From: Beggs, Tauren R - DNR
Sent: Friday, June 9, 2023 7:11 AM
To: Byers, Harris; Adam Tegen
Cc: Knapke.Eric@epa.gov
Subject: RE: Remedial Action Plan for Removal of Apparent Oxide Box Waste Fill Materials

Got it, thanks Harris

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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, June 8, 2023 10:51 AM
To: Beggs, Tauren R - DNR <Tauren.Beggs@wisconsin.gov>; Adam Tegen <ategen@manitowoc.org>
Cc: Knapke.Eric@epa.gov
Subject: Remedial Action Plan for Removal of Apparent Oxide Box Waste Fill Materials

Team:

To supplement the recently submitted RAP for the extension of River Point Drive, attached is a RAP for removal of apparent oxide box waste fill from the Phase 2 Redevelopment Area at the River Point District.

Tauren – I just uploaded a copy through the portal for your records.

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

Stantec Consulting Services Inc.
12080 Corporate Parkway, Suite 200 Mequon WI 53092

June 8, 2023
File: 193709261

Attention: Mr. Adam Tegen
Community Development Director
900 Quay Street
Manitowoc, WI 54220

Dear Mr. Tegen,

Reference: Remedial Action Plan for Removal of Apparent Oxide Box Waste Fill Materials
Phase 2 Redevelopment Area at the River Point District
Manitowoc, Wisconsin
BRRTS ID: 02-36-585491 (LGU)
Stantec Project #: 193709261

On behalf of the Community Development Authority of the City of Manitowoc (CDA) Stantec Consulting Services Inc. (Stantec) prepared this Remedial Action Plan (RAP) to facilitate excavation and offsite disposal of apparent oxide box waste from the Phase 2 Redevelopment Area at the River Point District. Work completed under this RAP will follow the methods described in the Stantec (2023a) RAP for the Phase 2 Redevelopment Area.

The area targeted for cleanup under this RAP is referred to herein as the "Remediation Area." The locations of the River Point District (outlined in yellow), the Phase 2 Redevelopment Area (outlined in green) and the Remediation Area (outlined in black) are illustrated on **Figure 1** relative to regional topography and on **Figure 2** relative to an orthophotograph taken in 2020.

This RAP was completed using funds provided to the City of Manitowoc (City) by the United States Environmental Protection Agency (USEPA) through a brownfield assessment grant funded under Cooperative Agreement Number BF-00E03044.

BACKGROUND

The Stantec (2020a) Phase II Environmental Site Assessment described a property-wide black granular fill unit at the River Point District containing concentrations of heavy metals and polycyclic aromatic hydrocarbons (PAHS) greater than health-based soil quality standards. The granular fill unit was further delineated by Stantec in subsequent phases of investigation at the River Point District (e.g., 2020b, 2020c, 2021, 2023b).

Unique to the Remediation Area, while performing a test pit to search for evidence of a former underground storage tank on Site 3, Stantec (2020b) encountered fill material with Prussian blue coloration consistent with ferrocyanide salts in oxide box waste at approximately 2.5 feet below ground surface. Shallow groundwater was encountered approximately three feet below ground surface in the test pit and had a similar blue color. Additional soil borings, monitoring wells, and test pits were installed by Stantec (2020c, 2023b) to further delineate the extents of the apparent oxide box waste and confirm residual subsurface impacts. The concentrations of total cyanide in soil and groundwater are adapted from Stantec (2020c) on **Figure 3** and **Figure 4**, respectively. The apparent extents of the oxide box waste are illustrated on **Figure 5**. Constituents

detected in the apparent oxide box waste are summarized on **Table 1** compared to toxicity thresholds estimated using the "20-Times Rule" for constituents listed in 40 CFR 261.24.

Apparent oxide box waste fill could serve as a direct contact risk and an ongoing source of impacts to groundwater. Therefore, the excavation and offsite disposal of this material is warranted to facilitate non-industrial redevelopment within the Phase 2 Redevelopment Area.

PROPOSED RAP

Work completed under this RAP will follow the methods described in the Stantec (2023a) RAP for the Phase 2 Redevelopment Area. The remedial contractor will be responsible for obtaining all applicable construction permits. Removal will follow all state and federal laws/regulations related to environmental cleanup.

The groundwater monitoring wells within the proposed excavation will be abandoned per ch. NR141 at the start of the remedial work. Apparent oxide box waste will be excavated and transported offsite to a licensed solid waste landfill, pending landfill approval of the waste profile. The excavations will extend downward until the apparent waste is removed, which may include removal of material below the water table (estimated 4-5 feet below ground surface). Groundwater or stormwater that requires removal from the excavations will be characterized and managed appropriately by the remedial contractor.

The proposed excavation extents are illustrated on **Figure 5** and will be adjusted during excavation to remove the apparent waste. This remedial action is anticipated to remove approximately 140 cubic yards of material.

Confirmation soil samples will be collected along the sidewalls of the excavation to document removal. Samples will be analyzed for semi-volatile organic compounds (SVOCs). To supplement this remedial action, the remaining concrete slab (illustrated on **Figure 5)** adjacent to the apparent oxide box waste will be demolished and transported offsite to a licensed solid waste landfill.

The excavations will be backfilled to match the surrounding grade with clean imported granular fill described in the Stantec (2023a) RAP for the Phase 2 Redevelopment Area, and a construction documentation report will be prepared at the completion of the remedial action.

CONCLUSIONS

The proposed remedial action will remove approximately 140 cubic yards of apparent oxide box waste as a first step to facilitate non-industrial redevelopment in the Phase 2 Redevelopment Area. Once a developer is identified, a future RAP and Material Management Plan will be prepared and submitted to WDNR describing the final engineered barriers and continuing obligations necessary to facilitate non-industrial redevelopment within the Phase 2 Redevelopment Area.

Stantec recommends submitting this RAP to the Wisconsin Department of Natural Resources for concurrence that this RAP is appropriate to address apparent oxide box waste encountered in the Phase 2 Redevelopment Area.

Reference: Remedial Action Plan for Removal of Apparent Oxide Box Waste Fill Materials
Phase 2 Redevelopment Area at the River Point District; Manitowoc, Wisconsin
BRRTS ID: 02-36-585491 (LGU)

Regards,

Stantec Consulting Services, Inc.

Hiedi Ann Waller, P.E.
Project Engineer
hiedi.waller@stantec.com

Harris L. Byers, Ph.D.
Sr. Brownfields Project Manager
Tel: 414-581-6476
harris.byers@stantec.com

Stu Gross, P.G.,
Hydrogeologist; QA/QC Manager
stu.gross@stantec.com

Enclosures
Table
Figures

REFERENCES

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

Stantec, 2020b, Construction Documentation Report for Demolition and Removal of Structural Impediments, River Point District – Site 3, December 11, 2020.

Stantec, 2020c, Phase II Environmental Site Assessment, River Point District; Manitowoc, Wisconsin, Site 3, December 18, 2020.

Stantec, 2021, NR 716 Site Investigation Report, River Point District Phase 1 Construction Area, July 19, 2021.

Stantec, 2022, Analysis of Brownfield Cleanup Alternatives, Phase 2 Redevelopment Area, River Point District, Manitowoc, Wisconsin (Rev 4), October 18, 2022.

Stantec, 2023a, Remedial Action Plan and Materials Management Plan, Phase 2 Redevelopment of the River Point District, River Point Drive Rights of Way, June 2, 2023.

Stantec, 2023b, Site Investigation Report, River Point District Phase 2 Redevelopment Area, June 2, 2023.

LIMITATIONS

The conclusions in this addendum are Stantec's professional opinion, as of the time of the addendum, and concerning the scope described in the addendum. 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 addendum relates solely to the specific project for which Stantec was retained and the stated purpose for which the addendum was prepared. This addendum 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 third parties in the preparation of this addendum 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 addendum is intended solely for use by the CDA in accordance with Stantec's contract with the CDA. While this addendum may be provided to applicable authorities having jurisdiction and others for whom the CDA is responsible, Stantec does not warrant the services to any third party. This addendum may not be relied upon by any other party without the express written consent of Stantec, which may be withheld at Stantec's discretion.

TABLE

Table 1
Detected Constituents in Apparent Oxide Box Waste
Phase 2 Redevelopment Area
River Point District
Manitowoc, Wisconsin

Notes:

mg/kg	Milligram per Kilogram
µg/kg	Microgram per Kilogram
	Concentration is greater than the toxicity threshold using the "20-Times Rule" for constituents listed in 40 CFR 261.24
15.2	Measured concentration did not exceed the indicated standard.
<0.03	Analyte was not detected at a concentration greater than the laboratory reporting limit.
NE	Toxicity threshold not established
-	Parameter not analyzed.
<DL	Concentration less than the laboratory detection limit
RCRA	Resource Conservation and Recovery Act

Table 1
Detected Constituents in Apparent Oxide Box Waste
Phase 2 Redevelopment Area
River Point District
Manitowoc, Wisconsin

Detected Constituents in Soil	Units	Toxicity Threshold	SB-21		SB-27		SB-189	TP-18		TP-19	TP-22
			9/9/2020	9/9/2020	9/9/2020	9/9/2020	11/18/2022	06/08/2021	06/08/2021	06/08/2021	06/08/2021
			Surface	3 - 5 ft	Surface	0 - 2 ft	0 - 2 ft	2.5 ft	3 ft	3.5 ft	3ft
RCRA Metals											
Arsenic	mg/kg	100	-	9	-	5	-	-	26	17	73
Barium	mg/kg	2,000	-	110	-	71	-	-	150	140	110
Cadmium	mg/kg	20	-	0.98	-	0.21	-	-	< 0.31	< 0.27	0.51 J
Chromium	mg/kg	100	-	10	-	9.5	-	-	4.4 J	9.3	4.6 J
Lead	mg/kg	100	-	300	-	55	110	-	170	280	270
Mercury	mg/kg	4	-	0.31	-	0.15	-	-	1.3	0.26	1.5
Silver	mg/kg	100	-	<0.15	-	<0.13	-	-	< 1.1	2.9 J	< 1.2
Polycyclic Aromatic Hydrocarbons											
Acenaphthene	µg/kg	NE	-	45	780	-	650 J	640000	< 1600	< 200	1400 J
Acenaphthylene	µg/kg	NE	-	120	5800	-	1700	2500000	33000	1300	11000
Anthracene	µg/kg	NE	-	130	5800	-	1700	2100000	84000	980 J	5000
Benzo(a)anthracene	µg/kg	NE	-	550	14000	-	6000	2400000	420000	6500	40000
Benzo(a)pyrene	µg/kg	NE	-	670	17000	-	7600	2200000	320000	8100	15000
Benzo(b)fluoranthene	µg/kg	NE	-	1100	17000	-	8600	2300000	410000	13000	130000
Benzo(g,h,i)perylene	µg/kg	NE	-	430	6400	-	2700	650000	130000	4900	28000
Benzo(k)fluoranthene	µg/kg	NE	-	320	7000	-	3700	1100000	240000	5000	49000
Chrysene	µg/kg	NE	-	630	13000	-	6400	1900000	370000	6300	53000
Dibenzo(a,h)anthracene	µg/kg	NE	-	110	1900	-	880	240000	51000	1600	10000
Fluoranthene	µg/kg	NE	-	1300	25000	-	9700	5800000	730000	6800	16000
Fluorene	µg/kg	NE	-	150	4000	-	1100	2000000	5000 J	180 J	< 650
Indeno(1,2,3-cd)pyrene	µg/kg	NE	-	420	6400	-	2900	690000	160000	5800	36000
Methylnaphthalene, 1-	µg/kg	NE	-	310	2300	-	410 J	1900000	< 2200	510 J	1100 J
Methylnaphthalene, 2-	µg/kg	NE	-	270	2800	-	970 J	2700000	3600 J	890 J	1700 J
Naphthalene	µg/kg	NE	-	170	7500	-	1100	11000000	19000	1300	8800
Phenanthrene	µg/kg	NE	-	790	20000	-	5000	7800000	320000	2600	6100
Pyrene	µg/kg	NE	-	1200	32000	-	9600	4100000	620000	6600	17000
Semi-Volatile Organic Compounds											
Benzoic acid	µg/kg	NE	-	<440	-	<2000	<7,500	< DL	< DL	< DL	< DL
Bis(2-Chloroethyl)ether	µg/kg	NE	-	<67	-	<300	<1,100	< DL	< DL	< DL	< DL
Bis(2-Ethylhexyl)phthalate (DEHP)	µg/kg	NE	-	<81	-	<360	<1,400	< DL	< DL	< DL	< DL
Carbazole	µg/kg	NE	-	160 J	-	4100	<1,900	2000000	24000	< 2800	< 12000
Cresol, m & p- (Methylphenol, 3&4-)	µg/kg	4,000,000	-	<74	-	1800	<1,300	1800000	< 15000	< 1900	< 7700
Cresol, o- (Methylphenol, 2-)	µg/kg	4,000,000	-	<71	-	650 J	<1,200	880000	< 14000	< 1800	< 7400
Dibenzofuran	µg/kg	NE	-	140 J	-	2200	1,300 J	1600000	< 11000	< 1300	< 5400
Dimethylphenol, 2,4-	µg/kg	NE	-	310 J	-	<750	<2,900	720000	< 34000	< 4200	< 18000
N-Nitrosodi-n-Propylamine	µg/kg	NE	-	<54	-	360 J	<920	< DL	< DL	< DL	< DL
Phenol	µg/kg	NE	-	<99	-	1500	<1,700	1900000	< 20000	< 2500	< 10000
Volatile Organic Compounds											
Benzene	µg/kg	10,000	-	-	-	-	40	–	120	< 15	94
Ethylbenzene	µg/kg	NE	-	-	-	-	34	–	< 26	< 19	170
Naphthalene	µg/kg	NE	-	-	-	-	430	–	2100	90 J	1400
Styrene	µg/kg	NE	-	-	-	-	<26	–	110 J	< 40	180
Toluene	µg/kg	NE	-	-	-	-	140	–	120	20 J	120
Trimethylbenzene, 1,2,4-	µg/kg	NE	-	-	-	-	100	–	< DL	< DL	< DL
Xylenes, Total	µg/kg	NE	-	-	-	-	330	–	88	26 J	71 J
General Chemistry											
Cyanide, Total	mg/kg	NE	1,400	8	1000	120	130	3.5	–	–	–

See notes on last page

FIGURES

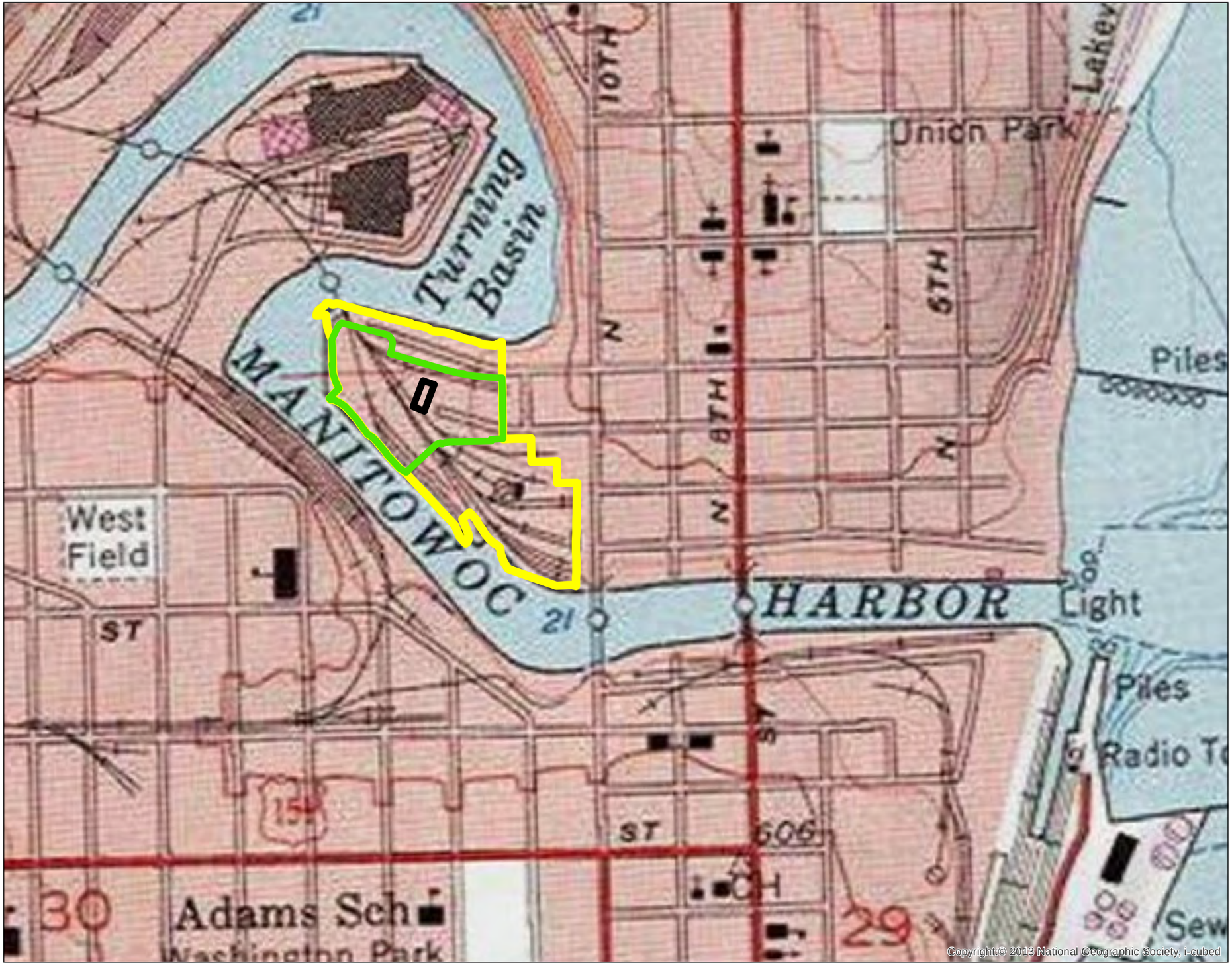


Figure No.
1

Title
Remediation Area and
Regional Topography

Client/Project
Apparent Oxide Box Waste Source Area
River Point District
City of Manitowoc

0 395 790 Feet

Prepared by HLB on 5/31/2023

Legend

- River Point District
- Remediation Area
- Phase 2 Redevelopment Area

N

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

Stantec

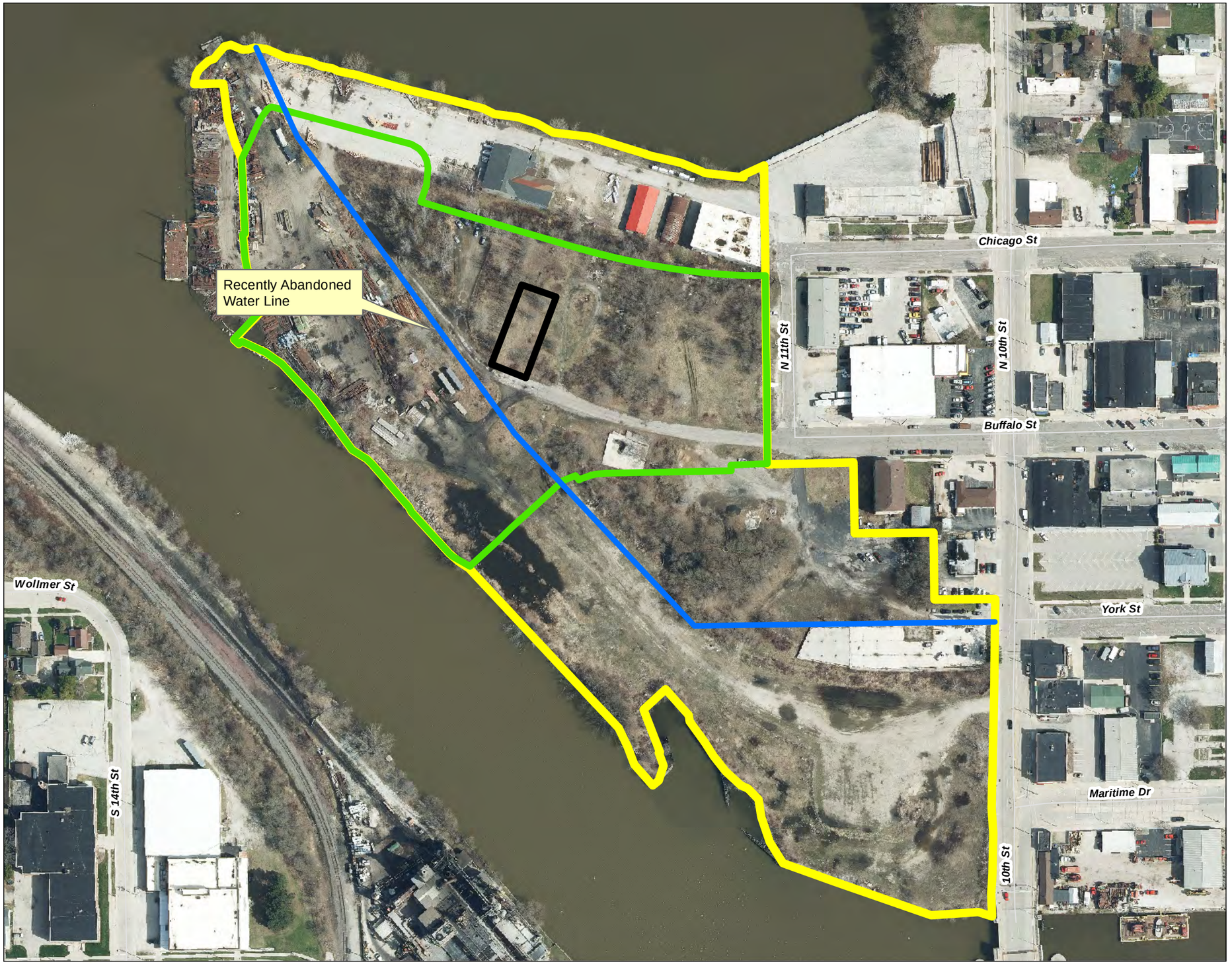


Figure No.
2

Title
Remediation Area and
2020 Orthophotograph

Client/Project
Apparent Oxide Box Waste Source Area
River Point District
City of Manitowoc

0 125 250 Feet

Prepared by HLB on 5/8/2023

Legend

N

- River Point District
- Remediation Area
- Phase 2 Redevelopment Area

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

Stantec

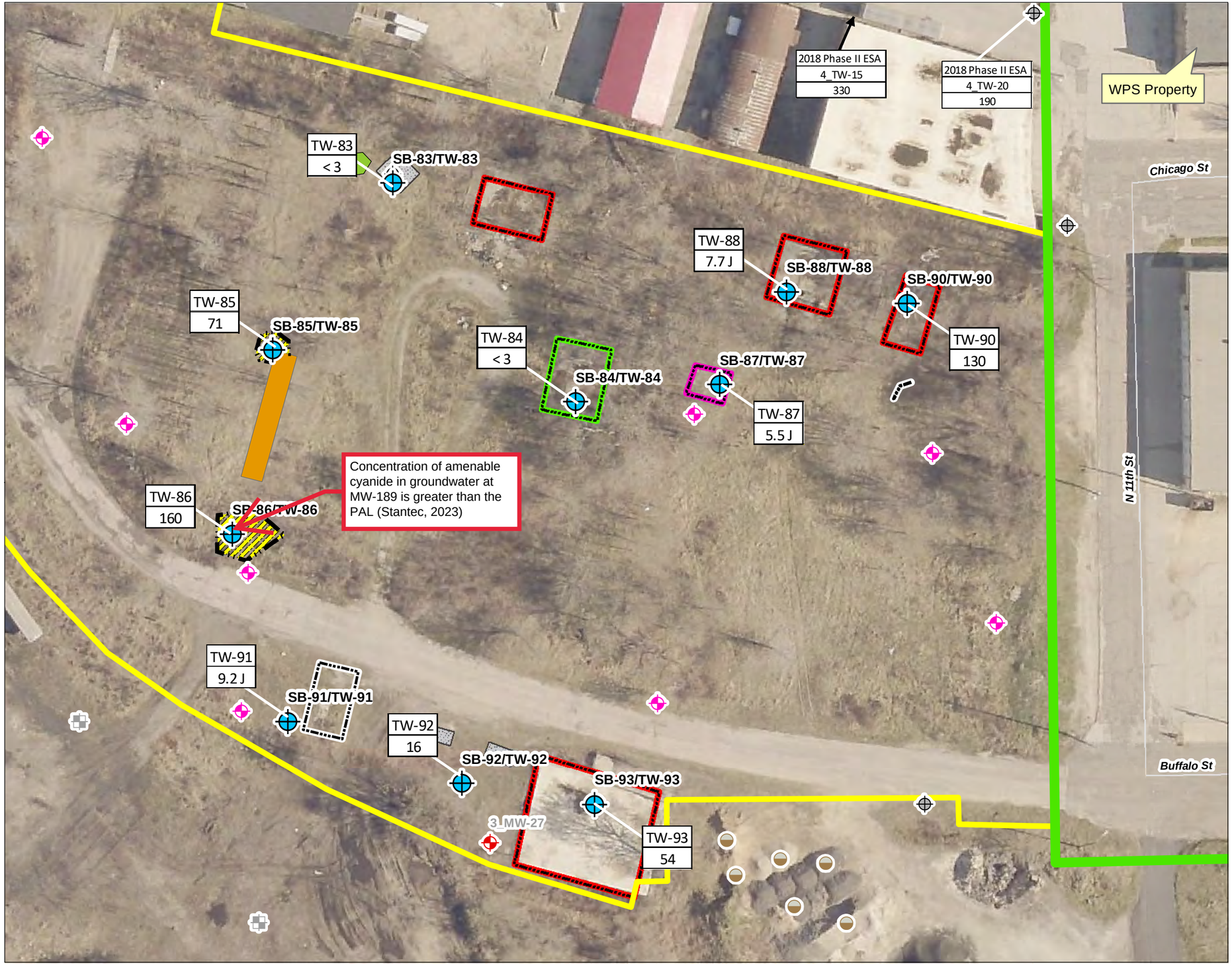


Figure No.
3
Title
Sample Locations & Total Cyanide (ug/L) in Groundwater

Client/Project
Apparent Oxide Box Waste Source Area
River Point District
City of Manitowoc

0 37.5 75 Feet
Prepared by HLB on 3/25/2020

N

Legend

- River Point District
- Site 3 - 1110 Bufalo Street
- Post-Slab Removal Sample Locations

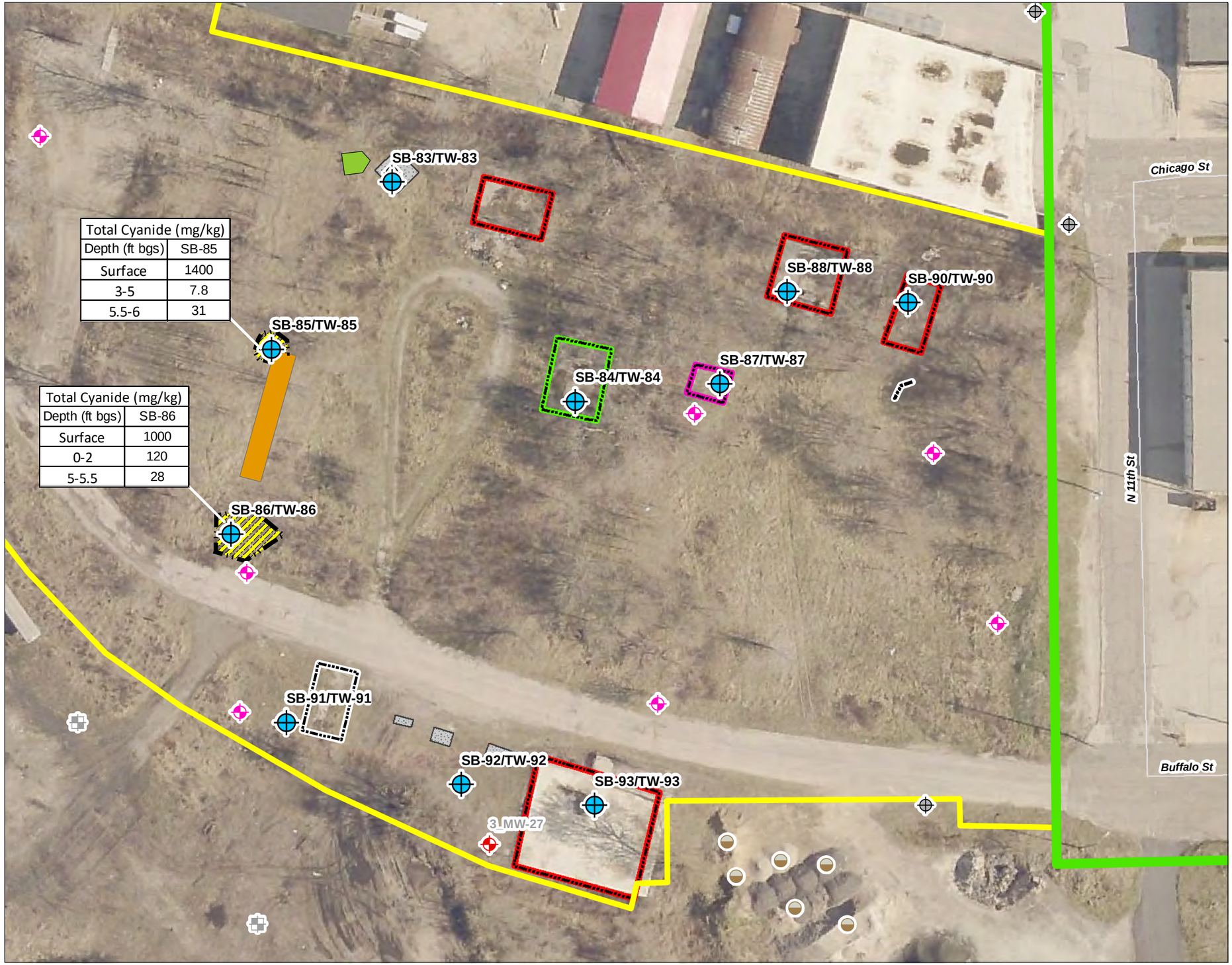
Prior Sample Locations (Stantec, 2020)
- Soil Boring (2)
- Surface Grab (6)
- Soil Boring/Temp Well (13)
- Groundwater Monitoring Well (1)
- Groundwater Monitoring Well (AECOM, 2020) (9)

Removed Slabs and Foundations
- Former Oil House (4)
- Former Pump House (1)
- Former Storage (?) (1)
- Misc. Concrete (4)

Remaining Features
- Concrete Debris
- Concrete Slab
- Concrete Wall
- Oxide Box Waste

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

Stantec



Total Cyanide (mg/kg)	
Depth (ft bgs)	SB-85
Surface	1400
3-5	7.8
5.5-6	31

Total Cyanide (mg/kg)	
Depth (ft bgs)	SB-86
Surface	1000
0-2	120
5-5.5	28

Figure No.
4

Title
Sample Locations and Total Cyanide Concentrations in Soil

Client/Project
Apparent Oxide Box Waste Source Area
River Point District
City of Manitowoc

0 37.5 75 Feet

Prepared by HLB on 3/25/2020

N

Legend

- River Point District
- Site 3 - 1110 Bufalo Street
- Post-Slab Removal Sample Locations

Prior Sample Locations (Stantec, 2020)

- Soil Boring (2)
- Surface Grab (6)
- Soil Boring/Temp Well (13)
- Groundwater Monitoring Well (1)
- Groundwater Monitoring Well (AECOM, 2020) (9)

Removed Slabs and Foundations

- Former Oil House (4)
- Former Pump House (1)
- Former Storage (?) (1)
- Misc. Concrete (4)

Remaining Features

- Concrete Debris
- Concrete Slab
- Concrete Wall
- Oxide Box Waste

Notes

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

Stantec

Figure No.
6

Title
Proposed Excavations

Client/Project
Apparent Oxide Box Waste Source Area
River Point District
City of Manitowoc

0 70 140 Feet

Prepared by HLB on 3/25/2020

N

Chicago St

N 11th St

Inset

TP-27
TP-29
TP-26
TP-28
SB-174/MW-174
SB-21/TW-21
TP-25
SB-184
TP-30
SB-210
TP-31
TP-21
TP-32
TP-20
TP-19
SB-185/MW-185
TP-35
TP-34
TP-33
Blue
TP-22
TP-18
TP-17
Tar
TP-24
TP-23
SB-189/MW-189
SB-191
MW-28
SB-28/TW-28
SB-190

0 25 50 100 Feet

Legend

River Point District

Phase 2 Redevelopment Area

Sample Locations

Soil Boring / Monitoring Well

Soil Boring

Soil Boring / Temp Well

Test Pits with Apparent Tar

Tar

Test Pits

Test Pits

Proposed Excavations

Oxide Box Waste

Remaining Features

Concrete Debris

Concrete Slab

Unknown Pipe

Water Valve

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

Stantec