State of Wisconsin
Department of Natural Resources
PO Box 7921, Madison WI 53707-7921
dnr.wi.gov

Technical Assistance, Environmental Liability Clarification or Post-Closure Modification Request

Notice: Use this form to request **a written response (on agency letterhead)** from the Department of Natural Resources (DNR) regarding technical assistance, a post-closure change to a site, a specialized agreement or liability clarification for Property with known or suspected environmental contamination. A fee will be required as is authorized by s. 292.55, Wis. Stats., and NR 749, Wis. Adm. Code., unless noted in the instructions below. Personal information collected will be used for administrative purposes and may be provided to requesters to the extent required by Wisconsin's Open Records law [ss. 19.31 - 19.39, Wis. Stats.].

Definitions

"Property" refers to the subject Property that is perceived to have been or has been impacted by the discharge of hazardous substances.

"Liability Clarification" refers to a written determination by the Department provided in response to a request made on this form. The response clarifies whether a person is or may become liable for the environmental contamination of a Property, as provided in s. 292.55, Wis. Stats.

"Technical Assistance" refers to the Department's assistance or comments on the planning and implementation of an environmental investigation or environmental cleanup on a Property in response to a request made on this form as provided in s. 292.55, Wis. Stats.

"Post-closure modification" refers to changes to Property boundaries and/or continuing obligations for Properties or sites that received closure letters for which continuing obligations have been applied or where contamination remains. Many, but not all, of these sites are included on the GIS Registry layer of RR Sites Map to provide public notice of residual contamination and continuing obligations.

Select the Correct Form

This from should be used to request the following from the DNR:

- Technical Assistance
- Liability Clarification
- Post-Closure Modifications
- Specialized Agreements (tax cancellation, negotiated agreements, etc.)

Do not use this form if one of the following applies:

- Request for an **off-site liability exemption or clarification** for Property that has been or is perceived to be contaminated by one or more hazardous substances that originated on another Property containing the source of the contamination. Use DNR's Off-Site Liability Exemption and Liability Clarification Application Form 4400-201.
- Submittal of an Environmental Assessment for the **Lender Liability Exemption**, s 292.21, Wis. Stats., **if no response or review by DNR is requested**. Use the Lender Liability Exemption Environmental Assessment Tracking Form 4400-196.
- Request for an **exemption to develop on a historic fill site** or licensed landfill. Use DNR's Form 4400-226 or 4400-226A.
- **Request for closure** for Property where the investigation and cleanup actions are completed. Use DNR's Case Closure - GIS Registry Form 4400-202.

All forms, publications and additional information are available on the internet at: dnr.wi.gov/topic/Brownfields/Pubs.html.

Instructions

1. Complete sections 1, 2, 6 and 7 for all requests. Be sure to provide adequate and complete information.
2. Select the type of assistance requested: Section 3 for technical assistance or post-closure modifications, Section 4 for a written determination or clarification of environmental liabilities; or Section 5 for a specialized agreement.
3. Include the fee payment that is listed in Section 3, 4, or 5, unless you are a "Voluntary Party" enrolled in the Voluntary Party Liability Exemption Program **and** the questions in Section 2 direct otherwise. Information on to whom and where to send the fee is found in Section 8 of this form.
4. Send the completed request, supporting materials and the fee to the appropriate DNR regional office where the Property is located. See the map on the last page of this form. A paper copy of the signed form and all reports and supporting materials shall be sent with an electronic copy of the form and supporting materials on a compact disk. For electronic document submittal requirements see: http://dnr.wi.gov/files/PDF/pubs/rr/RR690.pdf"

The time required for DNR's determination varies depending on the complexity of the site, and the clarity and completeness of the request and supporting documentation.

Section 1. Contact and Recipient Information

Requester Information

This is the person requesting technical assistance or a post-closure modification review, that his or her liability be clarified or a specialized agreement and is identified as the requester in Section 7. DNR will address its response letter to this person.

Last Name	First	MI	Organization/ Business Name		
Nelson	Denice		Tyco Fire Products LP		
Mailing Address			City	State	ZIP Code
2700 Industrial Parkway South			Marinette	WI	54143
Phone # (include area code)	Fax # (include area code)		Email		

The requester listed above: (select all that apply)

- [x] Is currently the owner
- [ ] Is considering selling the Property
- [ ] Is renting or leasing the Property
- [ ] Is considering acquiring the Property
- [ ] Is a lender with a mortgagee interest in the Property
- [ ] Other. Explain the status of the Property with respect to the applicant:

Contact Information (to be contacted with questions about this request)

☐ Select if same as requester

Contact Last Name	First	MI	Organization/ Business Name		
Milionis	Peter		Arcadis		
Mailing Address			City	State	ZIP Code
126 N Jefferson Street, Suite 400			Milwaukee	WI	53202
Phone # (include area code)	Fax # (include area code)		Email		
(267) 685-1815			peter.milionis@arcadis.com		

Environmental Consultant (if applicable)

Contact Last Name	First	MI	Organization/ Business Name		
Milionis	Peter		Arcadis		
Mailing Address			City	State	ZIP Code
126 N Jefferson Street, Suite 400			Milwaukee	WI	53202
Phone # (include area code)	Fax # (include area code)		Email		

Section 2. Property Information

Property Name			FID No. (if known)		
Tyco Fire Technology Center - PFCs			438005590		
BRRTS No. (if known)			Parcel Identification Number		
0238580694					
Street Address			City	State	ZIP Code
2700 Industrial Parkway South			Marinette	WI	54143
County	Municipality where the Property is located		Property is composed of:		Property Size Acres
Marinette	◉ City ○ Town ○ Village of Marinette		○ Single tax parcel ◉ Multiple tax parcels		380

1. Is a response needed by a specific date? (e.g., Property closing date) Note: Most requests are completed within 60 days. Please plan accordingly.

◉ No ○ Yes

Date requested by: _____

Reason:

_____

2. Is the "Requester" enrolled as a Voluntary Party in the Voluntary Party Liability Exemption (VPLE) program?

◉ No. **Include the fee that is required for your request in Section 3, 4 or 5.**

○ Yes. **Do not include a separate fee.** This request will be billed separately through the VPLE Program.

Fill out the information in Section 3, 4 or 5 which corresponds with the type of request:
Section 3. Technical Assistance or Post-Closure Modifications;
Section 4. Liability Clarification; or Section 5. Specialized Agreement.

Section 3. Request for Technical Assistance or Post-Closure Modification

Select the type of technical assistance requested: [**Numbers in brackets are for WI DNR Use]**

☐ No Further Action Letter (NFA) (Immediate Actions) - NR 708.09, [183] - **Include a fee of $350.** Use for a written response to an immediate action after a discharge of a hazardous substance occurs. Generally, these are for a one-time spill event.

☐ Review of Site Investigation Work Plan - NR 716.09, [135] - **Include a fee of $700.**

☐ Review of Site Investigation Report - NR 716.15, [137] - **Include a fee of $1050.**

☐ Approval of a Site-Specific Soil Cleanup Standard - NR 720.10 or 12, [67] - **Include a fee of $1050.**

☐ Review of a Remedial Action Options Report - NR 722.13, [143] - **Include a fee of $1050.**

☐ Review of a Remedial Action Design Report - NR 724.09, [148] - **Include a fee of $1050.**

☐ Review of a Remedial Action Documentation Report - NR 724.15, [152] - **Include a fee of $350**

☒ Review of a Long-term Monitoring Plan - NR 724.17, [25] - **Include a fee of $425.**

☐ Review of an Operation and Maintenance Plan - NR 724.13, [192] - **Include a fee of $425.**

Other Technical Assistance - s. 292.55, Wis. Stats. [97] (For request to build on an abandoned landfill use Form 4400-226)

☐ Schedule a Technical Assistance Meeting - **Include a fee of $700.**

☐ Hazardous Waste Determination - **Include a fee of $700.**

☐ Other Technical Assistance - **Include a fee of $700.** Explain your request in an attachment.

Post-Closure Modifications - NR 727, [181]

☐ Post-Closure Modifications: Modification to Property boundaries and/or continuing obligations of a closed site or Property; sites may be on the GIS Registry. This also includes removal of a site or Property from the GIS Registry. **Include a fee of $1050, and:**

☐ Include a fee of $300 for sites with residual soil contamination; and

☐ Include a fee of $350 for sites with residual groundwater contamination, monitoring wells or for vapor intrusion continuing obligations.

Attach a description of the changes you are proposing, and documentation as to why the changes are needed (if the change to a Property, site or continuing obligation will result in revised maps, maintenance plans or photographs, those documents may be submitted later in the approval process, on a case-by-case basis).

Skip Sections 4 and 5 if the technical assistance you are requesting is listed above and complete Sections 6 and 7 of this fo

Section 6. Other Information Submitted

Identify all materials that are included with this request.

Send both a paper copy of the signed form and all reports and supporting materials, and an electronic copy of the form and all reports, including Environmental Site Assessment Reports, and supporting materials on a compact disk.

Include one copy of any document from any state agency files that you want the Department to review as part of this request. The person submitting this request is responsible for contacting other state agencies to obtain appropriate reports or information.

☐ Phase I Environmental Site Assessment Report - Date: _____

☐ Phase II Environmental Site Assessment Report - Date: _____

☐ Legal Description of Property (required for all liability requests and specialized agreements)
☐ Map of the Property (required for all liability requests and specialized agreements)
Analytical results of the following sampled media: Select all that apply and include date of collection.
☐ Groundwater ☐ Soil ☐ Sediment ☐ Other medium - Describe: _____
Date of Collection: _____
☐ A copy of the closure letter and submittal materials
☐ Draft tax cancellation agreement
☐ Draft agreement for assignment of tax foreclosure judgment
☒ Other report(s) or information - Describe: Interim Long Term Monitoring Plan for Groundwater and Surface Water

For Property with newly identified discharges of hazardous substances only: Has a notification of a discharge of a hazardous substance been sent to the DNR as required by s. NR 706.05(1)(b), Wis. Adm. Code?

◯ Yes - Date (if known): _____
◯ No

Note: The Notification for Hazardous Substance Discharge (non-emergency) form is available at: dnr.wi.gov/files/PDF/forms/4400/4400-225.pdf.

Section 7. Certification by the Person who completed this form

☐ I am the person submitting this request (requester)
☒ I prepared this request for: Denice Nelson
Requester Name

I certify that I am familiar with the information submitted on this request, and that the information on and included with this request is true, accurate and complete to the best of my knowledge. I also certify I have the legal authority and the applicant's permission to make this request.

Jisa M Kuttkowski
Signature

3/15/2024
Date Signed

Senior Environmental Specialist
Title

(414) 277-6233
Telephone Number (include area code)

Section 8. DNR Contacts and Addresses for Request Submittals

Send or deliver one paper copy and one electronic copy on a compact disk of the completed request, supporting materials, and fee to the region where the property is located to the address below. Contact a DNR regional brownfields specialist with any questions about this form or a specific situation involving a contaminated property. For electronic document submittal requirements see: http://dnr.wi.gov/files/PDF/pubs/rr/RR690.pdf.

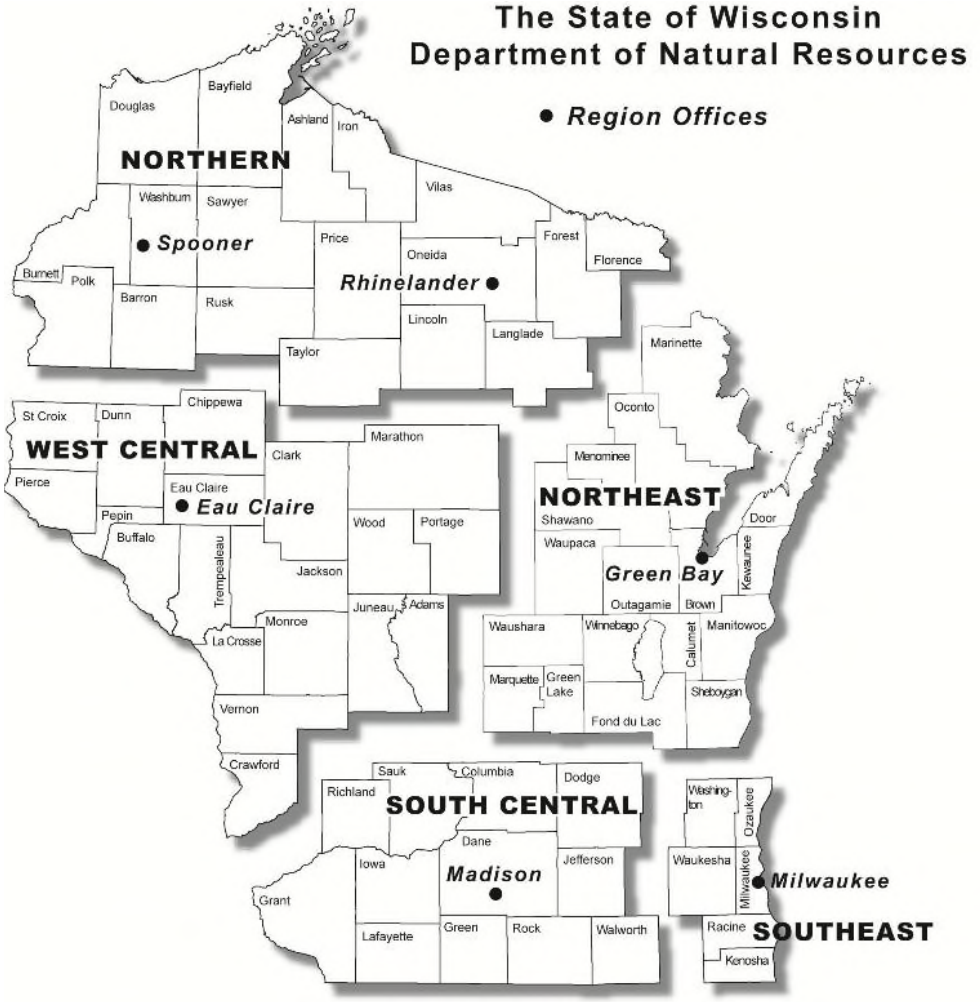
DNR NORTHERN REGION
Attn: RR Program Assistant
Department of Natural Resources
223 E Steinfest Rd Antigo, WI 54409

DNR NORTHEAST REGION
Attn: RR Program Assistant
Department of Natural Resources
2984 Shawano Avenue
Green Bay WI 54313

DNR SOUTH CENTRAL REGION
Attn: RR Program Assistant
Department of Natural Resources
3911 Fish Hatchery Road
Fitchburg WI 53711

DNR SOUTHEAST REGION
Attn: RR Program Assistant
Department of Natural Resources
2300 North Martin Luther King Drive
Milwaukee WI 53212

DNR WEST CENTRAL REGION
Attn: RR Program Assistant
Department of Natural Resources
1300 Clairemont Ave.
Eau Claire WI 54702



Note: These are the Remediation and Redevelopment Program's designated regions. Other DNR program regional boundaries may be different.

DNR Use Only			
Date Received	Date Assigned	BRRTS Activity Code	BRRTS No. (if used)
DNR Reviewer	Comments		
Fee Enclosed? ◯ Yes ◯ No	Fee Amount $	Date Additional Information Requested	Date Requested for DNR Response Letter
Date Approved	Final Determination		

Tyco Fire Products LP

Interim Long Term Monitoring Plan for Groundwater and Surface Water

Tyco Fire Technology Center
Marinette, Wisconsin

BRRTS No. 02-38-580694

March 2024

Interim Long Term Monitoring Plan for Groundwater and Surface Water

Tyco Fire Technology Center
Marinette, Wisconsin
BRRTS No. 02-38-580694

March 2024

Prepared By:
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126 North Jefferson Street, Suite 400
Milwaukee
Wisconsin 53202
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Prepared For:
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Scott Potter
Project Lead/Technical Expert

Tim Molitor, PG
Project Geologist

Matthew Coleman
Project Scientist

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Acronyms and Abbreviations

Arcadis	Arcadis U.S., Inc.
BRRTS	Bureau for Remediation and Redevelopment Tracking System
ES	Enforcement Standard
FTC	Fire Technology Center
GETS	groundwater extraction and treatment system
LTM	long term monitoring
MW	monitoring well
ng/L	nanograms per liter
NR	Natural Resources
PFAS	per- and poly-fluoroalkyl substances
PFOA	perfluorooctanoic acid
PFOS	perfluorooctanesulfonic acid
QAPP	Quality Assurance Project Plan
Site	Fire Technology Center located at 2700 Industrial Parkway South, Marinette, Wisconsin
TSS	Total Suspended Solids
Tyco	Tyco Fire Products LP
WDNR	Wisconsin Department of Natural Resources
Wis. Adm. Code	Wisconsin Administrative Code (Wis. Adm. Code).

1 Introduction

This document describes the Interim Long Term Monitoring (LTM) Plan for groundwater and surface water associated with the Tyco Fire Products LP (Tyco) Fire Technology Center (FTC) located at 2700 Industrial Parkway South in Marinette, Wisconsin (the Site; **Figure 1**). This Interim LTM Plan is associated with ongoing investigations of per- and polyfluoroalkyl substances (PFAS) being completed by Tyco within the Wisconsin Department of Natural Resources (WDNR) Environmental Repair Program, pursuant to the requirements of Natural Resources (NR) Chapter 716 of the Wisconsin Administrative Code (Wis. Adm. Code). The objectives of this Interim LTM Plan are to:

- Document the stability and attenuation of the site-related PFAS in groundwater.
- Verify that concentrations of site-related PFAS in surface water in Ditches A, C, and D are decreasing over time.

The sampling and analysis described in this Interim LTM Plan will be conducted in accordance with NR 724.17 and specifically the environmental standards established in Wisconsin and regulated by WDNR. The laboratory analytical methods, method detection limits, and reporting limits are outlined in the QAPP (Arcadis 2023a), and the method detection limits and reporting limits will be lower than the applicable standards.

This Interim LTM Plan spans the first five years of the Site's LTM program from 2024 to 2029. Through this interim period, monitoring will be implemented concurrently with the existing LTM Plan for the groundwater extraction and treatment system (GETS) (Arcadis 2021) and the existing LTM Plan associated with the deep bedrock aquifer wells (Arcadis 2022). At the end of the five-year period, a final LTM Plan, incorporating all monitoring programs associated with the Site, will be prepared for submittal to the WDNR. During implementation of the Interim LTM Plan, monitoring events will be completed concurrently with the other monitoring programs when possible (e.g., completing Interim LTM and GETS LTM during the same field mobilization).

In its first year, the Interim LTM Plan includes 84 existing monitoring wells, up to 14 new monitoring wells planned for construction in 2024 (up to 98 wells in total), and 6 surface water locations. The plan is dynamic, including changes in sampling frequency based on the program year and observed results. The conditional elements of the groundwater monitoring plan, designed to account for seasonality and reducing sampling redundancies, are described in **Section 3.2**.

To organize the sampling program, monitoring wells have been divided into four zones, as shown on **Figure 2**. The proposed monitoring zones and general sampling frequencies associated with this Interim LTM Plan are defined as follows:

- **FTC (Non-GETS)**: This zone encompasses the Site and includes 24 existing monitoring wells. Monitoring wells that are already included in the GETS LTM Plan are not included in this area and will continue to be sampled as part of the GETS LTM at this time. Monitoring wells in this zone are expected to be sampled semi-annually for two years and then annually thereafter.
- **Northern Plume**: This zone of the plume is northeast of the Site and GETS monitoring network. This zone includes 18 existing monitoring wells. Monitoring wells in this zone are expected to be sampled semi-annually for one year and then annually thereafter.
- **Southern Plume**: This zone of the plume is southeast of the Site and includes 21 existing monitoring wells. Monitoring wells in this zone are expected to be sampled semi-annually for one year and then annually thereafter.

- **Boundary Zone**: This zone includes 21 existing monitoring wells that will be used to monitor the perimeter of the Northern and Southern Plumes to confirm that the plume is not expanding. Monitoring wells in this zone are expected to be sampled semi-annually for one year, then annually for two years; sampling will be biennial thereafter. Additionally, a subset of the monitoring wells will be sampled at a higher frequency (i.e., quarterly) during the first two years of LTM implementation.

In accordance with the August 2023 Additional Site Investigation Work Plan (Arcadis 2023b), up to eleven overburden monitoring wells and three shallow bedrock monitoring wells will be installed in Spring/Summer 2024 (**Figure 2**). These newly installed monitoring wells will be incorporated into the zones associated with this Interim LTM Plan as applicable. Specifically, wells are expected to be incorporated as follows:

- Up to three overburden monitoring wells to be added to the Northern Plume Zone
- Three overburden monitoring wells to be added to the Southern Plume Zone
- Up to five overburden and three bedrock monitoring wells to be added to the Boundary Zone

In addition to groundwater monitoring, surface water samples will be collected from six locations (two in the North Branch of Ditch A; two in Ditch C; two in Ditch D) on a semi-annual basis during the period of the Interim LTM Plan. Surface water elevations will also be measured at eight locations (three along the West Branch of Ditch A; three along the North Branch of Ditch A; one along Ditch D; one on the connecting ditch between Ditches A and D) on a semi-annual basis in the first year of the Interim LTM and annually thereafter.

The remainder of this Interim LTM Plan describes the proposed monitoring tasks, schedule, and methods to be employed. Sampling protocols, analytical methods, and quality assurance/quality control measures applicable to this plan are documented in the Final Quality Assurance Project Plan (QAPP; Arcadis 2023a).

2 Interim Long Term Monitoring Plan Components

The Interim LTM Plan includes three major components: groundwater sampling, surface water sampling, and water level measurements. This section describes each data type, the purpose of collecting the data, and data collection locations. The sampling schedule for each data type is described in **Section 3**. Sampling methods are described in **Section 4**.

2.1 Groundwater Sampling

The existing monitoring well network associated with the Site is divided into the following monitoring programs and zones (**Table 1**; **Figure 2**): FTC (Non-GETS); GETS Network; Northern Plume; Southern Plume; Boundary Zone; and Deep Well Network. As described in **Section 1**, monitoring related to the GETS and deep aquifer well program is not included in this Interim LTM Plan as they are currently covered under other approved programs. The zone-specific groundwater sampling programs associated with this Interim LTM Plan are described below in **Sections 2.1.1** through **2.1.4**.

2.1.1 FTC (Non-GETS) Well Network

The FTC (Non-GETS) Zone encompasses monitoring wells on the Outdoor Testing and Training Area (OTA) and surrounding areas on or proximal to the Site that are not already included/sampled as part of the GETS program.

Purpose	Monitor trends within the OTA and surroundings
Monitoring Locations	24 existing monitoring wells (23 overburden; 1 bedrock) as shown on **Figures 2** and **3** and listed in **Table 2**

2.1.2 Northern Plume Well Network

The Northern Plume Sampling Zone is northeast of the Site and GETS Network.

Purpose	Track plume stability and attenuation north of the Site
Monitoring Locations	• 18 existing monitoring wells (10 overburden; 8 bedrock) as shown on **Figures 2** and **4** and listed in **Table 2** • Up to three new overburden monitoring wells as shown on **Figure 2**

2.1.3 Southern Plume Well Network

The Southern Plume Sampling Zone is southeast of the FTC (Non-GETS) Zone and GETS Network.

Purpose	Track plume stability and attenuation south of the Site
Monitoring Locations	• 21 existing monitoring wells (18 overburden; 3 bedrock) as shown on **Figures 2** and **5** and listed in **Table 2** • Up to three new overburden monitoring wells as shown on **Figure 2**

2.1.4 Boundary Zone Well Network

The Boundary Zone forms a perimeter around the other zones and extends as far south as Rader Road.

Purpose	Confirm that the plume is stable and not expanding
Monitoring Locations	• 21 existing monitoring wells (18 overburden; 3 bedrock) as shown on **Figures 2** through **5** and listed in **Table 2** • Up to five new overburden and three new bedrock monitoring wells as shown on **Figure 2**

Existing monitoring wells located south of Rader Road are outside of the plume and boundary zone, and therefore, are not included in the Boundary Zone. These monitoring wells (**Table 1**) are proposed to be abandoned in accordance with NR 141 Wis. Admin. Code.

2.2 Ditch Surface Water Sampling

Surface water samples will be collected from Ditches A, C, and D, at previously-sampled locations. Surface water monitoring in Ditch B is associated with the GETS LTM and is not included in this Interim LTM Plan.

Purpose	• Confirm that the groundwater plume is not expanding • Confirm that surface water concentrations are decreasing
Monitoring Locations	As shown on **Figure 6** and listed in **Table 4**: • Two previously sampled locations in the North Branch of Ditch A • Two previously sampled locations in Ditch C • Two previously sampled locations in Ditch D

2.3 Groundwater and Surface Water Gauging

Groundwater and surface water elevations will be measured, as applicable, during groundwater and surface water sampling events. Gauging associated with this Interim LTM Plan is anticipated to be completed concurrently with gauging associated with the GETS program, minimally on an annual basis, to obtain a comprehensive “snap-shot” of water levels.

Purpose	Document groundwater flow patterns and assess long-term water-level trends.
Monitoring Locations	Groundwater gauging locations, as shown on **Figures 2** through **5** and listed in **Table 2**: • 84 existing monitoring wells within the FTC (Non-GETS), Northern Plume, Southern Plume, and Boundary Zone • Up to 14 new monitoring wells with the Northern Plume, Southern Plume, and Boundary Zone
	Surface water gauging locations, as shown on **Figure 6** and listed in **Table 3**: • Three existing surveyed benchmarks along the West Branch of Ditch A • Three existing surveyed benchmarks along the North Branch of Ditch A • One existing surveyed benchmark along Ditch D • One existing surveyed benchmark along the connecting section of Ditches A and D

3 Monitoring Schedule

This section describes the anticipated schedule for data collection in each year of the Interim LTM Plan. The schedule is subject to change and details regarding changes described in **Section 3.2**.

3.1 Five-Year Monitoring Schedule

The Interim LTM Plan will be implemented over a five-year period. At the end of the five-year period, a final LTM Plan, incorporating all the monitoring programs associated with the Site, will be prepared for submittal to the WDNR. Sampling frequencies of monitoring wells may be adjusted as described in the plan modifications, which are listed below and discussed in detail in **Section 3.2**.

Groundwater Monitoring Schedule

Year	Zone	Monitoring Frequency	Plan Modifications
1	FTC (Non-GETS)	Semi-Annual (2 Events)	None
	Northern and Southern Plumes		
	Boundary Zone	Semi-Annual (2 Events); Subset of 10 MWs to be sampled quarterly (2 Additional Events)	
2	FTC (Non-GETS)	Semi-Annual (2 Events)	No sampling at a MW if sampling reduced to biennial (every two years): • If PFAS concentrations < criteria in both sampling events in Year 1 • If MWs are redundant within a cluster based on Year 1 PFAS results
	Northern and Southern Plumes	Annual (1 Event)	
	Boundary Zone	Annual (1 Event); Subset of 10 MWs to be sampled quarterly (3 Additional Events)	None
3	FTC (Non-GETS)	Annual + Biennial (1 Event) (i.e., All FTC Zone MWs sampled)	None
	Northern and Southern Plumes	Annual + Biennial (1 Event) (i.e., All Northern and Southern Plume Zone MWs sampled)	
	Boundary Zone	Annual (1 Event)	
4	FTC (Non-GETS)	Annual (1 Event)	No sampling at a MW if sampling reduced to biennial: • If PFAS concentrations < criteria for 2 or more consecutive events (Years 1- 3) • If MWs are redundant within a cluster based on Years 1-3 PFAS results
	Northern and Southern Plumes	Annual (1 Event)	
	Boundary Zone	No Sampling	Reduced to biennial sampling
5	FTC (Non-GETS)	Annual + Biennial (1 Event) (i.e., All FTC Zone MWs sampled)	None
	Northern and Southern Plumes	Annual + Biennial (1 Event) (i.e., All Northern and Southern Plume Zone MWs sampled)	
	Boundary Zones	Biennial (1 Event)	

Surface Water Monitoring Schedule

Year	Ditch	Monitoring Frequency	Plan Modifications
1 - 5	A, C, D	Semi-Annual (2 Events)	None

3.2 Monitoring Schedule Modifications

This Interim LTM Plan contains conditional elements of the groundwater monitoring plan, designed to account for seasonality and provide flexibility for reducing sampling redundancies. The conditional elements of the plan are as follows:

- At a minimum, all monitoring wells included in this plan will be sampled semi-annually (i.e., wet season and dry season) for the first year to account for seasonality. The results of the semi-annual sampling events will be reflected in the timing of the subsequent annual sampling events (i.e., annual sampling will be completed during the time of year that exhibited overall higher PFAS concentrations across all monitoring zones).
- The sampling frequency for a monitoring well inside the plume may be reduced to biennial if PFAS concentrations are less than criteria[1] for two consecutive events. Reductions in sampling frequency at monitoring wells within the FTC (Non-GETS) Zone and the Northern and Southern Plume Zones will be evaluated after Year 1 (before Year 2 monitoring) and after Year 3 (before Year 4 monitoring).
- The sampling frequency for a monitoring well may be reduced to biennial if the well is determined to be redundant within the well cluster (i.e., the monitoring well is screened within the same hydrostratigraphic unit and has similar PFAS concentrations) after two consecutive events. Reductions in sampling frequency at monitoring wells within the FTC (Non-GETS) Zone and the Northern and Southern Plume Zones will be evaluated after Year 1 (before Year 2 monitoring) and after Year 3 (before Year 4 monitoring).
- After five years of monitoring, the monitoring well network and sampling frequencies will be reviewed and refined prior to implementing the final LTM Plan.

All modifications to the sampling frequencies will be provided to WDNR in routine reporting described in **Section 6**.

[1] At this time, there are no established enforcement standards for PFAS in groundwater. PFAS concentrations will be compared to the Recommended Enforcement Standards provided in **Table 5** to evaluate reductions in monitoring well sampling frequencies. If Enforcement Standards are promulgated during the implementation of the Interim LTM Plan, the criteria for reducing sampling frequency will be re-evaluated.

4 Field Methods

The field methodologies for groundwater and surface water monitoring are described in this section.

4.1 Groundwater Monitoring

4.1.1 Manual Water-Level Measurements

Water elevations will be manually measured using a water-level meter at existing and proposed monitoring wells (**Table 2**). When gauging and sampling events occur concurrently, water elevations will be measured prior to sample collection. Monitoring wells will be gauged for depth to water and depth to the bottom of the well at all locations identified in **Table 2** at least annually[2].

4.1.2 Groundwater Sample Collection

Low-flow sampling procedures will be implemented for groundwater sampling, using a peristaltic pump and dedicated down-well disposable tubing, at existing and proposed monitoring wells (**Table 2**). Analytical samples will be collected after groundwater parameters measured with a field probe, including dissolved oxygen, pH, specific conductivity, and oxidation-reduction potential, are shown to have stabilized at each well in accordance with the QAPP (Arcadis 2023a) procedures. At any location where drawdown does not stabilize during the low-flow sampling attempt, low-flow sampling will be discontinued and, minimally, one well volume will be purged using a PFAS-free submersible pump in accordance with the QAPP; a sample will be collected after the water level in the monitoring well has recovered at least five feet.

Samples will be collected for PFAS analysis following the procedures described in **Section 5**.

4.2 Surface Water Monitoring

4.2.1 Surface Water Elevation Measurements

Water surface elevation measurements of Ditches A and D will be collected at eight existing surveyed benchmark locations where the ditch is crossed by roads (**Table 3**). Water levels will be measured using a tape or rod extending directly down to the water surface from marked surveyed measuring points.

4.2.2 Ditch Surface Water Sample Collection

Surface water sample collections will take place in Ditches A, C and D at six previously sampled locations (**Table 4**). Surface water samples will be collected by dipping a sample bottle below the surface of the water. Samples will be analyzed for PFAS following the procedures described in **Section 5**.

[2] A comprehensive round of water level measurements will be collected twice in Year 1 during the quarterly sampling events. In Years 2 through 5, a comprehensive round of water level measurements will be collected annually. Monitoring wells that are sampled biennially will be included in all comprehensive rounds of water level measurements.

5 Quality Assurance and Quality Control

5.1 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 (e.g., 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 QAPP (Arcadis 2023a).

Quality assurance samples are specified in the 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 in the sampling area that may influence samples during collection. 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.

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.

5.2 Laboratory Methods and Analysis

Details regarding the analytical methods to be used for each media are provided in the QAPP (Arcadis 2023a). The laboratory methods to be used for the proposed analytical parameters, along with the recommended frequency for collection of matrix spike/matrix spike duplicate and duplicate samples, are summarized below. Media analyzed for PFAS will be analyzed for the 36 PFAS analytes required by WDNR (WDNR 2020) and listed in the QAPP.

Laboratory Methods and QA/QC Frequency

Matrix	Parameter	Laboratory Method	Matrix Spike/ Matrix Spike Duplicate Frequency	Field Duplicate Frequency	Field Reagent Blank Frequency	Equipment Rinsate Blank Frequency
Water	PFAS	Modified USEPA 537 (36 compounds)	1/20	1/10	1/day	1/20
Water	TSS	USEPA 160.2	None	1/10	None	None

6 Reporting

Routine reports summarizing the results of the Interim LTM will be prepared and submitted to WDNR. Reports of monitoring results are to be submitted after each sampling event (NR 724.17(3m)) in accordance with the notification requirements outlined in NR 716.14. However, because the monitoring activities will be completed routinely for many years, an alternate notification schedule is proposed.

Reports are proposed to be submitted to WDNR semi-annually in Years 1 and 2 and annually in Years 3, 4, and 5; therefore, a total of seven reports are proposed to be submitted. Reports are proposed to be submitted within 30 days of receipt of all laboratory analytical data collected during the reporting period.

At a minimum, reports will include:

- a brief summary of the activities completed during the reporting period;
- applicable data tables and figures summarizing monitoring results (i.e., analytical data and water elevations);
- laboratory reports, data validation reports, and field sampling logs; and,
- an updated groundwater sampling plan table to capture planned reductions in sampling frequencies, if any, for the next reporting period and justifications for the reductions.

At least annually, data trend plots for perfluorooctanoic acid (PFOA) and perfluorooctanesulfonic acid (PFOS) will be included in reporting for wells in the Boundary Zone that are proposed to be sampled quarterly in Years 1 and 2.

Surface water analytical results will be compared to 95 nanograms per liter (ng/L) for PFOA and 8 ng/L for PFOS (**Table 5**). The groundwater analytical results will be compared to the Wisconsin Department of Health Services recommended groundwater quality enforcement standards (ES) for PFAS compounds (**Table 5**). If ES are promulgated for groundwater during the implementation of the Interim LTM Plan, the criteria for reducing sampling frequency will be re-evaluated.

At the conclusion of the 5-year Interim LTM period, a final LTM Plan will be prepared for submittal to WDNR incorporating all the monitoring programs associated with the Site. The final LTM Plan will be a comprehensive plan and will incorporate the GETS LTM and deep aquifer well LTM. This final plan will be submitted to WDNR within 60 days of submission of the seventh (final) routine report associated with the Interim LTM Plan.

7 References

Arcadis. 2021. Long-Term Monitoring Plan for the Groundwater Extraction and Treatment System, Tyco Fire Technology Center, Marinette, Wisconsin 54143, BRRTS No. 02-38-580694. July 16.

Arcadis. 2023a. Final Quality Assurance Project Plan Addendum, Tyco Per- and Polyfluoroalkyl Substances (PFAS) Site Investigation and Private Well Sampling Activities, Marinette, Wisconsin. May 1.

Arcadis. 2023b. 2023 Additional Site Investigation Work Plan, Tyco FTC PFAS, 2700 Industrial Parkway South, Marinette, Wisconsin. August 24.

Arcadis. 2022. Deep Aquifer Bedrock Well Design and Long-Term Monitoring Work Plan. September 27.

WDNR. 2020. Letter from David Neste. May 27.

Tables

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Table 1
Monitoring Well Construction
Interim LTM Plan
Tyco Fire Technology Center
Marinette, Wisconsin

Well ID	Area	Year Installed	Zone	Northing	Easting	Ground Elevation (ft NAVD88)	Top of Casing Elevation (ft NAVD88)	Survey Date	Depth to Top of Screen (ft bgs)	Depth to Bottom of Screen (ft bgs)	Surface Finish
FTC (non-GETS) Plume Well Group											
HMW-2-3S[1]	FTC	-	S	461171.6	2576750.1	611.3	613.19	12/06/22	6	16	SU
HMW-2-3D[1]	FTC	-	D	461173.3	2576753.0	611.4	614.37	12/06/22	32	42	SU
FTC-2S	FTC	1993	S	462333.2	2577206.6	611.3	611.08	05/10/21	5	15	FM
FTC-2D	FTC	1993	D	462335.3	2577215.4	611.5	611.15	05/10/21	27	32	FM
FTC-31	FTC	1995	S	462049.3	2577284.7	NA	610.28	08/16/16	3	13	FM
FTC-34S	FTC	1996	S	462115.2	2577669.0	NA	608.50	08/16/16	3	13	FM
FTC-34D	FTC	1996	D	462117.0	2577666.1	NA	608.72	08/16/16	28	33	FM
FTC-44	FTC	2003	S	461808.4	2577590.8	NA	611.30	08/16/16	5	15	SU
PZ-4S[2]	FTC	2010	D	NA	NA	NA	607.89	NA	36	41	SU
PZ-11	FTC	NA	D	461872.6	2578131.0	NA	611.41	04/29/16	41	46	SU
PZ-14S	FTC	NA	S	462736.7	2577956.9	NA	610.77	08/16/16	4	19	SU
PZ-14D	FTC	NA	D	462739.6	2577964.8	NA	611.15	08/16/16	25	35	SU
PZ-67-16	FTC	2022	S	462134.2	2576628.1	611.8	611.43	08/31/22	6	16	FM
PZ-9	FTC	NA	D	463351.7	2578076.4	NA	611.16	08/16/16	38	43	SU
PZ-19	FTC	NA	D	463133.7	2580048.4	NA	608.70	04/29/16	27	37	SU
PZ-59-21	Offsite	2022	S	463843.5	2575547.5	613.6	613.12	08/31/22	11	21	FM
PZ-65-16	FTC	2022	S	463214.8	2577133.1	610.1	609.72	08/31/22	6	16	SU
PZ-65-33	FTC	2022	D	463220.8	2577133.1	609.9	610.09	08/31/22	28	33	SU
PZ-67-40	FTC	2022	D	462145.5	2576625.0	611.7	611.35	08/31/22	35	40	FM
PZ-68-16	FTC	2022	S	462087.9	2575878.5	610.9	613.51	08/31/22	6	16	SU
PZ-68-26	FTC	2022	D	462079.6	2575878.1	611.0	613.92	08/31/22	21	26	SU
PZ-68-66	FTC	2022	BR	462099.6	2575885.2	610.9	613.55	12/06/22	61	66	SU
PZ-69-24	FTC	2022	S	462530.0	2579219.3	612.3	614.75	12/06/22	14	24	SU
PZ-69-43	FTC	2022	D	462533.4	2579214.7	614.5	612.23	12/06/22	38	43	SU
Northern Plume Well Group											
PZ-28-14	Offsite	2019	S	467125.0	2583162.7	594.7	594.41	09/09/21	9	14	FM
PZ-28-54	Offsite	2019	D	467123.2	2583168.6	594.8	594.47	09/09/21	49	54	FM
PZ-28-75	Offsite	2020	BR	467127.7	2583152.3	594.6	594.29	01/07/21	65	75	FM
PZ-63-60	Offsite	2022	BR	466843.7	2582055.9	594.7	594.15	12/06/22	55	60	FM
MW013S-R	Offsite	2022	S	469102.59	2583254.96	589.94	589.35	12/06/22	9	19	FM
MW013M-R	Offsite	2022	D	469092.91	2583271.22	589.86	589.26	12/06/22	30	35	FM
MW013D-R	Offsite	2022	BR	469097.89	2583262.63	589.91	589.60	12/06/22	41	46	FM
MW125S-20	Offsite	2020	S	468124.9	2582658.0	596.5	596.16	01/07/21	10	20	FM
MW125M-35	Offsite	2020	D	468123.8	2582646.8	596.6	596.26	01/07/21	30	35	FM
MW125D-60	Offsite	2020	BR	468123.1	2582652.0	596.4	596.03	01/07/21	50	60	FM
MW128S-17	Offsite	2022	S	468745.6	2584546.1	595.6	595.14	12/06/22	7	17	FM
MW128M-30	Offsite	2022	D	468739.6	2584544.3	595.7	595.16	12/06/22	25	30	FM
MW129S-21	Offsite	2022	S	468500.1	2585920.6	586.1	585.33	12/06/22	11	21	FM
MW129M-45	Offsite	2022	D	468494.0	2585918.9	586.0	585.57	12/06/22	40	45	FM
MW042D	Stanton	-	BR	469846.6	2584162.1	NA	587.2	NA	50	55	SU
MW046D	Stanton	-	BR	469473.3	2585481.9	NA	585.0	NA	53.5	58.51	SU
MW064D	Stanton	-	BR	469426.3	2584598.4	NA	588.8	NA	51.7	56.69	SU
MW118D-R	Stanton	-	BR	470462.1	2584807.0	NA	585.6	NA	47	52	FM

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Southern Plume Well Group											
TW-03	Offsite	2018	S	458244.3	2580830.6	598.3	598.07	11/06/18	10	20	FM
MW-101-16	Offsite	2018	S	459912.1	2580497.8	603.4	603.18	09/06/18	6	16	FM
MW-101-72	Offsite	2018	D	459907.9	2580496.3	603.5	603.20	09/06/18	62	72	FM
PZ-33-12	Offsite	2019	S	460123.9	2582902.9	594.7	594.33	09/09/21	7	12	FM
PZ-33-33	Offsite	2019	D	460123.7	2582897.4	594.6	594.33	09/09/21	28	33	FM
PZ-33-67	Offsite	2019	D	460123.1	2582892.7	594.6	594.42	09/09/21	57	67	FM
PZ-33-105	Offsite	2022	BR	459912.9	2582765.6	594.4	594.19	12/06/22	100	105	FM
PZ-34-17	Offsite	2019	S	457159.4	2583554.2	591.1	590.78	09/09/21	7	17	FM
PZ-34-84	Offsite	2019	D	457164.3	2583555.2	591.3	590.87	09/09/21	74	84	FM
PZ-35-17	Offsite	2019	S	459506.0	2577175.7	608.7	608.18	09/09/21	7	17	FM
PZ-35-37	Offsite	2019	D	459501.9	2577178.8	608.7	608.20	09/09/21	32	37	FM
PZ-35-48	Offsite	2019	D	459497.4	2577182.1	608.5	608.16	09/09/21	43	48	FM
PZ-46-19	Offsite	2020	S	459758.8	2578839.8	604.3	603.91	01/07/21	9	19	FM
PZ-46-40	Offsite	2020	D	459758.1	2578828.6	604.4	603.99	01/07/21	30	40	FM
PZ-46-65	Offsite	2020	D	459757.7	2578819.8	604.2	603.82	01/07/21	60	65	FM
PZ-70-17	FTC	2022	S	460233.9	2577370.9	608.7	611.46	12/06/22	7	17	SU
PZ-70-33	FTC	2022	D	460231.0	2577365.8	608.6	611.11	12/06/22	28	33	SU
PZ-70-55	FTC	2022	D	460222.5	2577349.2	609.2	611.95	12/06/22	50	55	SU
PZ-70-83	FTC	2022	BR	460225.2	2577361.7	608.6	611.57	12/06/22	73	83	SU
PZ-71-111	Offsite	2022	BR	461300.0	2580741.4	605.8	605.23	12/06/22	101	111	FM
PZ-76-34	Offsite	2022	D	459789.7	2584628.1	592.8	592.29	12/06/22	29	34	FM
Boundary Zone Well Group											
MW-100-32	Offsite	2018	D	457304.1	2578843.5	602.1	601.45	09/06/18	22	32	FM
MW-100-68	Offsite	2018	D	457304.3	2578849.0	602.1	601.83	09/06/18	58	68	FM
MW126S-20	Offsite	2020	S	469387.1	2581781.3	598.4	598.06	01/07/21	10	20	FM
MW126D-40	Offsite	2020	BR	469386.5	2581775.5	598.4	597.79	01/07/21	30	40	FM
TW-01	Offsite	2018	S	454749.4	2580449.1	594.7	594.47	11/06/18	9.5	19.5	FM
TW-02	Offsite	2018	S	456286.9	2580955.6	594.1	593.85	11/06/18	10	20	FM
TW-04	Offsite	2018	S	455223.9	2583148.3	593.9	593.60	11/06/18	10	20	FM
TW-05	Offsite	2018	S	454646.6	2578511.1	597.8	597.52	11/06/18	10	20	FM
PZ-26-11	Offsite	2019	S	466609.4	2579203.4	597.9	597.77	09/09/21	6	11	FM
PZ-26-36	Offsite	2022	BR	466619.3	2579206.6	597.0	596.14	12/06/22	31	36	FM
PZ-44-73	Offsite	2019	D	454734.7	2580183.8	595.2	594.63	09/09/21	63	73	FM
PZ-60-20	Offsite	2022	S	461877.2	2574148.8	612.9	612.50	08/31/22	10	20	FM
PZ-61-11	Offsite	2022	S	463970.7	2587161.1	585.4	584.99	08/31/22	6	11	FM
PZ-62-62	Offsite	2022	D	466239.8	2586295.7	585.0	584.59	12/06/22	57	62	FM
PZ-66-20	FTC	2022	S	460222.5	2575675.8	613.9	616.07	12/06/22	10	20	SU
PZ-66-57	FTC	2022	D	460538.8	2575677.4	614.6	617.26	12/06/22	52	57	SU
PZ-73-16	Offsite	2022	S	455740.3	2578713.6	601.7	601.23	12/06/22	6	16	FM
PZ-73-75	Offsite	2022	D	455736.0	2578704.5	601.9	601.37	12/06/22	70	75	FM
PZ-75-18	Offsite	2022	S	457336.4	2577001.7	605.5	605.13	12/06/22	8	18	FM
PZ-77-16	Offsite	2022	S	458682.5	2575530.9	606.9	609.79	12/06/22	5.7	15.7	SU
PZ-78-74	Offsite	2022	BR	467282.2	2586583.8	586.1	585.66	12/06/22	71.5	73.5	FM

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GETS Well Group[3]											
PZ-1D	FTC	2010	BR	463765.5	2579848.6	NA	606.2	08/16/16	63.5	68.5	SU
PZ-3	FTC	2010	D	462780.0	2579903.6	NA	609.2	08/16/16	38.0	43	SU
PZ-4D	FTC	2010	BR	462514.6	2578515.2	605.8	607.9	01/07/21	68.5	73.5	SU
PZ-15S	FTC	NA	S	463911.0	2579668.7	605.2	608.2	05/10/21	4.0	19	SU
PZ-15D	FTC	NA	D	463914.2	2579671.3	605.0	608.2	05/10/21	22.0	32	SU
PZ-16S	FTC	NA	S	463910.1	2579069.6	NA	609.3	04/29/16	4.0	19	SU
PZ-16D	FTC	NA	D	463913.8	2579072.1	NA	609.0	04/29/16	28.0	38	SU
PZ-18D	FTC	NA	D	462752.5	2579763.4	NA	609.6	08/16/16	37.0	47	SU
PZ-22S	FTC	NA	S	462770.3	2579826.4	NA	609.7	04/29/16	10.0	20	SU
PZ-22D	FTC	NA	D	462767.2	2579825.1	NA	609.6	04/29/16	31.0	41	SU
PZ-23	Offsite	2017	D	464564.7	2580218.1	597.9	597.6	05/24/22	35.0	40	FM
PZ-24-17	Offsite	2019	S	461565.5	2580738.8	605.2	604.8	09/09/21	7.0	17	FM
PZ-24-47	Offsite	2019	D	461570.2	2580738.9	605.6	604.7	09/09/21	37.0	47	FM
PZ-25-17	Offsite	2019	S	465263.6	2579969.3	598.6	598.3	09/09/21	7.0	17	FM
PZ-29-17	Offsite	2019	S	465386.4	2581734.1	593.9	593.6	09/09/21	7.0	17	FM
PZ-29-43	Offsite	2019	D	465386.3	2581729.5	593.8	593.5	09/09/21	38.0	43	FM
PZ-29-68	Offsite	2020	BR	465386.4	2581721.4	593.7	593.5	01/07/21	58.0	68	FM
PZ-30-12	Offsite	2019	S	464126.0	2582520.2	594.6	594.3	09/09/21	7.0	12	FM
PZ-30-45	Offsite	2019	D	464123.4	2582525.0	594.5	594.2	09/09/21	35.0	45	FM
PZ-30-59	Offsite	2019	D	464121.2	2582529.1	594.4	594.2	09/09/21	54.0	59	FM
PZ-31-17	Offsite	2019	S	462494.2	2582369.0	595.8	595.5	09/09/21	7.0	17	FM
PZ-31-40	Offsite	2019	D	462490.8	2582364.0	595.7	595.4	09/09/21	35.0	40	FM
PZ-31-53	Offsite	2019	D	462491.4	2582374.6	595.8	595.2	09/09/21	48.0	53	FM
PZ-32-18	Offsite	2019	S	461901.1	2583990.8	591.6	591.2	09/09/21	8.0	18	FM
PZ-32-72	Offsite	2019	D	461908.3	2583990.8	591.7	591.2	09/09/21	67.0	72	FM
PZ-45-31	Offsite	2020	D	463858.4	2579412.7	605.7	607.9	01/07/21	21.0	31	SU
PZ-47-40	FTC	2021	D	463488.1	2578741.0	608.2	611.0	09/09/21	35	40	SU
PZ-51-38	Offsite	2021	D	463344.4	2582027.2	594.9	594.4	09/09/21	33.0	38	FM
PZ-53-40	Offsite	2021	D	461921.2	2582490.5	596.0	595.7	09/09/21	35	40	FM
PZ-55-64	Offsite	2021	D	462662.5	2580658.8	616.5	616.3	09/09/21	59	64	FM
PZ-56-42	Offsite	2021	D	463289.6	2580664.2	605.9	605.4	09/09/21	37.2	42.2	FM
PZ-57-38	Offsite	2021	D	462908.7	2583829.9	594.3	594.0	09/09/21	33.0	38	FM
PZ-58-40	Offsite	2022	D	462256.6	2582444.3	596.6	596.4	08/31/22	35.0	40	FM
PZ-58-50	Offsite	2022	D	462249.5	2582444.4	596.8	596.4	12/06/22	45.0	50	FM
MW-EX-2	FTC	2021	D	463835.9	2579741.4	604.4	606.8	12/06/22	19.5	29.5	SU
MW-EX-3	Offsite	2021	D	464476.0	2580784.0	592.5	594.9	12/06/22	22.0	27	SU
MW-EX-4	Offsite	2021	D	464231.5	2581108.9	592.9	595.5	12/06/22	22.0	27	SU
MW-EX-5	Offsite	2021	D	463913.1	2581502.3	592.3	594.5	12/06/22	45.0	50	SU
Deep Monitoring Well Network[4]											
DMW-01	Offsite	2023	BR	459755.8	2578796.8	604.4	605.8	05/19/23	153.0	460	SU
DMW-02	Offsite	2023	BR	459892.0	2582759.9	594.2	595.8	05/19/23	168.0	500	SU
DMW-03	Offsite	2023	BR	455458.8	2581137.1	593.8	595.6	12/06/23	153.0	510	SU
DMW-04	Offsite	2023	BR	457140.0	2583550.1	591.1	590.8	12/06/23	168.0	500	SU

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Monitoring Wells Proposed to be Abandoned (South of Rader Road)											
PZ-36-19	Offsite	2019	S	453114.4	2582364.3	590.4	589.9	09/09/21	9.0	19	FM
PZ-36-38	Offsite	2019	D	453114.1	2582371.0	590.4	589.9	09/09/21	33.0	38	FM
PZ-36-85	Offsite	2019	D	453113.9	2582376.2	590.5	590.0	09/09/21	80.0	85	FM
PZ-37-12	Offsite	2019	S	451323.3	2581905.2	589.3	588.9	09/09/21	7.0	12	FM
PZ-37-29	Offsite	2019	D	451323.0	2581900.0	589.4	589.0	09/09/21	19.0	29	FM
PZ-37-75	Offsite	2019	D	451322.7	2581895.2	589.4	589.0	09/09/21	65.0	75	FM
PZ-38-17	Offsite	2019	S	450592.2	2580685.1	592.2	591.8	09/09/21	7.0	17	FM
PZ-38-75	Offsite	2019	D	450587.8	2580683.8	592.3	591.9	09/09/21	65.0	75	FM
PZ-41-17	Offsite	2019	S	452089.3	2578723.3	595.3	594.9	09/09/21	7.0	17	FM
PZ-41-84	Offsite	2019	D	452089.0	2578718.6	595.2	594.8	09/09/21	74.0	84	FM
PZ-42-17	Offsite	2019	S	451824.9	2580449.4	592.5	592.1	09/09/21	7.0	17	FM
PZ-42-76	Offsite	2019	D	451824.9	2580454.0	592.5	592.2	09/09/21	66.0	76	FM
PZ-43-19	Offsite	2019	S	452660.3	2580933.3	592.9	592.4	09/09/21	9.0	19	FM
PZ-43-80	Offsite	2019	D	452647.9	2580928.5	592.5	592.0	09/09/21	75.0	80	FM

Notes:

(1)Bottom of screen is measured total depth, but all were soft bottoms. HMW-2-3 series wells have slotted screens with threaded joints.

(2)The top of casing elevation for PZ-4S is not available. The groundwater elevation shown has been estimated by calculating the approximate top of casing elevation by measuring the length of the stickup above ground surface and adding the length to the surveyed ground surface elevation at nearby PZ-4D.

(3) The GETS well network is inclusive of all monitoring wells that are sampled and/or gauged in accordance with the GETS LTM Plan (Arcadis 2021); however select wells identified in other LTM well network groups (e.g. PZ-68-16 in the FTC Well Network) are gauged as part of the GETS LTM.

(4) The deep monitoring well network is inclusive of monitoring wells that are sampled and/or gauged in accordance with the Deep Aquifer Bedrock Well Design and Long-Term Monitoring Work Plan (Arcadis 2022). These monitoring wells are not screened and are open borehole at the depths indicated in the table.

Vertical Datum: North American Vertical Datum (NAVD) 1988

Acronyms/Abbreviations:

bgs = below ground surface

ft = feet

FTC = Fire Technology Center

LTM = long term monitoring

GETS = groundwater extraction and treatment system

NA = not available

Zone screened abbreviations: S = shallow overburden < 25 feet deep; D = deep overburden > 25 feet deep; BR = bedrock

Surface finish abbreviations: FM = flush mount; SU = stick up

Table 2
Groundwater Monitoring Plan
Interim LTM Plan
Tyco Fire Technology Center
Marinette, Wisconsin

Well ID	Area	Zone	Depth to Top of Screen (ft bgs)	Depth to Bottom of Screen (ft bgs)	Year 1: **Semi-Annual Sampling** - All Wells in All Groups; **Quarterly Sampling** - Select Boundary Zone Wells				Year 2[1]: **Annual Sampling** - Boundary Zone, Northern and Southern Plume Groups; **Semi-Annual Sampling** - FTC; **Quarterly Sampling** - Select Boundary Zone Wells				Year 3: **Annual/Biennial Sampling** - All MWs in All Groups	Year 4[2]: **Annual Sampling** - FTC, Northern and Southern Plume Groups	Year 5: **Annual/Biennial Sampling** - All MWs in All Groups
					Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q2/Q4[3]	Q2/Q4[3]	Q2/Q4[3]
FTC (non-GETS) Well Group															
HMW-2-3S	FTC	S	6	16		X		X		X		X	X	X	X
HMW-2-3D	FTC	D	32	42		X		X		X		X	X	X	X
FTC-2S	FTC	S	5	15		X		X		X		X	X	X	X
FTC-2D	FTC	D	27	32		X		X		X		X	X	X	X
FTC-31	FTC	S	3	13		X		X		X		X	X	X	X
FTC-34S	FTC	S	3	13		X		X		X		X	X	X	X
FTC-34D	FTC	D	28	33		X		X		X		X	X	X	X
FTC-44	FTC	S	5	15		X		X		X		X	X	X	X
PZ-4S	FTC	D	36	41		X		X		X		X	X	X	X
PZ-11	FTC	D	41	46		X		X		X		X	X	X	X
PZ-14S	FTC	S	4	19		X		X		X		X	X	X	X
PZ-14D	FTC	D	25	35		X		X		X		X	X	X	X
PZ-67-16	FTC	S	6	16		X		X		X		X	X	X	X
PZ-9	FTC	D	38	43		X		X		X		X	X	X	X
PZ-19	FTC	D	27	37		X		X		X		X	X	X	X
PZ-59-21	Offsite	S	11	21		X		X		X		X	X	X	X
PZ-65-16	FTC	S	6	16		X		X		X		X	X	X	X
PZ-65-33	FTC	D	28	33		X		X		X		X	X	X	X
PZ-67-40	FTC	D	35	40		X		X		X		X	X	X	X
PZ-68-16	FTC	S	6	16		X		X		X		X	X	X	X
PZ-68-26	FTC	D	21	26		X		X		X		X	X	X	X
PZ-68-66	FTC	BR	61	66		X		X		X		X	X	X	X
PZ-69-24	FTC	S	14	24		X		X		X		X	X	X	X
PZ-69-43	FTC	D	38	43		X		X		X		X	X	X	X

Table 2
Groundwater Monitoring Plan
Interim LTM Plan
Tyco Fire Technology Center
Marinette, Wisconsin

Well ID	Area	Zone	Depth to Top of Screen (ft bgs)	Depth to Bottom of Screen (ft bgs)	Year 1: **Semi-Annual Sampling** - All Wells in All Groups; **Quarterly Sampling** - Select Boundary Zone Wells				Year 2[1]: **Annual Sampling** - Boundary Zone, Northern and Southern Plume Groups; **Semi-Annual Sampling** - FTC; **Quarterly Sampling** - Select Boundary Zone Wells				Year 3: **Annual/Biennial Sampling** - All MWs in All Groups	Year 4[2]: **Annual Sampling** - FTC, Northern and Southern Plume Groups	Year 5: **Annual/Biennial Sampling** - All MWs in All Groups
Northern Plume Well Group															
PZ-28-14	Offsite	S	9	14		X		X				X[4]	X	X	X
PZ-28-54	Offsite	D	49	54		X		X				X[4]	X	X	X
PZ-28-75	Offsite	BR	65	75		X		X				X[4]	X	X	X
PZ-63-60	Offsite	BR	55	60		X		X				X[4]	X	X	X
MW013S-R	Offsite	S	9	19		X		X				X[4]	X	X	X
MW013M-R	Offsite	D	30	35		X		X				X[4]	X	X	X
MW013D-R	Offsite	BR	41	46		X		X				X[4]	X	X	X
MW125S-20	Offsite	S	10	20		X		X				X[4]	X	X	X
MW125M-35	Offsite	D	30	35		X		X				X[4]	X	X	X
MW125D-60	Offsite	BR	50	60		X		X				X[4]	X	X	X
MW128S-17	Offsite	S	7	17		X		X				X[4]	X	X	X
MW128M-30	Offsite	D	25	30		X		X				X[4]	X	X	X
MW129S-21	Offsite	S	11	21		X		X				X[4]	X	X	X
MW129M-45	Offsite	D	40	45		X		X				X[4]	X	X	X
MW042D	Stanton	BR	50	55		X		X				X[4]	X	X	X
MW046D	Stanton	BR	53.5	58.51		X		X				X[4]	X	X	X
MW064D	Stanton	BR	51.7	56.69		X		X				X[4]	X	X	X
MW118D-R	Stanton	BR	47	52		X		X				X[4]	X	X	X
Church St MW (PZ-63)	*Offsite*	*S*	*TBD*	*TBD*		*X*		*X*				*X*[4]	*X*	*X*	*X*
10th St MW(s)	*Offsite*	*S/D*	*TBD*	*TBD*		*X*		*X*				*X*[4]	*X*	*X*	*X*

Table 2
Groundwater Monitoring Plan
Interim LTM Plan
Tyco Fire Technology Center
Marinette, Wisconsin

Well ID	Area	Zone	Depth to Top of Screen (ft bgs)	Depth to Bottom of Screen (ft bgs)	Year 1: **Semi-Annual Sampling** - All Wells in All Groups; **Quarterly Sampling** - Select Boundary Zone Wells				Year 2[1]: **Annual Sampling** - Boundary Zone, Northern and Southern Plume Groups; **Semi-Annual Sampling** - FTC; **Quarterly Sampling** - Select Boundary Zone Wells				Year 3: **Annual/Biennial Sampling** - All MWs in All Groups	Year 4[2]: **Annual Sampling** - FTC, Northern and Southern Plume Groups	Year 5: **Annual/Biennial Sampling** - All MWs in All Groups
Southern Plume Well Group															
TW-03	Offsite	S	10	20		X		X				X[4]	X	X	X
MW-101-16	Offsite	S	6	16		X		X				X[4]	X	X	X
MW-101-72	Offsite	D	62	72		X		X				X[4]	X	X	X
PZ-33-12	Offsite	S	7	12		X		X				X[4]	X	X	X
PZ-33-33	Offsite	D	28	33		X		X				X[4]	X	X	X
PZ-33-67	Offsite	D	57	67		X		X				X[4]	X	X	X
PZ-33-105	Offsite	BR	100	105		X		X				X[4]	X	X	X
PZ-34-17	Offsite	S	7	17		X		X				X[4]	X	X	X
PZ-34-84	Offsite	D	74	84		X		X				X[4]	X	X	X
PZ-35-17	Offsite	S	7	17		X		X				X[4]	X	X	X
PZ-35-37	Offsite	D	32	37		X		X				X[4]	X	X	X
PZ-35-48	Offsite	D	43	48		X		X				X[4]	X	X	X
PZ-46-19	Offsite	S	9	19		X		X				X[4]	X	X	X
PZ-46-40	Offsite	D	30	40		X		X				X[4]	X	X	X
PZ-46-65	Offsite	D	60	65		X		X				X[4]	X	X	X
PZ-70-17	FTC	S	7	17		X		X				X[4]	X	X	X
PZ-70-33	FTC	D	28	33		X		X				X[4]	X	X	X
PZ-70-55	FTC	D	50	55		X		X				X[4]	X	X	X
PZ-70-83	FTC	BR	73	83		X		X				X[4]	X	X	X
PZ-71-111	Offsite	BR	101	111		X		X				X[4]	X	X	X
PZ-76-34	Offsite	D	29	34		X		X				X[4]	X	X	X
Green Gable Rd MW (PZ-72)	*Offsite*	*D*	*TBD*	*TBD*		*X*		*X*				*X*[4]	*X*	*X*	*X*
1 - Shore Dr MW (PZ-74)	*Offsite*	*S*	*TBD*	*TBD*		*X*		*X*				*X*[4]	*X*	*X*	*X*
2 - Shore Dr MW (PZ-74)	*Offsite*	*D*	*TBD*	*TBD*		*X*		*X*				*X*[4]	*X*	*X*	*X*

Table 2
Groundwater Monitoring Plan
Interim LTM Plan
Tyco Fire Technology Center
Marinette, Wisconsin

Well ID	Area	Zone	Depth to Top of Screen (ft bgs)	Depth to Bottom of Screen (ft bgs)	Year 1: **Semi-Annual Sampling** - All Wells in All Groups; **Quarterly Sampling** - Select Boundary Zone Wells				Year 2[1]: **Annual Sampling** - Boundary Zone, Northern and Southern Plume Groups; **Semi-Annual Sampling** - FTC; **Quarterly Sampling** - Select Boundary Zone Wells				Year 3: **Annual/Biennial Sampling** - All MWs in All Groups	Year 4[2]: **Annual Sampling** - FTC, Northern and Southern Plume Groups	Year 5: **Annual/Biennial Sampling** - All MWs in All Groups
Boundary Zone Well Group															
MW-100-32	Offsite	D	22	32	X	X	X	X	X	X	X	X[4]	X		X
MW-100-68	Offsite	D	58	68	X	X	X	X	X	X	X	X[4]	X		X
MW126S-20	Offsite	S	10	20		X		X				X[4]	X		X
MW126D-40	Offsite	BR	30	40		X		X				X[4]	X		X
TW-01	Offsite	S	9.5	19.5		X		X				X[4]	X		X
TW-02	Offsite	S	10	20		X		X				X[4]	X		X
TW-04	Offsite	S	10	20	X	X	X	X	X	X	X	X[4]	X		X
TW-05	Offsite	S	10	20		X		X				X[4]	X		X
PZ-26-11	Offsite	S	6	11	X	X	X	X	X	X	X	X[4]	X		X
PZ-26-36	Offsite	BR	31	36	X	X	X	X	X	X	X	X[4]	X		X
PZ-44-73	Offsite	D	63	73		X		X				X[4]	X		X
PZ-60-20	Offsite	S	10	20	X	X	X	X	X	X	X	X[4]	X		X
PZ-61-11	Offsite	S	6	11		X		X				X[4]	X		X
PZ-62-62	Offsite	D	57	62		X		X				X[4]	X		X
PZ-66-20	FTC	S	10	20		X		X				X[4]	X		X
PZ-66-57	FTC	D	52	57		X		X				X[4]	X		X
PZ-73-16	Offsite	S	6	16		X		X				X[4]	X		X
PZ-73-75	Offsite	D	70	75		X		X				X[4]	X		X
PZ-75-18	Offsite	S	8	18		X		X				X[4]	X		X
PZ-77-16	Offsite	S	5.7	15.7		X		X				X[4]	X		X
PZ-78-74	Offsite	BR	71.5	73.5	X	X	X	X	X	X	X	X[4]	X		X
Shore Dr MW (TW-04)	*Offsite*	*D*	*TBD*	*TBD*	*X*	*X*	*X*	*X*	*X*	*X*	*X*	*X*[4]	*X*		*X*
Stanley Ln MW (PZ-73)	*Offsite*	*D*	*TBD*	*TBD*		*X*		*X*				*X*[4]	*X*		*X*
Madsen Rd MW (MW-100)	*Offsite*	*BR*	*TBD*	*TBD*	*X*	*X*	*X*	*X*	*X*	*X*	*X*	*X*[4]	*X*		*X*
Madsen Rd MW	*Offsite*	*BR*	*TBD*	*TBD*		*X*		*X*				*X*[4]	*X*		*X*
Rader Rd MW(s)	*Offsite*	*S/D*	*TBD*	*TBD*		*X*		*X*				*X*[4]	*X*		*X*
4th St MW (PZ-78)	*Offsite*	*S*	*TBD*	*TBD*	*X*	*X*	*X*	*X*	*X*	*X*	*X*	*X*[4]	*X*		*X*
Lincoln St MW	*Offsite*	*BR*	*TBD*	*TBD*		*X*		*X*				*X*[4]	*X*		*X*

Table 2
Groundwater Monitoring Plan
Interim LTM Plan
Tyco Fire Technology Center
Marinette, Wisconsin

Well ID	Area	Zone	Depth to Top of Screen (ft bgs)	Depth to Bottom of Screen (ft bgs)	Year 1: **Semi-Annual Sampling** - All Wells in All Groups; **Quarterly Sampling -** Select Boundary Zone Wells	Year 2[1]: **Annual Sampling** - Boundary Zone, Northern and Southern Plume Groups; **Semi-Annual Sampling** - FTC; **Quarterly Sampling** - Select Boundary Zone Wells	Year 3: **Annual/Biennial Sampling -** All MWs in All Groups	Year 4[2]: **Annual Sampling -** FTC, Northern and Southern Plume Groups	Year 5: **Annual/Biennial Sampling -** All MWs in All Groups

Notes:

All wells will be sampled for PFAS via Modified 537 method.

All wells will be gauged during sampling; at minimum, comprehensive rounds of gauging across all well groups will be completed semi-annually in years 1 and 2; in years 3 to 5, comprehensive gauging will be completed annually during the Q4 sampling event.

This monitoring plan shows the most conservative sampling approach in years 2 and 4; some wells may be removed or the sampling frequency may be reduced pending results from years 1 and 2.

(1) FTC - sampling at redundent wells will be reduced from semi-annual to annual; N. Plume and S. Plume - annual sampling will be reduced to biennial sampling at wells with 2 rounds of "clean" or identified as redundant; Boundary Zone - A subset of wells may be sampled quarterly, all other wells will be sampled annually or reduced to biennially if identified as redundant.

(2) FTC - all wells sampled annually; N. Plume and S. Plume - No sampling at any wells previously reduced to biennial sampling; Boundary Zone - No sampling, all wells reduced to biennial.

(3) The results of previous semi-annual sampling events will determine the timing of subsequent annual sampling events (i.e., annual sampling in Yr 4 and Yr 5 will be completed during the time of year that previously exhibited overall higher PFAS concentrations across all monitoring zones).

(4) N. Plume, S. Plume and Boundary Zone - The results of previous semi-annual sampling events will determine the timing of the Yr 3 annual sampling event (i.e., Yr 3 annual sampling will be completed during the time of year that previously exhibited overall higher PFAS concentrations across all monitoring zones).

Vertical Datum: North American Vertical Datum (NAVD) 1988

Acronyms/Abbreviations:

bgs = below ground surface

ft = feet

FTC = Fire Technology Center

GETS = groundwater extraction and treatment system

NA = not available

Zone screened abbreviations: S = shallow overburden < 25 feet deep; D = deep overburden > 25 feet deep; BR = bedrock

Surface finish abbreviations: FM = flush mount; SU = stick up

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Table 3
Surface Water Monitoring Locations
Interim LTM Plan
Tyco Fire Technology Center
Marinette, Wisconsin

Location ID	Approximate Northing	Approximate Easting	Ditch	Monitoring Task
Interim LTM Surface Water Monitoring Locations				
SW-10	454622.33	2577900.45	A	Sampling
SW-12	457345.63	2578759.81	A	Sampling
SW-30	464592.04	2587793.91	C	Sampling
SW-31	463510.03	2586758.72	C	Sampling
SW-33	456798.96	2583460.17	D	Sampling
SW-36	460092.70	2582005.37	AD	Sampling
SG-10	454651.16	2577823.71	A	Gauging
SG-12	457336.70	2578735.48	A	Gauging
SG-13	457326.57	2577401.97	A	Gauging
SG-26	459954.13	2579450.05	A	Gauging
SG-36	460101.02	2582119.10	D	Gauging
SG-45	460015.76	2580829.09	AD	Gauging
SG-47	457379.72	2575405.66	A	Gauging
SG-48	456484.65	2578250.39	A	Gauging
GETS LTM Surface Water Monitoring Locations[1]				
SW-U10	464304.96	2577216.74	B	Sampling
SW-U03	464584.05	2579775.41	B	Sampling
SW-M09	464609.37	2580872.38	B	Sampling
SW-M07	464231.65	2581309.05	B	Sampling
SW-M04	463543.51	2582099.25	B	Sampling
SW-M01	462918.11	2582479.07	B	Sampling
SW-L09	461725.52	2583542.17	B	Sampling
SG-A1	462175.88	2576923.70	A	Gauging
SG-23	463399.53	2576808.46	A	Gauging
SG-50	463376.34	2576546.61	A	Gauging
SG-53	463645.42	2575386.62	B	Gauging
SG-U10	464305.27	2577082.23	B	Gauging
SG-U03	464616.87	2580026.83	B	Gauging
SG-M09	464728.45	2580715.44	B	Gauging
SG-M01	462816.30	2582507.70	B	Gauging
SG-L09	461731.81	2583377.89	B	Gauging

Notes:

(1) GETS LTM Surface Water Monitoring Locations are listed for reference purposes only and are monitored in accordance with the GETS LTM plan (Arcadis 2021).

Acronyms/Abbreviations:

LTM = Long Term Monitoring

SW = Surface Water

SG = Staff Gauge

Table 4
Surface Water Sampling Plan
Interim LTM Plan
Tyco Fire Technology Center
Marinette, Wisconsin

Location ID	Approximate Northing	Approximate Easting	Ditch	Year 1-5: Semi-Annual Sampling			
				Q1	Q2	Q3	Q4
SW-10	454622.33	2577900.45	A		X		X
SW-12	457345.63	2578759.81	A		X		X
SW-30	464592.04	2587793.91	C		X		X
SW-31	463510.03	2586758.72	C		X		X
SW-33	456798.96	2583460.17	D		X		X
SW-36	460092.70	2582005.37	AD		X		X

Table 5
Groundwater Recommended Enforcement Standards and Surface Water Standards
Interim LTM Plan
Tyco Fire Technology Center
Marinette, Wisconsin

Analyte	CAS	June 2019 DHS Recommended ES (Not Adopted by DNR Board) [1]	November 2020 DHS Recommended ES (Not Yet Proposed for Rulemaking by DNR) [2]	WDNR Surface Water Standards (Non-Drinking Water Source)[3,4]
PFBA	375-22-4	--	10,000	--
PFPeA	2706-90-3	--	--	--
PFHxA	307-24-4	--	150,000	--
PFHpA	375-85-9	--	--	--
PFOA	335-67-1	20	--	95
PFNA	375-95-1	--	30	--
PFDA	335-76-2	--	300	--
PFUnA	2058-94-8	--	3,000	--
PFDoA	307-55-1	--	500	--
PFTriA	72629-94-8	--	--	--
PFTeA	376-06-7	--	10,000	--
PFHxDA	67905-19-5	--	--	--
PFODA	16517-11-6	--	400,000	--
PFBS	375-73-5	--	450,000	--
PFPeS	2706-91-4	--	--	--
PFHxS	355-46-4	--	40	--
PFHpS	375-92-8	--	--	--
PFOS	1763-23-1	20	--	8
PFNS	68259-12-1	--	--	--
PFDS	335-77-3	--	--	--
PFDoS	79780-39-5	--	--	--
4:2 FTS	757124-72-4	--	--	--
6:2 FTS	27619-97-2	--	--	--
8:2 FTS	39108-34-4	--	--	--
10:2 FTS	120226-60-0	--	--	--
FOSA	754-91-6	--	20 (2)	--
NMeFOSA	31506-32-8	--	--	--
NEtFOSA	4151-50-2	--	20 (2)	--
NMeFOSAA	2355-31-9	--	--	--
NEtFOSAA	2991-50-6	--	20 (2)	--
NMeFOSE	24448-09-7	--	--	--
NEtFOSE	1691-99-2	--	20 (2)	--
HFPO-DA (GenX)	13252-13-6	--	300	--
ADONA	919005-14-4	--	3,000	--
F-53B Major	756426-58-1	--	--	--
F-53B Minor	763051-92-9	--	--	--

Notes on Page 2.

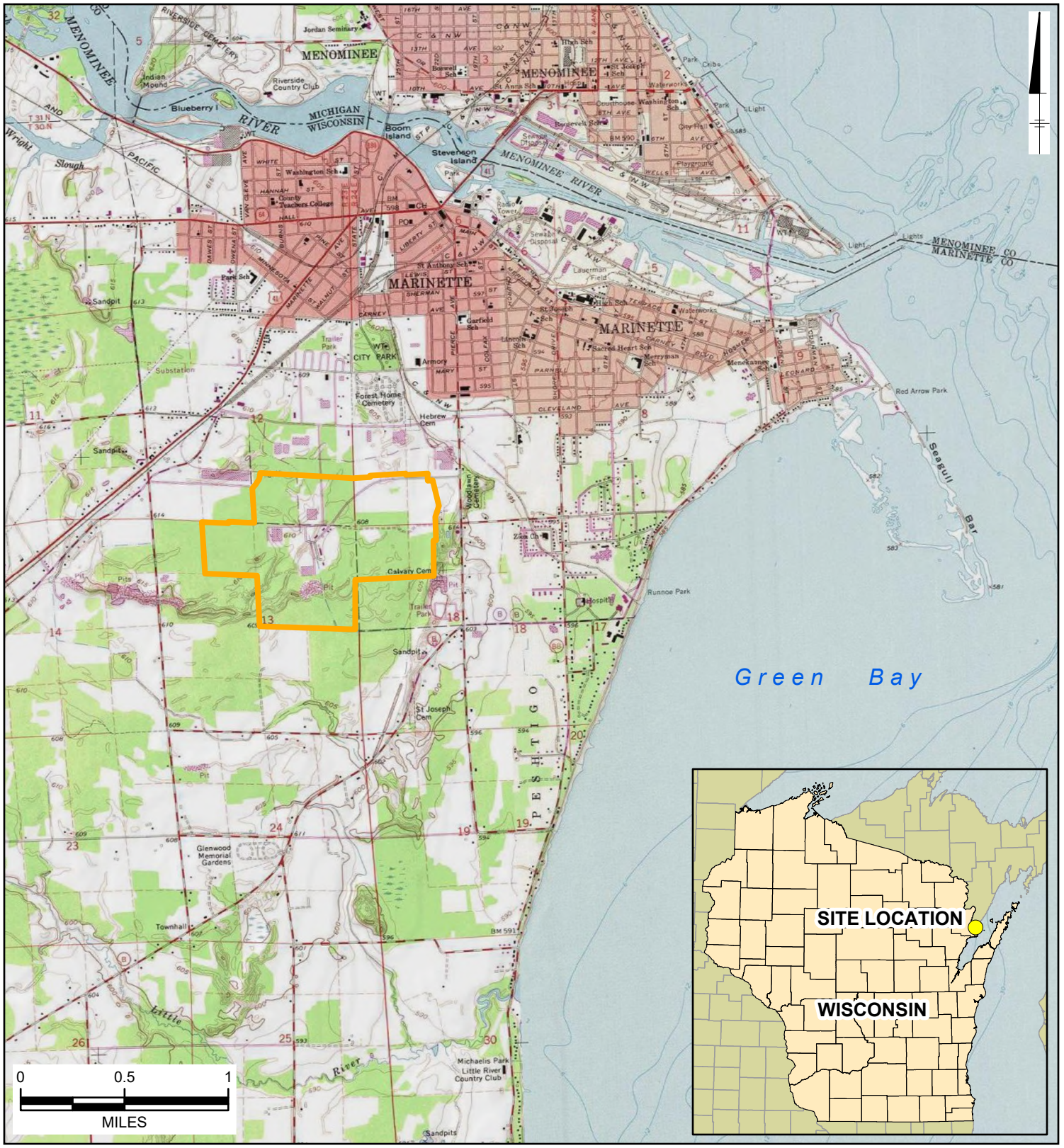
Table 5
Groundwater Recommended Enforcement Standards and Surface Water Standards
Interim LTM Plan
Tyco Fire Technology Center
Marinette, Wisconsin

Notes:
(1) = In June 2019, WDHS recommended individual groundwater standards of 20 ng/L for PFOA and PFOS. The WDNR proposed those standards through the state rulemaking process. In February 2022, the Wisconsin Natural Resource Board did not approve the proposed rulemaking for groundwater. In August 2022, WDNR promulgated a drinking water standard of 70 ng/L for PFOA and PFOS, individually and combined, for public water systems. This standard does not apply to private drinking water wells.
(2) = In November 2020 the Wisconsin DHS recommended a combined groundwater standard of 20 ng/L for: FOSA, NEtFOSE, NEtFOSA, NEtFOSAA, PFOS and PFOA. DHS also recommended individual standards for FOSA, NEtFOSE, NEtFOSA, NEtFOSAA, PFBS, PFHxS, PFNA, PFDA, PFDoA, PFHxA, PFTeA, PFUnA, PFBA, PFODA, DONA, and GenX. The agency's authority under the scope statement expired in September 2023. In September 2022, the Governor approved a Statement of Scope to establish groundwater standards for PFOA, PFOS, PFBS and GenX (referred to as the "Four PFAS"). The Statement of Scope was approved by the Natural Resources Board in December 2022. Pursuant to state law, the WDNR has stopped work on the proposed rule and notified the state legislature that, following economic analysis, the proposed costs would exceed statutory thresholds. As a result, the WDNR cannot continue the rulemaking without authorization from the state legislature.
(3) = The surface water quality standard for PFOA is 20 ng/L for waters classified as public water supplies and 95 ng/L for all other surface waters (WDNR NR 102.4). Ditches A, C, and D are not used for public drinking water supplies; therefore, the applicable standard for PFOA is 95 ng/L.
(4) = The surface water quality standard for PFOS is 8 ng/L for all waters except those that cannot naturally support fish and do not have downstream waters that support fish (WDNR NR 102.4).

Acronyms and Abbreviations:
-- = No standard
< = Compound not detected at reporting detection limit.
DHS = Department of Health Services
ES = Enforcement Standard
ng/L = nanograms per liter
WDNR = Wisconsin Department of Natural Resources

Chemical Abbreviation:
PFOA = Perfluorooctanoic acid (C8)
PFOS = Perfluorooctanesulfonic acid (C8)
PFBS = Perfluorobutanesulfonic acid (C4)
PFHpA = Perfluoroheptanoic acid (C7)
PFHxS = Perfluorohexanesulfonic acid (C6)
PFNA = Perfluorononanoic acid (C9)
PFDA = Perfluorodecanoic acid (C10)
PFDoA = Perfluorododecanoic acid (C12)
PFHxA = Perfluorohexanoic acid (C6)
PFTeA = Perfluorotetradecanoic acid (C14)
PFTriA = Perfluorotridecanoic acid (C13)
PFUnA = Perfluoroundecanoic acid (C11)
NEtFOSAA = N-ethylperfluorooctanesulfonamidoacetic acid (C12)
NMeFOSAA = N-methylperfluorooctanesulfonamidoacetic acid (C11)
PFBA = Perfluorobutanoic acid (C4)
PFPeA = Perfluoropentanoic acid (C5)
PFHxDA = Perfluoro-n-hexadecanoic acid (C16)
PFODA = Perfluoro-n-octadecanoic acid (C18)
PFPeS = Perfluoropentanesulfonic acid (C5)
PFHpS = Perfluoroheptanesulfonic acid (C7)
PFNS = Perfluorononanesulfonic acid (C9)
PFDS = Perfluorodecanesulfonic acid (C10)
PFDoS = Perfluorododecanesulfonic acid (C12)
FOSA = Perfluorooctanesulfonamide (C8)
NEtFOSA = N-ethylperfluorooctanesulfonamide (C10)
NMeFOSA = N-methylperfluorooctanesulfonamide (C9)
NMeFOSE = N-methylperfluorooctanesulfonamidoethanol (C11)
NEtFOSE = N-ethylperfluorooctanesulfonamidoethanol (C12)
4:2 FTS = 4:2 fluorotelomer sulfonate (C6)
6:2 FTS = 6:2 fluorotelomer sulfonate (C8)
8:2 FTS = 8:2 fluorotelomer sulfonate (C10)
10:2 FTS = 10:2 fluorotelomer sulfonate (C12)
ADONA = 4,8-Dioxa-3H-perfluorononanoic acid (C7)
HFPO-DA (GenX) = Hexafluoropropylene oxide dimer acid (C6)
F-53B Major = 9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (C8)
F-53B Minor = 11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (C10)

Figures



LEGEND

APPROXIMATE FTC SITE PROPERTY BOUNDARY

NOTES:

1. TOPOGRAPHIC MAP SOURCE: USA TOPO MAPS: COPYRIGHT:© 2013 NATIONAL GEOGRAPHIC SOCIETY, I-CUBED, ACCESSED FEBRUARY 2024.
2. ACRONYMS:
FTC - FIRE TECHNOLOGY CENTER

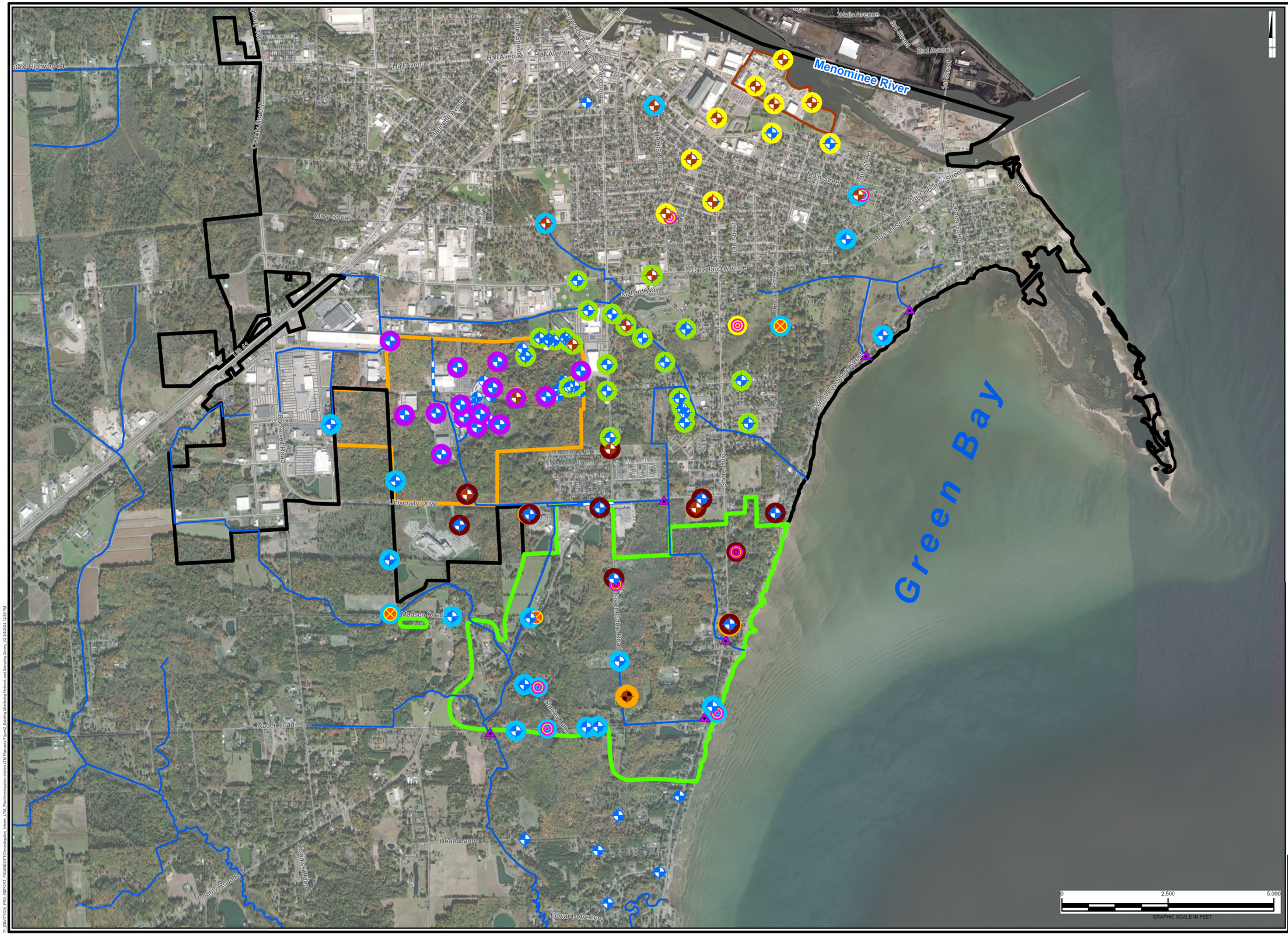
TYCO FIRE TECHNOLOGY CENTER
MARINETTE, WISCONSIN

INTERIM LONG TERM MONITORING PLAN FOR GROUNDWATER AND SURFACE ATER

SITE LOCATION

ARCADIS

FIGURE 1



LEGEND

- APPROXIMATE MARINETTE CITY BOUNDARY
- APPROXIMATE FTC SITE PROPERTY BOUNDARY
- APPROXIMATE STANTON STREET FACILITY PROPERTY BOUNDARY
- PRIVATE WELL SAMPLING AREA
- ROAD
- CULVERT
- DITCH OR STREAM
- BEDROCK MONITORING WELL OR PIEZOMETER
- OVERBURDEN MONITORING WELL OR PIEZOMETER
- DEEP BEDROCK MONITORING WELL

MONITORING ZONES:

- NORTHERN PLUME
- FTC (NON-GETS)
- SOUTHERN PLUME
- BOUNDARY ZONE
- GETS NETWORK
- DEEP MONITORING WELL NETWORK

PROPOSED GROUNDWATER INVESTIGATION LOCATIONS:

- OVERBURDEN MONITORING WELL
- SHALLOW BEDROCK MONITORING WELL

NOTES:
1. GETS MONITORING WELLS AND DEEP BEDROCK MONITORING WELLS ARE IDENTIFIED FOR REFERENCE PURPOSES ONLY. MONITORING OF GETS NETWORK WELLS IS COMPLETED IN ACCORDANCE WITH THE GETS LTM PLAN (ARCADIS, 2021). MONITORING OF THE DEEP MONITORING WELL NETWORK IS COMPLETED IN ACCORDANCE WITH THE DEEP AQUIFER BEDROCK WELL DESIGN AND LONG-TERM MONITORING WORK PLAN (ARCADIS 2022).
2. ACRONYMS:
   GETS - GROUNDWATER EXTRACTION AND TREATMENT SYSTEM
   FTC - FIRE TECHNOLOGY CENTER
3. AERIAL IMAGERY SOURCE: ESRI MAXAR, EARTHSTAR GEOGRAPHICS, AND THE GIS USER COMMUNITY.

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GRAPHIC SCALE IN FEET

TYCO FIRE TECHNOLOGY CENTER
MARINETTE, WISCONSIN
INTERIM LONG TERM MONITORING PLAN FOR GROUNDWATER AND SURFACE WATER

GROUNDWATER MONITORING WELL NETWORKS

ARCADIS | FIGURE 2

T:\ENVITYCO_PRC_REPORT_FIGURES\FTC\Investigation_Interim_LTM_Plan\Investigation Interim LTM Plan.aprx\Figure2_Existing Monitoring Network and Sampling Zones_V2 5/4/2024 12:53 PM

T:_ENV\TYCO_PRO_REPORT_FIGURES\FTC\Investigation_Interim_LTM_Plan\Investigation Interim LTM Plan.aprx Figure3_FTC (NON-GETS) SAMPLING ZONE3/14/2024 2:45 PM Last Saved By: MEstifanos

PZ-59-21
PZ-16S
PZ-16D
PZ-15S
PZ-15D
MW-EX-2
PZ-1S
PZ-1D
MW-EX-5
GETS BUILDING
PZ-47-40
PZ-9
PZ-65-33
PZ-65-16
DITCH A
PZ-14S
PZ-14D
PZ-56-42
PZ-19
PZ-22S
PZ-18S
PZ-3
PZ-55-64
PZ-18D
PZ-22D
PZ-4D
PZ-69-43
PZ-4S
PZ-69-24
FTC-2D
FTC-2S
PZ-67-40
PZ-67-16
PZ-68-16
PZ-68-66
PZ-68-26
FTC-34D
FTC-34S
FTC-31
PZ-11
FTC-44
PZ-60-20
PZ-24-47
PZ-24-17
PZ-71-111
HMW-2-3D
HMW-2-3S
PZ-66-20
PZ-66-57
Ditch A Treatment System
PZ-70-55
PZ-70-17
University Drive
Maxar, Microsoft

LEGEND

- APPROXIMATE MARINETTE CITY BOUNDARY
- APPROXIMATE FTC SITE PROPERTY BOUNDARY
- ROAD
- DITCH OR STREAM
- CULVERT
- OVERBURDEN MONITORING WELL OR PIEZOMETER
- BEDROCK MONITORING WELL OR PIEZOMETER
- GETS BUILDING
- SURFACE WATER TREATMENT SYSTEM

MONITORING ZONES:

- FTC (NON-GETS)
- SOUTHERN PLUME
- BOUNDARY ZONE
- GETS NETWORK

NOTES:
1. GETS MONITORING WELLS ARE IDENTIFIED FOR REFERENCE PURPOSES ONLY. MONITORING OF GETS NETWORK MONITORING WELLS IS COMPLETED IN ACCORDANCE WITH THE GETS LTM PLAN (ARCADIS, 2021).
2. ACRONYMS:
   GETS - GROUNDWATER EXTRACTION AND TREATMENT SYSTEM
   FTC - FIRE TECHNOLOGY CENTER
3. AERIAL IMAGERY SOURCE: ESRI MAXAR, EARTHSTAR GEOGRAPHICS, AND THE GIS USER COMMUNITY

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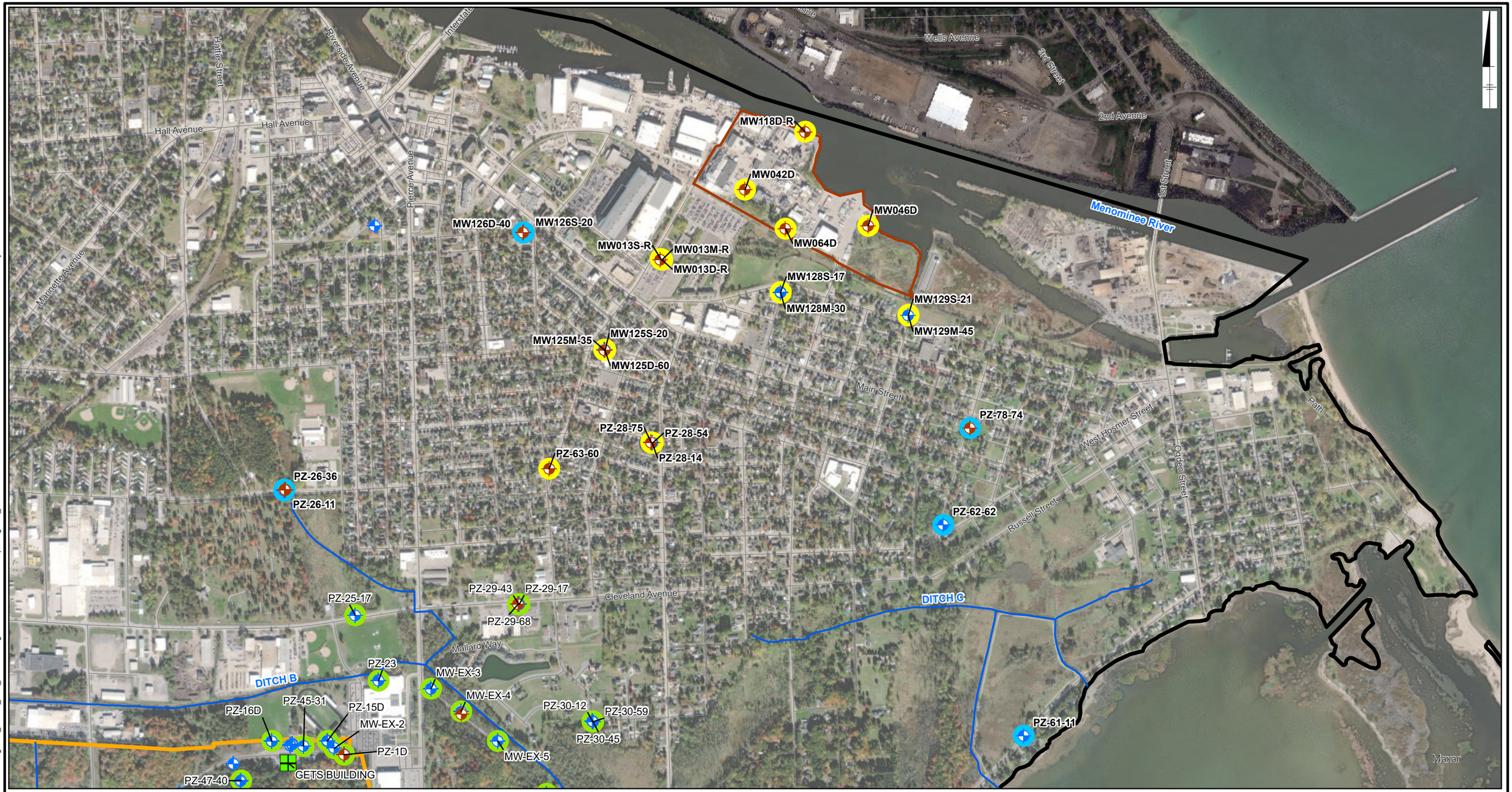
GRAPHIC SCALE IN FEET

TYCO FIRE TECHNOLOGY CENTER
MARINETTE, WISCONSIN
INTERIM LONG TERM MONITORING PLAN FOR GROUNDWATER AND SURFACE WATER

FTC (NON-GETS) PLUME AND BOUNDARY ZONE WELL NETWORK

ARCADIS

FIGURE
3



LEGEND

- APPROXIMATE MARINETTE CITY BOUNDARY
- APPROXIMATE STANTON STREET FACILITY PROPERTY BOUNDARY
- APPROXIMATE FTC SITE PROPERTY BOUNDARY
- ROAD
- DITCH OR STREAM
- CULVERT
- BEDROCK MONITORING WELL OR PIEZOMETER
- OVERBURDEN MONITORING WELL OR PIEZOMETER
- GETS BUILDING

MONITORING ZONES:

- NORTHERN PLUME
- BOUNDARY ZONE
- GETS NETWORK

NOTES:
1. GETS MONITORING WELLS ARE IDENTIFIED FOR REFERENCE PURPOSES ONLY. MONITORING OF GETS NETWORK MONITORING WELLS IS COMPLETED IN ACCORDANCE WITH THE GETS LTM PLAN (ARCADIS, 2021).
2. ACRONYMS:
   GETS - GROUNDWATER EXTRACTION AND TREATMENT SYSTEM
   FTC - FIRE TECHNOLOGY CENTER
3. AERIAL IMAGERY SOURCE: ESRI MAXAR, EARTHSTAR GEOGRAPHICS, AND THE GIS USER COMMUNITY

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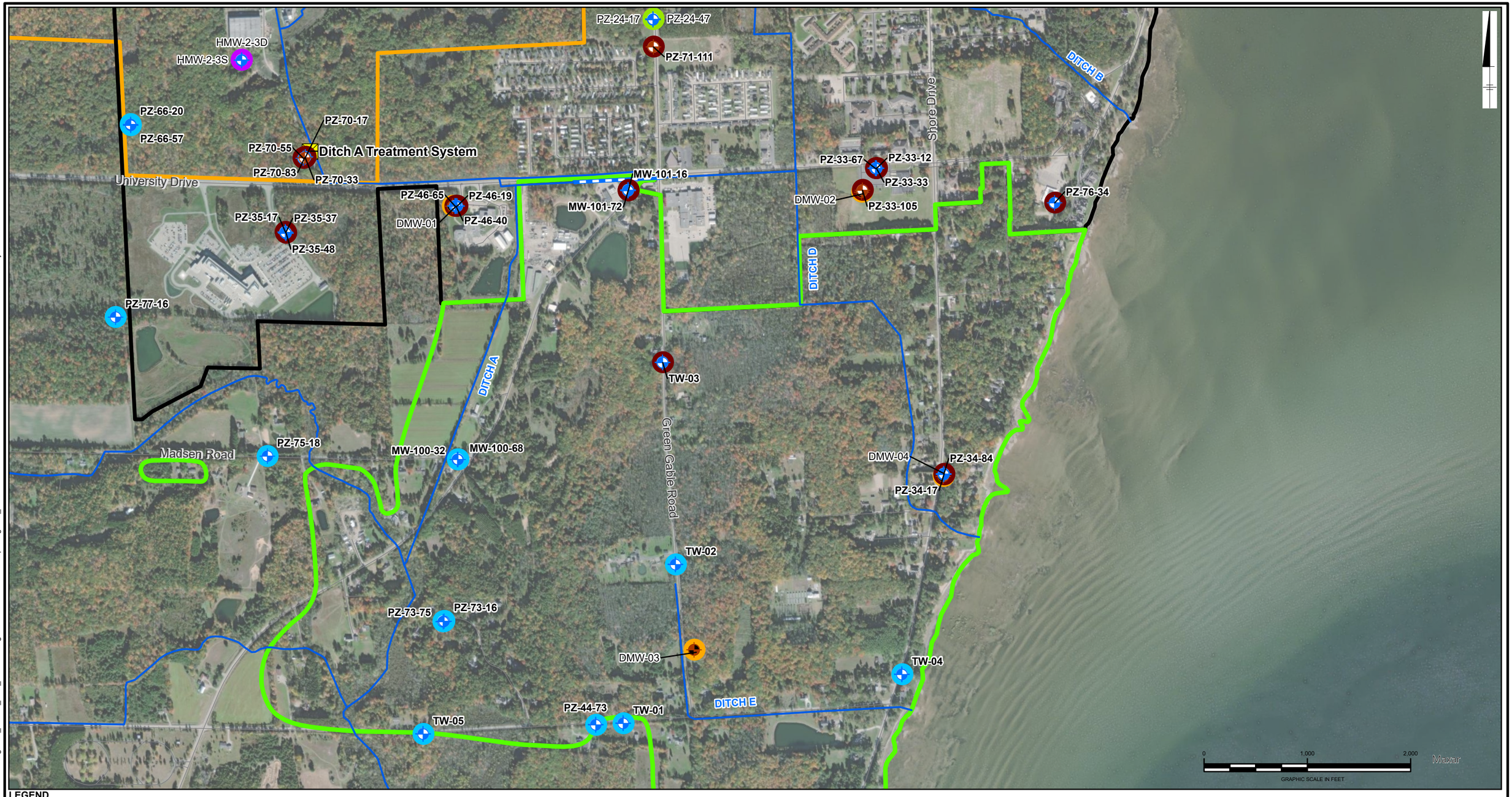
GRAPHIC SCALE IN FEET

TYCO FIRE TECHNOLOGY CENTER
MARINETTE, WISCONSIN
INTERIM LONG TERM MONITORING PLAN FOR GROUNDWATER AND SURFACE WATER

NORTHERN PLUME AND BOUNDARY ZONE WELL NETWORK

ARCADIS

FIGURE 4



LEGEND

- PRIVATE WELL SAMPLING AREA
- APPROXIMATE MARINETTE CITY BOUNDARY
- APPROXIMATE FTC SITE PROPERTY BOUNDARY
- ROAD
- DITCH OR STREAM
- CULVERT

- OVERBURDEN MONITORING WELL OR PIEZOMETER
- BEDROCK MONITORING WELL OR PIEZOMETER
- DEEP BEDROCK MONITORING WELL
- SURFACE WATER TREATMENT SYSTEM

MONITORING ZONES:

- FTC (NON-GETS)
- SOUTHERN PLUME
- BOUNDARY ZONE
- GETS NETWORK
- DEEP MONITORING WELL NETWORK

NOTES:

1. GETS MONITORING WELLS AND DEEP BEDROCK MONITORING WELLS ARE IDENTIFIED FOR REFERENCE PURPOSES ONLY. MONITORING OF GETS NETWORK WELLS IS COMPLETED IN ACCORDANCE WITH THE GETS LTM PLAN (ARCADIS, 2021). MONITORING OF THE DEEP MONITORING WELL NETWORK IS COMPLETED IN ACCORDANCE WITH THE DEEP AQUIFER BEDROCK WELL DESIGN AND LONG-TERM MONITORING WORK PLAN (ARCADIS 2022).
2. ACRONYMS:
   GETS - GROUNDWATER EXTRACTION AND TREATMENT SYSTEM
   FTC - FIRE TECHNOLOGY CENTER
3. AERIAL IMAGERY SOURCE: ESRI MAXAR, EARTHSTAR GEOGRAPHICS, AND THE GIS USER COMMUNITY

TYCO FIRE TECHNOLOGY CENTER
MARINETTE, WISCONSIN
INTERIM LONG TERM MONITORING PLAN FOR GROUNDWATER AND SURFACE WATER

SOUTHERN PLUME AND BOUNDARY ZONE WELL NETWORK

ARCADIS

FIGURE 5

T:_ENV\TYCO_PRO_REPORT_FIGURES\FTC\Investigation_Interim_LTM_Plan\Investigation Interim LTM Plan.aprx Figure5_SOUTHERN PLUME SAMPLING ZONE3/7/2024 6:21 PM Last Saved By: avi00976

DITCH B
SW-U10
SG-U10
SG-53
SG-50
SG-23
GETS BUILDING
SG-U03
SW-U03
SG-M09
SW-M09
SW-M07
SW-M04
SW-M01
SG-M01
DITCH C
SW-30
SW-31
Cleveland Avenue
West Bay Shore Street
Roosevelt Road
DITCH A (NORTH BRANCH)
SG-A1
Ditch A
Treatment System
SW-L09
SG-L09
Ditch B
Treatment System
Store Drive
University Drive
SG-26
DITCH A-D
SG-45
SW-36
SG-36
DITCH D
DITCH A (NORTH BRANCH)
Green Bay
DITCH A (WEST BRANCH)
SG-47
Madsen Road
SG-13
SW-12
SG-12
SG-48
Green Cable Road
SW-33
DITCH A (SOUTH BRANCH)
Rader Road
SW-10
SG-10
DITCH E
DITCH A

LEGEND

- APPROXIMATE FTC SITE PROPERTY BOUNDARY
- PRIVATE WELL SAMPLING AREA
- APPROXIMATE MARINETTE CITY BOUNDARY
- ROAD
- CULVERT
- DITCH OR STREAM
- SURFACE WATER SAMPLING
- STAFF GAUGE
- GETS BUILDING
- SURFACE WATER TREATMENT SYSTEM

MONITORING ZONES:

- GETS LTM SURFACE WATER MONITORING LOCATION
- INTERIM LTM SURFACE WATER MONITORING LOCATION

NOTES:

1. MONITORING OF DITCH B IS COMPLETED IN ACCORDANCE WITH THE GETS LTM PLAN (ARCADIS, 2021).
2. ACRONYMS:
FTC - FIRE TECHNOLOGY CENTER
GETS - GROUNDWATER EXTRACTION AND TREATMENT SYSTEM
LTM - LONG TERM MONITORING
3. AERIAL IMAGERY SOURCE: ESRI MAXAR, EARTHSTAR GEOGRAPHICS, AND THE GIS USER COMMUNITY

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GRAPHIC SCALE IN FEET

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MARINETTE, WISCONSIN

INTERIM LONG TERM MONITORING PLAN FOR GROUNDWATER AND SURFACE WATER

SURFACE WATER MONITORING LOCATIONS

ARCADIS

FIGURE 6

T:\ENVTYCO_PRO_REPORT_FIGURES\FTCInvestigation_Interim_LTM_Post\investigation_Interim LTM Plan.aprx Figure6_Surface Water Sampling Locations 3/7/2024 6:12 PM

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