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Sent: Friday, June 2, 2023 8:45 PM
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Cc: Knapke.Eric@epa.gov
Subject: Remedial Action Plan and Material Management Plan for the Phase 2 Redevelopment Area of the River Point District; Manitowoc, WI
Attachments: RAP_MMP for the Phase 2 Redevelopment Area of the River Point District.pdf

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Team:

Attached is the Remedial Action Plan and Material Management Plan for proposed remediation work in the Phase 2 Redevelopment Area of the River Point District in Manitowoc, Wisconsin.

Tauren – a copy was just submitted through the portal for your review.

Please review and send comments.

The bid spec is complete and the City would like to bid this work in a few weeks with the goal of finishing this work in Fall 2023.

Sincerely,

Harris Byers, Ph.D.

Sr. Brownfields Project Manager
Contaminant Hydrogeologist / Urban Geochemist

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Remedial Action Plan & Materials Management Plan
Phase 2 Redevelopment Area of the River Point District
River Point Drive Rights of Way

River Point District
Manitowoc, Wisconsin

BRRTS ID:

02-36-585491 (Open ERP)

07-36-583000 (LGU Exemption/
General Property)

Prepared for:
City of Manitowoc
900 Quay Street
Manitowoc, WI 54220

Prepared by:
Stantec Consulting Services Inc.
12080 Corporate Pkwy, Suite 200
Mequon, WI 53092



June 2, 2023
Project Number 193709261

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REMEDIAL ACTION PLAN & MATERIALS MANAGEMENT PLAN

Phase 2 Redevelopment Area of the River Point District; River Point Drive Rights of Way; River Point District; Manitowoc, Wisconsin

CERTIFICATIONS
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PHASE 2 REDEVELOPMENT AREA OF THE RIVER POINT DISTRICT
RIVER POINT DRIVE RIGHTS OF WAY
RIVER POINT DISTRICT
MANITOWOC, WISCONSIN

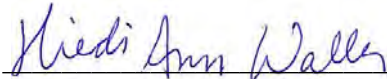
"I, Stu Gross, hereby certify that I am a hydrogeologist as that term is defined in s. NR 712.03 (1), Wis. Adm. Code, am registered in accordance with the requirements of ch. GHSS 2, Wis. Adm. Code, or licensed in accordance with the requirements of ch. GHSS 3, Wis. Adm. Code, and that, to the best of 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 (WAC)."



Stu Gross, PG No. 1201-13

June 1, 2023
Date

"I, Hiedi A. Waller, hereby certify that I am a registered professional engineer in the State of Wisconsin, registered in accordance with the requirements of ch. A-E8, WAC; that this document has been prepared in accordance with the Rules of Professional Conduct in cg. A-E8, WAC; and that to the best of my knowledge, all information contained in this document is correct and the document was prepared in compliance with all applicable requirements in chs. NR700 to 726, WAC."



Hiedi A. Waller, PE No. E-33741

June 1, 2023
Date

JUNE 2, 2023

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1.0 OVERVIEW

Section 1.0 of this submittal provides an overview of the location, background and environmental history for the proposed River Point Drive Rights of Way (ROW) which is located in the Phase 2 Redevelopment Area within the River Point District. The proposed River Point Drive ROW Project area is outlined in black; the Phase 2 Redevelopment Area is outlined in green, and the River Point District is outlined in yellow relative to regional topography on **Figure 1** and similarly illustrated on a 2020 Orthophotograph on **Figure 2**. The proposed ROW consists of portions of former railroad/industrial property roughly connecting the 1100 block of Buffalo Street and the 1200 block of Chicago Street in Manitowoc, Wisconsin (herein referred to as the “Property”).

Following the Remedial Action Plan (RAP) in Section 2.0, a Materials Management Plan (MMP) is included as Section 3.0 of this submittal and outlines procedures planned to properly manage impacted soils, groundwater/fluids, and other solid materials, as well as responding to unforeseen conditions.

1.1 INTRODUCTION

Using funds from a Brownfield Assessment Grant awarded to the City of Manitowoc (City) by United States Environmental Protection Agency (USEPA) under Cooperative Agreement Number BF-00E03044, the City contracted Stantec Consulting Services Inc. (Stantec) to prepare a RAP/MMP for remediation and soil management activities as part of River Point Drive ROW construction between Buffalo Street and Chicago Street (herein referred to as the “Project”). The USEPA Assessment, Cleanup and Redevelopment Exchange System (ACRES) identification numbers associated with portions of the Property are 239716, 239717 and 239719.

For continuity with prior work, the proposed Project will be completed within the Phase 2 Redevelopment Area and consists of portions of former railroad/industrial property generally located between the 1100 block of Buffalo Street and the 1200 block of Chicago Street. Please note that the Project area does not include the portion of River Point Drive at, or south of, the Buffalo Street intersection, as these portions of River Point Drive have already been covered under separate RAPs/MMPs (Stantec, 2021, 2022 and 2023a-b). Property grading plans depicting the current and final proposed surfaces for the Project are included in **Appendix A**.

Proposed remediation work first includes importing, compacting, and grading approximately 16,000 cubic yards of clean fill to initially cap existing contaminated soils by raising the grade within the Project area between three and 10 feet above current grade. This imported material will consist of granular fill imported from a commercial quarry suitable for roadway construction and/or soil generated during municipal construction projects (quality data for soils generated during municipal construction activities would be submitted to WDNR for approval prior to import to the Property).

The final ground surface within the proposed ROW will be finished with hardscape (asphalt and/or concrete streetscapes, curbs and sidewalks) or landscaping (consisting of a minimum of 19 inches of clean fill plus five inches of clean topsoil finished with grass) to prevent direct human contact with contaminated soil and fill material and reduce leaching of residual impacts to groundwater. The final ground surface in adjacent non-industrial redevelopments will be described in future RAP/MMPs prepared as part of future developments.

Wisconsin Department of Natural Resources (WDNR) Bureau for Remediation and Redevelopment Tracking System (BRRTS) Environmental Repair Program (ERP) and Local Government Unit (LGU) cases for the Property associated with development and former occupation by Wisconsin Central Ltd. (WCL) and other railroad entities are referred to in this report by the following titles:

- 02-36-585491 RIVERPOINT DISTRICT - LGU (Open ERP); and
- 07-36-583000 RAILROAD PROPERTY (FORMER) (LGU/General Property).

Soil contaminants of concern (COCs) primarily consist of polycyclic aromatic hydrocarbons (PAHs) and Resource Conservation and Recovery Act (RCRA) metals exceeding Chapter NR 720 Wisconsin Administrative Code (WAC) (NR 720) groundwater migration and direct contact pathways largely attributable to the black granular fill across the River Point District (including the Property), with less significant contamination from petroleum volatile organic compounds (PVOCs) from former industrial/railroad use. While no COCs were

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detected in groundwater sampled from monitoring wells within the Project area at concentrations greater than applicable Chapter NR 140 WAC (NR 140) preventive action limits (PALs) and/or enforcement standards (ESs), select per- and polyfluoroalkyl substances (PFAS) were detected in groundwater at concentrations greater than select proposed groundwater quality criteria.

1.2 PROJECT LOCATION

The Property is located in the northeast quarter of the northeast quarter of Section 30, and in the southeast quarter of the southeast quarter of Section 19; Township 19 North, Range 24 East, in the City of Manitowoc, Manitowoc County, Wisconsin. The Property consists of 2.25 acres within the 21-acre former railroad/industrial peninsula referred to locally as the River Point District. Surrounding properties are a mix of vacant land, rights-of-way, commercial and industrial land uses. The Property location (outlined in black), the Phase 2 Redevelopment Area (outlined in green), and the larger 21-acre River Point District (outlined in yellow) relative to local topography is illustrated on **Figure 1**, and these locations relative to orthophotography are shown on **Figure 2**. The parcels comprising the Property are illustrated on **Figure 3** and include Parcel IDs 173000, 173001, 173020 and 173170. The Property is currently undeveloped and zoned Central Business B-4, as illustrated in **Figure 4**.

The Property is being redeveloped as the extension of the River Point Drive ROW, extending northwest from Buffalo Street plus the western 200 linear feet of what will likely be dedicated as Chicago Street. Proposed reuse and engineered barriers/caps to be constructed at the Property are illustrated on **Figure 5**.

Please note that the Project will place fill in adjacent parcels that will eventually be sold and redeveloped for non-industrial purposes. A RAP/MMP will be required for each adjacent parcel in the future once reuse plans are finalized by developer(s). A RAP/MMP for the remaining portion of Chicago Street will be prepared once funding is secured to construct the ROW.

It is necessary to extend project work into these areas to achieve the following objectives:

- Achieve OSHA-safe slopes at the intersection of River Point Drive and Chicago Street;
- Maximize the amount of time for anticipated compression/settlement of underlying soils; and
- Provide infrastructure/access to the northwest portion of the River Point District as soon as practicable, to facilitate non-industrial redevelopment in 2024-2025 along the northern portion of the peninsula.

A grading and erosion control plan, as well as a cross sections of the final proposed surface at the Property are depicted on Sheets C1.01 and C7.10 of the River Point Drive Development Set included in **Appendix A**, respectively.

The approximate geographic coordinates of the center of the Property in the Wisconsin Transverse Mercator 1991 coordinate system are (X: 706957, Y: 405093); this was determined using the WDNR Remediation and Redevelopment Sites Map at a scale of 1 to 495 (WDNR, 2023a).

The Property is located near the City's downtown commercial district and offers a unique opportunity for non-industrial, multi-use redevelopment as a destination area to catalyze meaningful economic growth in the City. The Property is being redeveloped as an extension of River Point Drive as part of "Phase 2" of three phases of redevelopment planned for the River Point District. Proposed Property and surrounding redevelopment features are illustrated on **Figure 5**.

1.3 CONTACT INFORMATION

Contact information for the Property owner and environmental consulting firm are provided below.

PROPERTY OWNER: Community Development Authority of the City of Manitowoc
City of Manitowoc
900 Quay Street
Manitowoc, WI 54220-4543

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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

1.4 PROPERTY USE/OWNERSHIP HISTORY

General Property Use

The Property consists of 2.25 acres of vacant former railroad/industrial land surrounded by a mix of vacant land, rights-of-way, commercial and industrial land uses.

Development of the River Point District

As outlined in yellow on **Figure 1**, the River Point District consists of a 21-acre peninsula bound to the north, south, and west by the Manitowoc River and bound to the east by North 10th Street and North 11th Street. As described in the Stantec (2019) Phase I ESA, the River Point District appears undeveloped in 1835; however, the proximity of the peninsula to the Lake Michigan/Great Lakes shipping routes facilitated initial large scale industrial transloading development of the River Point District by 1868. Transloading operations on the peninsula in the late 19th Century included large scale coal, lumber/mills, grain, and large warehouses. Although ownership records are not available, a panoramic map drawn in 1883 indicates the River Point District was fully developed and occupied by several large industrial-like buildings and smaller commercial-like buildings.

19th Century Operations at the Property

As illustrated in **Figure 6**, the northern portion of the Project area was occupied by large industrial-like buildings by 1883, while the southern portion remained undeveloped until the last decade of the 19th Century.

20th Century Operations at the Property

As depicted on **Figure 7**, the majority of the Project area was developed for railroad use by 1895 and included multiple railroad spur lines. A large coal storage operation was present along the far northern portion of the Project area. An 1898 panoramic photograph depicting these railroad spur lines on the Property is included as **Figure 8**. The Property remained in railroad use through most of the 20th Century. A building permit was issued to the Soo Line Railroad on November 24, 1980 to raze the former railroad depot, which largely terminated railroad use at the River Point District; smaller-scale rail operations remained at the Property until the early 2000s when the remaining steel rails were removed (Stantec, 2019).

21st Century Operations at the Property

The Property remained largely vacant and used for material storage by adjacent property owners after railroad decommissioning of the River Point District. As noted below, the City of Manitowoc Community Development Authority (CDA) acquired the property in 2019 and is in the process of installing the necessary infrastructure to encourage non-industrial redevelopment at the River Point District.

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Property Ownership

Ownership in the mid-19th Century likely corresponds to the previous Property occupants. Ownership appears to have been consolidated under railroad ownership since the late 19th Century. Historic records indicate the Property was transferred from the Manitowoc Terminal Company to the Manitowoc and Western Railroad Company on July 22, 1895. Assessor records suggest the Property was later transferred to the Soo Line Railroad Company and ultimately transferred to WCL sometime during the latter half of the 20th Century. Railroad use of the Property largely ceased in the 1980s and the Property was decommissioned in the 2000s. The CDA acquired the Property from WCL on April 12, 2019 for the purpose of blight elimination and subsequently received a LGU Environmental Liability Exemption from the WDNR on March 18, 2019 under BRRS activity number 07-36-583000.

1.5 ENVIRONMENTAL INVESTIGATION HISTORY

City-Led Assessment Work

The City began assessment work in 2018 as part of pre-acquisition due diligence activities. Assessment and remedial planning work proceeded through 2023 (Stantec 2019, 2020, and 2023c; and AECOM 2020). Subsurface investigation work for the Property culminated in the Stantec “Site Investigation Report, River Point District Phase 2 Redevelopment Area” (Stantec, 2023c). Cumulative soil and groundwater observations and the extents of impacts are illustrated on **Figures 9 through 13**. The conclusions of Stantec (2023c), as they relate to the Project area, are summarized below.

Soil Lithology

Surface soils at the Property consisted of sparse, vegetated sandy/gravelly topsoil. Either present at the surface or immediately underlying these limited surface materials is a sitewide black granular fill unit of varying thickness. A spatial analysis model illustrating the thickness and horizontal extent of the fill unit is illustrated on **Figure 9** and estimates that approximately 11,533 cubic yards of this black granular fill material is present within the Property. Consistent with previous investigations, apparent native soils beneath the fill layer were organic sands, silts and clays. Saturated conditions were encountered from three to five feet below ground surface (ft bgs).

Soil Quality

Assessment work completed by Stantec (2023c) indicates that volatile organic compounds (VOCs), PAHs, and RCRA metals are present in soil at concentrations greater than established regulatory soil standards. The source of residual PAH and RCRA metal impacts is attributable to the black granular fill unit present across the River Point District and underlying native soils are not impacted by these COCs.

Petroleum VOC (benzene) impacts to soil were identified during prior assessment work by others and recently confirmed by Stantec (2023c). Petroleum impacts appear associated with prior adjacent bulk petroleum storage operations at discrete portions of the River Point District which were previously investigated by others and subsequently closed by WDNR.

The horizontal and vertical extents of identified soil impacts have been sufficiently defined (**Figure 10**) to facilitate the proposed cleanup work within the Project area.

Physical Hydrogeology

The potentiometric surface of shallow groundwater at the River Point District has consistently decreased radially towards the Manitowoc River (**Figure 11**) and the elevation gradient suggests the Manitowoc River is a constant head boundary for shallow groundwater at the River Point District.

Groundwater Quality

The extents of groundwater impacts near the Project are illustrated on **Figures 12 and 13**. In summary, no COCs (VOCs, PAHs, RCRA metals) were present in groundwater sampled within or near the Project area at concentrations greater than promulgated NR 140 standards.

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It is acknowledged that select PFAS compounds were detected in groundwater in the Project area at concentrations greater than one or more proposed groundwater standards (**Figure 13**). No potential source of PFAS has been identified at the Property.

The horizontal and vertical extents of identified groundwater impacts have been sufficiently defined to facilitate the proposed cleanup work within the Project area.

Soil Vapor

There are no buildings/structures currently at the Property, and none are proposed as part of River Point Drive ROW redevelopment. As described in Stantec (2023c), vapor intrusion is unlikely to occur at the Property based on the vapor intrusion screening guidelines in the *Addressing Vapor Intrusion at Remediation & Redevelopment Sites in Wisconsin*, Wis. Stat. ch. 292; Wis. Admin. Code ch. NR 700 WDNR guidance (WDNR, 2018).

1.6 SUMMARY OF BRRTS CASES AT THE PROPERTY

02-36-585491 RIVERPOINT DISTRICT - LGU (Open ERP)

Environmental activities performed to date at the Property are tracked under BRRTS ERP case number 02-36-585491 "RIVERPOINT DISTRICT- LGU". As summarized in Section 1.7, previous site investigations performed at/near the Property between 2018 and 2023 indicated that various COCs are present in soil and groundwater at concentrations greater than health-based standards.

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

This General Property listing documents the CDA was granted state LGU environmental liability exemption on March 18, 2019 for the River Point District.

1.7 CONTAMINANTS OF CONCERN AND EXPOSURE ROUTES

As described further in Stantec (2023c), COCs and exposure routes were evaluated for the Property relative to NR 720 residual contaminant levels (RCLs) for soil and NR 140 ESs and PALs for groundwater quality.

Soil. As noted in Section 1.5, soil COCs primarily consist of PAHs and RCRA metals associated with sitewide black granular fill, with less significant soil impacts from PVOCs (benzene). These COCs exceed direct contact RCLs (**Figure 10**) and therefore must be addressed to facilitate non-industrial redevelopment of the Property.

Groundwater. No constituents were detected in groundwater at concentrations greater than NR140 standards (**Figure 12**). As noted in Section 1.5, PFAS were detected in groundwater at the Property (**Figure 13**), which may pose a risk to human health. Groundwater impacts must be addressed to facilitate non-industrial redevelopment at the Property.

Vapor Intrusion. There are currently no structures on the Property (or neighboring structures to it), and no structures are planned as part of River Point Drive ROW redevelopment. As described in Stantec (2023c), vapor intrusion is unlikely to occur at the Property.

1.8 ENVIRONMENTAL RISK EVALUATION

Environmental risk has been evaluated for the Property based on the grading and erosion control plan exhibit (Sheet C1.01) and the cross section of the final proposed surface at the Property (Sheet C7.10) of the River Point Development Bid Set included as **Appendix A**. This proposed RAP/MMP is intended to manage environmental risk and establish a constructible and cost-effective approach to facilitate Property redevelopment.

Please note that although a small amount of fill will be placed in adjacent parcels outside of the proposed ROW to maintain a safe slope, an environmental risk evaluation will be completed in the future for the adjacent parcels once reuse plans are finalized by developer(s).

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The RAP presented in Section 2.0 and MMP presented in Section 3.0 will prevent or minimize adverse environmental impacts and potential threats to human health and welfare, including worker safety. Each potential exposure and migration pathway of concern is addressed below.

Vapor Intrusion. There are currently no structures on the Property and the Property is being redeveloped as road ROW(s). Neighboring occupied buildings are not at risk from vapor migration given their distance from known sources. Therefore, vapor intrusion is not a pathway of concern for the River Point Drive ROW.

Sediment/Surface Water. Based on the nature and extent of identified groundwater impacts, migration of groundwater impacts does not appear to be a significant threat to sediment or surface water. Additionally, the CDA will maintain ownership of the proposed ROW and the entire shoreline of the Manitowoc River. Provided that the stormwater best management practices described in the future Notice of Intent (to be filed by the CDA) are followed during construction, residual soil impacts at the Property should not pose a threat to sediment or surface water.

Wetlands. Stantec conducted a search on the WDNR (2023b) Surface Water Data Viewer on May 16, 2023 to determine whether wetlands and critical habitat areas were present/absent at the Property; the review determined that no wetlands or critical habitats are present the Property (WDNR, 2023b).

Air Quality. Impacted soils will be capped with an engineered barrier, which will limit volatilization of residual petroleum VOCs. Construction methods will include best management practices to limit particulate emissions. Contractors will be required to adequately wet soil during dry periods to prevent visible emissions.

Direct Contact Risk. No impacted fill will be disturbed/moved as part of this proposed remedial action. The current zoning of the Property is Central Business B-4 (**Figure 4**), with a proposed development/reuse as a Rights of Way. After the surface in the ROW is finished, the direct contact pathway will be mitigated by construction of engineered barriers illustrated on **Figure 5**, and the barriers maintained with an institutional control. Construction and remediation worker exposure will be managed by the Contractor through enforcement and compliance with approved Occupational Health and Safety (OSHA) compliant health and safety protocols detailed in project health and safety plans. Each Contractor will be responsible for preparing and following their health and safety plan.

As illustrated on **Figure 5**, the surfaces of adjacent parcels will be finished with a variety of engineered barriers which will be described in future RAP/MMP submittals.

Groundwater Quality/Water Supply. Though there are areas on the Property where groundwater has been adversely impacted by COCs, the extent of groundwater contamination has been largely defined. Further, no impacted fill will be disturbed/moved as part of this remedial action. As such, groundwater quality will not be adversely impacted by this proposed remedial action.

City residents receive potable water from Lake Michigan. No water supply wells are present on the Property. Stantec conducted a search for nearby groundwater wells using the WDNR (2023c) Well Construction Information System on May 16, 2023; there are no known public or private wells located within 1,200 feet of the Property (WDNR, 2023c).

Based on the above information, the migration potential of contaminants in groundwater at the Property to water supply wells is very low.

Existing Utilities. A potable water main at the Property was previously abandoned in place as part of River Point District development activities in 2021 (refer to **Figure 2**). There are no other existing utilities at the Property. Based on the extent of soil/groundwater impacts defined on the Property, it does not appear that contamination has migrated along former utilities and/or associated utility trenches.

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Future Utilities. When soils have undergone suitable settlement and compaction, new utilities and streetscape will be installed within the future road ROWs on the Property to support future residential and commercial redevelopment at the River Point District. The spoil generated during utility installation/trenching is not anticipated to disturb the impacted granular fill material at the Property (i.e., proposed utility excavations are sufficiently shallow to not encounter this material); therefore, the installation of new utilities is not expected to exacerbate contaminant transport. However, as a best management practice, a clean clay cut-off wall will be installed in the utility trench(es) at the Property boundary to reduce the risk for contaminant migration onto or through the Property.

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2.0 REMEDIAL ACTION PLAN

As illustrated on **Figure 5**, a small quantity of fill will be placed on the parcels adjacent to the River Point Drive ROW for safety reasons and to maintain an OSHA-safe slope. The surfaces of adjacent parcels will be finished with a variety of engineered barriers which will be described in future RAP/MMP submittals. As such, the Remedial Action Plan (specifically engineered barriers described in Section 2.4 and continuing obligations described in Section 2.7) described in this section only pertains to the ROW targeted for this remediation work.

As described in Stantec (2023c), the selected remedial alternative will occur in conjunction with Property construction activities. The remedial approach for Property construction includes:

- Management of impacted soil/fill materials in place (no disturbance of existing impacted fill is anticipated);
- Raising the grade of the Property by importing clean fill and constructing a variety of engineered barriers (**Figure 5**) with adherence to a future, approved maintenance plan; and
- Establishing continuing obligations/institutional controls (GIS Registry of Closed Remediation Sites).

This remedial approach will meet remedial objectives for the Project by:

- Beneficial reuse of contaminated soil onsite, while managing overall construction and post-construction monitoring and maintenance costs;
- Preventing contact with contaminated soils; and
- Reducing migration of contaminated groundwater through the construction of an engineered barrier.

This remedial approach was selected such that the final use of the Property is protective of public health, safety, and welfare and incorporated in the project design and construction specifications while managing overall costs.

2.1 SOIL MOVEMENT AND MANAGEMENT

A grading and erosion control plan, as well as a cross sections of the final proposed surface at the Property are depicted on Sheets C1.01 and C7.10 of the River Point Drive Development Set included in **Appendix A**, respectively.

Approximately 16,000 cubic yards of clean fill will be imported to the Property to achieve the proposed grade. Imported fill will consist of granular fill imported from a commercial quarry and/or soil generated during municipal construction projects (soils generated as part of municipal construction projects would be properly characterized and the results submitted to WDNR for approval prior to import to the Property). Additional clean structural fill may need to be imported and used as utility trench backfill, as appropriate.

No impacted (i.e., original ground surface) fill/soils are anticipated to be encountered as part of utility installation at the Property, as proposed trenching depths are sufficiently shallow to not encounter this material. In the event that impacted fill/soils at the Property are unexpectedly encountered as part of utility installation, they will be disposed of offsite at a licensed solid waste landfill. Clean fill import and grading are proposed to start as early as possible at the Property (Summer 2023) to maximize the amount of time for settlement and associated monitoring to occur due to the compressible nature of River Point District soils, and to provide infrastructure/access to the northwest portion of the River Point District for future proposed residential development in 2024/2025.

Proposed soil handling and placement procedures will meet environmental closure requirements of Chapter NR 726.13(b) WAC and shall not pose an unacceptable threat to public health, safety, welfare or the environment. Although a historic fill exemption is not required at the Property, if encountered, soils and fill excavated or cut during utility construction will be managed consistent with requirements of Chapter NR 718

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WAC. A MMP included as Section 3.0 of this submittal has been developed to manage soil within the Project boundaries in a manner that does not expand the current limits of contamination, exacerbate existing groundwater contamination risks, or create new risks such as a direct contact risk.

Significant dewatering is not anticipated during the Project. Groundwater or stormwater that requires removal from the excavations will be characterized and managed appropriately by the Contractor.

2.2 CONSTRUCTION OBSERVATION

Construction observation will be performed by a qualified environmental engineer/consultant and will focus on specific remedial objectives. The following tasks will be performed:

- Observe and document (including photographs) appropriate phases of remediation activities, including equipment and materials, and provide recommendations to the Contractor for those not meeting specifications or special provisions.
- Make regular site visits to ensure the Contractor is complying with requirements of the approved RAP/MMP and obtaining the information necessary for preparation of the construction documentation report.
- Keep site visit notes, logs, photographs, and other pertinent information to prepare a record of the Contractor's work related to materials management, cap installation, and solid waste management.

2.3 ENVIRONMENTAL MONITORING

Ahead of redevelopment, Stantec will abandon Property monitoring wells within and immediately adjacent to the Project area in accordance with NR 141. Abandonment documentation will be provided in a future submittal. Post-construction soil or groundwater monitoring is not anticipated. If future monitoring is required, a monitoring program will be designed and implemented post-construction.

2.4 ENGINEERED SURFACE BARRIER

Due to the presence of impacted fill/soil across the Property (**Figure 9**), impacted soils will be managed long-term with a sitewide engineered barrier consisting of a combination of porous and non-porous surfaces (**Figure 5**).

As shown on **Figure 5** and in **Appendix A**, the Property is being redeveloped as a ROW and will provide access to municipal infrastructure, landscaping, future townhome development(s), and space for additional commercial businesses. To accommodate this desired future use, the proposed cap is intended to support a non-industrial end use.

In accordance with Chapter NR 718.12 (2) WAC, NR 140, and NR 720, direct contact or groundwater migration concern will be addressed through an engineered surface barrier (cap). This cap will consist of the following:

- Hardscape (e.g., asphalt and/or concrete streetscapes, curbs and sidewalks); and
- A 24-inch soil cap in softscape/landscape areas, with no less than 19 inches of clean imported granular or clay fill covered with five inches of imported topsoil finished in grass, (however, most areas will receive five to 10 feet of granular clean fill to raise the ground to finished surfaces).

Proposed engineered barrier features in the Project area are illustrated on **Figure 5** with a cross-section illustrating the finished ground surface provided on **Figure 6**. New stormwater utilities being installed as part of Project construction will minimize surface water infiltration and erosion, maintaining the integrity of the engineered cap. Given the low permeability of the cap materials, the cap will also serve as an infiltration barrier to prevent further migration of contaminated groundwater. Construction practices for the placement of the final engineered barrier for the Property are discussed in Section 3.7.

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REMEDIAL ACTION PLAN & MATERIALS MANAGEMENT PLAN

Phase 2 Redevelopment Area of the River Point District; River Point Drive Rights of Way; River Point District; Manitowoc, Wisconsin

2.5 CONSTRUCTION DOCUMENTATION REPORT

A Chapter NR 724 WAC construction documentation report will be submitted following the completion of Project construction and remedial actions. The report will document that the completed final remedial action meets or exceeds the design criteria and that the plans and specifications were developed in accordance with the requirements of Chapter NR 724.15 WAC. Construction observation and contingency procedures are discussed in Section 3.9.

2.6 PERMITTING

Stantec understands all appropriate construction permits will be obtained by the Contractor for the Project.

2.7 CONTINUING OBLIGATIONS

Continuing obligations/institutional controls will provide future control of the direct contact pathway and provide a mechanism to maintain the integrity of the engineered barriers in the ROW. The ROW will be placed on the WDNR online GIS Registry for sites with residual soil and groundwater contamination and will have an approved cap maintenance plan which describes requirements for annual cap inspection and timely repair of any damaged/deteriorated areas.

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REMEDIAL ACTION PLAN & MATERIALS MANAGEMENT PLAN

Phase 2 Redevelopment Area of the River Point District; River Point Drive Rights of Way; River Point District; Manitowoc, Wisconsin

3.0 MATERIALS MANAGEMENT PLAN

As illustrated on **Figure 5**, a small quantity of fill will be placed on adjacent parcels for safety and to maintain an OSHA-safe slope. The surfaces of adjacent parcels will be finished with a variety of engineered barriers which will be described in future RAP/MMP submittals. As such, the MMP described in this section (including the cap described in Section 3.7 and schedule described in Section 3.9) only pertains to the proposed ROW.

3.1 LOCATIONAL CRITERIA

Within a floodplain: No

Within 100 feet of any wetland or critical habitat area: No

Within 300 feet of any navigable river, stream, lake, pond, or flowage: Yes, Manitowoc River. However, as noted above and further in Section 3, an engineered barrier will be constructed at the Property. Therefore, the Manitowoc River will not be impacted by onsite management of impacted granular fill materials.

Within 100 feet of any on-site water supply well or 300 feet of any off-site water supply well: No

Within 3 feet of the high groundwater level: Impacted granular fill materials are currently within 3 feet of the high groundwater level and have not impacted groundwater. Therefore, continued management of onsite granular fill materials is not anticipated to exacerbate current conditions.

At a depth greater than the depth of the original excavation from which the contaminated soil was removed: No

Explanation of why granting an exemption to the Wis. Admin. Code § NR 718.12 (1) (c) will be addressed by the proposed management. As described above and further herein, impacted soil is not likely to be disturbed as part of the proposed remedial action nor during future utility installation in the ROW. Construction of a sitewide barrier in the ROW (**Figure 5**), that when maintained with a continuing obligation, will mitigate the direct contact risk and the risk for mobilization of the granular fill during stormwater and/or flood events.

Stantec requests concurrence on the proposed material management activities. The following information is provided to support reuse of granular fill onsite.

Fill Characteristics and Quantities. As noted in Section 1.5, soil COCs primarily consist of PAHs and RCRA metals associated with sitewide black granular fill, with less significant impacts from PVOCs. These COCs exceed direct contact RCLs (**Figure 13**) and therefore must be addressed to facilitate non-industrial redevelopment of the Property.

Geologic and Hydrogeologic Characteristics. As noted in Section 1.5, no COCs were present in groundwater at the Property at quantifiable concentrations greater than promulgated NR 140 standards. PFAS were detected in groundwater at concentrations that might pose a risk to human health. As described in Stantec (2023c), the proposed non-industrial redevelopment of the Property includes construction of sitewide engineered barriers, which will be maintained with continuing obligation(s). The continuing obligation(s) will prevent direct contact with residual groundwater impacts (including PFAS) while natural attenuation continues to reduce residual impacts.

As a conservative best management practice, clay dams/plugs will be installed at the Property boundary in utility trenches, which include coarse bed and backfill material, to minimize the potential for contaminant migration.

Significant dewatering is not anticipated at this time. Groundwater or stormwater that requires removal will be characterized and managed appropriately by the Contractor.

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REMEDIAL ACTION PLAN & MATERIALS MANAGEMENT PLAN

Phase 2 Redevelopment Area of the River Point District; River Point Drive Rights of Way; River Point District; Manitowoc, Wisconsin

Unavailability of Environmentally Suitable Alternatives. The proposed Project in this RAP/MMP will redevelop the vacant brownfield as River Point Drive ROW infrastructure. In comparing the selected reuse alternative with the complete off-site landfill disposal of impacted soil/fill alternative, it was determined that the Project would not be economically feasible to construct if all the impacted soil/fill was landfilled due to the added financial burden.

Compliance with Other State and Federal Regulations. Soil management will follow other state and federal regulations and additional permits and approvals obtained as needed. The entire area will be managed as a construction site with proper erosion control and the soil will be managed per approved material management and capping plans for the Property designed to be protective of human health and the environment. Remaining soil impacts will be capped with an engineered barrier described in Section 2.4. Erosion control measures will be taken to prevent the potential runoff or surface migration of contaminants during construction per any necessary permits (refer to the grading and erosion control plan exhibit [Sheet C1.01] of the River Point Drive Development Set included in **Appendix A**).

3.2 SITEWIDE PRELIMINARY GRADING

Property grading information is included on the grading and erosion control plan exhibit (Sheet C1.01) of the River Point Drive Development Set included in **Appendix A**. Project construction work includes importing, compacting, and grading approximately 16,000 cubic yards of clean fill to raise the grade of the Property between three and 10 feet above current grade and provide weight/pressure to compress the underlying organic/compressible soils. Preliminary grading and compaction will be performed as early as possible at the Property (Summer 2023) to provide the amount of time for the required settlement of these filled areas prior to future streetscape and/or utility installation. The preliminary grading will serve as an immediate barrier for direct contact until final streetscape/utility work (**Figure 5**) is completed later in 2023/2024.

3.3 UTILITY ABANDONMENT AND NEW UTILITY INSTALLATION

A potable water main at the Property was previously abandoned in place as part of River Point District development activities in 2021 (refer to **Figure 2**). When soils have undergone suitable settlement and compaction, new utilities and streetscape will be installed within the future road ROWs on the Property to support future residential and commercial redevelopment at the River Point District.

Future work includes the installation of storm sewer, sanitary sewer, and potable watermain infrastructure. The spoil generated during utility trenching is not anticipated to disturb the impacted granular fill material at the Property (i.e., proposed utility excavations are sufficiently shallow to not encounter this material). In the event that impacted materials are unexpectedly encountered in utility excavations, they will be transported offsite for disposal. As a best management practice, a clay plug will be installed in the utility trench at the property boundary to reduce the potential for contaminant migration.

3.4 SOIL MOVEMENT AND MANAGEMENT

No impacted fill/soil will be disturbed as part of the proposed remediation work. If impacted materials are encountered during future utility installation, the material will be transported offsite for disposal at a licensed solid waste landfill. Should it be necessary to place cut material in stockpiles, the stockpiles will be maintained in general accordance with Chapter NR 718.05 WAC.

3.5 OFFSITE DISPOSAL OF CONTAMINATED MATERIALS

As the Property requires a large amount of fill for grading as part of the project, offsite disposal of soil or fill sourced from the Property is not anticipated. In the event that impacted materials are unexpectedly encountered (ex. during utility trenching), cut materials will be transported offsite for disposal at a licensed solid waste landfill. If free flowing groundwater and/or accumulated stormwater is encountered in the excavations, fluids will be removed for offsite treatment and disposal.

JUNE 2, 2023

REMEDIAL ACTION PLAN & MATERIALS MANAGEMENT PLAN

Phase 2 Redevelopment Area of the River Point District; River Point Drive Rights of Way; River Point District; Manitowoc, Wisconsin

3.6 POTENTIALLY CONTAMINATED MATERIALS AND OTHER MATERIALS

Surface Water and Groundwater Management

Dewatering is not anticipated during Property construction.

To assess and prevent run-off, erosion, and stormwater control during construction activities on the Property, the Contractor will submit a final Erosion Control Plan as part of the required Chapter NR 216 Notice of Intent submittal.

Management of Vegetation from Clearing and Grubbing

The majority of vegetation on the Property was cleared and grubbed in Fall 2020. Any remaining woody materials requiring removal from the Property as part of Project construction will be managed by the Contractor for offsite disposal.

Additional Materials

Other materials associated with prior railroad or industrial uses may be encountered during redevelopment. Solid wastes (if encountered) will be transported offsite for proper disposal at a licensed landfill. Potentially hazardous wastes, if encountered, will be characterized appropriately and transported offsite for appropriate management.

3.7 ENGINEERED CAP

As illustrated on **Figure 5**, a small quantity of fill will be placed on adjacent parcels for safety reasons and to maintain an OSHA-safe slope. The surfaces of adjacent parcels will be finished with a variety of engineered barriers which will be described in future RAP/MMP submittals. Fill placed in the adjacent parcels will be finished with topsoil and vegetated in grass to prevent erosion until a future developer begins work.

Site Cover System

To achieve the objectives of the grading plan, the ground surface is being raised between three to 10 feet across the entire Property. As described in Section 2.4 and illustrated on **Figure 5**, an engineered barrier will cover the entire Property and will consist of asphalt, concrete, and landscaping. Where a soil cover (cap) system is required (ex. landscaping), the final cap will consist of a minimum of 19 inches of clean fill soil followed by placement of five inches of clean topsoil. Soil will either come from characterized soil from municipal projects or granular fill imported from a quarry. Topsoil will be seeded and vegetated to reinforce and maintain the soil cap. Construction details of these cap features are depicted on the cross section of the final proposed surface at the Property (Sheet C7.10) of the River Point Drive Development Set included in **Appendix A**.

Cover System Placement

The Contractor will have a field representative present during soil cover system placement activities at the Property.

Stantec anticipates that the placement of the final cap on the Property will occur in phases, rather than as a one-time event. This will require Property maintenance to prevent stormwater and wind erosion should the material be exposed for extended periods of time. Erosion and stormwater control at the Property will follow WDNR Best Management Practices (BMPs). As discussed in Section 3.6, The Contractor will be held to the requirements for a final Erosion Control Plan as part of the required Chapter NR 216 Notice of Intent submittal.

JUNE 2, 2023

REMEDIAL ACTION PLAN & MATERIALS MANAGEMENT PLAN

Phase 2 Redevelopment Area of the River Point District; River Point Drive Rights of Way; River Point District; Manitowoc, Wisconsin

Future Utility Installation

Once soils are sufficiently compacted, an addendum to this RAP/MMP will be submitted to WDNR to guide the installation of utilities within the ROW. In general, the Contractor will oversee utility excavations, screen excavated soils for unanticipated contamination, and document that excavated materials are placed such that they will ultimately be covered by the full 24-inch-thick cap of clean soil and/or hardscape. Material displaying obvious contamination or containing deleterious material (ex. brick, wood, or possible waste) will be segregated from soils encountered on the Property and managed via disposal.

Stantec anticipates that filling, rough grading and construction will be completed by Winter 2023, with final paving, landscaping and seeding completed in 2024.

3.8 SCHEDULE

River Point Drive ROW construction is estimated to be completed by Summer 2024. The general planned sequence of work is as follows:

- Mobilization;
- Installation of erosion control measures BMPs;
- Installation of stormwater control BMPs;
- Sitewide grading and compaction (to allow for settlement prior to utility installation);
- Utility installation; and
- Final grading, capping and establishing vegetation within the Project area.

3.9 CONSTRUCTION OBSERVATION AND CONTINGENCY PROCEDURES

Construction observation will be performed by a qualified environmental engineer/consultant to document the source/placement/compaction of imported materials.

Once soils are sufficiently compacted, an addendum to this RAP/MMP will be submitted to WDNR to guide the installation of utilities within the ROW. During future utility installation, construction observation objectives will include confirming and documenting management of contaminated soil, if encountered during excavation, and overseeing final cap construction. Future excavated materials will be monitored by onsite personnel for the presence of:

- Strong or unusual odors indicative of petroleum impacts;
- Unusual soil discoloration not previously noted;
- Change in soil conditions not previously noted; and
- Possible industrial or solid waste (e.g., slag, cinders, tires, etc.).

If any of the above or other suspect materials are unexpectedly identified during future utility excavation operations, excavation in this area will be suspended until the materials encountered are evaluated for proper management methods. The City's onsite representative and the general Contractor will evaluate unusual situations on a case-by-case basis to determine the appropriate alternative response required. In each situation, the City's onsite representative will direct the Contractor on proper disposal of the material. The protocol when such unusual or changed conditions arise is as follows:

- If the material encountered is unplanned or unexpected, stop work immediately within the general area of the discovery until directed otherwise by the field representative. The Contractor may continue working in a different area if one is available.
- The City's onsite representative will document the location where the discovery was made, the material type, volume, and characteristics.
- As directed by the City's onsite representative, the Contractor shall temporarily stockpile the material and cover the material with plastic.

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REMEDIAL ACTION PLAN & MATERIALS MANAGEMENT PLAN

Phase 2 Redevelopment Area of the River Point District; River Point Drive Rights of Way; River Point District; Manitowoc, Wisconsin

- If necessary, the City or their designee will develop a plan for more permanent remediation or management of the newly discovered material including material handling alternatives, staging requirements, additional sampling and analyses, and additional characterization profiling for disposal and/or reuse. The Contractor shall have, and understand, the plan prior to continuing work in the affected area.
- The City or its designee will complete the required additional notifications to WDNR, if warranted, and direct Contractor in the loading, manifesting, and transport if offsite disposal is required.

These records will be accumulated throughout the duration of the construction project and will be incorporated into post-construction documentation.

JUNE 2, 2023

REMEDIAL ACTION PLAN & MATERIALS MANAGEMENT PLAN

Phase 2 Redevelopment Area of the River Point District; River Point Drive Rights of Way; River Point District; Manitowoc, Wisconsin

4.0 CONCLUSIONS

This RAP/MMP was developed to guide the management of materials impacted with a variety of COCs during the upcoming ROW construction and utility installation in River Point Drive. Project construction work includes importing, compacting, and grading approximately 16,000 cubic yards of clean fill to raise the grade of the Property between three and 10 feet above current grade. The finished surface of the ROW will be constructed to serve as an engineered barrier, finished with hardscape (ex. concrete curbs/sidewalks and/or asphalt-paved streetscape) or landscaping (consisting of a minimum of 19 inches of clean fill plus five inches of clean topsoil finished with grass) to prevent direct human contact with contaminated soil and fill material and reduce leaching of residual impacts to groundwater.

Continuing obligations/institutional controls will provide future control of the direct contact pathway and provide a mechanism to maintain the integrity of the engineered barriers in the River Point Drive ROW. The Project area will be placed on the WDNR online GIS Registry for sites with residual soil and groundwater contamination and will have an approved cap maintenance plan which describes requirements for annual cap inspection and timely repair of any damaged/deteriorated areas.

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REMEDIAL ACTION PLAN & MATERIALS MANAGEMENT PLAN

Phase 2 Redevelopment Area of the River Point District; River Point Drive Rights of Way; River Point District; Manitowoc, Wisconsin

5.0 REFERENCES

AECOM, 2020, Former CN Property Limited Site Investigation, 200 North 10th Street & 1110 Buffalo Street, Manitowoc, WI, May 8, 2020.

Stantec, 2019, 10th Street Railroad Property, Manitowoc, Wisconsin, Phase I Environmental Site Assessment, March 21, 2019.

Stantec, 2020, Phase II Environmental Site Assessment, Riverpoint District; Manitowoc, Wisconsin, March 23, 2020.

Stantec, 2021. Remedial Action Plan & Materials Management Plan, River Point District, Phase 1 Construction Area; Manitowoc, Wisconsin, Right of Way Project Area, July 19, 2021.

Stantec, 2022. Addendum to the Stantec (2021) Remedial Action Plan & Materials Management Plan, River Point District, Phase 1 Construction Area; Manitowoc, Wisconsin, BRRTS # 02-36-585491, July 29, 2022.

Stantec, 2023a. Remedial Action Plan & Materials Management Plan, River Point District, Phase 2 Construction Area; Manitowoc, Wisconsin, Right of Way Project Area, *in press*.

Stantec, 2023b. Remedial Action Plan Addendum – River Point Drive ROW, May 15, 2023.

Stantec, 2023c. Site Investigation Report, River Point District Phase 2 Construction Area; Manitowoc, Wisconsin, June 2, 2023.

WDNR, 2023a, Wisconsin Department of Natural Resources RR Sites Map, accessed by Whitney Cull (Stantec), May 31, 2023.

WDNR, 2023b, Wisconsin Department of Natural Resources Surface Water Data Viewer, accessed by Whitney Cull (Stantec), May 16, 2023.

WDNR, 2023c, Wisconsin Department of Natural Resources Well Construction Information System, accessed by Whitney Cull (Stantec), May 16, 2023.

JUNE 2, 2023

REMEDIAL ACTION PLAN & MATERIALS MANAGEMENT PLAN

Phase 2 Redevelopment Area of the River Point District; River Point Drive Rights of Way; River Point District; Manitowoc, Wisconsin

6.0 LIMITATIONS

The conclusions in this letter are Stantec's professional opinion, as of the time of the letter, and concerning the scope described in the letter. 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. This letter relates solely to the specific project for which Stantec was retained and the stated purpose for which the letter was prepared. This letter 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 and the CDA and third parties in the preparation of this letter 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 letter is intended solely for use by the City and the CDA in accordance with Stantec's contract with the City and the CDA. While this letter may be provided to applicable authorities having jurisdiction and others for whom the City and the CDA is responsible, Stantec does not warrant the services to any third party. This letter 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

APPENDICES

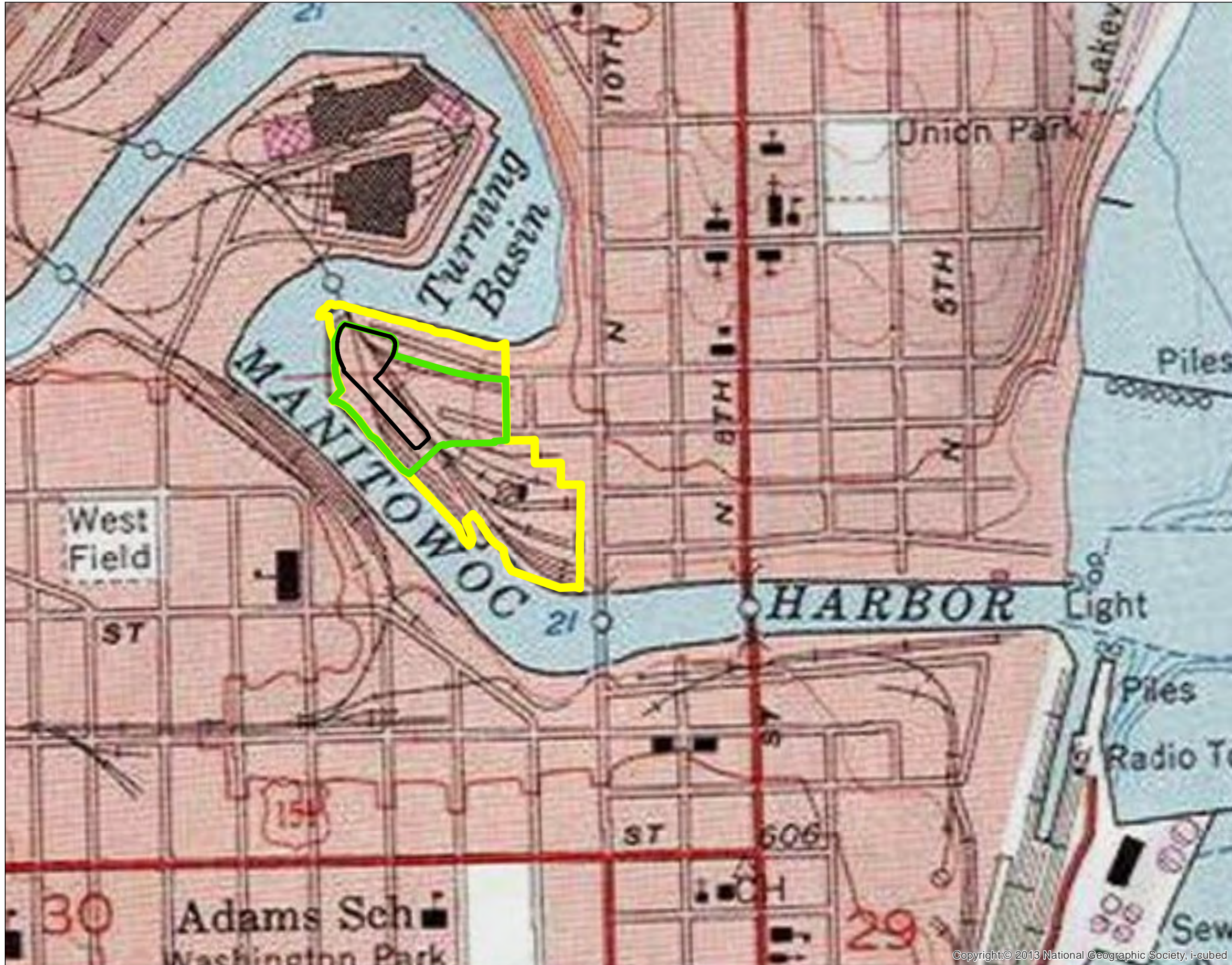


Figure No.

1

Title




Property Location and
Regional Topography

Client/Project
River Point Drive Rights of Way
River Point District
City of Manitowoc

0 395 790 Prepared by HLB on 5/31/2023

Feet

Legend

-  River Point District
-  River Point Drive Rights of Way
-  Phase 2 Redevelopment Area



NOTE:
1. Coordinate System: NAD 1983 StatePlane Wisconsin South FIPS 4803 Feet
2. Orthophotograph: Manitowoc County, 2020






Figure No.
2
 Title
**Property Location and
 2020 Orthophotograph**
 Client/Project
 River Point Drive Rights of Way
 River Point District
 City of Manitowoc
 0 125 250 Feet Prepared by HLB on 5/8/2023

Legend

- River Point District
- River Point Drive Rights of Way
- Phase 2 Redevelopment Area





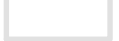
NOTE:
 1. Coordinate System: NAD 1983 StatePlane Wisconsin South FIPS 4803 Feet
 2. Orthophotograph: Manitowoc County, 2020






Figure No.
3
 Title
Property Location and Parcel Identification Numbers
 Client/Project
 River Point Drive Rights of Way
 River Point District
 City of Manitowoc
 0 125 250 Feet Prepared by HLB on 5/31/2023

Legend

-  River Point District
-  Riverpoint Drive Rights of Way
-  Parcel Identification Numbers



NOTE:
 1. Coordinate System: NAD 1983 StatePlane Wisconsin South FIPS 4803 Feet
 2. Orthophotograph: Manitowoc County, 2020



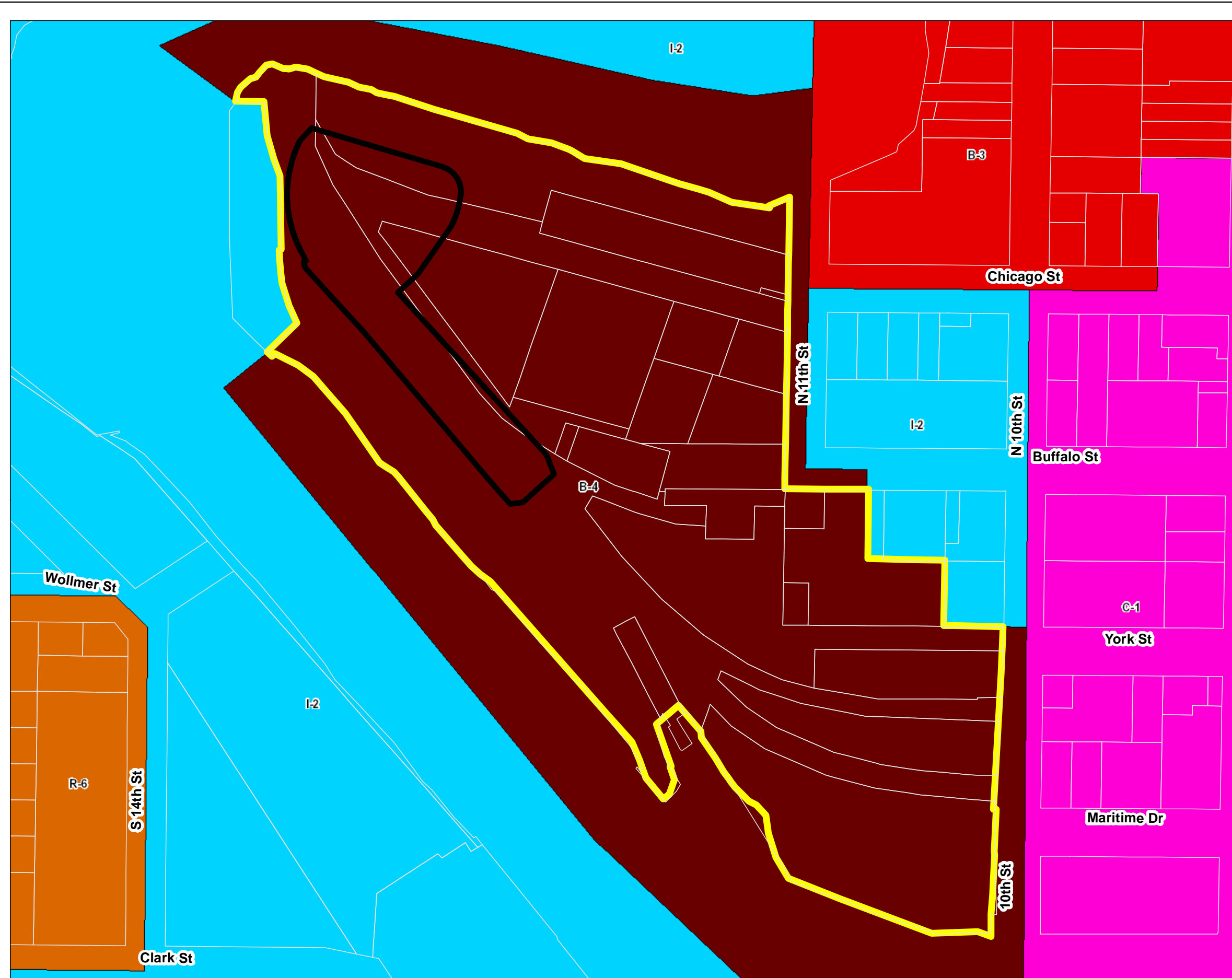
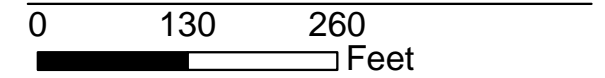


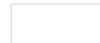


Figure No.
4
 Title
Property Location and Zoning

Client/Project
 River Point Drive Rights of Way
 River Point District
 City of Manitowoc
 Prepared by HLB on 5/10/2023



Legend

-  River Point District
-  Riverpoint Drive Rights of Way
-  Parcels



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.
5
 Title
Proposed Reuse and Engineered Barriers
 Client/Project
 River Point Drive Rights of Way
 River Point District
 City of Manitowoc
 0 55 110 Feet Prepared by HLB on 5/8/2023

Legend

River Point District

River Point Drive Rights of Way

Proposed Redevelopments

Town Homes (2025-2026)

Town Homes (2024-2025)

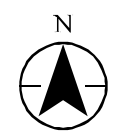
Roadway (2021-2024)

Landscaping (2023-2025)

Multi-Family Residential (2023-2024)

Sidewalk (2024-2025)

Proposed Commercial (2025-2026)



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





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. **6**
 Title
Project Area and Historic Site Features (19th Century)
 Client/Project
 River Point Drive Rights of Way
 River Point District
 City of Manitowoc
 0 125 250 Feet
 Prepared by HLB on 4/15/2021

Legend

- River Point Drive Rights of Way
- River Point District
- Additional Site Features (see table)
- Bank of the Manitowoc River

Carl Zander Planing Mill and Factory (~1870s-1895)

Site Feature

- Drying House
- Engine Room
- Lumber
- Planing Mill
- Warehouse
- Shavings
- Shed
- Steam Boxes

Notes

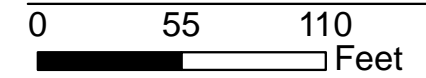
- Coordinate System: NAD 1983 StatePlane Wisconsin South FIPS 4803 Feet
- Historic Site features illustrated on this figure were digitized from multiple historic maps/sources, including City Assessor files, WDNR files, and Sanborn (R) Fire Insurance Maps. These features are provided for illustration purposes only; Stantec makes no warranty as to the accuracy of these features.
- Orthophotograph: Manitowoc County, 2020



Key	Site Feature
7	Coal Shed
8	Coal Storage
17	Unk
24	Storage
25	Unknown
26	Residential Dwelling
28	Unknown Bldg
29	Unk (possible AST?)
30	Unk (possible AST?)
35	Warehouse

Figure No.
7
Title
Historic Site Features (20th Century)

Client/Project
River Point Drive Rights of Way
River Point District
City of Manitowoc



Legend

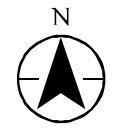
- River Point Drive Rights of Way
- River Point District
- Historic Site Features (see table for details)

Prior Site Features (City Records)

- Oil House (2)
- Oil Tank (AST) (26)
- Pump House (4)
- UST (1)
- Railroad Spurs

Additional Site Features (WDNR Files)

- Former UST (8)
- Product Piping (1)
- Pump House (1)
- Soil Excavation (1)



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



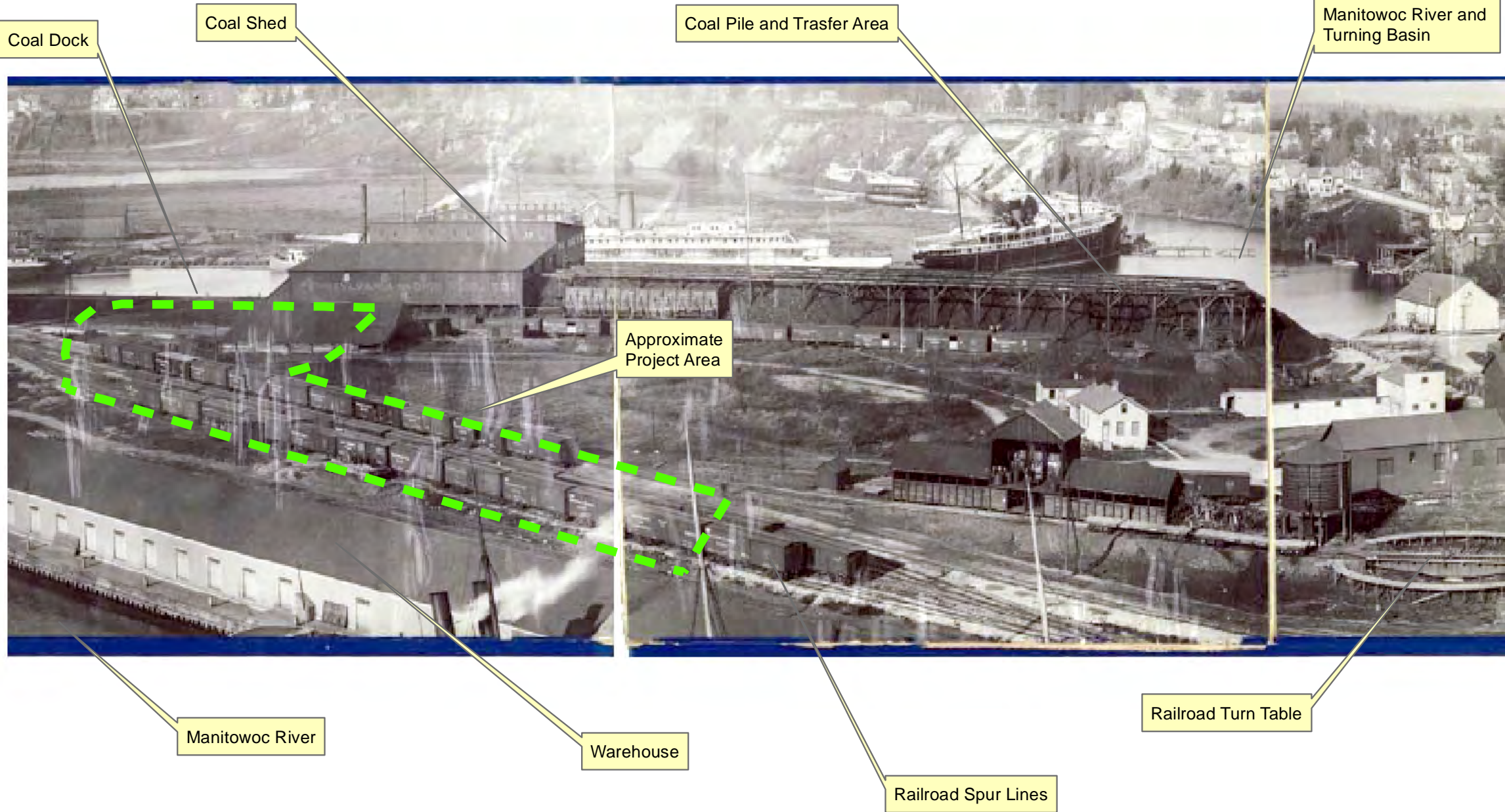
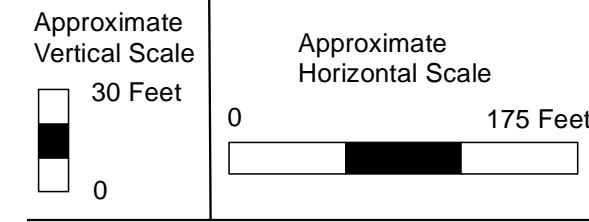


Figure No.
8
 Title
1898 Panoramic Photograph

Client/Project
 River Point Drive Rights of Way
 River Point District
 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.





Figure No.
9
 Title
 Fill Material Thickness

Client/Project
 River Point Drive Rights of Way
 River Point District
 City of Manitowoc

0 125 250 Feet Prepared by HLB on 5/8/2023

Legend

River Point Drive Rights of Way

River Point District

Depth to Bottom of Fill
(Feet Below Ground Surface)

- 7.111 - 8
- 6.222 - 7.111
- 5.333 - 6.222
- 4.444 - 5.333
- 3.556 - 4.444
- 2.667 - 3.556
- 1.778 - 2.667
- 0.889 - 1.778
- 0 - 0.889

Notes

1. Coordinate System: NAD 1983 StatePlane Wisconsin South FIPS 4803 Feet
2. Orthophotograph: Manitowoc County, 2020





Figure No. 10
 Title Sample Locations and Soil Impacts

Client/Project River Point Drive Rights of Ways
 River Point District
 City of Manitowoc

0 55 110 Feet
 Prepared by HLB on 5/8/2023

Legend

- River Point District
- River Point Drive Rights of Way

Sample Locations

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

Soil Impacts

- Petroleum PAH > IDC
- Petroleum PAH > NIDC
- PVOC > IDC
- PVOC > NIDC
- PVOC > GW Pathway
- CVOCs > GW Pathway

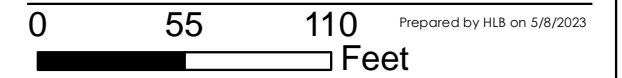
Notes
 1. Coordinate System: NAD 1983 HARN WISCRS Manitowoc County Feet
 2. Orthophotograph: Manitowoc County, 2020
 3. PAH = polycyclic aromatic hydrocarbon; PVOC = petroleum volatile organic compound; CVOC = chlorinated volatile organic compound; SVOC = semi-volatile organic compound; IDC = industrial direct contact residual contaminant level; NIDC = non-industrial direct contact residual contaminant level; GW = groundwater.
 4. Soil impacts illustrated on this drawing are in addition to the sitewide metals and PAH impacts associated with historic granular fill materials.






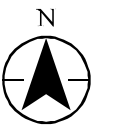
Figure No.
11
 Title
**Project Area and Groundwater
 Elevation (March 2023)**

Client/Project
 River Point Drive Rights of Ways
 River Point District
 City of Manitowoc



Legend

-  River Point District
-  River Point Drive Rights of Way
-  Groundwater Monitoring Well
-  Groundwater Elevation (feet above mean sea level)



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





Figure No. 12
 Title Sample Locations and Groundwater Impacts
 Client/Project River Point Drive Rights of Ways
 River Point District
 City of Manitowoc
 0 55 110 Feet
 Prepared by HLB on 5/8/2023

Legend

River Point District
 River Point Drive Rights of Way

Sample Locations

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

Groundwater Impacts

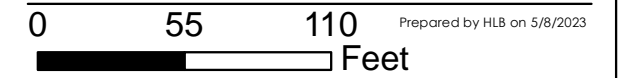
- Cyanide > PAL
- CVOC > ES
- CVOC > PAL
- PVOC > ES
- PVOC > PAL

Notes

1. Coordinate System: NAD 1983 HARN WISCRS Manitowoc County Feet
2. Orthophotograph: Manitowoc County, 2020
3. PVOC = petroleum volatile organic compound; CVOC = chlorinated volatile organic compound; PAL = Preventive Action Limit; ES = Enforcement Standard

Figure No. 13
 Title PFAS Concentrations in Groundwater

Client/Project
 River Point Drive Rights of Ways
 River Point District
 City of Manitowoc

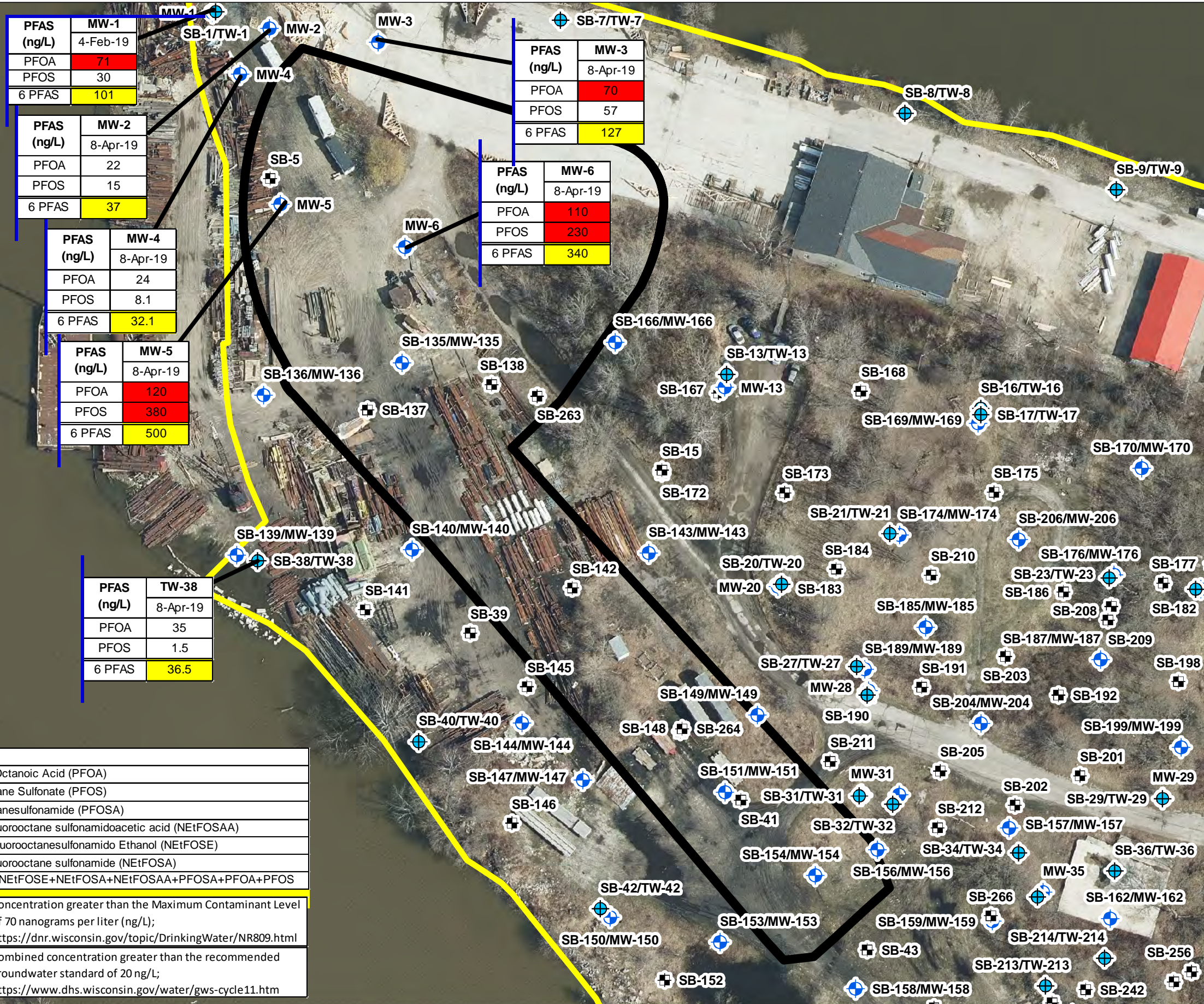


Legend

- River Point District
- River Point Drive Rights of Way

Sample Locations

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



Notes	
Perfluoro-n-Octanoic Acid (PFOA)	
Perfluorooctane Sulfonate (PFOS)	
Perfluorooctanesulfonamide (PFOSA)	
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	
N-Ethyl Perfluorooctanesulfonamido Ethanol (NEtFOSE)	
N-ethyl perfluorooctane sulfonamide (NEtFOSA)	
6 PFAS are NEtFOSE+NEtFOSA+NEtFOSAA+PFOSA+PFOA+PFOS	
	Concentration greater than the Maximum Contaminant Level of 70 nanograms per liter (ng/L); https://dnr.wisconsin.gov/topic/DrinkingWater/NR809.html
	Combined concentration greater than the recommended groundwater standard of 20 ng/L; https://www.dhs.wisconsin.gov/water/gws-cycle11.htm

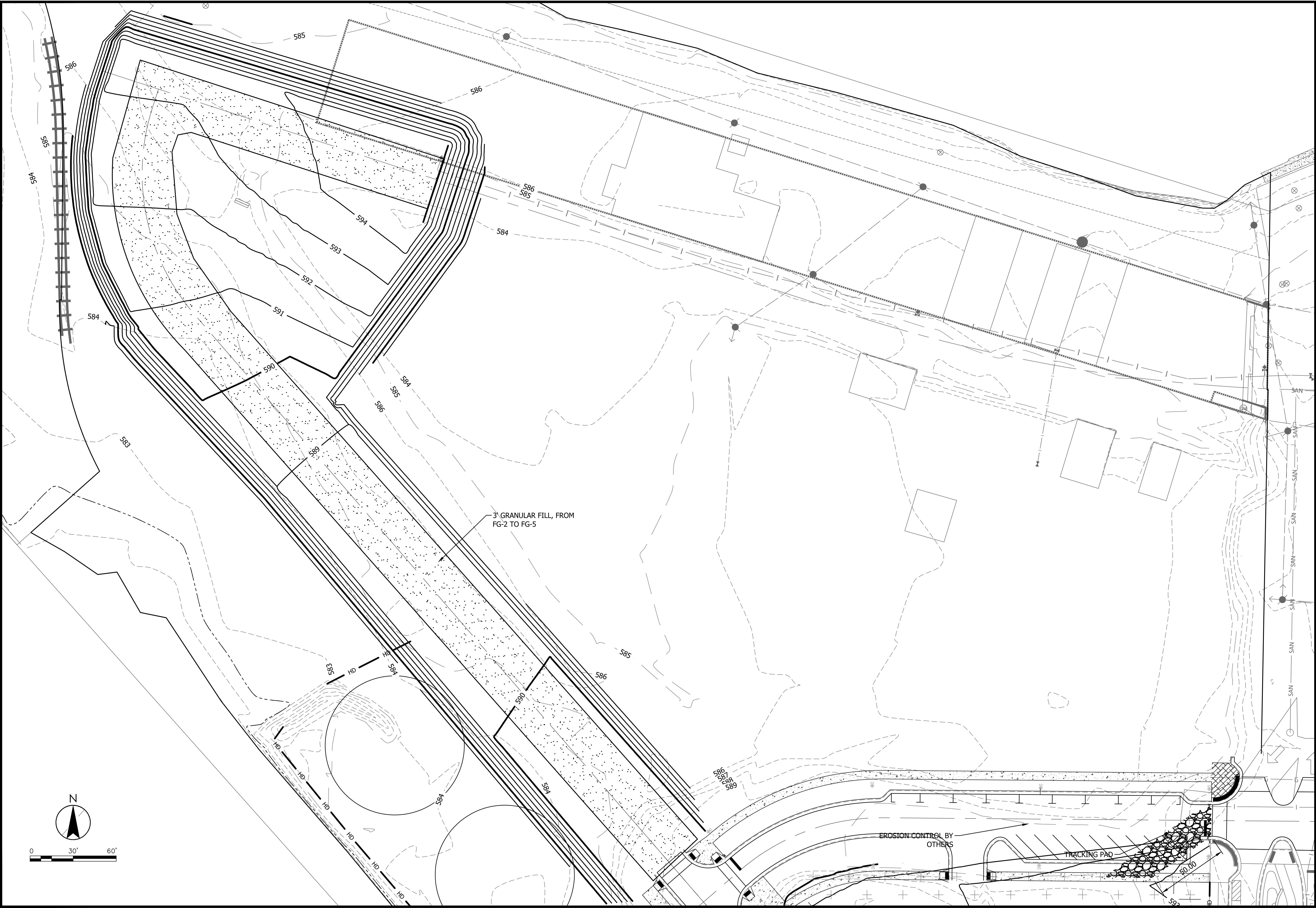
Notes
 1. Coordinate System: NAD 1983 HARN WISCRS Manitowoc County Feet
 2. Orthophotograph: Manitowoc County, 2020



APPENDIX A
River Point Drive Development Set
(Sheets C1.01 & C7.10)

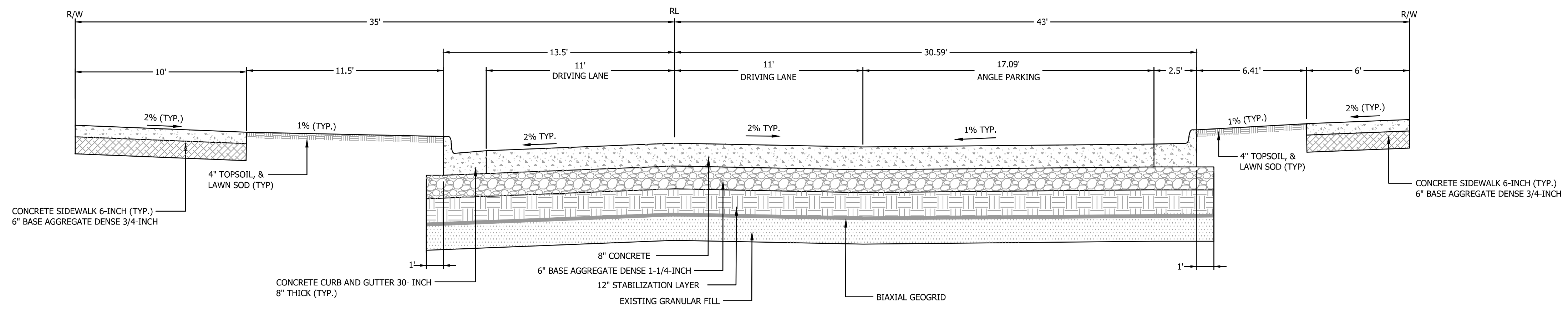
THE CONTRACTOR SHALL VERIFY AND BE RESPONSIBLE FOR ALL DIMENSIONS. DO NOT SCALE THE DRAWING. ANY ERRORS OR OMISSIONS SHALL BE REPORTED TO STANTEC WITHOUT DELAY. REPRODUCTION OR USE FOR ANY PURPOSE OTHER THAN THAT AUTHORIZED BY STANTEC IS FORBIDDEN.

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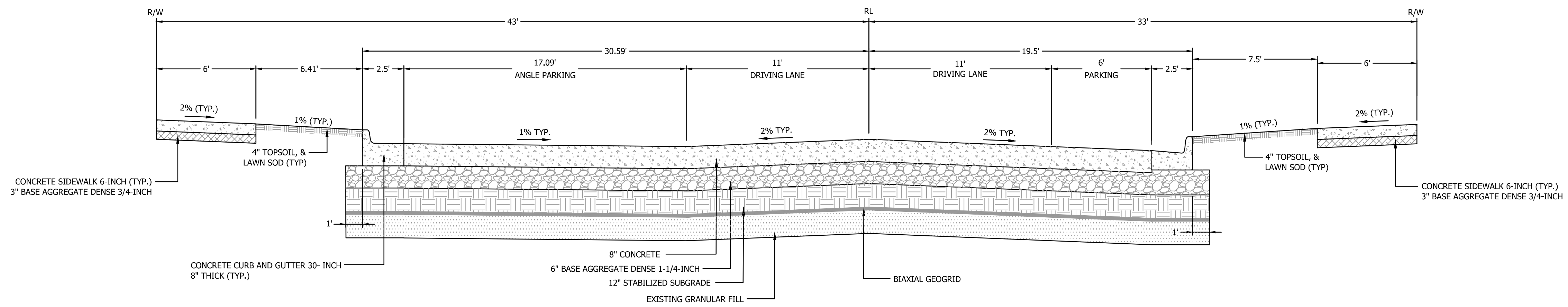


DATE OF ISSUANCE	May 30, 2023
NO. REVISION	DATE
SURVEY	#####
DRAWN	
DESIGNED	
CHECKED	---
APPROVED	###
PROJ. NO.	193709261
SHEET NUMBER	C1.01

THE CONTRACTOR SHALL VERIFY AND BE RESPONSIBLE FOR ALL DIMENSIONS. DO NOT SCALE THE DRAWING. ANY ERRORS OR OMISSIONS SHALL BE REPORTED TO STANTEC WITHOUT DELAY. REPRODUCTION OR USE FOR ANY PURPOSE OTHER THAN THAT AUTHORIZED BY STANTEC IS FORBIDDEN.



1 RIVER POINT 2 - CONCRETE
NTS



2 BUFFALO 2 - CONCRETE
NTS

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ROAD CROSS SECTION
RIVER POINT - WATERFRONT
CITY OF MANITOWOC
MANITOWOC, WISCONSIN

DATE OF ISSUANCE
2/2/2023

NO.	REVISION	DATE

SURVEY	CENTERPOINT
DRAWN	MF
DESIGNED	MF
CHECKED	MAB
APPROVED	JAW
PROJ. NO.	193805824

SHEET NUMBER
C7.10