Mr. Matt Thompson
Hydrogeologist
Remediation and Redevelopment Program
Wisconsin Department of Natural Resources
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Date: September 8, 2021
Our Ref: 30064038
Subject: 3M-Wausau, WI
Rail Lots, Railroad Right-of-Way
Revised Investigation Activities Work Plan
BRRTS Activity #02-37-587000

Dear Mr. Thompson,

On behalf of the 3M Company (3M), Arcadis U.S., inc. (Arcadis) is pleased to provide this Revised Work Plan for the supplemental investigation of arsenic in soil at the three lots which consist of railroad track and right-of-way (ROW) located from Sherman Street to West Thomas Street in Wausau, Marathon County, Wisconsin (the Site, **Figure 1**). The purpose of this Revised Work Plan is to describe the scope of work proposed during the June 24, 2021, conference call with Matt Thompson of the Wisconsin Department of Natural Resources (WDNR) and to address the requirements outlined in the WDNR letter dated February 26, 2021. *Please note the WDNR letter states the Bureau for Remediation and Redevelopment Tracking System (BRRTS) Activity # for the Site is BRRTS Activity #02-37-375870; however, the BRRTS on the Web Activity # for the Site is shown as BRRTS Activity #02-37-587000.*

Site Background

The Site consists of three lots approximately 0.23 acres (Lot 1), 1.74 acres (Lot 2), and 0.29 acres (Lot 3) in size and consists of railroad track and ROW (**Figure 2**). According to historical aerial photographs and topographic maps, the Site appears to have been developed with railroad tracks since 1898. 3M purchased the Site in November 2020.

The Site is surrounded by BRRTS Activity #02-37-000273 (3M Wausau Downtown Parking Lot, Closed) to the west and #02-37-000006 (Wauleco SNE Corp, Open) to the east. The adjacent properties to the east and west of the Site have been owned by 3M since at least 1961 and the current development footprint surrounding the Site has been consistent since at least 1998.

In September 2020, Arcadis conducted a Phase II Environmental Site Assessment (ESA) of the Site to support a property transaction. A total of five soil borings were advanced throughout the Site with three being converted to temporary monitoring wells.

- Soil data was compared to the Natural Resources (NR) 720 Wisconsin Administrative Code (WAC) Direct Contact Industrial (DCI) and Leaching Soil to Groundwater (LSG) screening criteria and the NR720 WAC

Wisconsin Background Threshold Values (BTVs). Groundwater data was compared to the NR140 WAC Enforcement Standards (ES) and Preventive Action Limits (PALs) screening criteria.

- A total of 11 soil samples (10 investigative and 1 duplicate) were collected from the soil borings. Two samples from each soil boring were collected; surface composite sample (0 to 4 feet below ground surface [bgs]) due to recovery amounts and above the water table. The soil samples were submitted for laboratory analysis of a combination of volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), Resource Conservation Recovery Act (RCRA) Metals, polychlorinated biphenyls (PCBs), Wisconsin gasoline range organics (WI-GRO), Wisconsin diesel range organics (WI-DRO), total phenols, dioxin-furans, pH, pesticides, and herbicides (**Table 1**).
    - VOCs were detected in five soil samples. All detected concentrations were below the NR720 WAC DCI screening criteria. Benzene exceeded the available NR720 WAC LSG screening criteria in three soil samples. Based on a review of the groundwater analytical results, there were no detections of benzene in the groundwater. Therefore, no further evaluation of benzene in soil is anticipated.
    - SVOCs were detected in nine soil samples. All detected concentrations were below the available NR720 WAC DCI screening criteria. Benzo(b)fluoranthene, bis(2-ethylhexyl)phthalate, and chrysene exceeded the available NR720 WAC LSG screening criteria in four soil samples. Based on a review of the groundwater analytical results, there were no detections of benzo(b)fluoranthene, bis(2-ethylhexyl)phthalate, and chrysene in the groundwater. Therefore, no further evaluation of benzo(b)fluoranthene, bis(2-ethylhexyl)phthalate, and chrysene in soil is anticipated.
    - RCRA Metals were detected in 11 soil samples.
        - Arsenic (As) exceeded the NR720 WAC DCI screening criteria in four soil samples: SB-01 (0 to 4 feet bgs) at 7.7 milligrams per kilogram (mg/kg), SB-02 (0 to 4 feet bgs) at 3.3 mg/kg, SB-04 (0 to 4 feet bgs) at 55 mg/kg, and SB-05 (0 to 4 feet bgs) at 8.6 mg/kg. Arsenic was detected in three groundwater samples; however, all detected groundwater concentrations were below the NR140 WAC ES and PAL screening criteria. The NR720 WAC Wisconsin BTV (Remediation and Redevelopment Program [RR] 106 publication) and Wisconsin Statewide Soil-Arsenic BTV (RR-940 publication) provides a background value of 8 mg/kg for arsenic. The RR-940 publication documents the US Geological Survey surface soil sampling results of 664 locations throughout the State of Wisconsin. Per the RR-940 publication, "…the RR Program has reviewed the report…and concluded that the data set is of sufficient scope and quality to establish a statewide soil-As background threshold value." The RR-940 publication also states "…the RR Program intends to use 8 ppm as the statewide soil-As BTV. It is then reasonable to conclude that any value above 8 ppm could be the result of a hazardous substance discharge."
            - Based on discussions with WDNR, Matt Thompson, on June 24, 2021, further investigation is requested at all locations which exceed the NR720 WAC DCI screening criteria of 3 mg/kg.
            - Further investigation is included in this Work Plan for SB-01, SB-02, SB-04 and SB-05 where concentrations exceeded the NR720 WAC DCI screening criteria.
        - Arsenic, cadmium, lead, and selenium exceeded the NR720 WAC LSG screening criteria in 11 soil samples. Based on a review of the groundwater analytical results, there were no exceedances of the NR 140 WAC ES or PAL for arsenic, cadmium, lead, and selenium in the

groundwater. Therefore, no further evaluation of these arsenic, cadmium, lead, and selenium exceedances in the soil is anticipated.

- PCBs were detected in one soil sample. All detected concentrations were below the NR720 WAC DCI screening criteria. Total PCBs exceeded the available NR720 WAC LSG screening criteria in one soil sample. Based on a review of the groundwater analytical results, there were no detections of total PCBs in the groundwater. Therefore, no further evaluation of total PCBs in the soil is required.
- WI-GRO were detected in seven soil samples. No NR720 WAC screening criteria exists for WI-GRO.
- WI-DRO were detected in four soil samples. No NR720 WAC screening criteria exists for WI-DRO.
- Total Phenols were detected in five soil samples. No NR720 WAC screening criteria exists for total phenols.
- Dioxin-furans were detected in seven soil samples. All detected concentrations were below the available NR720 WAC DCI and LSG screening criteria.
- Pesticides were detected in one soil sample. All detected concentrations were below the available NR720 WAC DCI and LSG screening criteria.
- Herbicides were not detected in any soil samples. All concentrations were below the method detection limits.
- pH results ranged from 5.6 to 8.1 standard units (S.U.).

- A total of four groundwater samples (three investigative and one duplicate) were collected from the three temporary monitoring wells and submitted for laboratory analysis of VOCs, SVOCs, RCRA Metals, PCBs, WI-GRO, WI-DRO, total phenols, dioxin-furans, pH, pesticides, and herbicides (**Table 2**).
  - VOCs, SVOCs, PCBs, WI-GRO, total phenols, pesticides, and herbicides were not detected in any samples. All concentrations were below the method detection limits.
  - RCRA Metals were detected in four samples. All detected concentrations were below the NR140 WAC ES and PAL screening criteria.
  - WI-DRO was detected in three samples. No NR140 WAC screening criteria exists for WI-DRO.
  - Dioxin-furans were detected in four samples. All detected concentrations were below the available NR140 WAC ES and PAL screening criteria.
  - pH results ranged from 6.7 to 7.2 S.U.

Based on the property transaction completed between 3M and Canadian National Railway in November 2020 and the discussion with WDNR, Matt Thompson, June 24, 2021, 3M is the current owner of the Site and has agreed to work with the WDNR to complete additional shallow soil sampling related to arsenic exceedances at SB-01 (0 to 4 feet bgs) at 7.7 mg/kg, SB-02 (0 to 4 feet bgs) at 3.3 mg/kg, SB-04 (0 to 4 feet bgs) at 55 mg/kg and SB-05 (0 to 4 feet bgs) at 8.6 mg/kg. The *Notification for Hazardous Substance Discharge (Non-Emergency Only) Form 4400-225* (WDNR Notification Form) was submitted to the WDNR on December 18, 2020 by 3M. The WDNR Notification Form included a site map, soil and groundwater analytical result tables, laboratory reports, and identified the arsenic exceedances at SB-04 (0 to 4 feet bgs) and SB-05 (0 to 4 feet bgs) as the reason for the submittal.

The purpose of this Work Plan is to describe the scope of work proposed to address the requirements outlined under *Required Steps #1 Scoping and Work Plan Submittal*, in the WDNR letter dated February 26, 2021, due April 27, 2021. As outlined in the WDNR letter, a technical assistance fee-based review of this Work Plan is being requested of WDNR. The *Technical Assistance, Environmental Liability Clarification or Post-Closure Modification Request Form 4400-237* and $700 check were previously included with the April 2021 submittal. The supplemental investigation will be initiated within 60 days after receiving WDNR approval of this Revised Work Plan.

Proposed Scope of Work

Soil Sampling

Arcadis proposes to advance up to 13 new soil borings at the Site via direct push to depths of 4 feet bgs at each proposed soil boring location. Soil borings will be advanced laterally approximately 5 to 35 feet from SB-01, SB-02, SB-04 and SB-05 completed in September 2020. At this time, soil borings will not be advanced on neighboring properties due to the BRRTS status (3M Wausau Downtown Parking Lot, Closed, #02-37-000273 to the west and Wauleco SNE Corp, Open, #02-37-000006 to the east) and will be contained within the parcel boundaries of the Site (rail lots).

The 13 proposed soil boring locations are presented on **Figure 3**. The sampling rationale for the proposed locations is based on the September 2020 analytical results for arsenic and the discussion with WDNR, Matt Thompson, on June 24, 2021.

- SB-01 – One soil boring is proposed north of SB-01. No other soil borings are proposed due to the activities completed within the Lot 1 parcel boundary and outlined in the email correspondence to WDNR, Matt Thompson, on August 2, 2021.
- SB-02 – Four soil borings are proposed north, south, east, and west of SB-02.
- SB-04 – Four soil borings are proposed north, south, east, and west of SB-04.
- SB-05 – Four soil borings are proposed north, south, east, and west of SB-05.

Arcadis will subcontract a local contractor to complete the drilling. The subsurface at each location will be “cleared” for any utilities by a line locator service, ground penetrating radar, and/or public locator services. Soil cores will be logged using the Unified Soil Classification System. Two soil samples (0 to 2 feet bgs and 2 to 4 feet bgs) per soil boring will be collected and submitted for laboratory analysis of arsenic using Method 6010B.

Vapor Intrusion

Per the WDNR RR-800 publication and the use of the U.S. Environmental Protection Agency Vapor Intrusion Screening Level, arsenic is *not considered sufficiently volatile and toxic to pose inhalation risk via vapor intrusion from a soil and groundwater source*. Therefore, a vapor intrusion investigation will not be conducted at the Site.

Reporting

Upon receipt of the sample data, Arcadis will prepare a site investigation report to document the soil sampling results and data interpretation. Based on the findings, the site investigation report will include recommendations to

secure site closure or conduct additional activities, if warranted. If site closure is warranted based on the data evaluation, a closure request will be submitted to the WDNR.

Closing

Should you have any questions relating to the information presented herein, please feel free to call me at your earliest convenience.

Sincerely,
Arcadis U.S., Inc.

Trenna Seilheimer
Certified Project Manager

Jennine Trask, PE
Account Manager

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CC. Mr. Kevin Madson (3M Company)

Enclosures:

- Table 1 – Summary of Soil Analytical Results (September 2020)
- Table 2 – Summary of Groundwater Analytical Results (September 2020)
- Figure 1 – Site Location Map
- Figure 2 – Site Layout Map
- Figure 3 – Proposed Soil Boring Location Map

Tables

Table 1
Summary of Soil Analytical Results
3M Company
CN Lots
Wausau, WI

ARCADIS Design & Consultancy for natural and built assets

Chemical Name	NR720 Wisconsin Administrative Code Screening Criteria: Direct Contact Industrial	NR720 Wisconsin Administrative Code Screening Criteria: Leaching Soil to Groundwater	Unit	Location ID	Sample ID	Sample Date	Sample Depth	Location ID	Sample ID	Sample Date	Sample Depth	Location ID	Sample ID	Sample Date	Sample Depth	Location ID	Sample ID	Sample Date	Sample Depth	Location ID	Sample ID	Sample Date	Sample Depth	Location ID	Sample ID	Sample Date	Sample Depth
				SB-01/TW-01	SB-01 (0-4)	9/26/2020	0-4 ft bgs	SB-01/TW-01	SB-01 (28-31)	9/26/2020	28-31 ft bgs	SB-01/TW-01	DUP-01 (092620)	9/26/2020	28-31 ft bgs	SB-02	SB-02 (0-4)	9/30/2020	0-4 ft bgs	SB-02	SB-02 (24-26)	9/30/2020	24-26 ft bgs	SB-03/TW-02	SB-03 (0-4)	9/26/2020	0-4 ft bgs
				SB-03/TW-02	SB-03 (24-27.5)	9/26/2020	24-27.5 ft bgs	SB-04	SB-04 (0-4)	9/30/2020	0-4 ft bgs	SB-04	SB-04 (24-26)	9/30/2020	24-26 ft bgs	SB-05/TW-03	SB-05 (0-4)	9/30/2020	0-4 ft bgs	SB-05/TW-03	SB-05 (29-31.5)	9/30/2020	29-31.5 ft bgs				
Dioxin/Furans (Method EPA 1613B)																											
1,2,3,4,6,7,8-HpCDD	2190	--	pg/g	21 B	0.46 JB	0.95 JqB	NA	NA	67 B	3.5 JB	NA	NA	230 B	0.11 JB													
1,2,3,4,6,7,8-HpCDF	2220	--	pg/g	6.5 B	0.18 JqB	0.43 JB	NA	NA	8.2 B	0.39 JqB	NA	NA	69 B	0.18 JqB													
1,2,3,4,7,8,9-HpCDF	2220	--	pg/g	0.71 JqB	< 0.022	0.21 JqB	NA	NA	0.66 JB	< 0.030	NA	NA	3.1 J	< 0.035													
1,2,3,4,7,8-HxCDD	223	--	pg/g	0.85 JB	0.27 JB	0.29 JqB	NA	NA	0.46 JB	< 0.033	NA	NA	2.7 J	0.20 Jq													
1,2,3,4,7,8-HxCDF	220	--	pg/g	0.85 J	< 0.041	0.20 J	NA	NA	0.32 Jq	< 0.055	NA	NA	4.4 J	< 0.070													
1,2,3,6,7,8-HxCDD	223	--	pg/g	1.4 J	< 0.034	0.18 Jq	NA	NA	1.9 J	< 0.042	NA	NA	9.3	< 0.048													
1,2,3,6,7,8-HxCDF	220	--	pg/g	0.89 J	< 0.036	0.23 Jq	NA	NA	0.33 J	< 0.049	NA	NA	3.7 J	< 0.062													
1,2,3,7,8,9-HxCDD	223	--	pg/g	0.91 JB	< 0.028	< 0.030	NA	NA	0.87 JB	0.082 JB	NA	NA	5.2 J	< 0.044													
1,2,3,7,8,9-HxCDF	223	--	pg/g	0.44 J	< 0.028	0.29 J	NA	NA	< 0.13	< 0.042	NA	NA	< 0.41	0.049 J													
1,2,3,7,8-PeCDD	22.3	--	pg/g	< 0.15	< 0.097	< 0.11	NA	NA	< 0.14	< 0.10	NA	NA	0.99 Jq	< 0.047													
1,2,3,7,8-PeCDF	744	--	pg/g	< 0.18	< 0.049	< 0.060	NA	NA	< 0.094	< 0.050	NA	NA	< 0.58	0.072 Jq													
2,3,4,6,7,8-HxCDF	223	--	pg/g	0.82 Jq	< 0.030	0.20 J	NA	NA	0.33 J	< 0.041	NA	NA	3.0 J	< 0.037													
2,3,4,7,8-PeCDF	74.4	--	pg/g	0.52 Jq	< 0.053	< 0.071	NA	NA	< 0.10	< 0.059	NA	NA	1.6 J	< 0.038													
2,3,7,8-TCDD	21.8	30	pg/g	< 0.21	< 0.15	< 0.15	NA	NA	< 0.18	< 0.13	NA	NA	0.35 Jq	< 0.038													
2,3,7,8-TCDF	219	--	pg/g	0.61 J	< 0.071	< 0.084	NA	NA	< 0.11	< 0.068	NA	NA	0.78 JB	0.066 JB													
OCDD	74400	--	pg/g	130 B	2.7 JB	6.7 JB	NA	NA	850 B	41 B	NA	NA	1800 B	1.3 JB													
OCDF	74400	--	pg/g	13 B	0.79 JB	1.1 JB	NA	NA	40 B	1.8 JB	NA	NA	140 B	0.52 JBq													
Total HpCDD	--	--	pg/g	40 B	0.98 JB	2.1 JqB	NA	NA	360 B	21 B	NA	NA	560 B	0.28 JBq													
Total HpCDF	--	--	pg/g	17 qB	0.32 JqB	0.98 JqB	NA	NA	31 B	1.3 JqB	NA	NA	180 B	0.18 JBq													
Total HxCDD	--	--	pg/g	7.2 B	0.27 JB	0.46 JqB	NA	NA	12 qB	0.43 JqB	NA	NA	68	0.20 Jq													
Total HxCDF	--	--	pg/g	16 q	< 0.041	0.91 Jq	NA	NA	7.9 q	0.21 Jq	NA	NA	96	< 0.051													
Total PeCDD	--	--	pg/g	< 0.26	< 0.097	< 0.11	NA	NA	< 0.14	< 0.10	NA	NA	21 q	< 0.047													
Total PeCDF	--	--	pg/g	17 q	< 0.053	< 0.21	NA	NA	1.0 Jq	< 0.17	NA	NA	69	0.16 Jq													
Total TCDD	--	--	pg/g	2.2	< 0.15	< 0.15	NA	NA	< 0.18	< 0.13	NA	NA	13 q	< 0.038													
Total TCDF	--	--	pg/g	5.3 q	< 0.071	< 0.084	NA	NA	< 0.11	< 0.068	NA	NA	23 qB	0.11 JqB													
Total Phenols (Method MCAWW 420.4)																											
Phenolics, Total	--	--	mg/kg	2.5	1.3	0.72	NA	NA	< 0.42	0.52	NA	NA	0.66	< 0.40													
RCRA Metals (Method SW846 6020A/6010C/7470A/7471B)[1]																											
Arsenic	3	0.584	mg/kg	**7.7**	**0.99**	**1.2**	**3.3**	**1.1**	**1.8**	**1**	**55**	**0.63 J**	**8.6**	**1.7**													
Barium	100000	164.8	mg/kg	53	18	17	120	32	59	22 V	95	12	95	56													
Cadmium	985	0.752	mg/kg	< 0.038	< 0.034	< 0.033	**0.76**	< 0.033	0.079 J	< 0.035	0.38	< 0.032	0.45	< 0.036													
Chromium	--	360000	mg/kg	15	11	11	69	20	13	18 F1	24	6.9	24	23													
Lead	800	27	mg/kg	**35**	1.6	1.7	**41**	4.2	8.9	1.7	**48**	1.1	**87**	3.7													
Selenium	5840	0.52	mg/kg	**1.9**	< 0.56	< 0.54	**0.94 J**	**0.68 J**	< 0.55	< 0.57	**1.0 J**	< 0.52	**0.81 J**	< 0.59													
Silver	5840	0.849	mg/kg	< 0.13	< 0.12	< 0.12	0.34 J	0.22 J	< 0.12	< 0.13	0.19 J	0.16 J	0.24 J	0.34 J													
Mercury	3.13	0.208	mg/kg	0.023	< 0.0051	< 0.0052	0.021	< 0.0052	0.013 J	< 0.0053	0.029	< 0.0053	0.061	< 0.0058													
Pesticides (Method SW846 8081B)																											
4,4'-DDE	9380	--	µg/kg	< 1.5	< 0.28	< 0.28	NA	NA	< 0.30	< 0.28	NA	NA	4	< 0.29													
4,4'-DDT	8530	--	µg/kg	< 4.8	< 0.90	< 0.89	NA	NA	< 0.94	< 0.89 F1	NA	NA	21	< 0.92													
cis-Chlordane	--	--	µg/kg	< 4.6	< 0.86	< 0.86	NA	NA	< 0.91	< 0.86	NA	NA	2.1	< 0.88													
Endrin aldehyde	--	--	µg/kg	< 1.5	< 0.29	< 0.29	NA	NA	< 0.30	< 0.28	NA	NA	3.4	< 0.29													
Heptachlor epoxide	338	8.16	µg/kg	< 3.2	< 0.61	< 0.60	NA	NA	< 0.64	< 0.60	NA	NA	2.9	< 0.62													
trans-Chlordane	--	--	µg/kg	< 2.4	< 0.45	< 0.44	NA	NA	< 0.47	< 0.44	NA	NA	1.8	< 0.46													
PCBs (Method SW846 8082A)																											
PCB-1260	1000	--	µg/kg	< 8.9	< 8.4	< 8.3	NA	NA	< 8.8	< 8.3	NA	NA	52 / 50	< 8.6													
PCBs, Total	967	9.384	µg/kg	< 3.5	< 3.3	< 3.2	NA	NA	< 3.4	< 3.2	NA	NA	**52 / 50**	< 3.3													

Table 1
Summary of Soil Analytical Results
3M Company
CN Lots
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ARCADIS Design & Consultancy for natural and built assets

Chemical Name	NR720 Wisconsin Administrative Code Screening Criteria: Direct Contact Industrial	NR720 Wisconsin Administrative Code Screening Criteria: Leaching Soil to Groundwater	Unit	Location ID	Sample ID	Sample Date	Sample Depth	Location ID	Sample ID	Sample Date	Sample Depth	Location ID	Sample ID	Sample Date	Sample Depth	Location ID	Sample ID	Sample Date	Sample Depth	Location ID	Sample ID	Sample Date	Sample Depth	Location ID	Sample ID	Sample Date	Sample Depth
				SB-01/TW-01	SB-01 (0-4)	9/26/2020	0-4 ft bgs	SB-01/TW-01	SB-01 (28-31)	9/26/2020	28-31 ft bgs	SB-01/TW-01	DUP-01 (092620)	9/26/2020	28-31 ft bgs	SB-02	SB-02 (0-4)	9/30/2020	0-4 ft bgs	SB-02	SB-02 (24-26)	9/30/2020	24-26 ft bgs	SB-03/TW-02	SB-03 (0-4)	9/26/2020	0-4 ft bgs
VOCs (Method SW846 8260B)																										
1,2,4-Trimethylbenzene	219000	--	µg/kg	54 J				< 32				< 35				210				47 J				< 33		
1,3,5-Trimethylbenzene	182000	--	µg/kg	< 41				< 34				< 38				56 J				< 34				< 35		
Benzene	7070	5.12	µg/kg	< 16				< 13				< 14				**130 B**				**32 B**				< 13		
Ethylbenzene	35400	1570	µg/kg	< 20				< 16				< 18				140				36				< 17		
Isopropylbenzene	268000	--	µg/kg	< 41				< 34				< 38				98 J				< 34				< 35		
n-Butylbenzene	108000	--	µg/kg	< 42				< 35				< 38				46 J				< 34				< 36		
N-Propylbenzene	264000	--	µg/kg	< 44				< 37				< 41				140				< 37				< 38		
Toluene	818000	1107.2	µg/kg	23 J				< 13				< 15				560				120				< 14		
Xylenes, Total	260000	3960	µg/kg	79				< 20				< 22				780				170				< 20		
SVOCs (Method SW846 8270D)																										
1-Methylnaphthalene	72700	--	µg/kg	190 J				< 8.3				< 8.3				120				87				16 J		
2-Methylnaphthalene	3010000	--	µg/kg	200 J				< 6.3				< 6.2				160 *				110 *				20 J		
Acenaphthene	45200000	--	µg/kg	< 33				< 6.1				< 6.1				16 J				< 6.1				< 6.4		
Acenaphthylene	--	--	µg/kg	150 J				< 4.5				< 4.5				29 J				< 4.5				16 J		
Anthracene	100000000	196949.153	µg/kg	110 J				< 5.7				< 5.7				68				< 5.7				24 J		
Benzo[a]anthracene	20800	--	µg/kg	370				7.3 J				< 4.6				280				18 J				42		
Benzo[a]pyrene	2110	470	µg/kg	460				7.1 J				< 6.5				200				15 J				50		
Benzo[b]fluoranthene	21100	478.088	µg/kg	**640**				9.0 J				7.5 J				370				14 J				97		
Benzo[g,h,i]perylene	--	--	µg/kg	250				< 11				< 11				120				33 J				41		
Benzo[k]fluoranthene	211000	--	µg/kg	220				10 J				< 10				110				11 J				32 J		
Benzoic acid	100000000	--	µg/kg	2400 J				< 340				430 J				< 350				< 340				460 J		
Bis(2-ethylhexyl) phthalate	164000	2880	µg/kg	< 330				< 62				< 62				< 64				< 62				< 65		
Chrysene	2110000	144.223	µg/kg	**430**				9.7 J				< 9.2				**320**				20 J				56		
Dibenz(a,h)anthracene	2110	--	µg/kg	70 J				< 6.6				< 6.5				52				< 6.6				9.4 J		
Dibenzofuran	1040000	--	µg/kg	< 210				< 40				< 40				49 J				< 40				< 42		
Fluoranthene	30100000	88877.805	µg/kg	580				13 J				7.2 J				400				20 J				77		
Fluorene	30100000	14829.932	µg/kg	< 26				< 4.8				< 4.8				27 J				16 J				< 5.0		
Indeno[1,2,3-cd]pyrene	21100	--	µg/kg	230				< 8.8				< 8.8				81				< 8.8				34 J		
Naphthalene	24100	658.182	µg/kg	170 J				< 5.2				< 5.2				170				96				14 J		
Phenanthrene	--	--	µg/kg	480				6.8 J				< 4.7				270				48				32 J		
Pyrene	22600000	54545.455	µg/kg	550				12 J				7.1 J				450				21 J				78		
pH (Method SW846 9045D)																										
pH	--	--	S.U.	5.6				7.1				7.6				NA				NA				7.4		
WI DRO/WI GRO (Method WI-DRO, WI-GRO)																										
WI DRO (C10-C28)	--	--	mg/kg	21 B				4.7 B				4.8 B				NA				NA				11 B		
WI GRO (C5-C10)	--	--	mg/kg	12				1.6 J				< 0.030				NA				NA				1.8 J		

Chemical Name	Location ID	Sample ID	Sample Date	Sample Depth	Location ID	Sample ID	Sample Date	Sample Depth	Location ID	Sample ID	Sample Date	Sample Depth	Location ID	Sample ID	Sample Date	Sample Depth	Location ID	Sample ID	Sample Date	Sample Depth
	SB-03/TW-02	SB-03 (24-27.5)	9/26/2020	24-27.5 ft bgs	SB-04	SB-04 (0-4)	9/30/2020	0-4 ft bgs	SB-04	SB-04 (24-26)	9/30/2020	24-26 ft bgs	SB-05/TW-03	SB-05 (0-4)	9/30/2020	0-4 ft bgs	SB-05/TW-03	SB-05 (29-31.5)	9/30/2020	29-31.5 ft bgs
VOCs (Method SW846 8260B)																				
1,2,4-Trimethylbenzene	< 32				57 J				< 35				< 39				< 32			
1,3,5-Trimethylbenzene	< 34				< 41				< 37				< 41				< 34			
Benzene	< 13				**48 B**				< 14				< 16				< 13			
Ethylbenzene	< 17				< 20				< 18				< 20				< 16			
Isopropylbenzene	< 35				< 41				< 37				< 41				< 35			
n-Butylbenzene	< 36				< 41				< 38				< 42				< 35			
N-Propylbenzene	< 38				< 44				< 40				< 45				< 37			
Toluene	< 14				130				< 14				39				< 13			
Xylenes, Total	< 20				150				< 21				110				< 20			
SVOCs (Method SW846 8270D)																				
1-Methylnaphthalene	< 8.3 F1				58 J				< 8.3				35 J				< 8.1			
2-Methylnaphthalene	< 6.3 F1				80 *				< 6.2 *				46 J*				< 6.1 *			
Acenaphthene	< 6.1				< 6.4				< 6.1				6.9 J				< 6.0			
Acenaphthylene	< 4.5				27 J				< 4.5				33 J				< 4.4			
Anthracene	< 5.7				39				< 5.6				45				< 5.6			
Benzo[a]anthracene	< 4.6				140				< 4.5				170				< 4.5			
Benzo[a]pyrene	< 6.6				150				< 6.5				190				< 6.5			
Benzo[b]fluoranthene	14 J				320				< 7.3				370				< 7.2			
Benzo[g,h,i]perylene	< 11 F1				110				< 11				120				< 11			
Benzo[k]fluoranthene	< 10				88				< 10				130				< 9.8			
Benzoic acid	< 340				1500 J				< 340				490 J				< 330			
Bis(2-ethylhexyl) phthalate	< 62				930				< 62				**4600**				< 61			
Chrysene	< 9.3				**240**				< 9.2				**240**				< 9.1			
Dibenz(a,h)anthracene	< 6.6				46				< 6.5				43				< 6.4			
Dibenzofuran	< 40				< 42				< 40				< 42				< 39			
Fluoranthene	< 6.3				370				< 6.3				470				< 6.2			
Fluorene	< 4.8				19 J				< 4.8				22 J				< 4.7			
Indeno[1,2,3-cd]pyrene	< 8.8				75				< 8.8				82				< 8.6			
Naphthalene	< 5.2 F1				51				< 5.2				37				< 5.1			
Phenanthrene	< 4.7				130				< 4.7				200				< 4.6			
Pyrene	< 6.8				310				< 6.7				360				< 6.6			
pH (Method SW846 9045D)																				
pH	8.1				NA				NA				7.6				7.7			
WI DRO/WI GRO (Method WI-DRO, WI-GRO)																				
WI DRO (C10-C28)	5.0 B				NA				NA				29 B				6.2 B			
WI GRO (C5-C10)	< 1.4				NA				NA				4.9				< 1.4			

Qualifier Definitions:

* - LCS or LCSD outside acceptance limits
B - compound found in blank and sample
q - Result estimated maximum possible concentration, quantitated using theoretical ion ratio, measured io ratio does not meet qualitative identification criteria, indicates possible interference
< - Result < MDL
V - Serial dilution exceeds control limits
F1 - MS and/or MSD recovery exceeds control limits
F2 - MS/MSD RPD exceeds control limits
J - Result < RL but ≥ to MDL, concentration is approximate value

Acronyms and Abbreviations:

"--" - no screening criteria
ft bgs - feet below ground surface
ID - identification
LCS - laboratory control sample
LCSD - laboratory control sample duplicate
MDL - method detection limit
mg/kg - milligram per kilogram
NA - not analyzed
NR - Natural Resources
pg/g - picogram per gram
RL - reporting limit
S.U. - standard units
SVOCs - Semivolatile organic compounds
µg/kg - microgram per kilogram
VOCs - Volatile organic compounds

Notes:

1 - NR720 Background Threshold Values: Arsenic (8 mg/kg), Barium (364 mg/kg), Cadmium (1 mg/kg), Chromium Total (44 mg/kg), Lead (52 mg/kg)

Result exceeds Leaching Soil to Groundwater screening criteria

Result exceeds NR720 WAC Leaching Soil to Groundwater and Direct Contact Industrial screening criteria outlined

Table only shows chemicals with a detection

Table 2
Summary of Groundwater Analytical Results
3M Company
CN Lots
Wausau, WI

Chemical Name	NR140 Wisconsin Administrative Code Screening Criteria		Location ID	SB-01/TW-01	SB-03/TW-02	SB-03/TW-02	SB-05/TW-03
			Sample ID	TW-01 (092720)	TW-02 (092720)	DUP-01 (092720)	TW-03 (093020)
	Enforcement Standard	Preventive Action Limit	Sample Date	9/27/2020	9/27/2020	9/27/2020	9/30/2020
			Unit				
Dioxin/Furans (Method EPA 1613B)							
1,2,3,4,6,7,8-HpCDD	--	--	pg/L	1.3 JqB	11 JB	1.3 JB	1.5 JBq
1,2,3,4,6,7,8-HpCDF	--	--	pg/L	< 0.26	17 JB	1.4 JqB	0.92 JBq
1,2,3,4,7,8,9-HpCDF	--	--	pg/L	0.81 JqB	14 JB	0.84 JB	0.80 JBq
1,2,3,4,7,8-HxCDD	--	--	pg/L	2.3 JB	6.9 JB	2.2 JB	1.9 JBq
1,2,3,4,7,8-HxCDF	--	--	pg/L	< 0.59	6.1 JB	< 0.47	< 0.66
1,2,3,6,7,8-HxCDD	--	--	pg/L	< 0.82	5.5 JB	< 0.80	< 0.42
1,2,3,6,7,8-HxCDF	--	--	pg/L	< 0.62	6.2 JB	< 0.51	< 0.62
1,2,3,7,8,9-HxCDD	--	--	pg/L	< 0.71	5.6 JB	< 0.68	< 0.39
1,2,3,7,8,9-HxCDF	--	--	pg/L	1.0 JqB	5.9 JB	< 0.36	0.84 JBq
1,2,3,7,8-PeCDD	--	--	pg/L	< 0.56	3.6 JqB	< 0.56	< 0.52
1,2,3,7,8-PeCDF	--	--	pg/L	0.83 JB	3.7 JB	0.77 JB	< 0.37
2,3,4,6,7,8-HxCDF	--	--	pg/L	< 0.71	5.6 JB	< 0.55	< 0.37
2,3,4,7,8-PeCDF	--	--	pg/L	< 0.46	4.0 JB	< 0.42	< 0.38
2,3,7,8-TCDD	30	3	pg/L	< 0.47	< 0.44	< 0.43	1.8 JBq
2,3,7,8-TCDF	--	--	pg/L	< 0.29	1.2 JB	< 0.26	5.3 JB
OCDD	--	--	pg/L	4.7 JB	31 JB	4.6 JB	7.3 JB
OCDF	--	--	pg/L	3.1 JB	120 B	3.6 JB	3.1 JBq
Total HpCDD	--	--	pg/L	2.9 JqB	15 JB	1.3 JB	3.1 JBq
Total HpCDF	--	--	pg/L	0.81 JqB	39 JB	2.2 JqB	1.7 JBq
Total HxCDD	--	--	pg/L	2.3 JB	18 JB	2.2 JB	1.9 JBq
Total HxCDF	--	--	pg/L	1.0 JqB	24 JB	< 0.55	0.84 JBq
Total PeCDD	--	--	pg/L	< 0.56	3.6 JqB	< 0.56	< 0.52
Total PeCDF	--	--	pg/L	0.83 JB	7.7 JB	0.77 JB	< 0.39
Total TCDD	--	--	pg/L	5.2 JqB	3.8 JB	5.1 JB	8.3 JBq
Total TCDF	--	--	pg/L	< 0.29	1.2 JB	< 0.26	9.9 JBq
RCRA Metals (Method SW846 6020A/6010C/7470A/7471B)							
Arsenic	10	1	µg/L	< 0.23	0.57 J	0.84 J	0.32 J
Barium	2000	400	µg/L	28	180	180	160
Chromium	100	10	µg/L	< 1.1	3.6 J	8.4	< 1.1
Lead	15	1.5	µg/L	< 0.19	0.54	1	0.91
Selenium	50	10	µg/L	< 0.98	2.1 J	2.2 J	< 0.98
pH (Method SW846 9045D)							
pH	--	--	S.U.	6.7 HF	6.7 HF	6.7 HF	7.2 HF
WI DRO (Method WI-DRO)							
WI DRO (C10-C28)	--	--	mg/L	0.56	0.3	0.42	< 0.036

Qualifier Definitions:

B - compound found in blank and sample

HF - field parameter with holding time of 15 minutes, test performed as requested

J - Result < RL but ≥ to MDL, concentration is approximate value

q - Result estimated maximum possible concentration, quantitated using theoretical ion ratio, measured io ratio does not meet qualitative identification criteria, indicates possible interference

< - Result < MDL

Acronyms and Abbreviations:

"--" - no screening criteria

ID - identification

MDL - method detection limit

mg/L - milligram per liter

pg/L - picogram per liter

RL - reporting limit

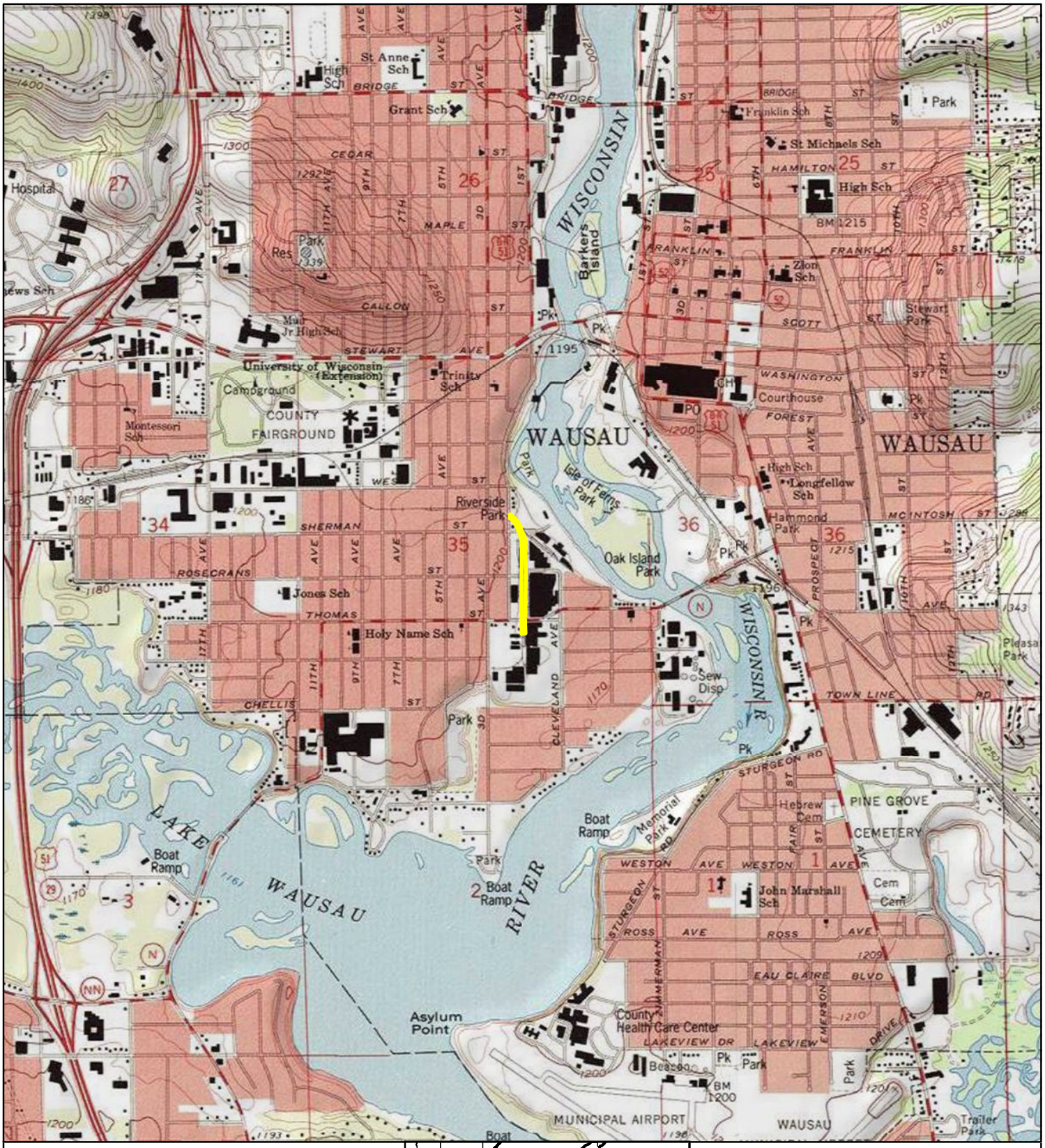
S.U. - standard units

µg/L - microgram per liter

Notes:

Table only shows chemicals with a detection

Figures



3M COMPANY
RAIL LOTS
WAUSAU, MARATHON COUNTY, WI

SITE LOCATION MAP

ARCADIS

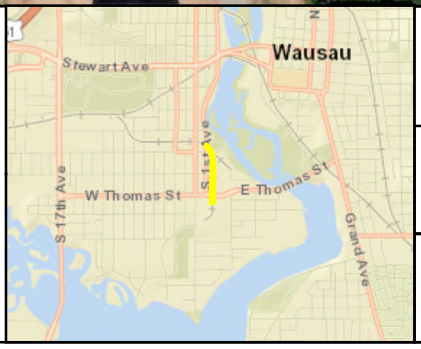
FIGURE
1

Legend

Lot Boundary

N

0 230 460 Feet

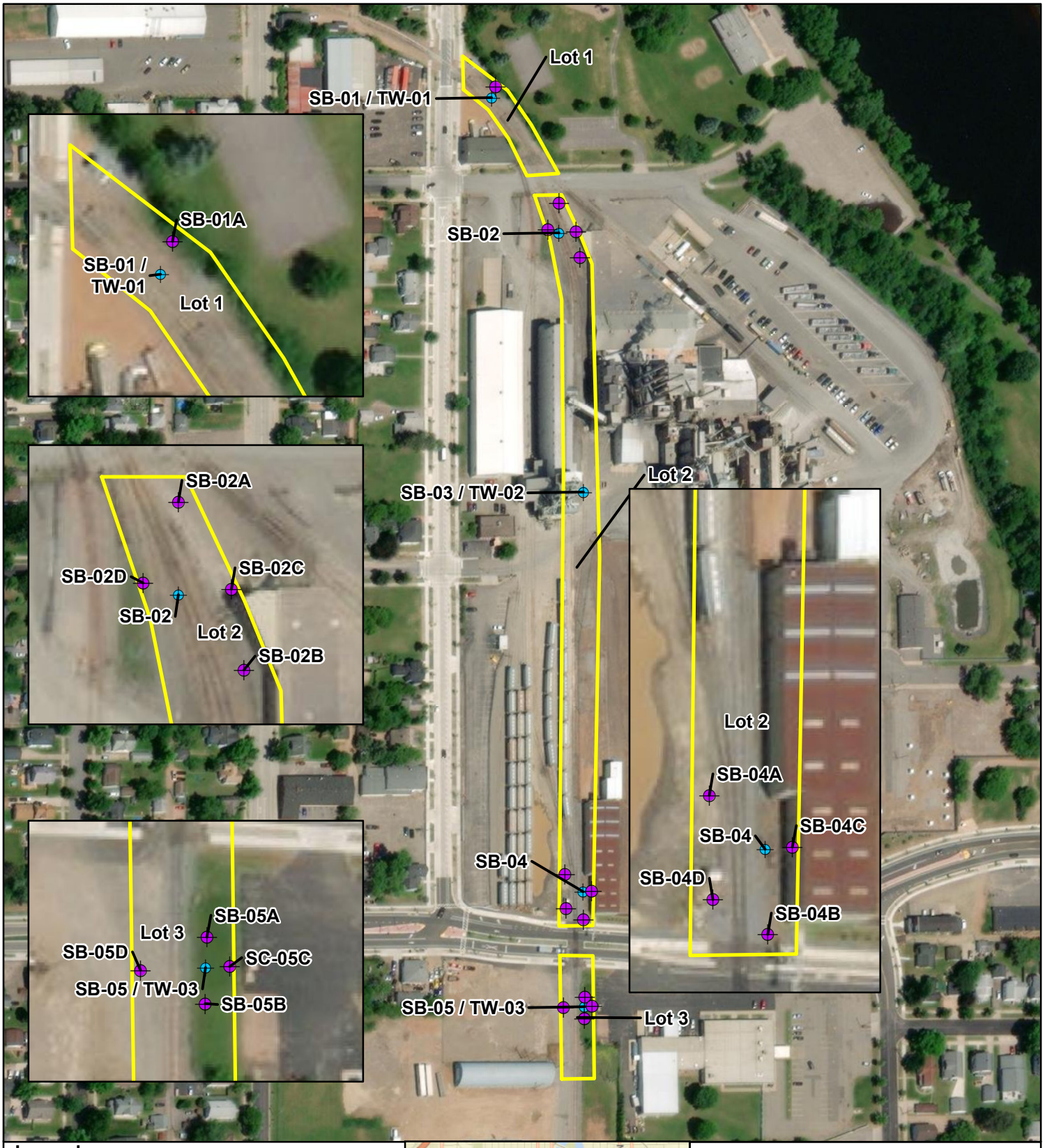


3M COMPANY
RAIL LOTS
WAUSAU, MARATHON COUNTY, WI

SITE LAYOUT MAP

ARCADIS

FIGURE
2

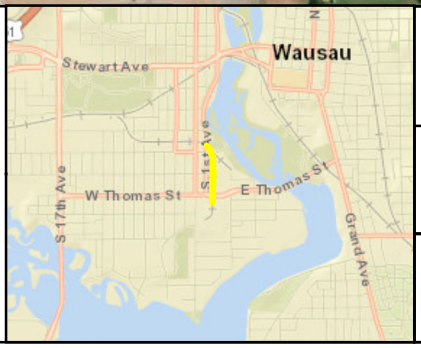


Legend

- Proposed Additional Sampling Location
- Sampling Location
- Lot Boundary

N

0 230 460 Feet



3M COMPANY
CN LOTS
WAUSAU, MARATHON COUNTY, WISCONSIN

PROPOSED SOIL BORING LOCATION MAP

ARCADIS

FIGURE 3