

Tyco Fire Products LP

## **SITE INVESTIGATION WORK PLAN**

Tyco Stanton Street Facility  
Marinette, Wisconsin

BRRTS No. 02-38-581955

March 2021

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## ACRONYMS AND ABBREVIATIONS

Arcadis	Arcadis U.S., Inc.
bgs	below ground surface
BRRTS	Bureau for Remediation and Redevelopment Tracking System
CSM	conceptual site model
ft	feet
FTC	Tyco Fire Technology Center
NAD 83	North American Datum of 1983
NAVD 88	North American Vertical Datum of 1988
NR	Natural Resources
PFAS	per- and poly-fluorinated alkyl substances
PFOA	perfluorooctanoic acid
PFOS	perfluorooctanesulfonic acid
ppt	parts per trillion
PVC	polyvinyl chloride
QA/QC	quality assurance/quality control
QAPP	Quality Assurance Project Plan
RCL	residual contaminant level
RCRA	Resource Conservation and Recovery Act
SIR	Site Investigation Report
Site	Tyco Stanton Street Facility at 1 Stanton Street, Marinette, Wisconsin
Tyco	Tyco Fire Products LP
USEPA	United States Environmental Protection Agency
WDHS	Wisconsin Department of Health Services
WDNR	Wisconsin Department of Natural Resources
work plan	Site Investigation Work Plan

## 1 INTRODUCTION

On behalf of Tyco Fire Products LP (Tyco), Arcadis U.S., Inc. (Arcadis) prepared this Site Investigation Work Plan (work plan) to continue investigation of the nature and extent of per- and poly-fluorinated alkyl substances (PFAS) associated with groundwater at and near the Tyco Stanton Street Facility, located at 1 Stanton Street in Marinette, Wisconsin (the Site; **Figure 1**). The investigation work described herein is based on an evaluation of the data collected to date and identification of data gaps.

This work plan builds upon the *Near-Term Bedrock Groundwater Evaluation Work Plan* (Arcadis 2020c) that was submitted to the Wisconsin Department of Natural Resources (WDNR) on May 1, 2020. The objectives of the proposed investigation are to further delineate the nature and extent of PFAS in groundwater in the vicinity of the Site and to collect additional information about the site geology and hydrogeology. These data, when combined with the existing data sets, will guide the identification and evaluation of a focused set of remedial alternatives, if warranted, for the Site.

The investigation activities described herein include:

- Installation of overburden groundwater monitoring wells for measurement of water levels. Note that this work has already been completed.
- Collection of groundwater samples from existing and newly installed monitoring wells for laboratory analysis.

It should be noted that Tyco proactively completed the installation of the overburden groundwater monitoring wells associated with this work plan in November and December 2020. These wells were installed during the drilling mobilization to install the shallow bedrock wells proposed in the May 2020 *Near-Term Bedrock Groundwater Evaluation Work Plan*, which WDNR has not provided comments on to date. Applicable observations, soil boring logs, well construction logs, and well development logs will be reported, along with the results of the groundwater sampling event proposed in this work plan, in an investigation progress report or Site Investigation Report (see Section 7 for additional details related to reporting). This report is anticipated to be submitted to WDNR in August 2021.

## 2 SITE BACKGROUND

A description of the Site, regional and site-specific geology and hydrogeology, and previously completed investigation activities is provided in this section.

### 2.1 Site Description and History

The Site comprises approximately 66 acres in the north-northeastern portion of the City of Marinette, directly south of the Menominee River (**Figure 1**). The surrounding area of the Site consists of industrial and residential properties within the City of Marinette. The land surface within the Site is generally flat; much of it is paved or covered by industrial buildings.

The Stanton Street facility was initially used for lumber mill operations, sawdust disposal, and lumber storage. In 1915, manufacturing operations began and included the manufacturing of cattle feed, refrigerants, and specialty chemicals. The Site was used to manufacture arsenic-based agricultural herbicide between 1957 and 1977. Investigations and remedial actions to address impacts of arsenic on soil and groundwater began in 1974 and were continued by Tyco after it acquired the Site in 1990. Tyco implemented a number of corrective measures through the Resource Conservation and Recovery Act (RCRA) program to address arsenic in soil and groundwater, including construction of a hydraulic barrier wall system that completely encloses the facility with a combination of slurry and sheet pile walls that extend throughout the thickness of the overburden (**Figure 2**). Under the RCRA program, Tyco has established an extensive monitoring well network. Existing well locations are shown on **Figure 3**.

Tyco's operations at the Site include dry chemical fire extinguisher and fire suppression system manufacturing, and foam blending.

### 2.2 Previous and Concurrent Investigations Related to PFAS

Groundwater sampling for PFAS was first performed in 2018 at existing monitoring wells within the barrier wall and one monitoring well (MW102S) outside the wall. The sampling results, reported in the June 21, 2018 data summary letter to the WDNR titled *Summary of Groundwater Sampling* (Arcadis 2018b), showed detections of PFAS in shallow groundwater. An expanded groundwater sampling event was performed in December 2019 that included wells located outside of the barrier wall. This second sampling event, reported in the February 4, 2020 *Summary of Soil and Groundwater Sampling* (Arcadis 2020a), included three bedrock wells (MW003D, MW013D, and MW102D). The sampling results showed that PFAS is present in shallow bedrock groundwater. Complete PFAS analytical results for the standard list at the time of 14 substances (pre-Cycle 11) analyzed as part of the 2018 and 2019 sampling events were previously provided in the June 2020 *Interim Site Investigation Report* (Arcadis 2020d).

Recently, Arcadis prepared three other submittals related to the presence of PFAS at the Site. The first document, the *Near-Term Bedrock Groundwater Evaluation Work Plan* (Arcadis 2020c), was submitted to WDNR for review on May 1, 2020. The activities proposed in this submittal were designed to develop a more complete understanding of groundwater flow and quality conditions with respect to PFAS present in bedrock groundwater. The primary field components of the *Near-Term Bedrock Groundwater Evaluation Work Plan* consisted of the installation and development of four proposed shallow bedrock monitoring wells (**Figure 5**), collection of groundwater samples for PFAS analysis from select existing monitoring

wells/piezometers and the proposed new monitoring wells, and collection of groundwater elevation and pressure transducer data from select monitoring wells. As mentioned in Section 1, the groundwater investigation presented in this work plan builds on the May 2020 *Near-Term Bedrock Groundwater Evaluation Work Plan* focused on shallow bedrock monitoring wells.

The second and third documents, the *Interim Site Investigation Report* (Interim SIR; Arcadis 2020d) and the *Conceptual Site Model* (CSM; Arcadis 2020e), were submitted to WDNR on June 15, 2020 and July 15, 2020, respectively. The Interim SIR describes the completed investigations that evaluated the nature and extent of PFAS in groundwater, soil, and surface water at the Site. The CSM, which was recommended to be reviewed together with the Interim SIR, includes a discussion of the sources, transport and exposure pathways, and receptors associated with PFAS at the Site. As of the writing of this work plan, Tyco has not received comments from WDNR on these documents.

Separate investigations associated with the Tyco Fire Technology Center (FTC) are on-going to evaluate the distribution of PFAS in groundwater. These investigations include well installation and sampling locations that may improve understanding of groundwater conditions upgradient of the Site. Data from the applicable FTC investigation locations will be included, as needed, in an investigation progress report and Site Investigation Report.

## 2.3 Geology and Physical Setting

The Site is located on generally level ground adjacent to the Menominee River. The manufacturing area of the Site is nearly flat at an elevation of approximately 585 feet above mean sea level, about 5 feet above the normal stage of the adjacent Menominee River. An area east of the manufacturing area, typically referred to as the “Wetlands Area”, is at a slightly lower elevation.

The Site overlies approximately 40 feet of fill, alluvium, and glacial deposits above Ordovician dolomite bedrock. The sequence of geologic units observed at the Site includes:

- Fill, present to depths of 5 to 10 feet below ground surface (ft bgs), generally comprising sandy soil, with saw dust, bricks, and other debris.
- Alluvium, present beneath the fill to approximately 20 ft bgs, typically comprising fine to medium sand, with localized areas of peat.
- Glacial lake sediments, present beneath the alluvium to approximately 35 ft bgs, primarily comprising silt, but interbedded with sand and clay.
- Till, typically present 5 to 10 feet above the bedrock surface, comprising a poorly sorted mixture of clay, silt, sand, and gravel.
- Shaley-dolomite of the Sinipee Group (Galena or Platteville Formations).

The Site is located in the Menominee River floodplain. Historical aerial photographs show that prior to development as a manufacturing area in the early 20<sup>th</sup> century, the Site had multiple areas of standing water connecting to the Menominee River. As the Site was developed, fill was added above the native alluvium. The shallow alluvial deposits in the floodplain lie laterally adjacent to sandy glacial lake-shore deposits present beneath the higher ground to the southwest. The underlying glacial lake deposits are mostly fine-grained lakebed deposits, although beds of sand are present. A layer of dense till separates



the lake deposits and bedrock. The depth to the bedrock surface beneath the Site ranges between approximately 35 and 45 feet, sloping gently to the southeast.

Under natural conditions in the vicinity of the Site, groundwater flow in both the overburden and shallow bedrock trends generally northeast toward the Menominee River. Within the manufacturing area of the Site, groundwater flow is controlled by the barrier wall and ongoing groundwater extraction resulting in an induced inward gradient.

The water table in the vicinity of the Site is typically less than 5 ft bgs, generally occurring within the shallow fill materials. In the developed portions of the Site, inside the barrier wall, the majority of runoff from the paved or building-covered surfaces is captured by a storm drainage system designed to limit recharge within the barrier wall.

## 2.4 Natural and Cultural Resources

A natural and cultural resources desktop review was conducted for the Tyco FTC site investigation as part of the 2018 *Revised Site Investigation Work Plan* (Arcadis 2018a) and covered the investigation area of the Stanton Street facility. Because the work proposed herein is within the same investigation area, the natural and cultural resources review information presented in the 2018 *Revised Site Investigation Work Plan* is relevant for this work plan. Applicable updates to the natural and cultural resources are as follows:

- 1) To date, Arcadis has conducted multiple wetland and waterbody delineations that have been confirmed by WDNR. Wetland and waterbody delineation surveys were conducted during multiple mobilizations for activities associated with the installation of the interim measure water treatment systems, for various projects performed at and planning purposes associated with the Site, for planning and permitting associated with the proposed municipal water distribution extension, and for planning and permitting for proposed soil and groundwater remedial actions. The purpose of the wetland and waterbody delineation surveys was to assess the presence or absence of wetlands and other waters that may be affected by the proposed activities and to assess general ecological conditions within the identified environmental survey area.
- 2) Project-specific Endangered Resource Reviews were conducted through the WDNR Bureau of Natural Heritage Conservation for the activities proposed in Section 1 of this work plan.
- 3) Additionally, a formal area of potential effect was established, and Arcadis conducted site-specific historic and archaeological records reviews and background research for the activities proposed in Section 1. The results were submitted the Water Resource Applications for Project Permits as needed. Project-specific areas of potential effect will be established, and site-specific record reviews and background research will be conducted as needed for future work.

### **3 GENERAL FIELD ACTIVITIES**

The following field activities apply to the investigation events described in this work plan. As noted in Section 1, well installations associated with this work plan, along with obtaining access and utility clearances, have already been completed.

#### **3.1 Access and Utility Clearance**

Prior to completing well installations, access was obtained from the City of Marinette, and street opening permits were filed and approved by the Marinette City Department of Public Works. Utility clearance activities were performed in accordance with the procedures described in the Draft Quality Assurance Project Plan (QAPP; Arcadis 2020b). Prior to mobilization, Wisconsin One Call (i.e., Diggers Hotline) was contacted. In accordance with Arcadis standard policies, at a minimum, three lines of evidence were utilized for locating subsurface utilities. A private utility locating service was contracted, an inspection of each location was conducted, discussions were conducted with representatives marking utilities in accordance with the One Call tickets, and soft digging via air knife were lines of evidence for clearing used to clear drilling locations.

Groundwater sampling is proposed to be completed on Tyco property, private property, and public rights-of-way. Prior to completing groundwater sampling, permission for access, if necessary, will be obtained from the appropriate jurisdictional authorities.

#### **3.2 Surveying**

Newly installed wells were surveyed in January 2021. Surveyed elevations (ground surface, top of well casing, etc.) are referenced to the North American Vertical Datum of 1988 (NAVD 88), and surveyed horizontal coordinates are referenced to the State Plane North American Datum of 1983 (NAD 83) – Wisconsin Central (4802) Zone. Locations have been surveyed to the nearest 0.01 foot (horizontal and vertical).

#### **3.3 Investigation-Derived Waste**

Purge water and soil generated during investigation activities has been containerized (e.g., in 55-gallon steel drums) and staged in a centralized and secured location on Tyco property. Purge water from future sampling activities on the FTC and within the City of Marinette Rights-of-Way (ROWs) is anticipated to be metered into the Ditch A treatment system. Purge water from locations on the Stanton Street property will be containerized and treated at the on-site groundwater treatment system.

## 4 GROUNDWATER

The scope of the proposed groundwater investigation includes 1) installation of monitoring wells in the surficial aquifer (November/December 2020), and 2) one round of groundwater sampling and water level gauging of existing and newly installed monitoring wells and piezometers. The groundwater investigation will be performed as described in this section and the procedures provided in the Draft QAPP (Arcadis 2020b).

The overall objective of the groundwater investigation is to complete delineation of overburden groundwater containing PFAS. The specific goal is to delineate the extent of PFAS in overburden groundwater at concentrations exceeding the Wisconsin Department of Health Services (WDHS) recommended groundwater quality standards, which were provided to the WDNR in November 2020 (Cycle 11).

### 4.1 Surficial Aquifer Monitoring Well Installations

Additional monitoring wells in two locations upgradient of the Site location were installed in November and December of 2020 to refine the understanding of groundwater flow and to delineate the presence of PFAS in groundwater to the south and southwest of the Site. The monitoring well locations were paired with shallow bedrock well locations proposed in the *Near-Term Bedrock Groundwater Evaluation Work Plan* (Arcadis 2020c). One well, MW126S-20, was installed on Newberry Avenue and two wells (MW125S-20 and MW125M-35) were installed on Carney Boulevard. The number of wells installed at each location was based on the thickness of the surficial aquifer and number of discrete sand zones observed. Monitoring well locations are shown on **Figure 5**. Details of locations are provided in **Table 1**.

Monitoring wells were installed following procedures described in the Draft QAPP (Arcadis 2020b). During boring activities, soil cores were collected and logged by an Arcadis field geologist. Soil descriptions include soil type, grain size, moisture content, and color, using the Munsell color chart. Fine-grained soil descriptions also include plasticity and consistency. Coarse-grained soil descriptions include angularity and sorting. The screened intervals of each monitoring well were set based on the observed lithology. Historical vertical aquifer profiling results were considered where applicable.

In accordance with the Draft QAPP, shallow monitoring wells were generally screened in proximity to the water table; the relatively deeper (i.e., intermediate) monitoring well was screened near the base of the sand unit. All monitoring wells have been constructed with 5- or 10-foot-long by 2-inch-diameter schedule 40 polyvinyl chloride (PVC) 0.010-inch slotted screen and a 2-inch schedule 40 PVC riser to the surface. Filter pack sand was placed to 2 feet above the screen, with a filter pack seal (clean fine sand and bentonite or bentonite only based on the depth of the screened interval) to at least 2 feet above the filter pack. Once the bentonite set (approximately 1 hour), the well was grouted to surface.

### 4.2 Well Development

In accordance with the Draft QAPP (Arcadis 2020b), following monitoring well installation and passage of a minimum of 24 hours, each new monitoring well was developed via over-pumping and surging methods using a submersible pump to remove sediments from the well and surrounding filter pack. Groundwater field parameters (pH, specific conductivity, temperature, and turbidity) were measured periodically, and

well development continued until up to 10 well volumes had been purged or until the parameters had stabilized.

### 4.3 Groundwater Monitoring

One groundwater monitoring event will be completed comprising up to 36 on-Site and off-Site monitoring wells. The monitoring event will include the following locations:

- Each of the three new overburden monitoring wells installed as part of this work plan.
- Eighteen (18) existing Site-related overburden monitoring wells.
- Each of four new shallow bedrock monitoring wells installed as proposed in the *Near-Term Bedrock Groundwater Evaluation Work Plan*.
- Seven existing Site-related shallow bedrock wells.
- Two existing overburden wells within the PZ-28 cluster.
- Two existing shallow bedrock monitoring wells located upgradient of the Site on the FTC (PZ-01D and PZ-04D).

The complete list of proposed monitoring locations is provided in **Table 1**. Note that monitoring wells MW049S and MW049M have been included as contingent monitoring locations if MW022S and MW022M are inaccessible due to high water conditions.

Pressure transducers are present in several existing wells as part of the monitoring program associated with the USEPA RCRA project. These pressure transducers will be removed from the wells prior to sampling. Each well in the monitoring event will be gauged using an electronic water level meter. Wells will also be inspected and redeveloped as needed. Groundwater sampling will be conducted after a minimum of 2 weeks following redevelopment, if required.

Low-flow sampling procedures will be used for groundwater sampling, using a peristaltic pump and dedicated down-well disposable tubing. Analytical samples will be collected after groundwater parameters that are measured with a field probe, including dissolved oxygen, pH, specific conductivity, and oxidation-reduction potential, are shown to have stabilized at each well. All monitoring wells will be gauged for depth to the top of water and depth to the bottom of the well.

Samples will be collected for PFAS analysis following the sampling procedures described in the Draft QAPP (Arcadis 2020b) and the quality assurance/quality control (QA/QC) process described in **Section 6**.

## 5 OTHER MEDIA

### 5.1 Soil

As described in the CSM (Arcadis 2020e), existing soil concentrations are below the WDNR industrial direct contact residual contaminant level (RCL). It should be noted any potential impacts to groundwater resulting from soil leaching that occur within the barrier wall will be extracted and treated by the existing groundwater collection and treatment system<sup>1</sup>. Soil concentrations are sufficiently delineated at the Site, and no additional soil samples will be collected for the site investigation.

### 5.2 Surface Water

As described in the CSM (Arcadis 2020e), potential groundwater discharge to the Menominee River is expected to result in minimal PFAS mass loading to the river, based on publicly available surface water sampling data collected by WDNR in the Menominee River, which indicate PFOS and PFOA concentrations are well below WDNR surface water quality guidelines. Surface water is sufficiently characterized for the site investigation based on publicly available data of PFAS sampling within the Menominee River. No additional surface water samples will be collected for the site investigation.

### 5.3 Stormwater

As described in the CSM (Arcadis 2020e), precautions have been taken to prevent PFAS-containing materials from discharging into the stormwater system. In Building 18 (**Figure 2**), an internal trench drain is pumped out, as needed, and is not connected to the stormwater system. Tyco has installed gate valves at the location of weirs in the sheet pile barrier wall that may be closed to prevent unwanted discharge of surface water runoff from the site. In addition, Tyco is in the process of planning and implementing substantial modifications to the stormwater management at the Site, which eliminates underground conveyance of stormwater, in accordance with the recently issued WPDES permit.

Publicly available surface water sampling data in the Menominee River indicate PFOS and PFOA concentrations below WDNR surface water quality guidelines, indicating that even if PFAS were present in stormwater, it is not affecting surface water quality. Stormwater is sufficiently characterized for the site investigation; therefore, no stormwater samples will be collected for the site investigation.

### 5.4 Air

As described in the *Aerial Deposition Evaluation Report* (Arcadis 2020f), there are no outdoor releases of aqueous film-forming foam at the Site. Aerial transport of PFAS is not believed to have historically occurred within the Site as no outdoor aqueous film-forming foam testing or firefighter training was conducted at the Site (Arcadis 2020f).

As such, no air samples will be collected for analysis of PFAS.

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<sup>1</sup> The existing groundwater extraction and treatment system will be upgraded by January 1, 2023 to comply with the recently issued WPDES permit.

## 5.5 Sediment

As described in the CSM (Arcadis 2020e), the low mass loading of PFAS to surface water and the 2012 and 2013 dredging adjacent to the Site suggest a low possibility for PFAS to be present in sediment at levels of concern. Therefore, no sediment investigation activities are planned based on previous investigations related to arsenic at the Site.

## 6 QUALITY ASSURANCE AND QUALITY CONTROL

### 6.1 Special Considerations for PFAS Sampling

The detection of PFAS compounds at very low concentrations can be influenced by common PFAS-containing materials that may be present at the sampling site. Therefore, to minimize the potential for cross-contamination, special attention will be given to sampling materials (i.e., tubing), decontamination procedures, and clothing and personal care products used by sampling personnel. Detailed standard operating procedures that will be followed during investigation activities are provided in the Draft QAPP submitted to WDNR on April 15, 2020 (Arcadis 2020b).

Quality assurance samples are specified in the Draft QAPP for each type of media to be sampled. Sampling for PFAS compounds will include the submission of one laboratory-supplied field reagent blank per day to detect the presence of ambient PFAS that may influence samples during sample collection in the sampling area. PFAS-free water used for the field reagent blank sample will be brought to the Site in a laboratory-supplied bottle. Field staff will transfer the laboratory-supplied PFAS-free water into an empty sample bottle. This field reagent blank will be placed in the same cooler as other samples intended for PFAS analyses.

All equipment will be decontaminated with PFAS-free water between use at each sampling location. Only Alconox, Liquinox, or methanol will be used as decontamination materials. To assess the adequacy of the decontamination process, an equipment rinsate blank will be collected every 20 samples or per day, whichever is more frequent. To prepare a rinsate blank, a sample of PFAS-free water will be poured over or through decontaminated field equipment before collection of environmental samples.

### 6.2 Laboratory Methods and Analysis

Details regarding the analytical methods to be used for each media are provided in the Draft QAPP (Arcadis 2020b). Analysis for PFAS will include the 36 PFAS analytes required by WDNR per correspondence dated May 27, 2020 and as indicated in the Draft QAPP.

Table 2. Laboratory Methods and QA/QC Frequency

Matrix	Parameter	Laboratory Method	Matrix Spike/ Matrix Spike Duplicate Frequency	Field Duplicate Frequency
Water	PFAS	Modified USEPA 537 (36 compounds)	1/20	1/10

## 7 REPORTING

Groundwater sample analytical results will be submitted to the WDNR per Chapter Natural Resources (NR) 716.14; Wisconsin Administrative Code after completion of the sampling event. Field investigation information will be communicated to WDNR in a future Site Investigation Report that meets the requirements detailed in NR716. Note that an investigation progress report may proceed the submission of the Site Investigation Report if, based on an evaluation of the data, additional investigation is deemed necessary. The results of the *Near-Term Bedrock Groundwater Evaluation Work Plan* will also be provided within an investigation progress report (if this report is needed) and the Site Investigation Report.



## 8 ANTICIPATED SCHEDULE

A review fee per NR 749 was submitted in September 2020 for this work plan. As previously mentioned, the original work plan was withdrawn in November 2020, prior to WDNR review. Tyco has routine conversations with the WDNR and estimates the following schedule based on work already completed and planned future activities.

- Field Activities:
  - November/December 2020: Installation of select monitoring wells and development.  
Note: this work has been completed.
  - April 2021: Groundwater monitoring of identified offsite monitoring wells and piezometers and select onsite monitoring wells.
- Reporting:
  - April/May 2021: Groundwater sample analytical results submittal per NR 716.14.
  - August 2021: Depending on the results of the investigation, an investigation progress report, or a NR 716 Site Investigation Report, whichever is applicable, will be submitted to WDNR. This report will be submitted after completion of all field activities proposed in this work plan and the *Near-Term Bedrock Groundwater Investigation Work Plan*. This report will provide a summary of the data collected, an evaluation of data, contour and cross-section figures, and a discussion of remaining data gaps, as applicable.

In the event the schedule is affected by weather, access, or other factors, WDNR will be provided with an updated schedule.

## 9 REFERENCES

- Arcadis. 2018a. Revised Site Investigation Work Plan, Tyco Fire Technology Center Site, 2700 Industrial Parkway, Marinette, Wisconsin, BRRTS No. 02-38-580694. April 20.
- Arcadis. 2018b. Summary of Groundwater Sampling, Ansul Inc., Stanton Street Facility, Marinette, Wisconsin, EPA ID: WID006125215. June 21.
- Arcadis. 2020a. Summary of Soil and Groundwater Sampling, Tyco Stanton Street Facility, Marinette, Wisconsin, BRRTS No. 02-38-581955. February 4.
- Arcadis. 2020b. Draft Quality Assurance Project Plan, Tyco Per- and Polyfluoroalkyl Substances (PFAS) Site Investigation and Private Well Sampling Activities, Marinette, Wisconsin. April 15.
- Arcadis. 2020c. Near-Term Bedrock Groundwater Evaluation Work Plan, Tyco Stanton Street Facility, 1 Stanton Street, Marinette, Wisconsin, BRRTS No. 02-38-581955. May 1.
- Arcadis. 2020d. Interim Site Investigation Report, Tyco Stanton Street Facility, Marinette, Wisconsin, BRRTS No. 02-38-581955. June 15.
- Arcadis. 2020e. Conceptual Site Model, Tyco Stanton Street Facility, Marinette, Wisconsin, BRRTS No. 02-38-581955. July 15.
- Arcadis. 2020f. Aerial Deposition Evaluation Report, Tyco Fire Products, Stanton Street Facility, Marinette, Wisconsin, BRRTS No. 02-38-581955. July 16.
- Arcadis. 2020g. Supplemental Site Investigation Work Plan, Tyco Fire Products, Fire Technology Center, Marinette, Wisconsin, BRRTS No. 02-38-580694. August 17.
- WDNR. 2020. Letter from David Neste of WDNR to Jeff Danko of Johnson Controls, Inc. and Scott Wahl of Tyco Fire Products LP Regarding Review and Response to JCI and Tyco Submittal of Draft Investigation Report of the Southern Area Groundwater Evaluation Efforts. BRRTS No. 02-38-580694. May 27.

# TABLES



**Table 1**  
**Proposed Groundwater Monitoring Locations**  
**Site Investigation Work Plan**  
**Tyco Stanton Street Facility**  
**Marinette, Wisconsin**

Well ID	Area	Depth to Top of Screen (feet bgs)	Depth to Bottom of Screen (feet bgs)	Top of Casing Elevation (feet)	Top of Screen Elevation (feet amsl)	Bottom of Screen Elevation (feet amsl)	General Description / Site Setting
<b>MW003D</b>	Stanton Street	45	50	587.29	542.29	537.29	On-site, bedrock
<b>MW003M</b>	Stanton Street	30	35	587.24	557.24	552.24	On-site, overburden
<b>MW003S</b>	Stanton Street	10	20	586.40	576.40	566.40	On-site, overburden
MW008M	Stanton Street	25	30	583.12	558.12	553.12	On-site, overburden
<b>MW013D</b>	Stanton Street	45	50	588.69	543.69	538.69	On-site, bedrock
<b>MW013M</b>	Stanton Street	30	33	587.91	557.91	555.30	On-site, overburden
<b>MW013S</b>	Stanton Street	5	15	588.21	583.21	573.21	On-site, overburden
<b>MW021M</b>	Stanton Street	30	35	586.93	556.93	551.93	On-site, overburden
<b>MW021S-R</b>	Stanton Street	6	16	586.17	580.17	570.17	On-site, overburden
<b>MW022M</b>	Stanton Street	30	35	584.34	554.34	549.34	On-site, overburden
<b>MW022S</b>	Stanton Street	10	20	584.30	574.30	564.30	On-site, overburden
MW032S	Stanton Street	7	17	588.33	581.33	571.33	On-site, overburden
<b>MW040D</b>	Stanton Street	38	43	582.67	544.67	539.67	On-site, bedrock
<b>MW040M-R</b>	Stanton Street	20	25	582.42	562.42	557.42	On-site, overburden
MW041S	Stanton Street	5	15	582.93	577.93	567.93	On-site, overburden
MW044S-R	Stanton Street	5	15	583.96	578.96	568.96	On-site, overburden
<b>MW049M*</b>	Stanton Street	10	20	584.37	574.37	564.37	On-site, overburden
<b>MW049S*</b>	Stanton Street	30	35	584.01	554.01	549.01	On-site, overburden
MW054S	Stanton Street	10	20	587.66	577.66	567.66	On-site, overburden
<b>MW100D</b>	Stanton Street	52	57	584.11	532.11	527.11	On-site, bedrock
<b>MW102D</b>	Stanton Street	50	55	588.49	538.73	533.81	On-site, bedrock
<b>MW102M</b>	Stanton Street	28	33	588.43	560.70	555.49	On-site, overburden
<b>MW102S</b>	Stanton Street	8	17	588.71	581.00	571.31	On-site, overburden
<b>MW104S</b>	Stanton Street	8	18	589.14	581.14	571.14	On-site, overburden
MW108D	Stanton Street	48	53	586.29	538.29	533.29	On-site, bedrock
MW108S	Stanton Street	8	18	586.51	578.51	568.51	On-site, overburden
MW109D	Stanton Street	48	53	584.59	536.28	531.28	On-site, bedrock
<b>MW125D-60</b>	Stanton Street	50	60	596.03	546.03	536.03	Off-site, bedrock
<b>MW125M-35</b>	Stanton Street	30	35	596.26	566.26	561.26	Off-site, overburden
<b>MW125S-20</b>	Stanton Street	10	20	596.16	586.16	576.16	Off-site overburden
<b>MW126D-40</b>	Stanton Street	30	40	597.79	567.79	557.79	Off-site, bedrock
<b>MW126S-20</b>	Stanton Street	10	20	598.06	588.06	578.06	Off-site overburden
<b>MW127D-85</b>	Stanton Street	75	85	595.83	520.83	510.83	Off-site bedrock
<b>PZ-01D</b>	FTC	64	69	606.23	542.73	537.73	Bedrock, FTC
<b>PZ-04D</b>	FTC	69	74	607.86	539.36	534.36	Bedrock, FTC
<b>PZ-28-14</b>	Stanton Street, FTC	9	14	594.76	585.76	580.76	Off-site, overburden
<b>PZ-28-54</b>	Stanton Street, FTC	49	54	594.81	545.81	540.81	Off-site, overburden
<b>PZ-28-75</b>	Stanton Street, FTC	65	75	594.29	529.29	519.29	Off-site, bedrock

**Notes:**

Bold indicates monitoring well is outside the containment wall

Vertical Datum: North American Vertical Datum (NAVD) 1988

amsl = above mean sea level

bgs = below ground surface

MW = monitoring well

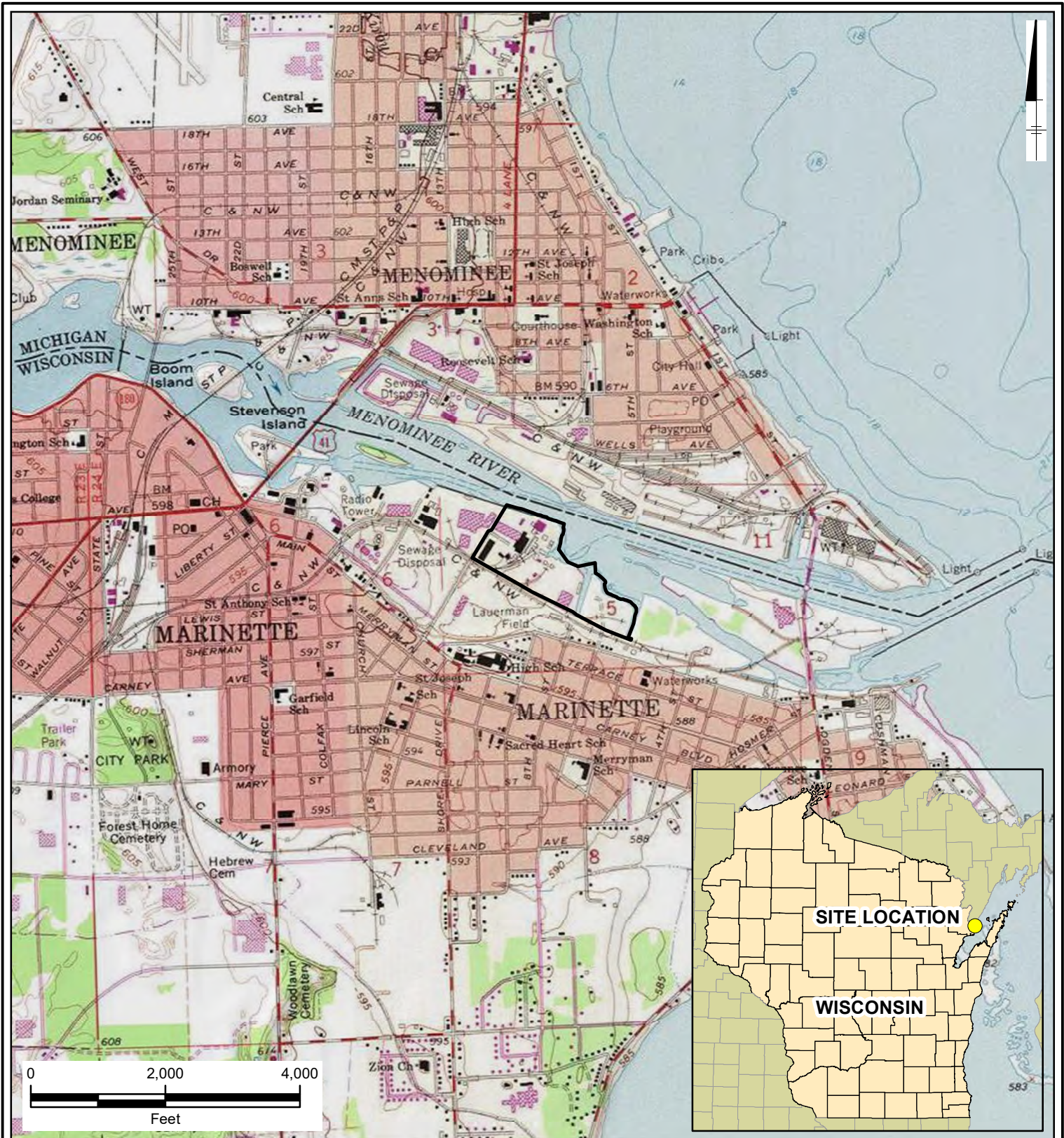
PZ = piezometer

\*Contingent wells if MW022S and MW022M are not accessible.

# FIGURES







**LEGEND:**

 APPROXIMATE SITE PROPERTY BOUNDARY

**NOTES:**

1. TOPOGRAPHIC MAP SOURCE: COPYRIGHT:© 2013 NATIONAL GEOGRAPHIC SOCIETY, I-CUBED, ACCESSED JANUARY 2021.

TYCO STANTON STREET FACILITY  
MARINETTE, WISCONSIN  
SITE INVESTIGATION WORK PLAN

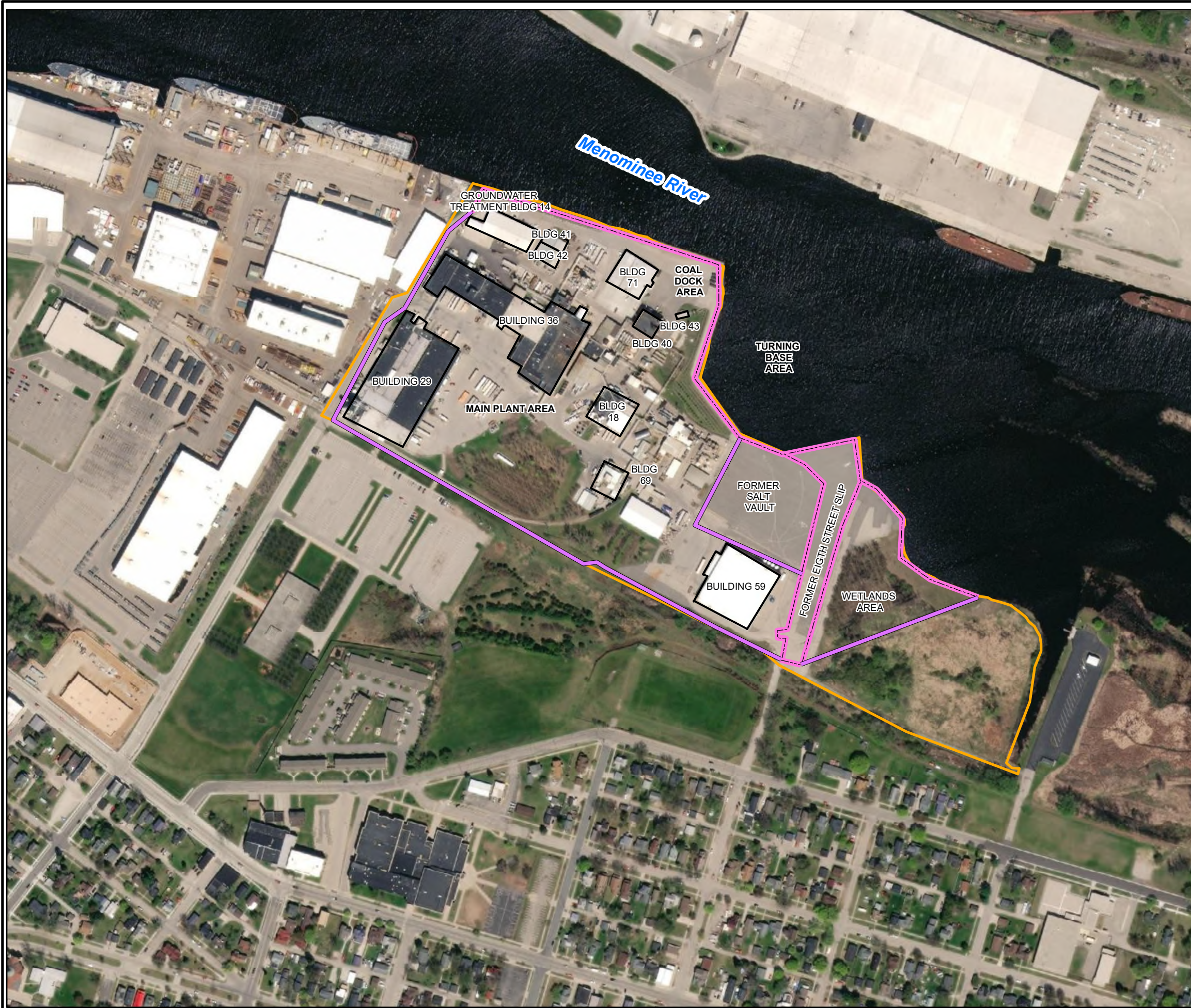
**SITE LOCATION**



**FIGURE  
1**

City: Marinette/Clark Div/Group: IMDVC Created By: MSMiller  
TYCO Marinette WI  
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LEGEND:

- APPROXIMATE SITE PROPERTY BOUNDARY
- SHEET PILE WALL
- SLURRY WALL

NOTES:

1. ROAD DATA SOURCE: OPEN STREET MAP, ACCESSED FALL 2017.
2. SERVICE LAYER CREDITS: SOURCE: ESRI, MAXAR, GEOEYE, EARTHSTAR GEOGRAPHICS, CNES/AIRBUS DS, USDA, USGS, AEROGRIID, IGN, AND THE GIS USER COMMUNITY.

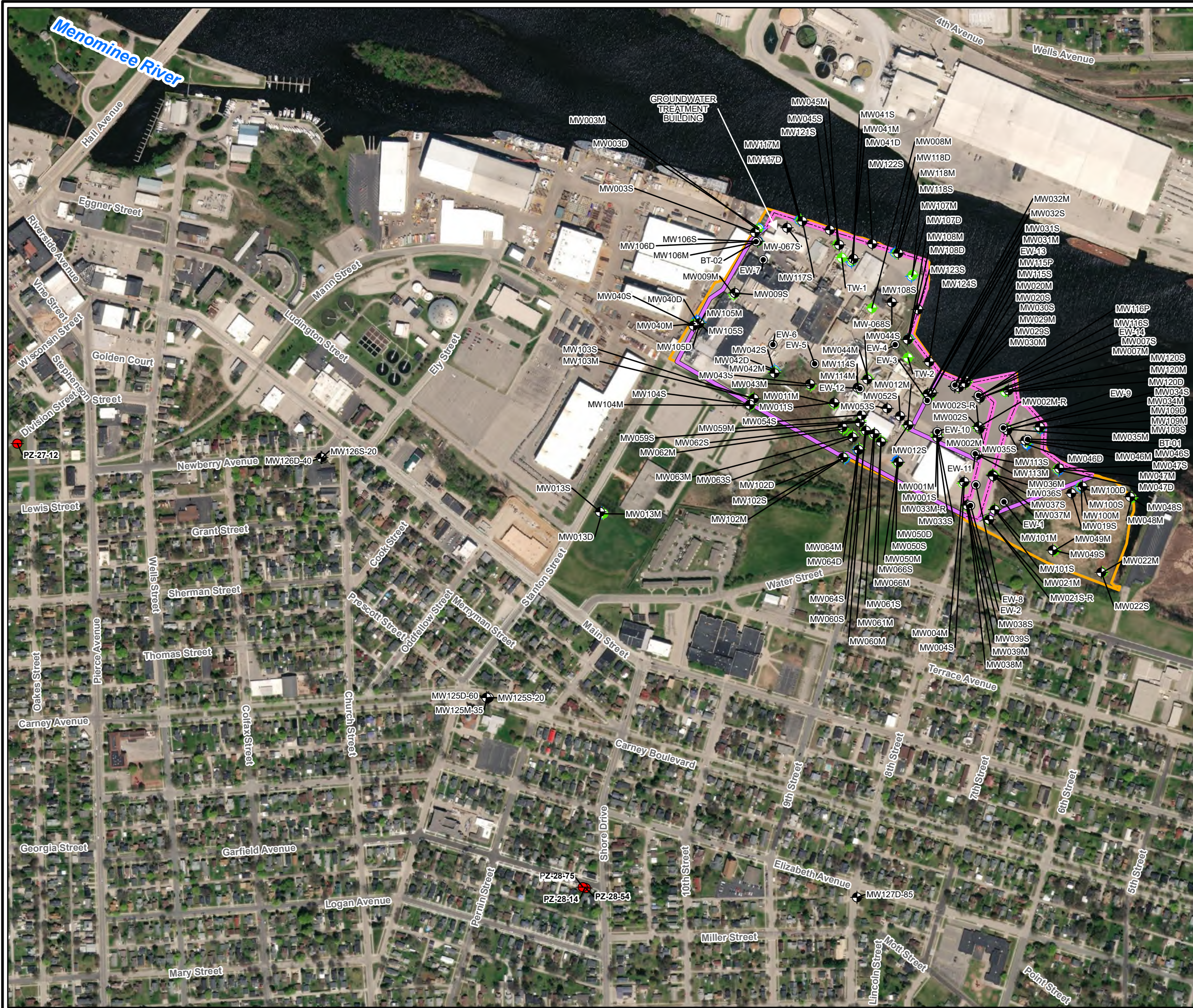


TYCO STANTON STREET FACILITY  
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 SITE INVESTIGATION WORK PLAN

SITE LAYOUT





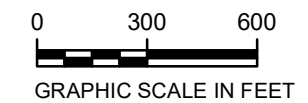


LEGEND:

- EXTRACTION WELL OR TEST WELL
- ⊕ MONITORING WELL - SHALLOW OR PEAT
- ⊕ MONITORING WELL - INTERMEDIATE
- ⊕ MONITORING WELL - DEEP (BEDROCK)
- PIEZOMETER
- ▭ APPROXIMATE SITE PROPERTY BOUNDARY
- ▬ SHEET PILE WALL
- ▬ SLURRY WALL

NOTES:

1. ROAD DATA SOURCE: OPEN STREET MAP, ACCESSED FALL 2017.
2. SERVICE LAYER CREDITS: SOURCE: ESRI, MAXAR, GEOEYE, EARTHSTAR GEOGRAPHICS, CNES/AIRBUS DS, USDA, USGS, AEROGRIID, IGN, AND THE GIS USER COMMUNITY.
3. WELLS PZ-28-75, MW127D-85, MW125 CLUSTER, AND MW126 PAIR WERE INSTALLED IN NOVEMBER/DECEMBER 2020.



TYCO STANTON STREET FACILITY  
 MARINETTE, WISCONSIN  
 SITE INVESTIGATION WORK PLAN

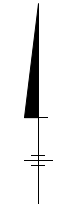
EXISTING MONITORING WELLS  
 AND PIEZOMETERS



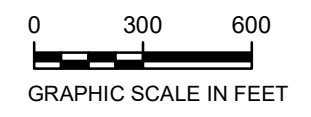
City: Minneapolis/Citrix Div/Group: IMDVC Created By: Last Saved By: MSMiller  
 TYCO Stanton St, Marinette, WI  
 D:\Tyco\_Stanton\2021-01\Figure 5 PROPOSED MONITORING WELL LOCATIONS Stanton\_01202021.mxd 1/28/2021 2:19:21 PM



- LEGEND:**
- MONITORING WELL OR WELL CLUSTER
  - PIEZOMETER
  - APPROXIMATE SITE PROPERTY BOUNDARY
  - SHEET PILE WALL
  - SLURRY WALL




- NOTES:**
1. RIVER DATA SOURCE: U.S. GEOLOGICAL SURVEY NATIONAL HYDROGRAPHY DATASET, ACCESSED FALL 2017.
  2. ROAD DATA SOURCE: OPEN STREET MAP, ACCESSED FALL 2017.
  3. AERIAL IMAGERY: 4/27/2016 DIGITALGLOBE, VIVID-USA.
  4. WELL LETTER SUFFIXES ARE DEFINED AS:  
 S = SHALLOW MONITORING WELL.  
 M = INTERMEDIATE MONITORING WELL.  
 D = DEEP MONITORING WELL.  
 R = REPLACEMENT WELL.
  5. TRANSDUCERS ARE PROPOSED TO BE DEPLOYED IN THE FOLLOWING WELLS: MW003D, MW003S, MW013D, MW013S, AND MW102D IN ACCORDANCE WITH THE MAY 2020 NEAR-TERM BEDROCK GROUNDWATER EVALUATION WORK PLAN.
  6. NOT INCLUDED IN THIS FIGURE ARE SHALLOW BEDROCK WELLS PZ-01D AND PZ-04D, WHICH ARE LOCATED ON THE TYCO FIRE TECHNOLOGY CENTER (FTC) SITE. THESE WELLS ARE PROPOSED TO BE SAMPLED AS PART OF THIS WORK PLAN.
  7. WELLS PZ-28-75, MW127D-85, MW125 CLUSTER, AND MW126 PAIR WERE INSTALLED IN NOVEMBER/DECEMBER 2020.



TYCO STANTON STREET FACILITY  
 MARINETTE, WISCONSIN  
 SITE INVESTIGATION WORK PLAN

**PROPOSED GROUNDWATER  
 MONITORING LOCATIONS**



**FIGURE  
 4**



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A decorative graphic consisting of three thin orange lines. One line is horizontal, extending across the bottom of the page. Two other lines are diagonal, starting from the bottom left and extending towards the top right, crossing the horizontal line.