

From: Beggs, Tauren R - DNR
Sent: Monday, April 17, 2023 3:02 PM
To: Byers, Harris
Cc: 'Naletta Sanchez'; Adam Tegen; Van Der Kloot, James; Knapke.Eric@epa.gov
Subject: RE: SSSAP for a Site Investigation in the Phase 3 Redevelopment Area of the River Point District in Manitowoc, Wisconsin

Hi Harris,

This work plan looks to be consistent with past conversations we have generally had for this area. The area with higher PFAS concentrations in groundwater is also proposed to be characterized further in this plan as well so that is good. I don't have any comments at this time.

Regards,

We are committed to service excellence.

Visit our survey at <http://dnr.wi.gov/customersurvey> to evaluate how I did.

Tauren R. Beggs

Phone: (920) 510-3472

Tauren.Beggs@wisconsin.gov (preferred contact method during work at home)

From: Byers, Harris <Harris.Byers@stantec.com>
Sent: Thursday, April 13, 2023 1:18 PM
To: Beggs, Tauren R - DNR <Tauren.Beggs@wisconsin.gov>; Van Der Kloot, James <vanderkloot.james@epa.gov>; Knapke.Eric@epa.gov
Cc: 'Naletta Sanchez' <naletta.sanchez@wedc.org>; Adam Tegen <ategen@manitowoc.org>
Subject: RE: SSSAP for a Site Investigation in the Phase 3 Redevelopment Area of the River Point District in Manitowoc, Wisconsin

Team:

To strengthen the site investigation workplan, we've made one small revision to Figure 16d by moving the proposed soil borings/temp wells to within the western building footprint.

Please continue to review the workplan and send comments as you have them.

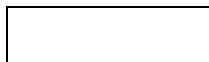
Sincerely,

Harris Byers, Ph.D.

Sr. Brownfields Project Manager
Contaminant Hydrogeologist / Urban Geochemist

Direct: 414 581-6476
Harris.Byers@stantec.com

Stantec
12080 Corporate Parkway Suite 200
Mequon WI 53092-2649



The content of this email is the confidential property of Stantec and should not be copied, modified, retransmitted, or used for any purpose except with Stantec's written authorization. If you are not the intended recipient, please delete all copies and notify us immediately.

From: Byers, Harris

Sent: Monday, April 10, 2023 10:35 AM

To: Beggs, Tauren R - DNR <Tauren.Beggs@wisconsin.gov>; Van Der Kloot, James <vanderkloot.james@epa.gov>; Knapke.Eric@epa.gov

Cc: 'Naletta Sanchez' <naletta.sanchez@wedc.org>; Adam Tegen <ategen@manitowoc.org>

Subject: SSSAP for a Site Investigation in the Phase 3 Redevelopment Area of the River Point District in Manitowoc, Wisconsin

Tauren and Team:

On behalf of the City of Manitowoc, Wisconsin (cc'd), attached is a Site-Specific Sampling and Analysis Plan (a/k/a Site Investigation Workplan) for a Site Investigation in the Phase 3 Redevelopment Area of the River Point District in Manitowoc.

This workplan was the basis for a WEDC Site Assessment Grant submitted last month to support the proposed multi-family redevelopment.

Jim/Eric – the WEDC SAG requires a match, which the City will meet using funds from their current USEPA Brownfield Coalition Assessment Grant.

Please review and send comments. We look forward to continuing our collaboration to make this a successful redevelopment.

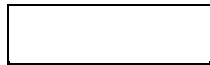
Sincerely,

Harris Byers, Ph.D.

Sr. Brownfields Project Manager
Contaminant Hydrogeologist / Urban Geochemist

Direct: 414 581-6476
Harris.Byers@stantec.com

Stantec
12080 Corporate Parkway Suite 200
Mequon WI 53092-2649



The content of this email is the confidential property of Stantec and should not be copied, modified, retransmitted, or used for any purpose except with Stantec's written authorization. If you are not the intended recipient, please delete all copies and notify us immediately.

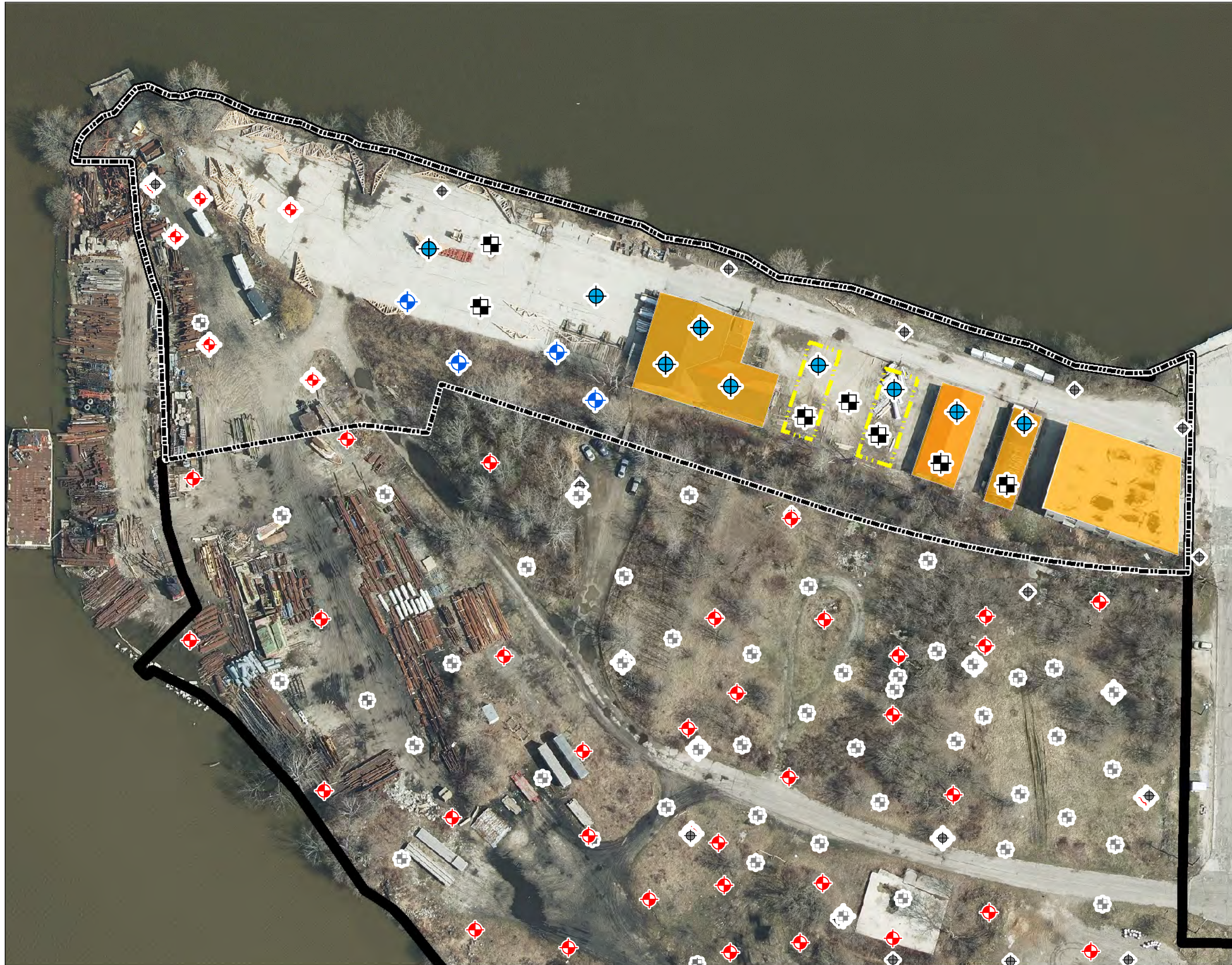
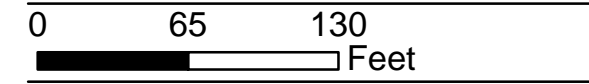


Figure No.
16d
 Title
**Proposed Sample Locations for
 Phase 4 of the Site Investigation**

Client/Project
 Phase III Redevelopment Area
 1102 Chicago Street
 City of Manitowoc



Legend

- Proposed Sample Locations**
- Soil Boring / Monitoring Well (4)
 - Soil Boring (7)
 - Soil Boring / Temp Well (9)
 - River Point District
 - Buildings to be Demolished (4)
 - Previously Razed Structures (2)
 - Phase III Redevelopment Area

- Previous Sample Locations**
- Soil Boring / Monitoring Well
 - Soil Boring
 - Soil Boring/Temp Well

Notes
 1. Coordinate System: NAD 1983 HARN WISCRS Manitowoc County Feet
 2. Orthophotograph: Manitowoc County, 2020



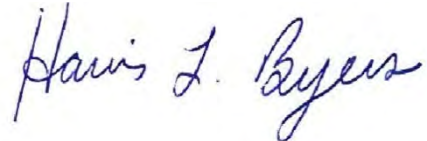
SITE INVESTIGATION WORKPLAN

Phase 3 Construction Area of the River Point District; Manitowoc, Wisconsin

1102 Chicago Avenue
Manitowoc, Wisconsin

U.S. EPA Brownfields Assessment Cooperative Agreement No.: BF00E03040
Assessment, Cleanup and Redevelopment Exchange System ID: 239717

BRRTS ID: 07-36-583000 (Open ERP)



*Harris L. Byers, Ph.D.
Sr. Brownfields Project Manager*



Stuart Gross, PG
Project QA/QC Manager

TABLE OF CONTENTS

1.0 INTRODUCTION	3
2.0 PROPERTY INFORMATION	4
2.1 PROPERTY LOCATION	4
2.2 CONTACT INFORMATION	4
2.3 PROPERTY HISTORY	45
2.4 CURRENT OWNERSHIP AND SITE USE	6
3.0 SUMMARY OF PREVIOUS ENVIRONMENTAL INVESTIGATIONS	7
4.0 SUMMARY OF BRRTS CASES AT THE PROPERTY	8
5.0 PHYSIOGRAPHICAL AND GEOLOGICAL SETTING	9
5.1 PROPERTY TOPOGRAPHY AND SURFACE WATER FLOW	9
5.2 REGIONAL AND PROPERTY GEOLOGY	9
5.3 REGIONAL AND PROPERTY HYDROGEOLOGY	9
6.0 SITE INVESTIGATION SCOPING	10
7.0 SITE INVESTIGATION OVERVIEW	12
7.1 PROBLEM STATEMENT	12
7.2 CONCEPTUAL SITE MODEL	12
8.0 PROPOSED SOIL ASSESSMENT	14
8.1 GENERAL	14
8.2 OBJECTIVES	14
8.3 SOIL BORING AND SUBSURFACE ASSESSMENT	14
8.4 SPECIAL HANDLING CONSIDERATIONS AND QA/QC SAMPLES	15
8.5 CHAIN-OF-CUSTODY	16
8.6 FIELD LOGBOOK	16
9.0 GROUNDWATER ASSESSMENT	17
9.1 GENERAL	17
9.2 OBJECTIVES	17
9.3 GROUNDWATER ASSESSMENT	17
9.4 SPECIAL HANDLING CONSIDERATIONS AND QA/QC SAMPLES	19
9.5 CHAIN-OF-CUSTODY	19
9.6 FIELD LOGBOOK	19
10.0 SITE INVESTIGATION REPORT	20
11.0 SCHEDULE	21
12.0 CERTIFICATION STATEMENT	22
13.0 REFERENCES	23
14.0 LIMITATIONS	24

April 7, 2023

SITE INVESTIGATION WORKPLAN

River Point District, Phase 3; Manitowoc, Wisconsin

FIGURES

- Figure 1: Project Area and Regional Topography
- Figure 2: Project Area and Property Identification Numbers
- Figure 3: Project Area and Zoning
- Figure 4: Redevelopment Areas at the River Point District
- Figure 5: Historic Plat Maps
- Figure 6a: Project Area and Bird's Eye Maps from the 19th Century
- Figure 6b: Project Area and 1898 Panoramic Photograph
- Figure 7: Project Area and Features from the 19th Century
- Figure 8: Project Area and Features from the 20th Century
- Figure 9: Site Buildings
- Figure 10: Most Recent Tenants (Late 20th Century)
- Figure 11: Project Area and Thickness of Fill
- Figure 12: Identified Groundwater Impacts
- Figure 13: Project Area and Proposed Redevelopment
- Figure 14: Building Layout
- Figures 15a-15c: Building Renderings
- Figure 16a: Proposed Sample Locations for Phase 1 of the Site Investigation
- Figure 16b: Proposed Sample Locations for Phase 2 of the Site Investigation
- Figure 16c: Proposed Sample Locations for Phase 3 of the Site Investigation
- Figure 16d: Proposed Sample Locations for Phase 4 of the Site Investigation

APPENDICES

- Appendix A: Site-Specific Health and Safety Plan

April 7, 2023

SITE INVESTIGATION WORKPLAN

River Point District, Phase 3; Manitowoc, Wisconsin

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 industrial property located at 1102 Chicago Street (herein referred to as the "Property"). Please note that although street numbers have not yet been established, the current working address of the Property is reflective of the proposed reuse, which places future buildings on the north side of an extension of Chicago Street. For consistency with prior work, further note that the address of 1103 Chicago Street was used previously by Stantec (2019c and 2020) to reference the Property based on the physical address of the current commercial tenant.

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.

A hazardous substance brownfield eligibility determination for the Property was submitted to the United States Environmental Protection Agency (USEPA) on June 11, 2018 (Stantec, 2018a) and approved by the agency on June 28, 2018. This Site Investigation Workplan was prepared using funds from the City of Manitowoc Community-Wide Assessment Grant awarded to the City by the United States Environmental Protection Agency (USEPA) on June 15, 2021.

April 7, 2023

SITE INVESTIGATION WORKPLAN

River Point District, Phase 3; Manitowoc, Wisconsin

2.0 PROPERTY INFORMATION

2.1 PROPERTY LOCATION

The Property is located in the southeast quarter of the southeast quarter of Section 19, Township 19 North, Range 24 East, and 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 approximate geographic coordinates of the center of the Property in the Wisconsin Transverse Mercator 1991 coordinate system are (X: 707017, Y: 405173); this was determined using the Wisconsin Department of Natural Resources (WDNR) Remediation and Redevelopment Sites Map.

The Property represents the third phase of redevelopment at the River Point District (i.e. Phase III Redevelopment Area). The location of the Property (shaded yellow) is illustrated on **Figure 1** relative to the River Point District (outlined in green) and the City of Manitowoc municipal boundary (outlined in black). The 4.1-acre Property consists of all or portions of four contiguous parcels of land (PINS: 173001, 173010, 173002, and 173000; **Figure 2**) recently rezoned from industrial to B-4 Central Business District (**Figure 3**). The location of the Property relative to the previous phases of redevelopment is illustrated on **Figure 4**.

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 start of Phase III redevelopment/construction activities at the Property is targeted for Spring 2024, with work continuing through Spring 2025.

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)
City of Manitowoc
900 Quay Street
Manitowoc, WI 54220-4543

Contact: Mr. Adam Tegen
Community Development Director
City of Manitowoc, Wisconsin
900 Quay Street
Manitowoc, WI 54220-4543
Phone: (920) 686-6931
Email: ategen@manitowoc.org

CONSULTANT: Stantec Consulting Services Inc.
12080 Corporate Parkway, Suite 200
Mequon, Wisconsin 53092

Contact: Harris Byers, Ph.D.
Sr. Brownfields Project Manager
Phone: (414) 581-6476
Email: harris.byers@stantec.com

2.3 PROPERTY HISTORY

2.3.1 Past Ownership and Site Uses (1835 – 2018) – River Point District

As described in the Stantec (2019c) Phase I Environmental Site Assessment (ESA), the River Point District consists of a 20.1-acre peninsula bound to the north, south, and west by the Manitowoc River and bound to the

April 7, 2023

SITE INVESTIGATION WORKPLAN

River Point District, Phase 3; Manitowoc, Wisconsin

east by North 10th Street and North 11th Street. The River Point District is currently zoned Central Business (B4; **Figure 3**) and consists of 23 individual contiguous parcel identification numbers (**Figure 2**).

Development and Historic Uses. The River Point District appears undeveloped in 1835 (**Figure 5**); however, the proximity of the peninsula to the Lake Michigan/Great Lakes shipping route facilitated initial development for lumber/saw mills by 1868 with expanded industrial (coal transloading, ship building), commercial, and residential development between 1868 and 1883. Historic records indicate the River Point District 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 (**Figure 6b**). Prior occupants/uses at the River Point District in the 19th and 20th Centuries are illustrated on **Figure 7** and **Figure 8**, respectively. In addition to railroad infrastructure (e.g., turn table, engine house, cinder pit), historic uses of the River Point District by previous owners/tenants have included ship building, lumberyards, warehouses, blacksmiths, smoke house, carpet weaving, an iron/metal scrap yard, multiple bulk petroleum storage/distribution yards, transloading yards for stone or coal, parking, grain elevator, woodworking.

Ownership. Assessor records suggest the River Point District 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 River Point District ceased in the 1980s and the property was formally decommissioned by the railroad in the 2000s; however, WCL maintained ownership of the River Point District until 2018.

2.3.2 Past Tenants and Property Uses – PIN 173001 and 173010

The first plat map of Manitowoc indicates the Property remained undeveloped in 1835 (**Figure 5**). As illustrated on the panoramic birds-eye view maps provided on **Figure 6a**, the Property was developed as the “Jones Saw Mill” between 1835 and 1868 which was renamed the “Hansen and Scove Saw Mill” by 1883; though notations on the Sanborn® Fire Insurance map published in 1883 indicates the saw mill was used infrequently.

The Property was platted as individual parcels by 1878, presumably for residential/commercial use as an extension of the downtown street grid and historic maps confirm at least five buildings were present at the Property by 1894 (**Figure 5**). The Property was redeveloped as a coal transloading yard in the late 19th Century (possibly as early as 1883) concurrent with the redevelopment of the River Point District for railroad use in the late 19th Century. The size/scale of the coal transloading operation is apparent on the panoramic photograph from 1898 adapted on **Figure 6b**. Sanborn® Fire Insurance Maps indicate the coal storage/transloading facility operated as the “Wisconsin Central RR Coal Dock” by the “C. Reiss Coal Co.” through at least 1945. The “Goodrich Transit Co.” used the bulkhead line of the Manitowoc River in 1919 for winter storage of three steam ships (i.e., S.S. Christopher Columbus, S.S. Florida, and the S.S. Arizona).

Historic orthophotographs indicate the western half of the Property was redeveloped for use as automotive parking by 1946. Although records are sparse, the parking area appears to have been leased to the “Manitowoc Ship Building Company”. Historic orthophotographs suggest the western portion of the Property was used for automotive parking through at least 1976.

Assessor records indicate the eastern half of the Property was leased to the “Laird Lumber Company” in December 1950, who subsequently constructed the four remaining buildings/sheds onsite plus two sheds that were razed by 1988 (**Figure 9**). Assessor records indicate the lease was transferred to the “Braun Building Company” by 1969 who has operated a millwork truss assembly facility onsite since then.

2.3.3 Past Tenants and Property Uses – PIN 173002

The approximately 0.01 acres on the far southeastern corner of the Property was leased to the “Wisconsin Fuel and Light Company” in 1986, which was later renamed “Wisconsin Public Service Commission” (**Figure 10**). The purpose of the lease has yet to be confirmed; however, no buildings or industrial uses are apparent on this portion of the Property by the Wisconsin Fuel and Light Company (or their subsequent entities).

April 7, 2023

SITE INVESTIGATION WORKPLAN

River Point District, Phase 3; Manitowoc, Wisconsin

2.3.4 Past Tenants and Property Uses – PIN 173000

The Property includes a small portion of a larger PIN (173000), which appears to have served as a rights of way to deliver bulk petroleum to the storage facilities located adjacent to and immediately south of the Property.

2.4 CURRENT OWNERSHIP AND SITE USE

A Phase I ESA was completed by Stantec (2019c) per the All Appropriate Inquiries rule detailed in 40 CFR §312.21 utilizing ASTM E1527-13 on behalf of the current owner (The Community Development Authority of the City of Manitowoc; CDA) on March 21, 2019. The current owner acquired the River Point District on April 12, 2019 for the purpose of blight elimination and subsequently received a Local Governmental Unit (LGU) Environmental Liability Exemption from Wisconsin Department of Natural Resources (WDNR) per ch. 292.11(9) of the Wisconsin Administrative Code (WAC) on March 18, 2019 under Bureau for Remediation and Redevelopment Tracking System (BRRTS) Case Number 07-36-583000. The current deed is provided in Attachment B.

The CDA maintained the lease to the Braun Building Company, who has continued to operate a wooden truss assembly operation in Building 6 while storing structural lumber in Building 3 and Building 3 (**Figure 9**). The Braun Building Company does not appear to be storing/using hazardous substances and/or petroleum as part of the truss assembly operation.

Building 1 is subleased to McMullen and Pitz, who uses the building for boat and equipment storage. McMullen and Pitz does not appear to be storing/using hazardous substances and/or petroleum in Building 1.

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

Stantec (2019c) Phase I ESA, River Point District

The Stantec (2019c) Phase I ESA performed for the greater River Point District identified the following recognized environmental conditions (RECs) associated with the Property:

- REC 1: Prior Railroad Use
- REC 2: Prior Industrial Use
- REC 3: Residual Impacts to Soil and Groundwater
- REC 4: Apparent Anthropogenic Fill
- REC 6: Residual Impacts to Soil and Groundwater from Nearby Properties

Stantec (2020) Phase II ESA, River Point District

Stantec completed a Phase II ESA at the River Point District using funds from a hazardous substance and a petroleum brownfield assessment grant awarded to the City by the United States Environmental Protection Agency (USEPA) in 2018 under Cooperative Agreement Number BF 00E02377-0. Results of the Stantec (2020) Phase II ESA investigation at the Property are summarized below.

- Soil. Select volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), and heavy metals were detected in soil at the Property at concentrations greater than applicable NR 720 residual contaminant levels (RCLs) and/or Background Threshold Values (BTVs). This investigation identified a sitewide heterogeneous granular black anthropogenic fill unit of varying quality. Ubiquitous soil impacts are largely attributable to the granular anthropogenic fill across the site, which is present in thicknesses of up to 5 feet (**Figure 11**).
- Groundwater. The potentiometric surface of shallow groundwater grades downward in a radial manner towards the Manitowoc River, which serves as a constant head boundary for groundwater. Select VOCs, SVOCs, and/or dissolved heavy metals were detected in groundwater at concentrations greater than applicable ch. NR 140 Wisconsin Administrative Code (NR 140) Preventive Action Limits (PAL) and/or Enforcement Standards (ES). Per- and polyfluoroalkyl substances (PFAS) were detected in groundwater at concentrations greater than proposed ES and PALs. Recent work has suggested the potential for VOC impacts to be migrating downgradient to the Property from the adjacent former bulk petroleum storage areas (**Figure 12**).

April 7, 2023

SITE INVESTIGATION WORKPLAN

River Point District, Phase 3; Manitowoc, Wisconsin

4.0 SUMMARY OF BRRTS CASES AT THE PROPERTY

02-36-585491 RIVER POINT DISTRICT – LGU (Open ERP)

This Environmental Repair Program (ERP) case was opened in 2020 after the completed Stantec (2020) Phase II ESA was received by WDNR documenting residual impacts from several constituents of concern (COCs) at the larger River Point District property. Past and future phases of redevelopment work for the River Point District (i.e., Phase 1 and Phase 2) are being investigated separately.

As summarized in Section 3, confirmed COCs for soil at the Property include select VOCs, SVOCs, and heavy metals. Confirmed COCs for groundwater at the Property include select VOCs, SVOCs, heavy metals, and PFAS. The scope of this Site Investigation Workplan is intended to position this open ERP case towards closure for the Property (Phase 3 of the River Point District development).

07-36-583000 RAILROAD PROPERTY (FORMER) (General Property)

This General Property listing confirms the CDA was granted a state LGU environmental liability exemption for the River Point District and was subsequently awarded two Wisconsin Assessment Monies (WAM) contractor services awards.

5.0 PHYSIOGRAPHICAL AND GEOLOGICAL SETTING

5.1 PROPERTY TOPOGRAPHY AND SURFACE WATER FLOW

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.

The surface elevation at the Property ranges from approximately 594 to 585 feet above mean sea level (ft amsl), and ground surface decreases northward and westward towards the Manitowoc River. Based on the topography, stormwater/surface water at the Property infiltrates the ground surface or is conveyed by overland flow to the Manitowoc River.

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 Stantec (2020), 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 and the elevation generally mirrors the ground surface elevation, with the elevation in groundwater decreasing from approximately 583 ft amsl on the east/southeast downward to approximately 581 ft amsl at the Manitowoc River.

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):

Open ERP Cases:

- 02-36-588366 RIVER NORTH; ~0.16 miles southeast of the Property
- 02-36-000219 WPSC MANITOWOC MGP (ALT SF); ~0.1 miles east of the Property
- 02-36-576809 MANITOWOC PLUMBING SUPPLY (FORMER); ~0.2 miles southeast of the Property

Closed ERP Cases:

- 03-36-001962 HOLMES OIL CORP; adjacent south/southeast of the Property
- 02-36-176478 W C L - TURNTABLE FORMER ROUNDHOUSE; ~0.12 miles southeast of the Property
- 02-36-000408 W C L - 200 N 10TH ST; ~0.17 miles southeast of the Property
- 03-36-001210 JAEGER BAKERY; ~0.11 miles southeast of the Property

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.

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

April 7, 2023

SITE INVESTIGATION WORKPLAN

River Point District, Phase 3; Manitowoc, Wisconsin

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 by the City at the Property beyond the initial Stantec (2020) Phase II ESA.

Remedial work is underway at the former manufactured gas plant located east of the Property. Activities are tracked under BRRS Case No. 02-36-000219 and are being overseen by the USEPA Region 5 superfund program. MGP residues were noted by others in soil borings installed near the Property within the upper fill unit (at 584 feet in elevation; 11 feet below ground surface) at the fill/sand interface (at 580 feet in elevation; 15 feet below ground surface) and in the lower sand unit (from 567 to 547 feet in elevation; 27 to 48 feet below ground surface). MGP residues were noted in the lower aquifer below Chicago Street at approximately 562 feet in elevation (33 feet below ground surface). No remedial actions are planned for the Property; however, remedial actions may occur to address sediment impacts in the Manitowoc River adjacent to and north of the Property.

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.

In April 2021 Stantec measured the hydraulic conductivity of the shallow unconfined aquifer of the south-adjointing Phase 1 Construction Area in by measuring the rate of water-level recovery in 10 wells installed at the Property in response to instantaneous water withdrawal and determined that the hydraulic conductivity ranged from 4.3×10^{-4} to 7.7×10^{-4} centimeters per second (cms) in this area, with an average of 5.2×10^{-4} cms. Similar values are anticipated at the Property.

7.0 SITE INVESTIGATION OVERVIEW

7.1 PROBLEM STATEMENT

The Stantec (2020) Phase II ESA identified subsurface impacts at concentrations greater than health-based soil and groundwater quality standards. Subsequent work at the adjoining redevelopment area suggests the potential for VOC impacts in groundwater to be migrating downgradient onto the Property.

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 quality using permanent wells to further define/confirm the extents of contamination.

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.

The current CSM builds on the environmental concerns and acknowledges the following attributes of the Site that are relevant to defining the nature and extent of impacts:

1. As described in the Stantec (2019c) Phase I ESA, the Property appears undeveloped in 1835; however, the proximity of the peninsula to the Lake Michigan/Great Lakes shipping route facilitated initial large scale industrial transloading development by 1868. By 1883, the River Point District was fully developed and occupied by several large industrial-like buildings and smaller commercial-like buildings. The River Point District 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. Railroad use of the Property ceased in the 1980s and the Property was decommissioned in the 2000s. The CDA acquired the Property in 2019 for the purpose of blight elimination and subsequently received a LGU Environmental Liability Exemption from WDNR.
2. MGP residues were noted by others in soil borings installed near the Property within the upper fill unit (at 584 feet in elevation; 11 feet below ground surface) at the fill/sand interface (at 580 feet in elevation; 15 feet below ground surface) and in the lower sand unit (from 567 to 547 feet in elevation; 27 to 48 feet below ground surface). MGP residues were noted in the lower aquifer below Chicago Street at approximately 562 feet in elevation (33 feet below ground surface). MGP residues or fill consistent with oxide box waste have not been encountered at the Property but have been encountered south of the Property.
3. Soil impacts from hazardous substances and/or petroleum appear largely attributable to the black granular fill unit, which is present in thicknesses of up to 5 feet. However, work to date has not confirmed the extent of the fill unit.

April 7, 2023

SITE INVESTIGATION WORKPLAN

River Point District, Phase 3; Manitowoc, Wisconsin

4. The elevation of groundwater decreases northward to the Manitowoc River. Groundwater impacts identified previously have not been delineated and recent work suggests VOCs may be migrating onto the Property from the south.
5. As illustrated on **Figure 13**, Phase III Redevelopment in the River Point District will include construction of (12) 1,900 square foot townhomes, 0.4 acres of greenspace, 1,100 linear feet of bi-modal trail, and 725 linear feet of new rights of way (roadway with new utility infrastructure). Design of the new rights of way is underway with construction beginning in 2024. Stantec understands construction of the townhomes is scheduled to begin in late 2024, immediately following construction of the needed infrastructure. The layout of the new buildings is illustrated on **Figure 14** and renderings provided on **Figures 15a-15d**.

As summarized in Section 3, confirmed COCs for soil at the Property include select VOCs, SVOCs, and heavy metals. Confirmed COCs for groundwater at the Property include select VOCs, SVOCs, heavy metals, and PFAS. Additional COCs included in this Site Investigation are PFAS in soil and cyanide in soil/groundwater if MGP residues/fill are encountered.

April 7, 2023

SITE INVESTIGATION WORKPLAN

River Point District, Phase 3; Manitowoc, Wisconsin

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 site-specific Health and Safety Plan (HASP) 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 further characterize the subsurface materials at the Property to facilitate 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/revisions (Stantec, 2016-2022).

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 summarized below and illustrated on **Figures 16a-16d**, Stantec proposes to complete a Site Investigation during four consecutive phases of work, with the scope of work for each phase adjusted as necessary based on the results of preceding work.

Phase	Investigation Objectives	Number of Soil Boring Locations	Sample Location Figure
1	1. Confirm soil quality at the northern Property boundary and the area south of existing monitoring wells. 2. Confirm impacts previously identified in fill have not leached to the subsurface. 3. Confirm previous SVOC detections in soil at SB-7.	11	Figure 16a
2	Confirm soil quality on the southeast portion of Property to evaluate potential for migration of offsite VOC impacts.	7	Figure 16b
3	Confirm if per and polyfluorinated alkyl substances in groundwater on NE portion of Property are associated with a surface release.	9	Figure 16c
4	Evaluate soil quality in additional potential source areas based on prior use(s) at the Property.	20	Figure 16d

Soil borings will be completed using direct-push dual-tube Geoprobe® drilling methods. Soil samples will be collected continuously from each borehole, and each borehole will extend downward to between five and 15 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. Actual locations may be adjusted based on accessibility and/or locations of underground utilities. Per section NR 141.25 WAC requirements, all borings 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 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. In addition, pertinent observations noted during installation of the soil borings will be documented on the soil boring logs.

April 7, 2023

SITE INVESTIGATION WORKPLAN

River Point District, Phase 3; Manitowoc, Wisconsin

Soil samples will be field screened for the presence of VOCs using a PID as described in SOP No. 1. The PID will be calibrated daily in the field in accordance with the manufacturer's specifications per SOP No. 09. 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 the table below. Proposed soil samples are targeted to confirm the magnitude of previous detections and delineate the horizontal and vertical extents of impacts to soil. Similar to work completed in the Phase 1 and Phase 2 Construction Areas, soil samples may be taken from native soil beneath the apparent shallow groundwater table to confirm upper granular fill materials have not leached metals and/or PAHs into lower native soils.

Constituents of Concern for Soil	Phase of Investigation				TOTAL
	1	2	3	4	
VOC	9	16		23	48
SVOCs	2	4			6
PAH	5			21	26
RCRA (8) Metals				21	21
Arsenic	9				9
Cyanide (total and amenable)		4		21	25
PFAS			18		18

Soil samples will be collected and preserved in accordance with SOP No. 02 and Table 3 of the QAPP. All VOC (SW846 Method 8260B), SVOC (SW846 Method 8270D), total and amenable cyanide (SW846 Method 9012B), PFAS (Method 527 Mod), and RCRA metal (SW846 Method 6010) 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 Eurofins Chicago [a laboratory within Eurofins Environment Testing North Central, LLC, a company within Eurofins Environment Testing Group of Companies], 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.

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. 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.

April 7, 2023

SITE INVESTIGATION WORKPLAN

River Point District, Phase 3; Manitowoc, Wisconsin

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.

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.

April 7, 2023

SITE INVESTIGATION WORKPLAN

River Point District, Phase 3; Manitowoc, Wisconsin

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 Stantec (2015) QAPP and associated addenda/revisions (Stantec, 2016-2022).

Groundwater quality data will be compared to ch. NR 140 WAC groundwater standards.

9.3 GROUNDWATER ASSESSMENT

As summarized below and illustrated on **Figures 16a-16d**, Stantec proposes to complete a Site Investigation during four consecutive phases of work, with the scope of work for each phase adjusted as necessary based on the results of preceding work. Groundwater will be evaluated during three phases of the Site Investigation.

Phase	Investigation Objectives	Number of Well Locations	Sample Location Figure
1	1. Confirm groundwater quality at the northern Property boundary and the area south of existing monitoring wells. 2. Confirm current per and polyfluorinated alkyl impacts to groundwater on the northeast portion of Target Property.	11 MW	Figure 16a
2	Confirm groundwater quality on the southeast portion of Property to evaluate potential for migration of offsite VOC impacts.	7 MW	Figure 16b
3	<i>Groundwater will not be evaluated during Phase 3 of the Site Investigation, unless impacts identified in Phase 1 or Phase 2 indicate groundwater assessment is warranted during Phase 3</i>		
4	Evaluate groundwater quality in additional potential source areas based on prior use(s) at the Property.	4 MWs 9 TW	Figure 16d

Notes: MW = ch. NR141 WAC groundwater monitoring wells; TW = one-inch diameter temporary monitoring wells constructed in general conformance with ch. NR 141 WAC.

The groundwater assessment will include sampling six existing groundwater monitoring wells at the Property (MW-1, MW-2 MW-3, MW-4, MW-5, and MW-6) and installing 22 new permanent groundwater monitoring wells in conformance with NR 141. The depths for the new wells will depend on the actual depth at which groundwater is encountered at the Property but are anticipated to have a total depth of approximately 13 ft bgs. The wells will be constructed using two-inch diameter polyvinyl chloride casing with 10-foot long, 0.010-inch slotted screens. Nine temporary 1-inch diameter PVC wells are planned for Phase 4 of the investigation to provide for further delineation of groundwater impacts identified during Task 1 and Task 2, if warranted.

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. Groundwater elevation data will also be used to document the gradient in potentiometric surface. The hydraulic conductivity of the shallow aquifer will be measured using the rising head method (SOP No. 19).

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.

April 7, 2023

SITE INVESTIGATION WORKPLAN

River Point District, Phase 3; Manitowoc, Wisconsin

Each well will be purged prior to sampling in accordance with SOP No. 04. 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.

After purging, groundwater samples will be collected from all monitoring wells, as summarized on the table below:

Constituents of Concern for Groundwater	Phase of Investigation				TOTAL
	1	2	3	4	
VOC	13	9		15	37
SVOCs	11	4		4	19
PFAS	10			6	16
Cyanide		4			4
Dissolved Arsenic	1				1
Dissolved RCRA (8) Metals				4	4

All groundwater samples will be collected and preserved per SOP No. 04. PFAS samples will be collected and preserved per SOP No. 29. All VOC (SW846 Method 8260B), SVOC (SW846 Method 8270D), cyanide (SW846 Method 9012B) and dissolved/field-filtered RCRA metal (SW846 Method 6010) 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 Eurofins Chicago, 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 Chicago.

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.

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. When appropriate, the groundwater monitoring wells will be decommissioned in accordance with SOP No. 04 and sealed in accordance with ch. NR 141.25 WAC.

April 7, 2023

SITE INVESTIGATION WORKPLAN

River Point District, Phase 3; Manitowoc, Wisconsin

9.4 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).

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.

9.5 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.

9.6 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.

April 7, 2023

SITE INVESTIGATION WORKPLAN

River Point District, Phase 3; Manitowoc, Wisconsin

10.0 SITE INVESTIGATION REPORT

Stantec will tabulate the data following completion of work proposed in Sections 8.0 and 9.0 of this Site Investigation Workplan to determine if identified impacts are fully delineated. Should additional sampling be warranted to complete the Site Investigation, additional soil and/or groundwater samples may be collected following methods 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 per the requirements of ch. NR 716 WAC. The report will include sufficient text, tables, figures, field data, and laboratory reports to properly document the investigation activities.

April 7, 2023

SITE INVESTIGATION WORKPLAN

River Point District, Phase 3; Manitowoc, Wisconsin

11.0 SCHEDULE

Site Investigation scoping as required by ch. NR 716.07 WAC has been completed as Section 6.0 of this Site Investigation Workplan. The soil and groundwater investigation activities outlined in Sections 8.0 and 9.0 are scheduled to be completed in Summer 2023-Spring 2024. The laboratory results 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 in subsequent phases of work. The is to submit a complete Site Investigation Report to WDNR for review by Spring 2024.

April 7, 2023

SITE INVESTIGATION WORKPLAN

River Point District, Phase 3; Manitowoc, Wisconsin

12.0 CERTIFICATION STATEMENT

"I, Stuart Gross, 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."



Stuart Gross, PG No. 1201

April 7, 2023
Date

April 7, 2023

SITE INVESTIGATION WORKPLAN

River Point District, Phase 3; Manitowoc, Wisconsin

13.0 REFERENCES

Stantec, 2015, Quality Assurance Project Plan (Revision 0), Implementation of U.S. EPA Assessment Grants for Petroleum and Hazardous Substance Brownfields, City of Manitowoc, WI, U.S. EPA Cooperative Agreement Nos. BF-BF-00E01529-0, August 19, 2015.

- Stantec, 2016a, June 3, 2016, Quality Assurance Project Plan Addendum 1.
- Stantec, 2016b, August 15, 2016. Quality Assurance Project Plan Update and Addendum 2.
- Stantec, 2016c, October 18, 2016. Quality Assurance Project Plan Update.
- Stantec, 2018a, Quality Assurance Project Plan Update and Addendum 3, June 17, 2018.
- Stantec, 2018b, QAPP 2018 Update - Current WDNR Laboratory Certificates, September 11, 2018.
- Stantec, 2018c, Quality Assurance Project Plan Addendum, November 18, 2018.
- Stantec, 2019a, Quality Assurance Project Plan Addendum, January 1, 2019.
- Stantec, 2019b, Quality Assurance Project Plan Addendum, January 7, 2019.
- Stantec, 2021, Quality Assurance Project Plan Update and Addendum, September 28, 2021.
- Stantec, 2022, Quality Assurance Project Plan Update and Addendum, November 29, 2022.

Stantec, 2018d, Hazardous Substances Eligibility Determination, June 11, 2018.

Stantec, 2019c, Phase I Environmental Site Assessment, April 9, 2019.

Stantec, 2020, Phase II Environmental Site Assessment, River Point District, Manitowoc, Wisconsin, March 23, 2020.

WGNHS, 2011, Wisconsin Geological and Natural History Survey, "Lexicon of Pleistocene Stratigraphic Units of Wisconsin, Technical Report 1", 2011.

April 7, 2023

SITE INVESTIGATION WORKPLAN

River Point District, Phase 3; Manitowoc, Wisconsin

14.0 LIMITATIONS

The conclusions in this Workplan are Stantec's professional opinion, as of the time of the Workplan, and concerning the scope described in the Workplan. The opinions in the document are based on conditions and information existing at the time the document was published and do not take into account any subsequent changes. The Workplan relates solely to the specific project for which Stantec was retained and the stated purpose for which the Workplan was prepared. The Workplan is not to be used or relied on for any variation or extension of the project, or for any other project or purpose, and any unauthorized use or reliance is at the recipient's own risk.

Stantec has assumed all information received from the City of Manitowoc and third parties in the preparation of the Workplan to be correct. While Stantec has exercised a customary level of judgment or due diligence in the use of such information, Stantec assumes no responsibility for the consequences of any error or omission contained therein.

This Workplan is intended solely for use by the City of Manitowoc in accordance with Stantec's contract with the City of Manitowoc. While the Workplan may be provided to applicable authorities having jurisdiction and others for whom the City of Manitowoc is responsible, Stantec does not warrant the services to any third party. The workplan may not be relied upon by any other party without the express written consent of Stantec, which may be withheld at Stantec's discretion.

FIGURES

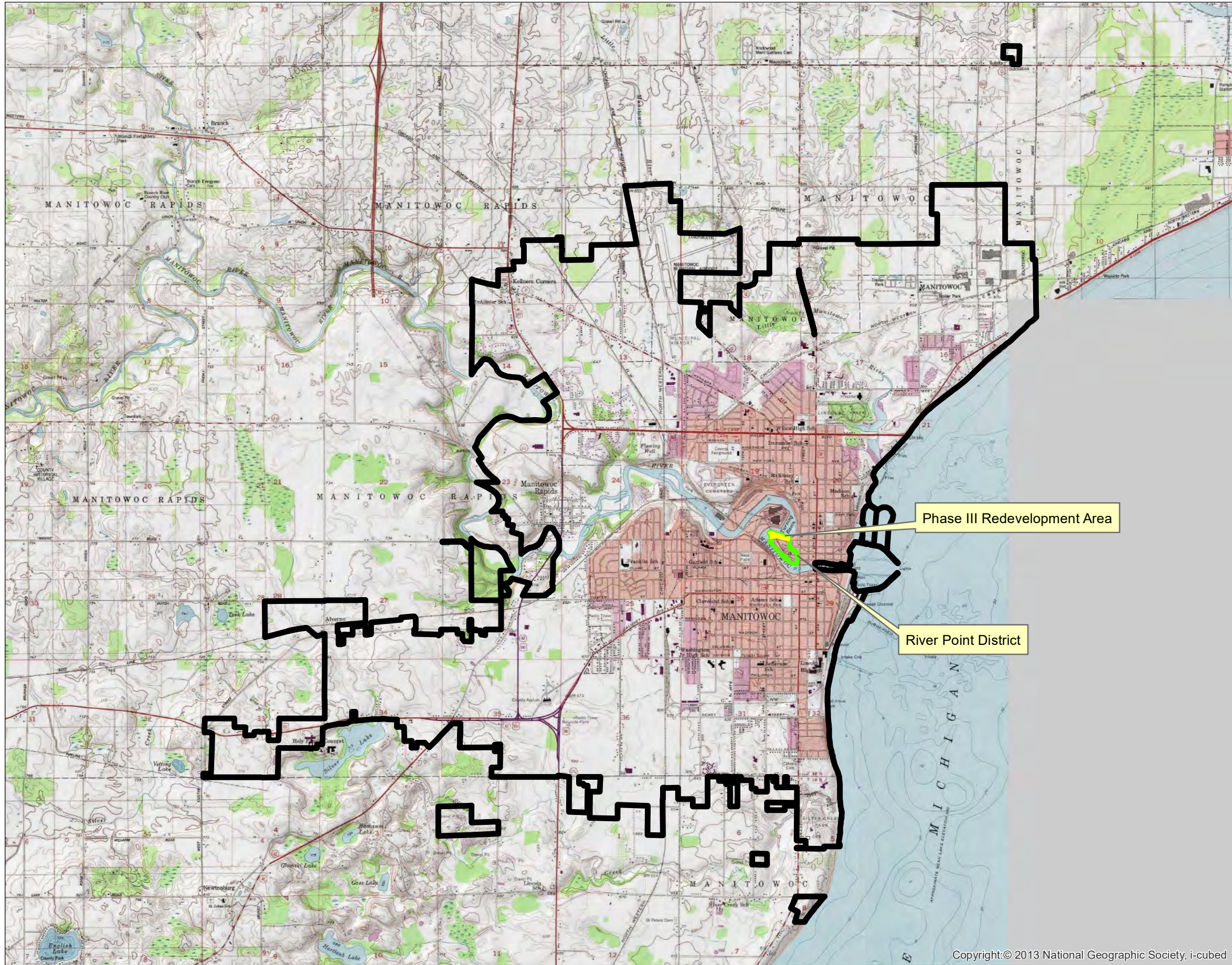
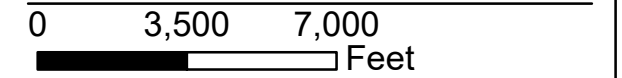





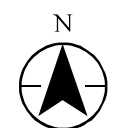
Figure No.
1
 Title
Project Area and Regional Topography

Client/Project
 Phase III Redevelopment Area
 1102 Chicago Street
 City of Manitowoc
 Prepared by HLB on 2/1/2023



Legend

-  City of Manitowoc
-  River Point District
-  Phase III Redevelopment Area



Phase III Redevelopment Area

River Point District

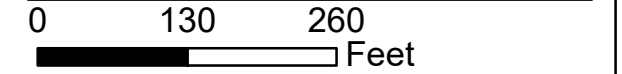
Notes
 1. Coordinate System: NAD 1983 HARN WISCRS Manitowoc County Feet
 2. Orthophotograph: Manitowoc County, 2020









Figure No.
2
 Title
**Project Area and
 Parcel Identification Numbers**

Client/Project
 Phase III Redevelopment Area
 1102 Chicago Street
 City of Manitowoc
 Prepared by HLB on 2/1/2023



Legend

-  Phase III Redevelopment Area
-  River Point District
-  Parcel Identification Numbers



Notes
 1. Coordinate System: NAD 1983 HARN WISCRS Manitowoc County Feet
 2. Orthophotograph: Manitowoc County, 2020



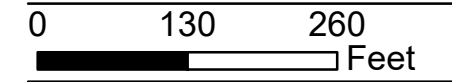
Figure No.

3

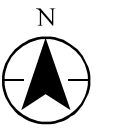
Title

Project Area and Zoning

Client/Project
Phase III Redevelopment Area
1102 Chicago Street
City of Manitowoc



Legend



- Parcels
- Site Investigation Project
- River Point District

Zoning

- B-1 Office - Residential
- B-2 Neighborhood
- B-3 General
- B-4 Central
- C-1 Commercial
- I-1 Light Industrial
- I-2 Heavy Industrial
- P-1 Conservancy
- R-1 Residential - Agricultural
- R-2 Single Family
- R-3 Single Family
- R-4 Single and Two Family
- R-5 Low Density Multiple Family
- R-6 Multiple Family
- R-7 Central

Notes

1. Coordinate System: NAD 1983 HARN WISCRS Manitowoc County Feet
2. Orthophotograph: Manitowoc County, 2020

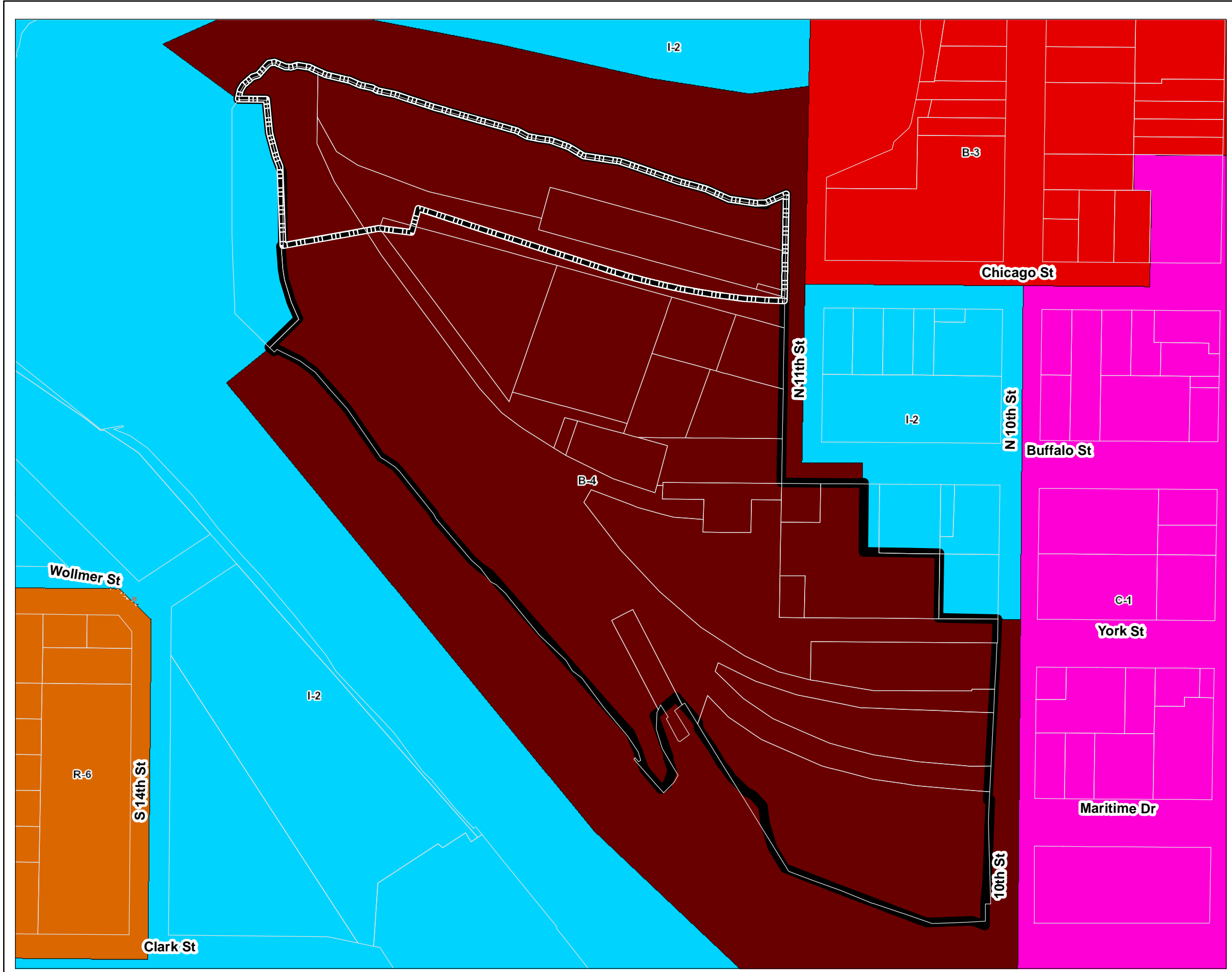



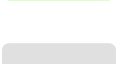





Figure No.
4
 Title
Redevelopment Areas at the River Point District
 Client/Project
 Phase III Redevelopment Area
 River Point District
 City of Manitowoc
 0 130 260 Feet
 Prepared by HLB on 3/30/2023
 193708490

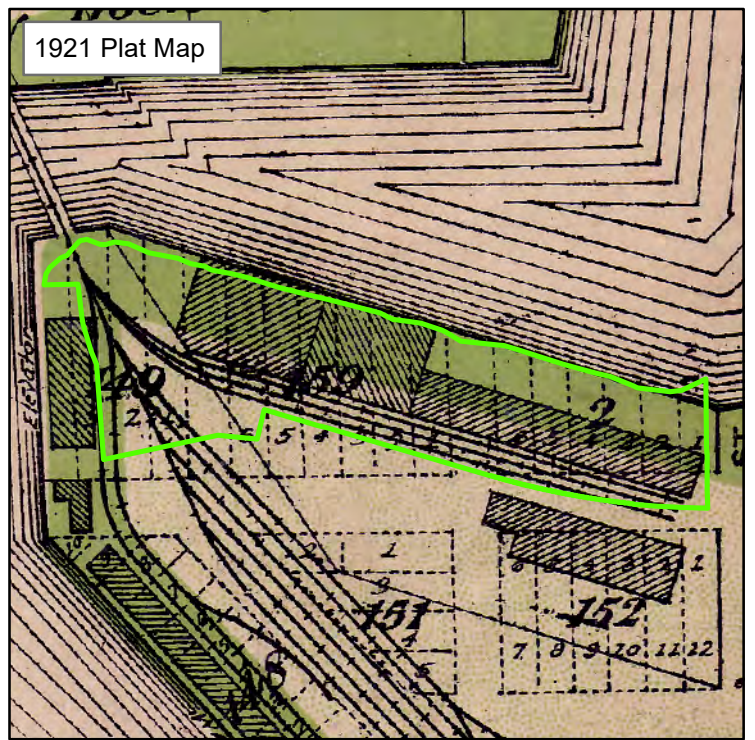
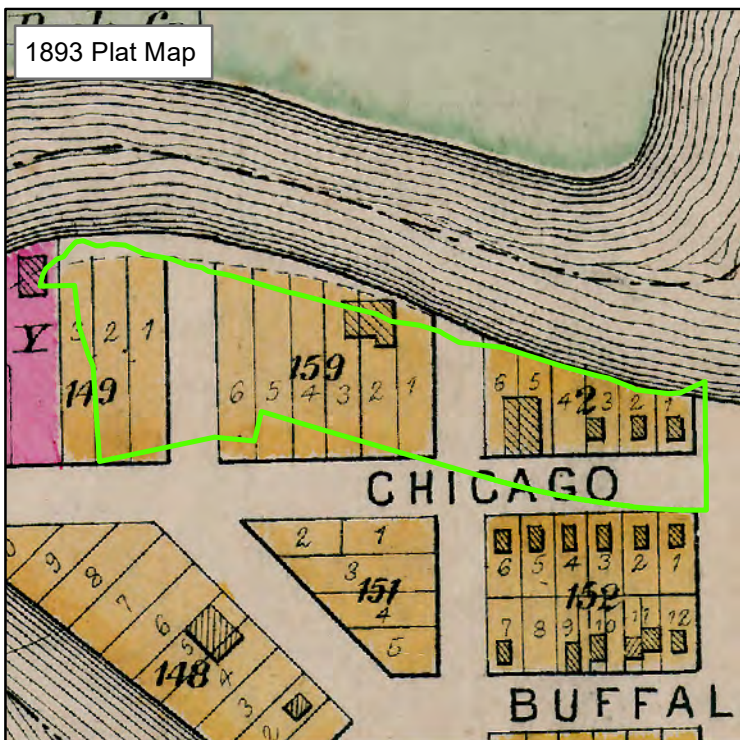
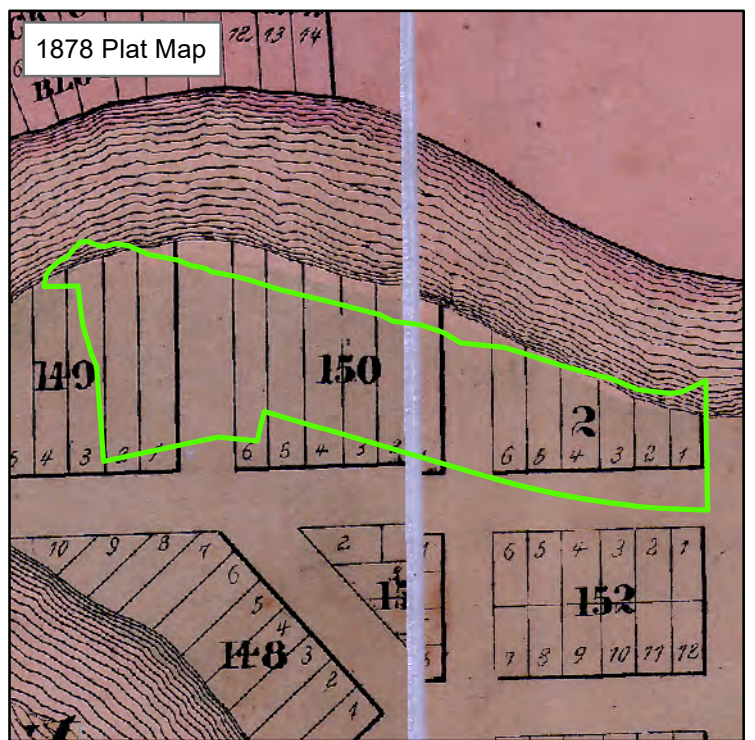
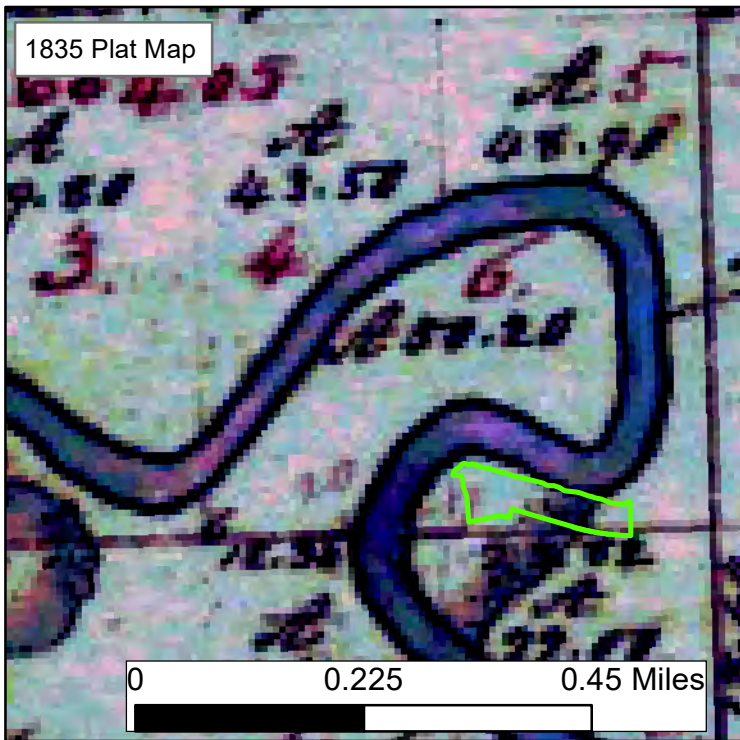
Legend

-  River Point District
-  Phase III Redevelopment Area
-  Phase II Redevelopment Area
-  Phase I Redevelopment Area
-  Former Turntable and Engine House



Notes
 1. Coordinate System: NAD 1983 HARN WISCRS Manitowoc County Feet
 2. Orthophotograph: Manitowoc County, 2020





State Location



County Location



Stantec
12075 Corporate Parkway
Suite 200
Mequon, WI 53092
(262) 643-9174

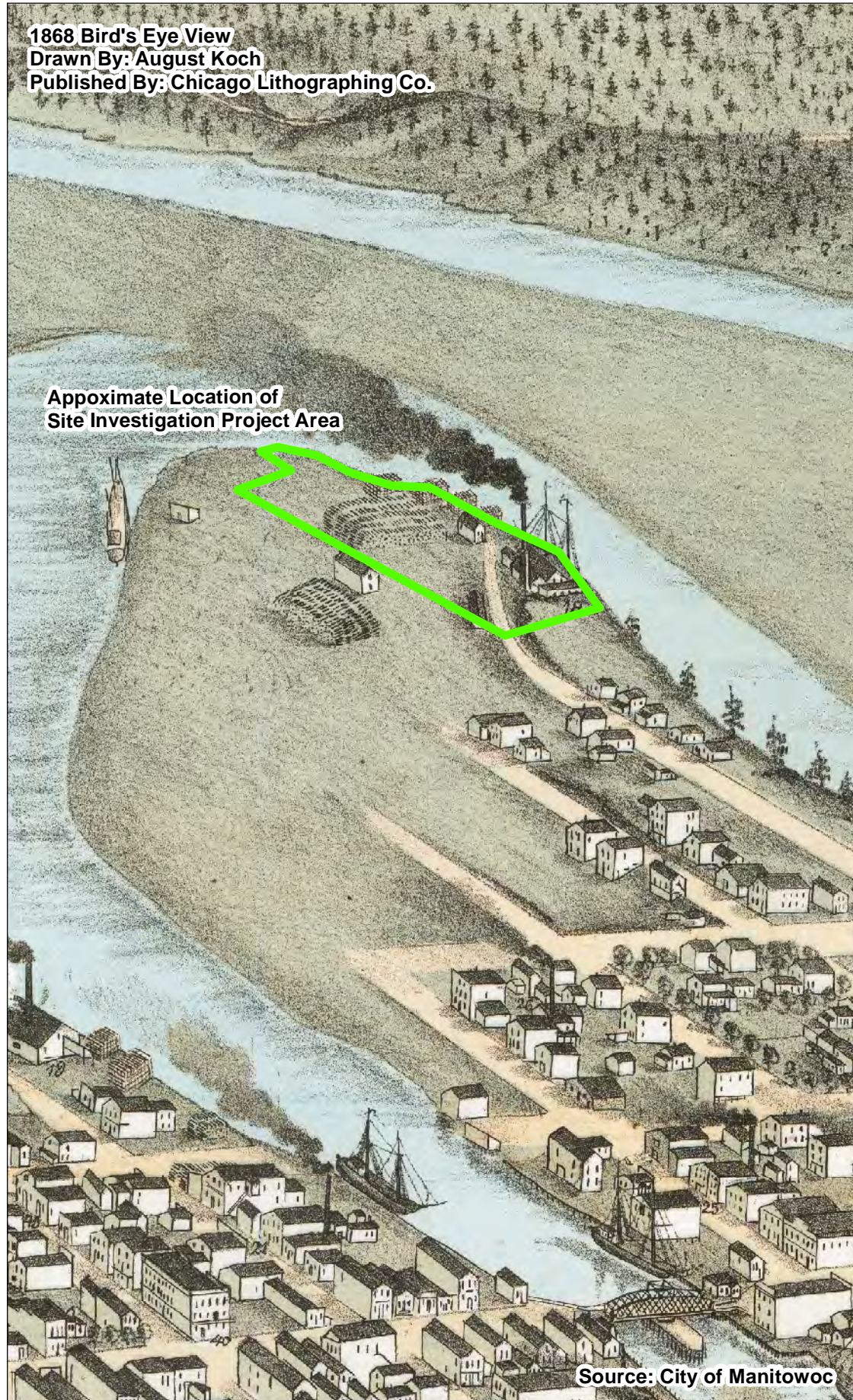
The information on this map has been compiled by Stantec staff from a variety of sources and is subject to change without notice. Stantec makes no representations or warranties, express or implied, as to accuracy, completeness, timeliness, or rights to the use of such information.

1102 Chicago Street
Manitowoc, Wisconsin

Figure 5
Historic Plat Maps

DWG: 03.mxd
DATE: February 2023
PROJ
NO.

1868 Bird's Eye View
Drawn By: August Koch
Published By: Chicago Lithographing Co.



Approximate Location of
Site Investigation Project Area

Source: City of Manitowoc

1886 Bird's Eye View
Published By: Beck and Pauli Litho



Approximate Location of
Site Investigation Project Area

Source: Wisconsin Historical Society

Figure No.
6a
Title
**Project Area and Bird's Eye Maps
from the 19th Century**
Client/Project
Site Investigation Project Area
1102 Chicago Street
City of Manitowoc
Prepared by HLB on 2/1/2023



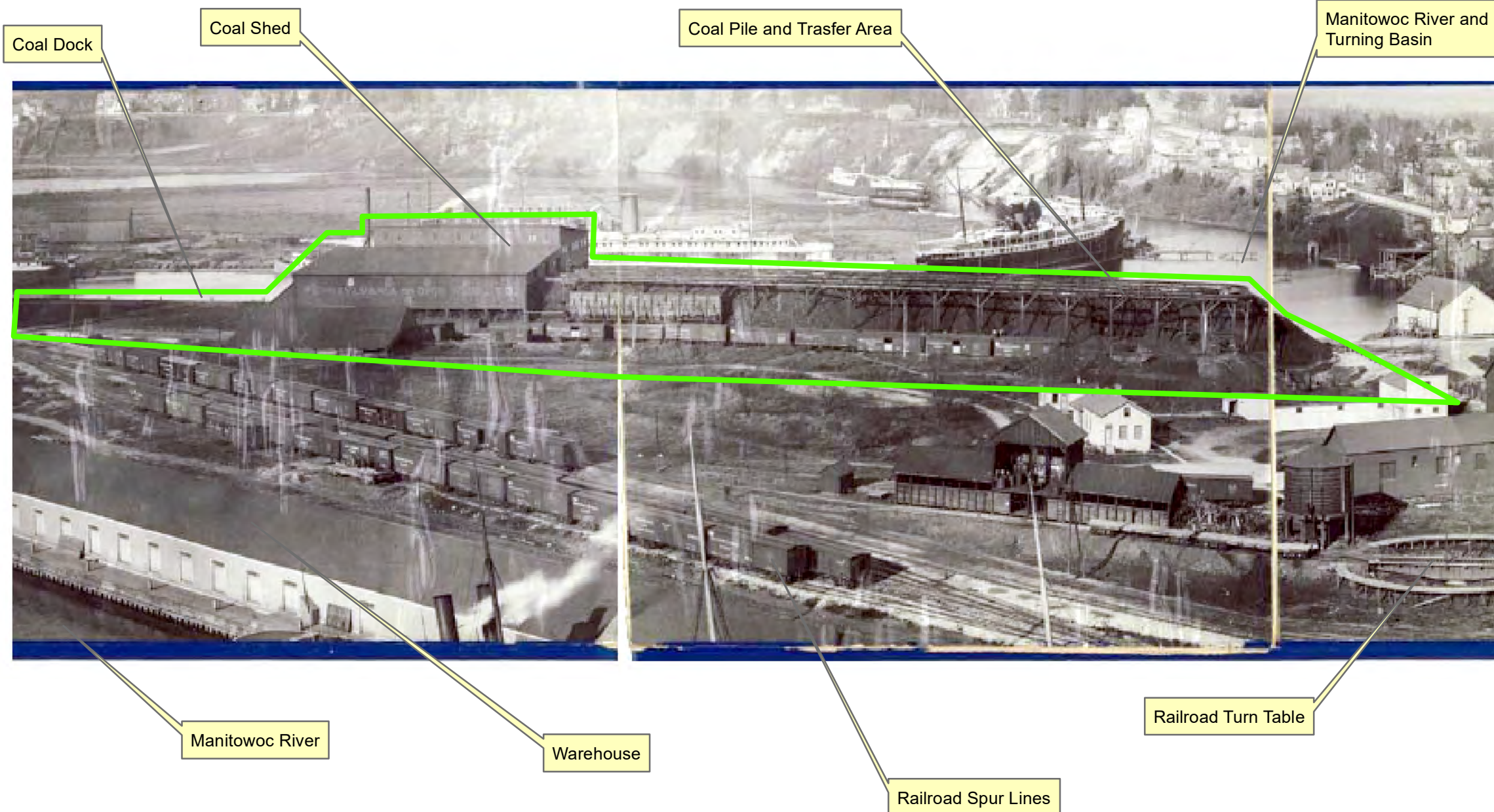
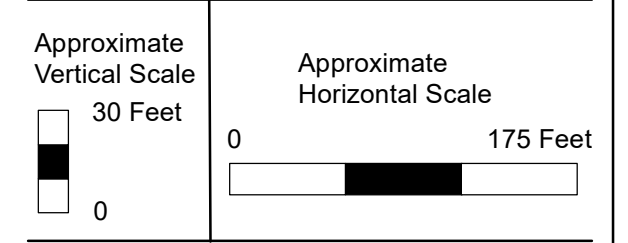


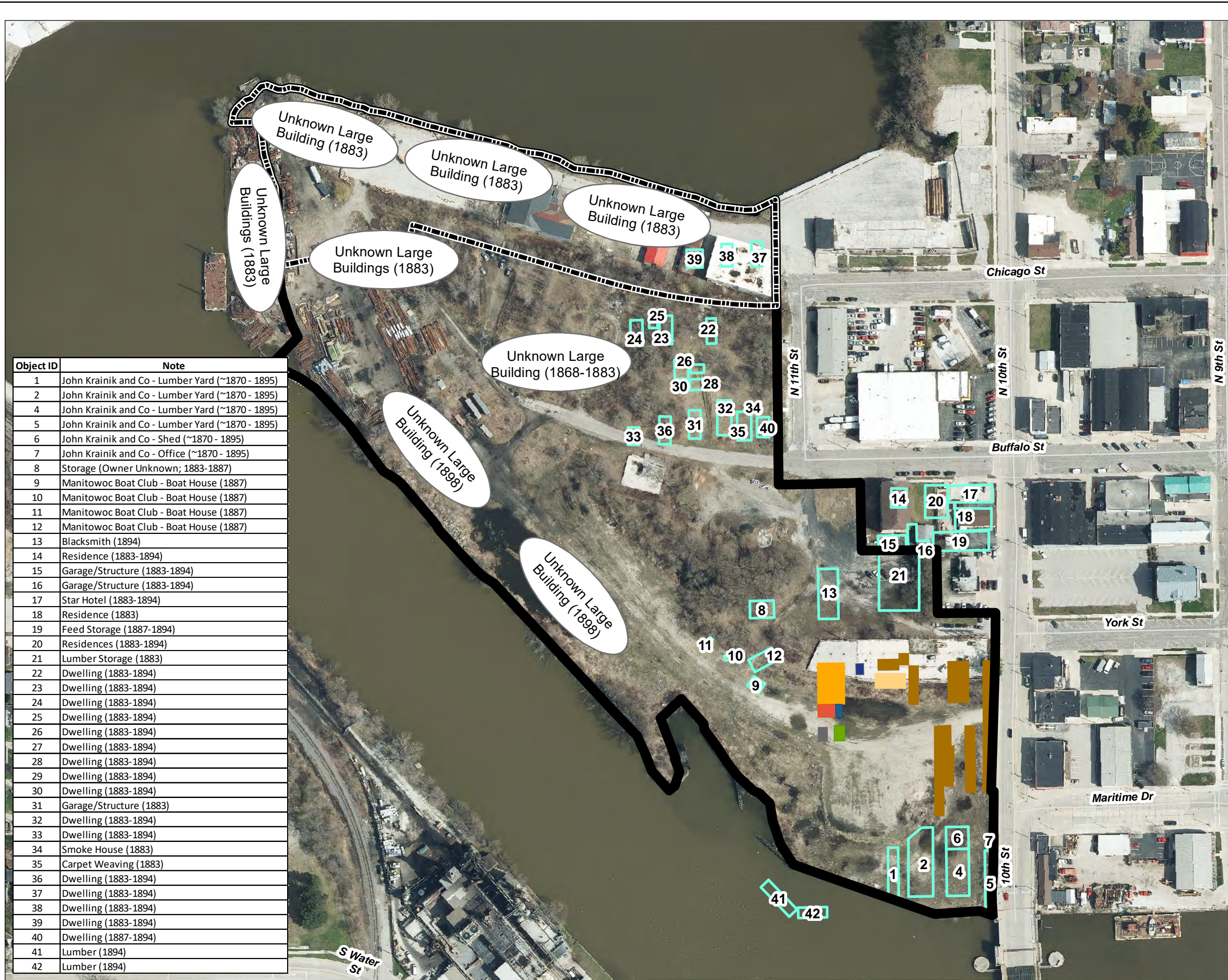
Figure No. **6b**
 Title
Project Area and 1898 Panoramic Photograph
 Client/Project
 Phase III Redevelopment Area
 1102 Chicago Street
 City of Manitowoc
 Prepared by HLB on 1/31/2023



Notes

1. Coordinate System: NAD 1983 HARN WISCRS Manitowoc County Feet
2. Orthophotograph: Manitowoc County Historical Society
3. Approximate horizontal and vertical scale for the Site Investigation Project Area based on measurements and notations on the Sanborn (R) Fire Insurance Map published in 1900. The approximate scales are not applicable outside of this area.





Object ID	Note
1	John Krainik and Co - Lumber Yard (~1870 - 1895)
2	John Krainik and Co - Lumber Yard (~1870 - 1895)
4	John Krainik and Co - Lumber Yard (~1870 - 1895)
5	John Krainik and Co - Lumber Yard (~1870 - 1895)
6	John Krainik and Co - Shed (~1870 - 1895)
7	John Krainik and Co - Office (~1870 - 1895)
8	Storage (Owner Unknown; 1883-1887)
9	Manitowoc Boat Club - Boat House (1887)
10	Manitowoc Boat Club - Boat House (1887)
11	Manitowoc Boat Club - Boat House (1887)
12	Manitowoc Boat Club - Boat House (1887)
13	Blacksmith (1894)
14	Residence (1883-1894)
15	Garage/Structure (1883-1894)
16	Garage/Structure (1883-1894)
17	Star Hotel (1883-1894)
18	Residence (1883)
19	Feed Storage (1887-1894)
20	Residences (1883-1894)
21	Lumber Storage (1883)
22	Dwelling (1883-1894)
23	Dwelling (1883-1894)
24	Dwelling (1883-1894)
25	Dwelling (1883-1894)
26	Dwelling (1883-1894)
27	Dwelling (1883-1894)
28	Dwelling (1883-1894)
29	Dwelling (1883-1894)
30	Dwelling (1883-1894)
31	Garage/Structure (1883)
32	Dwelling (1883-1894)
33	Dwelling (1883-1894)
34	Smoke House (1883)
35	Carpet Weaving (1883)
36	Dwelling (1883-1894)
37	Dwelling (1883-1894)
38	Dwelling (1883-1894)
39	Dwelling (1883-1894)
40	Dwelling (1887-1894)
41	Lumber (1894)
42	Lumber (1894)

Figure No. **7**
 Title
Project Area and Features from the 19th Century
 Client/Project
 Phase III Redevelopment Area
 1102 Chicago Street
 City of Manitowoc
 0 130 260 Feet
 Prepared by HLB on 2/11/2023

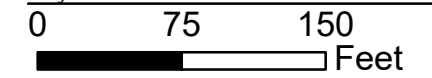
Legend
 Phase III Redevelopment Area
 River Point District
 Additional Site Features (see table)

Carl Zander Planing Mill and Factory (~1870s-1895)
 Drying House
 Engine Room
 Lumber
 Planing Mill
 Warehouse
 Shavings
 Shed
 Steam Boxes

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, 2020

Figure No. **8**
 Title
Project Area and Features from the 20th Century

Client/Project
 Phase III Redevelopment Area
 1102 Chicago Street
 City of Manitowoc Prepared by HLB on 2/1/2023



Legend

Phase III Redevelopment Area

Railroad Spurs



Prior Site Features (City Records)

- Oil House
- Oil Tank (AST)
- Pump House
- UST

Additional Site Features (WDNR Files)

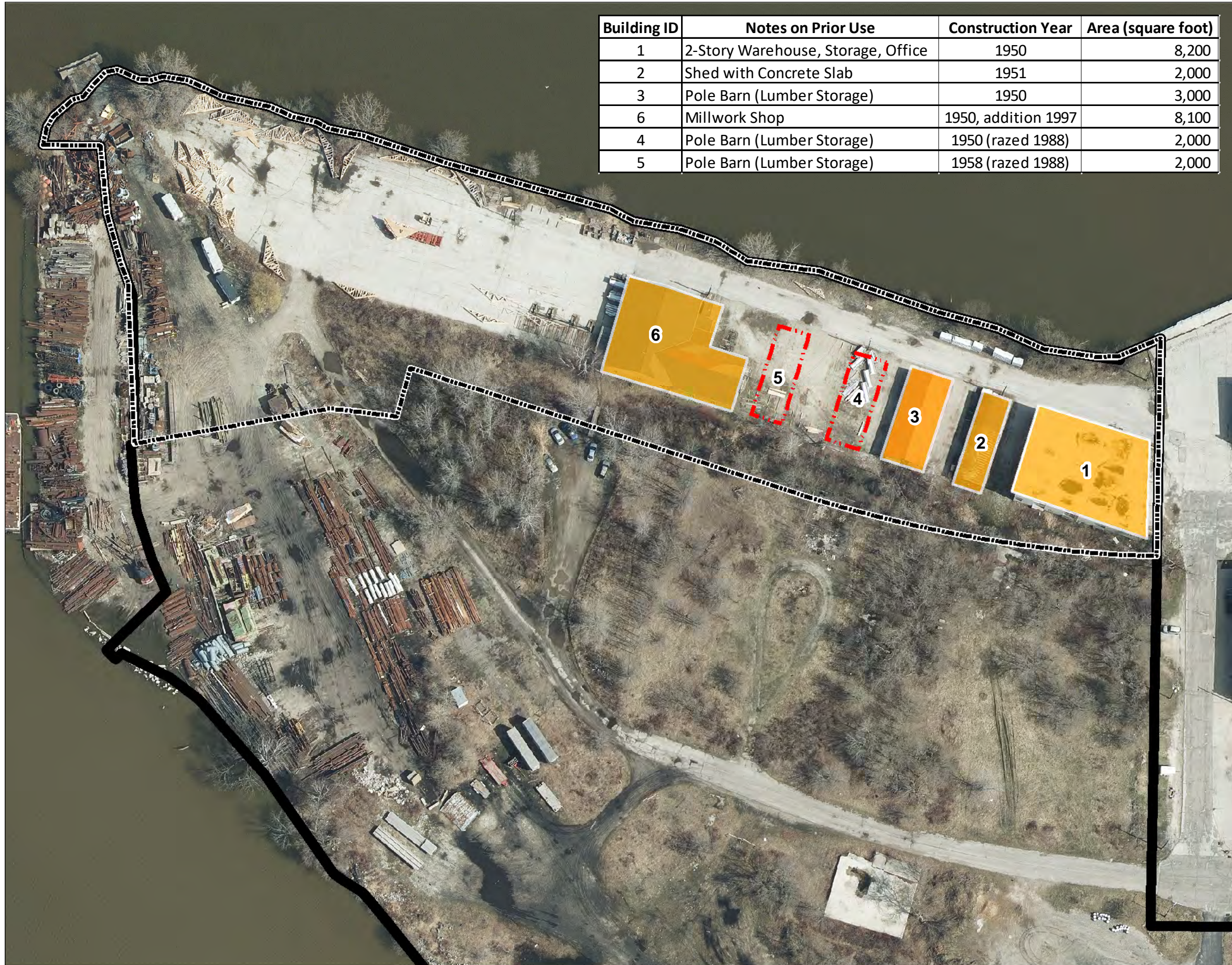
- Former UST
- Product Piping
- Pump House
- Soil Excavation
- Historic Site Features (see table for details)
- River Point District

Notes
 1. Coordinate System: NAD 1983 HARN WISCRS Manitowoc County Feet
 2. Orthophotograph: Manitowoc County, 2020



Key	Notes
4	Cinder Pit
5	Railroad Roundhouse
6	Railroad Turntable
7	Coal Shed
8	Coal Storage
9	Laird Lumber Company
10	Manitowoc Shipbuilding Company
11	Stephani-Strupp Oil Co. (Bulk Oil Station)
12	William H. Froehlich (Bulk Oil Station)
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.
21	Garage
24	Storage
25	Unknown
26	Residential Dwelling
27	Lake Park Oil, Inc. (Bulk Oil Station)
28	Unknown Bldg
29	Unk (possible AST?)
30	Unk (possible AST?)
31	Unk (possible AST?)
32	Shredded Metal
33	Shredded Metal
34	Wisconsin Public Service Commission
35	Warehouse





Building ID	Notes on Prior Use	Construction Year	Area (square foot)
1	2-Story Warehouse, Storage, Office	1950	8,200
2	Shed with Concrete Slab	1951	2,000
3	Pole Barn (Lumber Storage)	1950	3,000
6	Millwork Shop	1950, addition 1997	8,100
4	Pole Barn (Lumber Storage)	1950 (razed 1988)	2,000
5	Pole Barn (Lumber Storage)	1958 (razed 1988)	2,000

Figure No.

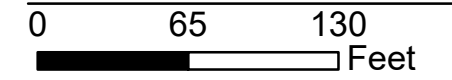
9

Title





Site Buildings

Client/Project
 Phase III Redevelopment Area
 1102 Chicago Street
 City of Manitowoc

Prepared by HLB on 1/31/2023



Legend

-  River Point District
-  Buildings Targeted for Demolition (see table for description)
-  Historic Structures Previously Razed
-  Phase III Redevelopment Area



Notes

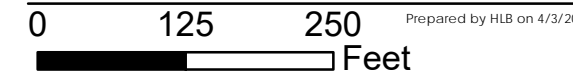
1. Coordinate System: NAD 1983 HARN WISCRS Manitowoc County Feet
2. Orthophotograph: Manitowoc County, 2020
3. Notes on prior use and construction details as described in assessor records contained in the Stantec (2019) Phase I ESA.









Figure No. **10**
 Title
 Most Recent Tenants (Late 20th Century)

Client/Project
 Phase III Redevelopment Area
 1102 Chicago Street
 City of Manitowoc



Legend

-  Prior Tenants
-  Phase III Redevelopment
-  River Point District



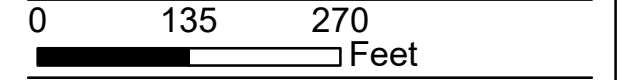
NOTE:
 1. Coordinate System: NAD 1983 StatePlane Wisconsin South FIPS 4803 Feet
 2. Orthophotograph: Manitowoc County, 2017







Figure No. **11**
 Title
Project Area and Thickness of Fill

Client/Project
 Phase III Redevelopment Area
 1102 Chicago Street
 City of Manitowoc
 Prepared by HLB on 2/1/2023

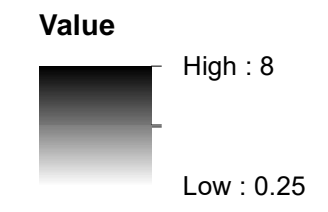


Legend



-  River Point District
-  Phase III Redevelopment Area

Fill Thickness (Feet)

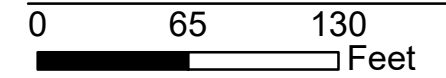


Notes
 1. Coordinate System: NAD 1983 HARN WISCRS Manitowoc County Feet
 2. Orthophotograph: Manitowoc County, 2020



Figure No.
12
 Title
Identified Groundwater Impacts

Client/Project
 Phase III Redevelopment Area
 1102 Chicago Street
 City of Manitowoc



Legend

- River Point District
- Phase III Redevelopment

Sample Locations (2018-2023)

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

Groundwater Impacts

- CN>PAL
- CVOCs>ES
- CVOCs>PAL
- PVOCs>ES
- PVOCs>PAL
- PFAS>ES



Notes
 1. Coordinate System: NAD 1983 HARN WISCRS Manitowoc County Feet
 2. Orthophotograph: Manitowoc County, 2020



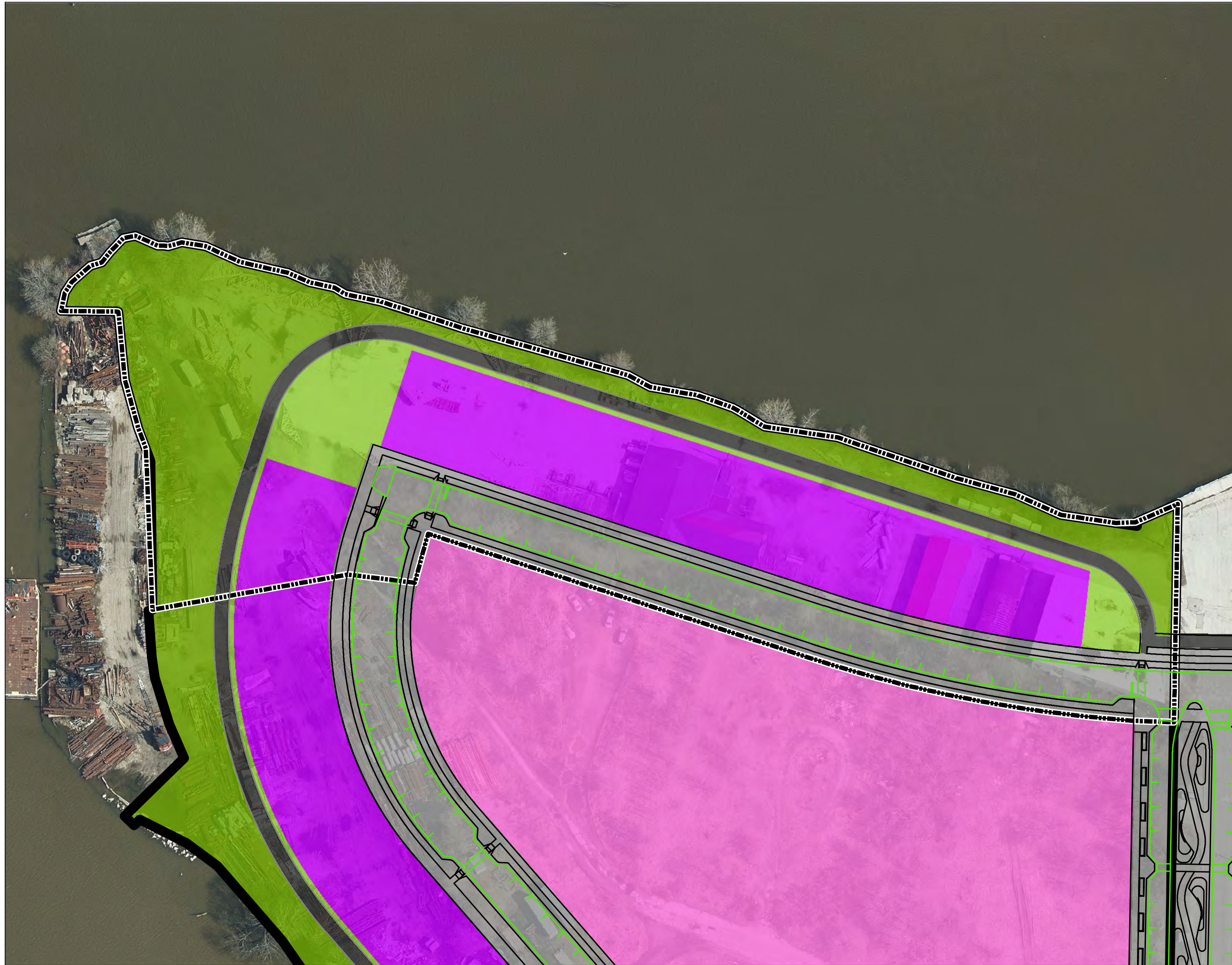
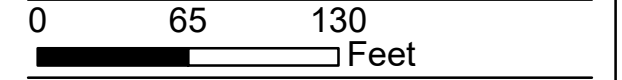


Figure No. **13**
 Title
Project Area and Proposed Redevelopment

Client/Project
 Phase III Redevelopment Area
 1102 Chicago Street
 City of Manitowoc
 Prepared by HLB on 1/31/2023



Legend

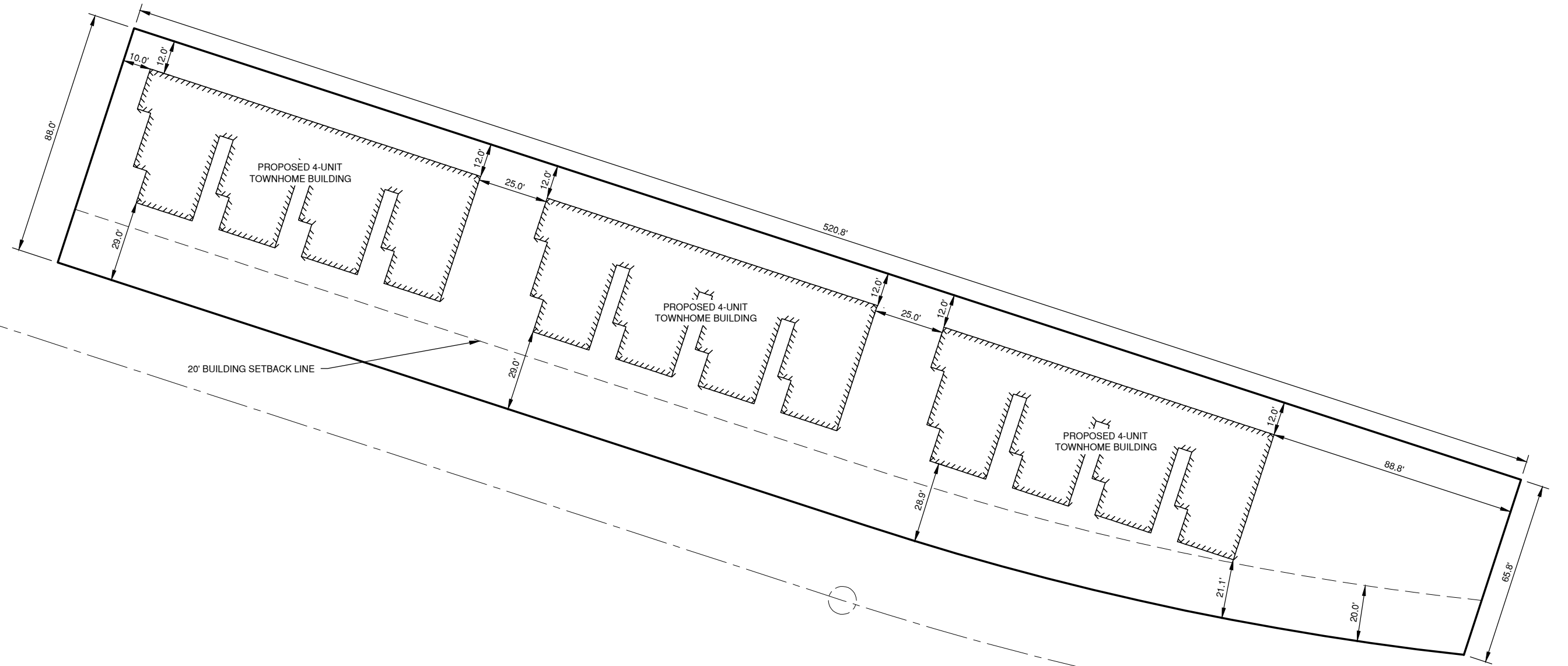


-  Phase III Redevelopment Area
-  River Point District
- Proposed Redevelopment**
-  Town Homes (2024-2025)
-  Roadway (2021-2024)
-  Landscaping (2024-2025)
-  Sidewalk (2024-2025)
-  River Walk / Park (2023-2024)
-  Proposed Commercial (2025-2026)

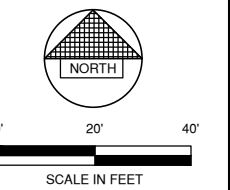
Notes
 1. Coordinate System: NAD 1983 HARN WISCRS Manitowoc County Feet
 2. Orthophotograph: Manitowoc County, 2020



Figure 14. Building Layout
 Source: Robert E. Lee and Associates, 2023



File: R:\300\6335\6335000\Manitowoc - Riverside Townhomes\Manitowoc Town Homes Layout.dwg
 Plot Date: 3/28/23 - 7:25:14am
 L:\03\11\17



NO.	DATE	APPROV.	REVISION	NO.	DATE	APPROV.	REVISION

DRAWN
 A/JB
 CHECKED

 DESIGNED
 A/JB

RIVER POINT TOWNHOMES FOR
 TYCORE BUILT, LLC
 CITY OF MANITOWOC
 MANITOWOC COUNTY, WISCONSIN

DATE
 11/20/22
 FILE
 RIVERSIDE TOWN HOMES LAYOUT
 JOB NO.
 6335-000


Robert E. Lee & Associates, Inc.
 ENGINEERING, SURVEYING, ENVIRONMENTAL SERVICES
 1250 CENTENNIAL CENTRE BOULEVARD HOBART, WI 54155
 920-662-9641 www.releeinc.com

SHEET NO.
1

Figure 15a - Building Renderings
 Source: ACS, 2023



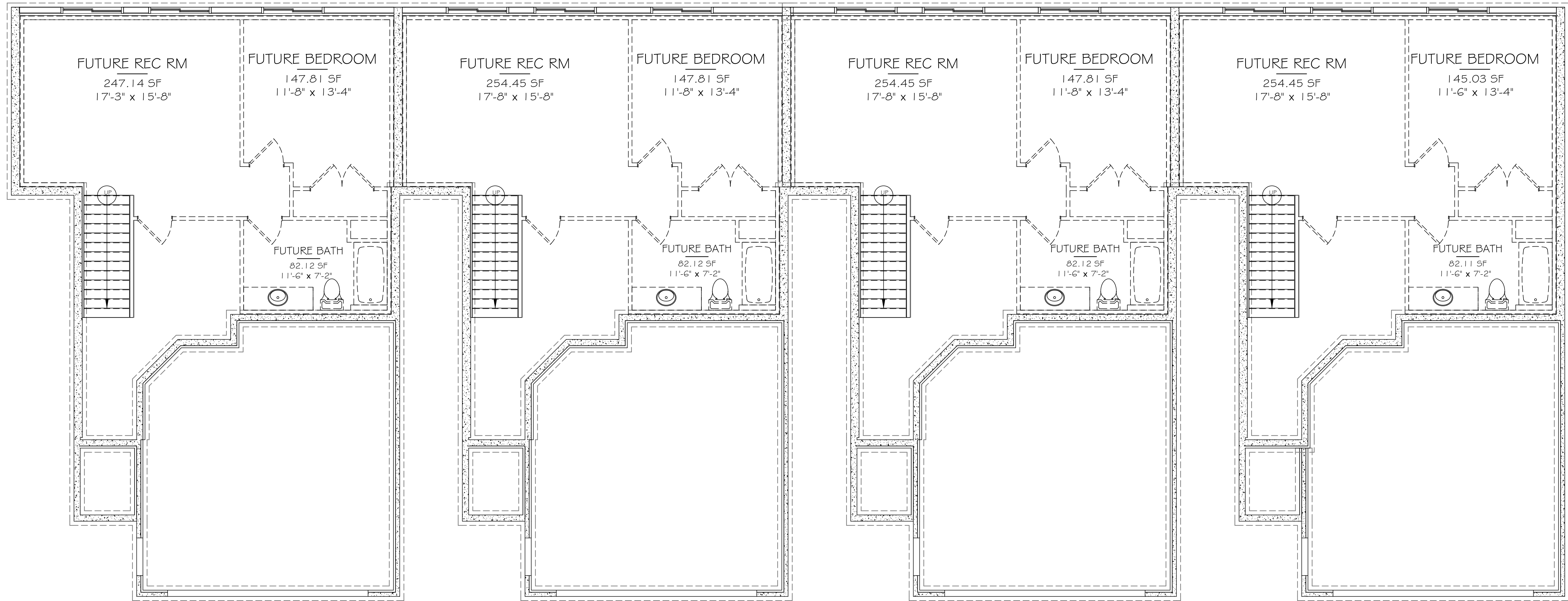
FRONT ELEVATION
 SCALE: 1/4" = 1'-0"

**A NEW COMMERCIAL / RESIDENTIAL BUILDING FOR,
 PROPOSED 4 UNIT BUILDING
 WISCONSIN**

DATE: DEC 30, 2022
 ARCH: K. SPERL
 D. BY: C. HORNLUNG
 JOB: PRELIM
 REV:

**A
 1.0**

Figure 15b - Building Renderings
 Source: ACS, 2023

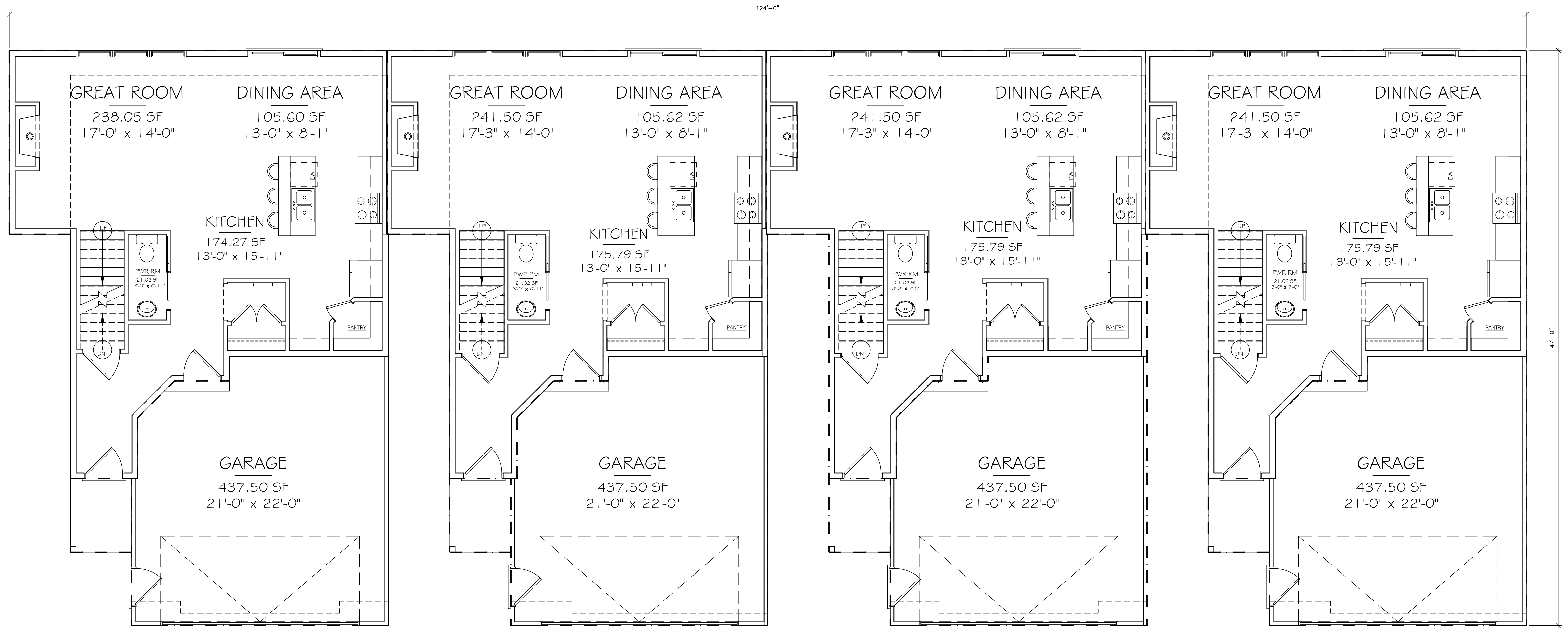


FOUNDATION PLAN
 SCALE: 1/4" = 1'-0"

A NEW COMMERCIAL / RESIDENTIAL BUILDING FOR,
PROPOSED 4 UNIT BUILDING
 WISCONSIN

DATE: DEC 30, 2022
 ARCH: K. SPERL
 D. BY: C. HORNLUNG
 JOB: PRELIM
 REV:

Figure 15c - Building Renderings
Source: ACS, 2023



UNIT 1
FIRST FLOOR 799 SQ.FT.
SECOND FLOOR 1079 SQ.FT.
TOTAL 1877 SQ.FT.
FUT. FIN BSMT 554 SQ.FT.

UNIT 2
FIRST FLOOR 800 SQ.FT.
SECOND FLOOR 1084 SQ.FT.
TOTAL 1884 SQ.FT.
FUT. FIN BSMT 559 SQ.FT.

UNIT 3
FIRST FLOOR 800 SQ.FT.
SECOND FLOOR 1081 SQ.FT.
TOTAL 1881 SQ.FT.
FUT. FIN BSMT 559 SQ.FT.

UNIT 4
FIRST FLOOR 801 SQ.FT.
SECOND FLOOR 1084 SQ.FT.
TOTAL 1885 SQ.FT.
FUT. FIN BSMT 556 SQ.FT.

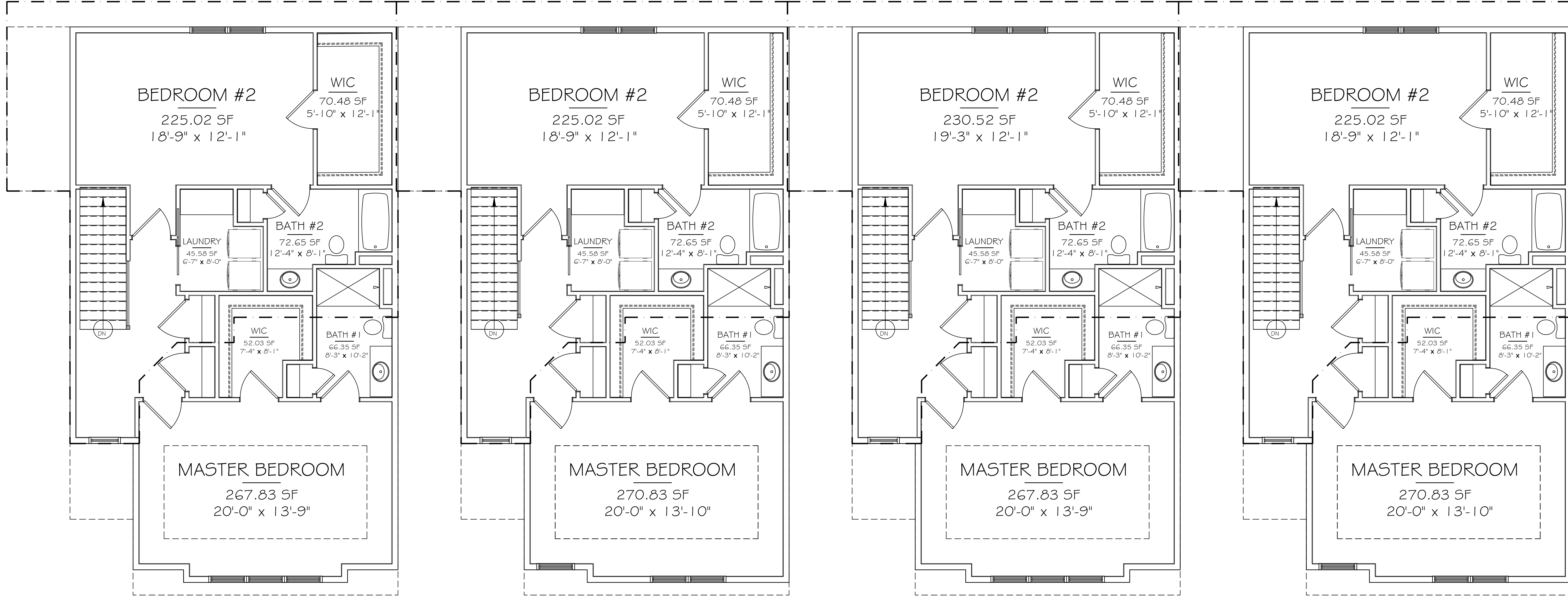
FIRST FLOOR PLAN
SCALE: 1/4" = 1'-0"

A NEW COMMERCIAL / RESIDENTIAL BUILDING FOR,
PROPOSED 4 UNIT BUILDING
WISCONSIN

DATE: DEC 30, 2022
ARCH: K. SPERL
D. BY: C. HORNING
JOB: PRELIM
REV:

A
3.0

Figure 15d - Building Renderings
 Source: ACS, 2023



SECOND FLOOR PLAN
 SCALE: 1/4" = 1'-0"

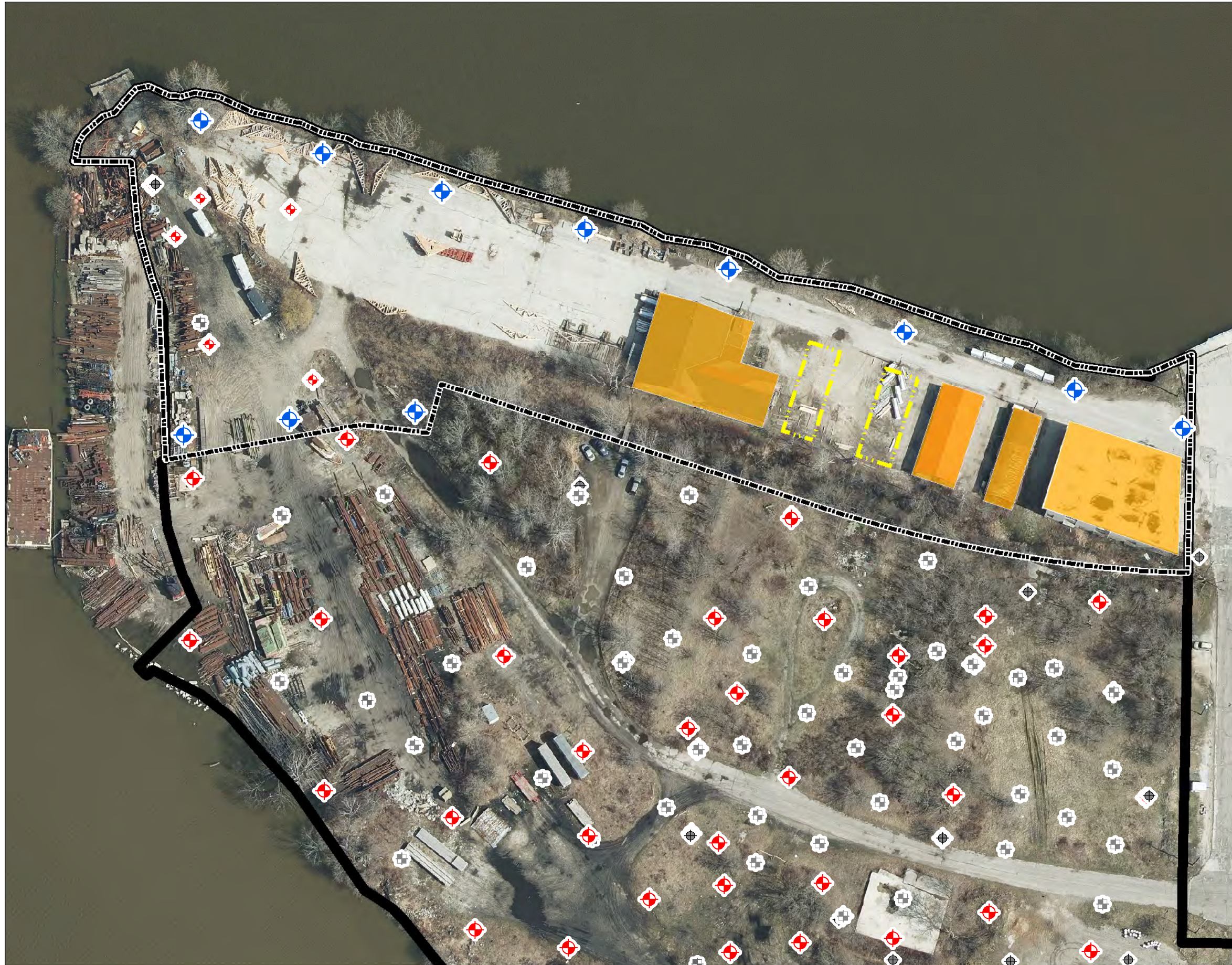
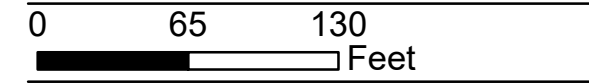







Figure No.
16a
 Title
**Proposed Sample Locations for
 Phase 1 of the Site Investigation**

Client/Project
 Phase III Redevelopment Area
 1102 Chicago Street
 City of Manitowoc






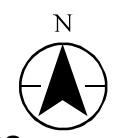
Legend

Proposed Sample Locations

-  Soil Boring / Monitoring Well (11)
-  River Point District
-  Buildings to be Demolished (4)
-  Previously Razed Structures (2)
-  Phase III Redevelopment

Previous Sample Locations

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



Notes
 1. Coordinate System: NAD 1983 HARN WISCRS Manitowoc County Feet
 2. Orthophotograph: Manitowoc County, 2020





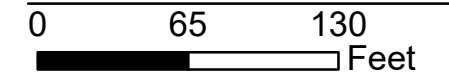
Figure No.

16b

Title

**Proposed Sample Locations for
Phase 2 of the Site Investigation**


Client/Project
Phase III Redevelopment Area
1102 Chicago Street
City of Manitowoc




Legend




Proposed Sample Locations

 Soil Boring / Monitoring Well (7)


 River Point District

 Buildings to be Demolished (4)

 Previously Razed Structures (2)

 Phase III Redevelopment

Previous Sample Locations

 Soil Boring / Monitoring Well

 Soil Boring

 Soil Boring/Temp Well

Notes

1. Coordinate System: NAD 1983 HARN WISCRS Manitowoc County Feet
2. Orthophotograph: Manitowoc County, 2020



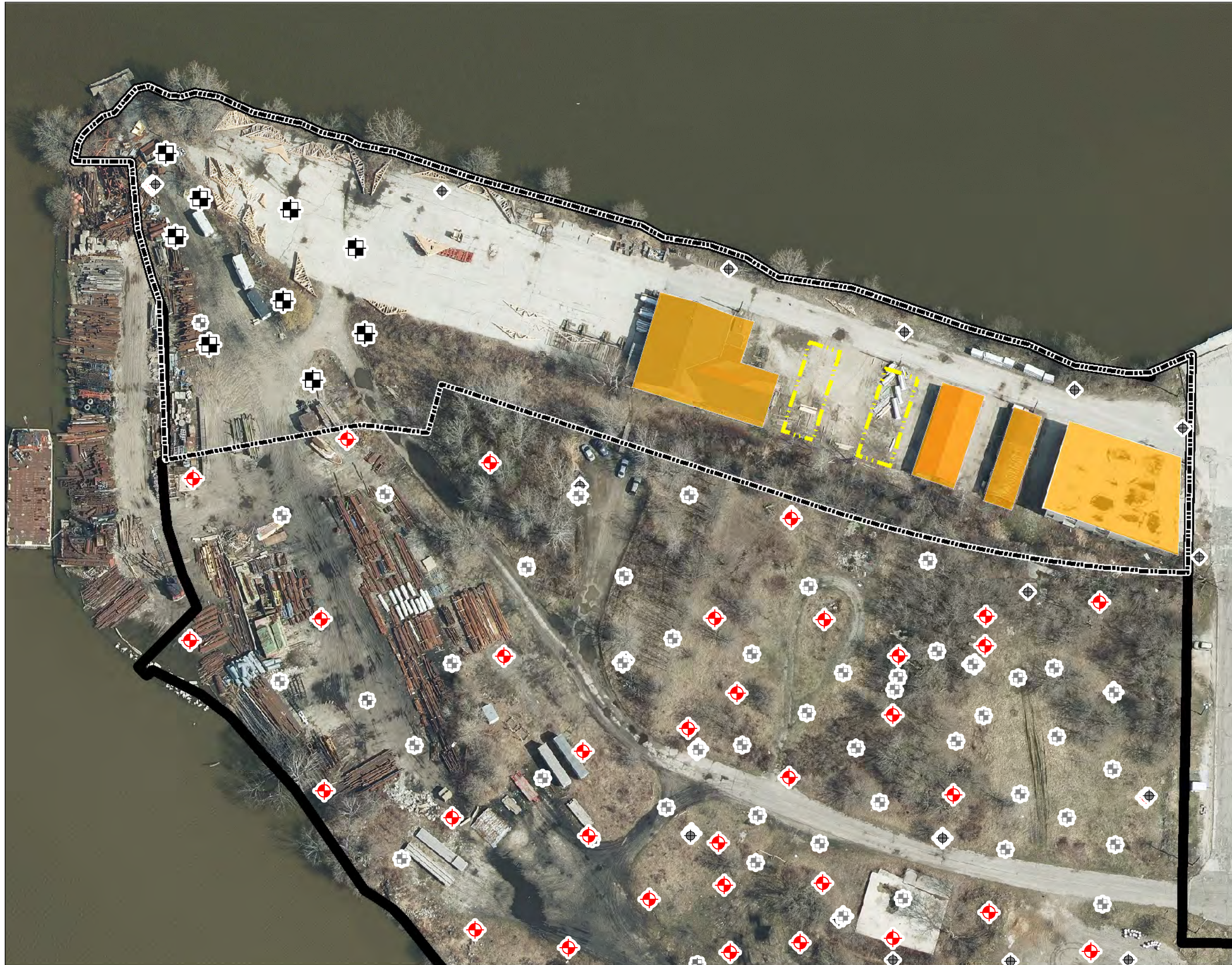
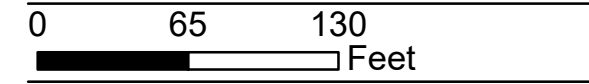







Figure No.
16c
 Title
**Proposed Sample Locations for
 Phase 3 of the Site Investigation**

Client/Project
 Phase III Redevelopment Area
 1102 Chicago Street
 City of Manitowoc






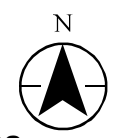
Legend

Proposed Sample Locations

-  Soil Boring (9)
-  River Point District
-  Buildings to be Demolished (4)
-  Previously Razed Structures (2)
-  Phase III Redevelopment

Previous Sample Locations

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

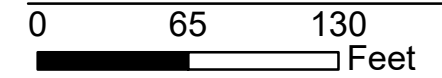


Notes
 1. Coordinate System: NAD 1983 HARN WISCRS Manitowoc County Feet
 2. Orthophotograph: Manitowoc County, 2020



Figure No.
16d
 Title
**Proposed Sample Locations for
 Phase 4 of the Site Investigation**




Client/Project
 Phase III Redevelopment Area
 1102 Chicago Street
 City of Manitowoc







Legend






Proposed Sample Locations

-  Soil Boring / Monitoring Well (4)
-  Soil Boring (7)
-  Soil Boring / Temp Well (9)

-  River Point District
-  Buildings to be Demolished (4)
-  Previously Razed Structures (2)
-  Phase III Redevelopment

Previous Sample Locations

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



Notes
 1. Coordinate System: NAD 1983 HARN WISCRS Manitowoc County Feet
 2. Orthophotograph: Manitowoc County, 2020



APPENDIX A

Site-Specific Health and Safety Plan

- 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 Field Level Risk Assessment (RMS2).

Date: April 7, 2023	This form expires 1 year from the date of creation		
Project / proposal number: 193708490	Project name: Site Investigation in Redevelopment Area 3 of the River Point District		
Location: 1102 Chicago Ave; Manitowoc, WI			
Project description (Companies involved, what, where, when)			
Stantec to contract Horizon Construction and Exploration to install up to 47 soil borings, 22 of which will be converted to permanent groundwater monitoring wells in conformance with ch. NR 141 WAC. Soil borings to be advanced to a depth of 10 feet while monitoring wells will be 15 feet in depth. Soil from all borings will be logged in two foot intervals, or for every change in lithology. Each interval will be screened with a PID and sampled depending on the highest reading, and shipped to Eurofins Chicago. Constituents of concern at the Property include: volatile organic compounds (VOCs), semi volatile organic compounds (SVOC), heavy metals, cyanide, and per-and polyfluorinated alkyl substances (PFAS).			
Does this project involve fieldwork?	Yes		
Is this project remote work?	No		
What method of communication will be used?	<input checked="" type="checkbox"/> Cell Phone	<input type="checkbox"/> Satellite Phone	
	<input type="checkbox"/> Spot Messenger	<input type="checkbox"/> Other:	
Is there a call in – call out system?	No		
Are there any unique security concerns?	No		
Will workers on this project be crossing into different states/provinces or countries?	No		
Is Stantec the Constructor/Prime Contractor?	Yes		
Is Stantec hiring subcontractors?	Yes		
Will Stantec staff or subcontractors be working alone?	No		
Client/Constructor HSSE training required?	No		
Is there a Client/Constructor HSSE program that the project is required to follow?	No		
Will this project require international travel outside of North America?	No		
List the major tasks associated with this project.			
1. Mobilize to and from the Project Area			
2. Coordinate with Horizon for drilling of soil borings and installation of permanent monitoring wells. Horizon to also abandon soil borings/temporary wells with bentonite.			
3. Screen and sample soil and groundwater, ship samples to Eurofins TestAmerica			
4. Click here to enter text			
5. Click here to enter text			
6. Click here to enter text			
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.
For each critical risk identified, review the flatsheet using the In Case of Crisis app or a printed copy.




 Driving	 Working at Heights	 Traffic Control	 Wildlife, Insects, and Vegetation	 Mobile and Heavy Equipment	 Environments with Water or Ice
Yes	No	No	No	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 hazards including activities, time of day, time of year and project stages. If an SWP for a task below is not available, please perform a Quantified Hazard Assessment (RMS7) for the task and include below.



Please identify SWPs below that apply to your project:

- | | | |
|---|---|---|
| <input checked="" type="checkbox"/> SWP 107 – First Aid | <input type="checkbox"/> SWP 111 – Medical Surveillance | <input checked="" type="checkbox"/> SWP 105 – PPE |
| <input type="checkbox"/> SWP 103 – WHMIS (CA) | <input checked="" type="checkbox"/> SWP 104 – HAZCOM (US) | <input type="checkbox"/> SWP 118 – Working Alone In the Field |

	Hazards	Applicable SWPs, forms, SOPs, RMS7s	Specialized training beyond the SWPs	Specific Site Controls
Thermal				
	<input checked="" type="checkbox"/> Cold stress <input checked="" type="checkbox"/> Cold surfaces <input type="checkbox"/> Heat stress <input type="checkbox"/> Hot surfaces <input type="checkbox"/> Hot work <input checked="" type="checkbox"/> Weather conditions <input type="checkbox"/> Other:	<input checked="" type="checkbox"/> SWP 514 - Working on or Near Ice <input checked="" type="checkbox"/> SWP 114 - Working in Cold Environments <input type="checkbox"/> SWP 113 - Heat Stress <input type="checkbox"/> SWP 414, 414a – Hot Work Enter additional SWPs, SOPs	Enter specialized training	Wear appropriate gear/clothing according for expected weather forecast. Warm up in truck as needed. Bring appropriate hydration fluids as water is not available onsite.
Chemical				
	<input type="checkbox"/> Oxygen deficient atmosphere <input type="checkbox"/> H ₂ S (Hydrogen sulfide) <input type="checkbox"/> Asbestos <input type="checkbox"/> Silica <input type="checkbox"/> Acids <input type="checkbox"/> Caustics <input checked="" type="checkbox"/> Petroleum hydrocarbons <input checked="" type="checkbox"/> Solvents/Flammables <input checked="" type="checkbox"/> Volatile organic compounds <input checked="" type="checkbox"/> Heavy metals <input checked="" type="checkbox"/> Benzene <input checked="" type="checkbox"/> Lead <input checked="" type="checkbox"/> Arsenic <input checked="" type="checkbox"/> Polycyclic Aromatic Hydrocarbons (PAH) <input type="checkbox"/> PCBs <input type="checkbox"/> Pesticides	<input type="checkbox"/> SWP 409 - Respiratory Protection <input type="checkbox"/> SWP 411, 411a, 411b, 411c – Confined Space Entry <input type="checkbox"/> SWP 304 - Asbestos Safety <input type="checkbox"/> SWP 309 - Silica Awareness <input checked="" type="checkbox"/> SWP 312 - Fueling Gasoline Engines <input checked="" type="checkbox"/> SWP 305 - Benzene Safety <input checked="" type="checkbox"/> SWP 314 – Working Around Hazardous Waste and Wastewater <input checked="" type="checkbox"/> SWP 315 - Arsenic Safety <input type="checkbox"/> SWP 319 - Hydrogen Fluoride / Hydrofluoric Acid Safety <input type="checkbox"/> SWP 519 - Post-Disaster Building Entry	40hr HAZWOPER	Subsurface impacts from historic fill are likely. Potential impacts from the UST are possible. Employees breathing space will be monitored with a PID. If readings above background occur, stop work, move upwind and contact the project manager to evaluate appropriate action. Stantec employees should make an effort to remain upwind of the excavation. Also, no smoking or eating in the work area. Wear nitrile gloves and change often. Also wear

	<input type="checkbox"/> Herbicides <input type="checkbox"/> Hydrogen fluoride / Hydrofluoric acid <input type="checkbox"/> Other:	Enter additional SWPs, SOPs		safety glasses to protect eyes.		
Biological						
	<input checked="" type="checkbox"/> Wildlife <input type="checkbox"/> Domestic animals (dogs, cattle) <input type="checkbox"/> Bees / wasps / hornets <input type="checkbox"/> Ticks <input type="checkbox"/> Black flies <input type="checkbox"/> Other stinging or biting insects <input checked="" type="checkbox"/> Pedestrians / onlookers <input type="checkbox"/> Protesters <input type="checkbox"/> Poison ivy <input type="checkbox"/> Poison oak <input type="checkbox"/> Giant hogweed <input type="checkbox"/> Wild parsnip <input type="checkbox"/> Sewage <input type="checkbox"/> Wastewater <input type="checkbox"/> Domestic waste <input type="checkbox"/> Medical waste <input type="checkbox"/> Bloodborne pathogens <input type="checkbox"/> Bacterial cultures <input type="checkbox"/> Other: <input type="checkbox"/> Other: <input type="checkbox"/> Other: <input type="checkbox"/> Other:	<input type="checkbox"/> SWP 409 - Respiratory Protection <input checked="" type="checkbox"/> SWP 314 - Working Around Hazardous Waste and Waste Water <input type="checkbox"/> SWP 108 - Bloodborne Pathogens <input type="checkbox"/> SWP 508 - Wildlife Encounters <input type="checkbox"/> SWP 102 - Workplace Violence <input type="checkbox"/> SWP 510 - Working in Abandoned Buildings <input type="checkbox"/> SWP 511 - Ticks and Tickborne Diseases <input type="checkbox"/> SWP 519 - Post-Disaster Building Entry Enter additional SWPs, SOPs	Enter specialized training	Maintain social distancing (minimum 6 ft) with other contract workers on the site to mitigate COVID 19. Wear a cloth mask if desired. The Site is located in an urban area and additional biological risk could include feral/domesticated animals/pets. Onlookers are also possible. If work is conducted in warmer weather, additional biological risk could include insects/invertebrates		
	Radiation					
		<input type="checkbox"/> Solar (UVA/UVB) <input type="checkbox"/> Welding <input type="checkbox"/> Nuclear densometers <input type="checkbox"/> NORMs <input type="checkbox"/> Microwave <input type="checkbox"/> Other:	<input type="checkbox"/> SWP 502, 502a-g (CA) - Radiation Safety Program Field Manual for Portable Gauges (Canada) <input type="checkbox"/> SWP 516, 516a-e (US) - Radiation Safety (US) Enter additional SWPs, SOPs	Enter specialized training	Enter specific controls	
		Noise				
			<input checked="" type="checkbox"/> Mobile equipment <input type="checkbox"/> Stationary equipment <input type="checkbox"/> Manual equipment <input type="checkbox"/> Impact <input checked="" type="checkbox"/> Vibration <input checked="" type="checkbox"/> Impact on communications <input type="checkbox"/> Other:	<input type="checkbox"/> SWP 106 - Noise Control and Hearing Conservation Program Enter additional SWPs, SOPs	Enter specialized training	Noise/vibration/impact is expected from equipment used to remove the UST. Wear earplugs during sampling and while Horizon is working

Gravity				
	<input checked="" type="checkbox"/> Slip / Trip / Fall	<input type="checkbox"/> SWP 201 - Fall Protection / Working at Heights	Enter specialized training	Wear appropriate footwear; use traction enhancement if needed. Wear safety toed boots with at least a 6" ankle for support onsite. Keep focus on path and off of phone/maps while walking
	<input type="checkbox"/> Work from heights	<input type="checkbox"/> SWP 202 - Ladder Safety		
	<input type="checkbox"/> Falling objects	<input type="checkbox"/> SWP 203 - Aerial Work Platform		
	<input type="checkbox"/> Other:	<input type="checkbox"/> SWP 205 - Scaffold Safety		
		<input type="checkbox"/> SWP 208 - Hoisting and Lifting		
	<input type="checkbox"/> SWP 510 - Working in Abandoned Buildings			
		Enter additional SWPs, SOPs		
Motion				
	<input type="checkbox"/> Working near traffic	<input type="checkbox"/> SWP 507 - Aircraft Safety	Enter specialized training	Green defensive driving in transit to/from/around Site. Maintain awareness near roadways. Work is planned to be in the parking lanes only, but control work area in all directions with cones/signage. Drilling subcontractor to develop and implement a traffic control plan. Be mindful of drilling equipment pathing, and make presence known in area (verbal/visual cues), wear hi-visibility clothing/vest. Sure-footing and use of safety-toed boots with ankle support
	<input checked="" type="checkbox"/> Automobile/truck/trailer	<input checked="" type="checkbox"/> SWP 124, 124a, 124b – Safe Driving		
	<input checked="" type="checkbox"/> Construction equipment	<input checked="" type="checkbox"/> SWP 216 - Working Near Mobile Equipment		
	<input type="checkbox"/> Elevated work platform	<input type="checkbox"/> SWP 217, 217a – Forklift Operation		
	<input type="checkbox"/> Pedestrians	<input type="checkbox"/> SWP 407, 407a – Traffic Control and Protection Planning		
	<input type="checkbox"/> Cyclists	<input type="checkbox"/> SWP 505, 505a, 505b, 505c, 505d - Off Road Vehicles		
	<input type="checkbox"/> Rail	<input type="checkbox"/> SWP 506 - Rail Safety		
	<input type="checkbox"/> ATV	<input checked="" type="checkbox"/> SWP 115 - Material Handling and Safe Lifting		
	<input type="checkbox"/> ARGO	<input type="checkbox"/> SWP 125 - Workstation Ergonomics		
	<input type="checkbox"/> Watercraft / water	<input type="checkbox"/> SWP 513 - Water and Boat Safety		
	<input type="checkbox"/> Snowmobile			
	<input type="checkbox"/> Aircraft (fixed wing or rotary)			
	<input type="checkbox"/> UAVs/Drones			
	<input checked="" type="checkbox"/> Walking/Hiking			
	<input checked="" type="checkbox"/> Lifting			
	<input checked="" type="checkbox"/> Pushing/Pulling			
	<input checked="" type="checkbox"/> Bending			
	<input checked="" type="checkbox"/> Posture/position	Enter additional SWPs, SOPs		
	<input type="checkbox"/> Climbing			
<input checked="" type="checkbox"/> Twisting				
<input type="checkbox"/> Other:				
Mechanical				
	<input checked="" type="checkbox"/> Cutting edges	<input checked="" type="checkbox"/> SWP 416 - Supervision of Contracted Drilling Activities	Enter specialized training	Communicate with contractor and maintain safe distance from heavy machinery. Stay 10' clear of Geoprobe and keep within eyesight at all times
	<input type="checkbox"/> Blades	<input type="checkbox"/> SWP 518, 518a – Using a Chainsaw		
	<input checked="" type="checkbox"/> Rotating parts (e.g., drill/auger)	<input checked="" type="checkbox"/> SWP 206 - Hand and Portable Power Tools		
	<input type="checkbox"/> Wrap points	<input type="checkbox"/> SWP 517 - Safe Machete Use		
	<input checked="" type="checkbox"/> Shear points	<input type="checkbox"/> SWP 408, 408a, 408b, 408c – Lock, Tag & Try		
	<input checked="" type="checkbox"/> Pinch points	<input checked="" type="checkbox"/> SWP 216 - Working Near Mobile Equipment		
	<input type="checkbox"/> Freewheeling point			
	<input type="checkbox"/> Chains			
	<input type="checkbox"/> Cables			
	<input type="checkbox"/> Other:	Enter additional SWPs, SOPs		

Electrical			
	<input type="checkbox"/> Power and communication lines <input type="checkbox"/> Static charge and lightning <input type="checkbox"/> Wiring <input checked="" type="checkbox"/> Batteries <input checked="" type="checkbox"/> Lighting levels <input type="checkbox"/> Wet environment <input checked="" type="checkbox"/> GFCI cords/plugs <input type="checkbox"/> Double insulated tools <input type="checkbox"/> Exposed circuits <input type="checkbox"/> Other:	<input checked="" type="checkbox"/> SWP 213, 213a, 213b, 213c – Utility Clearance <input type="checkbox"/> SWP 406, 406a, 406b – Electrical Safety Program <input type="checkbox"/> SWP 408, 408a, 408b, 408c – Lock, Tag & Try <input type="checkbox"/> SWP 504 - Backpack and Boat Mounted Electro-Fishing <input type="checkbox"/> SWP 519 - Post-Disaster Building Entry Enter additional SWPs, SOPs	Enter specialized training A private utility locate has been completed in the Project Area. No underground utilities are known to exist. Confirm that public utilities are remarked for clarification prior to starting work.
Pressure			
	<input type="checkbox"/> Excavations and spoil piles <input checked="" type="checkbox"/> Hydraulic systems <input checked="" type="checkbox"/> Pneumatic systems <input type="checkbox"/> Steam <input type="checkbox"/> Vacuum <input checked="" type="checkbox"/> Cylinders <input type="checkbox"/> Other:	<input type="checkbox"/> SWP 215 - Supervision of Hydro-Excavation Activities <input checked="" type="checkbox"/> SWP 310 - Compressed Gas Cylinders <input type="checkbox"/> SWP 214 - Entering Excavations and Trenches Enter additional SWPs, SOPs	Enter specialized training Be mindful in transporting PID calibration gas. Maintain safe distance from drill rig
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: <input checked="" type="checkbox"/> Type 1 (no side impact) <input type="checkbox"/> Class E (rated for 20000 volts) <input type="checkbox"/> Type 2 (side impact) <input type="checkbox"/> Class G (rated for 2200 volts) <input type="checkbox"/> Other <input type="checkbox"/> Class C (no electrical rating)	
Eye/face (CSA/ANSI)	☒	<input checked="" type="checkbox"/> Safety glasses with rigid side shields <input type="checkbox"/> Safety glasses and face shield <input type="checkbox"/> Polarized safety glasses with rigid side shields <input type="checkbox"/> Goggles and face shield <input type="checkbox"/> Goggles <input type="checkbox"/> UV glasses, UV shield <input type="checkbox"/> Spoggles	
Hand	☒	Hazard Protection <input type="checkbox"/> Abrasion <input type="checkbox"/> Cut <input type="checkbox"/> Vibration <input type="checkbox"/> Puncture <input type="checkbox"/> FR (flame resistant) <input type="checkbox"/> Arc Flash <input checked="" type="checkbox"/> Chemical <input type="checkbox"/> Impact <input type="checkbox"/> Cold <input type="checkbox"/> Heat <input type="checkbox"/> Other:	
		Glove Type <input checked="" type="checkbox"/> Nitrile <input type="checkbox"/> Leather <input type="checkbox"/> Cotton <input type="checkbox"/> High Performance Polyethylene <input type="checkbox"/> Polyurethane <input type="checkbox"/> Kevlar <input type="checkbox"/> Latex <input type="checkbox"/> PVC <input type="checkbox"/> Neoprene <input type="checkbox"/> Viton <input type="checkbox"/> Other:	
Foot (6" minimum ankle support)	☒	<input checked="" type="checkbox"/> CSA Green triangle and orange omega boots (CA) / ASTM / ANSI boots (US) <input type="checkbox"/> CSA Green triangle and orange omega waders (CA) / ASTM / ANSI waders boots (US) <input type="checkbox"/> CSA Green triangle and orange omega rubber boots (CA) / ASTM / ANSI rubber boots (US) <input type="checkbox"/> Traction Aids	
High visibility clothing	☒	Class 1 - not used <input type="checkbox"/> Class 3 (over 80km/h / 50 mph and/or twilight/dark) <input checked="" type="checkbox"/> Class 2 (under 80km/h / 50 mph and daylight)	

Hearing	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> Ear plugs <input type="checkbox"/> Ear plugs and muffs <input type="checkbox"/> Ear muffs
Coveralls	<input type="checkbox"/>	<input type="checkbox"/> Standard <input type="checkbox"/> FR (Flame Resistant) – Type: <input type="checkbox"/> Tyvek (disposable) <input type="checkbox"/> Chemical resistant
Respiratory	<input type="checkbox"/>	<input type="checkbox"/> N95 (dust mask) <input type="checkbox"/> 1/2 mask - Cartridge type: - Filter type: <input type="checkbox"/> Full face - Cartridge type: - Filter type: <input type="checkbox"/> PAPR - Cartridge type: - Filter type:
Fall arrest/limit	<input type="checkbox"/>	<p>Fall arrest harness (verify capacity)</p> <input type="checkbox"/> Class A (fall arrest) <input type="checkbox"/> Class D (controlled descent) <input type="checkbox"/> Class E (evacuation) <input type="checkbox"/> Class L (ladder) <input type="checkbox"/> Class P (positioning) <p>Lanyard</p> <input type="checkbox"/> 6' with shock absorber (verify capacity) <input type="checkbox"/> 4' with shock absorber (verify capacity) <input type="checkbox"/> 6' Y with shock absorber (verify capacity) <input type="checkbox"/> 6' with NO shock absorber (verify capacity) for use on aerial lifts <input type="checkbox"/> 4' with NO shock absorber (verify capacity) for use on aerial lifts <input type="checkbox"/> Other: <p>Additional equipment</p> <input type="checkbox"/> Rope Grab <input type="checkbox"/> Rope <input type="checkbox"/> Self-retracting lifeline – <input type="checkbox"/> SRL <input type="checkbox"/> SRL-R (integral rescue capability) <input type="checkbox"/> SRL-LE (leading edge capability) <input type="checkbox"/> Tripod <input type="checkbox"/> Retrieval winch <input type="checkbox"/> Anchorage connector <input type="checkbox"/> Beam anchor <input type="checkbox"/> Vertical or horizontal lifeline <input type="checkbox"/> Carabiner <input type="checkbox"/> Suspension trauma straps
Flotation device	<input type="checkbox"/>	<input type="checkbox"/> Lifejacket <input type="checkbox"/> PFD inflatable <input type="checkbox"/> Floater Jacket <input type="checkbox"/> Survival Suit <input type="checkbox"/> PFD - Type:
Other	<input checked="" type="checkbox"/>	Employees breathing space will be monitored with a PID. If readings above background occur, stop work, move upwind and contact the project manager to evaluate appropriate action.

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: 911

Ambulance: 911

Spill Response: 911

Police:
911

Regional HR: US North Central & South - Andrea Anderson - (941) 225-6173

Workers' Compensation Claim

Coordinator: US - Melissa Helton - cell 513-720-3706

OSEC: Kurt Rubsam – 262 - 402 - 8153

Public Relations: US Northeast, US Central - Maggie Meluzio (781) 221-1002

HSSE Manager: US North Central – Wes Cline (916) 281-7459

First aid facilities are located: In vehicle

First aiders on site: Whitney Cull (262) 219-4740

Fire extinguisher are located: In vehicle

SDS are located: NA

Eyewash station is located: NA

Spill response equipment is located: NA

Muster point is located NA

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

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. 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

Please designate Team Lead for field activities below.

Reviewed by: [Click here to enter text.](#)

_____ Print Name (Team Lead Field)	_____ 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