niagaran series. As described previously by others, surface soils consist of anthropogenic fill/reworked native soils, underlain by native sands and clays at depth.

5.3 REGIONAL AND PROPERTY HYDROGEOLOGY

Shallow groundwater is present in upper fill materials. The groundwater depth generally mirrors the ground surface elevation, with the elevation in groundwater decreasing from approximately 585.5 ft amsl on the east/northeast portion of the River Point District downward to approximately 582 ft amsl at the Manitowoc River. However, the elevation of the Manitowoc River likely influences the hydraulic head and potentiometric gradient of shallow groundwater. City Records do not suggest the current or historic presence of groundwater supply wells on or near the Property. Pathways for potential contaminant migration include via shallow groundwater in unconsolidated fill present across the Property, or by manmade disturbances (ex. utility lines).

6.0 SITE INVESTIGATION SCOPING

As required by Section NR 716.07 WAC, the following items were evaluated to ensure that the scope and detail of the field investigation were appropriate to the complexity of the Property:

1. ***History of the site or facility, including industrial, commercial, or other land uses that may have been associated with one or more hazardous substance discharges at the site or facility.***

   Refer to Section 2.3.

2. ***Knowledge of the type of contamination and the amount of the contamination.***

   Refer to Section 3.0.

3. ***History of previous hazardous substance discharges or environmental pollution.***

   Refer to Section 4.0.

4. ***Environmental media affected or potentially affected by the contamination.***

   Soil and groundwater are impacted at the Property; vapor has potential to be impacted at the Property.

5. ***Location of the Site or facility, and its proximity to other sources of contamination.***

   According to the WDNR GIS Registry, the following BRRTS cases were identified near the Property (in addition to the cases listed for the Property in Section 4.0):

   ERP Cases:
   - 02-36-000219 WPSC MANITOWOC MGP (ALT SF) – Open, ~460 feet north
   - 02-36-576809 MANITOWOC PLUMBING SUPPLY (FORMER) – Open, ~275 feet east
   - 02-36-577692 KERRY INC – Closed, ~375 feet south
   - 02-36-576709 RED ARROW PRODUCTS CO (FORMER) – Closed, ~400 feet south

   Leaking Underground Storage Tank (LUST) Cases:
   - 03-36-001962 HOLMES OIL CORP – Closed, ~300 feet northwest
   - 03-36-001210 JAEGER BAKERY – Closed, ~135 feet north
   - 03-36-001255 COLOR CRAFT GRAPHIC ARTS INC – Closed, ~360 feet northeast
   - 03-36-000165 BADGER CYCLE (VERN WICKMAN) – Closed, ~175 feet east

6. ***Need for permission from property owners to allow access to the Site or facility and to adjacent or nearby properties.***

   All Property parcels are owned by the CDA. No offsite sampling is planned at this time. However, if offsite sampling is necessary, the appropriate access agreements will be obtained.

7. ***Potential or known impacts to receptors, including public and private water supplies; buildings and other cultural features; and utilities or other subsurface improvements. This evaluation shall include mapping the location of all water supply wells within a 1,200-foot radius of the outermost edge of contamination.***

   There are no known impacts to public or private water supplies, buildings, or utilities. Residents of the City of Manitowoc receive potable water from Lake Michigan. There are no known public or private wells located within 1,200 feet of the Property (WDNR, 2020c).

8. ***Potential for impacts to any of the following: species, habitat or ecosystems sensitive to the contamination; wetlands; outstanding or exceptional resource waters; and sites or facilities of historical or archaeological significance.***

   The proposed investigative activities will be performed on the Property in a former heavy industrial area. There are no known potential impacts to threatened or endangered species; species, habitats or ecosystems sensitive to the contamination; outstanding or exceptional resource waters; or sites or facilities of historical or archaeological significance.

9. ***Potential interim and remedial actions applicable to the site or facility and the contamination.***

   No potential interim actions were determined to be necessary at the Property and it has not yet been determined what remedial actions will be necessary at the Property.

10. ***Immediate or interim actions already taken or in progress, including any evaluations made of whether an interim action is needed at the site or facility.***

    No immediate or interim actions have been taken or are in progress at the Property. However, in 2018 and 2019, soil borings and temporary/permanent monitoring wells were installed by Stantec across the Property to evaluate soil and groundwater quality for the greater River Point District project area (Stantec, 2020a). Laboratory analysis of these samples identified non/petroleum contamination was present in soil and/or groundwater above regulatory standards. The WDNR was notified and an ERP case (BRRTS activity number 02-36-585491) was opened for the River Point District in March 2020.

    In March 2020, AECOM (2020) installed and sampled several permanent monitoring wells on Site 1 as part of a groundwater assessment for the River Point District. PAHs were the only COC present at concentrations greater than the ES measured from the permanent wells installed on Site 1 in March 2020 and were limited to MW-65 installed through the eastern end of the former warehouse slab.

    In August 2020, Stantec (2020b, 2020c) facilitated the removal of structural impediments in the northeastern portion of Site 1 and advanced several test pits, soil borings and temporary wells to assess soil/groundwater quality in the previously impeded area. Petroleum impacts to soil (SB-55, SB-61, TP-5, TP-6 and TP-7) were identified on western end of the former warehouse slab and were attributed to former bulk storage. PAHs and heavy metals in soil/fill were detected at concentrations greater than health based RCLs and/or BTVs and are attributed to the ubiquitous fill unit present across the River Point District property. In groundwater, PAHs were the only COC present at concentrations greater than the ES and were limited to TW-55 on the western end of the former warehouse slab on Site 1.

11. ***Any other items, including climatological conditions and background water or soil quality information that may affect the scope or conduct of the site investigation.***

    No other items were identified that may potentially impact the scope of this investigation.

12. ***The need to gather data to determine the hydraulic conductivity of materials where contaminated groundwater is found.***

    The hydraulic conductivity of the aquifer will be measured in the field using the “slug-out” method as described in the Stantec SOP-19.

7.0 SITE INVESTIGATION OVERVIEW

7.1 PROBLEM STATEMENT

Several investigations have been performed to date identifying contaminant impacts to soil and groundwater quality at the Property but not yet fully investigated or assessed. The goal of the investigative work is to define and delineate the extents of soil and groundwater contaminants identified as part of the previous investigations performed at the Property listed in Section 3.0 to facilitate non-industrial redevelopment per ch. NR 716 WAC requirements. Investigative work will include evaluation of soil and groundwater using permanent and temporary wells to further define/confirm the extents of contamination. An assessment of collected groundwater for vapor intrusion potential using vapor risk screening levels will also be performed.

7.2 CONCEPTUAL SITE MODEL

The "Triad approach" for characterization and remediation of contaminated sites was developed by the Environmental Protection Agency and others with a goal of increasing confidence that project decisions about contaminant presence or absence, location, fate, exposure, and risk reduction choices, are made correctly and cost effectively. The foundation for site-related decisions that are both correct and optimized (from a cost-benefit standpoint) is the "Conceptual Site Model" (CSM) (Crumbling, 2004). CSM uses all available historical and current information to estimate:

- where contamination is (or might be) located;
- how much is (or might be) there;
- how variable concentrations may be and how much spatial patterning may be present;
- what is happening to contaminants as far as fate and migration;
- who might be exposed to contaminants or harmful degradation products; and,
- what might be done to manage risk by mitigating exposure.

Historic features of potential environmental concern are illustrated on Figure 5. Identified impacts to soil and groundwater are illustrated on Figure 6 and Figure 7. The following attributes are relevant to the Property and to defining the nature and extent of impacts.

Site 1 – 200 North 10th Street

1. The northern portion of Site 1 was developed for bulk petroleum storage/distribution by the Clarke Oil Company (presumably a tenant) between 1912 and 1919. Bulk petroleum storage operations expanded between 1919 and 1927, at which point the operation consisted of eight oil tanks and a pump house (Figure 5). Bulk petroleum storage ceased between 1927 and 1946. The owner, Soo Line Minneapolis St. Paul and Sault St. Marie Railroad Company, leased the parcel to "JF Kerscher" on May 22, 1950, who constructed a large warehouse at the Property and utilized the Property for a variety of storage/commercial uses (identified as "1" on Figure 5). The date of property transfer between the Soo Line Minneapolis St. Paul and Sault St. Marie Railroad Company and WCL is unknown, but property records suggest transfer took place between 1979 and 1986.

2. The southern portion of Site 1 was developed for railroad use by 1895 and remained in railroad use through most of the 20th Century. Property features included multiple spur lines/ferry loading area/sheds/maintenance areas (ex. tool house and wash house identified as "22" and "23", respectively on Figure 5) and depots (ex. freight house and transportation depot identified as "3" and "2", respectively on Figure 5). A building permit was issued to the Soo Line Railroad on October 24, 1980, to raze the former railroad depot, which largely terminated railroad use of the Site 1, though at least one set of vacant steel rails remained through at least 2004. The southern portion of the Property appeared to have been regraded after removal of railroad features (ex. rail lines) and used for transloading stone by a tenant from the late 1990s through the first decade of the 21st Century.

3. A Phase II ESA completed by SEC Donohue Inc in 1992 (SEC Donohue Inc, 1992) identified heavy metal and petroleum impacts using the total recoverable petroleum hydrocarbons method (Environmental Protection Agency Method 9073). Based on evaluation criteria used at the time, WDNR closed the associated ERP case (BRRTS activity number 02-36-00408) on April 6, 1993.

4. The Stantec (2020a) Phase II ESA completed for the River Point District property in late 2018 and early 2019 identified heavy metal and petroleum impacts to soil and groundwater from temporary wells on Site 1. Heavy metal and PAH constituents at concentrations greater than direct contact standards were attributed to a historic fill unit present across the River Point District Property with an average thickness of three feet. Due to the presence of structural impediments on the northern portion of Site 1, impacts to soil and groundwater beneath the former building(s) on Site 1 were not able to be fully assessed at the time. Chlorinated VOC constituent 1,2,3-trichloropropane was detected in soil boring SB-49, but at a concentration less than the limit of quantification. In groundwater, PFAS constituents were detected in TW-49, later replaced (but not sampled) by MW-49 (AECOM, 2020), at concentrations greater than the proposed ch. NR 140 WAC ES.

5. Previous work completed by others and summarized in the Stantec (2020a) Phase II ESA describes soil at Site 1 as “dark brown fill with organic matter” or “cinders” underlain by “silty sand”. Metal debris was also noted previously by others in surficial soils.

6. In March 2020, AECOM installed seven permanent wells on Site 1 to further evaluate heavy metal and PAH constituent concentrations present in the Stantec (2020a) temporary well network at the Property and confirmed that PAHs were present in groundwater on the eastern end of the former warehouse slab at concentrations greater than the ES in MW-65. The remaining six monitoring wells installed and sampled by AECOM in March 2020 had no PAH or heavy metal constituents present at concentrations greater than the ES and were present along the Site 1 Property boundaries and/or downgradient of the contamination present at the former warehouse slab. VOCs were also sampled as a COC in the AECOM (2020) investigation and were not detected in any Site 1 well. These monitoring wells show that petroleum and metals groundwater contamination is not migrating offsite. PFAS was not sampled as part of this investigation. Due to the presence of structural impediments on the northeastern portion of Site 1, impacts to groundwater beneath the former building(s) on Site 1 were not able to be fully assessed at the time.

7. Between August 17 and 19, 2020, Veit demolished the 20,200 square foot former warehouse slab in the northeast portion of Site 1 to facilitate soil and groundwater sampling in this area that could not previously be assessed (Stantec 2020b). Following the removal of the slab, Stantec completed a Phase II ESA for Site 1 in August 24,2020 (Stantec, 2020c) to investigate soil and groundwater in this area that could not previously be assessed. The Stantec (2020c) Phase II ESA for Site 1 identified heavy metal and petroleum impacts to soil, and petroleum impacts to groundwater associated with historic fill and prior bulk petroleum storage in the footprint of the former warehouse slab on the Property (consistent with previous investigations). The Stantec (2020c) Phase II ESA for Site 1 recommended installing NR-141 compliant monitoring wells on the west end of the former warehouse slab (near TW-55) and reinstalling/sampling MW-65 on the east end of the former warehouse slab (abandoned by Stantec [2020b] during demolition of the warehouse slab), to confirm historical detections of PAHs in groundwater.

Site 2 – 1101 Buffalo Street

1. A junk yard/metal scrap yard including numerous scrap piles, buildings and railroad spurs (Figure 5) was constructed on and occupied the majority of Site 2 by 1900 and appears to have remained in operation through the later portion of the 20th Century. The junk yard was asphalt paved between 2000 and 2006.

2. The southwestern portion of Site 2 was developed for railroad use by 1895, including a railroad roundhouse and multiple spurs/tracks. Rail operations remained at Site 2 until the early 2000s when the remaining steel rails were removed. A portion of Site 2 extends onto the capped "WCL Turntable Former Roundhouse" property, a closed ERP case with a BRRTS activity number of 02-36-176478 at the corner of 11th Street and Buffalo Street. Closure documentation associated with case indicates there are residual impacts attributed to historical use as a roundhouse and turntable to soil from PAHs and petroleum VOCs (benzene), and residual impacts to groundwater from chlorinated solvents (cis-1,2-dichloroethylene, trichloroethylene, and vinyl chloride).

3. Previous work completed by others and summarized in the Stantec (2020a) Phase II ESA describes soil at Site 2 as "black silty sand" and/or "black silty clay" extending from the surface downward to approximately six feet below ground surface and underlain by silty clay generally grading from "light brown" to "greenish gray."

4. The Stantec (2020a) Phase II ESA completed for the River Point District property in late 2018 and early 2019 identified VOC, PAH, PCB, and significant heavy metal impacts (lead and arsenic) to soil on Site 2. Chlorinated VOCs (trichloroethene and tetrachloroethene) were detected only in soil boring SB-77 on Site 2 and were detected in the laboratory blank and/or at concentrations less than the limit of quantification. Petroleum VOCs (benzene and naphthalene) were detected at concentrations greater than direct contact standards in soil boring SB-80. The petroleum VOC impacts at concentrations less than direct contact standards and PAH impacts to soil were attributed to the historic fill present across Site 2. Metal impacts were attributed to the fill and to the former operation of Site 2 as a junk yard/metal scrap yard. PCB impacts to soil were attributed to former junk yard/metal scrap yard operations and were at concentrations greater than direct contact (non-industrial) standards in two Site 2 borings (SB-79 and SB-80). In groundwater, PFAS was detected in MW-75 and MW-82 at concentrations greater than the proposed ES; arsenic was also detected in groundwater, but at concentrations less than the ES.

The extents of soil and groundwater impacts associated with the COCs discussed in the CSM for Property Sites 1 and 2 above (Stantec 2020a, 2020b, 2020c; AECOM 2020) are illustrated on Figures 6 and 7, respectively. Potential COCs include VOCs, PAHs, PCBs, and PFAS.

8.0 PROPOSED SOIL ASSESSMENT

8.1 GENERAL

Proposed soil sampling locations and analyses are based on the environmental concerns and CSM detailed in Section 7.0. Diggers Hotline will be contacted to locate and mark the locations of registered utilities in the project area. A private utility locate will be completed as part of the geophysical survey to identify underground anomalies of additional concern. A site-specific Health and Safety Plan to be utilized by Stantec personnel during the assessment activities, is presented in Appendix A.

8.2 OBJECTIVES

Stantec will conduct soil sampling activities to characterize the subsurface materials at the Property to plan for future non-industrial redevelopment. This investigation will evaluate appropriate future actions, if any, to obtain closure from the WDNR per ch. NR 700 WAC. Standard Operating Procedures (SOPs) for tasks associated with this work plan are presented in the Quality Assurance Project Plan (QAPP; Stantec, 2015) and associated addenda (Stantec, 2016a, 2016b, 2016c, 2018a, 2018b, 2018c, 2019b, and 2019c).

Soil quality data will be compared to ch. NR 720 WAC soil standards for the direct contact pathway at industrial and non-industrial properties and to soil standards for the soil to groundwater exposure pathway.

8.3 SOIL BORING AND SUBSURFACE ASSESSMENT

As illustrated on Figures 8 and 9, the proposed soil assessment includes advancing up to 39 soil borings using direct-push dual-tube Geoprobe® drilling methods. Soil samples will be collected continuously from each borehole, and each borehole will extend downward to four feet below ground surface (ft bgs), or until apparent native soils are encountered to evaluate the thickness of fill (where present) at each boring location. Soil borings intended to be completed as temporary groundwater monitoring wells (discussed in Section 9.3) will be advanced up to 12 ft bgs. Actual locations may be adjusted based on accessibility, the results of the geophysical survey, and/or locations of underground utilities. Per section NR 141.25 WAC requirements, any boreholes not converted into a temporary well will be decommissioned by filling with bentonite when the drilling and sampling are complete, and the surface repaired to match surrounding. Given the upland locations and minimal ground disturbance associated with the proposed soil borings, no control of erosion or structural repairs are anticipated.

The horizontal location and elevation of the ground surface at each soil boring will be surveyed by a registered professional land surveyor.

Soil sampling and field classification will be conducted according to SOP No. 02 (Stantec, 2015). Sample collection and laboratory analytical methods for soil samples, as well as the rationale for selecting sample locations and criteria to be used for selection of analyses, are presented in Table 1.

Soil samples will be collected continuously with four to five-foot samplers. Soil samples will be visually and physically examined by a Stantec field geologist, and observations made of the general soil type (percentages of gravel, sand, silt, and clay), any visible layering, evidence of non-native fill materials (with estimated percentages of these materials contained in the soil matrix), indications of chemical or other staining, odors, and any other distinctive features as described in SOP No. 02 (Stantec, 2015). In addition, pertinent observations noted during installation of the soil borings will be documented on the soil boring logs.

Soil samples will be field screened for the presence of VOCs using a PID as described in SOP No. 01 (Stantec, 2015). The PID will be calibrated daily in the field in accordance with the manufacturer's specifications per SOP No. 09 (Stantec, 2015).

Proposed soil samples are summarized on Table 1 and are targeted to confirm/delineate prior identified impacts.

Soil samples will be collected and preserved in accordance with SOP No. 02 and Table 3 of the QAPP. All VOC (SW846 Method 8260B), PCB (SW846 Method 8082A) and PAH (SW846 Method 8270D) samples will be placed in laboratory-supplied containers (per SOP No. 02), preserved as appropriate, stored on ice, and

submitted under chain-of-custody procedures to TestAmerica (Chicago, Illinois), a State of Wisconsin-certified laboratory for analysis as described in the QAPP using protocols outlined in SOP No. 07.

Each soil sample will be assigned a sample identification number (SIN) based on the following format:

Sample Type	Label for Type of Sample	Location Number	Sample Interval (ft bgs)	SIN	Location ID
Soil boring	SB	1	(0-2)	SB-1(0-2)	SB-1
Field Duplicate	FD	---	---	FD-1	---
Trip blank	TB	---	---	TB-1	---

Soil sampling equipment such as drilling tools will be decontaminated prior to arrival onsite and between each sampling location (SOP No. 08) to prevent sample cross-contamination. Soil cuttings generated during the subsurface investigation will be managed per SOP No. 10 (Stantec, 2015).

8.4 SPECIAL HANDLING CONSIDERATIONS AND QA/QC SAMPLES

Appropriate quality assurance and quality control procedures will be followed during investigative activities, including those specified in section NR 716.13 WAC, to ensure that accurate data will be collected. All soil samples will be collected and preserved in accordance with SOP No. 02 and Table 4 of the QAPP (Stantec, 2015). The laboratory will supply the appropriate containers with preservation chemicals as needed. Samples will be submitted to the laboratory as soon as possible after collection (i.e., daily).

Quality assurance/quality control (QA/QC) samples to be collected and analyzed will include trip blanks and field replicate/duplicate samples. Trip blanks prepared by the analytical laboratory will accompany the sample bottles from the time of shipment from the laboratory through the time the samples are returned for analysis. Trip blanks will be used to document any contamination detected in samples that may be attributable to shipping and field handling procedures or contaminated sample containers. Trip blanks will be provided by the laboratory and will be subject to the same handling and transportation procedures as the investigative samples.

De-identified field duplicate samples will be collected and analyzed to evaluate sample variability and overall data precision. Duplicate samples will be collected from soil borings and depth intervals representing the range of site conditions. Duplicate samples will be collected and analyzed for constituents at a rate of one sample for every 20 or fewer investigative samples.

Matrix spike/matrix spike duplicate samples will be collected and analyzed for constituents at a rate of one sample for every 20 or fewer investigative samples.

8.5 CHAIN-OF-CUSTODY

Chain-of-custody procedures will be utilized to track possession and handling of individual samples from the time of collection in the field through the time of delivery to the analytical laboratory. The chain-of-custody program will include use of sample labels, custody seals, field logbooks, chain-of-custody forms and laboratory logbooks. All chain-of-custody procedures will be performed in accordance with SOP No. 07 (Stantec, 2015).

8.6 FIELD LOGBOOK

An up-to-date field logbook will be maintained to document daily activities. The logbook will include a general list of tasks performed, additional data, or observations not listed on field data sheets and document communications with onsite personnel or visitors as these apply to the project.

9.0 GROUNDWATER ASSESSMENT

9.1 GENERAL

Proposed groundwater monitoring well sampling locations and analyses are based on the environmental concerns and CSM detailed in Section 7.0. A site-specific HASP, to be utilized by Stantec personnel during the assessment activities, is presented in Appendix A.

9.2 OBJECTIVES

Stantec will conduct groundwater sampling activities to characterize groundwater quality at the Property as necessary to facilitate proposed redevelopment. In addition, the sampling will determine appropriate future actions, if any, to obtain closure from the WDNR per the ch. NR 700 WAC. SOPs for tasks associated with this work plan are presented in the QAPP (Stantec, 2015) and associated addenda (Stantec, 2016a, 2016b, 2016c, 2018a, 2018b, 2018c, 2019b, and 2019c).

Groundwater quality data will be compared to ch. NR 140 WAC groundwater standards. In addition, VOCs detected in groundwater will be used to provide continued screening of the vapor intrusion pathway per WDNR Pub-RR800.

9.3 GROUNDWATER ASSESSMENT

As depicted on Table 2, the groundwater assessment will include sampling several existing, two-inch diameter groundwater monitoring wells on the Property (MW-47, MW-52, MW-66, MW-69, MW-73 and MW-74) to confirm and delineate previously identified impacts. In addition, as illustrated on Figures 8 and 9, six new permanent groundwater monitoring wells will be installed in conformance with NR 141 to confirm and delineate previously identified impacts. The depths for the new wells will depend on the actual depth at which groundwater is encountered beneath Site 1 but are anticipated to have a total depth of approximately 12 ft bgs. The wells will be constructed using two-inch diameter polyvinyl chloride casing with 10-foot long, 0.010-inch slotted screens.

As illustrated on Figures 8 and 9, the groundwater assessment will also include the completion of up to 18 soil borings described in Section 8.3 as temporary groundwater monitoring wells across Site 1 and Site 2. The depths for the temporary wells will depend on the actual depth at which groundwater is encountered beneath the Property but are anticipated to have total depths of approximately 12 ft bgs. The temporary wells will be constructed in general conformance with NR 141 using one-inch diameter polyvinyl chloride casing with 10-foot long, 0.010-inch slotted screens with coarse sand pack.

The horizontal location, elevation of the ground surface, and top of casing for each newly installed temporary well and permanent well will be surveyed by a registered professional land surveyor.

Following installation and recovery, and prior to purging and collection of groundwater samples, the elevation of the groundwater table will be measured and the volume of water present within each well will be calculated using the procedures set forth in SOP No. 04 (Stantec, 2015). Groundwater elevation data will also be used to document the gradient in potentiometric surface.

The depth and thickness of floating (light) and/or sinking (dense) non-aqueous phase liquids, if present, will be measured using an interface probe. SOP No. 04 details the procedures that will be used to detect immiscible layers. The interface probe will be decontaminated in accordance with SOP No. 08 (Stantec, 2015).

Each well will be purged prior to sampling in accordance with SOP No. 04 (Stantec, 2015). If the geologic materials surrounding the well are low yielding, then the wells will be completely evacuated, and groundwater samples collected after the water level recovers sufficiently to provide the volume of water needed to fill sample containers for the desired analyses. The well may be purged using any of the following methods: a peristaltic pump, a low-flow Micro-Purge Sampling System (or equivalent), a Voss disposable polyethylene bailer (or

equivalent), or a Waterra hand pump (or equivalent) or similar equipment. Non-disposable purging equipment will be decontaminated in accordance with SOP No. 08 (Stantec, 2015).

After purging, groundwater samples collected from all temporary and permanent groundwater monitoring wells, as summarized on Table 2. All groundwater samples will be collected and preserved per SOP No. 04 (Stantec, 2015). PFAS samples will be collected and preserved per SOP No. 29. All VOC (SW846 Method 8260B), PCB (SW846 Method 8082A) and PAH (SW846 Method 8270D) samples will be placed in laboratory-supplied containers (per SOP No. 04), preserved as appropriate, stored on ice, and submitted under chain-of-custody procedures to TestAmerica (Chicago, Illinois), a State of Wisconsin-certified laboratory for analysis as described in the QAPP using protocols outlined in SOP No. 07. Samples collected for PFAS (Non-EPA Method 537M) analysis will be placed in laboratory-supplied HDPE sample jars without preservative, stored on ice, and sent under chain-of-custody procedures to Eurofins TestAmerica (Sacramento, CA).

Each groundwater sample will be assigned a SIN based on the following format:

Sample Type	Label for Type of Sample	Location Number	(SIN)	Location ID
Monitoring Well	MW	1	MW-1	MW-1
Temporary Well	TW	1	TW-1	TW-1
Field Duplicate	FD	---	FD-1	---
Equipment Blank	EB	---	EB-1	---
Trip Blank	TB	---	TB-1	---

Decontamination procedures for any non-dedicated or non-disposable equipment used for collection of groundwater samples will also be performed using the procedures set forth in SOP No. 08 (Stantec, 2015).

All equipment used in developing/purging wells and for collection of the PFAS samples will be PFAS-free and will be collected using the procedures set forth in SOP No. 29. Decontamination procedures for any non-dedicated or non-disposable equipment used for collection of groundwater samples will also be performed using the procedures set forth in SOP No. 08.

Purged groundwater generated during the investigation will be managed per SOP No. 10 (Stantec, 2015). When appropriate, the groundwater monitoring wells will be decommissioned in accordance with SOP No. 04 (Stantec, 2015) and sealed in accordance with ch. NR 141.25 WAC.

9.4 SUPPLEMENTAL GROUNDWATER INVESTIGATION

As depicted in Table 3 and illustrated in Figure 10, a supplemental groundwater monitoring investigation may be warranted as part of this SWIP to confirm impacts identified in the temporary wells described in Section 9.3. If completed, the supplemental groundwater investigation will likely include replacing the temporary wells with groundwater monitoring wells and sampling for identified constituents of concern. Methods for monitoring well installation, development, and sampling are described in Section 9.3. If warranted, sampling of these wells may be conducted quarterly for a year to confirm plume dynamics.

9.5 SPECIAL HANDLING CONSIDERATIONS AND QA/QC SAMPLES

Collection and preservation of groundwater samples for VOC analysis will be performed in accordance with SOP No. 04. Headspace should not be present in the sample container, thus minimizing the volatilization of organics from the sample. The laboratory will supply the pre-preserved 40-ml glass vials with Teflon™-lined lids. If multiple constituent samples are to be taken from the same well, PFAS samples will be collected first, and VOC samples will be collected last (SOP No. 29).

As summarized on Table 2, QA/QC samples to be collected and analyzed will include a trip blank, an equipment blank and a field duplicate sample.

Trip blanks prepared by the analytical laboratory will accompany the sample bottles from the time of shipment from the laboratory through the time the samples are returned for analysis. Trip blanks will be used to document any contamination detected in samples that may be attributable to shipping and field handling procedures, or contaminated sample containers. Trip blanks will be provided by the laboratory and will be subject to the same handling and transportation procedures as the investigative samples. At least one trip blank sample will accompany each shipping container that contains samples for VOC analysis.

An equipment blank will be collected at a rate of one per sampling event by pumping laboratory-supplied PFAS-free water into laboratory-supplied sample jars using the same collection methods and equipment used in collecting PFAS groundwater samples in accordance with SOP No. 29.

De-identified field duplicate samples will be collected and analyzed to evaluate sample variability and overall data precision. For groundwater samples, the duplicate samples will be “field replicate samples” collected at the same time from the same well. To the extent practicable, multiple bottles associated with a set of duplicate samples will be filled in two or three stages such that each bottle receives a portion of the water from each section of the bailer, or each interval of sample pump operation. In recognition that data for duplicate samples are most meaningful when there are detectable concentrations present of constituents of concern, if there are existing groundwater data, or other data by which to anticipate wells with greater levels of contamination, duplicate samples will be preferentially collected from wells where detectable concentrations of constituents of concern are most likely to be present. Otherwise, duplicate samples will be collected from a randomly selected well or wells. Duplicate samples will be collected and analyzed for constituents at a rate of one sample for every 20 or fewer investigative samples.

Matrix spike/matrix spike duplicate samples will be collected and analyzed for constituents at a rate of one sample for every 20 or fewer investigative samples.

9.6 CHAIN-OF-CUSTODY

Chain-of-custody procedures will be utilized to track possession and handling of individual samples from the time of collection in the field through the time of delivery to the analytical laboratory. The chain-of-custody program will include use of sample labels, custody seals, field logbooks, chain-of-custody forms, and laboratory logbooks. All chain-of-custody procedures will be performed in accordance with SOP No. 07 (Stantec, 2015).

9.7 FIELD LOGBOOK

An up-to-date field logbook will be maintained to document daily activities. The logbook will include a general list of tasks performed, additional data or observations not listed on field data sheets, and document communications with onsite personnel or visitors as these apply to the project.

10.0 SITE INVESTIGATION REPORT

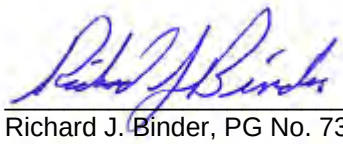
Stantec will evaluate the need for additional soil borings, monitoring wells and/or vapor samples using data collected from previous investigations and from data collected as part of the proposed investigations outlined in Sections 8.0 and 9.0. Once investigation activities are deemed complete and the COC extents are defined, Stantec will prepare a Site Investigation Report for the Property. The report will include sufficient text, tables, figures, field data, and laboratory reports to properly document the investigation activities.

11.0 SCHEDULE

Site Investigation scoping as required by Section NR 716.07 WAC has been completed as Section 6.0 of this workplan. The soil and groundwater investigation activities outlined in Sections 8.0 and 9.0 are scheduled to be completed in January-March 2021. The laboratory results for soil samples should be available within two to three weeks of sampling. Stantec will review the laboratory results upon receipt and, if necessary, evaluate the need for additional sampling.

12.0 CERTIFICATION STATEMENT

"I, Richard J. Binder, hereby certify that I am a hydrogeologist as that term is defined in s. NR 712.03 (1), Wis. Adm. Code, am registered in accordance with the requirements of ch. GHSS 2, Wis. Adm. Code, or licensed in accordance with the requirements of ch. GHSS 3, Wis. Adm. Code, and that, to the best of my knowledge, all of the information contained in this document is correct and the document was prepared in compliance with all applicable requirements in chs. NR 700 to 726, Wisconsin Administrative Code."



Richard J. Binder, PG No. 734-013 — January 13, 2021 Date

13.0 REFERENCES

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14.0 LIMITATIONS

This Site Investigation Workplan was developed in accordance with generally accepted practices for the environmental consulting profession, undertaking similar studies at the same time and in the same geographical area as the work conducted by Stantec. Stantec observed the degree of care and skill that are generally exercised by the profession under similar circumstances and conditions. No other warranty is expressed or implied.

Stantec's observations, findings, and opinions should not be considered as scientific certainties, but only as opinion based upon our professional judgment concerning the significance of the data gathered during the development of the Site Investigation Workplan. Specifically, Stantec cannot represent that the Property does not contain or potentially contain any hazardous or toxic materials or other latent conditions beyond that identified by Stantec during the development of the Site Investigation Workplan. Additionally, due to limitations of the Site Investigation Workplan development process and the necessary use of data furnished by others, Stantec and its subcontractors cannot assume liability if actual conditions differ from the information presented in this Site Investigation Workplan.

FIGURES

Figure No.
1
Title
Topographic Map

Client/Project
Phase I Project Area
River Point District
City of Manitowoc

0 395 790 Feet
193707885
Prepared by HLB on 12/10/2020

Legend

Site Investigation Project Area

N

Notes
1. Coordinate System: NAD 1983 StatePlane Wisconsin South FIPS 4803 Feet

Stantec

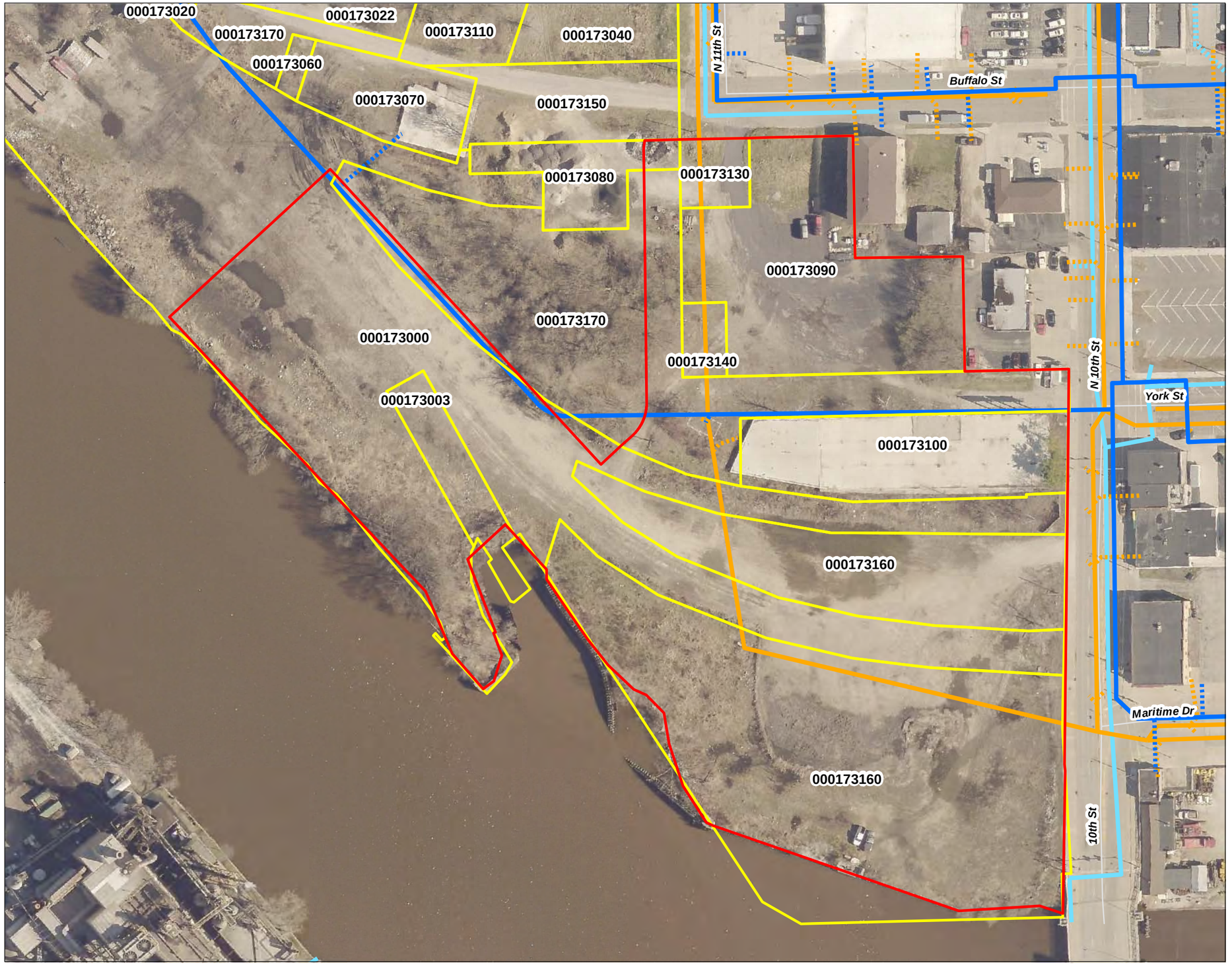


Figure No.
2

Title
Property Identification Numbers and Site Features

Client/Project
Phase I Project Area
River Point District
City of Manitowoc

0 70 140 Feet

193707885
Prepared by HLB on 12/10/2020

Legend

- Site Investigation Project Area
- Parcel Identification Numbers
- Potable Water Conveyance System
- Potable Water Lateral
- Sanitary Conveyance System
- Sanitary Lateral
- Stormwater Conveyance System
- Stormwater Lateral

N

Notes

1. Coordinate System: NAD 1983 StatePlane Wisconsin South FIPS 4803 Feet
2. Locations of utlities as illustrated in the City of Manitowoc GIS Database.
3. Orthophotograph: Manitowoc County, 2017

Stantec

Figure No.

4

Title

Site Investigation Project Area and Proposed Redevelopment

Client/Project

Riverpoint District Site 1
200 North 10th Street
City of Manitowoc

0 65 130 Feet

Prepared by HLB on 3/25/2020

Legend

- Site Investigation Project
- Cap Maintenance Area

Municipal Infrastructure

- Landscaping
- Parking
- RIghts-of-way
- Rock Wall
- Sidewalk
- Undeveloped

PetSkull Brewery

- Outdoor Patio

Apartment Complex

- Apartment Building
- Landscaping
- Parking

River Point Restaurant

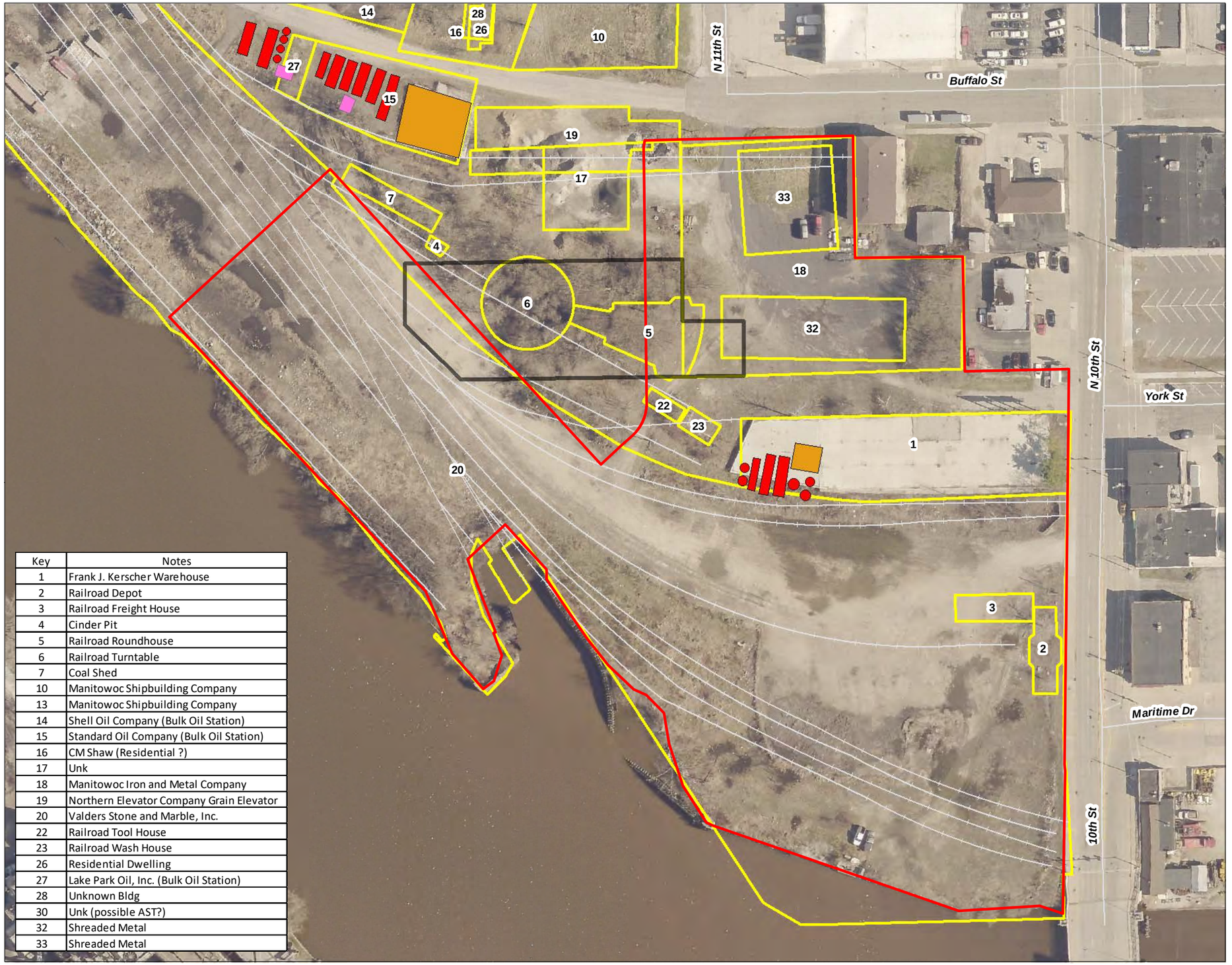
- Future Building
- Kayak Rental/Service
- Landscaping
- Outdoor Patio
- Parking
- Restaurant
- Sidewalk

N

Notes

1. Coordinate System: NAD 1983 StatePlane Wisconsin South FIPS 4803 Feet
2. Historic Site features illustrated on this figure were digitized from multiple historic maps/sources, including City Assessor files, WDNR files, and Sanborn (R) Fire Insurance Maps. These features are provided for illustration purposes only; Stantec makes no warranty as to the accuracy of these features.
3. Orthophotograph: Manitowoc County, 2017

Stantec



Key	Notes
1	Frank J. Kerscher Warehouse
2	Railroad Depot
3	Railroad Freight House
4	Cinder Pit
5	Railroad Roundhouse
6	Railroad Turntable
7	Coal Shed
10	Manitowoc Shipbuilding Company
13	Manitowoc Shipbuilding Company
14	Shell Oil Company (Bulk Oil Station)
15	Standard Oil Company (Bulk Oil Station)
16	CM Shaw (Residential ?)
17	Unk
18	Manitowoc Iron and Metal Company
19	Northern Elevator Company Grain Elevator
20	Valders Stone and Marble, Inc.
22	Railroad Tool House
23	Railroad Wash House
26	Residential Dwelling
27	Lake Park Oil, Inc. (Bulk Oil Station)
28	Unknown Bldg
30	Unk (possible AST?)
32	Shreaded Metal
33	Shreaded Metal

Figure No.
5
Title

Historic Site Features

Client/Project
Phase I Project Area
River Point District
City of Manitowoc

0 70 140 Feet

193707885
Prepared by HLB on 12/10/2020

N

Legend

- Cap Maintenance Area
- Railroad Spurs
- Historic Site Features (see table for details)
- Site Investigation Project Area

Prior Site Features (City Records)

- Oil House (2)
- Oil Tank (AST) (21)
- Pump House (2)

Notes

1. Coordinate System: NAD 1983 StatePlane Wisconsin South FIPS 4803 Feet
2. Historic Site features illustrated on this figure were digitized from multiple historic maps/sources, including City Assessor files, WDNR files, and Sanborn (R) Fire Insurance Maps. These features are provided for illustration purposes only; Stantec makes no warranty as to the accuracy of these features.
3. Orthophotograph: Manitowoc County, 2017

Stantec

Figure No.
6

Title
Previous Sampling Locations and Identified Soil Imapcts

Client/Project
Phase I Project Area
River Point District
City of Manitowoc

0 65 130 Feet

193707885
Prepared by HLB on 12/10/2020

Legend

- Site Investigation Project Area
- Cap Maintenance Area

Prior Sample Locations

- Soil Boring
- Soil Boring/Temp Well
- Monitoring Wells

Test Pits - Soil Impacts

- Pet. VOC and PAH > RCLs [TP-5 & TP-7; (8ft BGS)]
- N/A

Identified Soil Impacts

- PCBs > Non-Industrial RCLs
- Pet. VOCs > Industrial RCLs
- Possible VOC Impacts (?)

Prior Site Features (City Records)

- Oil House (2)
- Oil Tank (AST) (10)
- Pump House (1)

Notes

1. Coordinate System: NAD 1983 StatePlane Wisconsin South FIPS 4803 Feet
2. Historic Site features illustrated on this figure were digitized from multiple historic maps/sources, including City Assessor files, WDNR files, and Sanborn (R) Fire Insurance Maps. These features are provided for illustration purposes only; Stantec makes no warranty as to the accuracy of these features.
3. Orthophotograph: Manitowoc County, 2017

Stantec

Figure No.
7

Title
Previous Sampling Locations and Identified Groundwater Impacts

Client/Project
Phase I Project Area
River Point District
City of Manitowoc

0 65 130 Feet

193707885
Prepared by HLB on 12/10/2020

N

Legend

- Site Investigation Project Area
- Cap Maintenance Area

Prior Sample Locations

- Soil Boring/Temp Well
- Monitoring Wells
- Groundwater Elevation (Feet)

Identified Groundwater Impacts

- PAH > ES
- PFOA+PFOS > 20 ng/L

Prior Site Features (City Records)

- Oil House (2)
- Oil Tank (AST) (10)
- Pump House (1)

Notes

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3. Orthophotograph: Manitowoc County, 2017

Stantec

Figure No.

8

Title

Proposed Sample Locations and Previously Identified Impacts

Client/Project

Riverpoint District Site 1
200 North 10th Street
City of Manitowoc

0 65 130 Feet

Prepared by HLB on 3/25/2020

Legend

- Site Investigation Project Area
- Cap Maintenance Area

Proposed Sample Locations

- Soil Boring/Monitoring Well (6)
- Soil Boring (21)
- Soil Boring/Temp Well (18)

Prior Sample Locations

- Soil Boring (19)
- Soil Boring/Temp Well (26)
- Monitoring Wells (11)

Test Pits - Soil Impacts

- Pet. VOC and PAH > RCLs [TP-5 & TP-7; (8ft BGS)]
- N/A

Identified Soil Impacts

- PCBs > Non-Industrial RCLs
- Pet. VOCs > Industrial RCLs
- Possible VOC Impacts (?)

Identified Groundwater Impacts

- PAH > ES
- PFOS+PFOA > 20 ng/L

Notes

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3. Orthophotograph: Manitowoc County, 2017

Stantec

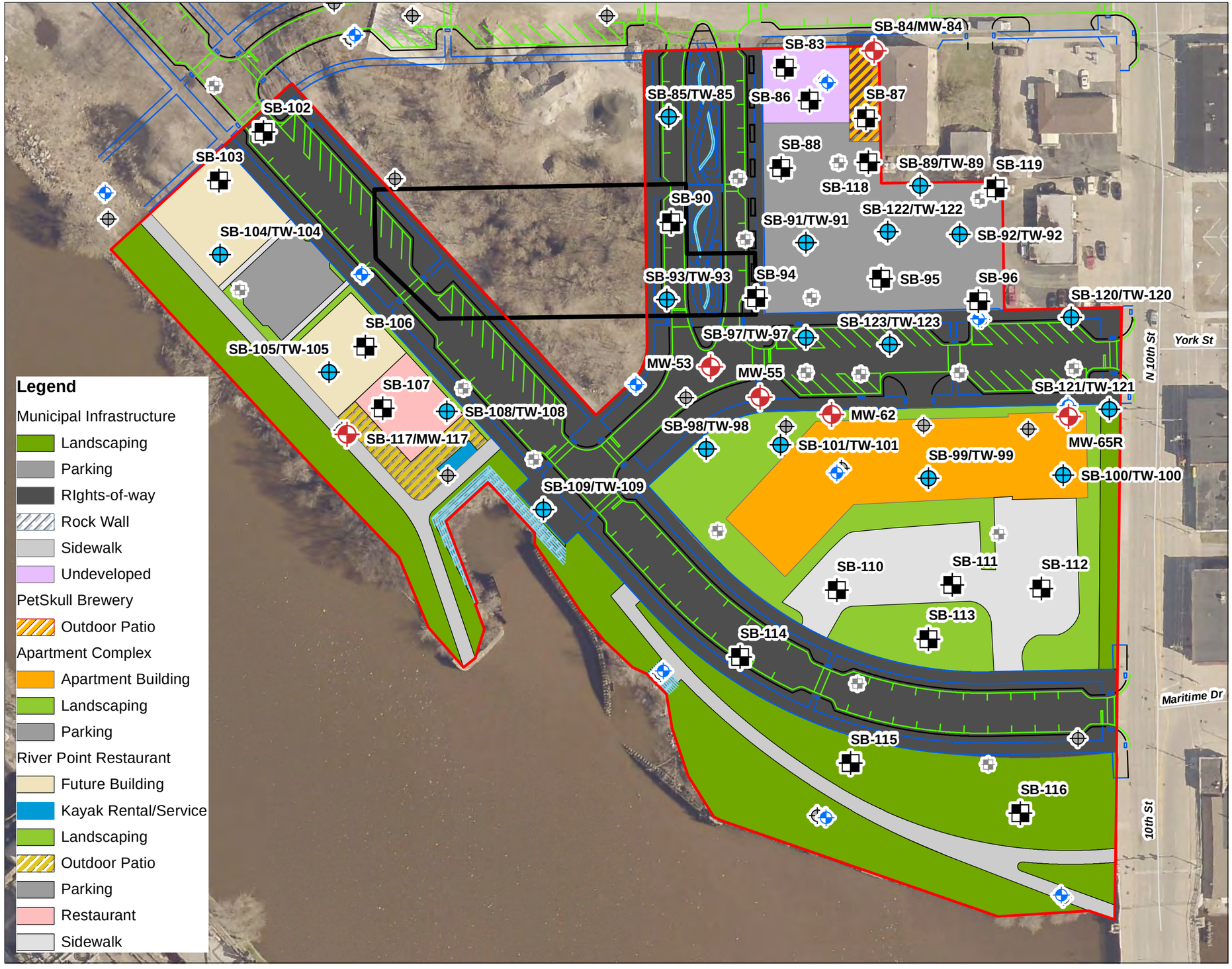

Figure No.
9

Title

Proposed Sample Locations and Proposed Redevelopment

Client/Project
Riverpoint District Site 1
200 North 10th Street
City of Manitowoc

0 65 130 Feet

Prepared by HLB on 3/25/2020

Legend

Site Investigation Project

Proposed Sample Locations

- Monitoring Well (6)
- Soil Boring (21)
- Soil Boring/Temp Well (18)

Prior Sample Locations

- Soil Boring (19)
- Soil Boring/Temp Well (26)
- Monitoring Wells (11)
- Cap Maintenance

N

Notes

1. Coordinate System: NAD 1983 StatePlane Wisconsin South FIPS 4803 Feet
2. Historic Site features illustrated on this figure were digitized from multiple historic maps/sources, including City Assessor files, WDNR files, and Sanborn (R) Fire Insurance Maps. These features are provided for illustration purposes only; Stantec makes no warranty as to the accuracy of these features.
3. Orthophotograph: Manitowoc County, 2017

Stantec

Figure No.
10
Title

Proposed Monitoring Well Locations for Supplemental Investigation

Client/Project
Riverpoint District Site 1
200 North 10th Street
City of Manitowoc

0 65 130 Feet

Prepared by HLB on 3/25/2020

Legend

N

- Cap Maintenance
- Site Investigation Project
- Previously Installed Monitoring Wells (11)

Proposed Sample Locations

- Monitoring Well (6)

Proposed Sample Locations Supplemental Investigation

- Monitoring Well (18)

Identified Groundwater Impacts

- PAH > ES
- PFOS+PFOA > 20 ng/L

Notes

1. Coordinate System: NAD 1983 StatePlane Wisconsin South FIPS 4803 Feet
2. Historic Site features illustrated on this figure were digitized from multiple historic maps/sources, including City Assessor files, WDNR files, and Sanborn (R) Fire Insurance Maps. These features are provided for illustration purposes only; Stantec makes no warranty as to the accuracy of these features.
3. Orthophotograph: Manitowoc County, 2017

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TABLES

Table 1
Proposed Laboratory Analysis for Soil
River Point District, Phase 1
Manitowoc, Wisconsin

Soil Boring ID	Estimated Soil Boring Depth	Estimated Sample Depth	Rationale	VOCs (8260B)	PCBs (8082A)	PAHs (8270D)	Lead (6010)
SB-83	4 Feet (or until native soil is encountered)	0.5-2 ft bgs	Confirm fill thickness and evaluate soil quality on the northern portion of the Property to determine if prior operation as an iron/metal company, material storage or placement of fill resulted in a release to soil.	(1) Highest PID if PID greater than 2 iu	-	-	(1) At 3-4 ft bgs
SB-84	4 Feet (or until native soil is encountered)	0.5-2 ft bgs	Confirm fill thickness and evaluate soil quality in the area of a proposed outdoor patio on the Property to determine if prior operation as an iron/metal company, material storage or placement of fill resulted in a release to soil.	(1) Highest PID if PID greater than 2 iu	-	-	-
SB-85	12 Feet	Various	Confirm fill thickness and evaluate soil quality in the proposed road right of way on the Property to determine if prior operation as an iron/metal company or placement of fill resulted in a release to soil.	(1) Highest PID if PID greater than 2 iu	-	-	(1) At 3-4 ft bgs
SB-86	4 Feet (or until native soil is encountered)	0.5-2 ft bgs	Confirm fill thickness and evaluate soil quality on the northern portion of the Property to determine if prior operation as an iron/metal company, material storage or placement of fill resulted in a release to soil.	(1) Highest PID if PID greater than 2 iu	-	-	-
SB-87	4 Feet (or until native soil is encountered)	0.5-2 ft bgs	Confirm fill thickness and evaluate soil quality on the northern portion of the Property in proposed outdoor patio area to determine if prior operation as an iron/metal company, material storage or placement of fill resulted in a release to soil.	(1) Highest PID if PID greater than 2 iu	-	-	-
SB-88	4 Feet (or until native soil is encountered)	Various	Confirm fill thickness and evaluate soil quality in the proposed road right of way on the Property to determine if prior operation as an iron/metal company or placement of fill resulted in a release to soil. Delineate extent/presence of metals and PAHs in area south of former junk pile. Metals and PAHs were not sampled in SB-76. Delineate extent/presence of PCBs and VOCs detected south of SB-88 in previous sampling.	(1) 2-2.5 ft bgs or Highest PID if PID greater than 2 iu	(1) At 1-3.75 ft bgs	-	-
SB-89	12 Feet	Various	Confirm fill thickness and evaluate soil quality in the area of proposed parking on the northern portion of the Property to determine if prior operation as an iron/metal company or placement of fill resulted in a release to soil. Delineate extent of PCB and VOC contamination detected in SB-80 in previous sampling.	(1) 2-2.5 ft bgs or Highest PID if PID greater than 2 iu	(1) At 1-3.75 ft bgs	-	(1) At 3-4 ft bgs
SB-90	4 Feet (or until native soil is encountered)	Various	Confirm fill thickness and evaluate soil quality in the proposed road right of way on the Property to determine if prior operation as a railroad roundhouse or placement of fill resulted in a release to soil. Confirm extent of PCBs contamination detected in SB-79 in previous sampling. VOCs were not detected in SB-79 or SB-76.	(1) 2-2.5 ft bgs or Highest PID if PID greater than 2 iu	(1) At 1-3.75 ft bgs	-	-
SB-91	12 Feet	1-3.75 ft bgs	Confirm fill thickness and evaluate soil quality in the area of proposed parking on the northern portion of the Property to determine if prior operation as an iron/metal company or placement of fill resulted in a release to soil. Delineate extent of PCB and VOC contamination detected in SB-79 and SB-80 in previous sampling.	(1) 2-2.5 ft bgs or Highest PID if PID greater than 2 iu	(1) At 1-3.75 ft bgs	-	-
SB-92	12 Feet	Various	Confirm fill thickness and evaluate soil quality in the area of proposed parking on the northern portion of the Property to determine if prior operation as an iron/metal company or placement of fill resulted in a release to soil. Delineate extent of PCB and VOC contamination detected in SB-80 in previous sampling.	(1) 2-2.5 ft bgs or Highest PID if PID greater than 2 iu	(1) At 1-3.75 ft bgs	-	-
SB-93	12 Feet	Various	Confirm fill thickness and evaluate soil quality in the proposed road right of way on the Property to determine if prior operation as a railroad roundhouse or placement of fill resulted in a release to soil. Delineate extent of VOC and PCB contamination detected in SB-79 and SB-80 in previous sampling.	(1) 2-2.5 ft bgs or Highest PID if PID greater than 2 iu	(1) At 1-3.75 ft bgs	-	-

Table 1
Proposed Laboratory Analysis for Soil
River Point District, Phase 1
Manitowoc, Wisconsin

Soil Boring ID	Estimated Soil Boring Depth	Estimated Sample Depth	Rationale	VOCs (8260B)	PCBs (8082A)	PAHs (8270D)	Lead (6010)
SB-94	4 Feet (or until native soil is encountered)	Various	Confirm fill thickness and evaluate soil quality in the proposed road right of way on the Property to determine if prior operation as a railroad roundhouse or placement of fill resulted in a release to soil. Delineate extent of VOC and PCB contamination detected in SB-79 and SB-80 in previous sampling.	(1) 2-2.5 ft bgs or Highest PID if PID greater than 2 iu	(1) At 1-3.75 ft bgs	-	-
SB-95	4 Feet (or until native soil is encountered)	Various	Confirm fill thickness and evaluate soil quality in the area of proposed parking on the northern portion of the Property to determine if prior operation as an iron/metal company or placement of fill resulted in a release to soil. Delineate extent of PCB and VOC contamination detected in SB-79 and SB-80 in previous sampling. Confirm presence of PAHs to determine source of contamination, junk pile, previous tank.	(1) 2-2.5 ft bgs or Highest PID if PID greater than 2 iu	(1) At 1-3.75 ft bgs	(1) At 4-5 ft bgs	-
SB-96	4 Feet (or until native soil is encountered)	Various	Confirm fill thickness and evaluate soil quality in the area of proposed parking on the northern portion of the Property to determine if prior operation as an iron/metal company or placement of fill resulted in a release to soil. Delineate extent of PCB and VOC contamination detected in SB-79 and SB-80 in previous sampling.	(1) 2-2.5 ft bgs or Highest PID if PID greater than 2 iu	(1) At 1-3.75 ft bgs	-	-
SB-97	12 Feet	Various	Confirm fill thickness and evaluate soil quality in the proposed road right of way on the Property to determine if prior operation as an iron/metal company or placement of fill resulted in a release to soil. Delineate extent of PCB and VOC contamination detected in SB-79 and SB-80 in previous sampling. Confirm presence of PAHs to determine source of contamination, junk pile, previous tank.	(1) 2-2.5 ft bgs or Highest PID if PID greater than 2 iu	(1) At 1-3.75 ft bgs	(1) At 4-5 ft bgs	-
SB-98	12 Feet	Various	Confirm fill thickness and evaluate soil quality west of the proposed apartment building on the Property to determine if prior operation as a railroad corridor, petroleum storage or placement of fill resulted in a release to soil. Confirm presence/extent of PAH contamination from oil tanks. VOCs not detected in SB-55 in previous sampling.	(1) Highest PID if PID greater than 2 iu	-	(1) At 4-5 ft bgs	-
SB-99	12 Feet	Various	Confirm fill thickness and evaluate soil quality in the area of a proposed apartment building on the Property to determine if prior operation as a railroad corridor, petroleum storage or placement of fill resulted in a release to soil. PAHs and VOCs not detected in SB-63 north of SB-99 in previous sampling.	(1) Highest PID if PID greater than 2 iu	-	-	-
SB-100	12 Feet	Various	Confirm fill thickness and evaluate soil quality in the area of a proposed apartment building on the Property to determine if prior operation as a railroad corridor, petroleum storage or placement of fill resulted in a release to soil. PAHs not detected and VOCs not sampled in SB-65 north of SB-101.	(1) Highest PID if PID greater than 2 iu	-	-	-
SB-101	12 Feet	Various	Confirm fill thickness and evaluate soil quality in the area of a proposed apartment building on the Property to determine if prior operation as a railroad corridor, petroleum storage or placement of fill resulted in a release to soil. Confirm presence/extent of PAH contamination from oil tanks. PAHs not detected in SB-66 and VOCs (benzene) detected in SB-66 1.5-2ft bgs, north of SB-101 in previous sampling.	(1) Highest PID if PID greater than 2 iu	-	(1) At 2.5-3.5 ft bgs	-
SB-102	12 Feet	Various	Confirm fill thickness and evaluate soil quality in the proposed road right of way on the Property to determine if prior operation as a railroad corridor or placement of fill resulted in a release to soil. Delineate extent of VOC and PAH contamination detected in SB-35 north of SB-102. No data for SB-46, PAH contamination detected in SB-45 at 1.5-3 ft.	(1) 6-7 ft bgs Highest PID if PID greater than 2 iu	-	(1)At 3-3.75 ft bgs	-
SB-103	4 Feet (or until native soil is encountered)	Various	Confirm fill thickness and evaluate soil quality in the area of a future Property building along the river to determine if prior operation as a railroad corridor or placement of fill resulted in a release to soil. Delineate extent of VOC and PAH contamination detected in SB-35 north of SB-102. No data for SB-46, PAHs were not sampled at SB-44 in previous sampling.	(1) Highest PID if PID greater than 2 iu	-	(1) At 3-3.75 ft bgs	-
SB-104	4 Feet (or until native soil is encountered)	Various	Confirm fill thickness and evaluate soil quality in the area of a future Property building along the river to determine if prior operation as a railroad corridor or placement of fill resulted in a release to soil.	(1) Highest PID if PID greater than 2 iu	-	-	-

Table 1
Proposed Laboratory Analysis for Soil
River Point District, Phase 1
Manitowoc, Wisconsin

Soil Boring ID	Estimated Soil Boring Depth	Estimated Sample Depth	Rationale	VOCs (8260B)	PCBs (8082A)	PAHs (8270D)	Lead (6010)
SB-105	4 Feet (or until native soil is encountered)	5-6 ft bgs	Confirm fill thickness and evaluate soil quality in the area of a future Property building along the river to determine if prior operation as a railroad corridor or placement of fill resulted in a release to soil. Determine presence/delineate extent of VOC contamination detected in trace amounts at SB-49 in previous sampling.	(1) Highest PID, or 5-6 ft bgs	-	-	-
SB-106	4 Feet (or until native soil is encountered)	5-6 ft bgs	Confirm fill thickness and evaluate soil quality in the area of a future Property building along the river to determine if prior operation as a railroad corridor or placement of fill resulted in a release to soil. Determine presence/delineate extent of VOC contamination detected in trace amounts at SB-49 in previous sampling.	(1) Highest PID, or 5-6 ft bgs	-	-	-
SB-107	4 Feet (or until native soil is encountered)	5-6 ft bgs	Confirm fill thickness and evaluate soil quality in the area of a proposed restaurant on the Property along the river to determine if prior operation as a railroad corridor or placement of fill resulted in a release to soil. Determine presence/delineate extent of VOC contamination detected in trace amounts at SB-49 in previous sampling.	(1) Highest PID, or 5-6 ft bgs	-	-	-
SB-108	4 Feet (or until native soil is encountered)	5-6 ft bgs	Confirm fill thickness and evaluate soil quality in the area of a proposed restaurant on the Property along the river to determine if prior operation as a railroad corridor or placement of fill resulted in a release to soil. Determine presence/delineate extent of VOC contamination detected in trace amounts at SB-49 in previous sampling.	(1) Highest PID, or 5-6 ft bgs	-	-	-
SB-109	12 Feet	Various	Confirm fill thickness and evaluate soil quality in the proposed road right of way on the Property to determine if prior operation as a railroad corridor or placement of fill resulted in a release to soil.	(1) Highest PID if PID greater than 2 iu	-	-	-
SB-110	4 Feet (or until native soil is encountered)	Various	Confirm fill thickness and evaluate soil quality south of the proposed apartment building on the Property to determine if prior operation as a railroad corridor or placement of fill resulted in a release to soil.	(1) Highest PID if PID greater than 2 iu	-	-	-
SB-111	4 Feet (or until native soil is encountered)	Various	Confirm fill thickness and evaluate soil quality south of the proposed apartment building on the Property to determine if prior operation as a railroad corridor or placement of fill resulted in a release to soil.	(1) Highest PID if PID greater than 2 iu	-	-	-
SB-112	4 Feet (or until native soil is encountered)	Various	Confirm fill thickness and evaluate soil quality south of the proposed apartment building on the Property to determine if prior operation as a railroad corridor or placement of fill resulted in a release to soil.	(1) Highest PID if PID greater than 2 iu	-	-	-
SB-113	4 Feet (or until native soil is encountered)	Various	Confirm fill thickness and evaluate soil quality south of the proposed apartment building on the Property to determine if prior operation as a railroad corridor or placement of fill resulted in a release to soil.	(1) Highest PID if PID greater than 2 iu	-	-	-
SB-114	4 Feet (or until native soil is encountered)	Various	Confirm fill thickness and evaluate soil quality in the proposed road right of way on the Property to determine if prior operation as a railroad corridor or placement of fill resulted in a release to soil.	(1) Highest PID if PID greater than 2 iu	-	-	-
SB-115	4 Feet (or until native soil is encountered)	Various	Confirm fill thickness and evaluate soil quality in the area of proposed landscaping along the river in the southern portion of the Property to determine if prior operation as a railroad corridor or placement of fill resulted in a release to soil.	(1) Highest PID if PID greater than 2 iu	-	-	-
SB-116	4 Feet (or until native soil is encountered)	Various	Confirm fill thickness and evaluate soil quality in the area of proposed landscaping along the river in the southern portion of the Property to determine if prior operation as a railroad corridor or placement of fill resulted in a release to soil.	(1) Highest PID if PID greater than 2 iu	-	-	-
SB-117	4 Feet (or until native soil is encountered)	5-6ft bgs	Confirm fill thickness and evaluate soil quality in the area of proposed landscaping/sidewalk southwest of the proposed restaurant and along the river in the western portion of the Property to determine if prior operation as a railroad corridor or placement of fill resulted in a release to soil. Determine presence/delineate extent of VOC contamination detected in trace amounts at SB-49 in previous sampling.	(1) Highest PID, or 5-6 ft bgs	-	-	-

Table 1
Proposed Laboratory Analysis for Soil
River Point District, Phase 1
Manitowoc, Wisconsin

Soil Boring ID	Estimated Soil Boring Depth	Estimated Sample Depth	Rationale	VOCs (8260B)	PCBs (8082A)	PAHs (8270D)	Lead (6010)
SB-118	4 Feet (or until native soil is encountered)	Various	Confirm fill thickness and evaluate soil quality in the area of proposed parking on the northern portion of the Property to determine if prior operation as an iron/metal company, material storage or placement of fill resulted in a release to soil. Delineate extent of PCB and VOC contamination detected in SB-79 and SB-80 in previous sampling. Determine presence of metal contamination due to DNR request.	(1) 2-2.5 ft bgs or Highest PID if PID greater than 2 iu	(1) At 1-3.75 ft bgs	-	(1) At 3-4 ft bgs
SB-119	4 Feet (or until native soil is encountered)	Various	Confirm fill thickness and evaluate soil quality in the area of proposed parking on the northern portion of the Property to determine if prior operation as an iron/metal company, material storage or placement of fill resulted in a release to soil. Delineate extent of PCB and VOC contamination detected in SB-79 and SB-80 in previous sampling. Determine presence of metal contamination due to DNR request.	(1) 2-2.5 ft bgs or Highest PID if PID greater than 2 iu	(1) At 1-3.75 ft bgs	-	(1) At 3-4 ft bgs
SB-120	4 Feet (or until native soil is encountered)	Various	Confirm fill thickness and evaluate soil quality in the proposed road right of way on the Property to determine if prior operation as an iron/metal company or placement of fill resulted in a release to soil. Delineate extent of PCB and VOC contamination detected in SB-79 and SB-80 in previous sampling.	(1) 2-2.5 ft bgs or Highest PID if PID greater than 2 iu	(1) At 1-3.75 ft bgs	-	(1) At 3-4 ft bgs
SB-121	4 Feet (or until native soil is encountered)	Various	Confirm fill thickness and evaluate soil quality in the proposed road right of way/landscaping area north of the proposed apartment building on the Property to determine if prior operation as an iron/metal company or placement of fill resulted in a release to soil. VOCs not detected in SB-59 north of SB-121 in previous sampling.	(1) Highest PID if PID greater than 2 iu	-	-	-
SB-122	4 Feet (or until native soil is encountered)	Various	Confirm fill thickness and evaluate soil quality in the area of proposed parking on the northern portion of the Property to determine if prior operation as an iron/metal company, material storage or placement of fill resulted in a release to soil. Delineate extent of PCB and VOC contamination detected in SB-79 and SB-80 in previous sampling.	(1) 2-2.5 ft bgs or Highest PID if PID greater than 2 iu	(1) At 1-3.75 ft bgs	(1) At 4-5 ft bgs	-
SB-123	4 Feet (or until native soil is encountered)		Confirm fill thickness and evaluate soil quality in the proposed road right of way on the Property to determine if prior operation as an iron/metal company or placement of fill resulted in a release to soil. Delineate extent of PCB and VOC contamination detected in SB-79 and SB-80 in previous sampling. Confirm presence of PAHs to determine source of contamination, junk pile, previous tank. Determine petroleum impacts detected in TP-7.	(1) 2-2.5 ft bgs or Highest PID if PID greater than 2 iu	(1) At 1-3.75 ft bgs	(1) At 4-5 ft bgs	-
Estimated number of investigative samples to be analyzed				30	15	8	6
Trip Blank		-	Field and Laboratory QAQC Sample	2	0	0	0
Matrix Spike/Matrix Spike Duplicate		-	Assess the influence of the matrix on lab results	2	1	1	1
Field Duplicate		-	Assess the quality of the data and collection techniques	2	1	1	1
Estimated number of QAQC samples to be analyzed				6	2	2	2
Estimated number of samples to be analyzed **				36	17	10	8

Notes:
QAQC = Quality Assurance Quality Control
VOC = Volatile Organic Compounds
PCB = Polychlorinated Biphenyls
PAH = Polycyclic Aromatic Hydrocarbons
PFAS = Per- and Polyfluoroalkyl Substances
PID = Photoionization Detector
(8260B) = Laboratory analytical method (SW-846)

** If a new fill horizon or new visual/olfactory indications are identified, additional samples will be collected for metals, PAHs, and/or PCBs.

Table 2
Proposed Laboratory Analysis for Groundwater
River Point District
Manitowoc, Wisconsin

Well ID	Estimated Well Depth	Rationale	VOCs (8260B)	PAHs (8270D)	PCBs (8082A)	PFAS (537M)
Existing Monitoring Wells						
MW-47	13.5 Feet	Sample existing permanent wells on the western portion of the Property to evaluate whether PFAS groundwater contamination in TW-49 extends to contaminate north to MW-47.	-	-	-	1
MW-52	13.5 Feet	Sample existing permanent wells on the Property to evaluate petroleum impacts to groundwater quality.	1	1	-	1
MW-66	13.5 Feet	Sample existing permanent wells on the Property to evaluate petroleum impacts to groundwater quality. Delineate PFAS contamination extent from upgradient TW-82 from previous sampling.	1	1	-	-
MW-69	13.5 Feet	Sample existing permanent wells on the Property to evaluate petroleum impacts to groundwater quality.	-	-	-	1
MW-73	13.5 Feet	Sample existing permanent wells on the Property to evaluate petroleum impacts to groundwater quality.	-	1	-	1
MW-74	13.5 Feet	Sample existing permanent wells on the Property to evaluate petroleum impacts to groundwater quality.	-	-	-	1
MW-75	13.5 Feet	Sample existing permanent wells on the Property to confirm whether groundwater quality is impacted by PFAS detected in TW-75 sample.	-	-	-	1
MW-82	13.5 Feet	Sample existing permanent wells on the Property to confirm whether groundwater quality is impacted by PFAS detected in TW-82. Delineate extent of PAH contamination detected in TW-65 from previous sampling.	-	-	-	1
Monitoring Wells/Temporary Wells to be Installed						
MW-55	12 Feet	Install a permanent well in place of former temporary well TW-55. Evaluate groundwater quality in the proposed road right of way on the Property to determine if prior operation as a warehouse, petroleum storage or placement of fill resulted in a release to groundwater.	1	1	-	1
MW-53	13 Feet	Install a permanent well to evaluate petroleum impacts to groundwater and LNAPL concerns.	1	1	-	-
MW-62	14 Feet	Install a permanent well to evaluate petroleum impacts to groundwater and LNAPL concerns.	1	1	-	-
MW-65R	12 Feet	Replace permanent well MW-65 abandoned in August 2020 as part of demolition activities on the Property. Evaluate groundwater quality in the area of a proposed apartment building on the Property to determine if prior operation as a warehouse, petroleum storage or placement of fill resulted in a release to groundwater.	1	1	-	1
MW-84	12 Feet	Install permanent well and evaluate groundwater quality in the proposed road right of way/patio area on the Property to determine if prior operation as an iron/metal company or placement of fill resulted in a release to groundwater. Confirm presence of PFAS contamination in permanent well rather than temporary well.	1	-	-	1
TW-85	12 Feet	Evaluate groundwater quality in the proposed road right of way on the Property to determine if prior operation as an iron/metal company or placement of fill resulted in a release to groundwater.	1	-	-	-
TW-89	12 Feet	Evaluate groundwater quality in the area of proposed parking on the northern portion of the Property to determine if prior operation as an iron/metal company or placement of fill resulted in a release to groundwater. Determine if presence/extent of PCB and VOC contamination in SB-80 in previous sampling extends to groundwater.	1	-	1	-

Table 2
Proposed Laboratory Analysis for Groundwater
River Point District
Manitowoc, Wisconsin

Well ID	Estimated Well Depth	Rationale	VOCs (8260B)	PAHs (8270D)	PCBs (8082A)	PFAS (537M)
TW-91	12 Feet	Evaluate groundwater quality in the area of proposed parking on the northern portion of the Property to determine if prior operation as an iron/metal company, material storage or placement of fill resulted in a release to groundwater. Determine if presence/extent of PCB and VOC contamination in SB-79 and SB-80 in previous sampling extends to groundwater.	1	-	1	-
TW-92	12 Feet	Evaluate groundwater quality in the area of proposed parking on the northern portion of the Property to determine if prior operation as an iron/metal company or placement of fill resulted in a release to groundwater. Determine if presence/extent of PCB and VOC contamination in SB-79 and SB-80 in previous sampling extends to groundwater.	1	-	1	-
TW-93	12 Feet	Evaluate groundwater quality in the proposed road right of way on the Property to determine if prior operation as a railroad roundhouse or placement of fill resulted in a release to groundwater. Determine if presence/extent of PCB and VOC contamination in SB-79 and SB-80 in previous sampling extends to groundwater. Delineate extent of PAH contamination in TW-55 from previous sampling.	1	-	-	-
TW-97	12 Feet	Evaluate groundwater quality in the proposed road right of way on the Property to determine if prior operation as an iron/metal company or placement of fill resulted in a release to groundwater. Determine if presence/extent of PCB and VOC contamination in SB-79 and SB-80 in previous sampling extends to groundwater. Delineate extent of PAH contamination in TW-55 from previous sampling.	1	1	-	-
TW-98	12 Feet	Evaluate groundwater quality west of the proposed apartment building on the Property to determine if prior operation as a railroad corridor, petroleum storage or placement of fill resulted in a release to groundwater. Determine if presence/extent of PCB and VOC contamination in SB-79 and SB-80 in previous sampling extends to groundwater. Delineate extent of PAH contamination in TW-55 from previous sampling.	1	1	-	-
TW-99	12 Feet	Evaluate groundwater quality in the area of a proposed apartment building on the Property to determine if prior operation as a railroad corridor, petroleum storage or placement of fill resulted in a release to groundwater. Delineate extent of VOC contamination from TW-61 from previous sampling. Delineate extent of PCB contamination in SB-79 from previous sampling. Delineate extent of PAH contamination from TW-55 from previous sampling.	1	1	-	-
TW-100	12 Feet	Evaluate groundwater quality in the area of a proposed apartment building on the Property to determine if prior operation as a railroad corridor, petroleum storage or placement of fill resulted in a release to groundwater. Delineate extent of VOC and PAH contamination detected in TW-65 from previous sampling.	-	1	-	-
TW-101	12 Feet	Evaluate groundwater quality in the area of a proposed apartment building on the Property to determine if prior operation as a railroad corridor, petroleum storage or placement of fill resulted in a release to groundwater. Delineate extent of VOC contamination from TW-61 from previous sampling. Delineate extent of PCB contamination in SB-79 from previous sampling. Delineate extent of PAH contamination from TW-55 from previous sampling. Determine petroleum impacts detected at TP-5.	1	1	-	-
TW-104	12 Feet	Evaluate groundwater quality in the proposed future building on the Property to determine if prior operation as a railroad corridor or placement of fill resulted in a release to groundwater.	1	-	-	-
TW-105	12 Feet	Evaluate groundwater quality in the area of the future Property building in the western portion of the Property to determine if prior operation as a railroad corridor or placement of fill resulted in a release to groundwater.	1	1	-	1
TW-108	12 Feet	Evaluate groundwater quality in the area of the future Property restaurant in the western portion of the Property to determine if prior operation as a railroad corridor or placement of fill resulted in a release to groundwater. Delineate extent of PAH contamination detected in TW-50 from previous sampling. Confirm presence of VOC contamination as detected in trace amounts in soil at SB-49 from previous sampling.	1	1	-	1
TW-109	12 Feet	Evaluate groundwater quality in the proposed road right of way on the Property to determine if prior operation as a railroad corridor or placement of fill resulted in a release to groundwater. Delineate extent of PAH contamination detected in TW-52 upgradient of TW-109 from previous sampling. Determine presence of VOCs in groundwater.	1	-	-	-

Table 2
Proposed Laboratory Analysis for Groundwater
River Point District
Manitowoc, Wisconsin

Well ID	Estimated Well Depth	Rationale	VOCs (8260B)	PAHs (8270D)	PCBs (8082A)	PFAS (537M)
MW-117	12 Feet	Evaluate groundwater quality in the proposed landscaping/sidewalk area in the western portion of the Property to determine if prior operation as a railroad corridor or placement of fill resulted in a release to groundwater. Delineate extent of PAH contamination detected in TW-50 from previous sampling. Confirm presence of VOC contamination as detected in trace amounts in soil at SB-49 from previous sampling. Delineate extent of PFAS contamination in groundwater detected in TWO-49 from previous sampling.	1	1	-	1
TW-120	12 Feet	Evaluate groundwater quality in the proposed road right of way on the Property to determine if prior operation as a railroad corridor or placement of fill resulted in a release to groundwater. Delineate extent of VOC and PAH contamination detected in TW-65 from previous sampling. Delineate presence/extent of VOC and PCB contamination in groundwater detected in SB-80 in previous sampling.	-	1	-	1
TW-121	12 Feet	Evaluate groundwater quality in the proposed road right of way on the Property to determine if prior operation as a railroad corridor or placement of fill resulted in a release to groundwater. Delineate extent of VOC and PAH contamination detected in TW-65 from previous sampling. Delineate presence/extent of VOC and PCB contamination in groundwater detected in SB-80 in previous sampling.	1	1	-	-
TW-122	12 Feet	Evaluate groundwater quality in the area of proposed parking on the northern portion of the Property to determine if prior operation as an iron/metal company, material storage or placement of fill resulted in a release to groundwater. Delineate presence/extent of VOC and PCB contamination in groundwater detected in SB-80 in previous sampling. Delineate extent of VOC and PAH contamination detected in TW-65 and TW-55 from previous sampling.	1	-	1	-
TW-123	12 Feet	Further evaluate possible VOC petroleum impacts identified previously below the vadose zone at TP-7.	1	1	-	-
Estimated number of investigative samples to be analyzed			24	18	4	14
Trip Blank		Field and Laboratory QAQC Sample	1	0	0	0
Equipment Blank		Assess data collection techniques	0	0	0	1
Matrix Spike/Matrix Spike Duplicate		Assess the influence of the matrix on lab results	1	1	0	0
Field Duplicate		Assess the quality of the data and collection techniques	1	1	1	1
Estimated number of QAQC samples to be analyzed			3	2	1	2
Estimated number of samples to be analyzed			27	20	5	16

Notes:
QAQC = Quality Assurance Quality Control
VOC = Volatile Organic Compounds
PCB = Polychlorinated Biphenyls
PAH = Polycyclic Aromatic Hydrocarbons
PFAS = Per- and Polyfluoroalkyl Substances
(8260B) = Laboratory analytical method (SW-846)

Table 3
Proposed Laboratory Analysis for Supplemental Groundwater Investigation
River Point District
Manitowoc, Wisconsin

Well ID	Estimated Well Depth	Rationale	VOCs (8260B)	PAHs (8270D)	PCBs (8082A)	PFAS (537M)
MW-85	12 Feet	Evaluate groundwater quality in the proposed road right of way on the Property to determine if prior operation as an iron/metal company or placement of fill resulted in a release to groundwater.	1	-	-	-
MW-89	12 Feet	Evaluate groundwater quality in the area of proposed parking on the northern portion of the Property to determine if prior operation as an iron/metal company or placement of fill resulted in a release to groundwater. Determine if presence/extent of PCB and VOC contamination in SB-80 in previous sampling extends to groundwater.	1	-	1	-
MW-91	12 Feet	Evaluate groundwater quality in the area of proposed parking on the northern portion of the Property to determine if prior operation as an iron/metal company, material storage or placement of fill resulted in a release to groundwater. Determine if presence/extent of PCB and VOC contamination in SB-79 and SB-80 in previous sampling extends to groundwater.	1	-	1	-
MW-92	12 Feet	Evaluate groundwater quality in the area of proposed parking on the northern portion of the Property to determine if prior operation as an iron/metal company or placement of fill resulted in a release to groundwater. Determine if presence/extent of PCB and VOC contamination in SB-79 and SB-80 in previous sampling extends to groundwater.	1	-	1	-
MW-93	12 Feet	Evaluate groundwater quality in the proposed road right of way on the Property to determine if prior operation as a railroad roundhouse or placement of fill resulted in a release to groundwater. Determine if presence/extent of PCB and VOC contamination in SB-79 and SB-80 in previous sampling extends to groundwater. Delineate extent of PAH contamination in TW-55 from previous sampling.	1	-	-	-
MW-97	12 Feet	Evaluate groundwater quality in the proposed road right of way on the Property to determine if prior operation as an iron/metal company or placement of fill resulted in a release to groundwater. Determine if presence/extent of PCB and VOC contamination in SB-79 and SB-80 in previous sampling extends to groundwater. Delineate extent of PAH contamination in TW-55 from previous sampling.	1	1	-	-
MW-98	12 Feet	Evaluate groundwater quality west of the proposed apartment building on the Property to determine if prior operation as a railroad corridor, petroleum storage or placement of fill resulted in a release to groundwater. Determine if presence/extent of PCB and VOC contamination in SB-79 and SB-80 in previous sampling extends to groundwater. Delineate extent of PAH contamination in TW-55 from previous sampling.	1	1	-	-
MW-99	12 Feet	Evaluate groundwater quality in the area of a proposed apartment building on the Property to determine if prior operation as a railroad corridor, petroleum storage or placement of fill resulted in a release to groundwater. Delineate extent of VOC contamination from TW-61 from previous sampling. Delineate extent of PCB contamination in SB-79 from previous sampling. Delineate extent of PAH contamination from TW-55 from previous sampling.	1	1	-	-
MW-100	12 Feet	Evaluate groundwater quality in the area of a proposed apartment building on the Property to determine if prior operation as a railroad corridor, petroleum storage or placement of fill resulted in a release to groundwater. Delineate extent of VOC and PAH contamination detected in TW-65 from previous sampling.	-	1	-	-
MW-101	12 Feet	Evaluate groundwater quality in the area of a proposed apartment building on the Property to determine if prior operation as a railroad corridor, petroleum storage or placement of fill resulted in a release to groundwater. Delineate extent of VOC contamination from TW-61 from previous sampling. Delineate extent of PCB contamination in SB-79 from previous sampling. Delineate extent of PAH contamination from TW-55 from previous sampling. Determine petroleum impacts detected at TP-5.	1	1	-	-
MW-104	12 Feet	Evaluate groundwater quality in the proposed future building on the Property to determine if prior operation as a railroad corridor or placement of fill resulted in a release to groundwater.	1	-	-	1
MW-105	12 Feet	Evaluate groundwater quality in the area of the future Property building in the western portion of the Property to determine if prior operation as a railroad corridor or placement of fill resulted in a release to groundwater.	1	1	-	1
MW-108	12 Feet	Evaluate groundwater quality in the area of the future Property restaurant in the western portion of the Property to determine if prior operation as a railroad corridor or placement of fill resulted in a release to groundwater. Delineate extent of PAH contamination detected in TW-50 from previous sampling. Confirm presence of VOC contamination as detected in trace amounts in soil at SB-49 from previous sampling.	1	1	-	1
MW-109	12 Feet	Evaluate groundwater quality in the proposed road right of way on the Property to determine if prior operation as a railroad corridor or placement of fill resulted in a release to groundwater. Delineate extent of PAH contamination detected in TW-52 upgradient of TW-109 from previous sampling. Determine presence of VOCs in groundwater.	1	-	-	1

Table 3
Proposed Laboratory Analysis for Supplemental Groundwater Investigation
River Point District
Manitowoc, Wisconsin

Well ID	Estimated Well Depth	Rationale	VOCs (8260B)	PAHs (8270D)	PCBs (8082A)	PFAS (537M)
MW-120	12 Feet	Evaluate groundwater quality in the proposed road right of way on the Property to determine if prior operation as a railroad corridor or placement of fill resulted in a release to groundwater. Delineate extent of VOC and PAH contamination detected in TW-65 from previous sampling. Delineate presence/extent of VOC and PCB contamination in groundwater detected in SB-80 in previous sampling.	1	1	-	1
MW-121	12 Feet	Evaluate groundwater quality in the proposed road right of way on the Property to determine if prior operation as a railroad corridor or placement of fill resulted in a release to groundwater. Delineate extent of VOC and PAH contamination detected in TW-65 from previous sampling. Delineate presence/extent of VOC and PCB contamination in groundwater detected in SB-80 in previous sampling.	1	1	-	-
MW-122	12 Feet	Evaluate groundwater quality in the area of proposed parking on the northern portion of the Property to determine if prior operation as an iron/metal company, material storage or placement of fill resulted in a release to groundwater. Delineate presence/extent of VOC and PCB contamination in groundwater detected in SB-80 in previous sampling. Delineate extent of VOC and PAH contamination detected in TW-65 and TW-55 from previous sampling.	1	-	1	-
MW-123	12 Feet	Further evaluate possible VOC petroleum impacts identified previously at TP-7.	1	1	-	-
Estimated number of investigative samples to be analyzed			17	10	4	5
Trip Blank		Field and Laboratory QAQC Sample	1	0	0	0
Equipment Blank		Assess data collection techniques	0	0	0	1
Matrix Spike/Matrix Spike Duplicate		Assess the influence of the matrix on lab results	1	1	0	0
Field Duplicate		Assess the quality of the data and collection techniques	1	1	1	1
Estimated number of QAQC samples to be analyzed			3	2	1	2
Estimated number of samples to be analyzed			20	12	5	7

Notes:
QAQC = Quality Assurance Quality Control
VOC = Volatile Organic Compounds
PCB = Polychlorinated Biphenyls
PAH = Polycyclic Aromatic Hydrocarbons
PFAS = Per- and Polyfluoroalkyl Substances
(8260B) = Laboratory analytical method (SW-846)

APPENDICES

APPENDIX A
Site-Specific Health and Safety Plan

Risk Management Strategy (RMS1)

- **If the project requires fieldwork a HASP or RMS1 must be completed.**
- **If the scope of work for a project that originally did not involve field work changes to include field work, an RMS1 form must be completed and reviewed with employees before field work begins.**
- **Although the RMS1 is intended to be part of the desktop planning process for a project, please be aware that the RMS1 must be carried as a field resource as well, to complement use of the RMS2 – Field Level Risk Assessment.**

Date: January 15, 2021	This form expires 1 year from the date of creation	
Project / proposal number: *Pending*	**Project name:** Site Investigation – Phase 1, River Point District	
Location: 200 North 10th Street, Manitowoc, WI (Site 1); 1100 Buffalo Street, Manitowoc, WI (Site 2)		
Project description (Companies involved, what, where, when) In January 2021, Stantec, Ground Penetrating Radar Systems (GPRS; private locate) CornerPoint LLC (CornerPoint; surveyor) and Horizon Construction and Exploration LLC (Horizon; drilling contractor) will be ready to start work at Sites 1 and 2 of the River Point District located at the addresses above to facilitate Site Investigation activities. GPRS to scan the entire paved area of Site 2 (former junk yard) to verify presence/absence of buried features, and scan/clear proposed boring locations. Horizon to blind drill/install four, 2" monitoring wells, perform up to 38 soil boring to a maximum depth of 12 feet below ground surface, and convert up to 17 borings to 1" temporary wells. CornerPoint to survey in soil boring/well locations after performed/constructed. Stantec to sample soil and/or groundwater (from existing and newly installed wells) for analysis of volatile organic compounds (VOCs), polychlorinated biphenyls (PCBs), polycyclic aromatic hydrocarbons (PAHs), heavy metals, and/or per- and polyfluoroalkyl substances (PFAS).		
Does this project involve fieldwork?	**Yes** - continue with this form	
Is this project remote work?	**No**	
What method of communication will be used?	☒ Cell Phone ☐ Spot Messenger	☐ Satellite Phone ☐ Other:
Is there a call in – call out system?	**No**	
Are there any unique security concerns?	**No**	
Will workers on this project cross state/provincial/national borders or require staff to work in different states/provinces or countries?	**No**	
Is Stantec the Constructor/Prime Contractor?	**Yes -** please contact the HSSE Advisor or Manager for the province, state or country that your staff are working in for guidance on HSSE regulations.	
Is Stantec hiring subcontractors?	**Yes -** please confirm that your subcontractor is prequalified. If you have any questions, please email subcontractors@stantec.com.	
Will Stantec staff or subcontractors be working alone?	**Yes -** provide guidance from SWP 118	
Client/Constructor HSSE training to abide by?	**No**	
Client/Constructor HSSE program to abide by?	**No**	
Is this work taking place outside of North America?	**No**	
List the major tasks associated with this project. 1. Drive to, from and around Site		
2. GPRS scans areas of proposed borings and the former junkyard area)		
3. Horizon to blind drill/install four permanent wells		
4. Horizon to perform up to 38 soil borings and convert up to 17 to temporary wells		
5. Stantec to sample soil from borings and groundwater from wells (new/existing) for VOCs, PCBs, PAHs, metals, and/or PFAS		

6. CornerPoint to survey in “as built” soil boring/well locations
7. Click here to enter text
8. Click here to enter text
9. Click here to enter text
10. Click here to enter text

Identify critical risk(s) that staff may encounter on this project.

Driving	Working at Heights	Traffic Control	Wildlife, Insects, and Vegetation	Mobile and Heavy Equipment	Environments with Water or Ice
Yes	No	No	Yes	Yes	Yes
Ground Disturbance	**Ergonomic Hazards and Manual Handling**	**Hazardous Materials and Environments**	**Control of Hazardous Energy**	**Hot Work**	**Confined Spaces**
Yes	Yes	Yes	No	No	No

When assessing energy sources please consider task and site wide hazards including activities, time of day, time of year and project stages

Please identify SWPs below that apply to your project:

☒ SWP 107 – First Aid
☐ SWP 103 – WHMIS (CA)
☒ SWP 104 – HAZCOM (US)
☒ SWP 105 – PPE

		Hazards	Applicable SWPs, forms, SOPS	Specialized training beyond the SWPs	Specific Site Controls
Thermal					
	☒	Cold Stress	☒ SWP 514 - Working on or Near Ice ☒ SWP 114 - Working in Cold Environments ☐ SWP 113 - Heat Stress ☐ SWP 414, 414a – Hot Work Enter additional SWPs, SOPs	Enter specialized training	Dress warmly and take periodic breaks in heated vehicle where warranted. Wear PPE designed for warmth, in addition to PPE for chemical protection (ex. knit gloves underneath nitrile gloves to keep fingers warm). Wear traction aids on shoes if icy.
	☐	Heat Stress			
	☐	Hot work			
	☐	Hot surfaces			
	☒	Cold surfaces			
	☐	Other:			
Chemical					
	☐	Oxygen deficient atmosphere	☐ SWP 409 - Respiratory Protection ☐ SWP 411, 411a, 411b, 411c – Confined Space Entry ☐ SWP 304 - Asbestos Safety ☐ SWP 309 - Silica Awareness ☐ SWP 312 - Fueling Gasoline Engines ☒ SWP 305 - Benzene Safety ☒ SWP 315 - Arsenic Safety	Enter specialized training	Soil/groundwater at the Site known to have VOC, PAH, PCB, metals and PFAS contamination. Wear nitrile gloves whenever handling soil/groundwater samples, along with safety glasses.
	☐	Asbestos			
	☐	Acids			
	☐	Caustics			
	☒	Volatile organic compounds			
	☒	Heavy metals			
	☐	Silica			
	☒	Polycyclic Aromatic Hydrocarbons (PAH)			
	☐	Pesticides			
	☐	Herbicides			

	☒	PCBs	☐ SWP 319 - Hydrogen Fluoride / Hydrofluoric Acid Safety ☐ SWP 519 - Post-Disaster Building Entry Enter additional SWPs, SOPs		
	☒	Petroleum hydrocarbons			
	☒	Solvents/Flammables			
	☐	H_2S (Hydrogen sulfide)			
	☒	Lead			
	☒	Arsenic			
	☒	Benzene			
	☐	Hydrogen fluoride / Hydrofluoric acid			
	☐	Other:			
Biological					
	☐	Bacterial cultures	☐ SWP 409 - Respiratory Protection ☐ SWP 314 - Working Around Hazardous Waste and Waste Water ☐ SWP 108 - Bloodborne Pathogens ☒ SWP 508 - Wildlife Encounters ☐ SWP 102 - Workplace Violence ☐ SWP 510 - Working in Abandoned Buildings ☐ SWP 519 - Post-Disaster Building Entry Enter additional SWPs, SOPs	Enter specialized training	Watch for wildlife. Site mostly cleared, but still some areas present with remnants of vegetation. This work is being performed during a pandemic (COVID-19). At the time of the completion of this form, the State of Wisconsin has a state-wide facemask mandate in public places where social distancing is not possible. Cloth or disposable masks should be available for Stantec and contractor personnel for use in cases where six feet or more distance is not attainable, for entering public spaces (ex. gas stations), etc. If any worker onsite has symptoms of COVID-19, has travelled internationally or has interfaced with a person that has positively tested for COVID-19 in the past 14 days, they will not be admitted to this Site. Further COVID-19 guidance is included as an attachment to this form.
	☐	Domestic waste			
	☐	Medical waste			
	☐	Wastewater			
	☐	Sewage			
	☐	Bloodborne pathogens			
	☒	Wildlife			
	☐	Domestic animals (dogs, cattle)			
	☐	Poison ivy			
	☐	Poison oak			
	☐	Giant Hogweed			
	☐	Wild parsnip			
	☐	Bees / wasps / hornets			
	☐	Ticks			
	☐	Black flies			
	☐	Other stinging or biting insects			
	☐	Pedestrians / onlookers			
	☐	Protesters			
	☒	Other:COVID-19			
	☐	Other:			
	☐	Other:			
	☐	Other:			
Radiation					
	☐	Nuclear densometers	☐ SWP 502, 502a-g (CA) - Radiation Safety Program Field Manual for Portable Gauges (Canada) ☐ SWP 516, 516a-e (US) - Radiation Safety (US) Enter additional SWPs, SOPs	Enter specialized training	
	☐	NORMs			
	☐	Microwave			
	☐	Sunburn			
	☐	Other:			
Noise					
	☒	Impact	Enter additional SWPs, SOPs	Enter specialized training	Wear earplugs or earmuffs when working in the vicinity
	☒	Mobile equipment			

	☐ Manual equipment ☒ Vibration ☐ Stationary equipment ☐ Impact on communications ☐ Other:				of loud machinery, particularly during soil boring drilling.
Gravity					
	☒ Slip / Trip / Fall ☐ Work from heights ☐ Falling objects ☐ Other:	☐ SWP 201 - Fall Protection / Working at Heights ☐ SWP 202 - Ladder Safety ☐ SWP 203 - Aerial Work Platform ☐ SWP 205 - Scaffold Safety ☐ SWP 208 - Hoisting and Lifting ☐ SWP 510 - Working in Abandoned Buildings Enter additional SWPs, SOPs	Enter specialized training	Wear safety toed boots with at least a 6” ankle for support onsite. Keep focus on path and off of phone/maps while walking. Wear traction aids on boots if conditions are icy.
Motion					
	☐ ATV ☐ ARGO ☐ Snowmobile ☐ Aircraft (fixed wing or rotary) ☐ UAVs/Drones ☐ Working near traffic ☒ Automobile/truck/trailer ☐ Elevated work platform ☐ Construction equipment ☐ Pedestrians ☐ Cyclists ☐ Rail ☒ Lifting ☐ Pushing/Pulling ☒ Bending ☒ Posture/position ☐ Twisting ☐ Watercraft / water ☒ Walking/Hiking ☐ Climbing ☐ Other:	☐ SWP 507 - Aircraft Safety ☒ SWP 124, 124a, 124b – Safe Driving ☒ SWP 216 - Working Near Mobile Equipment ☐ SWP 217, 217a – Forklift Operation ☐ SWP 407, 407a, 407b, 407c – Traffic Control and Protection Planning ☐ SWP 505, 505a, 505b, 505c, 505d - Off Road Vehicles ☐ SWP 506 - Rail Safety ☒ SWP 115 - Material Handling and Safe Lifting ☐ SWP 125 - Workstation Ergonomics ☐ SWP 513 - Boat and Water Safety Enter additional SWPs, SOPs	Enter specialized training	Green defensive driving in transit to/from/around Site, keep distance (10’ minimum) from mobile equipment; wear hi-vis clothing/hard hat at all times during drilling activities.
Mechanical					
	☒ Wrap points ☒ Shear points ☒ Pinch points ☐ Freewheeling point	☒ SWP 416 - Supervision of Contracted Drilling Activities ☐ SWP 518, 518a – Using a Chainsaw	Enter specialized training	Keep distance from mobile equipment operated by contractors (i.e., drill rig).

	☐ Chains ☒ Cables ☐ Cutting edges ☐ Blades ☒ Rotating parts (e.g., drill/auger) ☐ Other:	☒ SWP 206 - Hand and Portable Power Tools ☐ SWP 517 - Safe Machete Use ☐ SWP 408, 408a, 408b, 408c – Lock, Tag & Try ☒ SWP 216 - Working Near Mobile Equipment ☐ SWP 510 - Working in Abandoned Buildings Enter additional SWPs, SOPs		
Electrical					
	☐ Power and communication lines ☐ Static charge and lightning ☐ Wiring ☐ Batteries ☐ GFCI cords/plugs ☐ Lighting levels ☐ Double insulated tools ☒ Wet environment ☐ Exposed circuits ☐ Other:	☒ SWP 213, 213a, 213b, 213c – Utility Clearance ☐ SWP 406, 406a, 406b – Electrical Safety Program ☐ SWP 408, 408a, 408b, 408c – Lock, Tag & Try ☐ SWP 504 - Backpack and Boat Mounted Electro-Fishing ☐ SWP 519 - Post-Disaster Building Entry Enter additional SWPs, SOPs	Enter specialized training	Confirm that utilities have been located and cleared prior to drilling work.
Pressure					
	☒ Hydraulic systems ☐ Pneumatic systems ☐ Steam ☐ Vacuum ☐ Cylinders ☐ Excavations and spoil piles ☐ Other:	☐ SWP 215 - Supervision of Hydro-Excavation Activities ☐ SWP 310 - Compressed Gas Cylinders ☐ SWP 214 - Entering Excavations and Trenches Enter additional SWPs, SOPs	Enter specialized training	Stantec personnel to maintain distance from drilling equipment.

PPE	REQ'd	If you need assistance to answer these questions, please contact an HSSE advisor or HSSE manager
Head (CSA/ANSI)	☒	**Choose a Type and Class:** ☒ Type 1 (no side impact) ☐ Type 2 (side impact) ☐ Class E (rated for 20000 volts) ☐ Class G (rated for 2200 volts) ☐ Class C (no electrical rating) ☐ Other
Eye/face (CSA/ANSI)	☒	☒ safety glasses with rigid side shields ☒ polarized safety glasses with rigid side shields ☐ goggles ☐ spoggles ☐ safety glasses and face shield ☐ goggles and face shield ☐ UV glasses, UV shield
Hand	☒	**Hazard Protection** ☐ Abrasion ☐ Cut ☐ Vibration ☐ Puncture ☐ FR (flame resistant) ☐ Arc Flash ☒ Chemical ☐ Impact ☒ Cold ☐ Heat ☐ Other:

		Glove Type ☒ Nitrile ☐ Leather ☒ Cotton ☐ High Performance Polyethylene ☐ Polyurethane ☐ Kevlar ☐ Latex ☐ PVC ☐ Neoprene ☐ Viton ☐ Other:
Foot (6" minimum ankle support)	☒	☒ CSA Green triangle and orange omega boots (CA) / ASTM / ANSI boots (US) ☐ CSA Green triangle and orange omega rubber boots (CA) / ASTM / ANSI rubber boots (US) ☐ CSA Green triangle and orange omega waders (CA) / ASTM / ANSI waders boots (US) ☐ Traction Aids
High visibility clothing	☒	Class 1 - not used ☒ Class 2 (under 80km/h / 50 mph and daylight) ☐ Class 3 (over 80km/h / 50 mph and/or twilight/dark)
Hearing	☒	☒ Ear plugs ☒ Ear muffs ☐Ear plugs and muffs
Coveralls	☐	☐ Standard ☐ FR (Flame Resistant) – Type: ☐ Tyvek (disposable) ☐ Chemical resistant
Respiratory	☐	☐ N95 (dust mask) ☐ 1/2 mask - Cartridge type: - Filter type: ☐ Full face - Cartridge type: - Filter type: ☐ PAPR - Cartridge type: - Filter type:
Fall arrest/limit	☐	**Fall arrest harness (verify capacity)** ☐ Class A (fall arrest) ☐ Class D (controlled descent) ☐ Class E (evacuation) ☐ Class L (ladder) ☐ Class P (positioning) **Lanyard** ☐ 6' with shock absorber (verify capacity) ☐ 4' with shock absorber (verify capacity) ☐ 6' Y with shock absorber (verify capacity) ☐ 6' with NO shock absorber (verify capacity) for use on aerial lifts ☐ 4' with NO shock absorber (verify capacity) for use on aerial lifts **Additional equipment** ☐ Rope Grab ☐ Rope ☐ Self-retracting lifeline – ☐ Type 1 ☐ Type 2 ☐ Type 3 ☐ Tripod ☐ Retrieval winch ☐ Anchorage connector ☐ Beam anchor ☐ Vertical or horizontal lifeline ☐ Carabiner ☐ Suspension trauma straps
Flotation device	☐	☐ Lifejacket ☐ Floater Jacket ☐ PFD - Type: ☐ PFD inflatable ☐ Survival Suit
Other	☒	Photoionization Detector (PID) to be used as a vapor screening tool. Cloth mask to be utilized in situations where social distancing cannot be achieved.

EMERGENCY RESOURCES

(NOTE: This plan is not adequate for working at heights or confined space activities. A separate plan is required, please contact your Regional HSSE Manager or Advisor)

Site emergency number: 911

Fire Department: Manitowoc Fire & Rescue, 911 Franklin Street. (920) 686 - 6540

Ambulance:	Manitowoc Fire & Rescue, 911 Franklin Street. (920) 686 - 6540	**Spill Response:**	National Response Center (NRC). 1 (800) 424 – 8802.
Police:	Manitowoc Police Dept., 910 Jay Street. (920) 686 - 6500	**Regional HR:**	US Central - Ricardo Carlos Perez - (512) 469-5330
Workers' Compensation Claim Coordinator:	US - Melissa Helton - cell 513-720-3706		
OSEC:	Kurt Rubsam – (262) 402 - 8153		
Public Relations:	US Central – Laura Krinke (612) 712-2072		
HSSE Manager:	US Central – Wes Cline (916) 281-7459		

First aid facilities are located:	In Vehicle
First aiders on site:	Whitney Cull
Fire extinguisher are located:	In Vehicle
SDS are located:	N/A
Eyewash station is located:	N/A
Spill response equipment is located:	N/A

Incident reporting protocol based on work location (Select USA and / or Canada and / or International)

Incident Reporting Protocol US

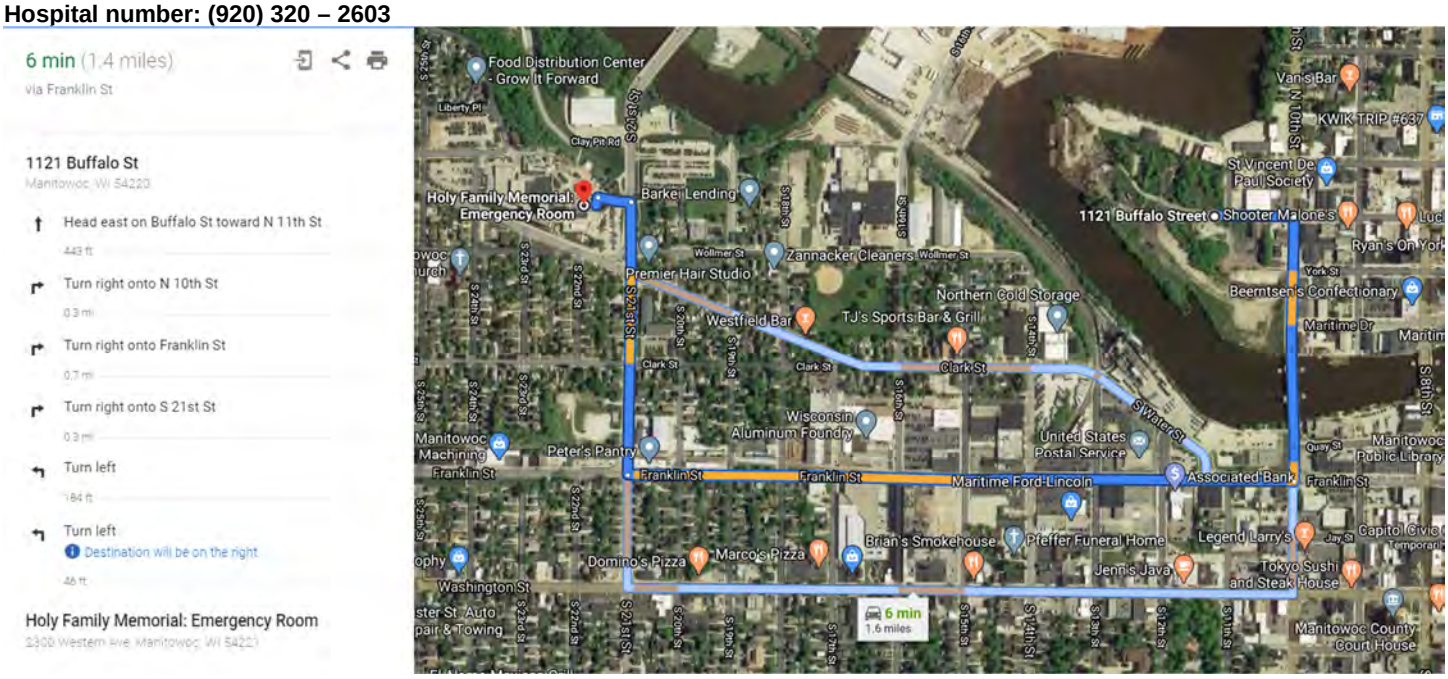
IMMEDIATE ACTIONS

1. Keeping safety in mind, care for injured people (if applicable) and stabilize the scene.
2. For life threatening injuries, **immediately contact 911**. Accompany the injured employee to the medical facility whenever possible.
3. Call **WorkCare (24-hour service): 1-888-449-7787** for work-related symptoms or injuries, and speak to a medical professional for guidance and treatment options.
4. Make voice contact with your supervisor within 1 hour or less of the incident occurring. Leaving a voicemail does not count. If you cannot contact your supervisor, contact the HSSE Manager or HSSE Advisor for your region.
5. Supervisors must immediately contact their HSSE Manager or HSSE Advisor by phone to discuss incident severity and determine if further notifications (internal or external) are required.
6. When an employee is guided by WorkCare to obtain medical assistance, or the employee requests medical attention for a non-life-threatening injury, and after alerting the supervisor; the employee must **immediately call Melissa Helton, Stantec's US WC Claims Coordinator at 513-720-3706** for assistance.
7. In most cases WorkCare will provide guidance about which clinic is available and provide directions. Some job sites already have prescribed clinics such as US Healthworks. Here is a link accessing additional clinic locations: Clinic Search link.
8. Additional notifications may be required based on the client requirements.

Maps are provided to the nearest medical clinic or hospital

Holy Family Memorial: Emergency Room, 2300 Western Avenue, Manitowoc, WI (see map on following page):

Hospital number: (920) 320 – 2603



PROJECT CONTACT INFORMATION

Title	Name	Company	Phone Number
Stantec Office	Mequon, Wisconsin	Stantec	(262) 241 - 4466
Project Manager	Harris Byers	Stantec	(414) 581 - 6476
Project Site Safety	Whitney Cull	Stantec	(262) 219 - 4740
Client or Owner	Adam Tegen	City of Manitowoc – Community Dev. Director	(920) 686 - 6931
Stantec After-Hours Number	Click here to enter text	Click here to enter text	Phone Number
Other: (specify)	Click here to enter text	Click here to enter text	Phone Number
Other: (specify)	Click here to enter text	Click here to enter text	Phone Number

Approvals

By signing this approval, the Project Manager is acknowledging that (s)he has communicated the hazards, controls, required PPE and applicable SWPs to the employees working on this project. It also indicates that the Project Manager has verified that employees have all the equipment required to work safely, that the equipment is in working order, and that the employees have the knowledge required to operate/use this equipment.

Prepared by:	Whitney Cull		12/15/2020
	Print Name	Signature	Date
Reviewed by: *(not author)*	Harris Byers		12/15/2020
	Print Name	Signature	Date
Approved by PM:	Harris Byers		12/15/2020
	Print Name	Signature	Date

Employee Review

Risk Management Strategy (RMS1)

All employees conducting field work on this project will review the Risk Management Strategy (RMS1) and sign below acknowledging that they have been advised of the hazards, controls, PPE, and other safety equipment required, and have reviewed the applicable SWPs. Employees in the field who identify additional hazards not listed above will notify the project manager of the hazard, and prior to proceeding, will confirm the controls that will be used. Document any on-site changes and communications using the RMS2 as appropriate; see section 4.4 of the HSSE Program Manual on Management of Change.

Please designate Team Lead for field activities below.

Reviewed by:	Whitney Cull		12/15/2020
	Print Name (Team Lead Field) Click here to enter text.	Signature	Date Click here to enter a date.
	Print Name Click here to enter text.	Signature	Date Click here to enter a date.
	Print Name Click here to enter text.	Signature	Date Click here to enter a date.
	Print Name Click here to enter text.	Signature	Date Click here to enter a date.
	Print Name	Signature	Date

Fit for Duty COVID-19 Guidance

Pre-mobilization fit for duty questions for Stantec field personnel

Please review the following statements and answer the question below:

You are not fit for duty if any of the following conditions are met.

- You have a temperature above 100.4 °F (38 °C).
- You have any symptoms associated with COVID-19 such as cough, sore throat, shortness of breath, chills, headache, repeated shaking with chills, muscle pain, new loss of taste or smell, or toes and extremities turning blue.
- You have been exposed to someone in the last 14 days that has been diagnosed with COVID-19 or is presumptively positive.
- You or any members of your household travelled internationally in the last 14 days.

Are you Fit for Duty?

Yes ☐ No ☐

If you answer **YES**, you can mobilize to the project field site.
If you answer **NO**, or you choose to not answer, please consult with your supervisor prior to mobilizing to the project field site.

Field Level Risk Assessment

Questions for non-Stantec personnel accessing field sites under Stantec control

"*Hello. As you are aware, COVID-19, also known as the novel coronavirus, was declared a global pandemic on March 11, 2020 by the World Health Organization (WHO). The COVID-19 situation continues to evolve and Stantec is now conducting active fit for duty affirmations prior to allowing access to this site.*"

Please review the following statements and answer the question below:

You are not fit for duty if any of the following conditions are met.

- You have a temperature above 100.4 °F (38 °C).
- You have any symptoms associated with COVID-19 such as cough, sore throat, shortness of breath, chills, headache, repeated shaking with chills, muscle pain, new loss of taste or smell, or toes and extremities turning blue.
- You have been exposed to someone in the last 14 days that has been diagnosed with COVID-19 or is presumptively positive.
- You or any members of your household travelled internationally in the last 14 days.

Are you Fit for Duty?

Yes ☐ No ☐

If the individual answers **YES**, site access can be granted.
If the individual answers **NO**, or refuses to answer, do not allow them access and consult with your supervisor, project manager and/or Regional Leader.

"Thank you for your honesty and understanding. While at this Stantec project site please adhere to social distancing to the fullest extent possible. Social distancing means staying 2 metres (6 feet) away from others and avoiding crowds. Please advise Stantec if your task requires you to be within 2 metres (6 feet) of another individual."

* Close contact is defined as a person who:

- Provided care for the individual, including healthcare workers, family members or other caregivers, or who had other similar close physical contact with the person without consistent and appropriate use of personal protective equipment OR
- Lived with or otherwise had close prolonged contact (within 2 metres / 6 feet) with the person while the person was infectious OR
- Had direct contact with infectious bodily fluids of the person (e.g., was coughed or sneezed on) while not wearing recommended personal protective equipment.

Stantec COVID-19 Field Guidance and Best Practices

NOTE: Recent revisions highlighted in yellow for ease of identification

The COVID-19 pandemic is rapidly evolving, and Stantec's Pandemic Committee continues to work diligently to secure guidance from global and regional health authorities to help protect the health and safety of our employees and minimize the spread of the virus. They provide regular updates to employees through Stantec's internal communications platform (The Lens) which allow us to continue to serve our clients. Our people are at the heart of everything we do; they give our work purpose and deliver the critical support our clients require. Supporting our employees' health and the health of those around them is entrenched in our corporate values. Stantec's Pandemic Committee has instituted a number of precautionary measures to promote continued health and mitigate the chance of virus spread. All employees are encouraged to refer to The Lens for the most up to date guidance.

This document is intended to provide guidance on managing the risks associated with COVID-19 for those that perform or direct **field work**.

This guidance should be incorporated as part of existing or new project Risk Management Strategy (RMS1) or Health and Safety Plans (HASPs).

Symptoms

Those who are infected with COVID-19 may have little to no symptoms. Symptoms may take up to 14 days to appear after exposure to COVID-19. A person may not realize they have symptoms of COVID-19 because they are similar to a cold or flu. Symptoms have included: fever, cough, sore throat, shortness of breath, chills, headache, repeated shaking with chills, muscle pain, new loss of taste or smell, or toes and extremities turning blue.

Worksite Considerations

For those working on project sites or in client settings, Stantec team members will work to uphold our company standards and work transparently with clients to coordinate approaches where appropriate. Relevant topics include, but are not limited to:

1. Social Distancing
2. Communication
3. Fitness for Duty
4. Safety Plans
5. Work at Remote sites
6. Emergency Responses

1. Social Distancing

Heath authorities are recommending social distancing to slow the spread of the virus. Social distancing includes voluntary avoidance of crowded places as defined by government agencies where exposure risks are increased. Experts also recommend staying a minimum of 2 metres (6 feet) away from others.

Project sites under the care and control of Stantec are asked to follow the direction of regional government and health agencies regarding social distancing or other measures. Field employees are asked to practice social distancing at toolbox meetings, in break or lunchrooms, site trailers, and vehicles. Confined spaces can also present unique challenges with respect to COVID-19 controls. When Stantec staff are requested to enter a confined space, and where possible and safe to do so, staff should request to not have others in the space with them while they conduct their work.

Minimize activities where groups of workers congregate. If reasonably practicable, conduct toolbox meetings outside, practice social distancing, and keep group sizes small.

Stantec staff will travel alone in vehicles when on Stantec business unless the work is covered by a variance or the following allowances below.

Where it is not reasonably practicable or would cause undue financial impact (as determined by the appropriate Regional Business Leader (RBL), Stantec Operational Business Line employees may travel in the same motor vehicle with one other person while on Stantec business with the following conditions.

1) When travelling in motor vehicles with more than one occupant, it is not likely that occupants will be able to maintain 2 metres / 6 feet physical distancing, and a cloth face covering should be worn as described by the **CDC**. Follow cleaning and disinfectant, and cloth face covering guidance provided in Section 1.4 of the *Hygiene and Wellness COVID-19* document posted on The Lens. The passenger is to sit in the back seat on the opposite side of the driver.

2) For travel in a shuttle, bus or multi-row van, there is a maximum of one occupant per row of seating, alternating in a checkerboard seating arrangement. The vehicle will be loaded from the back to front and unloaded from the front to back.

These allowances do not apply under the following situations:

- any travel within the same municipality,
- travel under 2 hours when travelling from the base location,
- where it contravenes local or regional government orders,
- the vehicle has one row of seating, or
- travel in boats, UTVs and helicopters.

If a variance is required, two variance options are available:

- Business Line variances for certain work categories (i.e. land surveying, remote biological surveys). The HSSE Manager for the BOU (MOC Reviewer) and the BL (MOC Owner) will work together to prepare and submit a plan to the Director HSSE Operations for approval.

- Project level variances for one-off project requirements. For this scenario, the project team will prepare and submit a plan to the Regional HSSE Manager (MOC Reviewer)

and appropriate RBL (MOC Owner) for joint review and feedback. Once finalized, it will be sent to the Director HSSE Operations for approval.

Final approvals will also be shared with the appropriate Regional Leader(s) and HSSE Manager(s).

When two individuals have been permitted to travel in a vehicle through the Stantec variance process, do not use the air recirculation feature in the vehicle, and when practicable, open windows to provide continual replacement of cabin air with fresh air.

Where possible, adjust work planning to maximize social distancing between workers, teams, and site personnel. This may include staggering meal and break times to avoid large gatherings of workers. If workers are required to sign in and out of a site, assign one individual to add the names to the sheet or permit to minimize the possibility of spreading the virus.

If a meeting must take place in-person onsite, the location must be large enough to permit 2 metres (6 feet) of separation between attendees; surfaces will be wiped down prior to convening the meeting; hand sanitizer and wipes must be available to all participants; invitees will be asked not to attend if they are not feeling well; person-to-person contact must be avoided (shaking hands, etc.); and all attendees are reminded to cover any coughs or sneezes using the crook of their arm.

The CDC, WHO and PHAC are recommending cloth face coverings be worn (covering the nose and mouth) to protect people around you if you may be infected but do not have symptoms. A cloth face covering should be worn in settings where other social distancing measures are difficult to or cannot be maintained (e.g. you cannot maintain 2 metres/ 6 feet at all times). This practice does not replace social distancing and is instead meant to be an additional control. If your task required the use of an N95 mask to protect you from workplace hazards before the outbreak of the pandemic, you should continue to wear the N95 mask while conducting your task. Any personal protective equipment, including face coverings of all types, should always be assessed, worn, and maintained as per the manufacturer’s instructions.

The cloth face coverings recommended are not surgical masks or N-95 respirators.

According to these organizations, cloth face coverings should:

1) Fit snugly but comfortably against the side of the face
2) Be secured with ties or ear loops
3) Include multiple layers of fabric
4) Allow for breathing without restriction
5) Be able to be laundered and machine dried without damage or change to shape

Before donning a cloth face covering, wash your hands thoroughly. Cover your mouth and nose and ensure there are no gaps between your face and the face covering. Avoid touching the face covering with your hands while you are wearing it; if you do, clean your hands with alcohol-based hand rub or soap and water. Replace the face covering with a new one as soon as it is damp.

When removing your face covering handle it by the straps and place it in a sealable container until it can be laundered. Launder cloth masks using the warmest water and appropriate detergent for the items and dry the coverings completely. The CDC indicates that standard laundering will remove the virus, use of bleach or a disinfectant is not required. Allow laundered face coverings to dry before reuse.

Stantec

For any staff wanting to wear a cloth face covering at work or out in the community, please use the link to the website below for instructions on how to make one.

If access to a client site requires a cloth face covering, please speak to your supervisor to approve associated expenses.

https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/diy-cloth-face-coverings.html

2. Communication

Our COVID-19 response follows CDC, WHO, and PHAC guidelines. If our practices are not aligned with client practices, employees are to meet with their project manager and supervisor to discuss the differences and determine an appropriate solution to continue supporting our clients. Please seek the support of HSSE as needed.

Differences in plans may affect our level of service, project schedule, and resourcing of construction laborers, materials, or other resources. We often have contractual obligations to formally notify our clients of these situations in order to be entitled to schedule or cost relief, and often these notices must be submitted within a short period of time. If you have questions, please contact regional counsel for support.

Project managers, in cooperation with our clients, will need to determine the appropriate staffing and resources for field offices while maintaining social distancing. Project teams are asked to maintain open lines of communication with their client contacts, request a copy of changes to site safety protocols (including fit for duty), and communicate any updates to the project team.

In the event that a Stantec employee has a confirmed diagnosis or exhibits symptoms of COVID-19 and interacted with a client (either in office settings or on project sites), the project team will connect with the Stantec Regional Crisis Team who will communicate with the client.

3. Fitness for Duty

As part of the **fitness for duty** checks documented on the Field Level Risk Assessment (RMS2) form, Stantec field employees are asked to verify that any personnel who will be visiting or conducting any work on a Stantec work site:

You are not fit for duty if any of the following conditions are met.

You have a temperature above 100.4 °F (38 °C).

You have any symptoms associated with COVID-19 such as cough, sore throat, shortness of breath, chills, headache, repeated shaking with chills, muscle pain, new loss of taste or smell, or toes and extremities turning blue.

You have been exposed to someone in the last 14 days that has been diagnosed with COVID-19 or is presumptively positive.

You or any members of your household, in the last 14 days, travelled internationally or travelled to or from an area or location which would require self-quarantine.

There are prepared speaking notes and a *Field Level Risk Assessment Fit for Duty COVID-19 Guidance* tool to assist field employees to verify worker fitness for duty related to COVID-19.

4. Safety Plans

Incorporate the guidance below into existing and new project Risk Management Strategy (RMS1) or Health and Safety Plans (HASPs).

- Notify BC leadership of ongoing field work so that local orders or directives can be communicated to field personnel in a timely manner. These may require project managers to determine which tasks are deemed critical and which tasks can be deferred.
- Maintain a current call down list for all field-based employees.
- For projects that extend beyond a single day, verify that the site is tidied up and left in a safe and secure condition. Project teams may not be able to return to the project site based on government orders or directives. In addition, where logistically feasible, plan on traveling home at the end of the workday rather than staying in a hotel. Be mindful of local maximum allowable work hours per day or per week.
- Discuss projects that require employees to enter a residential structure with BC leadership if the work is deemed critical or if it can be deferred. When entering a residential structure, communicate expectations ahead of scheduled visits, practice social distancing at the door, and make arrangements for the client to determine the following from the occupants of the residence before entry.

Does anyone have a temperature above 100.4 °F (38 °C).

Does anyone have any symptoms associated with COVID-19 such as cough, sore throat, shortness of breath, chills, headache, repeated shaking with chills, muscle pain, new loss of taste or smell, or toes and extremities turning blue.

Has anyone been exposed to someone in the last 14 days that has been diagnosed with COVID-19 or is presumptively positive.

Have you or any members of your household, in the last 14 days, travelled internationally or travelled to or from an area or location which would require self-quarantine.

- Where possible, employees are encouraged to pack meals and snacks as needed for the project duration and avoid visiting stores and restaurants. If necessary, modify your schedule to avoid restaurants and public restrooms during peak (i.e., crowded, periods to minimize contact with the public). Use drive-through service for food pick-up if available.

Personal Hygiene and Wellness

The following personal hygiene and wellness practices are recommended to prevent or control the transmission of bacteria and/or viruses:

- Wash your hands with soap and water for at least 20 seconds after using toilet facilities, before and after eating, after handling potentially contaminated or infectious materials, after removing

hand protection and other PPE, and after sneezing, coughing, or touching your face. When soap and water is not available use an alcohol-based hand sanitizer.

- Avoid touching your eyes, nose, and mouth with unwashed hands.
- Cover your mouth and nose when coughing or sneezing with a tissue or crook of your elbow. Throw the used tissue in the trash and wash your hands.
- Maintain lunchroom facilities through cleaning and disinfecting objects and surfaces. Leave contaminated tools, materials, or clothing outside.
- Maintain vehicles through regular cleaning and disinfecting of surfaces.
- Do not share tools or equipment (e.g. cell phones, shovels, etc.) between employees without disinfecting them first.
- Avoid handling common use items such as pens and clipboards; equip each worker with their own. If it is necessary to have common use items, include them in the cleaning and disinfecting cycle outlined below.
- Avoid unnecessary, unprotected contact with wild or farm animals, and wash hands immediately if contact does occur.
- Get vaccinated against seasonal influenza viruses.
- Get adequate rest, eat a healthy, balanced diet, and stay hydrated.
- Don’t share personal items that can’t be disinfected. Furthermore, any protective clothing or other safety device that is worn next to the skin must be cleaned and disinfected prior to use by another employee.

Cleaning and Disinfecting

COVID-19 can survive on different surfaces but can be killed by most cleaners and disinfectants. To prevent transmission of COVID-19 while cleaning, good hygiene measures and consistent use of appropriate personal protective equipment is recommended.

Cleaning refers to the removal of germs, dirt, and impurities from surfaces. Cleaning does not kill germs, but by removing them, it lowers their numbers and the risk of spreading infection.

Disinfecting refers to using chemicals to kill germs on surfaces. This process does not necessarily clean dirty surfaces or remove germs, but by killing germs on a surface after cleaning, it can further lower the risk of spreading infection.

Practice routine cleaning of frequently touched surfaces (for example: vehicle door handles, interior of vehicle such as steering wheel and control panel, equipment controls, handles, stair railings, toilet facility doors, etc.) with household cleaners and disinfectants that are appropriate for the surface, following label instructions. Labels contain instructions for safe and effective use of the cleaning product including precautions you should take, such as wearing gloves and making sure you have good ventilation during use. It is recommended to clean and disinfect high touch surfaces a minimum of twice daily.

It is important to keep vehicles clean. Do not transfer items between vehicles and limit the transfer of objects between the vehicle and the office. Each vehicle should have an ample supply of clean tissues

and hand sanitizer, as well as cleaning supplies and disinfectants. Clean vehicles after each use and wear appropriate personal protective equipment (PPE) when cleaning. When possible, use disposable gloves and masks that may be required for cleaning and disinfecting. Rental vehicles are to be cleaned prior to use, and when possible, use Stantec preferred vehicle rental agencies that have a COVID-19 cleaning protocol in place. All passengers are to clean their hands before touching common areas of the vehicle.

What you should know:

- Commonly used cleaners and disinfectants are effective against COVID-19.
- Frequently touched surfaces are most likely to be contaminated.
- Check the expiry date of products you use and always follow manufacturer's instructions.

If surfaces are dirty, they need to be cleaned using a detergent or soap and water prior to disinfection. For disinfection, refer to a list of products from the American Chemistry Council

Drinking Water

A reasonable supply of potable drinking water is to be kept readily accessible at the project site for the use of workers. Drinking water is to be supplied from a piping system, individual servings or from a clean, covered container with a drain faucet or pump. Workers will be given a sanitary means of drinking the drinking water and must not be required to share a common drinking container. If using water coolers to provide drinking water, wear clean gloves to operate the spigot and verify that a clean source of disposable cups is available. Verify that the cooler is cleaned and sanitized on a regular basis. If using bottled water sources, have employees take measures such as labeling bottles to avoid drinking out of someone else's bottle.

Toilet Facilities

Toilet facilities will be provided or arranged for workers before work has started at the project and workers will be provided reasonable access to these facilities. Project teams need to consider local closures of restaurants and other establishments when deciding on reasonable access to these facilities. The location of the toilet facilities will be posted in a conspicuous location. The toilet facilities will be serviced, cleaned, and sanitized on a regular basis to maintain them in a clean and sanitary condition. All toilet facilities will have toilet paper available at each toilet.

For toilets that are not connected to a sanitary sewer system, provide the user privacy and protection from weather and from falling objects. The toilets are to be illuminated by natural or artificial light, have adequate ventilation, and have a self-closing door that can be locked from the inside. If the facility is intended for use by female workers, a disposal receptacle for sanitary napkins will be provided. If the toilet facility is intended for use by males only or by females only, it must have a sign indicating that fact.

If a project is being carried out in a remote unpopulated area and it is not reasonably practicable to provide toilet facilities as described above, other types of toilet facilities that come as close as possible to having the features of non-sewered flush toilet facilities will be provided instead, and must be located to provide the user privacy. The minimum number of toilet facilities will be dependent on the gender and number of workers regularly employed on the project and be determined by local legislation.

Clean-up Facilities

Each toilet facility must be provided with its own clean-up facility. Each clean-up facility will meet the following requirements:

- A wash basin with both hot and cold running water if reasonably possible.
- Soap or an alcohol-based hand cleaner.
- Paper towels or a hand dryer. If paper towels are provided, there shall be a waste disposal receptacle nearby.
- If it is not reasonably possible to have a wash basin with running water at a clean-up facility, alcohol-based hand cleanser will be provided instead.

Workers who handle or use corrosive, poisonous or other substances likely to endanger their health will be provided with washing facilities with clean water, soap and individual paper towels.

5. Work at Remote Sites

Working at remote sites presents unique challenges. Items to consider and address in the Risk Management Strategy (RMS1) or Health and Safety Plan (HASP) include:

- Pre-mobilization
    - Each employee needs to review the *Field Level Risk Assessment Fit for Duty COVID-19 Guidance* document.
- Transportation
    - How the employees are accessing the site, by vehicle, airplane or helicopter, and what methods of social distancing they will have with their means of transportation; if reasonable, have the employees access the site via their own vehicle.
- Emergency response
    - A protocol needs to be developed should an employee show signs, or symptoms associated with COVID-19 which includes how they will access medical advice and how they will be evacuated out in case of an emergency. If employees are accessing the site via airplane or helicopter, they may not be allowed access to the airplane or helicopter to evacuate out if they are experiencing any signs or symptoms of COVID-19.
- Accommodations
    - Research the accommodations available, plan for each employee to have their own private lodging to assist with social distancing. If staying in a camp setting, request the camp COVID-19 protocol and review it to ensure it meets Stantec's standard as a minimum. If there is no standard available, the Project Manager will need to discuss Stantec's requirements with the client / camp director.
- Food and water
    - Research the dining options, choose food that is either full service or pre-bagged instead of self-serve buffet style.

- Determine how staff will access potable water

- Cleaning
  - Employees will need to have ready access to tissues and disinfecting wipes.

6. Emergency Response

If you experience signs or symptoms of illness, distance yourself from others and notify your supervisor. Your supervisor will work with the Regional Crisis Team to help manage the response.

This guidance document does not address every situation with our projects related to COVID-19 precautionary measures. Additional communication through The Lens as the situation evolves. If there are any questions or situations not currently addressed by any of the available resources found on The Lens, please reach out to your supervisor, project manager, or Regional HSSE resource.

Stantec	**STANDARD OPERATING PROCEDURE (SOP)** BC 1937 ECOSYSTEM RESTORATION
COVID-19 Ecosystem Restoration Fleet Protocol	
Preparation Date: 20200318	Prepared By: A. Feggestad
Revision Date:	Approved By: J. Arrigoni, M. Roznowski

1 PURPOSE

To provide staff, supervisors, and managers with a clear protocol for the use of Stantec fleet vehicles relative to public health and Stantec HSSE guidance for COVID-19:

A. As of 3/18/2020, Stantec has not issued policy for travel in vehicles where 2 or more employees may be confined for long periods. This protocol is intended to provide guidance for use of BC1937's vehicle fleet.
B. The Ecosystem Restoration team operates a fleet of vehicles for use on all restoration projects throughout the North-Central region. Team travel is frequently required in groups of 2-4 per vehicle.
C. The CDC definition as it applies to COVID-19 is defined as, "remaining out of congregrate settings, avoiding mass gatherings, and maintaining distance (approximately 6 feet or 2 meters) from others when possible."
D. It is not possible to practice recommended social distancing during team travel. This may affect the safety of Stantec drivers and employees. Steps are needed to minimize potential exposure during use of Stantec vehicles.

2 SCOPE

A. When practicable, staff should be encouraged to report directly to project sites using personal vehicles.
B. Do not use Stantec vehicles if you are showing signs of COVID-19 illness, particularly fever, cough, and difficulty breathing. Stay home.
C. Do not use Stantec vehicles if you have been exposed to someone who has tested positive for COVID-19 within the past 14 days.
D. Do not use a vehicle if a passenger who has entered the vehicle has tested positive for COVID-19 in the past 48 hours, unless it has been properly cleaned and disinfected.
E. Maximum of 2 passengers per vehicle: driver with a single passenger in the back to create physical distance.
F. Adjust behaviors during vehicle use to limit potential spread:
    a. Clean hands before touching frequently-touched areas of the vehicle (e.g. exterior and interior door, steering wheel, gear shifter, dash, etc.). Wash your hands often with soap and water for at least 20 seconds. Use an alcohol-based hand sanitizer that contains at least 60 percent alcohol if soap and water are not available.
    b. Avoid touching your eyes, nose, or mouth with unwashed hands.
    c. Cover your mouth and nose with a tissue when you cough or sneeze, then dispose of the tissue and disinfect your hands.
    d. Do not use the air circulation feature on vehicles. As weather allows, roll-down or crack windows to encourage continual replacement of cabin air with outdoor air.
G. Keeping vehicles clean:
    a. Do not transfer items currently in Stantec vehicles, such as binders, clipboards, binders, PPE, and spill kits, between vehicles or between the vehicle and the office.

b. Place personal items (e.g. keys, phones, re-usable drinking containers, and PPE) in a sealed plastic container (e.g. Rubbermaid) labeled with your name.
c. Do not share PPE.
d. Place tissues and hand sanitizer in each vehicle.
e. Store disinfectants and other cleaning supplies in vehicles. Use disinfectants that are pre-approved by the U.S. Environmental Protection Agency (EPA) for use against COVID-19:
    i. https://www.cdc.gov/coronavirus/2019-ncov/community/organizations/cleaning-disinfection.html
    ii. https://www.epa.gov/pesticide-registration/list-n-disinfectants-use-against-sars-cov-2
f. Follow directions for use of disinfectant products. Directions may vary by type and manufacturer. Some products require a long contact time (10+ minutes) to be effective.
g. Use of 70% isopropyl alcohol is preferred on vehicle surfaces. Quaternary ammonium compounds (QACs; e.g. disinfectant wipes and sprays) may be used if listed on product labels. Products containing bleach or hydrogen peroxide may damage vehicle surfaces. Follow industry practices for proper cleaning of vehicle surfaces:
    i. https://www.consumerreports.org/tires-car-care/how-to-kill-coronavirus-in-your-car-without-damaging-interior-surfaces/
    ii. https://auto.ndtv.com/news/how-to-keep-your-car-clean-and-coronavirus-free-2196200
h. Clean vehicles after each use. The person who last used the vehicle is responsible for cleaning. Note date and time of cleaning on daily mileage logs.

H. Wear appropriate eye protection (goggles preferred) when cleaning.
    a. Wear disposable gloves when cleaning and only use them once.
    b. Preferably (if available), wear a N-95 mask, mask with N-95 insert, or other suitable respiratory protection, when cleaning and do not share with others.
    c. Properly dispose of gloves and cleaning materials; place in a plastic bag, seal or tie-up, and place in trash.

I. Prepare for potential illness during work-related travel:
    a. Contact your supervisor if you experience symptoms while traveling for work. Avoid contact with others and Stantec vehicles.
    b. Prior to travel, develop a contingency plan in the event you or a co-worker develop symptoms during travel. This may include checking to see what vehicle rental agencies are located in the area you will be working or arranging for a co-worker or family member to drop off a vehicle so you may return home or visit a medical facility. Only drive if you are well-enough to do so.
    c. Only use Stantec-preferred vehicle rental agencies that have a COVID-19 cleaning protocol in place. Two options include:
        i. https://www.budget.com/en/coronavirus
        ii. https://www.hertz.com/rentacar/misc/index.jsp?targetPage=travel_advisory.jsp

J. Stay abreast of CDC recommendations for staying safe during travel:
    a. https://www.cdc.gov/coronavirus/2019-ncov/travelers/travel-in-the-us.html

Contingency:

A. In the event that numerous staff are exposed or test positive for COVID-19, consider assigning Stantec vehicles to a single driver, or using rental vehicles to maintain one person per vehicle. Rental vehicles shall be cleaned prior to use.

NOTE: RECENT CHANGES ARE HIGHLIGHTED IN YELLOW

HYGIENE AND WELLNESS

1.1 DRINKING WATER

A reasonable supply of potable drinking water will be kept readily accessible at the project site for the use of workers. Drinking water will be supplied from a piping system, individual servings or from a clean, covered container with a drain faucet or pump. Workers must be given a sanitary means of drinking the drinking water and will not be required to share a common drinking container. If using water coolers to provide drinking water, wear clean gloves to operate the spigot and verify that a clean source of disposable cups are available. Verify that the cooler is cleaned and sanitized on a regular basis. If using bottled water, have employees label bottles to avoid drinking out of someone else's bottle.

1.2 TOILET FACILITIES

Toilet facilities will be provided or arranged for workers before work has started at the project, and workers will be provided reasonable access to these facilities. The location of the toilet facilities will be posted in a prominent location. The toilet facilities will be serviced, cleaned, and sanitized on a regular basis to maintain clean and sanitary conditions. Each toilet facility will have toilet paper available.

For toilets that are not connected to a sanitary sewer system, provide the user privacy and protection from weather and from falling objects. The toilet must be illuminated by natural or artificial light, have adequate ventilation, and have a self-closing door that can be locked from the inside. If the facility is intended for use by female workers, a disposal receptacle for sanitary napkins will be provided. If the toilet facility is intended for use by males only or by females only, it must have a sign indicating that fact.

If a project is being carried out in a remote, unpopulated area and it is not reasonably practicable to provide the toilet facilities as described above, other types of facilities will be provided instead. The goal is to closely approximate the features of non-sewered flush toilet facilities, and they must be located to provide the user privacy. The minimum number of toilet facilities will be dependent on the gender and number of workers regularly employed on the project and be determined by local legislation.

1.3 CLEAN-UP FACILITIES

Each toilet facility must be provided with its own clean-up facility. Each clean-up facility will meet the following requirements:

- A wash basin with both hot and cold running water if reasonably practicable.
- Soap or an alcohol-based hand cleanser.
- Paper towels or a hand dryer. If paper towels are provided, there will be a waste disposal receptacle nearby.
- If it is not reasonably practicable to have a wash basin with running water at a clean-up facility, alcohol-based hand cleanser will be provided instead.

Workers who handle or use corrosive, poisonous, or other substances likely to endanger their health will be provided with washing facilities with clean water, soap, and individual paper towels.

NOTE: Sections 1.1 to 1.3 inclusive may be the responsibility of the Prime Contractor/Constructor dependent on the project and project location.

1.4 PERSONAL HYGIENE AND WELLNESS

All employees are to check The Lens on a frequent basis for updates on information regarding COVID-19 and follow any updated Stantec protocols. The Lens can be accessed on computers, tablets, and Stantec issued smartphones. Employees are to review the *Field Level Risk Assessment Fit for Duty COVID-19 Guidance* prior to mobilizing to a field site.

The following personal hygiene and wellness practices are recommended to prevent or control the transmission of bacteria and viruses, including COVID-19:

- Practice social distancing by staying a minimum of 2 metres (6 feet) away from others.
- Where possible, adjust work planning to maximize social distancing between workers, teams, and site personnel. This may include staggering meal and break times to avoid large gatherings of workers.
- Stay home if you're feeling unwell and report to your supervisor. If you have symptoms of a cold or flu call a medical professional if required and self-isolate for a minimum of 14 days after the symptoms disappear.
- Avoid close contact with those who are unwell.
- Wash your hands with soap and water for at least 20 seconds after using toilet facilities, before and after eating, after handling potentially contaminated or infectious materials, after removing hand protection and other PPE, and after sneezing, coughing, or touching your face. When soap and water is not available use an alcohol-based hand cleaner.
- Avoid touching your eyes, nose, and mouth with unwashed hands.
- Cover your mouth and nose when coughing or sneezing with a tissue or crooked elbow. Throw the used tissue in the trash.
- Maintain lunchroom facilities through cleaning and disinfecting objects and surfaces. Leave contaminated tools, materials, or clothing outside.
- Avoid unnecessary, unprotected contact with wild or farm animals, and wash hands after any contact.
- Get vaccinated for seasonal and other influenza viruses.
- Get adequate rest, eat a healthy, balanced diet, and stay hydrated.
- Don't share personal items that can't be disinfected. Avoid handling common use items such as pens and clipboards, each worker will be equipped with their own. If it is necessary to have common use items, include them in the cleaning and disinfecting cycle.

- Any protective clothing or other safety device that is worn next to the skin must be cleaned and disinfected prior to use by another employee.
- Stantec staff will travel alone in vehicles when on Stantec business unless the work is covered by a variance. Two variance options are available:
    - Business Line variances for certain work categories (i.e. land surveying, remote biological surveys). The HSSE Manager for the BOU and the BL will work together to prepare and submit a plan to the HSSE Director for approval.
    - Project level variances for one-off project requirements. For this scenario, the project team will prepare and submit a plan to the Regional HSSE Manager and appropriate RBL for joint review and feedback. Once finalized, it will be sent to the HSSE Director for approval.

    Final approvals will also be shared with the appropriate Regional Leader(s) and HSSE Manager(s).

    When two individuals have been permitted to travel in a vehicle through the Stantec variance process, do not use the air recirculation feature in the vehicle, and when practicable, open windows to provide continual replacement of cabin air with fresh air.
- Practice routine cleaning of frequently touched surfaces (for example: vehicle door handles, interior of vehicle such as steering wheel and control panel, equipment controls, handles, stair railings, toilet facility doors, etc.) with household cleaners and disinfectants that are appropriate for the surface, following label instructions. Labels contain instructions for safe and effective use of the cleaning product including precautions you should take, such as wearing gloves and making sure you have good ventilation during use. It is recommended to clean and disinfect high touch surfaces a minimum of twice daily.
- It is important to keep vehicles clean. Do not transfer items between vehicles and limit the transfer of objects between the vehicle and the office. Each vehicle should have an ample supply of clean tissues and hand sanitizer, as well as cleaning supplies and disinfectants. Clean vehicles after each use and wear appropriate personal protective equipment (PPE) when cleaning and disinfecting. Rental vehicles are to be cleaned prior to use, and when possible, use Stantec preferred vehicle rental agencies that have a COVID-19 cleaning protocol in place. All passengers are to clean their hands before touching common areas of the vehicle.

The CDC, WHO and PHAC are recommending cloth face coverings be worn (covering the nose and mouth) to protect people around you if you may be infected but do not have symptoms. A cloth face covering should be worn in a setting where other social distancing measures are difficult to or cannot be maintained (e.g. you cannot maintain 2 metres/ 6 feet at all times). This practice does not replace social distancing and is instead meant to be an additional control. If your task required the use of an N95 mask to protect you from workplace hazards before the outbreak of the pandemic, you should continue to wear the N95 mask while conducting your task. Any personal protective equipment, including face coverings of all types, should always be assessed, worn, and maintained as per the manufacturer's instructions.

The cloth face coverings recommended by the CDC are not surgical masks or N-95 respirators.

According to these organizations cloth face coverings should:

1) Fit snugly but comfortably against the side of the face
2) Be secured with ties or ear loops
3) Include multiple layers of fabric
4) Allow for breathing without restriction
5) Be able to be laundered and machine dried without damage or change to shape

Before donning a cloth face covering, wash your hands thoroughly. Cover your mouth and nose and ensure there are no gaps between your face and the face covering. Avoid touching the face covering with your hands while you are wearing it; if you do, clean your hands with alcohol-based hand rub or soap and water. Replace the face covering with a new one as soon as it is damp.

When removing your face covering handle it by the straps and place it in a sealable container until it can be laundered. Launder cloth masks using the warmest water and appropriate detergent for the items and dry the coverings completely. The CDC indicates that standard laundering will remove the virus, use of bleach or a disinfectant is not required. Allow laundered face coverings to dry before reuse.

For any staff wanting to wear a cloth face covering at work or out in the community, please use the link to the website below for instructions on how to make one.

If access to a client site requires a cloth face covering, please speak to your supervisor to approve associated expenses.

https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/diy-cloth-face-coverings.html

Please refer to the Cleaning and Disinfecting document on the Lens for additional guidance.

APPENDIX B
Revised Soil and Groundwater Quality Data

Attachment B
Detected Constituents in Soil
Riverpoint District
Manitowoc, Wisconsin

Notes:

mg/kg	Milligram per Kilogram
µg/kg	Microgram per Kilogram
SBVT	Wisconsin Soil Background Threshold Value per WDNR, 2018, RCL spreadsheet for use with macro-enabled Excel program, December 2018 Update, available at https://dnr.wi.gov/topic/Brownfields/documents/tech/RCLs.xlsm.
RCL	Residual contaminant level for noted pathway per WDNR, 2018, RCL spreadsheet for use with macro-enabled Excel program, December 2018 Update, available at https://dnr.wi.gov/topic/Brownfields/documents/tech/RCLs.xlsm.

A	Concentration with a superscript A indicates concentration exceeds the soil background threshold value
B	Concentration with a superscript B indicates concentration exceeds the RCL for direct contact at non-industrial properties
C	Concentration with a superscript C indicates concentration exceeds the RCL for direct contact at industrial properties
D	Concentration with a superscript D indicates concentration exceeds the RCL for the soil to groundwater exposure pathway
$1,500^{BCD}$	Concentration with multiple superscript letters indicates concentration exceeds more than one RCL. In this example, the concentration exceeds the RCL for direct contact at non-industrial and industrial properties and the RCL for the soil to groundwater exposure route

15.2	Measured concentration did not exceed the indicated standard.
<0.03	Analyte was not detected at a concentration greater than the laboratory reporting limit.
n/v	No standard/guideline value.
-	Parameter not analyzed / not available.
B	Indicates analyte was found in associated blank, as well as in the sample.
F1	MS and/or MSD Recovery is outside acceptance limits.
F2	MS/MSD relative percent difference exceeds control limits
J	The reported result is an estimated value.
*	LCS or LCSD is outside the control limits

Initial sample ID was used in Stantec reports in 2020. The Revised sample ID will be used starting in January 2021.

Attachment B
Detected Constituents in Soil
Riverpoint District
Manitowoc, Wisconsin

Detected Constituents in Soil	Units	Wisconsin SBTV (A)	Non-Industrial Direct Contact RCL (B)	Industrial Direct Contact RCL (C)	Soil to Groundwater RCL (D)	Revised Sample ID, Initial Sample ID, Sample Date, and Sample Depth in Feet Below Ground Surface, Lithology Relative to Black Granular Fill Unit																						
						SB-1		SB-7	SB-8		SB-9		SB-10		SB-11		SB-12	SB-13		SB-16	SB-17	SB-18	SB-19	SB-21			
						S5_SB-1		S4_SB4	S4_SB-9		S4_SB-12		S4_SB-15		S4_SB-20		S4_SB-23	S3_SB-11		S3_SB-29	S3_SB-83	S3_SB-88	S3_SB-90	S3_SB-85			
						19-Nov-18	19-Nov-18	19-Nov-18	19-Nov-18	19-Nov-18	19-Nov-18	19-Nov-18	20-Nov-18	20-Nov-18	20-Nov-18	20-Nov-18	20-Nov-18	19-Nov-18	19-Nov-18	19-Nov-18	9-Sep-20	9-Sep-20	9-Sep-20	9-Sep-20	9-Sep-20	9-Sep-20	9-Sep-20
						0 - 2 ft	3 - 4 ft	7 - 8 ft	0 - 2 ft	5 - 6 ft	1 - 1.5 ft	2 - 3 ft	0.5 - 1 ft	2.75 - 3 ft	1.25 - 2.25 ft	3 - 3.25 ft	2.5 - 3.5 ft	2 - 3 ft	3 - 4 ft	0.25 - 1 ft	2.5 - 5 ft	0.25 - 1 ft	1 - 3 ft	Surface	3 - 5 ft	FD 1	5.5 - 6 ft
						FILL	BELOW	BELOW	ABOVE	BELOW	ABOVE	FILL	ABOVE	ABOVE	FILL	BELOW	FILL										
Heavy Metals																											
Arsenic	mg/kg	8.3	0.677	3	0.584	13[ABCD]	-	0.63 J[D]	6.7[BCD]	-	-	9.7[ABCD]	1.9[BD]	-	8.5[ABCD]	-	<1.8	21[ABCD]	-	-	2.5[BD]	3.2[BCD]	3.3[BCD]	-	9.0[ABCD]	5.7[BCD]	-
Barium	mg/kg	364	15,300	100,000	164.8	51	-	33	40	-	-	37	20	-	47	-	69	100	-	-	26	81	76	-	110	86	-
Cadmium	mg/kg	1.07	71.1	985	0.752	0.71 J B	-	0.17 J B	0.54	-	-	0.25	0.29	-	0.31	-	0.41 J B	0.25	-	-	0.35	<0.042	0.050 J	-	0.98[D]	0.29	-
Chromium	mg/kg	43.5	n/v	n/v	360,000	23	-	11	13	-	-	9.8	6.7	-	10	-	4.5 J	17	-	-	9.9	20	19	-	10	19	-
Lead	mg/kg	51.6	400	800	27	220[AD]	-	3.5	170[AD]	-	-	38[D]	76[AD]	-	78[AD]	-	34[D]	33[D]	-	-	63[AD]	7.2	9.4	-	300[AD]	140[AD]	-
Mercury	mg/kg	n/v	3.13	3.13	0.208	0.050	-	0.013 J	0.045	-	-	0.14	0.022	-	0.12	-	0.030	0.12	-	-	0.011 J	0.013 J	0.018 J	-	0.31[D]	0.20	-
Selenium	mg/kg	n/v	391	5,840	0.52	<3.2	-	<0.81	<0.62	-	-	<0.63	<0.54	-	<0.63	-	<3.1	<0.73	-	-	<0.58	<0.68	<0.65	-	<0.69	<0.80	-
Silver	mg/kg	n/v	391	5,840	0.8491	<0.69	-	<0.18	<0.14	-	-	<0.14	<0.12	-	<0.14	-	<0.67	0.19 J	-	-	<0.13	<0.15	<0.14	-	<0.15	<0.17	-
Herbicides																											
Six (6) Compounds	µg/kg	n/v	Various	Various	Various	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Polychlorinated Biphenyls																											
Aroclor 1254	mg/kg	n/v	0.239	0.988	n/v	<0.041	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Aroclor 1260	mg/kg	n/v	0.243	1	n/v	<0.093	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Aroclor 1262	mg/kg	n/v	n/v	n/v	n/v	<0.039	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Aroclor 1268	mg/kg	n/v	n/v	n/v	n/v	<0.036	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Polycyclic Aromatic Hydrocarbons																											
Acenaphthene	µg/kg	n/v	3,590,000	45,200,000	n/v	<66	-	<83	42	-	-	39	31 J	-	4,500	-	150,000	20 J	-	-	<6.8	<7.3	12 J	-	45	74 J	-
Acenaphthylene	µg/kg	n/v	n/v	n/v	n/v	340 J	-	<61	89	-	-	140	730	-	49,000	-	1,200,000	12 J	-	-	<5.0	<5.4	26 J	-	120	140 J	-
Anthracene	µg/kg	n/v	17,900,000	100,000,000	196,949	420	-	2,700	200	-	-	490	560	-	79,000	-	1,200,000[D]	51	-	-	<6.3	<6.8	21 J	-	130	210 J	-
Benzo(a)anthracene	µg/kg	n/v	1,140	20,800	n/v	700	-	<62	540	-	-	1,900[B]	1,700[B]	-	290,000[BC]	-	950,000[BC]	84	-	-	17 J	7.2 J	77	-	550	580	-
Benzo(a)pyrene	µg/kg	n/v	115	2,110	470	870[BD]	-	<90	730[BD]	-	-	1,900[BD]	2,600[BCD]	-	250,000[BCD]	-	780,000[BCD]	82	-	-	23 J	<7.9	110	-	670[BD]	760[BD]	-
Benzo(b)fluoranthene	µg/kg	n/v	1,150	21,100	478	1,600[BD]	-	<100	1,300[BD]	-	-	2,200[BD]	3,600[BD]	-	370,000[BCD]	-	850,000[BCD]	110	-	-	35 J	<8.8	160	-	1,100[BD]	1,100[BD]	-
Benzo(g,h,i)perylene	µg/kg	n/v	n/v	n/v	n/v	550	-	<150	480	-	-	1,000	1,400	-	120,000	-	440,000	80	-	-	28 J	<13	96	-	430	600	-
Benzo(k)fluoranthene	µg/kg	n/v	11,500	211,000	n/v	670	-	<140	460	-	-	790	1,500	-	120,000[B]	-	350,000[BC]	43	-	-	<11	<12	46	-	320	390	-
Chrysene	µg/kg	n/v	115,000	2,110,000	144	860[D]	-	<130	760[D]	-	-	1,800[D]	2,000[D]	-	260,000[BD]	-	830,000[BD]	98	-	-	20 J *	<11 *	81 *	-	630 *[D]	630 *[D]	-
Dibenzo(a,h)anthracene	µg/kg	n/v	115	2,110	n/v	290 J[B]	-	<90	110	-	-	300[B]	350[B]	-	43,000[BC]	-	94,000[BC]	27 J	-	-	<7.3	<7.8	15 J	-	110	140 J[B]	-
Fluoranthene	µg/kg	n/v	2,390,000	30,100,000	88,878	1,100	-	<86	1,200	-	-	2,800	4,700	-	630,000[D]	-	3,400,000[BD]	140	-	-	27 J	10 J	140	-	1,300	1,300	-
Fluorene	µg/kg	n/v	2,390,000	30,100,000	14,830	61 J	-	<65	68	-	-	93	110	-	10,000	-	1,100,000[D]	21 J	-	-	<5.3	<5.7	30 J	-	150	290	-
Indeno(1,2,3-cd)pyrene	µg/kg	n/v	1,150	21,100	n/v	580	-	<120	320	-	-	980	1,100	-	130,000[BC]	-	350,000[BC]	60	-	-	18 J	<11	70	-	420	530	-
Methylnaphthalene, 1-	µg/kg	n/v	17,600	72,700	n/v	1,600	-	<110	310	-	-	180	220	-	5,100 J	-	410,000[BC]	480	-	-	43 J	11 J	200	-	310	800	-
Methylnaphthalene, 2-	µg/kg	n/v	239,000	3,010,000	n/v	1,900	-	<85	370	-	-	210	300	-	6,500 J	-	510,000[B]	560	-	-	76	16 J	170	-	270	280 J	-
Naphthalene	µg/kg	n/v	5,520	24,100	658	1,300[D]	-	<71	250	-	-	230	370	-	15,000[BD]	-	960,000[BCD]	370	-	-	51	9.4 J	45	-	170	320	-
Phenanthrene	µg/kg	n/v	n/v	n/v	n/v	1,300	-	140 J	960	-	-	1,400	1,900	-	400,000	-	4,800,000	370	-	-	35 J	7.8 J	130	-	790	1,200	-
Pyrene	µg/kg	n/v	1,790,000	22,600,000	54,546	1,000	-	<92	1,100	-	-	2,900	4,400	-	620,000[D]	-	2,900,000[BD]	130	-	-	35 J	12 J	150	-	1,200	1,700	-
Semi-Volatile Organic Compounds																											
Benzoic acid	µg/kg	n/v	100,000,000	100,000,000	n/v	-	-	<4,600	490 J	-	-	<360	<330	-	<37,000	-	<180,000	-	-	-	<370	<400	<420	-	<440	<2200	-
Bis(2-Chloroethyl)ether	µg/kg	n/v	286	1,290	n/v	-	-	10,000[BC]	<55	-	-	<55	<50	-	<5,600	-	<27,000	-	-	-	<56	<61	<64	-	<67	<340	-
Bis(2-Ethylhexyl)phthalate (DEHP)	µg/kg	n/v	38,800	164,000	2,880	-	-	<850	<67	-	-	<67	<61	-	<6,800	-	<33,000	-	-	-	<69	<74	<78	-	<81	<410	-
Carbazole	µg/kg	n/v	n/v	n/v	n/v	-	-	<1,200	160 J	-	-	280	110 J	-	29,000	-	320,000	-	-	-	<94	<100	<110	-	160 J	<560	-
Cresol, m & p- (Methylphenol, 3&4-)	µg/kg	n/v	n/v	n/v	n/v	-	-	<770	<61	-	-	<61	<56	-	<6,200	-	<30,000	-	-	-	<63	<68	<71	-	<74	390 J	-
Cresol, o- (Methylphenol, 2-)	µg/kg	n/v	3,160,000	41,000,000	n/v	-	-	<740	<59	-	-	<59	<54	-	<6,000	-	<29,000	-	-	-	<60	<65	<68	-	<71	<360	-
Dibenzofuran	µg/kg	n/v	73,000	1,040,000	n/v	-	-	<540	140 J	-	-	130 J	140 J	-	28,000	-	740,000[B]	-	-	-	<44	<48	<50	-	140 J	<260	-
Dimethylphenol, 2,4-	µg/kg	n/v	1,260,000	16,400,000	n/v	-	-	<1,800	<140	-	-	<140	<130	-	<14,000	-	<69,000	-	-	-	<140	<150	<160	-	310 J	880 J	-
N-Nitrosodi-n-Propylamine	µg/kg	n/v	78	328	n/v	-	-	<570	<45	-	-	<45	<41	-	<4,500	-	<22,000	-	-	-	<46	<50	<52	-	<54	<280	-
Phenol	µg/kg	n/v	19,000,000	100,000,000	2,295	-	-	<1,000	140 J	-	-	<81	<75	-	<8,300	-	<41,000	-	-	-	<84	<90	<95	-	<99	<500	-
Volatile Organic Compounds																											
Benzene	µg/kg	n/v	1,600	7,070	5.1	-	<9.9	<14	-	<9.5	<8.7	-	-	39[D]	-	<10 LQ	4,300[BD]	-	<67	24[D]	<9.4 *	<11 *	<12 *	-	-	-	-
Butylbenzene, n-	µg/kg	n/v	108,000	108,000	n/v	-	<26	<37	-	<25	<23	-	-	<31	-	<27 LQ	<840 LQ	-	<180	<23	<25 *	<28 *	<31 *	-	-	-	-
Butylbenzene, sec- (2-Phenylbutane)	µg/kg	n/v	145,000	145,000	n/v	-	<27	<37	-	<26	<24	-	-	<32	-	<27 LQ	<860 LQ	-	<180	<23	<26 *	<29 *	<31 *	-	-	-	-
Chloroform (Trichloromethane)	µg/kg	n/v	454	1,980	3.3	-	<25	<35	-	<24	<22	-	-	<30	-	<26 LQ	<800 LQ	-	<170	<22	<24 *	<27 *	<29 *	-	-	-	-
Dichloroethene, cis-1,2-	µg/kg	n/v	156,000	2,340,000	41.2	-	<28	<38	-	<27	<24	-	-	<33	-	<28	<880	-	<190	<24	<26	<30	<32	-	-	-	-
Ethylbenzene	µg/kg	n/v	8,020	35,400	1,570	-	<12	<17	-	<12	14 J	-	-	30	-	<13	490 J	-	<84	18	<12 *	<13 *	<14 *	-	-	-	-
Isopropylbenzene	µg/kg	n/v	268,000	268,000	n/v	-	<26	<36	-	<25	<23	-	-	<31	-	<26 LQ	<830 LQ	-	<180	<22	<25 *	<28 *	<30 *	-	-	-	-
Isopropyltoluene, p- (Cymene)	µg/kg	n/v	162,000	162,000	n/v	-	<25	1,100	-	<24	<21	-	-	<29	-	<25 LQ	<780 LQ	-	<170	<21	<23 *	<27 *	<29 *	-	-	-	-
Naphthalene	µg/kg	n/v	5,520	24,100	658	-	<23	<31	-	<22	130	-	-	240	-	<23	1,800,000[BCD]	-	<150	<20	26 J	<24	<26	-	-	-	-
Propylbenzene, n-	µg/kg	n/v	264,000	264,000	n/v	-	<28	<39	-	<27	<25	-	-	<33	-	<29 LQ	<900 LQ	-	<190	<24	<27 *	<30 *	<33 *	-	-	-	-
Tetrachloroethene (PCE)	µg/kg	n/v	33,000	145,000	4.5	-	<25	<35	-	<24	<22	-	-	<30	-	<26 LQ	<800 LQ	-	<170	<22	<24 *	<27 *	<29 *	-	-	-	-
Toluene	µg/kg	n/v	818,000	818,000	1,107	-	<10	<14	-	10 J	81	-	-	180	-	<10 LQ	3,900[D]	-	<67	170	33 *	<11 *	<12 *	-	-	-	-
Trichloroethane, 1,1,1-	µg/kg	n/v	640,000	640,000	140	-	<26	<36	-	<25	<23	-	-	<31	-	<26 LQ	<820 LQ	-	<170	<22	<25 *	<28 *	<30 *	-	-	-	-
Trichloroethene (TCE)	µg/kg	n/v	1,300	8,410	3.6	-	<11	<15	-	<11	<9.7	-	-	<13	-	<11 LQ	<350 LQ	-	<75	<9.6	<11 *	<12 *	<13 *	-	-	-	-
Trichlorofluoromethane (Freon 11)	µg/kg	n/v	1,230,000	1,230,000	4,478	-	<29	<40	-	<28	<25	-	-	<35	-	<30	<930	-	<200	<25	<28 *	<31 *	<34 *	-	-	-	-
Trimethylbenzene, 1,2,4-	µg/kg	n/v	219,000	219,000	1,380	-	<24	<34	-	<23	61	-	-	92	-	<25 LQ	6,500[D]	-	<160	31 J	<23 *	<26 *	46 J *	-	-	-	-
Trimethylbenzene, 1,3,5-	µg/kg	n/v	182,000	182,000		-	<26	<36	-	<25	<23	-	-	<31	-	<26 LQ	3,000[D]	-	<170	<22	<25 *	<28 *	45 J *	-	-	-	-
Xylenes, Total	µg/kg	n/v	260,000	260,000	3,960	-	<15	<21	-	<14	170	-	-	310	-	<15 LQ	9,500[D]	-	<100	110	61 *	<16 *	<17 *	-	-	-	-
General Chemistry																											
Cyanide, Total	mg/kg	n/v	27.1	195	195	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,400	8	52	31

Attachment B
Detected Constituents in Soil
Riverpoint District
Manitowoc, Wisconsin

Detected Constituents in Soil	Units	Wisconsin SBTV (A)	Non-Industrial Direct Contact RCL (B)	Industrial Direct Contact RCL (C)	Soil to Groundwater RCL (D)	Revised Sample ID, Initial Sample ID, Sample Date, and Sample Depth in Feet Below Ground Surface, Lithology Relative to Black Granular Fill Unit																					
						SB-23		SB-24			SB-25		SB-26	SB-27			SB-28	SB-29	SB-30	SB-31	SB-32		SB-34		SB-35		SB-36	SB-37
						S3_SB-84		S3_SB-58			S3_SB-87		S3_SB-72	S3_SB-86			S3_SB-45	S3_SB-64	S3_SB-77	S3_SB-20	S3_SB-91		S3_SB-92		S3_SB-27		S3_SB-93	S2_SB-8
						9-Sep-20	9-Sep-20	16-Nov-18	16-Nov-18	10-Dec-18	9-Sep-20	9-Sep-20	16-Nov-18	9-Sep-20	9-Sep-20	9-Sep-20	15-Nov-18	16-Nov-18	16-Nov-18	15-Nov-18	9-Sep-20	9-Sep-20	9-Sep-20	9-Sep-20	19-Nov-18	19-Nov-18	9-Sep-20	16-Nov-18
						0 - 1 ft	3 - 4.5 ft	3 - 4 ft	4 - 5 ft	3 - 4 ft	0.25 - 0.75 ft	2.5 - 3 ft	2 - 2.5 ft	Surface	0 - 2 ft	5 - 5.5 ft	1.5 - 2.5 ft	0 - 0.5 ft	2 - 3.5 ft	2 - 3.5 ft	0.25 - 2 ft	4.5 - 5 ft	3.5 - 4.5 ft	4.5-5 ft	3 - 3.75 ft	6 - 7 ft	1 - 2 ft	0 - 0.5 ft ABOVE
Heavy Metals																											
Arsenic	mg/kg	8.3	0.677	3	0.584	**2.4**[BD]	-	**5.9**[BCD]	-	-	**2.0**[BD]	-	**4.0**[BCD]	-	**5.0**[BCD]	-	**1.2**[BD]	-	**2.1**[BD]	**1.2**[BD]	**1.3**[BD]	**5.0**[BCD]	**1.5**[BD]	-	**9.2**[ABCD]	-	**2.7**[BD]	-
Barium	mg/kg	364	15,300	100,000	164.8	37	-	58	-	-	31	-	68	-	71	-	15	-	17	12	18	43	30	-	100	-	13	-
Cadmium	mg/kg	1.07	71.1	985	0.752	0.28	-	0.71	-	-	0.062 J	-	0.13 J	-	0.21	-	0.17 J B	-	0.048 J	0.096 J B	0.23	0.39	0.18 J	-	**1.3**[AD]	-	0.11 J	-
Chromium	mg/kg	43.5	n/v	n/v	360,000	11	-	12	-	-	9.4	-	19	-	9.5	-	4.8	-	6.2	6.1	5.7	6.2	6.8	-	16	-	5.4	-
Lead	mg/kg	51.6	400	800	27	25	-	**100**[AD]	-	-	**42**[D]	-	15	-	**55**[AD]	-	**42**[D]	-	3.8	4.7	**38**[D]	**50**[D]	**55**[AD]	-	**120**[AD]	-	3.2	-
Mercury	mg/kg	n/v	3.13	3.13	0.208	0.016 J	-	0.017 J	-	-	0.024	-	<0.0063	-	0.15	-	0.014 J	-	0.0063 J	<0.0053	0.017	0.092	0.013 J	-	0.075	-	<0.0058	-
Selenium	mg/kg	n/v	391	5,840	0.52	<0.67	-	<0.69	-	-	<0.63	-	**1.2**[D]	-	<0.61	-	<0.57	-	<0.60	**0.61 J B**[D]	<0.54	**0.78 J**[D]	<0.60	-	<3.4	-	<0.59	-
Silver	mg/kg	n/v	391	5,840	0.8491	<0.15	-	<0.15	-	-	<0.14	-	<0.15	-	<0.13	-	<0.12	-	<0.13	<0.12	<0.12	<0.14	<0.13	-	<0.75	-	<0.13	-
Herbicides																											
Six (6) Compounds	µg/kg	n/v	Various	Various	Various	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Polychlorinated Biphenyls																											
Aroclor 1254	mg/kg	n/v	0.239	0.988	n/v	-	-	<0.045	-	<0.0043	-	-	<0.0044	-	-	-	<0.0037	-	-	-	-	-	-	-	<0.044	-	-	-
Aroclor 1260	mg/kg	n/v	0.243	1	n/v	-	-	**0.25**[B]	-	<0.0098	-	-	<0.010	-	-	-	<0.0085	-	-	-	-	-	-	-	<0.10	-	-	-
Aroclor 1262	mg/kg	n/v	n/v	n/v	n/v	-	-	<0.044	-	0.11	-	-	<0.0042	-	-	-	<0.0036	-	-	-	-	-	-	-	<0.042	-	-	-
Aroclor 1268	mg/kg	n/v	n/v	n/v	n/v	-	-	<0.040	-	<0.0038	-	-	<0.0039	-	-	-	<0.0033	-	-	-	-	-	-	-	<0.039	-	-	-
Polycyclic Aromatic Hydrocarbons																											
Acenaphthene	µg/kg	n/v	3,590,000	45,200,000	n/v	<6.7	-	3,100	-	-	13,000	-	<7.3	780	-	-	<6.3	-	<6.4	<6.1	7.1 J	70,000	<6.5	-	<69	-	<6.7	-
Acenaphthylene	µg/kg	n/v	n/v	n/v	n/v	27 J	-	500	-	-	2,500 J	-	<5.3	5,800	-	-	37	-	<4.7	<4.5	13 J	20,000	<4.8	-	130 J	-	<4.9	-
Anthracene	µg/kg	n/v	17,900,000	100,000,000	196,949	64	-	1,100	-	-	8,900	-	<6.8	5,800	-	-	39	-	<5.9	<5.7	21 J	59,000	8.6 J	-	170 J	-	<6.2	-
Benzo(a)anthracene	µg/kg	n/v	1,140	20,800	n/v	180	-	220 J	-	-	<510	-	<5.4	**14,000**[B]	-	-	96	-	6.1 J	<4.6	270	**66,000**[BCD]	21 J	-	270 J	-	<5.0	-
Benzo(a)pyrene	µg/kg	n/v	115	2,110	470	**210**[B]	-	**260 J**[B]	-	-	<730	-	<7.8	**17,000**[BCD]	-	-	**200**[B]	-	<6.9	<6.6	**300**[B]	**74,000**[BCD]	32 J	-	**460**[B]	-	<7.2	-
Benzo(b)fluoranthene	µg/kg	n/v	1,150	21,100	478	240	-	380 J	-	-	<810	-	<8.7	**17,000**[BD]	-	-	180	-	<7.7 FQ	<7.3	**490**[D]	**71,000**[BCD]	47	-	**620**[D]	-	<8.0	-
Benzo(g,h,i)perylene	µg/kg	n/v	n/v	n/v	n/v	120	-	160 J	-	-	<1,200	-	19 J	6,400	-	-	260	-	<11 FQ	<11	190	31,000	56	-	600	-	<12	-
Benzo(k)fluoranthene	µg/kg	n/v	11,500	211,000	n/v	82	-	<120	-	-	<1,100	-	<12	7,000	-	-	130	-	<10 FQ	<10	160	**23,000**[B]	17 J	-	270 J	-	<11	-
Chrysene	µg/kg	n/v	115,000	2,110,000	144	**190 ***[D]	-	**330 J**[D]	-	-	<1,000 *	-	<11	**13,000 ***[D]	-	-	140	-	<9.7	<9.2	**400 ***[D]	**68,000 ***[D]	28 J *	-	**350 J**[D]	-	<10 * F1	-
Dibenzo(a,h)anthracene	µg/kg	n/v	115	2,110	n/v	20 J	-	<78	-	-	<730	-	<7.8	**1,900**[B]	-	-	35	-	<6.9	<6.5	78	**8,900 J**[BC]	12 J	-	**210 J**[B]	-	<7.2	-
Fluoranthene	µg/kg	n/v	2,390,000	30,100,000	88,878	400	-	570	-	-	1,500 J	-	<7.5	25,000	-	-	140	-	<6.6	<6.3	300	**140,000**[D]	31 J	-	460	-	<6.9	-
Fluorene	µg/kg	n/v	2,390,000	30,100,000	14,830	<5.3	-	3,200	-	-	**18,000**[D]	-	<5.7	4,000	-	-	8.4 J	-	<5.0	<4.8	7.1 J	**61,000**[D]	<5.1	-	<54	-	<5.2	-
Indeno(1,2,3-cd)pyrene	µg/kg	n/v	1,150	21,100	n/v	86	-	160 J	-	-	<980	-	<10	**6,400**[B]	-	-	120	-	<9.2 FQ	<8.8	160	**25,000**[BC]	35 J	-	520	-	<9.6	-
Methylnaphthalene, 1-	µg/kg	n/v	17,600	72,700	n/v	67 J	-	12,000	-	-	**140,000**[BC]	-	13 J	2,300	-	-	52 J	-	<8.7	<8.3	19 J	**120,000**[BC]	67 J	-	1,800	-	<9.0	-
Methylnaphthalene, 2-	µg/kg	n/v	239,000	3,010,000	n/v	86	-	6,600	-	-	220,000	-	18 J	2,800	-	-	80	-	<6.5	<6.2	25 J	140,000	92	-	2,500	-	<6.8	-
Naphthalene	µg/kg	n/v	5,520	24,100	658	45	-	**2,700**[D]	-	-	**71,000**[BCD]	-	16 J	**7,500**[BD]	-	-	43	-	<5.5	<5.2	24 J	**110,000**[BCD]	60	-	**1,400**[D]	-	<5.7	-
Phenanthrene	µg/kg	n/v	n/v	n/v	n/v	290	-	6,900	-	-	37,000	-	7.8 J	20,000	-	-	110	-	<5.0	<4.7	120	180,000	47	-	1,300	-	<5.2	-
Pyrene	µg/kg	n/v	1,790,000	22,600,000	54,546	470	-	1,500	-	-	4,900	-	<8.0	32,000	-	-	220	-	7.1 J LQ	<6.7	350	**250,000**[D]	42	-	520	-	<7.4 F1	-
Semi-Volatile Organic Compounds																											
Benzoic acid	µg/kg	n/v	100,000,000	100,000,000	n/v	<370	-	-	-	-	<37000	-	-	-	<2000	-	-	-	-	-	<340	<110000	<360	-	-	-	<370	-
Bis(2-Chloroethyl)ether	µg/kg	n/v	286	1,290	n/v	<56	-	-	-	-	<5600	-	-	-	<300	-	-	-	-	-	<52	<17000	<54	-	-	-	<56	-
Bis(2-Ethylhexyl)phthalate (DEHP)	µg/kg	n/v	38,800	164,000	2,880	410	-	-	-	-	<6,900	-	-	-	<360	-	-	-	-	-	<63	<20,000	<66	-	-	-	<68 F1	-
Carbazole	µg/kg	n/v	n/v	n/v	n/v	<94	-	-	-	-	<9,400	-	-	-	4,100	-	-	-	-	-	<86	<28,000	<91	-	-	-	<93	-
Cresol, m & p- (Methylphenol, 3&4-)	µg/kg	n/v	n/v	n/v	n/v	<63	-	-	-	-	<6,300	-	-	-	1,800	-	-	-	-	-	<57	<19,000	<61	-	-	-	<62	-
Cresol, o- (Methylphenol, 2-)	µg/kg	n/v	3,160,000	41,000,000	n/v	<60	-	-	-	-	<6,000	-	-	-	650 J	-	-	-	-	-	<55	<18,000	<58	-	-	-	<59	-
Dibenzofuran	µg/kg	n/v	73,000	1,040,000	n/v	<44	-	-	-	-	11,000 J	-	-	-	2,200	-	-	-	-	-	<40	40,000 J	<43	-	-	-	<43	-
Dimethylphenol, 2,4-	µg/kg	n/v	1,260,000	16,400,000	n/v	<140	-	-	-	-	<14,000	-	-	-	<750	-	-	-	-	-	<130	<42,000	<140	-	-	-	<140	-
N-Nitrosodi-n-Propylamine	µg/kg	n/v	78	328	n/v	<46	-	-	-	-	<4,600	-	-	-	**360 J**[BC]	-	-	-	-	-	<42	<14,000	<44	-	-	-	<45	-
Phenol	µg/kg	n/v	19,000,000	100,000,000	2,295	<83	-	-	-	-	<8,400	-	-	-	1,500	-	-	-	-	-	<77	<25,000	<81	-	-	-	<82	-
Volatile Organic Compounds																											
Benzene	µg/kg	n/v	1,600	7,070	5.1	<9.4 *	<11 *	-	**730**[D]	-	-	**44,000 ***[BCD]	-	-	-	-	-	<17	-	-	<9.3 *	**3,300 ***[BD]	<8.3 *	**190 ***[D]	-	**77**[D]	<9.2 *	**<11**
Butylbenzene, n-	µg/kg	n/v	108,000	108,000	n/v	<25 *	<29 *	-	2,600	-	-	51,000 *	-	-	-	-	-	<45	-	-	<25 *	1,900 *	<22 *	730 *	-	3,200	<25 *	<28
Butylbenzene, sec- (2-Phenylbutane)	µg/kg	n/v	145,000	145,000	n/v	<26 *	<30 *	-	870	-	-	14,000 *	-	-	-	-	-	<46	-	-	<25 *	420 *	<23 *	370 *	-	1,200	<25 *	<29
Chloroform (Trichloromethane)	µg/kg	n/v	454	1,980	3.3	<24 *	<28 *	-	**75 J**[D]	-	-	<270 *	-	-	-	-	-	<42	-	-	<23 *	<30 *	<21 *	**67 J ***[D]	-	<52	<23 *	**<27**
Dichloroethene, cis-1,2-	µg/kg	n/v	156,000	2,340,000	41.2	<26	<31	-	<28	-	-	<290	-	-	-	-	-	<47	-	-	<26	<33	<23	<58	-	**<57**	<26	<30
Ethylbenzene	µg/kg	n/v	8,020	35,400	1,570	<12 *	<14 *	-	**3,100**[D]	-	-	**220,000 ***[BCD]	-	-	-	-	-	<21	-	-	<12 *	**2,300 ***[D]	16 *	690 *	-	**2,300**[D]	<12 *	<13
Isopropylbenzene	µg/kg	n/v	268,000	268,000	n/v	<25 *	<29 *	-	580	-	-	18,000 *	-	-	-	-	-	<44	-	-	<24 *	360 *	<22 *	340 *	-	1,200	<24 *	<28
Isopropyltoluene, p- (Cymene)	µg/kg	n/v	162,000	162,000	n/v	<23 *	<27 *	-	700	-	-	8,100 *	-	-	-	-	-	<42	-	-	<23 *	1,100 *	<21 *	250 *	-	2,200	<23 *	<26
Naphthalene	µg/kg	n/v	5,520	24,100	658	<22	<25	-	**1,400**[D]	-	-	**130,000**[BCD]	-	-	-	-	-	<38	-	-	30 J	**110,000**[BCD]	35 J	**1,300**[D]	-	<47	<21	<24
Propylbenzene, n-	µg/kg	n/v	264,000	264,000	n/v	<27 *	<31 *	-	1,700	-	-	64,000 *	-	-	-	-	-	<47	-	-	<26 *	490 *	<24 *	760 *	-	2,100	<26 *	<30
Tetrachloroethene (PCE)	µg/kg	n/v	33,000	145,000	4.5	<24 *	<28 *	-	<26	-	-	<270 *	-	-	-	-	-	<42	-	-	<23 *	<30 *	**79 ***[D]	**2,000 ***[D]	-	<52	<23 *	**<27**
Toluene	µg/kg	n/v	818,000	818,000	1,107	14 J *	<11 *	-	500	-	-	**3,500 ***[D]	-	-	-	-	-	<17	-	-	29 *	**3,000 ***[D]	35 *	680 *	-	63	<9.3 *	<11
Trichloroethane, 1,1,1-	µg/kg	n/v	640,000	640,000	140	<25 *	<29 *	-	<26	-	-	<270 *	-	-	-	-	-	<44	-	-	<24 *	<31 *	<22 *	<54 *	-	<53	<24 *	<28
Trichloroethene (TCE)	µg/kg	n/v	1,300	8,410	3.6	<11 *	<12 *	-	<11	-	-	<120 *	-	-	-	-	-	<19	-	-	<10 *	<13 *	**21 J ***[D]	**910 ***[D]	-	<23	<10 *	**<12**
Trichlorofluoromethane (Freon 11)	µg/kg	n/v	1,230,000	1,230,000	4,478	<28 *	<32 *	-	<30	-	-	<310 *	-	-	-	-	-	<49	-	-	<27 *	<34 *	<24 *	<61 *	-	<60	<27 *	<31
Trimethylbenzene, 1,2,4-	µg/kg	n/v	219,000	219,000	1,380	<23 *	<27 *	-	**15,000**[D]	-	-	**520,000 ***[BCD]	-	-	-	-	-	<41	-	-	31 J *	**9,000 ***[D]	42 J *	**2,800 ***[D]	-	**7,600**[D]	<23 *	<26
Trimethylbenzene, 1,3,5-	µg/kg	n/v	182,000	182,000		<25 *	<29 *	-	**5,700**[D]	-	-	**130,000 ***[D]	-	-	-	-	-	<44	-	-	30 J *	**3,900 ***[D]	<22 *	**1,500 ***[D]	-	**4,700**[D]	<24 *	<28
Xylenes, Total	µg/kg	n/v	260,000	260,000	3,960	<14 *	<17 *	-	**9,800**[D]	-	-	**950,000 ***[BCD]	-	-	-	-	-	<25	-	-	44 *	**10,000 ***[D]	92 *	**4,100 ***[D]	-	1,700	<14 *	<16
General Chemistry																											
Cyanide, Total	mg/kg	n/v	27.1	195	195	-	-	-	-	-	-	-	-	1,000	120	28	-	-	-	-	-	-	-	-	-	-	-	-

Attachment B
Detected Constituents in Soil
Riverpoint District
Manitowoc, Wisconsin

Detected Constituents in Soil	Units	Wisconsin SBTV (A)	Non-Industrial Direct Contact RCL (B)	Industrial Direct Contact RCL (C)	Soil to Groundwater RCL (D)	Revised Sample ID, Initial Sample ID, Sample Date, and Sample Depth in Feet Below Ground Surface, Lithology Relative to Black Granular Fill Unit																			
						SB-38		SB-40		SB-42	SB-44	SB-45		SB-47		SB-49	SB-50		SB-52	SB-53	SB-54		SB-55	
						S5_SB-8		S5_SB-11		S5_SB-15	S5_SB-18	S2_SB-15		S5_SB-16		S1_SB-19	S1_SB-24		S1_SB-10	S1_SB-44	S1_SB-11		S1_SB-49	
						19-Nov-18	19-Nov-18	19-Nov-18	19-Nov-18	15-Nov-18	15-Nov-18	15-Nov-18	15-Nov-18	15-Nov-18	15-Nov-18	15-Nov-18	15-Nov-18	15-Nov-18	15-Nov-18	24-Aug-20	14-Nov-18	14-Nov-18	24-Aug-20	24-Aug-20
						0 - 1.5 ft	1.5 - 2.5 ft	0 - 1 ft	2 - 2.75 ft	2 - 3.5 ft	0 - 1 ft	0 - 1 ft	1.5 - 3 ft	2.5 - 3 ft	3 - 4 ft	5 - 6 ft	1.5 - 2.25 ft	2.25 - 3 ft	1 - 2 ft	0-2.5 ft	1 - 2 ft	5 - 6 ft	1-2 ft	3-5 ft
						ABOVE	FILL	ABOVE	FILL	FILL	ABOVE	ABOVE	FILL	BELOW	BELOW									
Heavy Metals																								
Arsenic	mg/kg	8.3	0.677	3	0.584	-	20[ABCD]	-	8.2[BCD]	9.5[ABCD]	-	-	10[ABCD]	2.4[BD]	-	-	-	-	16[ABCD]	13[ABCD]	12[ABCD]	-	1.6[BD]	3.6[BCD]
Barium	mg/kg	364	15,300	100,000	164.8	-	110	-	110	130	-	-	54	38	-	-	-	-	79	78	80	-	29	57
Cadmium	mg/kg	1.07	71.1	985	0.752	-	1.6[AD]	-	0.55	0.77 J B[D]	-	-	2.2[AD]	0.14 J B	-	-	-	-	13[AD]	0.36 B	0.70 J B	-	<0.035	0.14 J B
Chromium	mg/kg	43.5	n/v	n/v	360,000	-	51[A]	-	30	15	-	-	22	13	-	-	-	-	34	13	15	-	6.4	14
Lead	mg/kg	51.6	400	800	27	-	200[AD]	-	110[AD]	160[AD]	-	-	140[AD]	13	-	-	-	-	340[AD]	130[AD]	150[AD]	-	310 ^[AD]	57[AD]
Mercury	mg/kg	n/v	3.13	3.13	0.208	-	0.069	-	0.072	0.085	-	-	0.054	0.018	-	-	-	-	0.17	0.22[D]	0.096	-	0.047	0.045
Selenium	mg/kg	n/v	391	5,840	0.52	-	<3.6	-	1.2 J[D]	<3.6	-	-	<3.3	0.79 J B[D]	-	-	-	-	<3.3	<0.58	<3.6	-	<0.57	<0.65
Silver	mg/kg	n/v	391	5,840	0.8491	-	<0.78	-	0.20 J	<0.79	-	-	<0.73	<0.13	-	-	-	-	<0.73	<0.13	<0.80	-	<0.13	<0.14
Herbicides																								
Six (6) Compounds	µg/kg	n/v	Various	Various	Various	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ND	-	-	-
Polychlorinated Biphenyls																								
Aroclor 1254	mg/kg	n/v	0.239	0.988	n/v	-	<0.046	-	<0.048	-	-	-	<0.045	-	-	-	-	-	-	-	<0.047	-	-	-
Aroclor 1260	mg/kg	n/v	0.243	1	n/v	-	<0.10	-	<0.11	-	-	-	<0.10	-	-	-	-	-	-	-	<0.11	-	-	-
Aroclor 1262	mg/kg	n/v	n/v	n/v	n/v	-	<0.044	-	<0.046	-	-	-	<0.043	-	-	-	-	-	-	-	<0.045	-	-	-
Aroclor 1268	mg/kg	n/v	n/v	n/v	n/v	-	<0.041	-	<0.043	-	-	-	<0.040	-	-	-	-	-	-	-	<0.042	-	-	-
Polycyclic Aromatic Hydrocarbons																								
Acenaphthene	µg/kg	n/v	3,590,000	45,200,000	n/v	-	21,000	-	6,100	110	-	-	48	-	-	-	70 J	-	-	<6.7	44	-	<130	830
Acenaphthylene	µg/kg	n/v	n/v	n/v	n/v	-	9,800	-	15,000	53	-	-	99	-	-	-	1,600	-	-	<4.9	48	-	<99	<100
Anthracene	µg/kg	n/v	17,900,000	100,000,000	196,949	-	72,000	-	22,000	280	-	-	160	-	-	-	1,600	-	-	25 J	110	-	390 J	410 J
Benzo(a)anthracene	µg/kg	n/v	1,140	20,800	n/v	-	200,000[BC]	-	60,000[BC]	750	-	-	280	-	-	-	2,100[B]	-	-	130	500	-	<100	260 J
Benzo(a)pyrene	µg/kg	n/v	115	2,110	470	-	210,000[BCD]	-	67,000[BCD]	780[BD]	-	-	300[B]	-	-	-	5,100[BCD]	-	-	150[B]	740[BD]	-	<150	<150
Benzo(b)fluoranthene	µg/kg	n/v	1,150	21,100	478	-	270,000[BCD]	-	84,000[BCD]	970[D]	-	-	530[D]	-	-	-	9,200[BD]	-	-	230	1,300[BD]	-	<160	420 J
Benzo(g,h,i)perylene	µg/kg	n/v	n/v	n/v	n/v	-	80,000	-	30,000	440	-	-	150	-	-	-	3,200	-	-	110	420	-	<240	340 J
Benzo(k)fluoranthene	µg/kg	n/v	11,500	211,000	n/v	-	77,000[B]	-	34,000[B]	460	-	-	210	-	-	-	2,300	-	-	55	530	-	<220	<220
Chrysene	µg/kg	n/v	115,000	2,110,000	144	-	190,000[BD]	-	65,000[D]	840[D]	-	-	370[D]	-	-	-	2,900[D]	-	-	170[D]	840[D]	-	<200	1,900[D]
Dibenzo(a,h)anthracene	µg/kg	n/v	115	2,110	n/v	-	24,000[BC]	-	9,100[BC]	110	-	-	<8.0	-	-	-	1,300[B]	-	-	27 J	150[B]	-	<140	<150
Fluoranthene	µg/kg	n/v	2,390,000	30,100,000	88,878	-	500,000[D]	-	150,000[D]	1,700	-	-	380	-	-	-	1,800	-	-	180	940	-	<140	300 J
Fluorene	µg/kg	n/v	2,390,000	30,100,000	14,830	-	27,000[D]	-	15,000[D]	120	-	-	27 J	-	-	-	120 J *	-	-	<5.3	41 J	-	2,000	2,300
Indeno(1,2,3-cd)pyrene	µg/kg	n/v	1,150	21,100	n/v	-	91,000[BC]	-	31,000[BC]	440	-	-	160	-	-	-	3,300[B]	-	-	80	420	-	<190	<200
Methylnaphthalene, 1-	µg/kg	n/v	17,600	72,700	n/v	-	6,200	-	5,300	640	-	-	1,400	-	-	-	1,500	-	-	260	1,100	-	19,000[B]	18,000[B]
Methylnaphthalene, 2-	µg/kg	n/v	239,000	3,010,000	n/v	-	5,600	-	4,800	740	-	-	2,100	-	-	-	1,700	-	-	290	1,500	-	5,500	9,900
Naphthalene	µg/kg	n/v	5,520	24,100	658	-	8,900[BD]	-	5,300[D]	470	-	-	860[D]	-	-	-	1,400[D]	-	-	180	820[D]	-	<120	2,200[D]
Phenanthrene	µg/kg	n/v	n/v	n/v	n/v	-	410,000	-	150,000	1,800	-	-	1,000	-	-	-	1,100	-	-	290	1,000	-	3,600	10,000
Pyrene	µg/kg	n/v	1,790,000	22,600,000	54,546	-	500,000[D]	-	150,000[D]	1,400	-	-	370	-	-	-	2,400	-	-	250	790	-	270 J	2,000
Semi-Volatile Organic Compounds																								
Benzoic acid	µg/kg	n/v	100,000,000	100,000,000	n/v	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bis(2-Chloroethyl)ether	µg/kg	n/v	286	1,290	n/v	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bis(2-Ethylhexyl)phthalate (DEHP)	µg/kg	n/v	38,800	164,000	2,880	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Carbazole	µg/kg	n/v	n/v	n/v	n/v	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cresol, m & p- (Methylphenol, 3&4-)	µg/kg	n/v	n/v	n/v	n/v	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cresol, o- (Methylphenol, 2-)	µg/kg	n/v	3,160,000	41,000,000	n/v	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dibenzofuran	µg/kg	n/v	73,000	1,040,000	n/v	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dimethylphenol, 2,4-	µg/kg	n/v	1,260,000	16,400,000	n/v	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
N-Nitrosodi-n-Propylamine	µg/kg	n/v	78	328	n/v	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Phenol	µg/kg	n/v	19,000,000	100,000,000	2,295	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Volatile Organic Compounds																								
Benzene	µg/kg	n/v	1,600	7,070	5.1	<10	-	<12	-	-	<13 LQ	2.9	-	-	<9.3 LQ	160[D]	-	50[D]	-	26[D]	-	<10 *	<9.4	-
Butylbenzene, n-	µg/kg	n/v	108,000	108,000	n/v	<27	-	<33	-	-	<35 LQ	4.0	-	-	<25 LQ	140 J *	-	23 J *	-	<26	-	<28 *	550	-
Butylbenzene, sec- (2-Phenylbutane)	µg/kg	n/v	145,000	145,000	n/v	<28	-	<34	-	-	<35 LQ	3.2	-	-	<25 LQ	75 J *	-	<23 *	-	<27	-	<29 *	390	-
Chloroform (Trichloromethane)	µg/kg	n/v	454	1,980	3.3	<26	-	<32	-	-	<33 LQ	<0.73 LQ	-	-	<24 LQ	<68 *	-	<21 *	-	30 J B	-	<27 *	<24	-
Dichloroethene, cis-1,2-	µg/kg	n/v	156,000	2,340,000	41.2	<28	-	<35	-	-	<36	<0.81	-	-	<26	<75	-	<23	-	<28	-	<29	<26	-
Ethylbenzene	µg/kg	n/v	8,020	35,400	1,570	<13	-	<16	-	-	<16	7.2	-	-	<12	560	-	61	-	56	-	<13	<12	-
Isopropylbenzene	µg/kg	n/v	268,000	268,000	n/v	<27	-	<33	-	-	<34 LQ	8.9	-	-	<25 LQ	170 J *	-	42 J *	-	39 J	-	<28 *	100	-
Isopropyltoluene, p- (Cymene)	µg/kg	n/v	162,000	162,000	n/v	<25	-	<31	-	-	<32 LQ	<0.72 LQ	-	-	<23 LQ	100 J *	-	<20 *	-	<25	-	<26 *	<23	-
Naphthalene	µg/kg	n/v	5,520	24,100	658	32 J	-	<29	-	-	68 J	40	-	-	<21	1,100[D]	-	280	-	180	-	<24	<22	-
Propylbenzene, n-	µg/kg	n/v	264,000	264,000	n/v	<29	-	<35	-	-	<37	10	-	-	<26	280	-	56 J	-	50 J	-	<30	210	-
Tetrachloroethene (PCE)	µg/kg	n/v	33,000	145,000	4.5	<26	-	<32	-	-	<33 LQ	<0.73 LQ	-	-	<24 LQ	<68 *	-	<21 *	-	<25	-	<27 *	<24	-
Toluene	µg/kg	n/v	818,000	818,000	1,107	20	-	<13	-	-	30	21	-	-	<9.4 LQ	1,200[D]	-	320	-	170	-	<11 *	<9.5	-
Trichloroethane, 1,1,1-	µg/kg	n/v	640,000	640,000	140	<26	-	<33	-	-	<34 LQ	<0.75 LQ	-	-	<24 LQ	<70 *	-	<22 *	-	360	-	<27 *	<25	-
Trichloroethene (TCE)	µg/kg	n/v	1,300	8,410	3.6	<11	-	<14	-	-	<15 LQ	<0.33 LQ	-	-	<10 LQ	<30 *	-	<9.3 *	-	<11	-	<12 *	<11	-
Trichlorofluoromethane (Freon 11)	µg/kg	n/v	1,230,000	1,230,000	4,478	<30	-	<37	-	-	<38	<0.85	-	-	<27	<78	-	<24	-	<29	-	<31	<28	-
Trimethylbenzene, 1,2,4-	µg/kg	n/v	219,000	219,000	1,380	<25	-	<31	-	-	<32 LQ	20	-	-	<23 LQ	930	-	95	-	110	-	<26 *	610	-
Trimethylbenzene, 1,3,5-	µg/kg	n/v	182,000	182,000		<26	-	<33	-	-	<34 LQ	4.2	-	-	<24 LQ	170 J *	-	<22 *	-	<26	-	<27 *	<25	-
Xylenes, Total	µg/kg	n/v	260,000	260,000	3,960	<15	-	<19	-	-	35 J LQ	65	-	-	<14 LQ	2,600	-	410	-	330	-	<16 *	48	-
General Chemistry																								
Cyanide, Total	mg/kg	n/v	27.1	195	195	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Attachment B
Detected Constituents in Soil
Riverpoint District
Manitowoc, Wisconsin

Detected Constituents in Soil	Units	Wisconsin SBTV (A)	Non-Industrial Direct Contact RCL (B)	Industrial Direct Contact RCL (C)	Soil to Groundwater RCL (D)	Revised Sample ID, Initial Sample ID, Sample Date, and Sample Depth in Feet Below Ground Surface, Lithology Relative to Black Granular Fill Unit																				
						SB-56		SB-57	SB-58	SB-59		SB-61	SB-62	SB-63	SB-64	SB-65	SB-66		SB-67	SB-68	SB-69		SB-70	SB-71	SB-72	SB-73
						S1_SB-45		S1_SB-46	S1_SB-47	S1_SB-48		S1_SB-50	S1_SB-51	S1_SB-52	S1_SB-53	S1_SB-14	S1_SB-17		S1_SB-27	S1_SB-30	S1_SB-35		S1_SB-36	S1_SB-40	S1_SB-41	S1_SB-39
						24-Aug-20	24-Aug-20	24-Aug-20	24-Aug-20	24-Aug-20	24-Aug-20	24-Aug-20	24-Aug-20	24-Aug-20	24-Aug-20	16-Nov-18	20-Nov-18	20-Nov-18	20-Nov-18	14-Nov-18	14-Nov-18	14-Nov-18	14-Nov-18	14-Nov-18	14-Nov-18	14-Nov-18	14-Nov-18
						4-5 ft	FD 1	0-2 ft	2-4 ft	0-2 ft	4-6 ft	2.5-3.5 ft	0-2 ft	0-2 ft	2-4 ft	4 - 5 ft	0 - 1.5 ft	1.5 - 2 ft	1.75 - 3 ft	7 - 8 ft	2.5 - 3.5 ft	3.5 - 4 ft	1.5 - 2.5 ft	2 - 3 ft	3 - 4 ft	3 - 4 ft	4 - 5 ft
Heavy Metals																										
Arsenic	mg/kg	8.3	0.677	3	0.584	13[ABCD]	7.0[BCD]	1.4[BD]	1.4[BD]	1.3[BD]	-	2.4[BD]	1.2[BD]	1.9[BD]	1.3[BD]	1.8[BD]	0.39 J	-	2.0[BD]	2.9[BD]	4.1[BCD]	-	-	11[ABCD]	1.5[BD]	3.0[BD]	-
Barium	mg/kg	364	15,300	100,000	164.8	91	59	19	25	26	-	24	16	25	20	25	1.2	-	27	25	40	-	-	66	25	50	-
Cadmium	mg/kg	1.07	71.1	985	0.752	0.12 J B	0.14 J B	0.044 J B	0.075 J B	0.082 J B	-	0.086 J B	<0.037	0.42 B	0.046 J B	0.097 J	0.076 J B	-	0.12 J B	0.18 J B	0.17 J B	-	-	0.91 J B[D]	0.11 J B	0.25 J B	-
Chromium	mg/kg	43.5	n/v	n/v	360,000	13	12	7.1	8.1	10	-	8.3	7.6	8	7.1	7.4	1.3	-	9.5	8.1	11	-	-	14	7.5	13	-
Lead	mg/kg	51.6	400	800	27	52[AD]	32[D]	10	3.6 ^	26	-	32 ^[D]	4.5 ^	42[D]	5.2	22	<1.0	-	3.2	35[D]	17	-	-	260[AD]	31[D]	36[D]	-
Mercury	mg/kg	n/v	3.13	3.13	0.208	0.095	0.043	0.018	<0.0057	0.084	-	0.022	<0.0064	0.1	0.012 J	0.011 J	0.0072 J B	-	0.017 J B	0.14	0.018 J	-	-	0.056	0.064	0.028	-
Selenium	mg/kg	n/v	391	5,840	0.52	<0.62	<0.62	<0.55	<0.59	<0.61	-	<0.63	<0.61	<0.60	<0.57	0.71 J[D]	<0.52	-	<0.63	0.79 J B[D]	1.0 J B[D]	-	-	<3.5	<0.57	1.2 J B[D]	-
Silver	mg/kg	n/v	391	5,840	0.8491	<0.14	<0.14	<0.12	<0.13	<0.13	-	<0.14	<0.13	<0.13	<0.13	<0.13	<0.11	-	<0.14	<0.16	<0.14	-	-	<0.77	<0.13	<0.17	-
Herbicides																										
Six (6) Compounds	µg/kg	n/v	Various	Various	Various	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ND	-	-	-	-	-	-
Polychlorinated Biphenyls																										
Aroclor 1254	mg/kg	n/v	0.239	0.988	n/v	-	-	-	-	-	-	-	-	-	-	-	<0.0036	-	<0.0040	<0.046	<0.043	-	-	-	-	-	-
Aroclor 1260	mg/kg	n/v	0.243	1	n/v	-	-	-	-	-	-	-	-	-	-	-	<0.0082	-	<0.0092	<0.11	<0.098	-	-	-	-	-	-
Aroclor 1262	mg/kg	n/v	n/v	n/v	n/v	-	-	-	-	-	-	-	-	-	-	-	<0.0035	-	<0.0039	<0.044	<0.041	-	-	-	-	-	-
Aroclor 1268	mg/kg	n/v	n/v	n/v	n/v	-	-	-	-	-	-	-	-	-	-	-	<0.0032	-	<0.0036	<0.041	<0.038	-	-	-	-	-	-
Polycyclic Aromatic Hydrocarbons																										
Acenaphthene	µg/kg	n/v	3,590,000	45,200,000	n/v	11 J	26 J	<6.5	<6.3	23 J	-	110	<7.0	8.1 J	<6.4	<6.6	<6.1	-	<7.0	<8.0	11 J	-	-	64	<6.6	66	-
Acenaphthylene	µg/kg	n/v	n/v	n/v	n/v	44	32 J	<4.8	<4.6	9.9 J	-	190	<5.1	5.2 J	<4.7	<4.8	<4.5	-	<5.1	<5.9	14 J	-	-	180	<4.9	21 J	-
Anthracene	µg/kg	n/v	17,900,000	100,000,000	196,949	45	37 J	<6.0	<5.9	69	-	220	<6.5	24 J	<5.9	<6.1	<5.6	-	<6.5	11 J	29 J	-	-	420	<6.2	160	-
Benzo(a)anthracene	µg/kg	n/v	1,140	20,800	n/v	200	210	15 J	9.1 J	140	-	1,000	<5.2	100	<4.8	6.1 J	<4.6	-	<5.2	34 J	82	-	-	370	14 J	340	-
Benzo(a)pyrene	µg/kg	n/v	115	2,110	470	220[B]	260[B]	18 J	17 J	130[B]	-	780[BD]	<7.5	110	<6.9	<7.1	28 J	-	<7.5	40 J	110	-	-	380[B]	13 J	290[B]	-
Benzo(b)fluoranthene	µg/kg	n/v	1,150	21,100	478	330	350	15 J	35	130	-	1,200[BD]	<8.4	160	<7.7	<7.9	31 J	-	<8.4	59	170	-	-	610[D]	18 J	420	-
Benzo(g,h,i)perylene	µg/kg	n/v	n/v	n/v	n/v	200	230	18 J	<11	73	-	440	<13	120	<11	<12	31 J	-	12 J	41 J *	47	-	-	180	13 J	120	-
Benzo(k)fluoranthene	µg/kg	n/v	11,500	211,000	n/v	120	150	30 J	<10	78	-	560	<11	94	<10 F1 F2	<11	<10	-	<11	21 J *	63	-	-	290	<11	140	-
Chrysene	µg/kg	n/v	115,000	2,110,000	144	280[D]	260[D]	23 J	13 J	170[D]	-	1,000[D]	<11	130	14 J	<10	<9.2	-	<11	44	91	-	-	510[D]	14 J	340[D]	-
Dibenzo(a,h)anthracene	µg/kg	n/v	115	2,110	n/v	49	57	<7.0	<6.8	22 J	-	140[B]	<7.5	32 J	<6.9	<7.1	<6.5	-	<7.5	<8.6	18 J	-	-	47	<7.1	39 J	-
Fluoranthene	µg/kg	n/v	2,390,000	30,100,000	88,878	430	440	26 J	26 J	290	-	500	<7.2	170	<6.6	<6.8	<6.3	-	<7.2	55	66	-	-	620	21 J	760	-
Fluorene	µg/kg	n/v	2,390,000	30,100,000	14,830	17 J	29 J	<5.1	<5.0	22 J	-	190	<5.5	<4.9	<5.0	<5.1	<4.8	-	<5.5	<6.3	13 J	-	-	58	<5.2	150	-
Indeno(1,2,3-cd)pyrene	µg/kg	n/v	1,150	21,100	n/v	210	240	22 J	<9.1	97	-	340	<10	100	<9.2	<9.5	27 J	-	<10	37 J	49	-	-	200	10 J	120	-
Methylnaphthalene, 1-	µg/kg	n/v	17,600	72,700	n/v	130	120	27 J	<8.6	16 J	-	1,000	<9.5	25 J	<8.7	<8.9	<8.3	-	<9.5	<11	150	-	-	670	<9.0	38 J	-
Methylnaphthalene, 2-	µg/kg	n/v	239,000	3,010,000	n/v	120	150	34 J	<6.5	13 J	-	1,000	<7.2	19 J	<6.5 F1	<6.7	<6.2	-	<7.1	<8.2	190	-	-	700	<6.8	44 J	-
Naphthalene	µg/kg	n/v	5,520	24,100	658	82	92	14 J	<5.4	9.9 J	-	300	<6.0	13 J	<5.5	<5.6	<5.2	-	<6.0	9.6 J	130	-	-	390	<5.7	40 J	-
Phenanthrene	µg/kg	n/v	n/v	n/v	n/v	270	270	20 J	8.9 J	200	-	350	<5.4	98	<4.9	<5.1	5.2 J	-	<5.4	50	150	-	-	920	17 J	820	-
Pyrene	µg/kg	n/v	1,790,000	22,600,000	54,546	450	440	22 J	24 J	250	-	920	<7.7	180	8.4 J	<7.3	<6.7	-	<7.7	57	89	-	-	580	22 J	600	-
Semi-Volatile Organic Compounds																										
Benzoic acid	µg/kg	n/v	100,000,000	100,000,000	n/v	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bis(2-Chloroethyl)ether	µg/kg	n/v	286	1,290	n/v	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bis(2-Ethylhexyl)phthalate (DEHP)	µg/kg	n/v	38,800	164,000	2,880	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Carbazole	µg/kg	n/v	n/v	n/v	n/v	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cresol, m & p- (Methylphenol, 3&4-)	µg/kg	n/v	n/v	n/v	n/v	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cresol, o- (Methylphenol, 2-)	µg/kg	n/v	3,160,000	41,000,000	n/v	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dibenzofuran	µg/kg	n/v	73,000	1,040,000	n/v	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dimethylphenol, 2,4-	µg/kg	n/v	1,260,000	16,400,000	n/v	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
N-Nitrosodi-n-Propylamine	µg/kg	n/v	78	328	n/v	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Phenol	µg/kg	n/v	19,000,000	100,000,000	2,295	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Volatile Organic Compounds																										
Benzene	µg/kg	n/v	1,600	7,070	5.1	<10	<9.4	<8.7	<9.0	-	<8.6	<19	<9.8	<8.3	<8.2	-	-	34[D]	<8.3 *	-	-	<11 *	<8.3 *	34[D]	-	-	<13 *
Butylbenzene, n-	µg/kg	n/v	108,000	108,000	n/v	<28	<25	<23	<24	-	<23	310	<26	<22	<22	-	-	45 J *	<22 *	-	-	<29 *	<22 *	<35 *	-	-	<35 *
Butylbenzene, sec- (2-Phenylbutane)	µg/kg	n/v	145,000	145,000	n/v	<28	<26	<24	<24	-	<24	280	<27	<23	<22	-	-	<33 *	<23 *	-	-	<30 *	<23 *	<36 *	-	-	<36 *
Chloroform (Trichloromethane)	µg/kg	n/v	454	1,980	3.3	<26	26 J B	<22	<23	-	<22	<49	<25	<21	<21	-	-	<31 *	<21 *	-	-	<28 *	<21 *	<33 *	-	-	<34 *
Dichloroethene, cis-1,2-	µg/kg	n/v	156,000	2,340,000	41.2	<29	<26	<24	<25	-	<24	<54	<27	<23	<23	-	-	<34	<23	-	-	<31	<23	<37	-	-	<37
Ethylbenzene	µg/kg	n/v	8,020	35,400	1,570	<13	<12	<11	<11	-	<11	<24	<12	<10	<10	-	-	68	<10	-	-	<14	27	84	-	-	<17
Isopropylbenzene	µg/kg	n/v	268,000	268,000	n/v	<27	<25	<23	<24	-	<23	260	<26	<22	<22	-	-	49 J *	<22 *	-	-	<29 *	<22 *	<35 *	-	-	<35 *
Isopropyltoluene, p- (Cymene)	µg/kg	n/v	162,000	162,000	n/v	<26	<23	<22	<22	-	<21	<48	<24	<21	<20	-	-	35 J *	<21 *	-	-	<27 *	<21 *	<33 *	-	-	<33 *
Naphthalene	µg/kg	n/v	5,520	24,100	658	34 J	56 J	<20	<21	-	<20	210	<22	34 J	<19	-	-	570	<19	-	-	<25	160	370	-	-	200
Propylbenzene, n-	µg/kg	n/v	264,000	264,000	n/v	<30	<27	<25	<25	-	<25	420	<28	<23	<23	-	-	60 J *	<24 *	-	-	<31	<23	82 J	-	-	<38
Tetrachloroethene (PCE)	µg/kg	n/v	33,000	145,000	4.5	<26	<24	<22	<23	-	<22	<49	<25	<21	<21	-	-	<31 *	<21 *	-	-	<28 *	<21 *	<33 *	-	-	<34 *
Toluene	µg/kg	n/v	818,000	818,000	1,107	20	36	<8.8	<9.0	-	8.8 J	<20	<9.8	16	<8.3	-	-	340	<8.4 *	-	-	<11 *	80	230	-	-	<13 *
Trichloroethane, 1,1,1-	µg/kg	n/v	640,000	640,000	140	230	420	<23	<23	-	<22	<51	<25	<22	<21	-	-	<32 *	<22 *	-	-	<29 *	<22 *	<34 *	-	-	<35 *
Trichloroethene (TCE)	µg/kg	n/v	1,300	8,410	3.6	<12	<11	<9.8	<10	-	<9.7	<22	<11	<9.3	<9.2	-	-	<14 *	<9.3 *	-	-	<12 *	<9.3 *	<15 *	-	-	<15 *
Trichlorofluoromethane (Freon 11)	µg/kg	n/v	1,230,000	1,230,000	4,478	<31	<27	<25	<26	-	<25	<57	<29	<24	<24	-	-	<36	<24	-	-	<32	<24	<39	-	-	<39
Trimethylbenzene, 1,2,4-	µg/kg	n/v	219,000	219,000	1,380	62 J	73	<21	<22	-	<21	2,800[D]	<24	<20	<20	-	-	280	<20 *	-	-	<27 *	<20 *	240	-	-	160
Trimethylbenzene, 1,3,5-	µg/kg	n/v	182,000	182,000		<27	<24	<23	<23	-	<22	1,100[D]	<25	<22	<21	-	-	88	<22 *	-	-	<29 *	<22 *	120	-	-	<35 *
Xylenes, Total	µg/kg	n/v	260,000	260,000	3,960	41	85	<13	<14	-	<13	770	<15	<12	<12	-	-	830	<13 *	-	-	<17 *	210	590	-	-	<20 *
General Chemistry																										
Cyanide, Total	mg/kg	n/v	27.1	195	195	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Attachment B
Detected Constituents in Soil
Riverpoint District
Manitowoc, Wisconsin

Detected Constituents in Soil	Units	Wisconsin SBTV (A)	Non-Industrial Direct Contact RCL (B)	Industrial Direct Contact RCL (C)	Soil to Groundwater RCL (D)	Revised Sample ID, Initial Sample ID, Sample Date, and Sample Depth in Feet Below Ground Surface, Lithology Relative to Black Granular Fill Unit																		
						SB-74	SB-75	SB-76	SB-77		SB-78		SB-79		SB-80				SB-81		SB-82	Trip Blank		
						S1_SB-43	S2_SB-23	S2_SB-24	S2_SB-25		S2_SB-29		S2_SB-26		S2_SB-28				S2_SB-27		S2_SB-30			
						14-Nov-18	16-Nov-18	20-Nov-18	16-Nov-18	16-Nov-18	16-Nov-18	10-Dec-18	20-Nov-18	20-Nov-18	20-Nov-18	20-Nov-18	10-Dec-18	10-Dec-18	20-Nov-18	20-Nov-18	16-Nov-18	24-Aug-20	19-Nov-18	20-Nov-18
						1 - 2 ft	0.5 - 2 ft	2 - 2.5 ft	2 - 3 ft	3 - 4 ft	3 - 4 ft	3.75 - 4 ft	1 - 2 ft	3 - 3.5 ft	2 - 2.5 ft	2 - 3.75 ft	2 - 2.5 ft	2.5 - 3 ft	2 - 3.75 ft	3.5 - 3.75 ft	0.5 - 1.5 ft	NA	NA	NA
							FILL	NO FILL	ABOVE	FILL	FILL	FILL	FILL	BELOW	FILL	FILL	FILL	FILL	FILL	FILL	ABOVE	NA	NA	NA
Heavy Metals																								
Arsenic	mg/kg	8.3	0.677	3	0.584	**1.7**[BD]	**19**[ABCD]	-	-	**30**[ABCD]	**16**[ABCD]	-	**39**[ABCD]	-	-	**31**[ABCD]	-	-	**35**[ABCD]	-	**1.5**[BD]	-	-	-
Barium	mg/kg	364	15,300	100,000	164.8	65	**230**[D]	-	-	**2,000**[AD]	**3,900**[AD]	-	**520**[AD]	-	-	**1,600**[AD]	-	-	**500**[AD]	-	27	-	-	-
Cadmium	mg/kg	1.07	71.1	985	0.752	0.14 J B	**17**[AD]	-	-	**8.6**[AD]	**6.2**[AD]	-	**12**[AD]	-	-	**13**[AD]	-	-	**9.5**[AD]	-	0.34	-	-	-
Chromium	mg/kg	43.5	n/v	n/v	360,000	7.7	**74**[A]	-	-	41	32	-	**93**[A]	-	-	**64**[A]	-	-	42	-	6.3	-	-	-
Lead	mg/kg	51.6	400	800	27	24	**1,200**[ABCD]	-	-	**18,000**[ABCD]	**11,000**[ABCD]	-	**1,600**[ABCD]	-	-	**4,800**[ABCD]	-	-	**2,400**[ABCD]	-	**67**[AD]	-	-	-
Mercury	mg/kg	n/v	3.13	3.13	0.208	0.016 J	**1.2**[D]	-	-	**1.6**[D]	**1.7**[D]	-	**1.1**[D]	-	-	**0.86**[D]	-	-	**1.7**[D]	-	0.057	-	-	-
Selenium	mg/kg	n/v	391	5,840	0.52	<0.62	**<3.0**	-	-	**4.0 J**[D]	**<3.1**	-	**<3.2**	-	-	**7.5**[D]	-	-	**<2.9**	-	**<0.55**	-	-	-
Silver	mg/kg	n/v	391	5,840	0.8491	<0.14	<0.67	-	-	**1.2 J**[D]	<0.69	-	**1.2 J**[D]	-	-	**2.2 J**[D]	-	-	<0.64	-	<0.12	-	-	-
Herbicides																								
Six (6) Compounds	µg/kg	n/v	Various	Various	Various	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Polychlorinated Biphenyls																								
Aroclor 1254	mg/kg	n/v	0.239	0.988	n/v	-	<0.087	-	-	<0.041	<0.042	-	**0.34**[B]	-	-	**0.84**[B]	<0.041	<0.041	0.15	-	<0.0038	-	-	-
Aroclor 1260	mg/kg	n/v	0.243	1	n/v	-	<0.20	-	-	<0.094	<0.095	-	<0.019	-	-	<0.098	<0.093	<0.093	<0.0093	-	<0.0087	-	-	-
Aroclor 1262	mg/kg	n/v	n/v	n/v	n/v	-	1.1	-	-	0.14 J	0.31	-	<0.0081	-	-	<0.042	1.2	<0.039	<0.0039	-	<0.0037	-	-	-
Aroclor 1268	mg/kg	n/v	n/v	n/v	n/v	-	<0.077	-	-	<0.037	<0.037	-	<0.0075	-	-	0.40	<0.036	<0.036	<0.0036	-	<0.0034	-	-	-
Polycyclic Aromatic Hydrocarbons																								
Acenaphthene	µg/kg	n/v	3,590,000	45,200,000	n/v	11 J	29 J	-	-	110	51	-	220 J	-	-	11,000	-	-	36 J	-	44	-	-	-
Acenaphthylene	µg/kg	n/v	n/v	n/v	n/v	32 J	230	-	-	86	280	-	920	-	-	3,200	-	-	110 J	-	20 J	-	-	-
Anthracene	µg/kg	n/v	17,900,000	100,000,000	196,949	52	270	-	-	460	350	-	1,800	-	-	53,000	-	-	210	-	140	-	-	-
Benzo(a)anthracene	µg/kg	n/v	1,140	20,800	n/v	180	570	-	-	**1,300**[B]	770	-	**5,000**[B]	-	-	**100,000**[BC]	-	-	1,100	-	380	-	-	-
Benzo(a)pyrene	µg/kg	n/v	115	2,110	470	**170**[B]	**850**[BD]	-	-	**1,700**[BD]	**1,700**[BD]	-	**4,400**[BCD]	-	-	**75,000**[BCD]	-	-	**1,400**[BD]	-	**390**[B]	-	-	-
Benzo(b)fluoranthene	µg/kg	n/v	1,150	21,100	478	230	**1,600**[BD]	-	-	**2,400**[BD]	**2,300**[BD]	-	<85	-	-	**110,000**[BCD]	-	-	**2,700**[BD]	-	**520**[D]	-	-	-
Benzo(g,h,i)perylene	µg/kg	n/v	n/v	n/v	n/v	100	390	-	-	1,100	810	-	4,100	-	-	43,000	-	-	1,200	-	170	-	-	-
Benzo(k)fluoranthene	µg/kg	n/v	11,500	211,000	n/v	92	660	-	-	1,600	910	-	11,000	-	-	**35,000**[B]	-	-	820	-	180	-	-	-
Chrysene	µg/kg	n/v	115,000	2,110,000	144	**180**[D]	**1,200**[D]	-	-	**1,600**[D]	**1,200**[D]	-	**5,500**[D]	-	-	**100,000**[D]	-	-	**1,400**[D]	-	**390**[D]	-	-	-
Dibenzo(a,h)anthracene	µg/kg	n/v	115	2,110	n/v	32 J	**140**[B]	-	-	**410**[B]	**270**[B]	-	**1,000**[B]	-	-	**18,000**[BC]	-	-	**340**[B]	-	51	-	-	-
Fluoranthene	µg/kg	n/v	2,390,000	30,100,000	88,878	310	1,700	-	-	2,000	1,800	-	14,000	-	-	**230,000**[D]	-	-	1,900	-	680	-	-	-
Fluorene	µg/kg	n/v	2,390,000	30,100,000	14,830	19 J	51	-	-	140	130	-	550	-	-	**31,000**[D]	-	-	66 J	-	48	-	-	-
Indeno(1,2,3-cd)pyrene	µg/kg	n/v	1,150	21,100	n/v	91	400	-	-	1,100	720	-	**3,900**[B]	-	-	**45,000**[BC]	-	-	**1,200**[B]	-	190	-	-	-
Methylnaphthalene, 1-	µg/kg	n/v	17,600	72,700	n/v	32 J	240	-	-	160	370	-	300 J	-	-	4,400	-	-	130 J	-	36 J	-	-	-
Methylnaphthalene, 2-	µg/kg	n/v	239,000	3,010,000	n/v	40 J	300	-	-	200	440	-	300 J	-	-	5,800	-	-	160 J	-	39 J	-	-	-
Naphthalene	µg/kg	n/v	5,520	24,100	658	36 J	240	-	-	280	420	-	420	-	-	**12,000**[BD]	-	-	120 J	-	35	-	-	-
Phenanthrene	µg/kg	n/v	n/v	n/v	n/v	160	1,100	-	-	1,700	1,200	-	14,000	-	-	240,000	-	-	930	-	490	-	-	-
Pyrene	µg/kg	n/v	1,790,000	22,600,000	54,546	290	1,500	-	-	2,100	1,500	-	13,000	-	-	**170,000**[D]	-	-	1,800	-	690	-	-	-
Semi-Volatile Organic Compounds																								
Benzoic acid	µg/kg	n/v	100,000,000	100,000,000	n/v	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bis(2-Chloroethyl)ether	µg/kg	n/v	286	1,290	n/v	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bis(2-Ethylhexyl)phthalate (DEHP)	µg/kg	n/v	38,800	164,000	2,880	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Carbazole	µg/kg	n/v	n/v	n/v	n/v	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cresol, m & p- (Methylphenol, 3&4-)	µg/kg	n/v	n/v	n/v	n/v	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cresol, o- (Methylphenol, 2-)	µg/kg	n/v	3,160,000	41,000,000	n/v	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dibenzofuran	µg/kg	n/v	73,000	1,040,000	n/v	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dimethylphenol, 2,4-	µg/kg	n/v	1,260,000	16,400,000	n/v	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
N-Nitrosodi-n-Propylamine	µg/kg	n/v	78	328	n/v	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Phenol	µg/kg	n/v	19,000,000	100,000,000	2,295	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Volatile Organic Compounds																								
Benzene	µg/kg	n/v	1,600	7,070	5.1	<8.8 *	-	**<7.5 LQ**	**<7.2**	-	**<8.2**	**<9.8**	-	**<10 LQ**	**1,900**[BD]	-	-	-	-	**<9.9 LQ**	-	<7.3	**<7.3**	**<7.3 LQ**
Butylbenzene, n-	µg/kg	n/v	108,000	108,000	n/v	<23 *	-	<20 LQ	<19	-	<22	<26	-	<28 LQ	<80 LQ	-	-	-	-	<26 LQ	-	<19	<19	<19 LQ
Butylbenzene, sec- (2-Phenylbutane)	µg/kg	n/v	145,000	145,000	n/v	<24 *	-	<20 LQ	<20	-	24 J	<27	-	<28 LQ	<82 LQ	-	-	-	-	<27 LQ	-	<20	<20	<20 LQ
Chloroform (Trichloromethane)	µg/kg	n/v	454	1,980	3.3	<22 *	-	**<19 LQ**	**<18**	-	**<21**	**<25**	-	**<26 LQ**	**<76 LQ**	-	-	-	-	**<25 LQ**	-	**26 J B**	**<19**	**<19 LQ**
Dichloroethene, cis-1,2-	µg/kg	n/v	156,000	2,340,000	41.2	<24	-	<21	<20	-	23 J	<27	-	<29	**<84**	-	-	-	-	<28	-	<20	<20	<20
Ethylbenzene	µg/kg	n/v	8,020	35,400	1,570	<11	-	20	<9.0	-	29	<12	-	<13	<38	-	-	-	-	29	-	<9.2	<9.2	<9.2
Isopropylbenzene	µg/kg	n/v	268,000	268,000	n/v	<23 *	-	22 J LQ	<19	-	<22	<26	-	<27 LQ	<79 LQ	-	-	-	-	<26 LQ	-	<19	<19	<19 LQ
Isopropyltoluene, p- (Cymene)	µg/kg	n/v	162,000	162,000	n/v	<22 *	-	<19 LQ	<18	-	<20	<24	-	<26 LQ	<75 LQ	-	-	-	-	<25 LQ	-	<18	<18	<18 LQ
Naphthalene	µg/kg	n/v	5,520	24,100	658	<20	-	140	36 J	-	100	25 J B	-	<24	**360,000**[BCD]	-	-	-	-	98	-	<17	<17	<17
Propylbenzene, n-	µg/kg	n/v	264,000	264,000	n/v	<25	-	25 J LQ	<20	-	25 J	<28	-	<30 LQ	<85 LQ	-	-	-	-	28 J LQ	-	<21	<21	<21 LQ
Tetrachloroethene (PCE)	µg/kg	n/v	33,000	145,000	4.5	<22 *	-	**<19 LQ**	**31 J B**[D]	-	**<21**	**<25**	-	**<26 LQ**	**<76 LQ**	-	-	-	-	**<25 LQ**	-	<19	**<19**	**<19 LQ**
Toluene	µg/kg	n/v	818,000	818,000	1,107	<8.8 *	-	27	13	-	74	<9.8	-	<10 LQ	**1,800**[D]	-	-	-	-	52	-	7.4 J	<7.4	<7.4 LQ
Trichloroethane, 1,1,1-	µg/kg	n/v	640,000	640,000	140	<23 *	-	<20 LQ	<19	-	<21	<25 LQ	-	<27 LQ	<78 LQ	-	-	-	-	<26 LQ	-	<19	<19	<19 LQ
Trichloroethene (TCE)	µg/kg	n/v	1,300	8,410	3.6	<9.8 *	-	**<8.4 LQ**	**20 J**[D]	-	**<9.3**	**<11**	-	**<12 LQ**	**<34 LQ**	-	-	-	-	**<11 LQ**	-	<8.2	**<8.2**	**<8.2 LQ**
Trichlorofluoromethane (Freon 11)	µg/kg	n/v	1,230,000	1,230,000	4,478	<26	-	<22	<21	-	<24	<29	-	<31	<88	-	-	-	-	47 J	-	<21	<21	<21
Trimethylbenzene, 1,2,4-	µg/kg	n/v	219,000	219,000	1,380	<21 *	-	52	<18	-	31 J	<24	-	<26 LQ	**1,100**[D]	-	-	-	-	34 J LQ	-	<18	<18	<18 LQ
Trimethylbenzene, 1,3,5-	µg/kg	n/v	182,000	182,000		<23 *	-	<20 LQ	<19	-	<21	<25	-	<27 LQ	**540**[D]	-	-	-	-	<26 LQ	-	<19	<19	<19 LQ
Xylenes, Total	µg/kg	n/v	260,000	260,000	3,960	<13 *	-	130	17 J	-	95	<15	-	<16 LQ	1,600	-	-	-	-	120	-	<11	<11	<11 LQ
General Chemistry																								
Cyanide, Total	mg/kg	n/v	27.1	195	195	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Attachment B
Detected Constituents in Soil
Riverpoint District
Manitowoc, Wisconsin

Detected Constituents in Soil	Units	Wisconsin SBTV (A)	Non-Industrial Direct Contact RCL (B)	Industrial Direct Contact RCL (C)	Soil to Groundwater RCL (D)	Revised Sample ID, Initial Sample ID, Sample Date, and Sample Depth in Feet Below Ground Surface, Lithology Relative to Black Granular Fill Unit																		
						S1 TP-5 (E)	S1 TP-5 (E)	S1 TP-5 (W)	S1 TP-6 (C)	S1 TP-7 (C)	S3 TP-17 (C)	Berm	Surface Fill	SP-1	SP-1A	SP-2	SP-2A	SP-3	SP-3A	SP-4	SP-4A	SP-5	SP-5A	SP-6	SP-6A
						S1 TP-5 (E)	S1 TP-5 (E)	S1 TP-5 (W)	S1 TP-6 (C)	S1 TP-7 (C)	S3 TP-17 (C)														
						13-Aug-20	13-Aug-20	13-Aug-20	14-Aug-20	14-Aug-20	17-Aug-20	28-Nov-18	28-Nov-18	20-Nov-18	20-Nov-18	20-Nov-18	20-Nov-18	20-Nov-18	20-Nov-18	20-Nov-18	20-Nov-18	20-Nov-18	20-Nov-18	20-Nov-18	20-Nov-18
						1 ft	8 ft	8 ft	4 ft	8 ft	3 ft	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab
						NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heavy Metals																									
Arsenic	mg/kg	8.3	0.677	3	0.584	13[ABCD]	2.2[BD]	1.2 J[BD]	3[BCD]	1.1[BD]	1.8[BD]	6.9[BCD]	6.4[BCD]	1.2[BD]	-	5.9[BCD]	-	6.3[BCD]	-	1.0[BD]	-	6.3[BCD]	-	1.4[BD]	-
Barium	mg/kg	364	15,300	100,000	164.8	110	23	20	33	22	27	61	53	4,400[AD]	-	240[D]	-	110	-	3.9	-	78	-	14	-
Cadmium	mg/kg	1.07	71.1	985	0.752	0.61	0.36	0.072 J	0.19 J	0.067 J	0.091 J	0.62	0.54	0.91 J B[D]	-	4.2[AD]	-	3.6[AD]	-	0.094 J B	-	2.5[AD]	-	0.12 J B	-
Chromium	mg/kg	43.5	n/v	n/v	360,000	15	7.3	7.4	11	8.9	8.4	15	11	34	-	25	-	27	-	2.4	-	21	-	5.8	-
Lead	mg/kg	51.6	400	800	27	380[AD]	34[D]	3.7	36[D]	5.7	6.0	140[AD]	81[AD]	<4.3	-	370[AD]	-	130[AD]	-	3.4	-	130[AD]	-	28[D]	-
Mercury	mg/kg	n/v	3.13	3.13	0.208	0.13	0.23[D]	<0.0066	0.035	0.013 J	<0.0067	0.25[D]	0.020	0.0072 J B	-	0.088	-	0.090	-	<0.0051	-	0.11	-	0.0093 J B	-
Selenium	mg/kg	n/v	391	5,840	0.52	<0.75	<0.71	<0.75	<0.66	<0.62	<0.65	0.67 J[D]	<0.67	<0.54	-	<0.58	-	0.59 J[D]	-	<0.58	-	<0.68	-	<0.55	-
Silver	mg/kg	n/v	391	5,840	0.8491	<0.16	<0.16	<0.17	<0.15	<0.14	<0.14	<0.14	<0.15	0.53	-	0.37 J	-	0.31 J	-	<0.13	-	0.27 J	-	<0.12	-
Herbicides																									
Six (6) Compounds	µg/kg	n/v	Various	Various	Various	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Polychlorinated Biphenyls																									
Aroclor 1254	mg/kg	n/v	0.239	0.988	n/v	-	-	-	-	-	-	-	-	<0.0037	-	<0.0040	-	<0.0038	-	<0.036	-	<0.0041	-	<0.0038	-
Aroclor 1260	mg/kg	n/v	0.243	1	n/v	-	-	-	-	-	-	-	-	<0.0083	-	<0.0092	-	<0.0087	-	<0.081	-	<0.0094	-	<0.0087	-
Aroclor 1262	mg/kg	n/v	n/v	n/v	n/v	-	-	-	-	-	-	-	-	<0.0035	-	<0.0039	-	<0.0037	-	<0.034	-	<0.0040	-	<0.0037	-
Aroclor 1268	mg/kg	n/v	n/v	n/v	n/v	-	-	-	-	-	-	-	-	<0.0033	-	<0.0036	-	<0.0034	-	<0.032	-	<0.0037	-	<0.0034	-
Polycyclic Aromatic Hydrocarbons																									
Acenaphthene	µg/kg	n/v	3,590,000	45,200,000	n/v	<8.6	<79	<76	17 J	6,000	1,300	-	-	<6.1	–	<6.5	–	7.1 J	–	<58	–	<6.8	–	<6.4	–
Acenaphthylene	µg/kg	n/v	n/v	n/v	n/v	73	<58	<56	18 J	<510	350 J	-	-	<4.5	–	21 J	–	12 J	–	44 J	–	14 J	–	<4.7	–
Anthracene	µg/kg	n/v	17,900,000	100,000,000	196,949	68	<74	<71	32 J	960	250 J	-	-	<5.6	–	32 J	–	30 J	–	120 J	–	24 J	–	<5.9	–
Benzo(a)anthracene	µg/kg	n/v	1,140	20,800	n/v	200	60 J	<57	100	120 J	<57	-	-	11 J	–	140	–	120	–	470	–	120	–	19 J	–
Benzo(a)pyrene	µg/kg	n/v	115	2,110	470	220[B]	<85	<82	110	87 J	<82	-	-	13 J	–	220[B]	–	140[B]	–	700[BD]	–	140[B]	–	23 J	–
Benzo(b)fluoranthene	µg/kg	n/v	1,150	21,100	478	320	<95	<91	100	150 J	<91	-	-	19 J	–	380	–	220	–	930[D]	–	190	–	29 J	–
Benzo(g,h,i)perylene	µg/kg	n/v	n/v	n/v	n/v	150	<140	<140	72	<120	<140	-	-	11 J	–	100	–	81	–	370	–	96	–	18 J	–
Benzo(k)fluoranthene	µg/kg	n/v	11,500	211,000	n/v	180	<130	<120	140	<110	<120	-	-	<10	–	96	–	70	–	430	–	64	–	14 J	–
Chrysene	µg/kg	n/v	115,000	2,110,000	144	270	<120	<120	120	140 J	<120	-	-	20 J	–	220[D]	–	160[D]	–	690[D]	–	150[D]	–	24 J	–
Dibenzo(a,h)anthracene	µg/kg	n/v	115	2,110	n/v	39 J	<85	<82	14 J	<75	<82	-	-	<6.5	–	22 J	–	24 J	–	130 J[B]	–	23 J	–	<6.8	–
Fluoranthene	µg/kg	n/v	2,390,000	30,100,000	88,878	230	230 J	<78	150	260 J	100 J	-	-	37	–	330	–	260	–	1,000	–	260	–	43	–
Fluorene	µg/kg	n/v	2,390,000	30,100,000	14,830	<6.7	240 J	<59	46	6,300	2,200	-	-	<4.7	–	12 J	–	10 J	–	75 J	–	7.1 J	–	<5.0	–
Indeno(1,2,3-cd)pyrene	µg/kg	n/v	1,150	21,100	n/v	150	<110	<110	57	<100	<110	-	-	<8.8	–	98	–	77	–	250 J	–	91	–	16 J	–
Methylnaphthalene, 1-	µg/kg	n/v	17,600	72,700	n/v	800	7,100	550 J	140	63,000[B]	19,000[B]	-	-	<8.2	–	23 J	–	23 J	–	95 J	–	15 J	–	<8.6	–
Methylnaphthalene, 2-	µg/kg	n/v	239,000	3,010,000	n/v	1,100	6,400	920	180	94,000	28,000	-	-	19 J	–	30 J	–	27 J	–	140 J	–	16 J	–	<6.5	–
Naphthalene	µg/kg	n/v	5,520	24,100	658	720[D]	3,400[D]	<65	73	610 J	4,900[D]	-	-	11 J	–	21 J	–	18 J	–	130 J	–	13 J	–	<5.4	–
Phenanthrene	µg/kg	n/v	n/v	n/v	n/v	450	470	<59	220	18,000	3,900	-	-	28 J	–	160	–	150	–	540	–	120	–	21 J	–
Pyrene	µg/kg	n/v	1,790,000	22,600,000	54,546	260	220 J	<84	220	540	320 J	-	-	37	–	330	–	230	–	1,300	–	240	–	36	–
Semi-Volatile Organic Compounds																									
Benzoic acid	µg/kg	n/v	100,000,000	100,000,000	n/v	-	-	-	-	-	-	-	-	-	–	-	–	-	–	-	–	-	–	-	–
Bis(2-Chloroethyl)ether	µg/kg	n/v	286	1,290	n/v	-	-	-	-	-	-	-	-	-	–	-	–	-	–	-	–	-	–	-	–
Bis(2-Ethylhexyl)phthalate (DEHP)	µg/kg	n/v	38,800	164,000	2,880	-	-	-	-	-	-	-	-	-	–	-	–	-	–	-	–	-	–	-	–
Carbazole	µg/kg	n/v	n/v	n/v	n/v	-	-	-	-	-	-	-	-	-	–	-	–	-	–	-	–	-	–	-	–
Cresol, m & p- (Methylphenol, 3&4-)	µg/kg	n/v	n/v	n/v	n/v	-	-	-	-	-	-	-	-	-	–	-	–	-	–	-	–	-	–	-	–
Cresol, o- (Methylphenol, 2-)	µg/kg	n/v	3,160,000	41,000,000	n/v	-	-	-	-	-	-	-	-	-	–	-	–	-	–	-	–	-	–	-	–
Dibenzofuran	µg/kg	n/v	73,000	1,040,000	n/v	-	-	-	-	-	-	-	-	-	–	-	–	-	–	-	–	-	–	-	–
Dimethylphenol, 2,4-	µg/kg	n/v	1,260,000	16,400,000	n/v	-	-	-	-	-	-	-	-	-	–	-	–	-	–	-	–	-	–	-	–
N-Nitrosodi-n-Propylamine	µg/kg	n/v	78	328	n/v	-	-	-	-	-	-	-	-	-	–	-	–	-	–	-	–	-	–	-	–
Phenol	µg/kg	n/v	19,000,000	100,000,000	2,295	-	-	-	-	-	-	-	-	-	–	-	–	-	–	-	–	-	–	-	–
Volatile Organic Compounds																									
Benzene	µg/kg	n/v	1,600	7,070	5.1	<14 *	21 *[D]	<23 *	<10 *	<40 *	1,600 *[BD]	-	-	–	<10 *	–	<11 *	–	<11 *	–	<12 *	–	<11 *	–	<8.2 *
Butylbenzene, n-	µg/kg	n/v	108,000	108,000	n/v	<36	2,900	2,800	<27	12,000	7,700	-	-	–	<26 *	–	<30 *	–	<28 *	–	<31 *	–	<30 *	–	<22 *
Butylbenzene, sec- (2-Phenylbutane)	µg/kg	n/v	145,000	145,000	n/v	<37	1,300	3,700	<27	7,500	6,300	-	-	–	<27 *	–	<30 *	–	<29 *	–	<32 *	–	<31 *	–	<22 *
Chloroform (Trichloromethane)	µg/kg	n/v	454	1,980	3.3	<35 *	<31 *	<58 *	<25 *	<100 *	<55 *	-	-	–	<25 *	–	<28 *	–	<27 *	–	<29 *	–	<29 *	–	<21 *
Dichloroethene, cis-1,2-	µg/kg	n/v	156,000	2,340,000	41.2	<38	<34	<64	<28	<110	<60	-	-	–	<28	–	<31	–	<30	–	<32	–	<32	–	<23
Ethylbenzene	µg/kg	n/v	8,020	35,400	1,570	82	170	<29	<13	<50	8,500[BD]	-	-	–	<12	–	<14	–	<13	–	<15	–	<14	–	<10
Isopropylbenzene	µg/kg	n/v	268,000	268,000	n/v	<36	1,100	3,100	<26	3,800	3,400	-	-	–	<26 *	–	<29 *	–	<28 *	–	<31 *	–	<30 *	–	<22 *
Isopropyltoluene, p- (Cymene)	µg/kg	n/v	162,000	162,000	n/v	<34	630	<57	<25	<99	3,800	-	-	–	<25 *	–	<28 *	–	<26 *	–	<29 *	–	<28 *	–	<20 *
Naphthalene	µg/kg	n/v	5,520	24,100	658	130 B	1,400 B[D]	670 B[D]	53 J B	580 B	17,000 B[BD]	-	-	–	<23	–	<26	–	65 J	–	99	–	110	–	28 J
Propylbenzene, n-	µg/kg	n/v	264,000	264,000	n/v	44 J	1,900	5,500	<29	8,700	6,100	-	-	–	<28 *	–	<32 *	–	<30 *	–	<33 *	–	<32 *	–	<23 *
Tetrachloroethene (PCE)	µg/kg	n/v	33,000	145,000	4.5	<35	<31	<58	<25	<100	<55	-	-	–	<25 *	–	<28 *	–	<27 *	–	<29 *	–	<29 *	–	<21 *
Toluene	µg/kg	n/v	818,000	818,000	1,107	180	91	<23	<10	<40	150	-	-	–	<10 *	–	<11 *	–	<11 *	–	<12 *	–	<11 *	–	<8.3 *
Trichloroethane, 1,1,1-	µg/kg	n/v	640,000	640,000	140	<36	<32	<59	<26	<100	<56	-	-	–	<26 *	–	<29 *	–	<28 *	–	<30 *	–	<30 *	–	<21 *
Trichloroethene (TCE)	µg/kg	n/v	1,300	8,410	3.6	<15	<14	<26	<11	<45	<24	-	-	–	<11 *	–	<13 *	–	<12 *	–	<13 *	–	<13 *	–	<9.2 *
Trichlorofluoromethane (Freon 11)	µg/kg	n/v	1,230,000	1,230,000	4,478	<40	<36	<67	<29	<120	<63	-	-	–	<29	–	<33	–	<31	–	<34	–	<33	–	<24
Trimethylbenzene, 1,2,4-	µg/kg	n/v	219,000	219,000	1,380	380	15,000[D]	30,000[D]	65 J	56,000[D]	50,000[D]	-	-	–	<24 *	–	<27 *	–	<26 *	–	<28 *	–	<28 *	–	<20 *
Trimethylbenzene, 1,3,5-	µg/kg	n/v	182,000	182,000		150	5,800[D]	11,000[D]	<26	<100[D]	11,000[D]	-	-	–	<26 *	–	<29 *	–	<28 *	–	<30 *	–	<30 *	–	<21 *
Xylenes, Total	µg/kg	n/v	260,000	260,000	3,960	780	5,800[D]	6,500[D]	<15	<60	20,000[D]	-	-	–	<15 *	–	<17 *	–	<16 *	–	<17 *	–	<17 *	–	<12 *
General Chemistry																									
Cyanide, Total	mg/kg	n/v	27.1	195	195	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-

Attachment B
Waste Characterization of Soil Using TCLP Extraction
Riverpoint District
Manitowoc, Wisconsin

Concentration (mg/L)	Toxicity Threshold[1]	Revised Sample ID, Initial Sample ID , Depth, and Sample Date				
		1_SB-10 (1-2)	1_SB-40A (2-3)	2_SB-25 (3-4)	2_SB-29 (3-4)	5_SB-1 (0-2)
		1_SB-52 (1-2)	1_SB-71 (2-3)	2_SB-77 (3-4)	2_SB-78 (3-4)	5_SB-1 (0-2)
		12/10/2018	12/10/2018	12/10/2018	12/10/2018	12/10/2018
Arsenic	5	-	-	<0.010	<0.010	-
Barium	100	-	-	3.1	0.95	-
Cadmium	1	-	-	0.046	0.0046 J	-
Chromium	5	-	-	<0.010	<0.010	-
Lead	5	0.018 J	1.5	1.5	0.67	<0.0075
Selenium	1	-	-	<0.020	<0.020	-
Silver	5	-	-	<0.010	<0.010	-
Mercury	0.2	-	-	<0.00020	<0.00020	-

Notes:
[1] Maximum concentration of contaminants for the toxicity characteristic per 40 CFR 261.24
mg/L = Milligrams per liter
< = Concentration is less than the laboratory detection limit
- = Not Analyzed
J = Concentration is greater than the laboratory detection limit, but less than the limit of quantitation
Concentration is greater than the maximum concentration of contaminants for the toxicity characteristic per 40 CFR 261.24
The initial sample ID was used in Stantec reports from 2020. The revised sample ID will be used starting in January 2021.

Attachment B
Detected Constituents in Groundwater
Riverpoint District
Manitowoc, Wisconsin

Notes:

ug/L	microgram per liter
mg/L	milligram per liter
^{A}	Constituent concentration with a subscript A is greater than the ch. NR 140 WAC Preventive Action Limit
^{AB}	Constituent concentration with a subscript AB is greater than the ch. NR 140 WAC Enforcement Standard
15.2	Measured concentration did not exceed the indicated standard.
<0.03	Analyte was not detected at a concentration greater than the laboratory reporting limit.
-	Parameter not analyzed / not available.
B	Indicates analyte was found in associated blank, as well as in the sample.
F1	MS and/or MSD Recovery is outside acceptance limits.
J	The reported result is an estimated value.
n/v	No standard/guideline value.
$^{J-}$	Estimated concentration between the method detection limit and the reporting limit (+/- indicate the direction of bias).
UJ	Estimated limit of detection (LOD). NA - Not analyzed.

The Initial Sample ID was used to identify samples in 2020. The Revised Sample ID will be used after January 2021.

Attachment B
Detected Constituents in Groundwater
Riverpoint District
Manitowoc, Wisconsin

Detected Constituents	Units	Preventive Action Limit (A)	Enforcement Standard (B)	Revised Sample ID, Initial Sample ID, and Sample Date																			
				TW-1	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	TW-7	TW-8	TW-9	TW-10	TW-11	TW-13	MW-13	TW-16	TW-17		TW-18		TW-19
				S5_TW-1	S5_MW-1	S5_MW-78	S4_MW-80	S5_MW-79	S5_MW-81	S5_MW-82	S4_TW-4	S4_TW-9	S4_TW-12	S4_TW-15	S4_TW-20	S3_TW-11	AECOM 3_MW-11	S3_TW-29	S3_TW-83		S3_TW-88		S3_TW-90
				27-Nov-18	4-Feb-19	8-Apr-19	8-Apr-19	8-Apr-19	8-Apr-19	8-Apr-19	28-Nov-18	28-Nov-18	28-Nov-18	28-Nov-18	28-Nov-18	28-Nov-18	19-Mar-20	28-Nov-18	10-Sep-20	FD 2	9-Sep-20	10-Sep-20	10-Sep-20
General Chemistry																							
Total Cyanide	mg/L	n/v	n/v	-	-	-	-	-	-	-	-	-	-	0.33	0.19	-	-	-	<0.0030	<0.0030	0.0077 J	-	0.13
Metals																							
Arsenic	mg/L	0.001	0.01	0.00063 J	-	-	-	-	-	-	**0.92 J**	0.00059 J	0.00061 J	**0.0025^{A}**	0.00086 J	**0.0016^{A}**	0.00080 J	0.00076 J	**0.0013^{A}**	**0.0011^{A}**	0.00072 J	-	0.00077 J
Barium	mg/L	0.4	2	0.10	-	-	-	-	-	-	-	0.055	0.044	0.082	0.028	0.120	-	0.055	0.05	0.05	0.1	-	0.13
Cadmium	mg/L	0.0005	0.005	<0.00017	-	-	-	-	-	-	<0.00017	<0.00017	<0.00017	<0.00017	<0.00017	<0.00017	-	<0.00017	<0.00017	<0.00017	<0.00017	-	<0.00017
Chromium	mg/L	0.01	0.1	<0.0011	-	-	-	-	-	-	<0.0011	<0.0011	<0.0011	0.0013 J	<0.0011	<0.0011	-	<0.0011	<0.0011	<0.0011	<0.0011	-	<0.0011
Lead	mg/L	0.0015	0.015	<0.00019	-	-	-	-	-	-	<0.00019	**0.0018^{A}**	<0.00019	0.00070	<0.00019	0.00023 J	-	0.00024 J	<0.00019	<0.00019	<0.00019	-	<0.00019
Selenium	mg/L	0.01	0.05	<0.00098	-	-	-	-	-	-	-	0.0024 J	<0.00098	<0.00098	0.0013 J	<0.00098	-	<0.00098	<0.00098	<0.000098	<0.00098	-	<0.000098
Fluorinated Alkyl Substances																							
Perfluorobutane Sulfonate (PFBS)	ng/L	90000	450000	29	26	530	66	18	89	170	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluorobutanoic Acid (PFBA)	ng/L	2000	10000	17	18	38	18	110	26	33	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluorododecanoic Acid (PFDoA)	ng/L	100	500	<1.2	<0.50	2.5	<0.44	2.1	0.49 J B	4.9	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluoroheptane Sulfonate (PFHpS)	ng/L	n/v	n/v	21	4.7	1.3 J	5.1	1.1 J	26	19	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluoroheptanoic Acid (PFHpA)	ng/L	n/v	n/v	8	12	54	13	0.94 J	13	20	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluorohexanesulfonic acid (PFHxS)	ng/L	4	40	**500^{AB}**	**270^{AB}**	**230^{AB}**	**520^{AB}**	**280^{AB}**	**1100^{AB}**	**1300^{AB}**	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluorohexanoic Acid (PFHxA)	ng/L	30000	150000	47	58	330	73	56	78	160	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluoro-n-Octanoic Acid (PFOA)	ng/L	2	20	**94^{AB}**	**71^{AB}**	**22^{AB}**	**70^{AB}**	**24^{AB}**	**120^{AB}**	**110^{AB}**	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluorononanoic Acid (PFNA)	ng/L	3	30	<0.96	<0.25	<0.21	<0.22	<0.22	<0.22	<0.22	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluorooctane Sulfonate (PFOS)	ng/L	2	20	**110^{AB}**	**30^{AB}**	**15^{A}**	**57^{AB}**	**8.1^{A}**	**380^{AB}**	**230^{AB}**	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluoropentanesulfonic Acid (PFPeS)	ng/L	n/v	n/v	38	33	180	82	17	100	180	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluoropentanoic Acid (PFPeA)	ng/L	n/v	n/v	7.4 J	11	37	18	110	20	36	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluorotetradecanoic Acid (PFTeA)	ng/L	2000	10000	<0.72	<0.27	3.7	<0.23	0.60 J B	0.45 J B	2	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluorotridecanoic Acid (PFTriA)	ng/L	n/v	n/v	<0.96	<1.2	5.1	<1.0	2	<1.0	4.4	-	-	-	-	-	-	-	-	-	-	-	-	-
NEtFOSE+NEtFOSA+NEtFOSAA+PFOSA+PFOA+PFOS**	ng/L	2	20	**204^{AB}**	**101^{AB}**	**37^{AB}**	**127^{AB}**	**32.1^{AB}**	**500^{AB}**	**340^{AB}**	-	-	-	-	-	-	-	-	-	-	-	-	-
Polycyclic Aromatic Hydrocarbons																							
Acenaphthene	µg/L	n/v	n/v	<0.26 H	-	-	-	-	-	-	<0.25	<0.27	<0.28	<0.26	0.27 J	<0.26	0.17	<0.29	<0.24	<0.24	<0.24	-	1.4
Acenaphthylene	µg/L	n/v	n/v	<0.22 H	-	-	-	-	-	-	<0.21	<0.23	<0.24	<0.23	1.2	<0.22	< 0.0047	<0.25	<0.21	<0.21	<0.21	-	<0.21
Anthracene	µg/L	600	3,000	<0.28 H	-	-	-	-	-	-	<0.27	<0.29	<0.31	<0.28	2.6	<0.28	< 0.0099	<0.31	<0.26	<0.26	<0.26	-	<0.27
Benzo(a)anthracene	µg/L	n/v	n/v	<0.047 H	-	-	-	-	-	-	<0.045	0.11 J	<0.052	0.15 J	5.6	<0.047	< 0.0071	<0.053	<0.044	<0.045	<0.045	-	<0.045
Benzo(a)pyrene	µg/L	0.02	0.2	<0.082 H	-	-	-	-	-	-	<0.079	**0.11 J^{A}**	<0.090	**0.14 J^{A}**	**5.0^{AB}**	<0.083	< 0.0099	<0.092	<0.077	<0.078	<0.078	-	<0.079
Benzo(b)fluoranthene	µg/L	0.02	0.2	<0.067 H	-	-	-	-	-	-	<0.064	**0.17 J^{A}**	<0.074	**0.15 J^{A}**	**5.9^{AB}**	<0.068	< 0.0054	<0.075	<0.063	<0.063	<0.064	-	<0.064
Benzo(g,h,i)perylene	µg/L	n/v	n/v	<0.31 H	-	-	-	-	-	-	<0.30	<0.33	<0.34	<0.32	3.4	<0.31	< 0.0064	<0.35	<0.29	<0.30	<0.30	-	<0.30
Benzo(k)fluoranthene	µg/L	n/v	n/v	<0.053 H	-	-	-	-	-	-	<0.051	0.079 J	<0.059	0.099 J	2.9	<0.054	< 0.0071	<0.059	<0.050	<0.050	<0.051	-	<0.051
Chrysene	µg/L	0.02	0.2	<0.057 H	-	-	-	-	-	-	<0.054	**0.10 J^{A}**	<0.062	**0.13 J^{A}**	**5.4^{AB}**	<0.057	< 0.012	<0.063	<0.053	<0.054	<0.054	-	<0.054
Dibenzo(a,h)anthracene	µg/L	n/v	n/v	<0.042 H	-	-	-	-	-	-	<0.040	<0.044	<0.046	<0.043	0.75	<0.043	< 0.0095	<0.047	<0.040	<0.040	<0.040	-	<0.041
Fluoranthene	µg/L	80	400	<0.38 H	-	-	-	-	-	-	<0.36	<0.40	<0.41	<0.39	13	<0.38	< 0.010	<0.42	<0.35	<0.36	<0.36	-	<0.36
Fluorene	µg/L	80	400	<0.20 H	-	-	-	-	-	-	<0.19	<0.21	<0.22	<0.21	0.67 J	<0.20	0.024 J	<0.23	<0.19	<0.19	<0.19	-	2.6
Indeno(1,2,3-cd)pyrene	µg/L	n/v	n/v	<0.062 H	-	-	-	-	-	-	<0.059	0.13 J	<0.068	<0.064	3.2	<0.063	< 0.017	<0.069	<0.058	<0.059	<0.059	-	<0.060
Methylnaphthalene, 1-	µg/L	n/v	n/v	<0.25 H	-	-	-	-	-	-	<0.24	<0.26	<0.28	<0.26	<0.26	<0.25	0.0066 J	<0.28	<0.23	<0.24	<0.24	-	2.6
Methylnaphthalene, 2-	µg/L	n/v	n/v	<0.054 H	-	-	-	-	-	-	<0.052	<0.057	<0.060	<0.056	0.15 J	<0.055	< 0.0046	<0.060	<0.051	<0.051	0.090 J	-	0.29 J
Naphthalene	µg/L	10	100	<0.26 H	-	-	-	-	-	-	<0.25	<0.27	<0.28	<0.26	<0.27	<0.26	< 0.017	<0.29	<0.24	<0.24	<0.24	-	0.81
Phenanthrene	µg/L	n/v	n/v	<0.25 H	-	-	-	-	-	-	<0.24	<0.26	<0.28	<0.26	7.1	<0.25	< 0.013	<0.28	<0.23	<0.24	<0.24	-	<0.24
Pyrene	µg/L	50	250	<0.36 H	-	-	-	-	-	-	<0.34	<0.37	<0.39	<0.36	12	<0.36	< 0.0072	<0.40	<0.33	<0.34	<0.34	-	<0.34
Semi-Volatile Organic Compounds																							
Bis(2-Chloroethyl)ether	µg/L	n/v	n/v	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.28	<0.28	<0.28	-	<0.28
Chloro-3-methyl phenol, 4-	µg/L	n/v	n/v	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.35	<0.35	<0.36	-	<0.36
Chloroaniline, 4-	µg/L	n/v	n/v	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.24	<0.24	<0.24	-	<0.24
Chloronaphthalene, 2-	µg/L	n/v	n/v	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.20	<0.21	<0.21	-	2.3
Dichlorobenzene, 1,4-	µg/L	15	75	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<1.4	<1.4	<1.4	-	<1.4
Dimethylphenol, 2,4-	µg/L	n/v	n/v	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.82	6.2 J	<0.83	-	<0.84
Nitrophenol, 2-	µg/L	n/v	n/v	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.52	<0.53	<0.53	-	<0.54
Volatile Organic Compounds																							
Benzene	µg/L	0.5	5	<0.15	-	-	-	-	-	-	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	-	<0.15	<0.15	<0.15	-	0.25 J	**1.7^{A}**
Butylbenzene, n-	µg/L	n/v	n/v	<0.39	-	-	-	-	-	-	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	-	<0.39	<0.39	<0.39	-	<0.39	2.3
Butylbenzene, sec- (2-Phenylbutane)	µg/L	n/v	n/v	<0.40	-	-	-	-	-	-	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	-	<0.40	<0.40	<0.40	-	<0.40	3.6
Butylbenzene, tert-	µg/L	n/v	n/v	<0.40	-	-	-	-	-	-	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	-	<0.40	<0.40	<0.40	-	<0.40	0.48 J
Chloroethane (Ethyl Chloride)	µg/L	80	400	<0.51	-	-	-	-	-	-	<0.51	<0.51	<0.51	<0.51	<0.51	<0.51	-	<0.51	<0.51	<0.51	-	<0.51	<0.51
Dichloroethane, 1,1-	µg/L	85	850	<0.41	-	-	-	-	-	-	<0.41	<0.41	<0.41	<0.41	<0.41	<0.41	-	<0.41	<0.41	<0.41	-	<0.41	<0.41
Dichloroethane, 1,2-	µg/L	0.5	5	<0.39	-	-	-	-	-	-	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	-	<0.39	<0.39	<0.39	-	<0.39	<0.39
Dichloroethene, cis-1,2-	µg/L	7	70	<0.41	-	-	-	-	-	-	<0.41	<0.41	<0.41	<0.41	<0.41	<0.41	-	<0.41	<0.41	<0.41	-	<0.41	<0.41
Dichloropropane, 1,3-	µg/L	n/v	n/v	<0.36	-	-	-	-	-	-	<0.36	<0.36	<0.36	<0.36	<0.36	<0.36	-	<0.36	<0.36	<0.36	-	<0.36	<0.36
Ethylbenzene	µg/L	140	700	<0.18	-	-	-	-	-	-	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	-	<0.18	<0.18	<0.18	-	0.45 J	0.26 J
Isopropylbenzene	µg/L	n/v	n/v	<0.39	-	-	-	-	-	-	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	-	<0.39	<0.39	<0.39	-	<0.39	4.6
Isopropyltoluene, p- (Cymene)	µg/L	n/v	n/v	<0.36	-	-	-	-	-	-	10	<0.36	<0.36	<0.36	<0.36	<0.36	-	<0.36	<0.36	<0.36	-	<0.36	<0.36
Methylene Chloride (Dichloromethane)	µg/L	0.5	5	**4.6 J B^{A}**	-	-	-	-	-	-	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	-	<1.6	<1.6	<1.6	-	<1.6	<1.6
Naphthalene		10	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.34	<0.34	-	0.47 J	1.0
Propylbenzene, n-	µg/L	n/v	n/v	<0.41	-	-	-	-	-	-	<0.41	<0.41	<0.41	<0.41	<0.41	<0.41	-	<0.41	<0.41	<0.41	-	<0.41	5.2
Tetrachloroethene (PCE)	µg/L	0.5	5	<0.37	-	-	-	-	-	-	<0.37	<0.37	<0.37	<0.37	<0.37	<0.37	-	<0.37	<0.37	<0.37	-	<0.37	<0.37
Toluene	µg/L	160	800	<0.15	-	-	-	-	-	-	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	-	<0.15	<0.15	<0.15	-	<0.15	0.23 J
Trichlorobenzene, 1,2,3-	µg/L	n/v	n/v	<0.46	-	-	-	-	-	-	<0.46	<0.46	<0.46	<0.46	<0.46	<0.46	-	<0.46	<0.46	<0.46	-	<0.46	<0.46
Trichloroethane, 1,1,1-	µg/L	40	200	<0.38	-	-	-	-	-	-	<0.38	<0.38	<0.38	<0.38	<0.38	<0.38	-	<0.38	<0.38	<0.38	-	<0.38	<0.38
Trichloroethene (TCE)	µg/L	0.5	5	<0.16	-	-	-	-	-	-	<0.16	<0.16	<0.16	<0.16	<0.16	<0.16	-	<0.16	<0.16	<0.16	-	<0.16	**1.1^{A}**
Trichloropropane, 1,2,3-	µg/L	12	60	<0.41	-	-	-	-	-	-	<0.41	<0.41	<0.41	<0.41	<0.41	<0.41	-	<0.41	<0.41	<0.41	-	<0.41	<0.41
Trimethylbenzene, 1,2,4-	µg/L	96	n/v	<0.36	-	-	-	-	-	-	<0.36	<0.36	<0.36	<0.36	<0.36	<0.36	-	<0.36	<0.36	<0.36	-	1.3	2.9
Trimethylbenzene, 1,3,5-	µg/L	96	n/v	<0.25	-	-	-	-	-	-	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	-	<0.25	<0.25	<0.25	-	0.41 J	0.43 J
Xylenes, Total	µg/L	400	2,000	<0.22	-	-	-	-	-	-	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	-	<0.22	<0.22	<0.22	-	2.0	0.47 J

Attachment B
Detected Constituents in Groundwater
Riverpoint District
Manitowoc, Wisconsin

Detected Constituents	Units	Preventive Action Limit (A)	Enforcement Standard (B)	Revised Sample ID, Initial Sample ID, and Sample Date																		
				TW-20	MW-20	TW-21	TW-23	TW-24	MW-24	TW-25		TW-26	MW-26	TW-27	TW-28	MW-28	TW-29	MW-29	TW-30	MW-30	TW-31	MW-31	TW-32
				S3_TW-14	AECOM 3_MW-14	S3_TW-85	S3_TW-84	S3_TW-58	AECOM 3_MW-58	S3_TW-87		S3_TW-72	AECOM 3_MW-72	S3_TW-86	S3_TW-45	AECOM 3_MW-45	S3_TW-64	AECOM 3_MW-64	S3_TW-77	AECOM 3_MW-77	S3_TW-20	AECOM 3_MW-20	S3_TW-91
				28-Nov-18	19-Mar-20	10-Sep-20	10-Sep-20	28-Nov-18	20-Mar-20	9-Sep-20	10-Sep-20	28-Nov-18	20-Mar-20	10-Sep-20	28-Nov-18	19-Mar-20	28-Nov-18	19-Mar-20	28-Nov-18	20-Mar-20	28-Nov-18	19-Mar-20	10-Sep-20
General Chemistry																							
Total Cyanide	mg/L	n/v	n/v	-	-	0.071	<0.0030	-	-	0.0055 J	-	-	-	0.16	-	-	-	-	-	-	-	-	0.0092 J
Metals																							
Arsenic	mg/L	0.001	0.01	<0.00023	**0.0075**[A]	**0.0041**[A]	**0.0015**[A]	**0.0033**[A]	**0.0014**[A]	**0.0066**[A]	-	**0.0017**[A]	**0.0043**[A]	**0.0053**[A]	**0.0059**[A]	< 0.00028	**0.0067**[A]	**0.0038**[A]	**0.0013**[A]	0.00044 J	0.00055 J	-	0.00088 J
Barium	mg/L	0.4	2	0.047	-	0.12	0.15	0.160	-	0.14	-	0.071	-	0.11	0.150	-	0.120	-	0.086	-	0.018	-	0.00011
Cadmium	mg/L	0.0005	0.005	<0.00017	-	<0.00017	<0.00017	<0.00017	-	<0.00017	-	<0.00017	-	<0.00017	<0.00017	-	<0.00017	-	<0.00017	-	<0.00017	-	<0.00017
Chromium	mg/L	0.01	0.1	<0.0011	-	<0.0011	<0.0011	<0.0011	-	<0.0011	-	<0.0011	-	<0.0011	<0.0011	-	<0.0011	-	<0.0011	-	<0.0011	-	<0.0011
Lead	mg/L	0.0015	0.015	0.00020 J	-	**0.0075**[A]	<0.00019	0.00058	-	**0.0019**[A]	-	<0.00019	-	**0.0030**[A]	0.0011	-	0.0011	-	<0.00019	-	<0.00019	-	0.0005
Selenium	mg/L	0.01	0.05	<0.00098	-	0.001 J	<0.000098	<0.00098	-	<0.000098	-	<0.00098	-	<0.000098	<0.00098	-	<0.00098	-	1.7 J	-	0.0014 J	-	<0.000098
Fluorinated Alkyl Substances																							
Perfluorobutane Sulfonate (PFBS)	ng/L	90000	450000	-	-	-	-	-	-	-	-	1.4	-	-	-	-	-	-	-	-	-	-	-
Perfluorobutanoic Acid (PFBA)	ng/L	2000	10000	-	-	-	-	-	-	-	-	3.6 J	-	-	-	-	-	-	-	-	-	-	-
Perfluorododecanoic Acid (PFDoA)	ng/L	100	500	-	-	-	-	-	-	-	-	<0.47	-	-	-	-	-	-	-	-	-	-	-
Perfluoroheptane Sulfonate (PFHpS)	ng/L	n/v	n/v	-	-	-	-	-	-	-	-	<0.38	-	-	-	-	-	-	-	-	-	-	-
Perfluoroheptanoic Acid (PFHpA)	ng/L	n/v	n/v	-	-	-	-	-	-	-	-	1.8	-	-	-	-	-	-	-	-	-	-	-
Perfluorohexanesulfonic acid (PFHxS)	ng/L	4	40	-	-	-	-	-	-	-	-	0.47 J	-	-	-	-	-	-	-	-	-	-	-
Perfluorohexanoic Acid (PFHxA)	ng/L	30000	150000	-	-	-	-	-	-	-	-	2.1	-	-	-	-	-	-	-	-	-	-	-
Perfluoro-n-Octanoic Acid (PFOA)	ng/L	2	20	-	-	-	-	-	-	-	-	**38**[AB]	-	-	-	-	-	-	-	-	-	-	-
Perfluorononanoic Acid (PFNA)	ng/L	3	30	-	-	-	-	-	-	-	-	<0.38	-	-	-	-	-	-	-	-	-	-	-
Perfluorooctane Sulfonate (PFOS)	ng/L	2	20	-	-	-	-	-	-	-	-	1.9 J	-	-	-	-	-	-	-	-	-	-	-
Perfluoropentanesulfonic Acid (PFPeS)	ng/L	n/v	n/v	-	-	-	-	-	-	-	-	<0.38	-	-	-	-	-	-	-	-	-	-	-
Perfluoropentanoic Acid (PFPeA)	ng/L	n/v	n/v	-	-	-	-	-	-	-	-	<1.9	-	-	-	-	-	-	-	-	-	-	-
Perfluorotetradecanoic Acid (PFTeA)	ng/L	2000	10000	-	-	-	-	-	-	-	-	<0.28	-	-	-	-	-	-	-	-	-	-	-
Perfluorotridecanoic Acid (PFTriA)	ng/L	n/v	n/v	-	-	-	-	-	-	-	-	<0.38	-	-	-	-	-	-	-	-	-	-	-
NEtFOSE+NEtFOSA+NEtFOSAA+PFOSA+PFOA+PFOS**	ng/L	2	20	-	-	-	-	-	-	-	-	**39.9**[AB]	-	-	-	-	-	-	-	-	-	-	-
Polycyclic Aromatic Hydrocarbons																							
Acenaphthene	µg/L	n/v	n/v	<0.26	0.012 J-	0.35 J	<0.25	0.97	3.8	5.2	-	<0.28	< 0.0067	<0.24	<0.25	0.8	<0.26	< 0.0070	<0.27	< 0.0057	<0.26	< 0.0064	6.8
Acenaphthylene	µg/L	n/v	n/v	<0.22	0.0078 J-	<0.22	<0.22	<0.21	2.6	<0.21	-	<0.24	< 0.0055	<0.21	0.22 J	4.8	<0.22	< 0.0057	<0.24	< 0.0047	<0.22	< 0.0052	2.1
Anthracene	µg/L	600	3,000	<0.28	< 0.010 UJ	<0.27	<0.27	<0.27	0.85 J	<0.27	-	<0.30	< 0.011	<0.26	<0.27	1.2	<0.28	< 0.012	<0.29	< 0.0098	<0.28	< 0.011	1.2
Benzo(a)anthracene	µg/L	n/v	n/v	0.43	0.0091 J-	<0.046	<0.046	<0.045	< 0.18	<0.045	-	<0.051	< 0.0083	0.45	0.14 J	0.33	<0.047	< 0.0087	<0.050	< 0.0071	0.25	< 0.0079	0.15 J
Benzo(a)pyrene	µg/L	0.02	0.2	**0.35**[AB]	< 0.010 UJ	<0.080	<0.080	<0.079	< 0.26	<0.079	-	<0.090	< 0.012	**0.34**[AB]	**0.40**[AB]	**0.42**[AB]	<0.083	< 0.012	<0.087	< 0.0098	**0.29**[AB]	< 0.011	<0.078
Benzo(b)fluoranthene	µg/L	0.02	0.2	**0.44**[AB]	0.0089 J-	<0.065	<0.065	<0.064	< 0.14	<0.065	-	<0.073	< 0.0063	**0.78**[AB]	**0.32**[AB]	**0.40 J+**[AB]	<0.068	< 0.0066	<0.071	< 0.0054	**0.35**[AB]	< 0.0060	<0.064
Benzo(g,h,i)perylene	µg/L	n/v	n/v	<0.31	< 0.0066 UJ	<0.30	<0.30	<0.30	< 0.16	<0.30	-	<0.34	< 0.0075	0.58 J	1.1	0.42	<0.31	0.0079 J	<0.33	< 0.0063	0.35 J	0.014 J	<0.30
Benzo(k)fluoranthene	µg/L	n/v	n/v	<0.053	< 0.0073 UJ	<0.052	<0.052	<0.051	< 0.18	<0.051	-	<0.058	< 0.0083	0.32	0.14 J	0.19	<0.054	< 0.0087	<0.056	< 0.0071	0.099 J	< 0.0079	<0.051
Chrysene	µg/L	0.02	0.2	**0.38**[AB]	< 0.013 UJ	<0.055	<0.055	<0.054	< 0.32	<0.055	-	<0.062	< 0.014	**0.40**[AB]	**0.13 J**[A]	**0.35**[AB]	<0.057	< 0.015	<0.060	< 0.012	**0.26**[AB]	< 0.014	**0.15 J**[A]
Dibenzo(a,h)anthracene	µg/L	n/v	n/v	<0.042	< 0.0097 UJ	<0.041	<0.041	<0.040	< 0.24	<0.041	-	<0.046	< 0.011	0.11 J	0.090 J	0.054 J	<0.043	< 0.012	<0.045	< 0.0094	<0.042	< 0.011	<0.040
Fluoranthene	µg/L	80	400	0.77 J	0.040 J-	<0.37	<0.37	<0.36	< 0.26	0.38 J	-	<0.41	< 0.012	0.55 J	<0.36	1.2	<0.38	< 0.012	<0.40	< 0.010	0.39 J	< 0.011	1.2
Fluorene	µg/L	80	400	<0.20	0.019 J-	0.29 J	<0.20	1.1	7.2	7.2	-	<0.22	< 0.0088	<0.19	<0.20	2.9	<0.20	< 0.0092	<0.21	< 0.0074	<0.20	< 0.0084	3.9
Indeno(1,2,3-cd)pyrene	µg/L	n/v	n/v	0.22	< 0.017 UJ	<0.061	<0.061	<0.060	< 0.43	<0.060	-	<0.068	< 0.019	0.61	0.55	0.25 J+	<0.063	< 0.020	<0.066	< 0.016	0.17	< 0.019	<0.059
Methylnaphthalene, 1-	µg/L	n/v	n/v	<0.25	< 0.0057 UJ	0.89 J	<0.24	29	146	120	-	<0.27	< 0.0065	<0.24	<0.24	5.1	<0.25	< 0.0068	<0.27	0.017 J	<0.25	< 0.0062	11
Methylnaphthalene, 2-	µg/L	n/v	n/v	<0.054	< 0.0048 UJ	0.93 J	<0.053	19	182	160	-	<0.059	< 0.0054	<0.052	<0.052	6.5	<0.055	< 0.0056	<0.057	0.0077 J	0.070 J	< 0.0052	7.5
Naphthalene	µg/L	10	100	<0.26	< 0.018 UJ	3.2	<0.25	0.64 J	6	**63**[A]	-	<0.28	0.020 J	<0.24	<0.25	**33.6**[A]	<0.26	< 0.021	<0.27	< 0.017	<0.26	< 0.019	**68**[A]
Phenanthrene	µg/L	n/v	n/v	<0.25	< 0.013 UJ	0.66 J	<0.24	<0.24	9.8	9.8	-	<0.27	< 0.015	<0.24	<0.24	4.8	<0.25	< 0.016	<0.27	< 0.013	0.32 J	< 0.015	5.5
Pyrene	µg/L	50	250	0.70 J	0.027 J-	<0.35	<0.35	<0.34	0.40 J	0.86	-	<0.39	< 0.0084	0.51 J	<0.34	1	<0.36	< 0.0088	<0.38	< 0.0071	0.51 J	< 0.0081	0.80
Semi-Volatile Organic Compounds																							
Bis(2-Chloroethyl)ether	µg/L	n/v	n/v	-	-	<0.29	<0.29	-	-	2.8 J	-	-	-	<0.28	-	-	-	-	-	-	-	-	6.9
Chloro-3-methyl phenol, 4-	µg/L	n/v	n/v	-	-	15	<0.36	-	-	<0.36	-	-	-	<0.36	-	-	-	-	-	-	-	-	3.1
Chloroaniline, 4-	µg/L	n/v	n/v	-	-	<0.25	<0.25	-	-	<0.24	-	-	-	<0.24	-	-	-	-	-	-	-	-	1.4 J
Chloronaphthalene, 2-	µg/L	n/v	n/v	-	-	<0.21	<0.21	-	-	5.1	-	-	-	<0.21	-	-	-	-	-	-	-	-	3.1
Dichlorobenzene, 1,4-	µg/L	15	75	-	-	**87**[AB]	<1.5	-	-	**29**[AB]	-	-	-	<1.4	-	-	-	-	-	-	-	-	2.4 J
Dimethylphenol, 2,4-	µg/L	n/v	n/v	-	-	<0.85	<0.85	-	-	<0.84	-	-	-	<0.83	-	-	-	-	-	-	-	-	<0.83
Nitrophenol, 2-	µg/L	n/v	n/v	-	-	<0.54	<0.54	-	-	<0.54	-	-	-	<0.53	-	-	-	-	-	-	-	-	1.4 J
Volatile Organic Compounds																							
Benzene	µg/L	0.5	5	<0.15	-	-	<0.15	**15**[AB]	**15.3**[AB]	-	**1,900**[AB]	0.19 J	-	-	<0.15	-	<0.15	-	<0.15	-	<0.15	-	**3.1**[A]
Butylbenzene, n-	µg/L	n/v	n/v	<0.39	-	-	<0.39	31	260	-	29	<0.39	-	-	<0.39	-	<0.39 FQ	-	<0.39	-	<0.39	-	<0.39
Butylbenzene, sec- (2-Phenylbutane)	µg/L	n/v	n/v	<0.40	-	-	<0.40	14	7.7 J	-	16	<0.40	-	-	<0.40	-	<0.40 FQ	-	<0.40	-	<0.40	-	<0.40
Butylbenzene, tert-	µg/L	n/v	n/v	<0.40	-	-	<0.40	<0.80	-	-	<0.80	<0.40	-	-	<0.40	-	<0.40	-	<0.40	-	<0.40	-	<0.40
Chloroethane (Ethyl Chloride)	µg/L	80	400	<0.51	-	-	<0.51	<1.0	-	-	1.1 J	<0.51	-	-	<0.51	-	<0.51	-	<0.51	-	<0.51	-	<0.51
Dichloroethane, 1,1-	µg/L	85	850	<0.41	-	-	<0.41	<0.82	-	-	<0.82	<0.41	-	-	<0.41	-	<0.41	-	<0.41	-	<0.41	-	<0.41
Dichloroethane, 1,2-	µg/L	0.5	5	<0.39	-	-	<0.39	<0.78	-	-	**79**[AB]	<0.39	-	-	<0.39	-	<0.39	-	<0.39	-	<0.39	-	<0.39
Dichloroethene, cis-1,2-	µg/L	7	70	<0.41	-	-	<0.41	<0.82	-	-	<0.82	<0.41	-	-	<0.41	-	<0.41	-	<0.41	-	<0.41	-	<0.41
Dichloropropane, 1,3-	µg/L	n/v	n/v	<0.36	-	-	<0.36	<0.72	-	-	2.0	<0.36	-	-	<0.36	-	<0.36	-	<0.36	-	<0.36	-	<0.36
Ethylbenzene	µg/L	140	700	<0.18	-	-	<0.18	100	112	-	**500**[A]	<0.18	-	-	<0.18	-	<0.18 FQ	-	<0.18	-	<0.18	-	1.1
Isopropylbenzene	µg/L	n/v	n/v	<0.39	-	-	<0.39	16	15.5	-	35	<0.39	-	-	<0.39	-	<0.39	-	<0.39	-	<0.39	-	<0.39
Isopropyltoluene, p- (Cymene)	µg/L	n/v	n/v	<0.36	-	-	<0.36	9.4	3.5 J	-	11	<0.36	-	-	<0.36	-	<0.36 FQ	-	<0.36	-	<0.36	-	<0.36
Methylene Chloride (Dichloromethane)	µg/L	0.5	5	<1.6	-	-	<1.6	<3.3	-	-	<3.3	**2.8 J B**[A]	-	-	<1.6	-	<1.6	-	**4.5 J B**[A]	-	<1.6	-	<1.6
Naphthalene		10	100	-	-	-	<0.34	-	-	-	**300**[AB]	-	-	-	-	-	-	-	-	-	-	-	**130**[AB]
Propylbenzene, n-	µg/L	n/v	n/v	<0.41	-	-	<0.41	35	29.7	-	65	<0.41	-	-	<0.41	-	<0.41	-	<0.41	-	<0.41	-	<0.41
Tetrachloroethene (PCE)	µg/L	0.5	5	<0.37	-	-	<0.37	<0.74	**1.2 J**[A]	-	<0.74	<0.37	-	-	<0.37	-	<0.37 FQ	-	<0.37	-	<0.37	-	<0.37
Toluene	µg/L	160	800	<0.15	-	-	<0.15	2.9	1.9 J	-	52	<0.15	-	-	<0.15	-	<0.15	-	<0.15	-	<0.15	-	2.2
Trichlorobenzene, 1,2,3-	µg/L	n/v	n/v	<0.46	-	-	<0.46	1.8 J	-	-	<0.92	<0.46	-	-	<0.46	-	<0.46	-	<0.46	-	<0.46	-	<0.46
Trichloroethane, 1,1,1-	µg/L	40	200	<0.38	-	-	<0.38	<0.76	-	-	<0.76	<0.38	-	-	<0.38	-	<0.38 FQ	-	<0.38	-	<0.38	-	<0.38
Trichloroethene (TCE)	µg/L	0.5	5	<0.16	-	-	<0.16	<0.33	< 0.64	-	<0.33	<0.16	-	-	<0.16	-	<0.16	-	<0.16	-	<0.16	-	<0.16
Trichloropropane, 1,2,3-	µg/L	12	60	<0.41	-	-	<0.41	<0.83	-	-	<0.83	<0.41	-	-	<0.41	-	<0.41	-	<0.41	-	<0.41	-	<0.41
Trimethylbenzene, 1,2,4-	µg/L	96	n/v	<0.36	-	-	<0.36	**370**[AB]	**279**[A]	-	**540**[AB]	<0.36	-	-	<0.36	-	<0.36	-	<0.36	-	<0.36	-	3.7
Trimethylbenzene, 1,3,5-	µg/L	96	n/v	<0.25	-	-	<0.25	**120**[AB]	79.6	-	**160**[AB]	<0.25	-	-	<0.25	-	<0.25	-	<0.25	-	<0.25	-	1.2
Xylenes, Total	µg/L	400	2,000	<0.22	-	-	<0.22	310	263	-	**1,700**[A]	<0.22	-	-	<0.22	-	<0.22	-	<0.22	-	<0.22	-	5.0

Attachment B
Detected Constituents in Groundwater
Riverpoint District
Manitowoc, Wisconsin

Detected Constituents	Units	Preventive Action Limit (A)	Enforcement Standard (B)	Revised Sample ID, Initial Sample ID, and Sample Date																					
				TW-34	TW-35	MW-35	MW-35	MW-35D	TW-36	TW-37	TW-38		TW-40	TW-42	TW-44	MW-44	TW-45	TW-47	MW-47	TW-49	TW-50	TW-52	MW-52	TW-53	TW-54
				S3_TW-92	S3_TW-27	S3_MW-27	AECOM 3_MW-27	AECOM 3_MW-27D	S3_TW-93	S2_TW-8	S5_TW-8		S5_TW-11	S5_TW-15	S5_TW-18	S5_MW-18	2_TW-23	S5_TW-16	AECOM 1_MW-19	S1_TW-19	S1_TW-24	S1_TW-10	AECOM 1_MW-10	S1_TW-44	S1_TW-11
				10-Sep-20	28-Nov-18	4-Feb-19	20-Mar-20	20-Mar-20	10-Sep-20	28-Nov-18	27-Nov-18	8-Apr-19	27-Nov-18	27-Nov-18	27-Nov-18	4-Feb-19	28-Nov-18	27-Nov-18	18-Mar-20	28-Nov-18	28-Nov-18	28-Nov-18	18-Mar-20	25-Aug-20	10-Dec-18
General Chemistry																									
Total Cyanide	mg/L	n/v	n/v	0.016	-	-	-	-	0.054	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Metals																									
Arsenic	mg/L	0.001	0.01	**0.0046^{A}**	**0.008^{A}**	-	-	< 0.00028	0.00099 J	**0.0022^{A}**	0.0010	-	**0.0013^{A}**	**0.0012^{A}**	**0.0030^{A}**	<0.0037	0.0010	-	< 0.00056	**0.0024^{A}**	-	-	0.00088 J	**0.0011^{A}**	0.00068 J
Barium	mg/L	0.4	2	0.00011	0.120	-	-	-	0.091	0.23	0.13	-	0.16	0.15	0.34	-	0.054	-		0.16	-	-	0.102	0.094	0.13
Cadmium	mg/L	0.0005	0.005	<0.00017	<0.00017	-	-	-	<0.00017	<0.00017	<0.00017	-	<0.00017	<0.00017	<0.00017	-	<0.00017	-		<0.00017	-	-	-	<0.00017	<0.00017
Chromium	mg/L	0.01	0.1	<0.0011	<0.0011	-	-	-	<0.0011	0.0011 J	<0.0011	-	0.0012 J	<0.0011	<0.0011	-	<0.0011	-	-	<0.0011	-	-	-	<0.0011	<0.0011
Lead	mg/L	0.0015	0.015	<0.00019	0.00021 J	-	-	-	<0.00019	<0.00019	<0.00019	-	**0.0040^{A}**	**0.0025^{A}**	0.00083	-	<0.00019	-	-	<0.00019	-	-	-	0.00042 J	0.00019 J
Selenium	mg/L	0.01	0.05	<0.000098	<0.00098	-	-	-	<0.000098	<0.00098	<0.00098	-	<0.00098	<0.00098	<0.00098	-	<0.00098	-	-	<0.00098	-	-	0.0015	<0.00098	<0.00098
Fluorinated Alkyl Substances																									
Perfluorobutane Sulfonate (PFBS)	ng/L	90000	450000	-	-	-	-	-	-	-	-	0.87 J	-	-	-	-	2.1	-	-	3.5	-	2.7	-	-	-
Perfluorobutanoic Acid (PFBA)	ng/L	2000	10000	-	-	-	-	-	-	-	-	24	-	-	-	-	9.9	-	-	14	-	4.9 J	-	-	-
Perfluorododecanoic Acid (PFDoA)	ng/L	100	500	-	-	-	-	-	-	-	-	1.0 J B	-	-	-	-	<0.54	-	-	<0.5	-	<0.49	-	-	-
Perfluoroheptane Sulfonate (PFHpS)	ng/L	n/v	n/v	-	-	-	-	-	-	-	-	<0.15	-	-	-	-	<0.43	-	-	<0.4	-	<0.39	-	-	-
Perfluoroheptanoic Acid (PFHpA)	ng/L	n/v	n/v	-	-	-	-	-	-	-	-	3	-	-	-	-	4.6	-	-	4	-	2.2	-	-	-
Perfluorohexanesulfonic acid (PFHxS)	ng/L	4	40	-	-	-	-	-	-	-	-	0.74 J B	-	-	-	-	1.9 J	-	-	0.79 J	-	<0.39	-	-	-
Perfluorohexanoic Acid (PFHxA)	ng/L	30000	150000	-	-	-	-	-	-	-	-	11	-	-	-	-	3.4	-	-	4.2	-	2.3	-	-	-
Perfluoro-n-Octanoic Acid (PFOA)	ng/L	2	20	-	-	-	-	-	-	-	-	**35^{AB}**	-	-	-	-	73	-	-	**37^{AB}**	-	**17^{A}**	-	-	-
Perfluorononanoic Acid (PFNA)	ng/L	3	30	-	-	-	-	-	-	-	-	<0.21	-	-	-	-	<0.43	-	-	0.62 J	-	<0.39	-	-	-
Perfluorooctane Sulfonate (PFOS)	ng/L	2	20	-	-	-	-	-	-	-	-	1.5 JM	-	-	-	-	4.3	-	-	**3.3^{A}**	-	**2.8^{A}**	-	-	-
Perfluoropentanesulfonic Acid (PFPeS)	ng/L	n/v	n/v	-	-	-	-	-	-	-	-	<0.24	-	-	-	-	<0.43	-	-	<0.4	-	<0.39	-	-	-
Perfluoropentanoic Acid (PFPeA)	ng/L	n/v	n/v	-	-	-	-	-	-	-	-	3.1	-	-	-	-	3.9 J	-	-	3.7 J	-	2 J	-	-	-
Perfluorotetradecanoic Acid (PFTeA)	ng/L	2000	10000	-	-	-	-	-	-	-	-	0.53 J B	-	-	-	-	<0.33	-	-	<0.3	-	<0.29	-	-	-
Perfluorotridecanoic Acid (PFTriA)	ng/L	n/v	n/v	-	-	-	-	-	-	-	-	1.0 J B	-	-	-	-	<0.43	-	-	<0.4	-	<0.39	-	-	-
NEtFOSE+NEtFOSA+NEtFOSAA+PFOSA+PFOA+PFOS**	ng/L	2	20	-	-	-	-	-	-	-	-	**36.5^{AB}**	-	-	-	-	77.3	-	-	**40.3^{AB}**	-	**19.8^{A}**	-	-	-
Polycyclic Aromatic Hydrocarbons																									
Acenaphthene	µg/L	n/v	n/v	<0.25	<0.27	-	< 0.0056	< 0.0056	<0.25	<0.25	<0.26 H	-	<0.25 H	<0.27 H	<0.27 H	<0.24 LQ	<0.26	-	-	<0.25	<0.26	<0.26	0.074	0.45 J	<0.25 H
Acenaphthylene	µg/L	n/v	n/v	<0.21	<0.23	-	< 0.0046	< 0.0046	<0.21	<0.22	<0.23 H	-	<0.22 H	<0.24 H	0.45 J H	<0.21 LQ	<0.22	-	-	<0.22	<0.23	<0.23	0.011 ^{J}	<0.22	<0.22 H
Anthracene	µg/L	600	3,000	<0.27	<0.29	-	< 0.0097	< 0.0097	<0.27	<0.27	0.53 J H	-	<0.27 H	<0.29 H	1.4	<0.26	<0.28	-	-	<0.27	<0.28	<0.29	< 0.010	<0.27	<0.27 H
Benzo(a)anthracene	µg/L	n/v	n/v	<0.045	<0.049	-	< 0.0070	< 0.0070	<0.045	<0.047	1.4	-	0.28	0.11 J H	3.7	<0.045	0.063 J	-	-	0.095 J	0.11 J	0.54	< 0.0074	0.060 J	<0.046 H
Benzo(a)pyrene	µg/L	0.02	0.2	<0.079	<0.085	-	< 0.0098	< 0.0098	<0.079	<0.081	**1.4^{AB}**	-	**0.30^{AB}**	<0.087 H	**3.9^{AB}**	<0.078	<0.083	-	-	<0.081	**0.11 J^{A}**	**0.62^{AB}**	< 0.010	**0.12 J^{A}**	<0.081 H
Benzo(b)fluoranthene	µg/L	0.02	0.2	<0.064	<0.070	-	< 0.0053	< 0.0053	<0.065	<0.066	**1.8^{AB}**	-	**0.32^{AB}**	**0.081 J H^{A}**	**4.2^{AB}**	<0.064	<0.068	-	-	<0.066	**0.16 J^{A}**	**0.57^{AB}**	< 0.0056	<0.066	<0.066 H
Benzo(g,h,i)perylene	µg/L	n/v	n/v	<0.30	<0.32	-	< 0.0063	< 0.0063	<0.30	<0.31	0.87	-	<0.30 H	<0.33 H	2.4	<0.30	<0.32	-	-	<0.31	<0.32	0.44 J	< 0.0066	<0.31	<0.31 H
Benzo(k)fluoranthene	µg/L	n/v	n/v	<0.051	<0.055	-	< 0.0070	< 0.0070	<0.051	<0.053	0.43	-	0.16	<0.056 H	2.0	<0.050	<0.054	-	-	<0.052	<0.054	0.41	< 0.0074	<0.052	<0.052 H
Chrysene	µg/L	0.02	0.2	<0.054	<0.059	-	< 0.012	< 0.012	<0.055	<0.056	**1.3^{AB}**	-	**0.29^{AB}**	**0.072 J H^{A}**	**3.7^{AB}**	<0.054	<0.057	-	-	<0.056	**0.088 J^{A}**	**0.62^{AB}**	< 0.013	<0.056	<0.056 H
Dibenzo(a,h)anthracene	µg/L	n/v	n/v	<0.041	<0.044	-	< 0.0093	< 0.0093	<0.041	<0.042	0.28	-	0.070 J H	<0.045 H	0.66	<0.040	<0.043	-	-	<0.042	<0.043	0.10 J	< 0.0098	<0.042	<0.042 H
Fluoranthene	µg/L	80	400	<0.36	<0.39	-	< 0.0099	< 0.0099	<0.36	<0.37	3.3	-	0.59 J H	<0.40 H	7.4	<0.36	<0.38	-	-	<0.37	<0.38	0.84 J	< 0.010	<0.37	<0.37 H
Fluorene	µg/L	80	400	<0.19	<0.21	-	< 0.0074	< 0.0074	<0.20	<0.20	<0.21 H	-	<0.20 H	<0.21 H	0.49 J H	<0.19	<0.21	-	-	<0.20	<0.21	<0.21	0.043	0.69 J	<0.20 H
Indeno(1,2,3-cd)pyrene	µg/L	n/v	n/v	<0.060	<0.064	-	< 0.016	< 0.016	<0.060	<0.061	0.89	-	0.19	<0.066 H	2.1	<0.059	<0.063	-	-	<0.061	<0.063	0.42	< 0.017	<0.061	<0.061 H
Methylnaphthalene, 1-	µg/L	n/v	n/v	0.76 J	0.86 J	-	< 0.0055	< 0.0055	<0.24	<0.25	<0.25 H	-	<0.24 H	<0.27 H	<0.27 H	<0.24 LQ	<0.25	-	-	<0.25	<0.25	<0.26	0.09	17	<0.25 H
Methylnaphthalene, 2-	µg/L	n/v	n/v	0.63 J	0.98 J	-	< 0.0045	< 0.0045	<0.052	<0.054	<0.055 H	-	<0.053 H	<0.057 H	0.096 J H	<0.051 LQ	<0.055	-	-	<0.053	<0.055	0.072 J	0.0092 J	0.66 J	<0.053 H
Naphthalene	µg/L	10	100	<0.25	0.78 J	-	< 0.017	< 0.017	<0.25	<0.25	<0.26 H	-	<0.25 H	<0.27 H	<0.27 H	<0.24 LQ	<0.26	0.37 J B	-	<0.25	<0.26	<0.26	0.14	0.40 J	<0.25 H
Phenanthrene	µg/L	n/v	n/v	<0.24	<0.26	-	< 0.013	< 0.013	<0.24	<0.25	2.0	-	0.37 J H	<0.27 H	4.3	<0.24	<0.25	-	-	<0.25	<0.25	0.33 J	< 0.014	0.54 J	<0.25 H
Pyrene	µg/L	50	250	<0.34	<0.37	-	< 0.0071	< 0.0071	<0.34	<0.35	2.7	-	0.53 J H	<0.38 H	6.7	<0.34	<0.36	-	-	<0.35	<0.36	0.90	< 0.0075	<0.35	<0.35 H
Semi-Volatile Organic Compounds																									
Bis(2-Chloroethyl)ether	µg/L	n/v	n/v	<0.28	-	-	-	-	<0.28	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-
Chloro-3-methyl phenol, 4-	µg/L	n/v	n/v	<0.36	-	-	-	-	<0.36	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-
Chloroaniline, 4-	µg/L	n/v	n/v	<0.24	-	-	-	-	<0.24	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-
Chloronaphthalene, 2-	µg/L	n/v	n/v	<0.21	-	-	-	-	<0.21	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-
Dichlorobenzene, 1,4-	µg/L	15	75	<1.4	-	-	-	-	<1.4	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-
Dimethylphenol, 2,4-	µg/L	n/v	n/v	<0.84	-	-	-	-	<0.84	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-
Nitrophenol, 2-	µg/L	n/v	n/v	<0.54	-	-	-	-	<0.54	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-
Volatile Organic Compounds																									
Benzene	µg/L	0.5	5	**1.7^{A}**	**33^{AB}**	**47^{AB}**	< 0.25	< 0.25	<0.15	<0.15	<0.15	-	<0.15	<0.15	<0.15	-	<0.15	<0.15	-	<0.15	<0.15	-	< 0.25	<0.15	<0.15 H
Butylbenzene, n-	µg/L	n/v	n/v	<0.39	<0.78	<0.39	< 0.47	< 0.47	<0.39	<0.39	<0.39	-	<0.39	<0.39	<0.39	-	<0.39	<0.39	-	<0.39	<0.39	-	< 0.71	1.3	<0.39 H
Butylbenzene, sec- (2-Phenylbutane)	µg/L	n/v	n/v	0.42 J	6.5	3.8	< 0.85	< 0.85	<0.40	<0.40	<0.40	-	<0.40	<0.40	<0.40	-	<0.40	<0.40	-	<0.40	<0.40	-	< 0.85	2.0	0.87 J H
Butylbenzene, tert-	µg/L	n/v	n/v	<0.40	<0.80	0.70 J	-	-	<0.40	<0.40	<0.40	-	<0.40	<0.40	<0.40	-	<0.40	<0.40	-	<0.40	<0.40	-	-	<0.40	<0.40 H
Chloroethane (Ethyl Chloride)	µg/L	80	400	<0.51	<1.0	<0.51	-	-	<0.51	<0.51	<0.51	-	<0.51	<0.51	<0.51	-	<0.51	<0.51	-	<0.51	<0.51	-	-	<0.51	<0.51 H
Dichloroethane, 1,1-	µg/L	85	850	<0.41	<0.82	<0.41	-	-	<0.41	<0.41	<0.41	-	<0.41	<0.41	<0.41	-	<0.41	<0.41	-	<0.41	<0.41	-	-	1.8	<0.41 H
Dichloroethane, 1,2-	µg/L	0.5	5	<0.39	<0.78	<0.39	-	-	<0.39	<0.39	<0.39	-	<0.39	<0.39	<0.39	-	<0.39	<0.39	-	<0.39	<0.39	-	-	<0.39	<0.39 H
Dichloroethene, cis-1,2-	µg/L	7	70	1.5	<0.82	<0.41	-	-	<0.41	<0.41	<0.41	-	<0.41	<0.41	<0.41	-	<0.41	<0.41	-	<0.41	<0.41	-	-	<0.41	<0.41 H
Dichloropropane, 1,3-	µg/L	n/v	n/v	<0.36	<0.72	<0.36	-	-	<0.36	<0.36	<0.36	-	<0.36	<0.36	<0.36	-	<0.36	<0.36	-	<0.36	<0.36	-	-	<0.36	<0.36 H
Ethylbenzene	µg/L	140	700	<0.18	120	80	< 0.32	< 0.32	<0.18	<0.18	<0.18	-	<0.18	<0.18	<0.18	-	<0.18	<0.18	-	<0.18	<0.18	-	< 0.32	<0.18	<0.18 H
Isopropylbenzene	µg/L	n/v	n/v	2.0	41	29	< 1.7	< 1.7	<0.39	<0.39	<0.39	-	<0.39	<0.39	<0.39	-	<0.39	<0.39	-	<0.39	<0.39	-	< 1.7	1.9	<0.39 H
Isopropyltoluene, p- (Cymene)	µg/L	n/v	n/v	<0.36	13	12	< 0.80	< 0.80	<0.36	<0.36	<0.36	-	<0.36	<0.36	<0.36	-	<0.36	<0.36	-	<0.36	<0.36	-	< 0.80	<0.36	<0.36 H
Methylene Chloride (Dichloromethane)	µg/L	0.5	5	<1.6	<3.3	<1.6	-	-	<1.6	<1.6	**4.3 J B^{A}**	-	**4.6 J B^{A}**	**4.5 J B^{A}**	**3.9 J B^{A}**	-	<1.6	**4.5 J B^{A}**	-	<1.6	<1.6	-	-	<1.6	<1.6 H
Naphthalene		10	100	<0.34	-	**12^{A}**	-	-	<0.34	<0.25	-	-	-	-	-	-	<0.26	-	-	-	-	-	-	<0.34	<0.34 H
Propylbenzene, n-	µg/L	n/v	n/v	1.5	41	23	< 0.81	< 0.81	<0.41	<0.41	<0.41	-	<0.41	<0.41	<0.41	-	<0.41	<0.41	-	<0.41	<0.41	-	< 0.81	2.0	<0.41 H
Tetrachloroethene (PCE)	µg/L	0.5	5	**1.4^{A}**	**1.5 J^{A}**	**0.88 J^{A}**	1.0 J	1.1	<0.37	<0.37	<0.37	-	<0.37	<0.37	<0.37	-	<0.37	<0.37	-	<0.37	<0.37	-	< 0.33	<0.37	<0.37 H
Toluene	µg/L	160	800	0.73	38	35	< 0.27	< 0.27	<0.15	<0.15	<0.15	-	<0.15	<0.15	<0.15	-	0.16 J	<0.15	-	<0.15	<0.15	-	< 0.27	<0.15	<0.15 H
Trichlorobenzene, 1,2,3-	µg/L	n/v	n/v	<0.46	<0.92	<0.46	-	-	<0.46	<0.46	<0.46	-	<0.46	<0.46	<0.46	-	<0.46	<0.46	-	<0.46	<0.46	-	-	<0.46	<0.46 H
Trichloroethane, 1,1,1-	µg/L	40	200	<0.38	<0.76	<0.38	-	-	<0.38	<0.38	<0.38	-	<0.38	<0.38	<0.38	-	<0.38	<0.38	-	<0.38	<0.38	-	-	1.8	<0.38 H
Trichloroethene (TCE)	µg/L	0.5	5	**2.8^{A}**	<0.33	<0.16	0.33 J	0.45 J	<0.16	<0.16	<0.16	-	<0.16	<0.16	<0.16	-	<0.16	<0.16	-	<0.16	<0.16	-	< 0.26	<0.16	<0.16 H
Trichloropropane, 1,2,3-	µg/L	12	60	<0.41	<0.83	<0.41	-	-	<0.41	<0.41	<0.41	-	<0.41	<0.41	<0.41	-	<0.41	<0.41	-	<0.41	<0.41	-	-	<0.41	<0.41 H
Trimethylbenzene, 1,2,4-	µg/L	96	n/v	29	**410^{AB}**	**330^{AB}**	< 0.84	< 0.84	1.4	<0.36	<0.36	-	<0.36	<0.36	<0.36	-	<0.36	<0.36	-	<0.36	<0.36	-	< 0.84	<0.36	<0.36 H
Trimethylbenzene, 1,3,5-	µg/L	96	n/v	6.5	**110^{AB}**	**110^{AB}**	< 0.87	< 0.87	<0.25	<0.25	<0.25	-	<0.25	<0.25	<0.25	-	<0.25	<0.25	-	<0.25	<0.25	-	< 0.87	<0.25	<0.25 H
Xylenes, Total	µg/L	400	2,000	2.8	**710^{A}**	**650^{A}**	< 1.5	< 1.5	0.25 J	<0.22	<0.22	-	<0.22	<0.22	<0.22	-	<0.22	<0.22	-	<0.22	<0.22	-	< 1.5	<0.22	<0.22 H

Attachment B
Detected Constituents in Groundwater
Riverpoint District
Manitowoc, Wisconsin

Detected Constituents	Units	Preventive Action Limit (A)	Enforcement Standard (B)	Revised Sample ID, Initial Sample ID, and Sample Date																				
				TW-55		TW-61		TW-62		TW-63		TW-64			TW-65	MW-65	TW-66	MW-66	TW-69		MW-69	MW-69D	TW-72
				S1_TW-44		S1_TW-50		S1_TW-51		S1_TW-52		S1_TW-53			S1_TW-14	AECOM 1_MW-14	S1_TW-17	AECOM 1_MW-17	S1_TW-35		AECOM 1_MW-35	AECOM 1_MW-35D	S1_TW-41
				24-Aug-20	25-Aug-20	24-Aug-20	25-Aug-20	24-Aug-20	25-Aug-20	24-Aug-20	25-Aug-20	24-Aug-20	25-Aug-20	FD2	28-Nov-18	18-Mar-20	28-Nov-18	10-Dec-18	19-Mar-20	28-Nov-18	10-Dec-18	18-Mar-20	18-Mar-20	28-Nov-18
General Chemistry																								
Total Cyanide	mg/L	n/v	n/v	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Metals																								
Arsenic	mg/L	0.001	0.01	-	**0.0043**[A]	-	**0.0043**[A]	-	**0.0080**[A]	-	**0.0017**[A]	-	0.00072 J	0.00059 J	-	0.00064 J	-	0.00087 J	0.00032 J	-	0.00089 J	**0.0014 J**[A]	**0.0016**[A]	-
Barium	mg/L	0.4	2	-	0.088	-	0.070	-	**0.58**[A]	-	0.093	-	0.069	0.070	-	0.0992	-	0.043	-	-	0.21	0.220	0.208	-
Cadmium	mg/L	0.0005	0.005	-	<0.00017	-	<0.00017	-	<0.00017	-	<0.00017	-	0.00025 J	0.00027 J	-	-	-	<0.00017	-	-	<0.00017	-	-	-
Chromium	mg/L	0.01	0.1	-	<0.0011	-	<0.0011	-	<0.0011	-	<0.0011	-	<0.0011	<0.0011	-	-	-	<0.0011	-	-	0.0012 J	-	-	-
Lead	mg/L	0.0015	0.015	-	0.00095	-	**0.0015**[A]	-	**0.0053**[A]	-	0.00024 J	-	0.00029 J	0.00031 J	-	-	-	0.00073	-	-	0.00076	-	-	-
Selenium	mg/L	0.01	0.05	-	<0.00098	-	<0.00098	-	<0.00098	-	<0.00098	-	<0.00098	<0.00098	-	0.0016	-	<0.00098	-	-	<0.00098	< 0.00063	< 0.00032	-
Fluorinated Alkyl Substances																								
Perfluorobutane Sulfonate (PFBS)	ng/L	90000	450000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluorobutanoic Acid (PFBA)	ng/L	2000	10000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluorododecanoic Acid (PFDoA)	ng/L	100	500	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluoroheptane Sulfonate (PFHpS)	ng/L	n/v	n/v	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluoroheptanoic Acid (PFHpA)	ng/L	n/v	n/v	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluorohexanesulfonic acid (PFHxS)	ng/L	4	40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluorohexanoic Acid (PFHxA)	ng/L	30000	150000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluoro-n-Octanoic Acid (PFOA)	ng/L	2	20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluorononanoic Acid (PFNA)	ng/L	3	30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluorooctane Sulfonate (PFOS)	ng/L	2	20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluoropentanesulfonic Acid (PFPeS)	ng/L	n/v	n/v	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluoropentanoic Acid (PFPeA)	ng/L	n/v	n/v	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluorotetradecanoic Acid (PFTeA)	ng/L	2000	10000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluorotridecanoic Acid (PFTriA)	ng/L	n/v	n/v	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NEtFOSE+NEtFOSA+NEtFOSAA+PFOSA+PFOA+PFOS**	ng/L	2	20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Polycyclic Aromatic Hydrocarbons																								
Acenaphthene	µg/L	n/v	n/v	1.1	-	<0.26	-	<0.25	-	<0.24	-	<0.24	-	<0.24	<0.25	0.0089 J	-	<0.27 H	0.016 J	<0.25	-	< 0.0058	< 0.0065	<0.25
Acenaphthylene	µg/L	n/v	n/v	<0.21	-	<0.23	-	<0.21	-	<0.21	-	<0.21	-	<0.21	<0.22	0.056	-	<0.24 H	0.0060 J	<0.22	-	0.0071 J	0.0075 J	<0.22
Anthracene	µg/L	600	3,000	0.36 J	-	<0.28	-	<0.27	-	0.40 J	-	<0.26	-	<0.26	<0.27	0.075	-	<0.30 H	< 0.010	<0.27	-	0.059	0.049 J	<0.27
Benzo(a)anthracene	µg/L	n/v	n/v	0.65	-	<0.048	-	0.099 J	-	<0.045	-	0.046 J	-	<0.045	0.38	0.31	-	<0.050 H	0.0080 J	<0.047	-	0.0093 J	< 0.0081	<0.047
Benzo(a)pyrene	µg/L	0.02	0.2	<0.078	-	<0.083	-	**0.15 J**[A]	-	<0.078	-	<0.078	-	<0.078	**0.33**[AB]	**0.3**[AB]	-	<0.087 H	< 0.010	<0.081	-	< 0.010	< 0.011	<0.081
Benzo(b)fluoranthene	µg/L	0.02	0.2	<0.064	-	<0.068	-	**0.16**[A]	-	<0.064	-	<0.064	-	<0.064	**0.38**[AB]	**0.38**[AB]	-	<0.071 H	< 0.0056	<0.066	-	0.011 J	< 0.0062	<0.066
Benzo(g,h,i)perylene	µg/L	n/v	n/v	<0.30	-	<0.32	-	<0.30	-	<0.30	-	<0.30	-	<0.30	<0.31	0.14	-	<0.33 H	< 0.0066	<0.31	-	0.0088 J	< 0.0073	<0.31
Benzo(k)fluoranthene	µg/L	n/v	n/v	<0.050	-	<0.054	-	<0.051	-	<0.050	-	<0.050	-	<0.050	0.22	0.19	-	<0.057 H	< 0.0073	<0.053	-	< 0.0073	< 0.0081	<0.053
Chrysene	µg/L	0.02	0.2	**0.42**[AB]	-	<0.057	-	**0.055 J**[A]	-	<0.054	-	<0.054	-	<0.054	**0.34**[AB]	**0.37**[AB]	-	<0.060 H	< 0.013	<0.056	-	< 0.013	< 0.014	<0.056
Dibenzo(a,h)anthracene	µg/L	n/v	n/v	0.16 J	-	<0.043	-	0.14 J	-	<0.040	-	<0.040	-	<0.040	<0.042	0.037 J	-	<0.045 H	< 0.0097	<0.042	-	< 0.0096	< 0.011	<0.042
Fluoranthene	µg/L	80	400	<0.36	-	<0.38	-	<0.36	-	<0.36	-	<0.36	-	<0.36	0.54 J	0.77	-	<0.40 H	< 0.010	<0.37	-	< 0.010	< 0.011	<0.37
Fluorene	µg/L	80	400	2.7	-	1.8	-	0.35 J	-	<0.19	-	<0.19	-	<0.19	<0.20	0.049	-	<0.22 H	0.0083 J	<0.20	-	< 0.0077	< 0.0086	<0.20
Indeno(1,2,3-cd)pyrene	µg/L	n/v	n/v	<0.059	-	<0.063	-	<0.059	-	<0.059	-	<0.059	-	<0.059	0.15 J	0.14	-	<0.066 H	< 0.017	<0.062	-	< 0.017	< 0.019	<0.062
Methylnaphthalene, 1-	µg/L	n/v	n/v	77	-	0.25 J	-	6.4	-	<0.24	-	<0.24	-	<0.24	<0.25	0.011 J	-	<0.27 H	0.025 J	<0.25	-	< 0.0057	< 0.0063	<0.25
Methylnaphthalene, 2-	µg/L	n/v	n/v	88	-	0.19 J	-	7.4	-	<0.051	-	<0.051	-	<0.051	<0.054	0.011 J	-	<0.058 H	0.010 J	<0.054	-	< 0.0047	< 0.0053	<0.054
Naphthalene	µg/L	10	100	0.71 J	-	0.30 J	-	**13**[A]	-	<0.24	-	<0.24	-	<0.24	<0.25	< 0.018	-	<0.27 H	0.087 J	<0.25	-	< 0.018	< 0.020	<0.25
Phenanthrene	µg/L	n/v	n/v	9.4	-	<0.25	-	0.60 J	-	<0.24	-	<0.24	-	<0.24	<0.25	0.5	-	<0.27 H	< 0.013	<0.25	-	< 0.013	< 0.015	<0.25
Pyrene	µg/L	50	250	0.80	-	<0.36	-	<0.34	-	<0.34	-	<0.34	-	<0.34	0.48 J	0.61	-	<0.38 H	0.0075 J	<0.35	-	0.0076 J	< 0.0082	<0.35
Semi-Volatile Organic Compounds																								
Bis(2-Chloroethyl)ether	µg/L	n/v	n/v	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloro-3-methyl phenol, 4-	µg/L	n/v	n/v	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloroaniline, 4-	µg/L	n/v	n/v	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloronaphthalene, 2-	µg/L	n/v	n/v	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dichlorobenzene, 1,4-	µg/L	15	75	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dimethylphenol, 2,4-	µg/L	n/v	n/v	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nitrophenol, 2-	µg/L	n/v	n/v	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Volatile Organic Compounds																								
Benzene	µg/L	0.5	5	-	**0.57**[A]	-	<0.15	-	<0.15	-	<0.15	-	<0.15	<0.15	<0.15	-	<0.15	-	< 0.25	<0.15	-	< 0.25	< 0.25	<0.15
Butylbenzene, n-	µg/L	n/v	n/v	-	1.1	-	<0.39	-	<0.39	-	<0.39	-	<0.39	<0.39	<0.39	-	<0.39	-	< 0.71	<0.39	-	< 0.71	< 0.71	<0.39
Butylbenzene, sec- (2-Phenylbutane)	µg/L	n/v	n/v	-	<0.40	-	3.8	-	1.1	-	<0.40	-	<0.40	<0.40	<0.40	-	<0.40	-	< 0.85	<0.40	-	< 0.85	< 0.85	<0.40
Butylbenzene, tert-	µg/L	n/v	n/v	-	<0.40	-	<0.40	-	<0.40	-	<0.40	-	<0.40	<0.40	<0.40	-	<0.40	-	-	<0.40	-	-	-	<0.40
Chloroethane (Ethyl Chloride)	µg/L	80	400	-	<0.51	-	<0.51	-	<0.51	-	<0.51	-	<0.51	<0.51	<0.51	-	<0.51	-	-	<0.51	-	-	-	<0.51
Dichloroethane, 1,1-	µg/L	85	850	-	<0.41	-	<0.41	-	<0.41	-	<0.41	-	<0.41	<0.41	<0.41	-	<0.41	-	-	<0.41	-	-	-	<0.41
Dichloroethane, 1,2-	µg/L	0.5	5	-	<0.39	-	<0.39	-	<0.39	-	<0.39	-	<0.39	<0.39	<0.39	-	<0.39	-	-	<0.39	-	-	-	<0.39
Dichloroethene, cis-1,2-	µg/L	7	70	-	<0.41	-	<0.41	-	<0.41	-	<0.41	-	<0.41	<0.41	<0.41	-	<0.41	-	-	<0.41	-	-	-	<0.41
Dichloropropane, 1,3-	µg/L	n/v	n/v	-	<0.36	-	<0.36	-	<0.36	-	<0.36	-	<0.36	<0.36	<0.36	-	<0.36	-	-	<0.36	-	-	-	<0.36
Ethylbenzene	µg/L	140	700	-	<0.18	-	<0.18	-	0.81	-	<0.18	-	<0.18	<0.18	<0.18	-	<0.18	-	< 0.32	<0.18	-	< 0.32	< 0.32	<0.18
Isopropylbenzene	µg/L	n/v	n/v	-	0.50 J	-	10	-	1.0	-	<0.39	-	<0.39	<0.39	<0.39	-	<0.39	-	< 1.7	<0.39	-	< 1.7	< 1.7	<0.39
Isopropyltoluene, p- (Cymene)	µg/L	n/v	n/v	-	<0.36	-	1.1	-	2.1	-	<0.36	-	<0.36	<0.36	<0.36	-	<0.36	-	< 0.80	<0.36	-	34.5	31.2	<0.36
Methylene Chloride (Dichloromethane)	µg/L	0.5	5	-	<1.6	-	<1.6	-	<1.6	-	<1.6	-	<1.6	<1.6	**4.5 J B**[A]	-	**4.3 J B**[A]	-	-	<1.6	-	-	-	<1.6
Naphthalene		10	100	-	1.6	-	**14**[A]	-	1.6	-	<0.34	-	<0.34	<0.34	-	-	0.36 J B	-	-	-	-	-	-	-
Propylbenzene, n-	µg/L	n/v	n/v	-	0.74 J	-	8.1	-	1.5	-	<0.41	-	<0.41	<0.41	<0.41	-	<0.41	-	< 0.81	<0.41	-	< 0.81	< 0.81	<0.41
Tetrachloroethene (PCE)	µg/L	0.5	5	-	<0.37	-	<0.37	-	**1.4**[A]	-	<0.37	-	<0.37	<0.37	<0.37	-	<0.37	-	< 0.33	<0.37	-	< 0.33	< 0.33	<0.37
Toluene	µg/L	160	800	-	<0.15	-	<0.15	-	<0.15	-	<0.15	-	<0.15	<0.15	<0.15	-	<0.15	-	< 0.27	<0.15	-	0.52 J	0.48 J	<0.15
Trichlorobenzene, 1,2,3-	µg/L	n/v	n/v	-	<0.46	-	<0.46	-	<0.46	-	<0.46	-	<0.46	<0.46	<0.46	-	0.90 J	-	-	<0.46	-	-	-	<0.46
Trichloroethane, 1,1,1-	µg/L	40	200	-	<0.38	-	<0.38	-	1.0	-	<0.38	-	<0.38	<0.38	<0.38	-	<0.38	-	-	<0.38	-	-	-	<0.38
Trichloroethene (TCE)	µg/L	0.5	5	-	<0.16	-	<0.16	-	<0.16	-	<0.16	-	<0.16	<0.16	<0.16	-	<0.16	-	< 0.26	<0.16	-	< 0.26	< 0.26	<0.16
Trichloropropane, 1,2,3-	µg/L	12	60	-	0.51 J	-	<0.41	-	<0.41	-	<0.41	-	<0.41	<0.41	<0.41	-	0.97 J	-	-	<0.41	-	-	-	<0.41
Trimethylbenzene, 1,2,4-	µg/L	96	n/v	-	7.3	-	**130**[A]	-	10	-	<0.36	-	<0.36	<0.36	<0.36	-	2.5	-	< 0.84	<0.36	-	< 0.84	< 0.84	<0.36
Trimethylbenzene, 1,3,5-	µg/L	96	n/v	-	0.79 J	-	**40**[A]	-	3.8	-	<0.25	-	<0.25	<0.25	<0.25	-	<0.25	-	< 0.87	<0.25	-	< 0.87	< 0.87	<0.25
Xylenes, Total	µg/L	400	2,000	-	1.7	-	89	-	10	-	<0.22	-	<0.22	<0.22	<0.22	-	<0.22	-	< 1.5	<0.22	-	< 1.5	< 1.5	<0.22

Attachment B
Detected Constituents in Groundwater
Riverpoint District
Manitowoc, Wisconsin

Detected Constituents	Units	Preventive Action Limit (A)	Enforcement Standard (B)	Revised Sample ID, Initial Sample ID, and Sample Date														
				TW-73	MW-73	TW-74	MW-74	TW-75	MW-75		TW-82	MW-82	Trip Blank	TRIP BLANK	TRIP BLANK	FD-1	FD-2	Equp Blank (1_TW-1)
				S1_TW-39	AECOM 1_MW-39	S1_TW-43	AECOM 1_MW-43	S2_TW-23	S2_MW-23		S2_TW-30	S2_MW-30						
				28-Nov-18	18-Mar-20	28-Nov-18	18-Mar-20	28-Nov-18	4-Feb-19	4-Feb-19	28-Nov-18	4-Feb-19	27-Nov-18	24-Aug-20	10-Sep-20	28-Nov-18	27-Nov-18	28-Nov-18
General Chemistry																		
Total Cyanide	mg/L	n/v	n/v	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Metals																		
Arsenic	mg/L	0.001	0.01	-	< 0.0014	**0.0038**[A]	0.00080 J	0.0010	<0.0037	-	**0.011**[AB]	**0.0042 J**[A]	-	-	-	0.00068 J	**0.0020**[A]	-
Barium	mg/L	0.4	2	-	**0.729**[A]	0.19	-	0.054	-	-	0.12	-	-	-	-	0.012	0.070	-
Cadmium	mg/L	0.0005	0.005	-	-	<0.00017	-	<0.00017	-	-	<0.00017	-	-	-	-	<0.00017	<0.00017	-
Chromium	mg/L	0.01	0.1	-	-	0.0017 J	-	<0.0011	-	-	<0.0011	-	-	-	-	<0.0011	<0.0011	-
Lead	mg/L	0.0015	0.015	-	-	**0.0088**[A]	-	<0.00019	-	-	0.00029 J	-	-	-	-	<0.00019	<0.00019	-
Selenium	mg/L	0.01	0.05	-	< 0.0016	<0.00098	-	<0.00098	-	-	<0.00098	-	-	-	-	0.0010 J	<0.00098	-
Fluorinated Alkyl Substances																		
Perfluorobutane Sulfonate (PFBS)	ng/L	90000	450000	-	-	0.4 J	-	2.1	-	1.7 J	1.9 J	-	-	-	-	-	-	<0.91
Perfluorobutanoic Acid (PFBA)	ng/L	2000	10000	-	-	15	-	9.9	-	6.7	9.9 J	-	-	-	-	-	-	<0.91
Perfluorododecanoic Acid (PFDoA)	ng/L	100	500	-	-	<0.5	-	<0.54	-	<0.51	<1.2	-	-	-	-	-	-	<0.27
Perfluoroheptane Sulfonate (PFHpS)	ng/L	n/v	n/v	-	-	<0.4	-	<0.43	-	<0.18	<0.95	-	-	-	-	-	-	<0.55
Perfluoroheptanoic Acid (PFHpA)	ng/L	n/v	n/v	-	-	1.4	-	4.6	-	4.5	4	-	-	-	-	-	-	<0.36
Perfluorohexanesulfonic acid (PFHxS)	ng/L	4	40	-	-	<0.4	-	1.9 J	-	2.2	<0.95	-	-	-	-	-	-	<0.55
Perfluorohexanoic Acid (PFHxA)	ng/L	30000	150000	-	-	3.6	-	3.4	-	2.6	4.7 J	-	-	-	-	-	-	<0.36
Perfluoro-n-Octanoic Acid (PFOA)	ng/L	2	20	-	-	**8.7**[A]	-	**73**[AB]	-	**55**[AB]	**32**[AB]	-	-	-	-	-	-	<0.36
Perfluorononanoic Acid (PFNA)	ng/L	3	30	-	-	<0.4	-	<0.43	-	0.44 J	<0.95	-	-	-	-	-	-	<0.82
Perfluorooctane Sulfonate (PFOS)	ng/L	2	20	-	-	0.52 J	-	**4.3**[A]	-	**5.2**[A]	**7.2**[A]	-	-	-	-	-	-	<0.36
Perfluoropentanesulfonic Acid (PFPeS)	ng/L	n/v	n/v	-	-	<0.4	-	<0.43	-	<0.28	<0.95	-	-	-	-	-	-	<0.36
Perfluoropentanoic Acid (PFPeA)	ng/L	n/v	n/v	-	-	4 J	-	3.9 J	-	<0.46	<4.8	-	-	-	-	-	-	<0.27
Perfluorotetradecanoic Acid (PFTeA)	ng/L	2000	10000	-	-	<0.3	-	<0.33	-	<0.27	<0.71	-	-	-	-	-	-	<0.46
Perfluorotridecanoic Acid (PFTriA)	ng/L	n/v	n/v	-	-	<0.4	-	<0.43	-	<1.2	<0.95	-	-	-	-	-	-	<1.8
NEtFOSE+NEtFOSA+NEtFOSAA+PFOSA+PFOA+PFOS**	ng/L	2	20	-	-	**9.22**[A]	-	**77.3**	-	**60.20**	**39.2**	-	-	-	-	-	-	-
Polycyclic Aromatic Hydrocarbons																		
Acenaphthene	µg/L	n/v	n/v	10	9.2	<0.25	-	<0.26	-	-	1.1	-	-	-	-	<0.27	<0.30 H	-
Acenaphthylene	µg/L	n/v	n/v	<0.22	0.012 J	<0.21	-	<0.22	-	-	<0.22	-	-	-	-	<0.24	<0.26 H	-
Anthracene	µg/L	600	3,000	1.4	0.033 J	<0.27	-	<0.28	-	-	<0.28	-	-	-	-	<0.29	<0.32 H	-
Benzo(a)anthracene	µg/L	n/v	n/v	0.39	0.0084 J	<0.045	-	0.063 J	-	-	<0.047	-	-	-	-	<0.050	<0.055 H	-
Benzo(a)pyrene	µg/L	0.02	0.2	<0.082	< 0.011	<0.079	-	<0.083	-	-	<0.082	-	-	-	-	<0.087	<0.095 H	-
Benzo(b)fluoranthene	µg/L	0.02	0.2	**0.20**[A]	< 0.0057	<0.064	-	<0.068	-	-	<0.067	-	-	-	-	<0.071	<0.078 H	-
Benzo(g,h,i)perylene	µg/L	n/v	n/v	<0.31	< 0.0068	<0.30	-	<0.32	-	-	<0.31	-	-	-	-	<0.33	<0.36 H	-
Benzo(k)fluoranthene	µg/L	n/v	n/v	0.062 J	< 0.0076	<0.051	-	<0.054	-	-	<0.053	-	-	-	-	<0.056	<0.062 H	-
Chrysene	µg/L	0.02	0.2	**0.42**[AB]	< 0.013	<0.054	-	<0.057	-	-	<0.057	-	-	-	-	<0.060	<0.066 H	-
Dibenzo(a,h)anthracene	µg/L	n/v	n/v	<0.042	< 0.010	<0.041	-	<0.043	-	-	<0.042	-	-	-	-	<0.045	<0.049 H	-
Fluoranthene	µg/L	80	400	2.9	0.058	<0.36	-	<0.38	-	-	<0.38	-	-	-	-	<0.40	<0.44 H	-
Fluorene	µg/L	80	400	5.9	0.53	<0.19	-	<0.21	-	-	0.66 J	-	-	-	-	<0.21	<0.23 H	-
Indeno(1,2,3-cd)pyrene	µg/L	n/v	n/v	<0.062	< 0.018	<0.060	-	<0.063	-	-	<0.062	-	-	-	-	<0.066	<0.072 H	-
Methylnaphthalene, 1-	µg/L	n/v	n/v	3.2	0.7	<0.24	-	<0.25	-	-	0.79 J	-	-	-	-	<0.26	<0.29 H	-
Methylnaphthalene, 2-	µg/L	n/v	n/v	4.5	0.9	<0.052	-	<0.055	-	-	0.71 J	-	-	-	-	<0.057	<0.063 H	-
Naphthalene	µg/L	10	100	6.2	0.17	<0.25	-	<0.26	-	-	2.4	-	<0.34	-	-	<0.27	<0.30 H	-
Phenanthrene	µg/L	n/v	n/v	11	0.42	<0.24	-	<0.25	-	-	0.83	-	-	-	-	<0.26	<0.29 H	-
Pyrene	µg/L	50	250	1.8	0.035 J	<0.34	-	<0.36	-	-	<0.36	-	-	-	-	<0.37	<0.41 H	-
Semi-Volatile Organic Compounds																		
Bis(2-Chloroethyl)ether	µg/L	n/v	n/v	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloro-3-methyl phenol, 4-	µg/L	n/v	n/v	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloroaniline, 4-	µg/L	n/v	n/v	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloronaphthalene, 2-	µg/L	n/v	n/v	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dichlorobenzene, 1,4-	µg/L	15	75	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dimethylphenol, 2,4-	µg/L	n/v	n/v	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nitrophenol, 2-	µg/L	n/v	n/v	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Volatile Organic Compounds																		
Benzene	µg/L	0.5	5	<0.15	-	<0.15	-	<0.15	-	-	<0.15	-	<0.15	<0.15	<0.15	<0.15	<0.15	-
Butylbenzene, n-	µg/L	n/v	n/v	<0.39	-	<0.39	-	<0.39	-	-	<0.39	-	<0.39	<0.39	<0.39	<0.39	<0.39	-
Butylbenzene, sec- (2-Phenylbutane)	µg/L	n/v	n/v	<0.40	-	<0.40	-	<0.40	-	-	<0.40	-	<0.40	<0.40	<0.40	<0.40	<0.40	-
Butylbenzene, tert-	µg/L	n/v	n/v	<0.40	-	<0.40	-	<0.40	-	-	<0.40	-	<0.40	<0.40	<0.40	<0.40	<0.40	-
Chloroethane (Ethyl Chloride)	µg/L	80	400	<0.51	-	<0.51	-	<0.51	-	-	<0.51	-	<0.51	<0.51	<0.51	<0.51	<0.51	-
Dichloroethane, 1,1-	µg/L	85	850	<0.41	-	<0.41	-	<0.41	-	-	<0.41	-	<0.41	<0.41	<0.41	<0.41	<0.41	-
Dichloroethane, 1,2-	µg/L	0.5	5	<0.39	-	<0.39	-	<0.39	-	-	<0.39	-	<0.39	<0.39	<0.39	<0.39	<0.39	-
Dichloroethene, cis-1,2-	µg/L	7	70	<0.41	-	<0.41	-	<0.41	-	-	<0.41	-	<0.41	<0.41	<0.41	<0.41	<0.41	-
Dichloropropane, 1,3-	µg/L	n/v	n/v	<0.36	-	<0.36	-	<0.36	-	-	<0.36	-	<0.36	<0.36	<0.36	<0.36	<0.36	-
Ethylbenzene	µg/L	140	700	0.23 J	-	<0.18	-	<0.18	-	-	<0.18	-	<0.18	<0.18	<0.18	<0.18	<0.18	-
Isopropylbenzene	µg/L	n/v	n/v	<0.39	-	<0.39	-	<0.39	-	-	<0.39	-	<0.39	<0.39	<0.39	<0.39	<0.39	-
Isopropyltoluene, p- (Cymene)	µg/L	n/v	n/v	<0.36	-	<0.36	-	<0.36	-	-	<0.36	-	<0.36	<0.36	<0.36	<0.36	<0.36	-
Methylene Chloride (Dichloromethane)	µg/L	0.5	5	<1.6	-	<1.6	-	<1.6	-	-	<1.6	-	**3.9 J B**[A]	<1.6	<1.6	**4.1 J B**[A]	**4.2 J B**[A]	-
Naphthalene		10	100	-	-	-	-	-	-	-	-	-	-	<0.34	<0.34	-	-	-
Propylbenzene, n-	µg/L	n/v	n/v	<0.41	-	<0.41	-	<0.41	-	-	<0.41	-	<0.41	<0.41	<0.41	<0.41	<0.41	-
Tetrachloroethene (PCE)	µg/L	0.5	5	<0.37	-	<0.37	-	<0.37	-	-	<0.37	-	<0.37	<0.37	<0.37	<0.37	<0.37	-
Toluene	µg/L	160	800	<0.15	-	<0.15	-	0.16 J	-	-	0.17 J	-	<0.15	<0.15	<0.15	<0.15	<0.15	-
Trichlorobenzene, 1,2,3-	µg/L	n/v	n/v	<0.46	-	<0.46	-	<0.46	-	-	<0.46	-	<0.46	<0.46	<0.46	<0.46	<0.46	-
Trichloroethane, 1,1,1-	µg/L	40	200	<0.38	-	<0.38	-	<0.38	-	-	<0.38	-	<0.38	<0.38	<0.38	<0.38	<0.38	-
Trichloroethene (TCE)	µg/L	0.5	5	<0.16	-	<0.16	-	<0.16	-	-	<0.16	-	<0.16	<0.16	<0.16	<0.16	<0.16	-
Trichloropropane, 1,2,3-	µg/L	12	60	<0.41	-	<0.41	-	<0.41	-	-	<0.41	-	<0.41	<0.41	<0.41	<0.41	<0.41	-
Trimethylbenzene, 1,2,4-	µg/L	96	n/v	0.61 J	-	<0.36	-	<0.36	-	-	<0.36	-	<0.36	<0.36	<0.36	<0.36	<0.36	-
Trimethylbenzene, 1,3,5-	µg/L	96	n/v	<0.25	-	<0.25	-	<0.25	-	-	<0.25	-	<0.25	<0.25	<0.25	<0.25	<0.25	-
Xylenes, Total	µg/L	400	2,000	0.57 J	-	<0.22	-	<0.22	-	-	<0.22	-	<0.22	<0.22	<0.22	<0.22	<0.22	-

State of Wisconsin
Department of Natural Resources
PO Box 7921, Madison WI 53707-7921
dnr.wi.gov

Site Investigation Work Plan Preparation Checklist
Wis. Admin. Code § NR 716.07

Form 4400-316 (R 07/19)

Wisconsin DNR – NR 700 Process

Remediation and Redevelopment Program **April 2019**

Purpose

This guidance is offered as an optional tool to help develop and review site investigation work plans for compliance with Wis. Admin. Code ch. NR 716 Site Investigation requirements. Consultants may choose to use this checklist as an outline for preparation of the site investigation work plan. Use of this checklist is not required. Rule citations are added for clarity. The checklist is meant for use with Wis. Admin. Code § NR 716.09 and other site investigation related guidance. For more comprehensive site investigation related information, visit our web page at dnr.wi.gov and search: "site investigation."

Receipt of Site Investigation Work Plan NR 716.09 (1)		**Comments**
☐ NR 716.09 (1)	Within 60 days of receipt of RP letter, or other notification that a site investigation is required	
☐ NR 716.09 (1), NR 700.11 (3g)	One paper copy	
☐ NR 716.09 (1), NR 700.11 (3g)	One electronic copy	
☐ NR 749	Review fee, if review by DNR is requested	
Purpose NR 716.01		**Comments**
☒ NR 716.01	Proposed investigation will define the nature, degree and extent of contamination	1.0 Introduction
☒ NR 716.01	Proposed investigation will define the source or sources of contamination	1.0 Introduction
☒ NR 716.01	Proposed investigation will determine the need for an interim and/or remedial action	1.0 Introduction
☒ NR 716.01	Proposed investigation will provide information needed to select an interim and/or remedial action	1.0 Introduction
Contents NR 716.09 (2)		**Comments**
☒ NR 716.09 (2) (a)	Site name and address	1.0 Introduction; 2.1 Property Location
☒ NR 716.09 (2) (a)	Site location – ¼ ¼ section, Township, Range, County	2.1 Property Location
☒ NR 716.09 (2) (a)	WTM coordinates	2.1 Property Location
☒ NR 716.09 (2) (b)	RP's name and address (May be more than one RP – current property owner, lessee, operator, other RP.)	2.2 Contact Information
☒ NR 716.09 (2) (b)	Consultant or contractor's name and address	2.2 Contact Information
☒ NR 716.09 (2) (c)	Site location on a USGS topo map	Figure 1
☒ NR 716.09 (2) (c)	Site layout map(s) with: buildings, roads, discharge location & other relevant site features	Figures 2 through 9
☐ NR 716.09 (2) (d)	Scoping of the Investigation:	Section 6.0 Site Investigation Scoping
☒ NR 716.07 (1)	• History of the site or facility, including land uses that may have one or more associated hazardous substance discharges or environmental pollution, including emerging contaminants such as PFAS	Section 2.3 Property History; Section 6.0 Site Investigation Scoping

Contents (continue) NR 716.09 (2)		**Comments**
☒ NR 716.07 (2)	• Type and amount of contamination, if known	Section 3.0 Summary of Previous Environmental Investigations; Section 6.0 Site Investigation Scoping
☒ NR 716.07 (3)	• History of previous hazardous substance discharges or environmental pollution	Section 4.0 Summary of BRRTS Cases at the Property; Section 6.0 Site Investigation Scoping
☒ NR 716.07 (4)	• Environmental media affected or potentially affected by contamination	Section 6.0 Site Investigation Scoping
☒ NR 716.07 (5)	• Location of the site or facility and its proximity to other sources of contamination	Section 6.0 Site Investigation Scoping
☒ NR 716.07 (6)	• Need for permission from property owners to allow access to the site or facility and to adjacent or nearby properties	Section 6.0 Site Investigation Scoping
☒ NR 716.07 (7)	• Potential or known impacts to receptors, including buildings, utilities or other subsurface improvements, and water supply wells within 1,200 feet of outermost edge of contamination	Section 6.0 Site Investigation Scoping
☒ NR 716.07 (8) (a), (b), (c), (d)	• Potential for impacts to sensitive species, habitats or ecosystems, wetlands, resource waters, sites of historical/archaeological significance	Section 6.0 Site Investigation Scoping
☒ NR 716.07 (9)	• Potential interim and remedial actions applicable to the contamination	Section 6.0 Site Investigation Scoping
☒ NR 716.07 (10)	• Immediate or interim actions taken or in progress, including any evaluations made of whether an interim action is necessary	Section 6.0 Site Investigation Scoping
☒ NR 716.07 (11)	• Any other items, including climatological conditions and background water or soil quality info that may affect the scope or conduct of the investigation	Section 6.0 Site Investigation Scoping
☒ NR 716.07 (12)	• Need to gather data to determine the hydraulic conductivity of materials where contaminated groundwater is found	Section 6.0 Site Investigation Scoping
☐ NR 716.09 (2) (e)	Physiographical and geological setting of the site necessary to choose sampling methods and locations, including:	Section 5.0 Physiographical and Geological Setting
☒ NR 716.09 (2) (e) 1.	• Existing topography, including prominent topographic features	Section 5.0 Physiographical and Geological Setting
☒ NR 716.09 (2) (e) 2.	• Surface water drainage patterns and significant hydrologic features, such as surface waters, springs, drainage basins, divides, wetlands, floodplain or floodway	Section 5.0 Physiographical and Geological Setting
☒ NR 716.09 (2) (e) 3.	• Texture and classification of surficial soils	Section 5.0 Physiographical and Geological Setting
☒ NR 716.09 (2) (e) 4.	• Nature and distribution of geologic materials, including the thickness and type of unconsolidated materials and type and nature of bedrock	Section 5.0 Physiographical and Geological Setting
☒ NR 716.09 (2) (e) 5.	• General hydrogeologic information	Section 5.0 Physiographical and Geological Setting
☒ NR 716.09 (2) (e) 6.	• Potential hazardous substance migration pathways	Section 5.0 Physiographical and Geological Setting
☐ NR 716.09 (2) (f)	Sampling and analysis strategy to be used during the field investigation, including:	Section 7.0 Site Investigation Overview; Section 8.0 Proposed Soil Assessment; Section 9.0 Proposed Groundwater Assessment

Contents (continue) NR 716.09 (2)		**Comments**
☒ NR 716.09 (2) (f) 1.	• Description of the investigative techniques to be used to characterize the site or facility	Section 8.0 Proposed Soil Assessment; Section 9.0 Proposed Groundwater Assessment
☒ NR 716.09 (2) (f) 2.	• Site layout map(s), in planimetric and vertical views, with locations from which samples of environmental media will be obtained or a description of the strategy to be used for determining sample locations	Section 7.0 Site Investigation Overview; Figures 6 through 9
☒ NR 716.09 (2) (f) 3.	• Description of sampling methods to be used, including methods for collecting, preserving, and delivering samples and leak detection methods (for vapor sampling)	Section 8.3 Soil Boring and Subsurface Assessment; Section 9.3 Groundwater Assessment
☒ NR 716.09 (2) (f) 4.	• List of the parameters for which samples will be analyzed, analytical methods to be used including method detection limits	Section 8.3 Soil Boring and Subsurface Assessment; Section 9.3 Groundwater Assessment
☒ NR 716.09 (2) (f) 5.	• Description of quality control and quality assurance procedures to be used per sampling method, including the items listed in NR 716.13	8.4, 9.4 Special Handling Considerations and QA/ QC Samples
☒ NR 716.09 (2) (f) 6.	• Description of procedures to prevent cross-contamination between samples	Section 8.3 Soil Boring and Subsurface Assessment; Section 9.3 Groundwater Assessment
☒ NR 716.09 (2) (f) 7.	• Description of the type of investigative wastes that will be generated during the site investigation and how they will be collected, stored, transported, treated or disposed	Section 8.3 Soil Boring and Subsurface Assessment; Section 9.3 Groundwater Assessment
☒ NR 716.09 (2) (f) 8.	• Discussion of how the sampling and analysis results will be related to previous investigations at the site or facility and how the results will be used to determine the degree and extent of contamination and the selection of a remedial action, including natural attenuation, where appropriate	10.0 Site Investigation Report & Remedial Action Plan
☒ NR 716.09 (2) (g)	Description of other procedures to be used for site management, including erosion control and repair of structural, soil or ground disturbance	8.3 Soil Boring and Subsurface Assessment
☒ NR 716.09 (2) (h)	Schedule for conducting the field investigation and reporting the results to the DNR	11.0 Schedule
☒ NR 712	Certification of professional(s) that will conduct or supervise the work necessary to obtain data, develop conclusions and recommendations, and prepare the site investigation submittal, per Wis. Admin. Code NR 712	12.0 Certification Statement