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 | | |
|---|---|---|---|---|---|
| Wahl | Scott | | 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 | | |
|---|---|---|---|---|---|
| Verburg | Ben | | 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 | | |
| (414) 276-7742 | | | Ben.Verburg@arcadis.com | | |

### Environmental Consultant (if applicable)

| Contact Last Name | First | MI | Organization/ Business Name | | |
|---|---|---|---|---|---|
| Verburg | Ben | | 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 | | |
| (414) 276-7742 | | | Ben.Verburg@arcadis.com | | |

## 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.

- [x] Groundwater
- [x] Soil
- [x] 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
- [x] Other report(s) or information - Describe: Interim Site Investigation Report - Tyco Fire Technology Center

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)
- [x] I prepared this request for: Scott Wahl
  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.

Signature: [signature] | Date Signed: 5/21/2020

Title: Project Environmental Specialist | Telephone Number (include area code): (312) 575-3732

## 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.

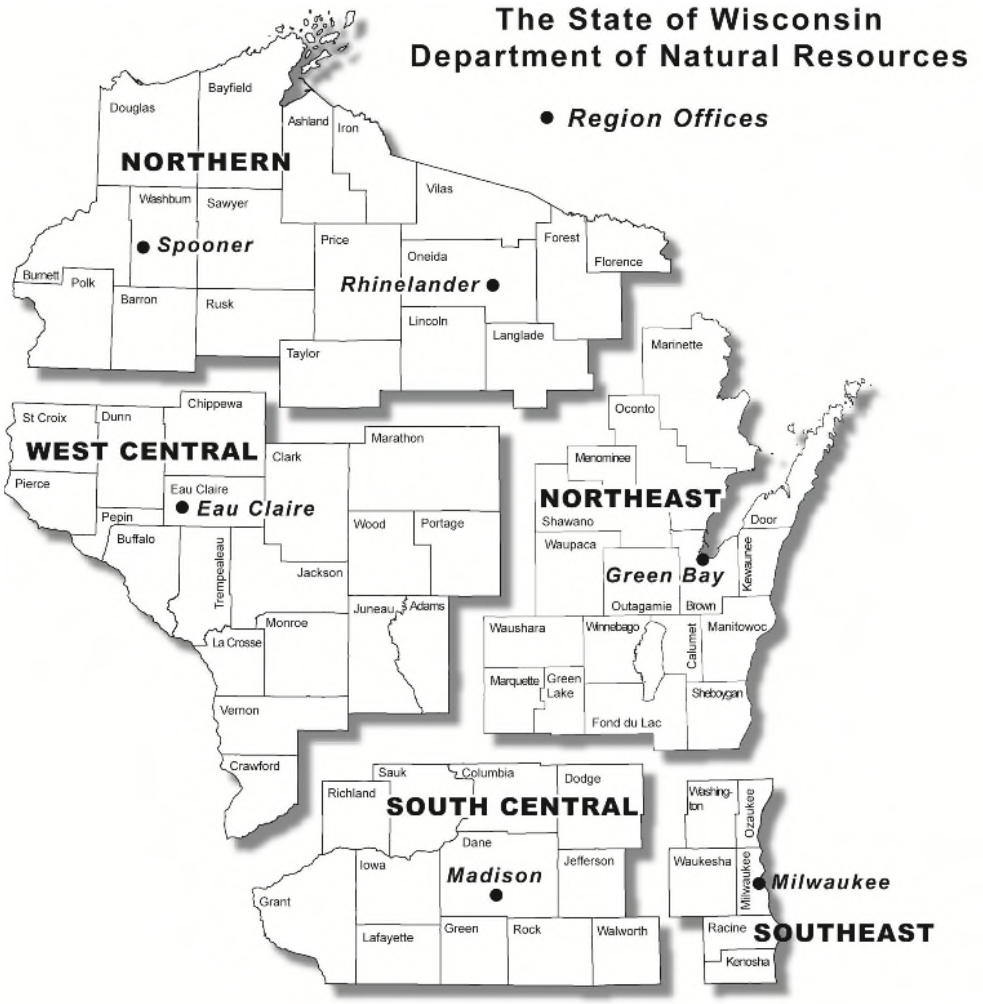
**DNR NORTHERN REGION**
Attn: RR Program Assistant
Department of Natural Resources
223 E Steinfest Rd Antigo, WI 54409

**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 SITE INVESTIGATION REPORT

Tyco Fire Technology Center
Marinette, Wisconsin

BRRTS No. 02-38-580694

May 2020

# INTERIM SITE INVESTIGATION REPORT

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

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30015294

Date:

May 15, 2020

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# CONTENTS

Acronyms and Abbreviations ..... vi
Executive Summary ..... 1
1 Introduction ..... 1
1.1 Scope of Investigation ..... 1
1.2 Objectives of Investigation ..... 3
1.3 Interim Remedial Actions ..... 3
2 Site Background ..... 4
2.1 Geology, Hydrogeology, and Physical Setting ..... 4
3 Site Investigation ..... 6
3.1 Site Preparation ..... 6
3.2 Sample Identification Nomenclature ..... 6
3.3 Groundwater Investigation Activities ..... 7
3.3.1 Vertical Aquifer Profile Borings ..... 7
3.3.1.1 Direct-Push Technology ..... 8
3.3.1.2 Sonic Drilling ..... 9
3.3.2 Shallow and Intermediate Monitoring Well Installations and Development ..... 11
3.3.3 Bedrock Investigation ..... 11
3.3.3.1 Production Well ..... 12
3.3.3.2 Bedrock Borings – MW-100B, MW-101B, and MW-102B ..... 12
3.3.4 Groundwater Monitoring ..... 13
3.3.5 Hydraulic Conductivity Testing ..... 13
3.3.5.1 Slug Testing ..... 13
3.3.5.2 Hydraulic Profiling Tool ..... 14
3.3.6 Piezometer Installations ..... 15
3.3.6.1 Shallow Temporary Piezometer Installations ..... 15
3.3.6.2 Piezometer Installation and Development ..... 15
3.3.7 Groundwater Elevation Gauging ..... 16
3.4 Surface Water ..... 16
3.4.1 Surface Water Sampling ..... 17

3.4.2 Groundwater-Surface Water Interaction ..... 19
3.4.3 Surface Water Hydrodynamics ..... 20
3.5 Sediment ..... 21
3.6 Stormwater ..... 21
3.7 Soil ..... 22
3.7.1 Soil Sampling for Physical Characteristics ..... 22
3.7.2 Soil Sampling for PFAS ..... 22
3.8 Surveying ..... 24
3.9 Investigation-Derived Waste ..... 24
4 Quality Assurance and Quality Control ..... 25
4.1 Special Considerations for PFAS Sampling ..... 25
4.2 Field Activities and Methods ..... 25
4.3 Laboratory Methods and Analysis ..... 26
4.4 Data Validation ..... 26
5 Site Investigation Results ..... 27
5.1 Groundwater Investigation Results ..... 27
5.1.1 Vertical Aquifer Profiling ..... 27
5.1.2 Groundwater Monitoring ..... 28
5.1.3 Evaluation of Groundwater Data ..... 29
5.1.4 Hydraulic Conductivity Testing ..... 30
5.1.4.1 Slug Test ..... 30
5.1.4.2 Hydraulic Profiling Tool ..... 30
5.1.5 Groundwater Elevations ..... 30
5.2 Surface Water Investigation Results ..... 30
5.2.1 Surface Water Sampling ..... 30
5.2.2 Groundwater-Surface Water Interaction ..... 31
5.2.3 Surface Water Hydrodynamics ..... 31
5.3 Sediment Results ..... 32
5.4 Stormwater Results ..... 32
5.5 Soil Investigation ..... 33
5.5.1 Soil Sampling for Physical Characteristics ..... 33

5.5.2 Soil Sampling ..... 33
6 Conclusions and NEXT STEPS ..... 35
7 References ..... 37

# TABLES

Table 1 Investigation Timeline
Table 2 Summary of VAP Sonic Sampling
Table 3 Well Construction Details
Table 4 Groundwater Elevations
Table 5 Piezometer and Stilling Well Manual Water Levels
Table 6 Sediment Descriptions and Field Data
Table 7 Analytical Lab Details
Table 8 Analytical Method Details
Table 9 VAP Groundwater Analytical Results – 2013 to 2014
Table 10 VAP Groundwater Analytical Results – 2016 to 2019
Table 11 Groundwater Monitoring Analytical Results
Table 12 Hydraulic Conductivity Values Estimated from Slug Tests
Table 13 Surface Water Analytical Results
Table 14 Sediment Analytical Results
Table 15 Stormwater Analytical Results
Table 16 Soil Grain Size Analysis Results
Table 17 Soil Analytical Results
Table 18 Synthetic Precipitation Leaching Procedure Test Analytical Results

# FIGURES


Figure 1 Site Location

Figure 2 FTC Operations Area Layout

Figure 3 Investigation Area

Figure 4 Comprehensive On-site Investigation Locations

Figure 5 Comprehensive Off-site Investigation Locations

Figure 6 Offsite Piezometer and Monitoring Well Locations

Figure 7 Shallow Groundwater Potentiometric Surface – August 2018

Figure 8 Shallow Groundwater Potentiometric Surface – November 2018

Figure 9 Shallow Groundwater Potentiometric Surface – October 2019

Figure 10 Deep Groundwater Potentiometric Surface – October 2019

Figure 11 Soil Investigation Locations

Figure 12 2013 – 2014 and 2016 - 2017 VAP Analytical Results

Figure 13 2017 – 2019 VAP Analytical Results

Figure 14 Analytical Monitoring Well Data

Figure 15 Detections of PFOA and PFOS in Groundwater

Figure 16 Ditch A Surface Water Analytical Results

Figure 17 Ditch B Surface Water Analytical Results

Figure 18 Ditch C, D, and E Surface Water Analytical Results

Figure 19 Surface Water-Groundwater Interactions

Figure 20 Historic Surface Water Calculated Flow Rates

Figure 21 June 2018 Sediment Sample Analytical Results – North

Figure 22 June 2018 Sediment Sample Analytical Results – FTC

Figure 23 June 2018 Sediment Sample Analytical Results – South

Figure 24 Stormwater Analytical Results

Figure 25 Soil Analytical Results

# APPENDICES


| | |
|---|---|
| Appendix A | Submittal Certification |
| Appendix B | Boring and Abandonment Logs |
| Appendix C | Fluorescein Dye Analytical Results |
| Appendix D | Well Construction and Development Forms |
| Appendix E | Geophysical Logging Reports |
| Appendix F | Slug Testing Results |
| Appendix G | Hydraulic Profiling Tool Report |
| Appendix H | Precipitation Data – Hydrographs |
| Appendix I | Surface Water Velocity Measurements |
| Appendix J | Soil Physical Parameter Results |
| Appendix K | Survey Data |

# ACRONYMS AND ABBREVIATIONS

| | |
|---|---|
| AFFF | aqueous film-forming foam |
| amsl | above mean sea level |
| Arcadis | Arcadis U.S., Inc. |
| bgs | below ground surface |
| BRRTS | Bureau of Remediation and Redevelopment Tracking System |
| CSM | Conceptual Site Model |
| DC | direct contact |
| DPT | direct-push technology |
| FTC | Fire Technology Center |
| gpm | gallons per minute |
| HAL | Health Advisory Level |
| HPT | hydraulic profiling tool |
| µg/kg | micrograms per kilogram |
| mg/kg | milligrams per kilogram |
| NAD | North American Datum |
| NAVD | North American Vertical Datum |
| ng/L | nanograms per liter |
| NOAA | National Oceanic and Atmospheric Administration |
| NR | Natural Resources |
| OTA | Outdoor Testing/Training Area |
| PFAS | per- and poly-fluorinated alkyl substances |
| PFOA | perfluorooctanoic acid |
| PFOS | perfluorooctanesulfonic acid |
| POET | point-of-entry treatment |
| ppt | parts per trillion |
| PVC | polyvinyl chloride |
| QA/QC | quality assurance/quality control |
| RCL | Residual Contaminant Level |
| ROW | right-of-way |

| | |
|---|---|
| Site | Tyco Fire Technology Center located at 2700 Industrial Parkway South, Marinette, Wisconsin |
| SPLP | Synthetic Precipitation Leaching Procedure |
| TDS | total dissolved solids |
| TOC | total organic carbon |
| TSS | total suspended solids |
| Tyco | Tyco Fire Products LP |
| USEPA | United States Environmental Protection Agency |
| VAP | vertical aquifer profiling |
| VOC | volatile organic compound |
| WDHS | Wisconsin Department of Health Services |
| WDNR | Wisconsin Department of Natural Resources |
| WPDES | Wisconsin Pollutant Discharge Elimination System |

# EXECUTIVE SUMMARY

On behalf of Tyco Fire Products LP (Tyco), Arcadis U.S., Inc. (Arcadis) conducted a site investigation to define the nature and extent of per- and poly-fluorinated alkyl substances (PFAS) related to the Tyco Fire Technology Center and the Outdoor Testing/Training Area (OTA) located at 2700 Industrial Parkway South in Marinette, Wisconsin (Site). The Site includes a fire suppressant training, testing, and research and development facility built in the early 1960s. Aqueous film-forming foams (AFFFs) have been used at the Site as part of research and development, quality testing, and firefighting training activities. AFFF has not been sprayed outdoors at the Site since 2017.

The site investigation has been conducted in phases and in accordance with work plans prepared on behalf of Tyco and approved by the Wisconsin Department of Natural Resources (WDNR). The completed investigations evaluated the nature and extent of PFAS in groundwater, soil, surface water, sediment, and stormwater and characterized the hydraulic and hydrogeologic controls that influence PFAS transport. The investigation also included characterization of overburden and bedrock geology; installation of monitoring wells, piezometers, and stilling wells; monitoring of surface water and groundwater elevations; measurement of surface water velocity; and inspection and rehabilitation of sewer lines. Investigation activities were completed in an adaptive, data-driven approach, incrementally expanding the investigation area as required by the data and focusing data-collection methods to fill data gaps revealed by the work completed to that point. During execution of the work plans, review of the data prompted the need for additional sampling and development of certain interim mitigation actions, which were performed under the oversight and approval of WDNR.

This report presents the results of investigation activities conducted at the Site and surrounding areas and data received for those activities on or before December 31, 2019. The following tasks are still in progress and will be reported at a later date:

- Green Bay surface water investigation (Work Plan dated October 23, 2019)
- Fish tissue sampling (Work Plan dated December 17, 2019)

In May 2016, the United States Environmental Protection Agency (USEPA) issued a drinking water Lifetime Health Advisory Level (HAL) for two PFAS, specifically the individual and combined values for perfluorooctanoic acid (PFOA) and perfluorooctanesulfonic acid (PFOS) of 70 nanograms per liter (ng/L), or parts per trillion (ppt). In June 2019, the Wisconsin Department of Health Services (WDHS) recommended a groundwater enforcement standard of 20 ng/L for PFOA and PFOS, individually and combined. Concentrations of PFOA and PFOS were reported above the USEPA HAL and WDHS recommended groundwater enforcement standard in multiple groundwater samples collected on and off the Site. The horizontal limits of PFOA and PFOS in groundwater above 20 ng/L were found to extend eastward from a source area at the OTA, moving with groundwater to the northeast and southeast. The lateral extent includes a portion of the City of Marinette extending northeast from the Site toward the Menominee River, and portions of the City of Marinette and Town of Peshtigo extending southeast approximately as far as Rader Road.

The nature and extent of PFAS in surface water related to the Site has been defined for five ditches. In 2018 and 2019 surface water sampling data, PFOA and PFOS were identified at concentrations above the current WDNR surface water quality guidelines (420 ng/L for PFOA and 11 ng/L for PFOS) in portions

of three small streams referred to as Ditches A, B, and D. The ditch segments where PFOA and PFOS concentrations exceeded the guidelines include:

- Ditch A extending downstream from the Site to a location upstream of a sample point where the ditch crosses Rader Road.
- Ditch B from approximately where the ditch crosses Pierce Avenue downstream to Green Bay.
- Ditch D at one sample point at the upstream head of the ditch near University Drive.

Detections of PFOS and PFOA in surface water samples at two additional ditches evaluated (Ditches C and E) were below WDNR surface water quality guidelines. Tyco has installed surface water treatment systems as interim remedial actions to reduce PFAS concentrations in Ditch A and Ditch B. Those systems commenced operations in January and October 2019, respectively.

Results from the Green Bay surface water investigation (planned for summer 2020) will be used to further delineate the lateral extent of PFAS concentrations.

Of a total of 66 soil samples collected within and near the OTA during multiple phases of work, no results exceeded the WDNR industrial (16.4 milligrams per kilogram [mg/kg]) direct contact (DC) residual contaminant levels (RCLs) for PFOA or PFOS. Data also were collected to support the calculation of a site-specific soil leaching RCL based on protection of groundwater quality; the results will be provided in a Conceptual Site Model (CSM) Report under separate cover.

Tyco has implemented the following interim remedial actions during the site investigation to safeguard public safety:

- Bottled water service has been offered to private drinking water well owners/users in the private well sampling area regardless of whether PFAS exceedances were detected in well samples.
- Point-of-entry treatment (POET) systems have been offered to private well owners/users in the private well sampling area for wells with PFAS detections. The 40 POET systems installed are monitored and maintained by Tyco.
- Surface water treatment systems have been installed in Ditches A and B.
- Tyco has designed a municipal water line extension to service businesses and residences in portions of the private well sampling area, and Tyco is pursuing regulatory approval for same.

In summary, this Interim Site Investigation Report provides an evaluation of the investigation data collected as of December 31, 2019, in accordance with a January 23, 2020 request from WDNR. As noted in the investigation work plans approved by WDNR, the site investigation data presented and evaluated in this report are part of an ongoing process to identify the nature and extent of PFAS in environmental media potentially due to historical operations at the Site. Additional investigation and evaluation work has been and will be described in future work plans prior to execution as needed. After the site investigation is complete, a Comprehensive Site Investigation Report, anticipated for submittal by December 31, 2020, will be prepared pursuant to Wisconsin Administrative Code Natural Resources (NR) 716 requirements. Overall conclusions and recommendations will be provided in that report.

Key points based on site investigation activities conducted at the Site through December 31, 2019 include the following:

- Delineation of combined site-related PFOA and PFOS groundwater concentrations exceeding 20 ng/L is complete. The plume has been found to extend eastward from a source area at the OTA, moving with groundwater to the northeast and southeast. The lateral extent includes a portion of the City of Marinette extending northeast from the Site toward the Menominee River, and portions of the City of Marinette and Town of Peshtigo extending southeast approximately as far as Rader Road.
- Delineation of PFOA and PFOS in the ditches at concentrations exceeding WDNR surface water quality guidelines is complete. The nature and extent of PFAS in surface water related to the Site has been defined for five ditches, including three where PFOA and PFOS concentrations were present in surface water above WDNR guidelines. Surface water concentrations will be further delineated with the results of the Green Bay surface water sampling scheduled for later in 2020.
- Sediment samples were collected and analyzed to evaluate PFAS concentrations. Results show that PFAS is present in sediment in Ditch A within the site boundaries, and at rapidly decreasing concentrations downstream (i.e., 2 micrograms per kilogram [µg/kg] of PFOA and less than 0.9 µg/kg of PFOS at the most downgradient sample point near Rader Road). PFAS was detected in sediment in Ditch B only at low concentrations. While there are no WDNR sediment screening levels for PFAS, an evaluation of relative concentrations indicates the data are sufficient to evaluate the nature and extent of PFAS in sediment.
- Stormwater samples were collected and analyzed to evaluate PFAS concentrations. An evaluation of the data based on relative concentrations indicates the data obtained to date are sufficient to characterize the nature and extent of PFAS in stormwater for the site investigation.
- Delineation of PFAS in soil at concentrations exceeding the WDNR non-industrial and industrial DC RCLs is complete. Data were also collected to support the calculation of a site-specific soil RCL based on protection of groundwater quality. Soil leaching to groundwater RCLs will be calculated in the CSM Report under separate cover.
- Ongoing interim remedial actions of bottled water and POET systems will be continued for public safety until a long-term solution of a municipal water line extension to service businesses and residences in the portions of the private well sampling area is constructed and operating. Tyco is pursuing regulatory approval for this water line extension.
- Operation of the Ditch A and Ditch B interim remedial action surface water extraction and treatment systems will continue as an engineering control for public safety.
- The data presented in this report will be utilized to evaluate implementation of potential additional remedial actions to address PFAS present in the impacted media at the Site and extending from the Site.

# 1 INTRODUCTION

On behalf of Tyco Fire Products LP (Tyco), Arcadis U.S., Inc. (Arcadis) conducted a site investigation for the Tyco Fire Technology Center (FTC) located at 2700 Industrial Parkway South in Marinette, Wisconsin (Site; **Figure 1**). This Interim Site Investigation Report presents the results of the investigation conducted at the Site and in the surrounding areas to define the nature and extent of per- and poly-fluorinated alkyl substances (PFAS) related to the Site. This report only provides information on this Site and does not provide information on other PFAS matters in the Marinette area. The purpose of this Interim Site Investigation Report is to summarize investigation activities conducted and data received on or before December 31, 2019, in accordance with a January 23, 2020 request from the Wisconsin Department of Natural Resources (WDNR). A Comprehensive Site Investigation Report, which will encompass previously completed and remaining planned investigation activities for the Site, is anticipated to be submitted by December 31, 2020, and will be completed pursuant to Wisconsin Administrative Code Natural Resources (NR) 716 requirements. NR 712 submittal certifications are included in **Appendix A**.

## 1.1 Scope of Investigation

Since 2013, Tyco has completed multiple phases of site investigations to evaluate the presence of PFAS at and extending from the Site. These investigations relating to PFAS were completed under WDNR Bureau of Remediation and Redevelopment Tracking System (BRRTS) No. 02-38-580694. The investigations were conducted in accordance with the following work plans submitted to WDNR:

- Revised Site Investigation Work Plan (Arcadis 2018a), submitted to WDNR on April 20, 2018 and approved by WDNR on April 27, 2018
- Supplemental Site Investigation Work Plan (Arcadis 2019b), submitted to WDNR on February 5, 2019 and approved by WDNR on February 28, 2019
- Heath Lane Area Investigation Work Plan (Arcadis 2019d), submitted to WDNR on May 28, 2019 and approved by WDNR on July 11, 2019

The completed investigations evaluated the nature and extent of PFAS in groundwater, soil, surface water, sediment, and stormwater and characterized the hydraulic and hydrogeologic controls that influence PFAS transport. The investigations also included characterization of overburden and bedrock geology; installation of monitoring wells, piezometers, and stilling wells; monitoring of surface water and groundwater elevations; measurement of surface water velocity; and inspection of sewer lines. These investigations were completed in an adaptive, data-driven approach, incrementally expanding the investigation area and focusing data-collection methods to fill data gaps revealed by the work completed to that point. Following is a general timeline of investigations conducted at the Site; details of the specific activities conducted during each phase are presented in **Table 1**:

- October 2013 and April 2014: Samples for analysis of PFAS in soil and groundwater were first collected at the Site in 2013 and 2014 by O&M, Inc. These samples were collected as a supplemental task within a separate investigation of volatile organic compounds (VOCs) associated with fuel releases from the Outdoor Testing/Training Area (OTA) at the Site under BRRTS No. 03-38-001345.

- May through September 2016: The primary objective of the May through September 2016 investigation was to evaluate VOCs in groundwater and soil at the Site. The investigation was performed under BRRTS No. 03-38-001345. Sampling results indicated the presence of PFAS in groundwater, which initiated a site investigation for PFAS under BRRTS No. 02-38-580694. The results were presented in the 2016 Investigation Report submitted to WDNR on November 22, 2016 (Arcadis 2016).
- August and November/December 2017: Investigation activities were performed at the Site and in the surrounding area to further evaluate the presence and extent of PFAS under BRRTS No. 03-38-580694.
- May 29 through August 2018: Investigation activities were performed at the Site and in the surrounding area in accordance with the April 2018 Work Plan (Arcadis 2018a) to further evaluate PFAS. The results were presented in the Site Investigation Report submitted to WDNR on September 28, 2018 (Arcadis 2018b).
- August 29, 2018 through December 31, 2018: Investigation activities were performed at the Site and in the surrounding area in accordance with the April 2018 (Arcadis 2018a) and February 2019 (Arcadis 2019b) Work Plans to further evaluate PFAS. The data were presented in the Data Summary Report submitted to WDNR on March 8, 2019 (Arcadis 2019c).
- January 2019 through October 2019: Investigation activities were performed at the Site and in the surrounding area in accordance with the April 2018 (Arcadis 2018a), February 2019 (Arcadis 2019b), and May 2019 (Arcadis 2019d) Work Plans to further evaluate PFAS. The data were presented in the Data Summary Report submitted to WDNR on December 31, 2019 (Arcadis 2019g); the Data Summary Report – Heath Lane Investigation submitted to WDNR on February 4, 2020 (Arcadis 2020a); and the Southern Area Groundwater Evaluation Report submitted to WDNR on March 20, 2020 (Arcadis 2020b).

Tasks still in progress as of December 31, 2019, and the data obtained from that work, will be reported at a later date. These tasks include:

- Green Bay surface water investigation (Work Plan dated October 23, 2019 and verbally approved by WDNR in November 2019; Arcadis 2019e). Originally, this work plan was scheduled to be implemented in early spring once any ice had melted and boating conditions were safe to perform the work. However, the work was postponed because of State of Wisconsin COVID-19 restrictions (State of Wisconsin 2020a and 2020b), which implemented the Safer at Home Orders from March 25, 2020 through May 26, 2020. Implementation of the Green Bay surface water investigation is tentatively planned for early summer 2020, pending lifting of COVID-19 restrictions.
- Fish tissue sampling (Work Plan dated December 17, 2019 and approved by WDNR on April 8, 2020; Arcadis 2019f). Fish tissue sampling is tentatively scheduled for late summer 2020 during optimal fish sampling conditions.

In addition, WDNR independently conducted a deer study at the Site with access approval from Tyco. WDNR collected deer tissue on the Site in February 2020; however, the results of the deer tissue sampling and analysis are still pending. It is likely that WDNR, rather than Tyco, will prepare a report summarizing the sampling results.

## 1.2 Objectives of Investigation

The primary objective of the investigation is to delineate the nature and extent of PFAS in environmental media on the Site and extending from the Site. The information obtained from this Interim Site Investigation provides insight into the following nature and extent and transport of PFAS:

- Assessment of horizontal and vertical variations in PFAS concentrations in on-site and off-site groundwater
- Characterization of overburden hydrostratigraphy and bedrock lithology on and off the Site
- Refinement of horizontal and vertical delineation of PFAS in on-site soils
- Evaluation of spatial and temporal PFAS concentrations in on-site and off-site surface water and on-site stormwater
- Assessment of groundwater-surface water interactions on and off the Site
- Evaluation of horizontal variations in PFAS concentrations in on-site and off-site sediment

The site investigation data collected and presented in this report are part of an ongoing process to identify the nature and extent of PFAS in groundwater, soil, surface water, sediment, and stormwater as a result of historical operations at the Site.

## 1.3 Interim Remedial Actions

Based on the findings of PFAS site investigation activities completed to date, Tyco is performing the following voluntary interim remedial actions with WDNR's approval:

- Providing ongoing bottle water service to private drinking water well owners/users in the private well sampling area regardless of whether PFAS exceedances were detected in well samples.
- Maintaining and monitoring 40 point-of-entry treatment (POET) systems of private well owners/users in the private well sampling area installed for wells with PFAS detections.
- Developing and designing a municipal water line extension to service businesses and residences in the portions of the private well sampling area, and pursuing regulatory approval for same.
- Installing, operating, and maintaining a surface water treatment system in Ditch A. The treatment system went online in January 2019.
- Installing, operating, and maintaining a surface water treatment system in Ditch B. The treatment system went online in October 2019.
- Performing rehabilitation and maintenance of the sewer system located at the FTC.
- Assisting the City of Marinette with a biosolids disposal strategy and implementation.

# 2 SITE BACKGROUND

The FTC is a fire suppressant training, testing, and research and development facility built in the early 1960s. The Site encompasses approximately 380 acres, of which approximately 9 acres is used as the OTA. The OTA includes the Firefighting School area (where firefighting scenarios are simulated) and the Research and Development area (where product testing occurs). The location of the OTA is presented on **Figure 2**. The remaining area of the Site is used for manufacturing of metal fire suppressant components, warehousing, office or classroom activities, and parking or is undeveloped.

The Site is bordered by industrial and commercial properties to the west, and industrial, commercial, and Marinette School District property to the north. Agricultural land, a cemetery, a community center, and undeveloped land owned by the University of Wisconsin Board of Regents and private owners border the Site to the east and south.

Aqueous film-forming foams (AFFFs) historically have been used at the OTA as part of research and development, quality and military specification testing, and firefighting training activities. A detailed history of the use of foams at the OTA is provided in Tyco's response letter to WDNR's Additional Information Request letter, submitted March 12, 2018 (Tyco 2018). AFFF has not been sprayed outdoors at the OTA since November 2017.

Historically, Tyco discharged foam-containing wastewater produced at the FTC to the sanitary sewer system. Due to foaming issues at the City of Marinette's Publicly Owned Treatment Works (POTW), Tyco limited its output to approximately 2 gallons per minute (gpm). In March 2019, Tyco ceased discharging foam-containing wastewater into the sanitary sewer system. The sewer lines at the Site were televiewed and rehabilitated in 2019 to prevent potential release from the sewer line to soil or groundwater.

The area of investigation described in this report includes portions of the Site and off-site areas to the north, east, and south within the City of Marinette and the Town of Peshtigo. Off-site investigation activities were conducted in the City of Marinette and the Town of Peshtigo right-of-way (ROW) and on private properties under access agreements.

## 2.1 Geology, Hydrogeology, and Physical Setting

The Site is located in a low-relief plane, approximately one mile west of Green Bay (**Figure 1**). The area near the Site is drained by ditches that flow to Green Bay. These ditches are not formally named but are referred to in this report by letter (A, B, C, D, and E), as identified on **Figure 3**. Only one surface water feature, Ditch A, receives runoff from the FTC. Ditch A flows north to south through the FTC, passing west of the OTA. As of January 2019, the majority of on-site flow in Ditch A is intercepted and treated to remove PFAS before exiting the site boundary. Ditch A flows south from the FTC through a series of connecting ditches and streams through the Town of Peshtigo to Green Bay.

The surficial geology in the City of Marinette and Town of Peshtigo areas was mapped by the United States Geological Survey as glacial lake deposits, consisting mainly of clay, silt, and sand, overlying Ordovician dolomite bedrock (Oakes and Hamilton 1973). Site investigations completed to date generally agree with this geologic framework. Observed overburden deposits consist of a sequence of sands and finer-grained deposits that thicken above a sloping bedrock surface from less than 15 feet north and west of the FTC to greater than 100 feet along the Green Bay shoreline.

The glacial deposits vary in composition across the investigation area. In general, the bulk of the observed materials are sands, consistent with a glacial lake shore environment of beach facies and dunes. These deposits are interbedded with lower-permeability silts and clays, reflecting lower-energy glacial lake sediments. Dense glacial till is typically observed directly above the rock surface.

Beneath the FTC, sands extend to approximately 35 feet, coarsening with depth, overlying 10 feet or more of till above the bedrock surface. To the east and south, as the overburden thickens, the sands separate into distinct shallow and deep units separated by an aquitard consisting of silts and clay. The silts and clays behave as an aquitard that thickens toward Green Bay.

The water table throughout the investigation area is shallow, generally less than 5 feet below ground surface (bgs). Groundwater beneath the FTC is interpreted to flow generally eastward, with flow paths radiating along an arc from southeast to northeast, discharging to Green Bay and the Menominee River. Groundwater in the shallow sand unit discharges locally into the network of ditches flowing through the investigation area. Groundwater in the deeper sand unit may flow beneath ditches on flow paths that trend more directly toward Green Bay or the Menominee River.

A Conceptual Site Model (CSM) is being prepared and will be provided as a separate document. The CSM will include additional details regarding the site setting and the geologic/hydrogeologic background information for the site and surrounding area.

# 3 SITE INVESTIGATION

## 3.1 Site Preparation

Investigation activities were conducted on Tyco property, as well as in public ROWs and on private property. Prior to mobilization, permission for access to investigation locations was obtained from the appropriate jurisdictional authorities and private parties.

In accordance with Arcadis standard policies, at minimum, three lines of evidence were used to locate subsurface utilities. Prior to mobilization, Wisconsin One Call (i.e., Diggers Hotline) was contacted to provide utility mark-outs. Additionally, Ground Penetrating Radar Services, a private utility locating service, was contracted to perform locating services, such as ground-penetrating radar, and each location was inspected prior to conducting intrusive work. Available utility drawings were reviewed, and knowledgeable facility personnel were interviewed when possible.

## 3.2 Sample Identification Nomenclature

This section summarizes the nomenclature used to identify investigation locations in recent and historical site investigations.

Groundwater monitoring wells and piezometers:

- FTC – On-site monitoring well location completed circa 2013 to 2014
- MW – Off-site monitoring well location
- MW-XXB – Bedrock borehole location. Note that location was abandoned and never completed as a well.
- PZ – Piezometer used for groundwater sampling or groundwater elevation measurements. Note that for locations with names such as PZ-24-47, the first number is the location identifier and the second denotes the bottom depth (in feet) of the screened interval. PZ also denotes stream bed mini-piezometers installed to measure groundwater elevations directly below the ditches for comparison with surface water stage measurements.
- TW – Temporary wells, installed for groundwater elevation gauging

Grab groundwater sample, soil boring, and hydraulic testing boring locations:

- VAP – Vertical aquifer profile boring location, used to collect grab groundwater sample at one or more depths
- SB – Soil boring location. Note some locations identified by SB were also sampled at VAP locations.
- HPT – Hydraulic profile tool boring location. Note some locations identified by HPT were also soil boring locations.

Surface water investigation locations:

- SW – Surface water sample location

- STW – Stilling well/water elevation location
- SD – Sediment sample location

Other sample types:

- SW-FTC – Stormwater sample location at the Site
- OS – Stormwater runoff samples from OTA outfall locations
- SS – Soil sample location

The following discrepancies occurred with sample identifiers:

- There are two locations labeled as PZ-10: one is a ditch piezometer paired with a stilling well to measure groundwater-surface water elevations, and the other is a drilled piezometer used to collect groundwater samples at the FTC.
- There are two locations labeled as PZ-11: one is a ditch piezometer paired with a stilling well to measure groundwater-surface water elevations, and the other is a drilled piezometer used to collect groundwater samples at the FTC.
- Four surface water samples collected in 2017 (SS-01 through SS-04) have soil sample nomenclature.
- One surface water sample (SS-05) collected in 2018 has soil sample nomenclature. The sample data are not usable because the location was not recorded.
- Two stormwater samples (SW-01 and SW-04) collected in 2018 have surface water sample nomenclature.

## 3.3 Groundwater Investigation Activities

Groundwater investigation activities included evaluating the hydrostratigraphic characteristics of overburden soils through soil borings (including grain size analysis, VAP, bedrock investigation, slug testing, and HPT soundings); assessing groundwater movement by piezometer and well installations and water elevation measurements; and monitoring groundwater quality by groundwater sampling, as described in this section.

### 3.3.1 Vertical Aquifer Profile Borings

Groundwater samples collected at VAP borings both on and off the Site have been used to delineate the vertical and lateral distribution of PFAS in overburden groundwater. Groundwater samples were collected from VAP boring locations following the sample handling procedures described in **Section 4** and submitted for PFAS analysis. The groundwater PFAS results are discussed in **Section 5.1.3**. Soil boring logs and well/borehole reports are included in **Appendix B**. The on-site sampling locations are shown on **Figure 4** and the off-site sampling locations are shown on **Figure 5.** As per the WDNR-approved work plans, VAP borings were abandoned to the surface after completion of sampling. Borings completed in the overburden were abandoned using chipped bentonite or bentonite grout. Abandonment forms are included in **Appendix B**.

VAP borings were completed by two drilling methods: direct-push technology (DPT) and sonic drilling. Most of the borings were completed by DPT, which is faster and uses a smaller rig. However, many locations encountered running sands, an adverse drilling phenomenon in which loose sands flow into the borehole and drilling tools, plugging the drill string and preventing deeper advancement. In many instances, DPT boreholes could not penetrate the full thickness of the overburden. For that reason, a subset of the VAP locations was extended deeper using a larger sonic rig, which can maintain hole stability using temporary casing and drilling water. The two drilling methods employ different approaches for VAP sampling, as described below.

#### 3.3.1.1 Direct-Push Technology

VAP sampling via DPT was completed using drill rods with a stainless-steel well screen covered by a retractable sheath fixed at the base. VAP sampling was completed at each boring location following a top-down approach. Groundwater sampling was generally attempted every 5 to10 feet starting at the top of the saturated zone and extending downward to refusal. Once a target sampling depth was reached, the sheath was pulled up to expose the well screen to the subsurface formation. Groundwater samples were collected using a peristaltic pump after the well point had been purged to remove suspended solids. Because of the difficulty with running sands (described above), soil samples were not collected or described at most DPT borings. Water samples were collected at fixed depth intervals, as noted above, and not adjusted based on observed geology, except where the formation produced minimal groundwater. If a sample could not be collected from an interval (i.e., due to insufficient yield), the drill rod was pushed 5 feet deeper, and another attempt to collect a sample was conducted. After sample collection, drill rods were removed from the subsurface and decontaminated before being advanced to the next sample interval.

*October 2013 and April 2014*

O&M, Inc. collected preliminary groundwater samples from 15 locations (FTC-58-S to FTC-63-S, FTC-71 to FTC-77, FTC-82, and FTC-83) on the Site in fall 2013 and spring 2014. All locations were completed on the Site, in the vicinity of the OTA, as shown on **Figure 4**.

*June through August 2016*

From June through August 2016, soil characterization was completed at 45 boring locations as part of analysis of the nature and extent of VOCs. Drilling activities were completed by Dakota Technologies Company, LLC of Maple Grove, Minnesota, with oversight from an Arcadis field geologist. Soil cores were collected from 23 locations (SB-1 through SB-16 and SB-19 through SB-25) using direct-push drilling and logged using Unified Soil Classification System guidelines. Note that the primary objective of the 2016 investigation was delineation of VOCs in groundwater, and therefore PFAS samples were not collected from all completed locations.

Groundwater PFAS samples were collected from 12 VAP boring locations (SB-4, SB-5, SB-9, SB-15, SB-16, SB-29, SB-30, SB-32, SB-35, SB-45 to SB-47) between June and August 2016. The boring locations were installed to a maximum depth between 35 and 50 feet bgs. All borings where PFAS samples were collected were located on the Site, either near the OTA or along the northern and eastern site boundary. Boring locations are shown on **Figure 4**.

*November and December 2017*

In November and December 2017, DPT techniques were used to advance 24 off-site borings (VAP-1 to VAP-24) until refusal. Installation of the boring locations reached a maximum depth between 18 and 62 feet bgs. Groundwater samples were collected at multiple depths from these borings. VAP borings were located off site and generally east and southeast of the FTC, in portions of the City of Marinette and Town of Peshtigo. The VAP locations are shown on **Figure 5**.

*June through August and October through November 2018*

In June and July 2018, DPT techniques were used to drill and collect groundwater samples at eight off-site boring locations (VAP-31 to VAP-33 and VAP-35 to VAP-39) to a maximum depth between 20 and 55 feet bgs, depending on the depth of refusal. VAP borings were located off site and generally northeast and southeast of the FTC, in portions of the City of Marinette and Town of Peshtigo. VAP locations are shown on **Figure 5**.

Based on the PFAS results associated with the 16- to 20-foot-bgs interval at VAP-36 (i.e., the VAP location farthest to the southeast of the Site), the VAP boring at VAP-36 was repeated (VAP-36[2]) and eight additional VAP borings (VAP-40 to VAP-47) were completed southeast of the Site in August 2018 to a maximum depth between 20 and 40 feet bgs. Additionally, two soil borings (SB-51 and SB-52) were completed near former VAP-21 and VAP-36 to gather soil characterization data.

Based on the June 2018 PFAS results for VAP-36, four additional VAP borings (VAP-48 to VAP-51) were completed in October and November 2018. The borings were advanced to a maximum depth of 30 to 37 feet bgs, depending on the encountered depth of refusal. Groundwater samples were collected at multiple depths from these borings. VAP locations are shown on **Figure 5**.

#### 3.3.1.2 Sonic Drilling

VAP samples were collected in sonic-drilled boreholes in three phases to evaluate groundwater quality across the full thickness of the overburden in places where DPT borings were not capable of penetrating the full depth. The drilling and sampling approach for each phase is described below.

*August 2017*

In August 2017, 36 groundwater PFAS samples were collected from four VAP boring locations (PZ-23 and SB-48 to SB-50) to a maximum depth between 50 and 85 feet bgs. The borings were advanced using sonic drilling techniques coupled with the Push-Ahead VAP system from Cascade Drilling Inc. The Push-Ahead system allows for the collection of groundwater samples from portions of the aquifer undisturbed by drilling. Results obtained through use of this method reliably characterize variations in constituent concentrations related to changes in aquifer depth and subsurface lithology and ensure that a full concentration profile is obtained at each investigation location. Groundwater samples were collected at multiple depths from these borings, located off site to the east and northeast of the FTC. Locations are shown on **Figure 5**.

*June through August 2018*

In June, July, and August 2018, VAP groundwater sampling was completed via sonic drilling techniques at five locations (VAP-26 to VAP-30) to evaluate the deeper portion of the overburden (i.e., deeper than a

DPT rig was capable of drilling during previous investigation work). The sonic VAP locations, which are shown on **Figure 5**, included:

- Four locations southeast of the Site near previously completed (2017) DPT VAP locations (VAP-26 to VAP-28 and VAP-30)
- One location east of the Site (VAP-29)

Note that VAP-30/MW-100B was originally planned to be completed on the southern portion of the Site; however, the proposed location proved to be inaccessible. As such, the boring and well cluster were relocated to Madsen Road, as approved by WDNR via email on July 17, 2018. Two of the VAP borings (VAP-26 and VAP-30) were collocated with bedrock investigation locations (MW-101B and MW-100B, respectively). At these locations, VAP sampling was conducted in the same boring used to advance the well casing to the bedrock surface.

At the five sonic VAP locations, boreholes were advanced to the top of bedrock, which was encountered between approximately 60 and 100 feet bgs. Where low-permeability beds were encountered (e.g., a silt, clay or till bed at least 5 feet thick), drillers set a temporary isolation casing to limit potential drag-down from the sand unit. Drillers used potable water with added fluorescein dye throughout the VAP drilling to allow for evaluation of the presence of dye as a marker for drilling water. Continuous soil cores were collected and logged by an Arcadis field geologist. The soil boring logs and well/drillhole reports are included in **Appendix B**.

VAP samples were collected using a 5-foot-long sampling assembly consisting of a 3-foot screen and standpipe. Once a sampling interval was selected and the sonic drill casing was set to the bottom of the interval, the sampling assembly was deployed inside the drill casing. With the screen at the target depth, the drill casing was withdrawn to expose the screen. A packer on a 3-inch drop pipe was then lowered into the drill casing to the top of the sampling assembly. When the drop pipe was seated on the screen assembly, the packer was inflated to isolate the sample zone.

VAP samples were collected only from zones that were found to have sufficient yield to allow collection of representative samples (VAP-26, VAP-28 to VAP-30). Tests were terminated without sampling (VAP-27) if:

- Formation yield was insufficient to allow purging of two test-interval volumes within a two-hour period without exceeding the 10 feet of drawdown.
- Dye concentrations in purge water indicated the presence of greater than approximately 5 percent drilling water after two hours of purging.

A total of 19 VAP samples were attempted in the five sonic VAP boreholes. As summarized in **Table 2**, 10 tests were terminated without collecting a sample due to insufficient yield. Within the deep overburden, none of the attempted groundwater samples could be collected; however, samples were collected at four locations (VAP-26 and VAP-28 to VAP-30) from a more permeable interface with the underlying bedrock (maximum depth between 69 and 102 feet bgs).

In compliance with the WDNR-approved work plan, nine sonic VAP samples were successfully collected, after purging a minimum target volume and reaching the target dye concentration. In six instances where samples were collected, the percentage of fluorescein dye observed in purge water after at least two

hours of pumping appeared slightly above the 5 percent target based on comparison to prepared visual standards (**Table 2**). Additional samples were collected to quantify the percentage of dye present in order to better document the potential drilling water interference. In each of these six instances, a sample of purge water and an associated sample of dyed drilling water were analyzed by Ozark Underground Laboratories to confirm the visual standards (**Appendix C**). Measured dye concentrations ranged from approximately 2.2 percent to 16.5 percent.

*August 2019*

In August 2019, two borings (VAP-52 and VAP-53), which are shown on **Figure 5,** were advanced to 102 and 107 feet bgs, respectively, southeast of the Site. Twelve groundwater samples were collected following the same approach as the 2018 sonic VAP borings, described above.

### 3.3.2 Shallow and Intermediate Monitoring Well Installations and Development

Two sets of shallow and intermediate monitoring wells were installed off site, adjacent to bedrock investigation locations VAP-26/MW-101B and VAP-30/MW-100B, which are shown on **Figure 5**. These monitoring well pairs were installed south and southeast of the Site to improve understanding of groundwater quality and flow patterns in this area.

The shallow and intermediate well pairs were installed using a sonic drill rig. Wells were constructed and finished in accordance with Wisconsin Administrative Code (NR 141). **Table 3** provides the well construction details. Well construction logs and development forms are included in **Appendix D**.

The MW-101 pair (MW-101-16 and MW-101-72) was installed and the associated wells were developed in June and July 2018. MW-101-16 was installed as a water table well screened from 6 to 16 feet bgs; MW-101-72 was installed at the base of the overburden and screened from 62 to 72 feet bgs. The MW-100 pair (MW-100-32 and MW-100-68) was installed and developed in August 2018. MW-100-32 was installed within approximately the same interval as nearby private drinking water wells and screened from 22 to 32 feet bgs; MW-100-68 was installed at the base of the overburden and screened from 58 to 68 feet bgs. Groundwater sample were collected at multiple depths from these well during the August 2018 and August 2019 monitoring events.

### 3.3.3 Bedrock Investigation

The bedrock investigation was conducted to evaluate the hydrostratigraphy of shallow bedrock and to ascertain the presence of PFAS at one existing on-site production well (PW-1) and three new bedrock borings. The on-site bedrock boring (MW-102B) and production well (PW-1) are shown on **Figure 4**. The off-site bedrock borings (MW-100B and MW-101B) are shown on **Figure 5**. As per the WDNR-approved work plan, VAP borings were abandoned to the surface after completion of sampling. Borings extending into bedrock were abandoned using bentonite-cement grout. The bedrock boring and abandonment logs associated with MW-100B to MW-102B are included in **Appendix B** and the geophysical logging reports for the on-site production well are provided in **Appendix E**.

#### 3.3.3.1 Production Well

In June 2018, a groundwater sample for PFAS analysis was collected from the on-site production well (PW-1; **Figure 4**) using the existing pump in place following the sample handling procedures as described in **Section 4**. After sample collection, the pump was disconnected and removed from the well.

In June 2018, geophysical logging was conducted at PW-1, in accordance with the April 2018 Work Plan, to evaluate the lithologic, structural, and hydraulic characteristics of the bedrock. The geophysical logging report for the on-site production well is provided in **Appendix E**.

Based on preliminary results of geophysical logging, all measurable flow into the well under pumping conditions was interpreted to enter from either the base of the casing at 66 feet bgs or from a notable fracture just below the casing at 67 feet bgs. No measurable flow could be detected entering the well below 67 feet, although the borehole was open to approximately 147 feet bgs. The packer testing scope was modified from the proposed scope provided in the April 2018 Work Plan to confirm this observation. A single packer was deployed below the fracture at 67 feet. The zones above and below the packer were each tested separately via short pumping tests to evaluate their yield. The results showed that the overburden is the only significant water-bearing interval in the borehole (i.e., specific capacity of the shallow zone was found to be similar to that of the full well; the yield of the deeper zone was too low to measure). Based on these results, no additional water samples were collected. The whole-well water sample collected prior to geophysical logging is assumed to be representative of water quality in the shallow zone. Collecting deeper water samples was determined to be infeasible; the low yield of the rock would have prohibited adequate purging to collect representative samples.

In June 2019, PW-1 was abandoned by Ground Source, Inc. of De Pere, Wisconsin, in accordance with Wisconsin Administrative Code NR 812. The steel well casing was cut to 18 inches below grade, and the well was filled with bentonite to the top of casing and hydrated. The ground surface was patched to match the surrounding area. The production well abandonment form is included in **Appendix B**.

#### 3.3.3.2 Bedrock Borings – MW-100B, MW-101B, and MW-102B

In June, July, and August 2018, sonic techniques were used to drill bedrock borings at three locations in accordance with the April 2018 Work Plan. The on-site bedrock boring (MW-102B) is shown on **Figure 4**. The off-site bedrock borings (MW-100B and MW-101B) are shown on **Figure 5**. As described in **Section 3.3.1.2**, a temporary isolation casing was used at the top of the till observed above bedrock. A permanent steel surface casing was also installed at each location, grouted into a “rock socket,” extending 10 feet below the top of competent bedrock. Soil logging of the overburden was performed as described in **Section 3.3.1**. Bedrock cores were described by an Arcadis geologist in accordance with the April 2018 Work Plan. Because sonic drilling typically pulverizes rock core samples, detailed logging of fractures was not performed. Soil and bedrock descriptions are included in boring logs provided in **Appendix B**.

As proposed in the April 2018 Work Plan, each boring was initially terminated at a total depth of 150 feet bgs. MW-101B and MW-102B were completed to this depth in June 2018; however, based on the results of open-borehole falling head tests, observations of water level recovery following drilling, and preliminary geophysical logging, no fractures with significant yield were identified. As such, drilling at each boring was continued to a total depth of 205 feet bgs, and falling head tests were conducted periodically during the

boring advancement. In August 2018, MW-100B was completed to 150 feet bgs; at this total depth, a falling head test was performed to assess yield. Because no significant yield was found, MW-100B was also extended to a total depth of 205 feet bgs.

Geophysical logging at MW-101B was completed in June 2018 to 150 feet bgs and then to 205 feet bgs in August 2018, after the borehole had been deepened. Geophysical logging at MW-100B and MW-102B was completed during the August 2018 mobilization. The geophysical logging reports for the bedrock borings are provided in **Appendix E**.

Geophysical logging and other field observations showed that each of the bedrock boreholes had a low water yield. No fractures of sufficient transmissivity were found that would meet the minimum requirements for purging to obtain a representative groundwater sample; therefore, no packer tests were completed in the bedrock. The preliminary findings from the bedrock boreholes were communicated to WDNR in teleconferences on August 16 and 23, 2018. During these teleconferences and in an email from Tyco to WDNR on August 24, 2018, borehole abandonment rather than bedrock well installation was proposed. WDNR approved this change to the April 2018 Work Plan in an email dated August 24, 2018, and the bedrock borings were grouted to the surface during the week of September 3, 2018. Abandonment logs are included in **Appendix B**.

### 3.3.4 Groundwater Monitoring

Groundwater samples were collected for PFAS analysis following the sample handling procedures described in **Section 4**. The on-site sampling locations are shown on **Figure 4** and the off-site sampling locations are shown on **Figure 5**. Off-site nested monitoring wells are shown on **Figure 6**. The results are presented in **Section 5.1.2**.

Groundwater sampling events were conducted in August 2018 and August 2019 at 19 monitoring wells (FTC-2S, FTC-2D, FTC-34S, FTC-34D, PZ-1S, PZ-1D, PZ-9, PZ-14S, PZ-14D, PZ-16S, PZ-16D, PZ-19, PZ-22S, PZ-22D, PZ-23, MW100-32, MW100-68, MW101-16, and MW101-72). Groundwater sampling was initially intended to be completed at 22 monitoring wells; however, three of the wells (PZ-4S, PZ-4D, and PZ-11) were inaccessible due to the presence of standing water (PZ-4S/D) and overgrown vegetation in a heavily wooded area (PZ-11).

Low-flow sampling procedures were employed for groundwater sampling using a peristaltic pump and dedicated down-well disposable tubing. Analytical samples were collected at each well after groundwater parameters (i.e., dissolved oxygen, pH, specific conductivity, and oxidation-reduction potential) stabilized. Groundwater samples were collected for PFAS analysis following the methodology and sample handling procedures described in **Section 4**.

### 3.3.5 Hydraulic Conductivity Testing

#### 3.3.5.1 Slug Testing

*2016*

Slug testing was completed at six monitoring wells to characterize hydraulic conductivity of unconsolidated geologic units in the immediate vicinity of the tested wells. Wells included for slug testing

(PZ-1S, FTC-2S, PZ-3, PZ-6S, PZ-14S, and PZ-22S) were selected based on location, well screen length, well depth, and geology at the well screen interval. Slug testing was conducted on May 25 and 26, 2016. The well locations are shown on **Figure 4.** The slug testing results are provided in **Appendix F**.

Two methods of hydraulic conductivity testing were utilized, including bail-down and pneumatic slug tests. Bail-down tests were conducted at wells where the groundwater level bisected the well screen, while pneumatic slug tests were conducted at wells with fully submerged screens. The methodologies utilized during the slug testing are described below:

- Bail-down slug tests were conducted at wells FTC-2S and PZ-6S, which are both screened in unconsolidated sandy soils. The tests were initiated by removing a specific volume of groundwater from the well (two tests with removal of 500 milliliters and one test with removal of one liter at each well) using a bailer. Groundwater level recovery data were then recorded using a pressure transducer until approximately 90 percent recovery was observed.
- Pneumatic slug tests were conducted at wells PZ-1S, PZ-3, PZ-14S, and PZ-22S. Wells PZ-14S and PZ-22S are screened in the surficial sand unit and wells PZ-1S and PZ-3 are screened in the underlying silt-clay unit. Slug tests were conducted at these locations using a specialized well apparatus to pressurize the air column in the well, and thereby force groundwater out through the well screen to create an artificial depression in the water level. Once the groundwater level had stabilized at the lower equilibrium point, the air column in the well was rapidly depressurized to allow for groundwater level recovery to the original equilibrium point. The change in the groundwater level was recorded using a pressure transducer during each test until approximately 90 percent recovery was observed.

*2018*

In September 2018, slug testing was completed at four (two intermediate and two bedrock) newly installed monitoring wells (MW-100-32, MW-100-68, MW-101-16, and MW-101-72; **Figures 5** and **6**) to evaluate hydraulic conductivity. Rising and falling head tests were completed with a solid slug with a recording interval of 0.5 second. The slug testing results are provided in **Appendix F**.

#### 3.3.5.2 Hydraulic Profiling Tool

HPT is a specialized soil characterization technique that uses a probe fixed to the end of DPT drill rods. The probe continuously injects a small water stream into the soil and measures and records the pressure required to maintain flow of the water stream as the direct-push rods are advanced through the subsurface. The resulting pressure-depth profile produced by the HPT technique is an indicator of subsurface permeability and hydraulic conductivity, which can be used to provide evidence of soil types encountered in the geological profile.

*2016*

Soil characterization was also completed at boring locations SB-26 through SB-47 via use of an HPT (**Figures 4** and **5).** HPT profiling data collected during the 2016 investigation activities were combined with soil logging results for adjacent boring locations to determine subsurface geology at HPT boring locations. Confirmation soil cores were also collected at SB-35 and SB-47 using direct-push drilling and logged in accordance with Unified Soil Classification System guidelines to assist with interpreting the site

geology. Boring logs are included in **Appendix B** and a report summarizing HPT profiling results is provided in **Appendix G.**

*2019*

A total of 17 HPT borings (HPT-22 to HPT-38) were completed in July 2019 to assess the relative permeability vertically within the overburden. Boring locations are shown on **Figure 5**. Borings extended downward to refusal or until low-permeability, fine-grained soils were encountered. HPT soundings and data analysis were completed by Dakota Technologies Company, LLC, of New Hope, Minnesota.

At two HPT locations, HPT-25 and HPT-35, soil borings (HPT-25 and HPT-35) were completed adjacent to the HPT boring. At these locations, continuous soil cores were collected using a sonic drill rig and logged by an Arcadis field geologist. After the completion of each HPT location, the borings were abandoned. The soil boring logs are provided in **Appendix B** and the HPT reports are included in **Appendix G.**

### 3.3.6 Piezometer Installations

#### 3.3.6.1 Shallow Temporary Piezometer Installations

In October and November 2018, five shallow temporary piezometers (TM-01 to TM-05) were installed to evaluate the groundwater flow patterns southeast of the Site. The locations of the shallow temporary piezometers are shown on **Figure 5.**

The shallow temporary piezometers were installed using an auger drill rig. During drilling activities, continuous soil cores were collected and logged by an Arcadis field geologist. Each shallow temporary piezometer was screened near the top of the water table, constructed with 10-foot-long by 2-inch-diameter Schedule 40 polyvinyl chloride (PVC) 0.010-inch slotted screens at an approximate depth of 10 to 20 feet bgs and a 2-inch-diameter Schedule 40 PVC riser to the surface. At each location, filter pack sand was placed to approximately 2 feet above the screen, with a filter pack seal of fine sand to at least 2 feet above the filter pack. The annulus at each location was sealed using bentonite to the surface. **Table 3** provides the construction details for the shallow temporary piezometers. Soil boring logs are included in **Appendix B** and construction logs are provided in **Appendix D**.

#### 3.3.6.2 Piezometer Installation and Development

In June and August 2019, 40 piezometers were installed at 19 locations (PZ-24 to PZ-38 and PZ–41 to PZ-44) to the north, east, and southeast of the Site (**Figures 5** and **6**). Drilling and well construction were performed by Braun Intertec Corporation of La Crosse, Wisconsin, with oversight by an Arcadis field geologist. Piezometer clusters were installed at 15 (PZ-24, PZ-28 to PZ-38, and PZ-41 to PZ-43) of the 19 locations, with each containing up to three piezometers screened at different intervals within the overburden. Installation locations of off-site piezometer clusters were adjusted slightly based on access constraints or field conditions. Specifically, PZ-27 was shifted approximately 500 feet to the northwest.

Continuous soil cores were collected and logged at the first borehole drilled at each piezometer location. The initial borehole at each location was advanced to bedrock or until reaching a confining unit above the bedrock surface. The number of wells at each location and screened intervals of each well were

determined based on observed lithology and, where applicable, depths of nearby wells and historical VAP results. The deepest piezometer at each location was set within the logged borehole, and shallower wells were installed in adjacent boreholes (within approximately 5 feet of each other) without collecting soil cores. Shallow piezometers were screened at or near the water table. Because of the shallow depth of the water table (e.g., typically less than 5 feet bgs), most piezometers were constructed slightly below the water table (e.g., screened 7 to 17 feet bgs) to permit construction of a sufficient surface seal above the screened interval. Intermediate and deeper piezometers were screened in permeable sand units within the overburden.

Piezometers were installed using a sonic drill rig and constructed in accordance with Wisconsin Administrative Code NR 141. Piezometers were constructed with 5- or 10-foot-long by 2-inch-diameter Schedule 40 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 top of screen, followed by a 2-foot filter pack seal of granular bentonite, and the piezometer was grouted to a depth of 2 feet bgs and completed as a flush-mount. Newly installed piezometers were developed by Braun Intertec Corporation in August 2019. The piezometers were surged with a block and pumped. **Table 3** provides the construction details for the piezometers. Soil boring logs are included in **Appendix B**, and construction logs and development forms are included in **Appendix D**.

### 3.3.7 Groundwater Elevation Gauging

Three rounds of groundwater level measurements were completed since 2018 within the expanded network of wells and piezometers. The events were conducted as follows:

- August 2018, in conjunction with groundwater sampling event. Approximately 19 locations were gauged, including the recently completed off-site monitoring wells (MW-100-32, MW-100-68, MW-101-16, and MW-101-72, **Figure 7**).
- November 2018, a supplemental gauging event was completed, including the newly completed temporary piezometers (TW-01 to TW-05, **Figure 8**).
- October 2019, comprising approximately 70 locations, including recently completed off-site piezometers (**Figures 9** and **10**) and surface water gauging locations.

Water levels were manually measured using an electronic water level meter, relative to a surveyed measuring point. Water level measurements are provided in **Table 4**. Measurement locations are provided on the potentiometric surface figures shown on **Figures 7** through **10**.

## 3.4 Surface Water

Surface water samples were collected from within the ditches on the Site and in the surrounding area and from off-site ponds to evaluate the nature and extent of PFAS present in surface water.

### 3.4.1 Surface Water Sampling

*February 2017*

Initial surface water samples were collected from four on-site locations (SS-01, SS-02, SS-03, and SS-04) to evaluate site surface water conditions in 2017. The on-site sampling locations are shown on **Figure 4**. The sampling locations were accessed by walking or wading, and samples were collected using a clean laboratory-supplied bottle and analyzed for PFAS. The sampling event was conducted as part of a separate investigation under a separate BRRTS number (03-38-001345).

*May through July 2018*

The first of the three seasonal sampling events outlined in the April 2018 Work Plan was completed in May 2018 to capture spring rain conditions. Additional sampling was conducted in June and July 2018 (summer rain conditions) to confirm the May 2018 results and expand the sampling area. On-site surface water sampling locations are shown on **Figure 4** and off-site sampling locations are shown on **Figure 5**.

The May 2018 event included 18 sampling locations:

- On-Site Ditch A, four locations (SW-22, SW-24, SW-25, and SW-27)
- Off-Site Ditch A, five locations (SW-10, SW-11, SW-12, SW-13, and SW-26)
- On-Site Ditch A Pond, one location (SW-23)
- Off-Site Ditch A Pond, two locations (SW-14 and SW-19)
- Off-Site Ditch B, six locations (SW-15, SW-16, SW-17, SW-18, SW-20, and SW-21)

In June (pond) and July (ditch) 2018, 19 locations were sampled:

- On-Site Ditch A, two resample locations (SW-24 and SW-27)
- Off-Site Ditch A, two resample locations (SW-10 and SW-12) and one new location (SW-34)
- Off-Site Ditch B, five resample locations (SW-15, SW-16, SW-17, SW-18, and SW-20) and one new location (SW-32)
- Off-Site Ditch C, four new locations (SW-28, SW-29, SW-30, and SW-31)
- Off-Site Ditch D, two new locations (SW-33 and SW-36)
- Off-Site Ditch E, one new location (SW-35)
- Off-Site Ditch A Pond, one location in June (SW-19)

*September and October 2018*

The second of the three seasonal sampling events outlined in the April 2018 Work Plan was completed in September and October 2018 to capture fall rain conditions. The September (ponds) and October (ditch) event included resampling all 27 locations sampled from May through July 2018:

- On-Site Ditch A, four locations (SW-22, SW-24, SW-25, and SW-27)
- On-Site Ditch A Pond, one location (SW-23)

- Off-Site Ditch A, six locations (SW-10, SW-11, SW-12, SW-13, SW-26, and SW-34)
- Off-Site Ditch B, seven locations (SW-15, SW-16, SW-17, SW-18, SW-20, SW-21, and SW-32)
- Off-Site Ditch C, four locations (SW-28, SW-29, SW-30, and SW-31)
- Off-Site Ditch D, two locations (SW-33 and SW-36)
- Off-Site Ditch E, one location (SW-35)
- Off-Site Ditch A Pond, two locations (SW-14 and SW-19)

*March/April, May, August, and October 2019*

The last of the three seasonal sampling events (ditch and pond), as outlined in the April 2018 and February 2019 Work Plans, was completed in March and April 2019 to capture snowmelt conditions. Additional seasonal sampling was conducted in August 2019 along select Ditch A locations and one on-site pond. Additional pond sampling was also conducted in May and October 2019 to further evaluate PFAS in surface water.

The March/April 2019 event included 28 sampling locations:

- On-Site Ditch A, four locations (SW-22, SW-24, SW-25, and SW-27)
- Off-Site Ditch A, six locations (SW-10, SW-11, SW-12, SW-13, SW-26, and SW-34)
- Off-Site Ditch B, seven locations (SW-15, SW-16, SW-17, SW-18, SW-20, SW-21, and SW-32)
- Off-Site Ditch C, four locations (SW-28, SW-29, SW-30, and SW-31)
- Off-Site Ditch D, two locations (SW-33 and SW-36)
- Off-Site Ditch E, one location (SW-35)
- On-Site Ditch A Pond, one location (SW-23)
- Off-Site Ditch A Pond, one resample location (SW-14)
- Off-Site Ditch E Pond, two new locations (SW-37 and SW-38)

In May 2019, three locations were sampled:

- Off-Site Pond, three locations (SW-14, SW-37, and SW-38)

In August 2019, six locations were sampled:

- On-Site Ditch A, four locations (SW-22, SW-24, SW-25, and SW-27)
- Off-Site Ditch A, one location (SW-26)
- On-Site Ditch A Pond, one location (SW-23)

In October 2019, three locations were sampled:

- Off-Site Ditch A Pond, one location (SW-14)
- Off-Site Ditch A and E Pond, two locations (SW-37 and SW-38)

The collection of surface water samples in 2018 and 2019 was performed in accordance with the April 2018 and February 2019 Work Plans, using a decontaminated beaker attached to a pole, and then pouring the sample into appropriate laboratory-supplied containers. Samples were collected for analyses following the sample handling procedures described in **Section 4**. Sampling locations were accessed by foot, and off-site locations were in public ROW areas. Access to the private ponds was granted by the property owners. The private ponds were sampled from the edge of the water.

Surface water samples were analyzed for PFAS and total suspended solids (TSS). Based on the May 2018 sample results, the parameter list was expanded in July and October 2018 to include alkalinity, pH, total dissolved solids (TDS), and total organic carbon (TOC) for select sample locations to obtain data for the water treatment evaluation. Sample locations for which the additional parameters were collected in July 2018 include SW-10, SW-15, SW-16, SW-17, SW-18, SW-20, SW-24, and SW-27 through SW-36. In October 2018, the additional parameters were collected for SW-15 and SW-27.

### 3.4.2 Groundwater-Surface Water Interaction

Stilling wells and mini-piezometers were installed to measure seasonal groundwater and surface water elevations and evaluate whether groundwater is discharging to the ditches. In 2018, 11 stilling well and mini-piezometer pairs were installed for monitoring. Four locations (PZ-01/STW-01 to PZ-04/STW-04) were installed on Ditch A in June 2018, five locations (PZ-05/STW-05 to PZ-09/STW-9) were installed on Ditch B in July 2018, and two additional locations (PZ-10/STW-10, and PZ-11/STW-11) were installed on Ditch A in November 2018. A fifth location proposed to be installed on Ditch A to the south of the Site on University Drive in accordance with the April 2018 Work Plan was not installed due to the presence of several utilities in the road ROW. Two sets of stilling wells (PZ-39/STW-39 and PZ-40/STW-40) were installed on Ditch A in August 2019 in accordance with the May 2019 Work Plan. The on-site locations of the stilling well and mini-piezometer pairs are shown on **Figure 4** and the off-site locations are shown on **Figure 5**. Ditch mini-piezometers were constructed using a 6-inch drive-point steel screen connected to two 4-foot sections of 1-inch steel pipe. Stilling wells were constructed of perforated drainpipe attached to a stake, with the bottom of pipe a few inches above the sediment surface. Stilling wells were also installed in the middle of the ditch within 3 feet of each mini-piezometer.

In accordance with the April 2018 and February 2019 Work Plans, seasonal monitoring events were conducted in August 2018 to capture summer dry conditions, October 2018 to capture fall rain conditions, March/April 2019 to capture winter snowmelt conditions, and May 2019 to capture spring rain conditions. Transducers were deployed in each mini-piezometer and stilling well and remained in place for at least two weeks. Manual water level measurements were collected from each well using a water level meter prior to transducer deployment and before retrieval. Transducer data from the August 2018, October 2018, March/April 2019, and May 2019 events were barometrically corrected, converted to feet above mean sea level (amsl), and plotted alongside precipitation data on hydrographs (**Appendix H**). Data from mini-piezometer and stilling well pair STW-09/PZ-09, which are located approximately 700 feet upstream of the Ditch B discharge point into Green Bay, were also plotted alongside Green Bay surface water elevation data to assess the interaction between the bay and nearby surface water and groundwater. Manual water level measurements collected in the field are included in **Table 5**. Manual water level measurements were inadvertently not collected during the June 2018 monitoring event. These data are

required to correlate transducer pressure data to water levels relative to a surveyed monitoring point; therefore, the transducer data could not be converted to elevations and are not included in this report.

A surface water elevation gauge was not installed in the Little River as proposed in the May 2019 Work Plan. A National Oceanic and Atmospheric Administration (NOAA) gauging station was identified in Menominee, Michigan, and used instead for gauging surface water elevations. The gauging station measures hourly Green Bay water levels based on North American Vertical Datum of 1988 (NAVD 88).

### 3.4.3 Surface Water Hydrodynamics

Surface water velocity measurements were collected to support evaluation of surface water hydrodynamics and potential sediment erosion. The measurements were used to calculate stream flow in gpm to evaluate off-site transport. Stream velocity measurements were collected in 2018 and 2019. Stream velocity locations were collocated with surface water sampling locations, and measurements were collected on the same days as sampling events. On-site velocity measurement locations are shown on **Figure 4**. Off-site velocity measurement locations are shown on **Figure 5**. Velocity measurements are summarized in **Appendix I**. These measurements were used to calculate surface flow and discharge for hydrodynamic data analysis, and results are summarized in **Section 5.2.3**.

*May 2018*

Stream velocities were collected at 14 locations along Ditch A and Ditch B (SW-10, SW-11, SW-12, SW-13, SW-15, SW-16, SW-17, SW-18, SW-20, SW-21, SW-24, SW-25, SW-26, and SW-27) as shown on **Figure 4** and **Figure 5**. At each location, velocity was measured along a transect using a Hach FH950 portable velocity flow meter and accessed by walking or wading. During the initial May 2018 measurement event, velocities were recorded at three points along the transect (center and either side of center) in accordance with the April 2018 Work Plan. Measurements were taken at 60 percent of the total water depth below the water surface.

*July 2018 through August 2019*

During subsequent measurement events, stream velocity was recorded at additional locations along the transect to better refine the understanding of flow conditions and channel geometry. Stream velocity was measured during three additional events in 2018 and three events in 2019 to support further evaluation of surface water hydrodynamics and potential sediment erosion.

Locations of stream velocity measurements (**Figures 4** and **5**) during each event include:

- Twelve locations in July 2018 along Ditches A, B, C, and D (SW-10, SW-15, SW-16, SW-17, SW-18, SW-20, SW-29, SW-30, SW-31, SW-32, SW-33, and SW-34)
- Five locations in August 2018 along Ditches A and B (SW-15, SW-16, SW-17, SW-24, and SW-27)
- All 24 locations in October 2018 along Ditches A, B, C, D, and E
- All 24 locations in March and April 2019 along Ditches A, B, C, D, and E
- All 24 locations in May 2019 along Ditches A, B, C, D, and E
- Six locations in August 2019 along Ditch A (SW-12, SW-22, SW-24, SW-25, SW-26, and SW-27)

At each measurement location, a transect was selected, total width was recorded, and depth and velocity were measured every 6 inches. The velocity was measured along a transect using a Hach FH950 portable velocity flow meter. Measurements were taken every 6 inches across the stream, regardless of stream width, to refine the understanding of flow conditions and channel geometry. Measurements were taken at 60 percent of the total water depth below the water surface.

## 3.5 Sediment

Sediment samples were collected from within the ditches on and near the Site to evaluate whether ditch sediment is a potential source of PFAS to ditch surface water. Sediment samples were collected June 12 through 14, 2018 in accordance with the April 2018 Work Plan and analyzed for PFAS, TOC, and grain size. Results are presented in **Section 5.3.**

Twenty-seven sediment samples were collected from 18 locations (SD 1 through SD-18), as shown on **Figure 4** (on-site locations) and **Figure 5** (off-site locations)**.** Four on-site locations (SD-12, SD-14, SD-16, and SD-17) were selected to represent four transects for collection of three samples along each transect crossing the ditch as outlined in the April 2018 Work Plan. At the remaining sediment sampling locations, one sediment sample per location was collected. Sediment samples were collected following procedures described in the April 2018 Work Plan, including collection of samples to a depth of 0.5 foot using a hand-pushed Lexan plastic core tube. Samples were collected for analyses following the sample handling procedures described in **Section 4**. Sediment descriptions and field data are presented in **Table 6**. Sampling locations were accessed by foot, and off-site locations were in public ROW areas.

## 3.6 Stormwater

Stormwater runoff samples were collected from the Site to evaluate stormwater runoff from the OTA and were analyzed for PFAS and TSS. The results are presented in **Section 5.4.**

*March 2018*

Two stormwater runoff samples, SW-01 and SW-04, were collected in March 2018 near the OTA. Coordinates for the sample locations were not recorded (approximate location shown on **Figure 4**). The chain-of-custody documentation was used to verify the media type and date of collection, and a field figure mark-up was used to verify the approximate locations.

*March through May and October 2019*

Three seasonal sampling events, outlined in the April 2018 Work Plan, were conducted in 2019 to capture snowmelt, spring rain, and fall rain conditions. Stormwater runoff samples were collected from four locations on the Site (**Figure 4**). The March/April 2019 sampling event included three sampling locations (SW-FTC-01, SW-FTC-02, and SW-FTC-03); the May 2019 sampling event included four sampling locations (SW-FTC-01, SW-FTC-02, SW-FTC-03, and SW-FTC-04); and the October 2019 sampling event included three sampling locations (SW-FTC-01, SW-FTC-02, and SW-FTC-03). During the March/April 2019 and October 2019 events, stormwater was only present at three locations, so three rather than four locations were sampled.

The March/April and May 2019 stormwater runoff samples were collected using a Teledyne ISCO sampler set to a 24-hour composite sampling interval and a decontaminated beaker, and then pouring the

sample into appropriate laboratory-supplied containers. The October 2019 stormwater runoff samples were collected using a Teledyne ISCO sampler set to a three-hour composite sampling interval and a decontaminated beaker, and then pouring the sample into appropriate laboratory-supplied containers. The sampling locations were on the Site and accessible by foot. Stormwater samples were analyzed for PFAS and TSS.

*November 2019*

Four stormwater runoff samples, OS-01 through OS-04, were collected from each of the four OTA outfall locations (**Figure 4**) in November 2019, pursuant to Wisconsin Pollutant Discharge Elimination System (WPDES) annual discharge compliance requirements. WDNR required inclusion of PFAS compounds in the annual WPDES sampling for the first time in 2019. The stormwater runoff samples were collected using a decontaminated beaker and then pouring the sample into appropriate laboratory-supplied containers. Stormwater samples were analyzed for PFAS, metals, cyanide, phenols, oil and grease, pH, biological oxygen demand, chemical oxygen demand, phosphorous, and TSS.

## 3.7 Soil

Shallow soil sampling was conducted via DPT to assess soil conditions and delineate the horizontal extent of PFAS at the Site and extending from the Site.

### 3.7.1 Soil Sampling for Physical Characteristics

Soil samples were collected from borings SB-4 and SB-16 using DPT in June 2016 and submitted for grain size analysis. Two soil samples were collected from each location, one from the sand layer and one from the underlying silt-clay layer. A total of 20 soil samples were collected from VAP sampling locations (VAP-26/MW101B, VAP-27 to VAP-29, VAP-30/MW-100B, and MW-102B) for grain size analysis from the sonic boreholes at intervals selected to be representative of the soil types encountered in June and August 2018. Soil samples were also collected for analysis of physical parameters: specific gravity, bulk density, and moisture content. The results of the analysis of physical parameters are included in **Appendix J**. The sampling locations are shown on **Figures 4** and **5** and results of the grain size analysis are presented in **Section 5.5.1**.

### 3.7.2 Soil Sampling for PFAS

*October 2013 and April 2014*

In October 2013 and April 2014, eight samples (FTC-59, FTC-60, FTC-62, FTC-71, FTC-72, FTC-77, FTC-82, and FTC-83) were collected from the unsaturated zone within the OTA and analyzed for PFAS. The soil sampling locations are shown on **Figure 11**.

*August and September 2016*

In August and September 2016, shallow soil sampling was conducted via DPT to assess the horizontal extent of PFAS around the OTA. Sixteen soil samples were collected from a total of 14 boring locations distributed throughout the area (SS-97 to SS-110). Samples were collected within the first 3 feet of ground surface at each location, except at two locations (SS-97 and SS-106) where a second, deeper sample was collected from above the water table. The soil sampling locations are shown on **Figure 11**.

*June and July 2018*

In June and July 2018, shallow soil sampling was conducted via DPT to assess soil conditions and delineate the horizontal extent of PFAS north and east of the OTA. Fifteen on-site soil borings (SS-113 to SS-127) were advanced within and near the OTA as shown on **Figure 11**. At each boring, samples were collected from two depth intervals. The first sample was collected within the top 1 foot of soil; the second sample was collected: 1) within the capillary fringe if there was a sufficient interval between the surface soil sample and the water table; or, 2) at a maximum depth of 8 feet bgs, targeting less permeable soils if they were encountered. Additionally, two soil borings (SS-128 and SS-129), each with one sample interval, were completed near two borings previously completed in 2016: SS-101 and SS-105 (**Appendix B**). At SS-128, the sample was collected at the maximum investigation depth interval of 7 to 8 feet bgs; at SS-129, the sample interval was associated with the capillary fringe (2 to 3 feet bgs).

*July 2019*

In July 2019, shallow soil sampling was conducted via DPT to assess soil conditions and delineate the horizontal extent of PFAS north, south, east, and west of the OTA. Ten on-site soil borings (SS-130 to SS-139) were advanced near the OTA, and a soil sample was collected within the first 2 feet at each location.

Leaching tests were conducted in July 2019 on samples collected from eight of the 10 soil sampling locations (SS-130, SS-132, SS-134 to SS-139) to evaluate the site-specific Residual Contaminant Level (RCL) for soil based on protection of groundwater. The samples were collected from areas representative of the compounds and soil heterogeneity at the Site. The locations were distributed across the OTA and represent a range of PFAS concentrations. Samples were collected from the unsaturated zone. The leaching tests were completed based on WDNR's Guidance on the Use of Leaching Tests for Unsaturated Soil to Determine Groundwater Contamination Potential (guidance, WDNR 2003). The samples were analyzed using the United States Environmental Protection Agency (USEPA) Method 1312 Synthetic Precipitation Leaching Procedure (SPLP).

As proposed in the February 2019 Work Plan, two modifications were made to the SPLP. A circumneutral eluant of site groundwater with low to non-detect concentrations of PFAS was collected from monitoring well MW-100-32 and used as the eluant. This approach is consistent with the guidance, which states that acidic eluants should not be used for anionic metals species because the acidic eluant can result in biased results (WDNR 2003). PFAS are anionic compounds and have increased partitioning to the solid phase (soil) at low pH (Higgins and Luthy 2006). Because an acidic eluant may result in biased low results, a circumneutral eluant was used to more accurately represent precipitation percolating through the soil. The other modification to the SPLP was the filtering step. The SPLP includes filtering the sample after tumbling. Because of the potential for PFAS to sorb to filters, samples were not filtered.

Soil samples were also collected for analysis of physical parameters: specific gravity, bulk density, and moisture content. Qualifier descriptions are provided in **Section 4.4**. All boring locations were logged by an Arcadis field geologist and abandoned upon completion. Soil boring logs and abandonment forms are provided in **Appendix B**. Soil sampling locations are shown on **Figure 11**. Samples were collected for PFAS analysis following the sample handling procedures described in **Section 4**.

## 3.8 Surveying

Survey data are summarized below and provided in **Appendix K.**

*2016*

Each boring location for the 2016 investigation was surveyed in August and September 2016 by Mountain Engineering, Inc. of Iron Mountain, Michigan. The ground surface elevation of each boring was referenced to the NAVD 88 system and the horizontal coordinates of the borings were reported in the Wisconsin State Plane North American Datum 1983 (NAD 1983) – Wisconsin Central 4802 Zone system.

*2018 and 2019*

All sampling locations were marked with a flag or staked and surveyed. Additionally, new monitoring wells, piezometers, and stilling wells were surveyed following installation activities. The ground surface elevation of each location was referenced to the NAVD 88 system, and the horizontal coordinates were reported in the NAD 83 – Wisconsin Central 4802 Zone system as part of the survey work.

## 3.9 Investigation-Derived Waste

Purge water, soil, drilling fluid, and rock cuttings generated during investigation activities were containerized (e.g., 55-gallon steel drums and 1,500-gallon polyethylene tanks) and staged in a centralized and secured location on Tyco property, pending characterization. Waste disposal options will be assessed following waste characterization.

# 4 QUALITY ASSURANCE AND QUALITY CONTROL

This section discusses field and laboratory quality assurance (QA)/quality control (QC).

## 4.1 Special Considerations for PFAS Sampling

The detection of PFAS compounds, including at low concentrations, can be influenced by common PFAS-containing materials that may be present at the sampling site. Therefore, sampling protocols were strictly followed by sampling personnel. Sampling and decontamination procedures were conducted, and field blanks were collected in accordance with the April 2018, February 2019, and May 2019 Work Plans.

## 4.2 Field Activities and Methods

Investigation activities were performed in accordance with the April 2018, February 2019, and May 2019 Work Plans approved by WDNR. However, during execution of the Work Plans, review of the data prompted the need for additional sampling. These additional activities were performed under the oversight and approval of WDNR. Precision and accuracy of field methods were assessed by the collection of field duplicates for laboratory analysis. Representativeness of field data was addressed by the selection of sampling locations, sampling frequency, and investigation methods as described in the April 2018, February 2019, and May 2019 Work Plans. Comparability of field data was achieved using standard methods specified in the April 2018, February 2019, and May 2019 Work Plans. Completeness was measured by comparing the number of samples collected to the number of samples proposed and was evaluated during data validation, which is discussed in **Section 4.4**. Sensitivity of field data was addressed by calibration of field equipment.

Piezometer and stilling well installation and the subsequent data-collection events were performed in accordance with the April 2018 and May 2019 Work Plans. However, as described in **Section 3.4.2**, the transducer data for the stilling wells and piezometers from the June 2018 monitoring event did not include manual depth to water measurements. As a result, the transducer data cannot be converted to elevations. Therefore, these data are not usable for the intended data quality objective of evaluating surface water and groundwater interactions.

One surface water sample, SS-05, was collected in February 2018. The chain-of-custody was used to verify media type and sample collection date; however, there are no field notes or global positioning system coordinates to confirm the location of this sample. Therefore, although the data are shown with the surface water analytical results, these data are not usable for the evaluation of surface water concentrations within the investigation area.

VAP-36 was originally collected in June 2018. Analytical results for samples collected in June 2018 were observed at relatively high amounts compared to nearby VAP locations and were considered an anomaly. A second boring VAP-36(2) was completed at the same location in October 2018 and the results have been used for evaluation of groundwater in the investigation area. Both sets of analytical results are provided with the VAP analytical results.

Sample VAP-16 (36-40) and the associated duplicate, DUP-12 (120717), were collected in December 2017. The non-detected results associated with the PFAS compounds listed in data validation reports for

this sample were rejected due to internal standard recoveries below the control limit and less than 25 percent associated with sample DUP-12 (120717).

## 4.3 Laboratory Methods and Analysis

The laboratory that processed each analyte and the methods used for analysis of each analyte are provided in **Tables 7** and **8**, respectively. Samples for laboratory analysis and QA/QC (duplicates, matrix spike/matrix spike duplicates, equipment blanks, and field blanks) were collected, stored, and handled as detailed in the April 2018, February 2019, and May 2019 Work Plans.

## 4.4 Data Validation

Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-2017-002, January 2017 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999, as appropriate). Data validation reports have been submitted to WDNR in previous reports.

Results are qualified as follows in accordance with the National Functional Guidelines:

- B = The compound is considered non-detect at the listed value due to associated blank contamination.
- D = The concentration is based on diluted sample analysis.
- E = The concentration exceeds the maximum calibration range of the laboratory instrument.
- H = Analysis was completed after the method hold time.
- J = The result is an estimated quantity. The associated value is the approximate concentration of the analyte in the sample.
- R = The result is a rejected analyte.
- U = The compound was analyzed for but not detected. The associated value is the compound quantitation limit.

With the exception of data that were rejected, accepted data are used as described in the work plans.

# 5 SITE INVESTIGATION RESULTS

This section summarizes the groundwater, surface water, sediment, stormwater, and soil results associated with activities completed and data received between October 2013 and December 31, 2019. The laboratories and analytical methods are indicated in **Table 7** and **Table 8**, respectively.

## 5.1 Groundwater Investigation Results

This section presents the analytical results of the VAP sampling, bedrock investigation, groundwater monitoring, slug testing, HPT soundings, and water level gauging. Soil boring logs are provided in **Appendix B**.

USEPA classifies PFAS as a category of “emerging contaminants.” In May 2016, USEPA issued a drinking water Lifetime Health Advisory Level (HAL) for two PFAS, specifically the individual and combined values for perfluorooctanoic acid (PFOA) and perfluorooctanesulfonic acid (PFOS) of 70 nanograms per liter (ng/L) or parts per trillion (ppt). In June 2019, the Wisconsin Department of Health Services (WDHS) recommended a groundwater enforcement standard of 20 ng/L for PFOA and PFOS, individually and combined. The 20 ng/L value is a potential future groundwater standard and is included for consideration in this Interim Site Investigation Report for discussion purposes.

### 5.1.1 Vertical Aquifer Profiling

The 2013-2014 and 2016-2019 VAP groundwater analytical results are provided in **Table 9** and **Table 10,** respectively. The VAP groundwater analytical results are presented on **Figures 12** and **13**. The evaluation of the data considered the applicable HAL and WDHS criteria when they were made available.

*October 2013 and April 2014*

Groundwater samples were collected from 15 overburden locations (FTC-58-S to FTC-63-S, FTC-71 to FTC-77, and FTC-82 to FTC-83) on and around the OTA. Concentrations of PFOS ranged from 750 ng/L to greater than 64,000 ng/L (exceeded laboratory calibration range). Concentrations of PFOA ranged from 14,700 ng/L to 254,000 ng/L (Arcadis 2016).

*June through August 2016*

Groundwater samples were collected from 12 VAP boring locations (SB-4, SB-5, SB-9, SB-15, SB-16, SB-29, SB-30, SB-32, SB-35, SB-45, SB-46, and SB-47) between June and August 2016. PFAS results indicated the presence of each of the 19 fluorinated compounds included in the analytical method. Concentrations of PFOS ranged from non-detect to 12,000 H ng/L (Arcadis 2016). Concentrations of PFOA ranged from 2.8 ng/L to 190,000 EB ng/L. At the time of the investigation, the results were compared to the USEPA HAL. The results of the comparison, particularly concentrations above and below the HAL, were used to define additional investigations.

*August 2017*

In August 2017, groundwater PFAS samples were collected from 36 overburden intervals (PZ-23 and SB-48 to SB-50). PFOS concentrations ranged from non-detect to 120 ng/L, and PFOA concentrations ranged from 19 to 33,000 ng/L. The results of the comparison, particularly concentrations above and below the HAL, were used to define additional investigations.

*November and December 2017*

In November and December 2017, PFAS samples were collected from 24 overburden locations (VAP-1 to VAP-24). PFOS concentrations ranged from non-detect to 553 ng/L, and PFOA concentrations ranged from non-detect to 1,100 ng/L. At the time of the investigation, the results were compared to the USEPA HAL. The results of the comparison, particularly concentrations above and below the HAL, were used to define additional investigations.

*June through* August and October through *November 2018*

Groundwater samples were collected from 19 overburden locations (VAP-31 to VAP-33, VAP-35 to VAP-47, and VAP-28 to VAP-30). No groundwater samples could be collected from within the till because the intervals were dry or did not yield sufficient water for sampling. Groundwater samples were analyzed for PFAS. PFOS concentrations ranged from non-detect to 18 ng/L, and PFOA concentrations ranged from non-detect to 1,100 ng/L.

Groundwater samples were collected from 14 overburden locations (VAP-48 to VAP-51) in October and November 2018 southeast of the Site. PFOS concentrations ranged from non-detect to 8.4 ng/L, and PFOA concentrations ranged from non-detect to 16 ng/L.

At the time of the investigation, the PFAS results were compared to the USEPA HAL. The results of the comparison, particularly concentrations above and below the HAL, were used to define additional investigations.

*August 2019*

Twelve groundwater samples were collected from two overburden locations (VAP-52 and VAP-53). PFOS concentrations within the 2019 VAP samples ranged from non-detect to 1.5 ng/L, and PFOA concentrations ranged from non-detect to 26 ng/L. At the time of the investigation, the results were compared to the USEPA HAL of 70 ng/L and WDHS recommended standard of 20 ng/L.

Cumulative results for VAP from 2013 and 2019 are used to find the limits of PFAS groundwater concentrations above 20 ng/L as described in **Section 5.1.3**.

### 5.1.2 Groundwater Monitoring

In August 2018 and August 2019, 19 monitoring wells were sampled for PFAS using low-flow methods. The monitoring well data represent various locations at the Site and downgradient of the Site. Comprehensive 2019 analytical results are provided in **Table 11** and on **Figure 14**. The evaluation of the data considered the applicable HAL and WDHS criteria when they were made available HAL and WDHS criteria were made available.

In 2018, PFOS results ranged from non-detect to 15,000 ng/L. Well FTC-34D, located on the east side of the fire training pad, exhibited the highest concentration of PFOS. In 2018, PFOA results ranged from

non-detect to 46,000 D ng/L. The highest PFOA result was detected in PZ-1S, located on the northeast corner of the Site. PFOS results for MW-100-32 and MW-101-16, located downgradient of the Site, were non-detect and 5.4 ng/L, respectively. Results for PFOA in MW-100-68 and MW-101-72, located downgradient of the Site, were non-detect and 1,300 ng/L, respectively.

One groundwater sample (PW-1) was collected from the on-site bedrock production well in June 2018. However, due to the nature of the well casing construction and the results of geophysical logging and flow evaluation, the sampling results appear to be more representative of groundwater quality in the shallow zone than the bedrock zone. WDNR concurred with this assessment during discussion of these results. The concentrations of PFOS and PFOA were non-detect and 800 D ng/L, respectively.

At the time of the investigation, the results were compared to the USEPA HAL. The PFOA concentrations were above the HAL value of 70 ng/L.

In 2019, the 2018 groundwater monitoring event was duplicated and the same 19 wells were sampled a second time. In 2019, concentrations of PFOA and PFOS generally decreased. PFOS results ranged from non-detect to 10,000 ng/L. Similar to 2018, the highest concentration of PFOS was detected in well FTC-34D. PFOA results ranged from 1.2 J ng/L to 43,000 EJ ng/L. Similar to 2018, the highest concentration of PFOS was detected in well PZ-1S. In 2019, off-site concentrations of PFOA and PFOS remained consistent with 2018 results. PFOS concentrations in downgradient wells MW-100-32 and MW-101-16 were non-detect and 5.4 ng/L, respectively. Concentrations of PFOA in MW-100-68 and MW-101-72, downgradient of the Site, were 1.2 J ng/L and 990 D ng/L, respectively. At the time of the investigation, the results were compared to the USEPA HAL of 70 ng/L and WDHS recommended standard of 20 ng/L.

### 5.1.3 Evaluation of Groundwater Data

Data collected from the VAP investigations, described above, have delineated the distribution of PFAS in groundwater within the investigation area. **Figure 15** provides an overview of PFAS detections across the City of Marinette-Town of Peshtigo area, and depicts the approximate lateral extent of PFAS impacts in groundwater that are potentially related to the FTC. As previously reported in the Southern Area Groundwater Evaluation Report (Arcadis 2020b), the lateral extent of the plume is based on the WDHS-recommended groundwater enforcement standard of 20 ng/L for total PFOA and PFOS. This interpretation is primarily based on VAP and monitoring well results but encompasses sampling results from private wells as a secondary line of evidence. The mapped plume extent is based on the maximum concentration observed at any depth within the overburden; therefore, some portions of the overburden within the denoted area may have concentrations less than the 20 ng/L standard. The horizontal limits of PFOA and PFOS in groundwater above 20 ng/L were found to extend eastward from a source area at the OTA, moving with groundwater to the northeast and southeast. The lateral extent includes a portion of the City of Marinette extending northeast from the Site toward the Menominee River, and portions of the City of Marinette and Town of Peshtigo extending southeast approximately as far as Rader Road. Note that interpretations of the plume geometry are undergoing refinement as a component of a groundwater modeling effort now in progress and scheduled for completion at a later date.

### 5.1.4 Hydraulic Conductivity Testing

#### 5.1.4.1 Slug Test

Slug tests were conducted in 2016 and 2018 to evaluate the hydraulic conductivity of overburden. Tests were analyzed using the Bouwer and Rice (1976) unconfined solution, employing the AQTESOLV for Windows software program (Duffield 2007) to graph the results and obtain best-fit lines. Test results are summarized in **Table 12.** Test analyses are provided in **Appendix F**.

The slug test analyses provide useful estimates of hydraulic conductivity that demonstrate the approximate range of permeability of different formations within the overburden. Estimated results range from approximately 0.1 feet/day for clayey silts, to greater than 100 feet/day in some permeable sands. Note that results often reflect localized heterogeneities within the aquifer at individual wells and should not be interpreted to be representative of the aquifer as a whole. Hydraulic conductivity estimates for slug tests performed in 2018 are interpreted to be biased high, because the 0.5-second transducer recording interval did not provide sufficient data resolution to clearly define the recovery curves.

#### 5.1.4.2 Hydraulic Profiling Tool

The 39 HPT borings completed in 2016 and 2019 provide estimated hydraulic conductivity profiles across portions of overburden. These data support interpretations of hydrostratigraphy, as discussed in **Section 2.1**. The HPT results (presented in **Appendix G)** illustrate the heterogeneity of the overburden deposits, and help define the limits of the sand units and low-permeability beds that influence patterns of groundwater flow. HPT estimates of hydraulic conductivity were generally consistent with slug test results. Although locations and depth intervals differed, most HPT soundings encountered a dominant sand unit with a hydraulic conductivity of approximately 50 feet/day. The hydraulic conductivity of the lower-permeability beds (e.g., silts and clays and till) were typically below the measurement range of the HPT probe (e.g., about 0.1 feet/day). Note that not all HPT borings were able to fully penetrate the overburden, and the termination depth of borings was based on tool refusal.

### 5.1.5 Groundwater Elevations

Manual water level measurements from the top of the monitoring wells were recorded in August 2018, in November 2018 following the installation of five temporary piezometers, and in October 2019, as described in **Section 3.3.7**. Water level measurements are provided in **Table 4**. The data were used to develop potentiometric surface maps for the shallow sand unit (**Figure 7** – August 2018, **Figure 8** – November 2018, and **Figure 9** – October 2019) and the deep sand unit (**Figure 10** – October 2019).

## 5.2 Surface Water Investigation Results

### 5.2.1 Surface Water Sampling

On-site surface water sample locations are shown on **Figure 4**. Off-site surface water sample locations, including pond sample locations, are shown on **Figure 5**. Analytical results for surface water samples are

provided in **Table 13. Figures 16** through **18** present the results from each sample location and each time period.

The current WDNR surface water quality guidelines are 420 ng/L for PFOA and 11 ng/L for PFOS. Based on 2018 and 2019 sampling data, PFOA and PFOS concentrations were present in surface water above those guidelines in portions of Ditches A, B, and D. The ditch segments where PFOA and PFOS concentrations exceeded the guidelines include:

- Ditch A extending downstream from the Site to a location upstream of a sample point where the ditch crosses Rader Road.
- Ditch B from approximately where the ditch crosses Pierce Avenue downstream to Green Bay.
- Ditch D at one sample point at the upstream head of the ditch near University Drive.

Detections of PFOA and PFOS in surface water samples at two additional ditches evaluated (Ditches C and E) were below WDNR surface water quality guidelines. Note that Tyco has installed surface water treatment systems as interim actions to reduce PFAS concentrations in Ditches A and B. Those systems went online in January and October 2019, respectively. Results from the Green Bay surface water investigation (tentatively planned for summer 2020) will be used to further delineate the lateral extent of PFAS concentrations.

### 5.2.2 Groundwater-Surface Water Interaction

Transducer data from the August 2018, October 2018, March/April 2019, and May 2019 events were barometrically corrected, converted to feet amsl, and plotted alongside precipitation data on hydrographs (**Appendix H**). Data from mini-piezometer and stilling well pair STW-09/PZ-09, which are located approximately 700 feet upstream of the Ditch B discharge point into Green Bay, were also plotted alongside Green Bay water elevation data to assess the interaction between the bay and nearby surface water and groundwater. Manual water level measurements are included in **Table 5**. Results of an analysis of groundwater and surface water elevations showing when groundwater was discharging to surface water and when surface water was migrating into groundwater are shown on **Figure 19.**

### 5.2.3 Surface Water Hydrodynamics

Surface water velocity was measured to calculate stream flow for analysis of off-site transport. Surface water velocities were measured at 14 locations in Ditches A and B in May 2018; 12 locations throughout Ditches A, B, C and D in July 2018; five locations in Ditches A and B in August 2018; 24 locations in all five Ditches (A through E) in October 2018, March/April 2019, and May 2019; and six locations throughout Ditch A in August 2019. May 2018 velocity measurements were not used for calculating flow because of the limited number of measurements along each transect. The May 2018 data were collected to evaluate flow direction and were not intended to estimate flow rates. The velocity measurements, flow calculations, and stream dimensions are summarized in **Appendix I**. The sampling locations are listed in **Section 3.4.3** and shown on **Figure 4** and **Figure 5**.

In 2018, the calculated flow rates ranged from 28 to 1,608 gpm in July, from no measurable flow (water was stagnant) to 587 gpm in August, and from no measurable flow to 2,101 gpm in October. In 2019, the calculated flow rates ranged from 2 to 2,785 gpm in March and April, from no measurable flow to 5,932

gpm in May, and from no measurable flow to 92 gpm in the on-site Ditch A locations in August. The 2018 and 2019 velocity measurement locations and historical flow rates are shown on **Figure 20**.

## 5.3 Sediment Results

Twenty-seven sediment samples were collected from 18 locations (SD-1 to SD-18) and analyzed for PFAS, TOC, and grain size. Sediment descriptions and field data are presented in **Table 6** and laboratory results are included in **Table 14**. PFOA and PFOS results are shown on **Figures 21** through **23**.

Concentrations of PFOS ranged from non-detect to 100 micrograms per kilogram (µg/kg), and PFOA concentrations ranged from non-detect to 550 µg/kg. The highest concentrations of PFOS and PFOA were detected in on-site sediment samples collected from Ditch A. PFOS and PFOA concentrations decreased in sediment samples collected off the Site and farther downstream in Ditch A. Overall, the results show that PFAS is present in sediment in Ditch A within the site boundaries, and at rapidly decreasing concentrations downstream (i.e., 2 µg/kg for PFOA and less than 0.9 µg/kg for PFOS at the most downstream sample point near Rader Road).

Low concentrations of PFOS and PFOA were observed in the Ditch B sediments and ranged from non-detect to 4.4 µg/kg for PFOS and non-detect to 4.0 µg/kg for PFOA.

While there are no WDNR sediment screening levels for PFAS, an evaluation of relative concentrations indicates that the sediment data are sufficient to evaluate the nature and extent of PFAS in sediment.

## 5.4 Stormwater Results

Stormwater runoff samples were collected from the Site to evaluate stormwater runoff from the OTA. The analytical results are included in **Table 15**. The sample locations are shown on **Figure 4** and the PFOA and PFOS results are shown on **Figure 24**.

The two stormwater runoff samples, SW-01 and SW-04, collected in March 2018 near the OTA had PFOS detections of 1,200 ng/L and 41 ng/L, respectively, and PFOA detections of 860 ng/L and 710 ng/L, respectively.

Concentrations in stormwater runoff samples collected from four on-site locations (SW-FTC-01 through SW-FTC-04) during three seasonal precipitation events in April, May, and October 2019 ranged from 11 ng/L to 5,100 ng/L for PFOS and 50 ng/L to 6,400 ng/L for PFOA.

Concentrations in stormwater runoff samples collected from the four outfall sampling locations (OS-01 through OS-04) in November 2019 ranged from non-detect to 9.8 ng/L for PFOS and non-detect to 130 ng/L for PFOA.

Evaluating the data based on relative concentrations, the data obtained to date are sufficient to characterize the nature and extent of PFAS in stormwater for the site investigation.

## 5.5 Soil Investigation

### 5.5.1 Soil Sampling for Physical Characteristics

Representative soil samples were collected at select intervals from borings (i.e., SB-4 and SB-5 in 2016 and VAP-26/MW-101B, VAP-27 to VAP-29, VAP-30/MW-100B, and MW-102B in 2018) for grain size analysis. Grain size analysis was performed to confirm the QA/QC for field soil descriptions. The results of the analysis are summarized in **Table 16**. Soil samples were also collected for analysis of physical parameters: specific gravity, bulk density, and moisture content. The results of the analysis of physical parameters are included in **Appendix J**. The sampling locations are shown on **Figures 4** and **5.**

### 5.5.2 Soil Sampling

Shallow soil sampling was conducted via DPT to assess soil conditions and delineate the horizontal extent of PFAS at the Site. PFAS analytical results for soil samples are provided in **Table 17** and on **Figure 25**. Soil boring logs and abandonment logs are provided in **Appendix B**.

The process to develop soil standards is provided in Wisconsin Administrative Code NR 720. Following this process, WDNR has calculated direct contact (DC) RCLs in soil for PFOA and PFOS that were deemed protective of human health. WDNR established the non-industrial DC RCLs for both PFOA and PFOS at 1.26 milligrams per kilogram (mg/kg). WDNR also established the industrial DC RCLs for both PFOA and PFOS at 16.4 mg/kg. In multiple phases of work, in results from a total of 66 soil samples collected within and near the OTA, none exceeded the industrial DC RCLs for PFOA or PFOS. Data were also collected to support the calculation of a site-specific soil RCL based on protection of groundwater quality; the results will be provided in a CSM Report under separate cover.

In October 2013 and April 2014, eight soil samples (FTC-59, FTC-60, FTC-62, FTC-71, FTC-72, FTC-77, FTC-82, and FTC-83) were collected from the OTA and analyzed for PFAS compounds. PFOS concentrations within the 2013 to 2014 soil samples ranged from non-detect to 580 µg/kg, and PFOA concentrations ranged from non-detect to 122 µg/kg.

In August and September 2016, 16 soil samples were collected from boring locations SS-97 to SS-110 and analyzed for PFAS compounds. PFOS concentrations within the soil samples ranged from 0.22 J µg/kg to 380 µg/kg, and PFOA concentrations ranged from 0.73 µg/kg to 1,300 µg/kg.

A total of 32 soil samples were collected from 17 on-site DPT borings (SS-113 to SS-129) in June and July 2018 and analyzed for PFAS compounds. The PFOS concentrations within the soil samples ranged from non-detect to 450 D µg/kg, and the PFOA concentrations ranged from non-detect to 440 D µg/kg.

Ten soil samples were collected from locations SS-130 to SS-139 in July 2019 and analyzed for PFAS. The PFOS concentrations within the 2019 soil samples ranged from non-detect to 800 D µg/kg, and the PFOA concentrations ranged from 0.56 µg/kg to 1,100 µg/kg. Soil samples were also collected for analysis of physical parameters: specific gravity, bulk density, and moisture content. The results of the analysis of physical parameters are included in **Appendix J**.

Leach testing was completed on eight soil samples in 2019 using groundwater from MW-100-32 as an eluant. PFOS concentrations within the eluant ranged from 18 ng/L to 6,900 D ng/L, and concentrations of PFOA ranged from 10 ng/L to 2,900 ng/L. The results of the leaching tests are included in **Table 18**.

Analytical data for MW-100-32 are included in **Table 11**. Soil leaching to groundwater RCLs are being calculated for the CSM and will be presented at a later date.

# 6 CONCLUSIONS AND NEXT STEPS

A site investigation related to PFAS was conducted in phases and completed in accordance with work plans prepared on behalf of Tyco and approved by WDNR. The site investigation activities included groundwater, surface water, sediment, stormwater, and soil sampling; bedrock characterization; monitoring of surface water and groundwater elevations; measurement of surface water velocity; and inspection and rehabilitation of sewer lines.

As noted above, a Comprehensive Site Investigation Report, which will encompass previously completed and remaining planned investigation activities for the Site, is anticipated to be submitted by December 31, 2020. The data and evaluations presented in this Interim Site Investigation Report are part of an ongoing process to identify the nature and extent of PFAS in environmental media, and will be used to evaluate implementation of potential additional remedial actions. As noted below, while additional investigation work will be executed for some media (e.g., surface water, fish tissue, and on-site soil sampling), delineation for other media can be considered complete (e.g., groundwater, sediments). Some of the key points based on the site investigation activities conducted at the Site through December 31, 2019 include the following:

- Delineation of combined site-related PFOA and PFOS groundwater concentrations above 20 ng/L is complete. The plume has been found to extend eastward from a source area at the OTA, moving with groundwater to the northeast and southeast. The lateral extent includes a portion of the City of Marinette extending northeast from the Site toward the Menominee River, and portions of the City of Marinette and Town of Peshtigo extending southeast approximately as far as Rader Road.
- Delineation of PFOA and PFOS in the ditches at concentrations above the WDNR surface water quality guidelines is complete. The nature and extent of PFAS in surface water related to the Site have been defined for five ditches, including three where PFOA and PFOS concentrations were present in surface water above the WDNR surface water quality guidelines. Stream segments where surface water exceeded the guidelines include: Ditch A, extending downstream from the Site to a location upstream of a sample point where the ditch crosses Rader Road; Ditch B from approximately where the ditch crosses Pierce Avenue downstream to Green Bay; and Ditch D at one sample point at the upstream head of the ditch near University Drive. Surface water concentrations will be further delineated with the results of the Green Bay surface water sampling scheduled for later in 2020.
- Sediment samples were collected and analyzed to evaluate PFAS concentrations. Results show that PFAS is present in sediment in Ditch A within the site boundaries, and at rapidly decreasing concentrations downstream (i.e., 2 µg/kg for PFOA and less than 0.9 µg/kg for PFOS at the most downstream sample point near Rader Road). PFAS was detected in sediment in Ditch B only at low concentrations. While there are no WDNR sediment screening levels for PFAS, an evaluation of relative concentrations indicates the data are sufficient to evaluate the nature and extent of PFAS in sediment.
- Stormwater samples were collected and analyzed to evaluate PFAS concentrations. An evaluation of the data based on relative concentrations indicates the data obtained to date are sufficient to characterize the nature and extent of PFAS in stormwater for the site investigation.

- Delineation of soil PFAS concentrations above the WDNR non-industrial and industrial DC RCLs is complete. Data were also collected to support the calculation of a site-specific soil RCL based on protection of groundwater quality. Soil leaching to groundwater RCLs will be calculated in the CSM report to be submitted under separate cover.
- Ongoing interim remedial actions of bottled water and POET system will be continued for public safety until a long-term water solution of a municipal water line extension to service businesses and residences in the portions of the private well sampling area is constructed and operating. Tyco is pursuing regulatory approval for this water line extension.
- Operation of the Ditch A and Ditch B interim remedial action surface water extraction and treatment systems will continue as an engineering control for public safety.
- The data presented in this report will be utilized to evaluate implementation of additional remedial actions to address PFAS present in the impacted media at the Site and extending from the Site.

The following tasks are still in progress and results will be reported at a later date:

- Green Bay surface water investigation (Work Plan dated October 23, 2019)
- Fish tissue sampling (Work Plan dated December 17, 2019)

Once the site investigation activities are complete, a Comprehensive Site Investigation Report, anticipated for submittal by December 31, 2020, will be prepared pursuant to Wisconsin Administrative Code NR 716 requirements. Overall conclusions and recommendations will be provided in that report.

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# TABLES

**Table 1**
**Timeline of Investigation Activities**
**Interim Site Investigation Report**
**Marinette, Wisconsin**

| Investigation Activities | Area Investigated and Associated Work Plan | Associated Data Report |
|---|---|---|
| **October 2013 and April 2014** | | |
| Collection of soil samples at eight boring locations for PFAS analysis. | Investigation activities were performed by a previous consultant. | Not applicable. |
| Collection of groundwater samples from 15 VAP locations for PFAS analysis. | | |
| **May through September 2016** | | |
| Slug testing at six monitoring wells to characterize subsurface hydraulic conductivity. | Investigation activities were performed under BRRTS No. 03-38-001345. | Results were presented in the 2016 Investigation Report submitted to WDNR on November 22, 2016. |
| Collection of groundwater samples from 38 VAP intervals (12 locations) for PFAS analysis. | | |
| Collection of 16 soil samples (14 locations) for PFAS analysis. | | |
| Collection of four sediment samples (two locations) for grain size analysis. | | |
| Advancement and abandonment of 22 HPT borings using DPT. | | |
| **August and November/December 2017** | | |
| Collection of groundwater samples from 171 VAP intervals (28 locations) for PFAS analysis. | Investigation activities were performed under BRRTS No. 03-38-001345. | Results were summarized in the Site Investigation Report submitted to WDNR on September 28, 2018. |
| Collection of surface water samples from four locations for PFAS analysis. | | |
| **May through August 2018** | | |
| Advancement and abandonment of 35 DPT borings and six sonic boring locations. | Investigation activities were performed under BRRTS No. 02-38-580694 in accordance with the April 20, 2018 Revised Site Investigation Work Plan. | Results were summarized in the Site Investigation Report submitted to WDNR on September 28, 2018. |
| Collection of groundwater samples from 65 VAP intervals (20 borings) for PFAS analysis. | | |
| Collection of soil samples from 20 VAP intervals (six borings) for grain size analysis. | | |
| Continuous soil logging at six sonic drilling borings and two DPT borings. | | |
| Installation of two off-site monitoring well pairs in the sand unit. | | |
| Collection of one groundwater sample from the existing on-site production well for PFAS analysis. | | |
| Completion of downhole geophysical logging at the existing on-site production well. | | |
| Completion of three bedrock borings to 205 feet below ground surface and downhole geophysical logging. | | |
| Collection of surface water samples from 18 locations on Ditch A and Ditch B in for analysis of PFAS and TSS (May 2018). | | |
| Collection of surface water samples from 18 locations on Ditches A, B, C, D, and E for analysis of PFAS, TSS, alkalinity, pH, TDS, and TOC (July 2018). | | |
| Installation of stilling well and piezometer pairs at four locations on Ditch A and five locations on Ditch B with completion of one seasonal round of water level monitoring. | | |
| Collection of sediment samples from 18 locations on Ditch A and Ditch B for analysis of PFAS, TOC, and grain size. | | |
| Velocity measurements recorded at surface water sampling locations (May, July, and August 2018). | | |

**Table 1**
**Timeline of Investigation Activities**
**Interim Site Investigation Report**
**Marinette, Wisconsin**

| Investigation Activities | Area Investigated and Associated Work Plan | Associated Data Report |
|---|---|---|
| **August 29, 2018 through December 31, 2018** | | |
| Collection of groundwater samples from 19 monitoring wells for PFAS analysis. | Investigation activities were performed under BRRTS No. 02-38-580694 in accordance with the April 20, 2018 Revised Site Investigation Work Plan and February 5, 2019 Supplemental Site Investigation Work Plan. | Results were presented in the Data Summary Report submitted to WDNR on March 8, 2019. |
| Slug testing at four newly installed monitoring wells. | | |
| Advancement and abandonment of five VAP borings. | | |
| Collection of groundwater samples from 16 VAP intervals for PFAS analysis. | | |
| Installation of five shallow temporary piezometers in the sand unit. | | |
| Collection of two rounds of groundwater elevation data from select monitoring wells and piezometers. | | |
| Collection of surface water samples at 27 locations during fall (October 2018) rain conditions. | | |
| Collection of stream velocity measurements at 21 locations during fall (October 2018) rain conditions. | | |
| Collection of paired surface water and groundwater elevation data at nine locations during fall (October 2018) rain conditions. | | |
| **January 2019 through October 2019** | | |
| Advancement and abandonment of 17 HPT borings using DPT. | Investigation activities were performed under BRRTS No. 02-38-580694 in accordance with the April 20, 2018 Revised Site Investigation Work Plan; February 5, 2019 Supplemental Site Investigation Work Plan; and May 28, 2019 Heath Lane Area Investigation Work Plan. | Results were presented in the Data Summary Report submitted to WDNR on March 8, 2019. |
| Installation of 24 off-site piezometers, grouped in 13 clusters with piezometers screening up to three different depths within the overburden. Continuous soil logging was completed at the deepest boring in each cluster. | | |
| Collection of 19 groundwater samples from existing on-site and off-site monitoring wells for PFAS analysis. | | |
| Collection of soil samples from 10 locations for analysis of PFAS. | | |
| Installation of ditch piezometer and stilling well pairs at two locations in Ditch A. | | |
| Collection of stormwater runoff samples on the Site. | | |
| Collection of surface water samples, including pond samples, at 30 locations during snowmelt and spring 2019. | | |
| Collection of stream velocity measurements at 24 locations during snowmelt and spring 2019. | | |
| Collection of paired surface water and groundwater elevation data during snowmelt and spring 2019. | | |
| Collection of stormwater samples during snowmelt, spring, and fall 2019. | | |
| Collection of groundwater and surface water elevations during a gauging event completed in October 2019. | | |
| Collection of groundwater samples from eight VAP intervals (two borings) for analysis of PFAS southeast of the Site. | | |
| Installation of 15 water level piezometers in seven locations. | | |
| Installation of two in-stream stilling well and piezometer pairs in Ditch A. | | |
| Collection of groundwater and surface water elevation data from the piezometers and the in-stream stilling well and piezometer pairs. | | |

**Notes:**
DPT = direct push technology
HPT= hydraulic profiling tool
PFAS = per- and poly-fluorinated alkyl substances
TDS = total dissolved solids
TOC = total organic carbon
TSS = total suspended solids
VAP = vertical aquifer profiling
WDNR = Wisconsin Department of Natural Resources

**Table 2**
**Summary of VAP Sonic Sampling**
**Interim Site Investigation Report**
**Marinette, Wisconsin**

| Location | Interval (ft bgs) | Date | Groundwater Sample Collected? | Fluorescein Dye Concentration | Field Description of Soil |
|---|---|---|---|---|---|
| VAP-26/ MW-101B | 45-50 | 6/11/2018 | No; limited flow/excessive drawdown | NA | Sand: fine with a trace of pebbles, loose |
| | 50-55 | 6/11/2018 | No; limited flow/excessive drawdown | NA | Sand: fine with a trace of pebbles, loose |
| | 66-69 | 6/12/2018 | Yes | <5%* | Sand: fine with a trace of pebbles, loose |
| | 84-87 | 6/13/2018 | No; limited flow/excessive drawdown | NA | Clay/Silt/Sand: fine sand, with pebbles and cobbles, hard, dense, till like |
| VAP-27 | 68-71 | 6/21/2018 | No; limited flow/excessive drawdown | NA | Sand: fine grain, silty, with trace pebbles and rock fragments, somewhat compacted |
| VAP-28 | 47-50 | 8/15/2018 | No; limited flow/excessive drawdown | NA | Silt: clayey, trace very fine grain sand, slightly firm |
| | 72-75 | 8/15/2018 | Yes | 2% | Sand: medium grain with some very fine-fine grain, moderately well sorted, loose |
| | 82-85 | 8/16/2018 | Yes | 5% | Sand: medium to coarse grain, some fine grain, moderately well sorted, loose |
| | 92-95 | 8/16/2018 | No | NA | Clay: very silty, much fine-coarse gravel, somewhat firm-slightly soft |
| | 99-102 | 8/16/2018 | Yes | 3% | Clay/silt sand/gravel/limestone: fine-coarse grain sand, fine-coarse gravel, weathered limestone pieces, soft |
| VAP-29 | 5-10 | 6/25/2018 | Yes | <5%* | Sand: fine grain with some very fine and medium grain, some silt, well sorted, loose |
| | 15-20 | 6/26/2018 | No; no flow to surface | NA | Sand: very fine grain, some silt, loose |
| | 25-30 | 6/26/2018 | Yes | 11% | Sand/Silt: very fine grain sand with silt, well sorted, loose, trace clayey layers |
| | 47-50 | 6/27/2018 | No; limited flow/excessive drawdown | NA | Clay: very silty, soft, somewhat plastic, trace gravel and cobbles to 2 inches in diameter |
| | 72-75 | 6/27/2018 | No; limited flow/excessive drawdown | NA | Clay/Silt: slightly plastic, trace gravel, hard |
| | 79-82 | 6/27/2018 | Yes | 8% | Sand/Silt: very fine to fine grain, some medium to coarse grain, much fine to coarse gravel and cobbles to 2 inches in diameter, firm to slightly loose, below 80 feet weathered limestone bedrock fragments/angular pieces |

Notes on Page 2.

**Table 2**
**Summary of VAP Sonic Sampling**
**Interim Site Investigation Report**
**Marinette, Wisconsin**

| Location | Interval (ft bgs) | Date | Groundwater Sample Collected? | Fluorescein Dye Concentration | Field Description of Soil |
|---|---|---|---|---|---|
| VAP-30/MW-100B | 59-62 | 8/7/2018 | Yes | <5%* | Sand: very fine-fine grain, well sorted, loose |
| | 73-76 | 8/8/2018 | No; limited flow/excessive drawdown | NA | Silt/Sand/Gravel: clayey silt, very fine-fine grain sand, some medium-coarse grain, fine-coarse gravel, pebbles, firm, hard |
| | 77-80 | 8/8/2018 | Yes | 17% | Sand/Silt: very fine-coarse grain, poorly sorted, much fine-coarse gravel, trace clay, loose |
| VAP-52 | 7-10 | 8/13/2019 | Yes | <5%* | Sand: fine-medium grain, well sorted, loose |
| | 20-23 | 8/14/2019 | Yes | <5%* | Sand: fine-medium grain, well sorted, loose |
| | 61-64 | 8/14/2019 | Yes | <5%* | Sand: fine-medium grain, well sorted, loose |
| | 75-78 | 8/15/2019 | Yes | <5%* | Sand: fine-medium grain, well sorted, loose |
| | 81-84 | 8/15/2019 | Yes | <5%* | Sand: fine grain-large pebbles, well sorted; loose |
| | 102-105 | 8/15/2019 | No; limited flow/excessive drawdown | NA | Sand: fine-coarse grain, moderately sorted, loose to medium dense |
| VAP-53 | 7-10 | 8/16/2019 | Yes | <5%* | Sand: fine-medium grain, well sorted, loose |
| | 21-24 | 8/16/2019 | Yes | <5%* | Sand: fine-medium grain, well sorted, loose |
| | 52-55 | 8/19/2019 | Yes | 5% | Sand: fine-medium grain, trace medium to very large pebbles, well sorted, loose |
| | 65-68 | 8/19/2019 | Yes | 5% | Sand: fine-medium grain, trace medium to very large pebbles, well sorted, loose |
| | 73-76 | 8/20/2019 | Yes | 5% | Sand: medium-coarse grain, well sorted, loose |

**Notes:**
* = Concentrations listed as <5% are based on comparison of purged water to visual standards created in the field. No samples were submitted for laboratory analysis of dye concentration because the concentration of dye was sufficiently low based on visual standards.

ft bgs = feet below ground surface

NA = not applicable

VAP = vertical aquifer profiling

**Table 3**
**Well Construction Details**
**Interim Site Investigation Report**
**Marinette, Wisconsin**

| Well ID | Area | Year Installed | Depth to Top of Screen (feet bgs) | Depth to Bottom of Screen (feet bgs) | Top of Casing Elevation (feet) | Surface Finish | Ditch PZ Stickup Length (feet) | Top of screen elevation (feet amsl) | Bottom of screen elevation (feet amsl) |
|---|---|---|---|---|---|---|---|---|---|
| MW5 | FTC | 2010 | 4 | 14 | 609.29 | Flush | -- | 605.29 | 595.29 |
| CS-9R | FTC | NA | 2 | 12 | 610.59 | Flush | -- | 608.59 | 598.59 |
| FTC 1 | FTC | 1993 | 5 | 15 | NM | Flush | -- | NM | NM |
| FTC 13R | FTC | NA | 2 | 12 | 609.70 | Flush | -- | 607.70 | 597.70 |
| FTC 15R | FTC | NA | 2 | 12 | 609.91 | Flush | -- | 607.91 | 597.91 |
| FTC 20R | FTC | NA | 3 | 18 | 610.62 | Flush | -- | 607.62 | 592.62 |
| FTC 27 | FTC | 1995 | 3 | 13 | 609.98 | Flush | -- | 606.98 | 596.98 |
| FTC 3 | FTC | 1993 | 5 | 15 | NM | Flush | -- | NM | NM |
| FTC 30 | FTC | 1995 | 3 | 13 | NM | Flush | -- | NM | NM |
| FTC 31 | FTC | 1995 | 3 | 13 | 610.28 | Flush | -- | 607.28 | 597.28 |
| FTC 32D | FTC | 1996 | 28 | 33 | 609.73 | Flush | -- | 581.73 | 576.73 |
| FTC 32S | FTC | 1996 | 3 | 13 | 609.71 | Flush | -- | 606.71 | 596.71 |
| FTC 33D | FTC | 1996 | 28 | 33 | 609.35 | Flush | -- | NM | NM |
| FTC 33S | FTC | 1996 | 3 | 13 | 609.42 | Flush | -- | 606.42 | 596.42 |
| FTC 45 | FTC | 2003 | 2 | 4 | 609.95 | Flush | -- | 607.95 | 605.95 |
| FTC 46D | FTC | 2004 | 27.8 | 32.8 | 610.98 | Flush | -- | 583.18 | 578.18 |
| FTC 46S | FTC | 2004 | 3.5 | 13.5 | 612.35 | Flush | -- | 608.85 | 598.85 |
| FTC 47 | FTC | 2004 | 2.2 | 7.2 | NM | Flush | -- | NM | NM |
| FTC 66 | FTC | NA | 2 | 17 | 608.85 | Flush | -- | 606.85 | 591.85 |
| FTC-28 | FTC | 1995 | 3 | 13 | 609.67 | Flush | -- | NM | NM |
| FTC-2D | FTC | 1993 | 27 | 32 | 611.43 | Flush | -- | 584.43 | 579.43 |
| FTC-2S | FTC | 1993 | 5 | 15 | 611.55 | Flush | -- | 606.55 | 596.55 |
| FTC-34D | FTC | 1996 | 28 | 33 | 608.72 | Flush | -- | 580.72 | 575.72 |
| FTC-34S | FTC | 1996 | 3 | 13 | 608.50 | Flush | -- | 605.50 | 595.50 |
| FTC-35 | FTC | NA | 3 | 13 | 610.30 | Flush | -- | NM | NM |

Notes on Page 6.

**Table 3**
**Well Construction Details**
**Interim Site Investigation Report**
**Marinette, Wisconsin**

| Well ID | Area | Year Installed | Depth to Top of Screen (feet bgs) | Depth to Bottom of Screen (feet bgs) | Top of Casing Elevation (feet) | Surface Finish | Ditch PZ Stickup Length (feet) | Top of screen elevation (feet amsl) | Bottom of screen elevation (feet amsl) |
|---|---|---|---|---|---|---|---|---|---|
| FTC-42 | FTC | 2003 | 5 | 15 | 609.37 | Flush | -- | NM | NM |
| FTC-44 | FTC | 2003 | 5 | 15 | 611.30 | Flush | -- | NM | NM |
| FTC-67 | FTC | NA | 32 | 37 | 611.22 | Stickup | -- | 579.22 | 574.22 |
| MW-100-32 | Off Site | 2018 | 22 | 32 | 601.45 | Flush | -- | 579.45 | 569.45 |
| MW-100-68 | Off Site | 2018 | 58 | 68 | 601.83 | Flush | -- | 543.83 | 533.83 |
| MW-101-16 | Off Site | 2018 | 6 | 16 | 603.18 | Flush | -- | 597.18 | 587.18 |
| MW-101-72 | Off Site | 2018 | 62 | 72 | 603.20 | Flush | -- | 541.20 | 531.20 |
| PZ-01 (STW-01 Pair) | Off Site | 2018 | 2.95 | 3.45 | 597.55 | Stickup | 3.1 | 591.5 | 591 |
| STW-01 | Off Site | 2018 | -- | 2.59 | 597.22 | Stickup | -- | -- | 594.63 |
| PZ-02 (STW-02 Pair) | Off Site | 2018 | 3.26 | 3.76 | 605.38 | Stickup | 3.79 | 598.33 | 597.83 |
| STW-02 | Off Site | 2018 | -- | 3.05 | 604.6 | Stickup | -- | -- | 601.55 |
| PZ-03 (STW-03 Pair) | Off Site | 2018 | 3.64 | 4.14 | 609.95 | Stickup | 2.31 | 604 | 603.5 |
| STW-03 | Off Site | 2018 | -- | 2.91 | 611.11 | Stickup | -- | -- | 608.2 |
| PZ-04 (STW-04 Pair) | Off Site | 2018 | 4.3 | 4.79 | 612.15 | Stickup | 2.65 | 605.2 | 604.71 |
| STW-04 | Off Site | 2018 | -- | 3.47 | 612.85 | Stickup | -- | -- | 609.38 |
| PZ-05 (STW-05 Pair) | Off Site | 2018 | 4.15 | 4.65 | 607.01 | Stickup | 3.78 | 599.08 | 598.58 |
| STW-05 | Off Site | 2018 | -- | 3.29 | 606.67 | Stickup | -- | -- | 603.38 |
| PZ-06 (STW-06 Pair) | Off Site | 2018 | 4.66 | 5.16 | 595.94 | Stickup | 3.39 | 587.89 | 587.39 |
| STW-06 | Off Site | 2018 | -- | 3.56 | 596.8 | Stickup | -- | -- | 593.24 |
| PZ-07 (STW-07 Pair) | Off Site | 2018 | 5 | 5.5 | 595.37 | Stickup | 3 | 587.37 | 586.87 |
| STW-07 | Off Site | 2018 | -- | 3.31 | 595.14 | Stickup | -- | -- | 591.83 |
| PZ-08 (STW-08 Pair) | Off Site | 2018 | 4.19 | 4.69 | 594.54 | Stickup | 3.86 | 586.49 | 585.99 |
| STW-08 | Off Site | 2018 | -- | 3.45 | 594.28 | Stickup | -- | -- | 590.83 |
| PZ-09 (STW-09 Pair) | Off Site | 2018 | 4.87 | 5.37 | 584.48 | Stickup | 3.13 | 576.48 | 575.98 |
| STW-09 | Off Site | 2018 | -- | 3.12 | 585.04 | Stickup | -- | -- | 581.92 |

Notes on Page 6.

**Table 3**
**Well Construction Details**
**Interim Site Investigation Report**
**Marinette, Wisconsin**

| Well ID | Area | Year Installed | Depth to Top of Screen (feet bgs) | Depth to Bottom of Screen (feet bgs) | Top of Casing Elevation (feet) | Surface Finish | Ditch PZ Stickup Length (feet) | Top of screen elevation (feet amsl) | Bottom of screen elevation (feet amsl) |
|---|---|---|---|---|---|---|---|---|---|
| PZ-10 | Off Site | 2019 | 38 | 43 | 610.42 | Stickup | -- | 572.42 | 567.42 |
| PZ-10 (STW-10 Pair) | Off Site | 2019 | 4.63 | 5.13 | 609.17 | Stickup | 3.25 | 601.29 | 600.79 |
| STW-10 | Off Site | 2019 | -- | 3.63 | 609.45 | Stickup | -- | -- | 605.82 |
| PZ-11 | Off Site | 2019 | 41 | 46 | 611.41 | Stickup | -- | 570.41 | 565.41 |
| PZ-11 (STW-11 Pair) | Off Site | 2019 | 4.21 | 4.71 | 607.89 | Stickup | 3.68 | 600 | 599.5 |
| STW-11 | Off Site | 2019 | -- | 3.78 | 607.8 | Stickup | -- | -- | 604.02 |
| PZ-12 | FTC | NA | 38 | 43 | 611.4 | Stickup | -- | 573.4 | 568.4 |
| PZ-13 | FTC | NA | 35 | 40 | 610.94 | Stickup | -- | 575.94 | 570.94 |
| PZ-14D | FTC | NA | 25 | 35 | 611.15 | Stickup | -- | 586.15 | 576.15 |
| PZ-14S | FTC | NA | 4 | 19 | 610.771 | Stickup | -- | 606.771 | 591.771 |
| PZ-15D | FTC | NA | 22 | 32 | 608.19 | Stickup | -- | 586.19 | 576.19 |
| PZ-15S | FTC | NA | 4 | 19 | 608.21 | Stickup | -- | 604.21 | 589.21 |
| PZ-16D | FTC | NA | 28 | 38 | 608.613 | Stickup | -- | 580.613 | 570.613 |
| PZ-16S | FTC | NA | 4 | 19 | 608.93 | Stickup | -- | 604.93 | 589.93 |
| PZ-17D | FTC | NA | 23 | 33 | 609.14 | Stickup | -- | 586.14 | 576.14 |
| PZ-17S | FTC | NA | 4 | 19 | 609.14 | Stickup | -- | 605.14 | 590.14 |
| PZ-18D | FTC | NA | 37 | 47 | 609.61 | Stickup | -- | 572.61 | 562.61 |
| PZ-18S | FTC | NA | 10 | 20 | 609.2 | Stickup | -- | 599.2 | 589.2 |
| PZ-19 | FTC | NA | 27 | 37 | 604.91 | Stickup | -- | 577.91 | 567.91 |
| PZ-1D | FTC | 2010 | 63.5 | 68.5 | 606.23 | Stickup | -- | 542.73 | 537.73 |
| PZ-1S | FTC | 2010 | 36 | 41 | 606.36 | Stickup | -- | 570.36 | 565.36 |
| PZ-2 | FTC | 2010 | 36 | 41 | 610.31 | Stickup | -- | 574.31 | 569.31 |
| PZ-20 | FTC | NA | 37 | 47 | 607.43 | Stickup | -- | 570.43 | 560.43 |
| PZ-21 | FTC | NA | 36 | 46 | 606.9 | Stickup | -- | 570.9 | 560.9 |
| PZ-22D | FTC | NA | 31 | 41 | 605.79 | Stickup | -- | 574.79 | 564.79 |

Notes on Page 6.

**Table 3**
**Well Construction Details**
**Interim Site Investigation Report**
**Marinette, Wisconsin**

| Well ID | Area | Year Installed | Depth to Top of Screen (feet bgs) | Depth to Bottom of Screen (feet bgs) | Top of Casing Elevation (feet) | Surface Finish | Ditch PZ Stickup Length (feet) | Top of screen elevation (feet amsl) | Bottom of screen elevation (feet amsl) |
|---|---|---|---|---|---|---|---|---|---|
| PZ-22S | FTC | NA | 10 | 20 | 605.91 | Stickup | -- | 595.91 | 585.91 |
| PZ-23 | Off Site | 2017 | 35 | 40 | 601.73 | Flush | -- | 566.73 | 561.73 |
| PZ-24-17 | Off Site | 2019 | 7 | 17 | 605.463 | Flush | -- | 598.463 | 588.463 |
| PZ-24-47 | Off Site | 2019 | 37 | 47 | 605.273 | Flush | -- | 568.273 | 558.273 |
| PZ-25-17 | Off Site | 2019 | 7 | 17 | 598.738 | Flush | -- | 591.738 | 581.738 |
| PZ-26-11 | Off Site | 2019 | 6 | 11 | 598.126 | Flush | -- | 592.126 | 587.126 |
| PZ-27-12 | Off Site | 2019 | 7 | 12 | 592.987 | Flush | -- | 585.987 | 580.987 |
| PZ-28-14 | Off Site | 2019 | 9 | 14 | 594.756 | Flush | -- | 585.756 | 580.756 |
| PZ-28-54 | Off Site | 2019 | 49 | 54 | 594.81 | Flush | -- | 545.81 | 540.81 |
| PZ-29-17 | Off Site | 2019 | 7 | 17 | 594.017 | Flush | -- | 587.017 | 577.017 |
| PZ-29-48 | Off Site | 2019 | 38 | 43 | 593.937 | Flush | -- | 555.937 | 550.937 |
| PZ-3 | FTC | 2010 | 38 | 43 | 609.2 | Stickup | -- | 571.2 | 566.2 |
| PZ-30-12 | Off Site | 2019 | 7 | 12 | 594.746 | Flush | -- | 587.746 | 582.746 |
| PZ-30-45 | Off Site | 2019 | 35 | 45 | 594.719 | Flush | -- | 559.719 | 549.719 |
| PZ-30-59 | Off Site | 2019 | 54 | 59 | 594.635 | Flush | -- | 540.635 | 535.635 |
| PZ-31-17 | Off Site | 2019 | 7 | 17 | 595.74 | Flush | -- | 588.74 | 578.74 |
| PZ-31-40 | Off Site | 2019 | 35 | 40 | 595.751 | Flush | -- | 560.751 | 555.751 |
| PZ-31-53 | Off Site | 2019 | 48 | 53 | 595.785 | Flush | -- | 547.785 | 542.785 |
| PZ-32-18 | Off Site | 2019 | 8 | 18 | 591.734 | Flush | -- | 583.734 | 573.734 |
| PZ-32-72 | Off Site | 2019 | 67 | 72 | 591.733 | Flush | -- | 524.733 | 519.733 |
| PZ-33-12 | Off Site | 2019 | 7 | 12 | 594.791 | Flush | -- | 587.791 | 582.791 |
| PZ-33-33 | Off Site | 2019 | 28 | 33 | 594.769 | Flush | -- | 566.769 | 561.769 |
| PZ-33-67 | Off Site | 2019 | 57 | 67 | 594.794 | Flush | -- | 537.794 | 527.794 |
| PZ-34-17 | Off Site | 2019 | 7 | 17 | 591.343 | Flush | -- | 584.343 | 574.343 |
| PZ-34-84 | Off Site | 2019 | 74 | 84 | 591.285 | Flush | -- | 517.285 | 507.285 |

Notes on Page 6.

**Table 3**
**Well Construction Details**
**Interim Site Investigation Report**
**Marinette, Wisconsin**

| Well ID | Area | Year Installed | Depth to Top of Screen (feet bgs) | Depth to Bottom of Screen (feet bgs) | Top of Casing Elevation (feet) | Surface Finish | Ditch PZ Stickup Length (feet) | Top of screen elevation (feet amsl) | Bottom of screen elevation (feet amsl) |
|---|---|---|---|---|---|---|---|---|---|
| PZ-35-17 | Off Site | 2019 | 7 | 17 | 608.219 | Flush | -- | 601.219 | 591.219 |
| PZ-35-37 | Off Site | 2019 | 32 | 37 | 608.193 | Flush | -- | 576.193 | 571.193 |
| PZ-35-48 | Off Site | 2019 | 43 | 48 | 608.211 | Flush | -- | 565.211 | 560.211 |
| PZ-36-19 | Off Site | 2019 | 9 | 19 | 590.424 | Flush | -- | 581.424 | 571.424 |
| PZ-36-38 | Off Site | 2019 | 33 | 38 | 590.453 | Flush | -- | 557.453 | 552.453 |
| PZ-36-85 | Off Site | 2019 | 80 | 85 | 590.344 | Flush | -- | 510.344 | 505.344 |
| PZ-37-12 | Off Site | 2019 | 7 | 12 | 589.206 | Flush | -- | 582.206 | 577.206 |
| PZ-37-29 | Off Site | 2019 | 19 | 29 | 589.349 | Flush | -- | 570.349 | 560.349 |
| PZ-37-75 | Off Site | 2019 | 65 | 75 | 589.275 | Flush | -- | 524.275 | 514.275 |
| PZ-38-17 | Off Site | 2019 | 7 | 17 | 592.241 | Flush | -- | 585.241 | 575.241 |
| PZ-38-75 | Off Site | 2019 | 65 | 75 | 592.291 | Flush | -- | 527.291 | 517.291 |
| PZ-39 (STW-39 Pair) | Off Site | 2019 | 8 | 8.5 | 584.023 | Stickup | NM | 576.023 | 575.523 |
| STW-39 | Off Site | 2019 | -- | NM | 583.719 | Stickup | -- | -- | NA |
| PZ-40 (STW-40 Pair) | Off Site | 2019 | 8 | 8.5 | 589.109 | Stickup | NM | 581.109 | 580.609 |
| STW-40 | Off Site | 2019 | -- | NM | 589.679 | Stickup | -- | -- | NA |
| PZ-41-17 | Off Site | 2019 | 7 | 17 | 595.39 | Flush | -- | 588.39 | 578.39 |
| PZ-41-84 | Off Site | 2019 | 74 | 84 | 595.334 | Flush | -- | 521.334 | 511.334 |
| PZ-42-17 | Off Site | 2019 | 7 | 17 | 592.635 | Flush | -- | 585.635 | 575.635 |
| PZ-42-76 | Off Site | 2019 | 66 | 76 | 592.348 | Flush | -- | 526.348 | 516.348 |
| PZ-43-19 | Off Site | 2019 | 9 | 19 | 592.757 | Flush | -- | 583.757 | 573.757 |
| PZ-43-80 | Off Site | 2019 | 75 | 80 | 592.451 | Flush | -- | 517.451 | 512.451 |
| PZ-44-73 | Off Site | 2019 | 63 | 73 | 595.059 | Flush | -- | 532.059 | 522.059 |
| PZ-4D | FTC | 2010 | 68.5 | 73.5 | NM | Stickup | -- | NM | NM |
| PZ-4S | FTC | 2010 | 36 | 41 | NM | Stickup | -- | NM | NM |
| PZ-5 | FTC | NA | NA | NA | NM | Flush | -- | NM | NM |

Notes on Page 6.

**Table 3**
**Well Construction Details**
**Interim Site Investigation Report**
**Marinette, Wisconsin**

| Well ID | Area | Year Installed | Depth to Top of Screen (feet bgs) | Depth to Bottom of Screen (feet bgs) | Top of Casing Elevation (feet) | Surface Finish | Ditch PZ Stickup Length (feet) | Top of screen elevation (feet amsl) | Bottom of screen elevation (feet amsl) |
|---|---|---|---|---|---|---|---|---|---|
| PZ-6D | FTC | 2011 | 30 | 35 | 609.18 | Stickup | -- | 579.18 | 574.18 |
| PZ-6S | FTC | NA | 4 | 19 | 609.83 | Stickup | -- | 605.83 | 590.83 |
| PZ-7 | FTC | 2011 | 35 | 40 | 608.32 | Stickup | -- | 573.32 | 568.32 |
| PZ-8 | FTC | NA | 45 | 50 | 611.89 | Stickup | -- | 566.89 | 561.89 |
| PZ-9 | FTC | NA | 38 | 43 | 611.16 | Stickup | -- | 573.16 | 568.16 |
| TW-01 | Off Site | 2018 | 9.5 | 19.5 | 594.467 | Flush | -- | 584.967 | 574.967 |
| TW-02 | Off Site | 2018 | 10 | 20 | 593.847 | Flush | -- | 583.847 | 573.847 |
| TW-03 | Off Site | 2018 | 10 | 20 | 598.073 | Flush | -- | 588.073 | 578.073 |
| TW-04 | Off Site | 2018 | 10 | 20 | 593.595 | Flush | -- | 583.595 | 573.595 |
| TW-05 | Off Site | 2018 | 10 | 20 | 597.523 | Flush | -- | 587.523 | 577.523 |

**Notes:**
Vertical Datum: North American Vertical Datum (NAVD) 1988
Stilling wells are not installed into ground, Top of Casing Elevations column is the top of stilling well, and Bottom of Screen Elevation column is the bottom of stilling well
PZ-39 and PZ-40 depth to top and bottom of screen are shown from below TOC
amsl = above mean sea level
bgs = below ground surface
NA = not available
NM = not measured
PZ = piezometer

**Table 4**
**Groundwater Elevations**
**Interim Site Investigation Report**
**Marinette, Wisconsin**

| Well ID | Depth to Top of Screen (ft bgs) | Depth to Bottom of Screen (ft bgs) | Measuring Point (ft amsl) | Measurement Date | Depth to Water (ft) | Water Elevation (ft amsl) |
|---|---|---|---|---|---|---|
| FTC-2D | 27.0 | 32.0 | 611.43 | 10/16/2019 | 2.78 | 608.65 |
| FTC-2S | 5.0 | 15.0 | 611.55 | 10/16/2019 | 2.64 | 608.91 |
| FTC-34D | 28.0 | 33.0 | 608.72 | 10/16/2019 | 0.76 | 607.96 |
| FTC-34S | 3.0 | 13.0 | 608.50 | 10/16/2019 | 0.40 | 608.10 |
| FTC-35 | 3.0 | 13.0 | 610.30 | -- | -- | -- |
| FTC-42 | 5.0 | 15.0 | 609.37 | 10/17/2019 | 0.22 | 609.15 |
| FTC-44 | 5.0 | 15.0 | 611.30 | 10/16/2019 | 2.84 | 608.46 |
| MW-100-32 | 22.0 | 32.0 | 601.45 | 10/16/2019 | 1.26 | 600.19 |
| MW-100-68 | 58.0 | 68.0 | 601.83 | 10/16/2019 | 1.38 | 600.45 |
| MW-101-16 | 6.0 | 16.0 | 603.18 | 10/16/2019 | 2.10 | 601.08 |
| MW-101-72 | 62.0 | 72.0 | 603.20 | 10/16/2019 | 2.75 | 600.45 |
| PZ-14D | 25.0 | 35.0 | 611.15 | 10/17/2019 | 3.77 | 607.38 |
| PZ-14S | 4.0 | 19.0 | 610.77 | 10/17/2019 | 3.10 | 607.67 |
| PZ-16D | 28.0 | 38.0 | 608.61 | 10/16/2019 | 5.50 | 603.11 |
| PZ-16S | 4.0 | 19.0 | 608.93 | 10/16/2019 | 5.05 | 603.88 |
| PZ-19 | 27.0 | 37.0 | 604.91 | 10/17/2019 | 6.53 | 598.38 |
| PZ-1D | 63.5 | 68.5 | 606.23 | 10/16/2019 | 9.58 | 596.65 |
| PZ-1S | 36.0 | 41.0 | 606.36 | 10/16/2019 | 5.05 | 601.31 |
| PZ-11 | -- | -- | 611.41 | -- | -- | -- |
| PZ-22D | 31.0 | 41.0 | 605.79 | 10/16/2019 | 5.80 | 599.99 |
| PZ-22S | 10.0 | 20.0 | 605.91 | 10/16/2019 | 5.88 | 600.03 |
| PZ-23 | 35.0 | 40.0 | 601.73 | 10/17/2019 | 1.58 | 600.15 |
| PZ-24-17 | 7.0 | 17.0 | 605.46 | 10/16/2019 | 3.40 | 602.06 |
| PZ-24-47 | 37.0 | 47.0 | 605.27 | 10/16/2019 | 3.47 | 601.80 |
| PZ-25-17 | 7.0 | 17.0 | 598.74 | 10/16/2019 | 5.40 | 593.34 |
| PZ-26-11 | 6.0 | 11.0 | 598.13 | 10/16/2019 | 3.33 | 594.80 |
| PZ-27-12 | 7.0 | 12.0 | 592.99 | 10/16/2019 | 4.71 | 588.28 |
| PZ-28-14 | 9.0 | 14.0 | 594.76 | 10/16/2019 | 4.75 | 590.01 |
| PZ-28-54 | 49.0 | 54.0 | 594.81 | 10/16/2019 | 5.49 | 589.32 |
| PZ-29-17 | 7.0 | 17.0 | 594.02 | 10/16/2019 | 2.29 | 591.73 |
| PZ-29-48 | 38.0 | 43.0 | 593.94 | 10/16/2019 | 3.21 | 590.73 |
| PZ-30-12 | 7.0 | 12.0 | 594.75 | 10/16/2019 | 3.25 | 591.50 |
| PZ-30-45 | 35.0 | 45.0 | 594.72 | 10/16/2019 | 3.92 | 590.80 |
| PZ-30-59 | 54.0 | 59.0 | 594.64 | 10/16/2019 | 3.82 | 590.82 |
| PZ-31-17 | 7.0 | 17.0 | 595.74 | 10/16/2019 | 3.18 | 592.56 |
| PZ-31-40 | 35.0 | 40.0 | 595.75 | 10/16/2019 | 3.25 | 592.50 |
| PZ-31-53 | 48.0 | 53.0 | 595.79 | 10/16/2019 | 3.23 | 592.56 |

Notes on Page 2.

**Table 4**
**Groundwater Elevations**
**Interim Site Investigation Report**
**Marinette, Wisconsin**

| Well ID | Depth to Top of Screen (ft bgs) | Depth to Bottom of Screen (ft bgs) | Measuring Point (ft amsl) | Measurement Date | Depth to Water (ft) | Water Elevation (ft amsl) |
|---|---|---|---|---|---|---|
| PZ-32-18 | 8.0 | 18.0 | 591.73 | 10/16/2019 | 1.48 | 590.25 |
| PZ-32-72 | 67.0 | 72.0 | 591.73 | 10/16/2019 | 1.98 | 589.75 |
| PZ-33-12 | 7.0 | 12.0 | 594.79 | 10/16/2019 | 0.37 | 594.42 |
| PZ-33-33 | 28.0 | 33.0 | 594.77 | 10/16/2019 | 0.37 | 594.40 |
| PZ-33-67 | 57.0 | 67.0 | 594.79 | 10/16/2019 | 0.83 | 593.96 |
| PZ-34-17 | 7.0 | 17.0 | 591.34 | 10/16/2019 | 5.75 | 585.59 |
| PZ-34-84 | 74.0 | 84.0 | 591.29 | 10/16/2019 | 0.63 | 590.66 |
| PZ-35-17 | 7.0 | 17.0 | 608.22 | 10/16/2019 | 2.19 | 606.03 |
| PZ-35-37 | 32.0 | 37.0 | 608.19 | 10/16/2019 | 2.49 | 605.70 |
| PZ-35-48 | 43.0 | 48.0 | 608.21 | 10/16/2019 | 2.55 | 605.66 |
| PZ-44-73 | 63.0 | 73.0 | 595.06 | 10/18/2019 | 1.84 | 593.22 |
| PZ-4D | 68.5 | 73.5 | -- | -- | -- | -- |
| PZ-4S | 36.0 | 41.0 | -- | -- | -- | -- |
| PZ-9 | 38.0 | 43.0 | 611.16 | 10/17/2019 | 4.64 | 606.52 |
| **Temporary Wells** | | | | | | |
| TW-01 | 9.5 | 19.5 | 594.47 | -- | -- | -- |
| TW-02 | 10.0 | 20.0 | 593.85 | 10/17/2019 | 0.10 | 593.75 |
| TW-03 | 10.0 | 20.0 | 598.07 | 10/17/2019 | 1.07 | 597.00 |
| TW-04 | 10.0 | 20.0 | 593.60 | -- | -- | -- |
| TW-05 | 10.0 | 20.0 | 597.52 | -- | -- | -- |

**Notes:**

-- = not available

amsl = above mean sea level

bgs = below ground surface

ft = feet

**Table 5**
**Piezometer and Stilling Well Manual Water Levels**
**Interim Site Investigation Report**
**Marinette, Wisconsin**

| Piezometer ID | Piezometer Elevation (ft amsl) | Stilling Well ID | Stilling Well Elevation (ft amsl) | Proximal Surface Water Sample Location | Feature | Date | Depth to Water (ft) | | Water Elevation (ft amsl) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Piezometer (inside casing) | Stilling Well | Piezometer (inside casing) | Stilling Well |
| PZ-01 | 597.55 | STW-01 | 597.22 | SW-10 | Ditch A | 7/10/2018 | 1.98 | 2.6 | 595.57 | 594.62 |
| | | | | | | 8/8/2018 | 6.55 | 2.84 | 591.00 | 594.38 |
| | | | | | | 8/31/2018 | 2 | 2.8 | 595.55 | 594.42 |
| | | | | | | 10/18/2018 | 1.43 | 2.25 | 596.12 | 594.97 |
| | | | | | | 11/9/2018 | 1.45 | 2.18 | 596.10 | 595.04 |
| | | | | | | 4/5/2019 | 0.00 | 1.35 | 597.55 | 595.87 |
| | | | | | | 5/29/2019 | 0.00 | 1.22 | 597.55 | 596.00 |
| | | | | | | 10/17/2019 | 1.60 | 1.48 | 595.95 | 595.74 |
| PZ-02 | 605.38 | STW-02 | 604.6 | SW-12 | Ditch A | 7/10/2018 | 3.53 | 2.83 | 601.85 | 601.77 |
| | | | | | | 8/8/2018 | 4.75 | Dry | 600.63 | -- |
| | | | | | | 8/31/2018 | 4.24 | Dry | 601.14 | -- |
| | | | | | | 10/18/2018 | 3.13 | 2.46 | 602.25 | 602.14 |
| | | | | | | 11/9/2018 | 3.10 | 2.30 | 602.28 | 602.30 |
| | | | | | | 4/5/2019 | 3.04 | 1.89 | 602.34 | 602.71 |
| | | | | | | 5/29/2019 | 2.71 | 1.84 | 602.67 | 602.76 |
| | | | | | | 10/17/2019 | 2.69 | -- | 602.69 | -- |
| PZ-03 | 609.95 | STW-03 | 611.11 | SW-27 | Ditch A | 7/10/2018 | 1.77 | 2.47 | 608.18 | 608.64 |
| | | | | | | 8/8/2018 | 3.66 | Dry | 606.29 | -- |
| | | | | | | 8/31/2018 | 3.71 | Dry | 606.24 | -- |
| | | | | | | 10/18/2018 | 1.65 | 1.86 | 608.30 | 609.25 |
| | | | | | | 11/9/2018 | 1.66 | 1.80 | 608.29 | 609.31 |
| | | | | | | 4/5/2019 | 0.96 | 1.31 | 608.99 | 609.80 |
| | | | | | | 5/29/2019 | 0.69 | 1.05 | 609.26 | 610.06 |
| | | | | | | 10/17/2019 | 0.87 | 1.26 | 609.08 | 609.85 |

Notes on Page 4.

**Table 5**
**Piezometer and Stilling Well Manual Water Levels**
**Interim Site Investigation Report**
**Marinette, Wisconsin**

| Piezometer ID | Piezometer Elevation (ft amsl) | Stilling Well ID | Stilling Well Elevation (ft amsl) | Proximal Surface Water Sample Location | Feature | Date | Depth to Water (ft) | | Water Elevation (ft amsl) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Piezometer (inside casing) | Stilling Well | Piezometer (inside casing) | Stilling Well |
| PZ-04 | 612.15 | STW-04 | 612.85 | SW-24 | Ditch A | 7/10/2018 | 1.78 | 2.62 | 610.37 | 610.23 |
| | | | | | | 8/8/2018 | 2.52 | 3.95 | 609.63 | 608.90 |
| | | | | | | 8/31/2018 | 2.42 | 3.05 | 609.73 | 609.80 |
| | | | | | | 10/18/2018 | 1.77 | 2.61 | 610.38 | 610.24 |
| | | | | | | 11/9/2018 | 1.79 | 2.56 | 610.36 | 610.29 |
| | | | | | | 4/5/2019 | 1.55 | 2.30 | 610.60 | 610.55 |
| | | | | | | 5/29/2019 | 1.26 | 2.30 | 610.89 | 610.55 |
| | | | | | | 10/17/2019 | 1.16 | 2.18 | 610.99 | 610.67 |
| PZ-05 | 607.01 | STW-05 | 606.67 | SW-20 | Ditch B | 7/17/2018 | 5.53 | 2.76 | 601.48 | 603.91 |
| | | | | | | 8/8/2018 | 1.66 | 2.84 | 605.35 | 603.83 |
| | | | | | | 8/31/2018 | 1.80 | 2.85 | 605.21 | 603.82 |
| | | | | | | 10/18/2018 | 0.96 | 2.67 | 606.05 | 604.00 |
| | | | | | | 11/9/2018 | 1.08 | 2.73 | 605.93 | 603.94 |
| | | | | | | 3/20/2019 | 1.38 | 2.66 | 605.63 | 604.01 |
| | | | | | | 5/29/2019 | 0.43 | 2.53 | 606.58 | 604.14 |
| | | | | | | 10/17/2019 | 0.58 | -- | 606.43 | -- |
| PZ-06 | 595.94 | STW-06 | 596.8 | SW-18 | Ditch B | 7/17/2018 | 1.58 | 3.03 | 594.36 | 593.77 |
| | | | | | | 8/8/2018 | 1.81 | 2.27 | 594.13 | 594.53 |
| | | | | | | 8/31/2018 | 1.52 | 2.38 | 594.42 | 594.42 |
| | | | | | | 10/18/2018 | 1.05 | 2.77 | 594.89 | 594.03 |
| | | | | | | 11/9/2018 | 1.36 | 2.94 | 594.58 | 593.86 |
| | | | | | | 3/20/2019 | 0.96 | 2.40 | 594.98 | 594.40 |
| | | | | | | 5/29/2019 | 0.86 | 2.21 | 595.08 | 594.59 |
| | | | | | | 10/17/2019 | 0.72 | 1.90 | 595.22 | 594.90 |

Notes on Page 4.

**Table 5**
**Piezometer and Stilling Well Manual Water Levels**
**Interim Site Investigation Report**
**Marinette, Wisconsin**

| Piezometer ID | Piezometer Elevation (ft amsl) | Stilling Well ID | Stilling Well Elevation (ft amsl) | Proximal Surface Water Sample Location | Feature | Date | Depth to Water (ft) | | Water Elevation (ft amsl) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Piezometer (inside casing) | Stilling Well | Piezometer (inside casing) | Stilling Well |
| PZ-07 | 595.37 | STW-07 | 595.14 | SW-17 | Ditch B | 7/17/2018 | 2.55 | 2.62 | 592.82 | 592.52 |
| | | | | | | 8/8/2018 | 2.73 | 2.96 | 592.64 | 592.18 |
| | | | | | | 8/31/2018 | 2.63 | 2.44 | 592.74 | 592.70 |
| | | | | | | 10/18/2018 | 2.37 | 2.29 | 593.00 | 592.85 |
| | | | | | | 11/9/2018 | 2.50 | 2.32 | 592.87 | 592.82 |
| | | | | | | 3/20/2019 | 2.38 | 2.18 | 592.99 | 592.96 |
| | | | | | | 5/29/2019 | 2.12 | 1.86 | 593.25 | 593.28 |
| | | | | | | 10/17/2019 | 2.19 | 2.05 | 593.18 | 593.09 |
| PZ-08 | 594.54 | STW-08 | 594.28 | SW-16 | Ditch B | 7/17/2018 | 2.43 | 2.63 | 592.11 | 591.65 |
| | | | | | | 8/8/2018 | 2.62 | 2.68 | 591.92 | 591.60 |
| | | | | | | 8/31/2018 | 2.45 | 2.60 | 592.09 | 591.68 |
| | | | | | | 10/18/2018 | 1.92 | 2.22 | 592.62 | 592.06 |
| | | | | | | 11/9/2018 | 2.14 | 2.26 | 592.40 | 592.02 |
| | | | | | | 3/20/2019 | 2.00 | 2.10 | 592.54 | 592.18 |
| | | | | | | 5/29/2019 | 1.59 | 1.86 | 592.95 | 592.42 |
| | | | | | | 10/17/2019 | 1.69 | 1.84 | 592.85 | 592.44 |
| PZ-09 | 581.71 | STW-09 | 581.48 | SW-15 | Ditch B | 8/8/2018 | 2.14 | 3.09 | 579.57 | 578.39 |
| | | | | | | 8/31/2018 | 1.99 | 3.05 | 579.72 | 578.43 |
| | | | | | | 10/18/2018 | 1.80 | 2.81 | 579.91 | 578.67 |
| | | | | | | 11/9/2018 | 1.96 | 2.77 | 579.75 | 578.71 |
| | | | | | | 3/20/2019 | 2.54 | 2.64 | 579.17 | 578.84 |
| | | | | | | 5/29/2019 | 2.45 | 2.60 | 579.26 | 578.88 |
| | | | | | | 10/17/2019 | 1.30 | -- | 580.41 | -- |

Notes on Page 4.

**Table 5**
**Piezometer and Stilling Well Manual Water Levels**
**Interim Site Investigation Report**
**Marinette, Wisconsin**

| Piezometer ID | Piezometer Elevation (ft amsl) | Stilling Well ID | Stilling Well Elevation (ft amsl) | Proximal Surface Water Sample Location | Feature | Date | Depth to Water (ft) | | Water Elevation (ft amsl) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Piezometer (inside casing) | Stilling Well | Piezometer (inside casing) | Stilling Well |
| PZ-10 | 609.17 | STW-10 | 609.45 | N/A | Ditch A | 4/9/2019 | 1.61 | 2.23 | 607.56 | 607.22 |
| | | | | | | 5/29/2019 | 1.50 | 2.41 | 607.67 | 607.04 |
| | | | | | | 10/17/2019 | 1.62 | 2.65 | 607.55 | 606.80 |
| PZ-11 | 607.89 | STW-11 | 607.8 | N/A | Ditch A | 4/9/2019 | 2.79 | 2.03 | 605.10 | 605.77 |
| | | | | | | 5/29/2019 | 1.62 | 1.93 | 606.27 | 605.87 |
| | | | | | | 10/17/2019 | 1.89 | 2.10 | 609.78 | 605.70 |
| PZ-39 | 584.02 | STW-39 | 583.719 | N/A | Ditch A | 10/18/2019 | 2.25 | 2.11 | 581.77 | 581.61 |
| PZ-40 | 589.109 | STW-40 | 589.679 | N/A | Ditch A | 10/18/2019 | --* | 3.02 | --* | 586.66 |

**Notes:**

-- = not available

* = The water level at PZ-40 was artisian during the gauging event

amsl = above mean sea level

bgs = below ground surface

ft = feet

**Table 6**
**Sediment Descriptions and Field Data**
**Interim Site Investigation Report**
**Marinette, Wisconsin**

| Location | Date | Water Depth (inches) | Probe Depth (inches) | Channel Description | Sample Depth (inches) | Sediment Description |
|---|---|---|---|---|---|---|
| SD-01 | 6/12/2018 | 11 | 6 | Rip rap along bottom of stream and banks, vegetation on both sides of stream | 0 - 6 | Dark brown organics/silt, some fine sand, wet |
| SD-02 | 6/12/2018 | 6 | 8 | Bottom of channel about 10% rip rap, soft bottom, vegetation on both sides of channel | 0 - 6 | Sand-silt, some organics, piece of brick, fine sand, very dark brown, wet |
| SD-03 | 6/12/2018 | 5 | 4.5 | Sheen on water, channel bottom soft, rip rap on bottom and banks | 0 - 4.5 | Sand, brown, trace organics, fine sand, wet |
| SD-04 | 6/12/2018 | 36 | 9 | Soft bottom, rip rap on west side of channel, large sheen on east side of culvert and storm drain | 0 - 6 | Sand, fine to very fine grained, trace organics, brown, wet |
| SD-05 | 6/13/2018 | 4 | 6 | Soft bottom, sheen on standing water on east side of channel | 0 - 3 | Sand-gravel, coarse to fine grained, small to medium, subangular gravel, trace organics, black, wet |
| SD-06 | 6/13/2018 | 6 | 7 | East side of channel soft sediment with rip rap, foam on surface of water, west side soft sediment | 0 - 5 | Silt-sand, some organics, fine sand, very dark brown, wet |
| SD-07 | 6/13/2018 | 2 | 18 | Water stagnant to northwest, some flow towards east from road crossing | 0 - 6.5 | Sand-gravel, medium to fine sand, trace organic, brown, wet |
| SD-08 | 6/13/2018 | 4 | 30 | Soft sediment, vegetation along banks | 0 - 4.5 | Silt, some sand, trace organics, dark brown, wet |
| SD-09 | 6/13/2018 | 6 | 30 | Soft sediment, vegetation along banks | 0 - 7 | Sand-silt, trace subangular gravel, trace organics, brown, wet |
| SD-10 | 6/13/2018 | 6 | 42 | Soft sediment, harder within 2 feet of culvert, vegetation along banks, sheen on water on south side of road crossing | 0 - 6 | Sand-silt-organics, dark brown, wet |
| SD-11 | 6/14/2018 | 6 | 24 | No discernible stream to north of culvert, wetland | 0 - 3 | Silt-sand, much organics, very dark brown, wet |
| SD-12-A | 6/14/2018 | -- | 6 | Soft sediment, vegetation along banks | 0 - 6 | Organics-silt, much sand, dark brown, wet |
| SD-12-B | 6/14/2018 | 7 | 6 | Soft sediment, gravel bottom near culvert, vegetation along banks | 0 - 5 | Silt-sand, some organics, find sand, dark brown, wet |
| SD-12-C | 6/14/2018 | -- | 6 | Soft sediment, vegetation along banks | 0 - 4 | Sand-silt, some organics, fine sand, dark brown, wet |
| SD-13 | 6/14/2018 | 12 | 18 | Soft sediment, tall vegetation in stream, vegetation along bank | 0 - 6 | Silt-sand, some organics, very dark brown, wet |
| SD-14-A | 6/14/2018 | -- | -- | -- | 0 - 5 | Sand-silt, trace organics, brown, wet |
| SD-14-B | 6/14/2018 | 6 | 18 | Soft sediment, sheen on water surface | 0 - 7 | Sand, some silt, fine sand, some organics, brown, wet |
| SD-14-C | 6/14/2018 | -- | -- | -- | 0 - 7 | Sand-silt, some organics, dark brown, wet |
| SD-15 | 6/14/2018 | 1 | 18 | Soft sediment, sheen on water surface | 0 - 6 | Sand, fine grained, trace organics, wet |
| SD-16-A | 6/14/2018 | -- | -- | -- | 0 - 5.5 | Silt, some sand, some organics, very dark brown, wet |
| SD-16-B | 6/14/2018 | 12 | 12 | Soft sediment, tall vegetation in stream, vegetation along banks | 0 - 5 | Sand, some silt, some organics, brown, wet |
| SD-16-C | 6/14/2018 | -- | -- | -- | 0 - 5 | Silt-sand-organics, dark brown, wet |
| SD-17-A | 6/14/2018 | -- | -- | -- | 0 - 7 | Sand, some silt, some organics, dark brown, wet |
| SD-17-B | 6/14/2018 | 0 | 10 | No standing water | 0 - 6 | Sand, some organics, brown, wet |
| SD-17-C | 6/14/2018 | -- | -- | -- | 0 - 7 | Sand-silt, some organics, brown, wet |
| SD-18 | 6/14/2018 | 12 | 15.6 | Soft sediment, rip rap along bank near crossing, tall vegetation in stream, vegetation along banks | 0 - 6 | Silt, some sand, some organics, very dark brown, wet |

**Notes:**
-- = not available

**Table 7**
**Analytical Lab Details**
**Interim Site Investigation Report**
**Marinette, Wisconsin**

| Analytes | Air Toxics LTD, Folsom, CA | Cascade | ECCS Nationwide Mobile Laboratories | TestAmerica Burlington, VT | TestAmerica Chicago, (University Park) IL | TestAmerica Nashville, TN | TestAmerica North Canton, OH | TestAmerica Sacramento, CA | Unk-Historical |
|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | | | | | X | | | | |
| 1,1,1-Trichloroethane | X | | X | | X | | | | |
| 1,1,2,2-Tetrachloroethane | X | | X | | X | | | | |
| 1,1,2-trichloro-1,2,2-trifluoroethane | X | | | | | | | | |
| 1,1,2-Trichloroethane | X | | X | | X | | | | |
| 1,1-Dichloroethane | X | | X | | X | | | | |
| 1,1-Dichloroethene | X | | X | | X | | | | |
| 1,1-Dichloropropene | | | | | X | | | | |
| 1,2,3-Trichlorobenzene | | | X | | X | | | | |
| 1,2,3-Trichloropropane | | | | | X | | | | |
| 1,2,4-Trichlorobenzene | X | | X | | X | | | | |
| 1,2,4-Trimethylbenzene | X | | X | | X | | | | |
| 1,2-Dibromo-3-chloropropane | | | | | X | | | | |
| 1,2-Dibromoethane | X | | | | X | | | | |
| 1,2-Dichlorobenzene | X | | X | | X | | | | |
| 1,2-Dichloroethane | X | | X | | X | | | | |
| 1,2-Dichloropropane | X | | | | X | | | | |
| 1,2-Dichlorotetrafluoroethane | X | | | | | | | | |
| 1,3,5-Trimethylbenzene | X | | X | | X | | | | |
| 1,3-Butadiene | X | | | | | | | | |
| 1,3-Dichlorobenzene | X | | X | | X | | | | |
| 1,3-Dichloropropane | | | | | X | | | | |
| 1,4-Dichlorobenzene | X | | X | | X | | | | |
| 1,4-Dioxane | X | | | | X | | | | |
| 2,2,4-Trimethylpentane | X | | | | | | | | |
| 2,2-Dichloropropane | | | | | X | | | | |
| 2-Butanone (MEK) | X | | | | | | | | |
| 2-Chlorotoluene | | | X | | X | | | | |
| 4-Chlorotoluene | | | X | | X | | | | |
| 4-Ethyltoluene | X | | | | | | | | |
| 4-Methyl-2-Pentanone | X | | | | | | | | |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTSA) | | | | | X | | | | |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTSA) | | | | | X | | | | |
| Acetone | X | | | | | | | | |
| Alkalinity | | | | | X | | | | |
| Allyl chloride | X | | | | | | | | |

**Table 7**
**Analytical Lab Details**
**Interim Site Investigation Report**
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|---|---|---|---|---|---|---|---|---|---|
| Benzene | X | | X | | X | | | | |
| Benzyl Chloride | X | | | | | | | | |
| Bromobenzene | | | | | X | | | | |
| Bromochloromethane | | | | | X | | | | |
| Bromodichloromethane | X | | | | X | | | | |
| Bromoform | X | | | | X | | | | |
| Bromomethane | X | | | | X | | | | |
| Carbon Disulfide | X | | | | | | | | |
| Carbon Tetrachloride | X | | X | | X | | | | |
| CFC-11 | X | | | | X | | | | |
| CFC-12 | X | | | | X | | | | |
| Chlorobenzene | X | | X | | X | | | | |
| Chlorodibromomethane | X | | | | X | | | | |
| Chloroethane | X | | | | X | | | | |
| Chloroform | X | | X | | X | | | | |
| Chloromethane | X | | X | | X | | | | |
| cis-1,2-Dichloroethene | X | | X | | X | | | | |
| cis-1,3-Dichloropropene | X | | | | X | | | | |
| Clay | | | | X | | | | | |
| Cyclohexane | X | | | | | | | | |
| Cymene (p-Isopropyltoluene) | | | X | | X | | | | |
| Dibromomethane | | | | | X | | | | |
| Dichloromethane | X | | X | | X | | | | |
| Di-isopropyl ether | | | | | X | | | | |
| Ethane | | | | | | | X | | |
| Ethanol | X | | | | | | | | |
| Ethene | | | | | | | X | | |
| Ethylbenzene | X | | X | | X | | | | |
| Gravel | | | | X | | | | | |
| Hexachloro-1,3-butadiene | X | | | | X | | | | |
| Hexane | X | | | | | | | | |
| HYDROMETER, Reading 1, Percent Finer | | | X | | | | | | |
| HYDROMETER, Reading 3,Percent Finer | | | X | | | | | | |
| HYDROMETER, Reading 4, Percent Finer | | | X | | | | | | |

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|---|---|---|---|---|---|---|---|---|---|
| HYDROMETER, Reading 5, Percent Finer | | | X | | | | | | |
| HYDROMETER, Reading 6, Percent Finer | | | X | | | | | | |
| HYDROMETER, Reading 7, Percent Finer | | | X | | | | | | |
| HYDROMETER, Redin 2, Percent Finer | | | X | | | | | | |
| Iron | | | | | X | | | | |
| Isopropyl alcohol | X | | | | | | | | |
| Isopropylbenzene | X | | X | | X | | | | |
| Manganese | | | | | X | | | | |
| Methane | | | | | | | X | | |
| Methyl N-Butyl Ketone (2-Hexanone) | X | | | | | | | | |
| Methyl-tert-butylether | X | | X | | X | | | | |
| Naphthalene | | | X | | X | | | | |
| n-Butylbenzene | | | X | | X | | | | |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | | | | | X | | | X | |
| n-Heptane | X | | | | | | | | |
| Nitrate-N | | | | | X | | | | |
| N-Methylperfluoroocatane sulfonamidoacetic acid (MeFOSAA) | | | | | X | | | X | |
| n-Propylbenzene | X | | X | | X | | | | |
| o-Xylene | X | | X | | | | | | |
| Perfluorobutane sulfonate (PFBS) | | | | | | | | | X |
| Perfluorobutane sulfonic acid (PFBS) | | X | | | X | | | X | |
| Perfluorobutanoic acid (PFBA) | | | | | X | | | | |
| Perfluorodecane sulfonic acid (PFDS) | | | | | X | | | | X |
| Perfluorodecanoic acid (PFDA) | | | | | X | | | X | X |
| Perfluorododecanoic acid (PFDoA) | | | | | X | | | X | X |
| Perfluoroheptane sulfonic acid (PFHpS) | | | | | X | | | | X |
| Perfluoroheptanoic acid (PFHpA) | | X | | | X | | | X | X |
| Perfluorohexane sulfonic acid (PFHxS) | | X | | | X | | | X | X |

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|---|---|---|---|---|---|---|---|---|---|
| Perfluorohexanoic acid (PFHxA) | | | | | X | | | X | X |
| Perfluorononanoic acid (PFNA) | | X | | | X | | | X | X |
| Perfluorooctane sulfonamide (PFOSA) | | | | | X | | | | |
| Perfluorooctane sulfonic acid (PFOS) | | X | | | X | | | X | X |
| Perfluorooctanoic acid (PFOA) | | X | | | X | | | X | X |
| Perfluoropentanoic acid (PFPeA) | | | | | X | | | | |
| Perfluorotetradecanoic acid (PFTeA) | | | | | X | | | X | X |
| Perfluorotridecanoic acid (PFTrDA) | | | | | X | | | X | X |
| Perfluoroundecanoic acid (PFUdA) | | | | | X | | | X | X |
| pH | | | | | X | | | | |
| Sand | | | | X | | | | | |
| Sand Coarse | | | | X | | | | | |
| Sand Fine | | | | X | | | | | |
| Sand Medium | | | | X | | | | | |
| sec-Butylbenzene | | | X | | X | | | | |
| Sieve 0.375 inch, Percent Finer | | | | X | | | | | |
| Sieve 0.75 inch, Percent Finer | | | | X | | | | | |
| Sieve 1 inch, Percent Finer | | | | X | | | | | |
| Sieve 1.5 inch, Percent Finer | | | | X | | | | | |
| Sieve 2 inch, Percent Finer | | | | X | | | | | |
| Sieve 3 inch, Percent Finer | | | | X | | | | | |
| Sieve No. 10, Percent Finer | | | | X | | | | | |
| Sieve No. 100, Percent Finer | | | | X | | | | | |
| Sieve No. 20, Percent Finer | | | | X | | | | | |
| Sieve No. 200, Percent Finer | | | | X | | | | | |
| Sieve No. 40, Percent Finer | | | | X | | | | | |
| Sieve No. 60, Percent Finer | | | | X | | | | | |
| Sieve No. 80, Percent Finer | | | | X | | | | | |
| Sieve No.4, Percent Finer | | | | X | | | | | |
| Silt | | | | X | | | | | |
| Styrene (Monomer) | X | | X | | X | | | | |
| Sulfate | | | | | X | | | | |
| tert-Butylbenzene | | | X | | X | | | | |
| Tetrachloroethene | X | | X | | X | | | | |
| Tetrahydrofuran | X | | | | | | | | |
| Toluene | X | | X | | X | | | | |

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**Marinette, Wisconsin**

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|---|---|---|---|---|---|---|---|---|---|
| Total Dissolved Solids | | | | | X | | | | |
| Total Organic Carbon | | | | X | | | | | |
| Total Organic Carbon 2 | | | | | X | X | | | |
| Total Solids | | | X | | | | | | |
| Total Suspended Solids | | | | | X | | | | |
| Total Xylenes | | | | | X | | | | |
| trans-1,2-Dichloroethene | X | | X | | X | | | | |
| trans-1,3-Dichloropropene | X | | | | X | | | | |
| Trichloroethene | X | | X | | X | | | | |
| Vinyl chloride | X | | X | | X | | | | |

**Table 8**
**Analytical Method Details**
**Interim Site Investigation Report**
**Marinette, Wisconsin**

| Analytes | CASC-SOP CTS-10.22.0 | D422 | E537 | LLOYD KAHN | PFASs | PFC_IDA | RSK175 | SM2320B | SM2540B | SM2540C | SM2540D | SM4500-H-B | SW6020 | SW8260B | SW9056A | SW9060 | TO15 | TO15SIM | WS-LC-0025 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Clay | | X | | | | | | | | | | | | | | | | | |
| Gravel | | X | | | | | | | | | | | | | | | | | |
| HYDROMETER, Reading 1, Percent Finer | | X | | | | | | | | | | | | | | | | | |
| HYDROMETER, Reading 3,Percent Finer | | X | | | | | | | | | | | | | | | | | |
| HYDROMETER, Reading 4, Percent Finer | | X | | | | | | | | | | | | | | | | | |
| HYDROMETER, Reading 5, PErcent Finer | | X | | | | | | | | | | | | | | | | | |
| HYDROMETER, Reading 6, Percent Finer | | X | | | | | | | | | | | | | | | | | |
| HYDROMETER, Reading 7, Percent Finer | | X | | | | | | | | | | | | | | | | | |
| HYDROMETER, Redin 2, Percent Finer | | X | | | | | | | | | | | | | | | | | |
| Sand | | X | | | | | | | | | | | | | | | | | |
| Sand Coarse | | X | | | | | | | | | | | | | | | | | |
| Sand Fine | | X | | | | | | | | | | | | | | | | | |
| Sand Medium | | X | | | | | | | | | | | | | | | | | |
| Sieve 0.375 inch, Percent Finer | | X | | | | | | | | | | | | | | | | | |
| Sieve 0.75 inch, Percent Finer | | X | | | | | | | | | | | | | | | | | |
| Sieve 1 inch, Percent Finer | | X | | | | | | | | | | | | | | | | | |
| Sieve 1.5 inch, Percent Finer | | X | | | | | | | | | | | | | | | | | |
| Sieve 2 inch, Percent Finer | | X | | | | | | | | | | | | | | | | | |
| Sieve 3 inch, Percent Finer | | X | | | | | | | | | | | | | | | | | |
| Sieve No. 10, Percent Finer | | X | | | | | | | | | | | | | | | | | |
| Sieve No. 100, Percent Finer | | X | | | | | | | | | | | | | | | | | |
| Sieve No. 20, Percent Finer | | X | | | | | | | | | | | | | | | | | |
| Sieve No. 200, Percent Finer | | X | | | | | | | | | | | | | | | | | |
| Sieve No. 40, Percent Finer | | X | | | | | | | | | | | | | | | | | |
| Sieve No. 60, Percent Finer | | X | | | | | | | | | | | | | | | | | |
| Sieve No. 80, Percent Finer | | X | | | | | | | | | | | | | | | | | |
| Sieve No.4, Percent Finer | | X | | | | | | | | | | | | | | | | | |
| Silt | | X | | | | | | | | | | | | | | | | | |
| Total Organic Carbon | | | | X | | | | | | | | | | | | | | | |
| Perfluorobutane sulfonate (PFBS) | X | | X | | X | X | | | | | | | | | | | | | X |
| Perfluorodecane sulfonic acid (PFDS) | | | | | X | | | | | | | | | | | | | | X |
| Perfluorodecanoic acid (PFDA) | | | X | | X | X | | | | | | | | | | | | | X |
| Perfluorododecanoic acid (PFDoA) | | | X | | X | X | | | | | | | | | | | | | X |
| Perfluoroheptane sulfonic acid (PFHpS) | | | | | X | | | | | | | | | | | | | | X |
| Perfluoroheptanoic acid (PFHpA) | X | | X | | X | X | | | | | | | | | | | | | X |
| Perfluorohexane sulfonic acid (PFHxS) | X | | | | X | X | | | | | | | | | | | | | X |
| Perfluorohexanoic acid (PFHxA) | | | X | | X | X | | | | | | | | | | | | | X |
| Perfluorononanoic acid (PFNA) | X | | X | | X | X | | | | | | | | | | | | | X |
| Perfluorooctane sulfonic acid (PFOS) | X | | X | | X | X | | | | | | | | | | | | | X |
| Perfluorooctanoic acid (PFOA) | X | | X | | X | X | | | | | | | | | | | | | X |
| Perfluorotetradecanoic acid (PFTeA) | | | X | | X | X | | | | | | | | | | | | | X |
| Perfluorotridecanoic acid (PFTrDA) | | | X | | X | X | | | | | | | | | | | | | X |
| Perfluoroundecanoic acid (PFUdA) | | | X | | X | X | | | | | | | | | | | | | X |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | | | X | | | X | | | | | | | | | | | | | |
| -Methylperfluoroocatane sulfonamidoacetic acid (MeFOSAA) | | | X | | | X | | | | | | | | | | | | | X |
| Ethane | | | | | | | X | | | | | | | | | | | | |
| Ethene | | | | | | | X | | | | | | | | | | | | |

Notes on Page 4.

**Table 8**
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**Interim Site Investigation Report**
**Marinette, Wisconsin**

| Analytes | CASC-SOP CTS-10.22.0 | D422 | E537 | LLOYD KAHN | PFASs | PFC_IDA | RSK175 | SM2320B | SM2540B | SM2540C | SM2540D | SM4500-H-B | SW6020 | SW8260B | SW9056A | SW9060 | TO15 | TO15SIM | WS-LC-0025 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Methane | | | | | | | X | | | | | | | | | | | | |
| Alkalinity | | | | | | | | X | | | | | | | | | | | |
| Total Solids | | | | | | | | | X | | | | | | | | | | |
| Total Dissolved Solids | | | | | | | | | | X | | | | | | | | | |
| Total Suspended Solids | | | | | | | | | | | X | | | | | | | | |
| pH | | | | | | | | | | | | X | | | | | | | |
| Iron | | | | | | | | | | | | | X | | | | | | |
| Manganese | | | | | | | | | | | | | X | | | | | | |
| 1,1,1,2-Tetrachloroethane | | | | | | | | | | | | | | X | | | | | |
| 1,1,1-Trichloroethane | | | | | | | | | | | | | | X | | | | X | |
| 1,1,2,2-Tetrachloroethane | | | | | | | | | | | | | | X | | | | X | |
| 1,1,2-Trichloroethane | | | | | | | | | | | | | | X | | | | X | |
| 1,1-Dichloroethane | | | | | | | | | | | | | | X | | | | X | |
| 1,1-Dichloroethene | | | | | | | | | | | | | | X | | | | X | |
| 1,1-Dichloropropene | | | | | | | | | | | | | | X | | | | | |
| 1,2,3-Trichlorobenzene | | | | | | | | | | | | | | X | | | | | |
| 1,2,3-Trichloropropane | | | | | | | | | | | | | | X | | | | | |
| 1,2,4-Trichlorobenzene | | | | | | | | | | | | | | X | | | X | | |
| 1,2,4-Trimethylbenzene | | | | | | | | | | | | | | X | | | X | | |
| 1,2-Dibromo-3-chloropropane | | | | | | | | | | | | | | X | | | | | |
| 1,2-Dibromoethane | | | | | | | | | | | | | | X | | | | X | |
| 1,2-Dichlorobenzene | | | | | | | | | | | | | | X | | | X | | |
| 1,2-Dichloroethane | | | | | | | | | | | | | | X | | | | X | |
| 1,2-Dichloropropane | | | | | | | | | | | | | | X | | | X | | |
| 1,3,5-Trimethylbenzene | | | | | | | | | | | | | | X | | | X | | |
| 1,3-Dichlorobenzene | | | | | | | | | | | | | | X | | | X | | |
| 1,3-Dichloropropane | | | | | | | | | | | | | | X | | | | | |
| 1,4-Dichlorobenzene | | | | | | | | | | | | | | X | | | | X | |
| 1,4-Dioxane | | | | | | | | | | | | | | X | | | X | | |
| 2,2-Dichloropropane | | | | | | | | | | | | | | X | | | | | |
| 2-Chlorotoluene | | | | | | | | | | | | | | X | | | | | |
| 4-Chlorotoluene | | | | | | | | | | | | | | X | | | | | |
| Benzene | | | | | | | | | | | | | | X | | | | X | |
| Bromobenzene | | | | | | | | | | | | | | X | | | | | |
| Bromochloromethane | | | | | | | | | | | | | | X | | | | | |
| Bromodichloromethane | | | | | | | | | | | | | | X | | | X | | |
| Bromoform | | | | | | | | | | | | | | X | | | X | | |
| Bromomethane | | | | | | | | | | | | | | X | | | X | | |
| Carbon Tetrachloride | | | | | | | | | | | | | | X | | | | X | |
| CFC-11 | | | | | | | | | | | | | | X | | | X | | |
| CFC-12 | | | | | | | | | | | | | | X | | | | X | |
| Chlorobenzene | | | | | | | | | | | | | | X | | | X | | |
| Chlorodibromomethane | | | | | | | | | | | | | | X | | | X | | |
| Chloroethane | | | | | | | | | | | | | | X | | | | X | |
| Chloroform | | | | | | | | | | | | | | X | | | | | |
| Chloromethane | | | | | | | | | | | | | | X | | | | X | |
| cis-1,2-Dichloroethene | | | | | | | | | | | | | | X | | | | X | |

Notes on Page 4.

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**Analytical Method Details**
**Interim Site Investigation Report**
**Marinette, Wisconsin**

| Analytes | CASC-SOP CTS-10.22.0 | D422 | E537 | LLOYD KAHN | PFASs | PFC_IDA | RSK175 | SM2320B | SM2540B | SM2540C | SM2540D | SM4500-H-B | SW6020 | SW8260B | SW9056A | SW9060 | TO15 | TO15SIM | WS-LC-0025 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| cis-1,3-Dichloropropene | | | | | | | | | | | | | | X | | | X | | |
| Cymene (p-Isopropyltoluene) | | | | | | | | | | | | | | X | | | | | |
| Dibromomethane | | | | | | | | | | | | | | X | | | | | |
| Dichloromethane | | | | | | | | | | | | | | X | | | X | | |
| Di-isopropyl ether | | | | | | | | | | | | | | X | | | | | |
| Ethylbenzene | | | | | | | | | | | | | | X | | | | X | |
| Hexachloro-1,3-butadiene | | | | | | | | | | | | | | X | | | X | | |
| Isopropylbenzene | | | | | | | | | | | | | | X | | | X | | |
| m&p-Xylenes | | | | | | | | | | | | | | X | | | | X | |
| Methyl-tert-butylether | | | | | | | | | | | | | | X | | | | X | |
| Naphthalene | | | | | | | | | | | | | | X | | | | | |
| n-Butylbenzene | | | | | | | | | | | | | | X | | | | | |
| n-Propylbenzene | | | | | | | | | | | | | | X | | | X | | |
| o-Xylene | | | | | | | | | | | | | | X | | | | | |
| sec-Butylbenzene | | | | | | | | | | | | | | X | | | | | |
| Styrene (Monomer) | | | | | | | | | | | | | | X | | | X | | |
| tert-Butylbenzene | | | | | | | | | | | | | | X | | | | | |
| Tetrachloroethene | | | | | | | | | | | | | | X | | | | X | |
| Toluene | | | | | | | | | | | | | | X | | | | X | |
| Total Xylenes | | | | | | | | | | | | | | X | | | | | |
| trans-1,2-Dichloroethene | | | | | | | | | | | | | | X | | | | X | |
| trans-1,3-Dichloropropene | | | | | | | | | | | | | | X | | | X | | |
| Trichloroethene | | | | | | | | | | | | | | X | | | | X | |
| Vinyl chloride | | | | | | | | | | | | | | X | | | | X | |
| Nitrate-N | | | | | | | | | | | | | | | X | | | | |
| Sulfate | | | | | | | | | | | | | | | X | | | | |
| Total Organic Carbon 2 | | | | | | | | | | | | | | | | X | | | |
| 1,1,2-trichloro-1,2,2-trifluoroethane | | | | | | | | | | | | | | | | | X | | |
| 1,3-Butadiene | | | | | | | | | | | | | | | | | X | | |
| 2,2,4-Trimethylpentane | | | | | | | | | | | | | | | | | X | | |
| 2-Butanone (MEK) | | | | | | | | | | | | | | | | | X | | |
| 4-Ethyltoluene | | | | | | | | | | | | | | | | | X | | |
| 4-Methyl-2-Pentanone | | | | | | | | | | | | | | | | | X | | |
| Acetone | | | | | | | | | | | | | | | | | X | | |
| Allyl chloride | | | | | | | | | | | | | | | | | X | | |
| Benzyl Chloride | | | | | | | | | | | | | | | | | X | | |
| Carbon Disulfide | | | | | | | | | | | | | | | | | X | | |
| Cyclohexane | | | | | | | | | | | | | | | | | X | | |
| Ethanol | | | | | | | | | | | | | | | | | X | | |
| Hexane | | | | | | | | | | | | | | | | | X | | |
| Isopropyl alcohol | | | | | | | | | | | | | | | | | X | | |
| Methyl N-Butyl Ketone (2-Hexanone) | | | | | | | | | | | | | | | | | X | | |
| n-Heptane | | | | | | | | | | | | | | | | | X | | |
| Tetrahydrofuran | | | | | | | | | | | | | | | | | X | | |
| 1,2-Dichlorotetrafluoroethane | | | | | | | | | | | | | | | | | | X | |
| Chloroform | | | | | | | | | | | | | | | | | | X | |
| o-Xylene | | | | | | | | | | | | | | | | | | X | |

Notes on Page 4.

**Table 8**
**Analytical Method Details**
**Interim Site Investigation Report**
**Marinette, Wisconsin**

| Analytes | CASC-SOP CTS-10.22.0 | D422 | E537 | LLOYD KAHN | PFASs | PFC_IDA | RSK175 | SM2320B | SM2540B | SM2540C | SM2540D | SM4500-H-B | SW6020 | SW8260B | SW9056A | SW9060 | TO15 | TO15SIM | WS-LC-0025 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6:2 Fluorotelomer sulfonic acid (6:2 FTSA) | | | | | | | | | | | | | | | | | | | X |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTSA) | | | | | | | | | | | | | | | | | | | X |
| Perfluorobutanoic acid (PFBA) | | | | | | | | | | | | | | | | | | | X |
| Perfluorooctane sulfonamide (PFOSA) | | | | | | | | | | | | | | | | | | | X |
| Perfluoropentanoic acid (PFPeA) | | | | | | | | | | | | | | | | | | | X |

**Methods:**

CASC-SOP CTS-10.22.0 = CASCADE Mobile Lab - PFAS via LCMSMS - SOP CTS-10.22.0
D422 = Standard Test Method for Particle-Size Analysis of Soil
E537 = Standard Test Method of Thermal Stability of Chemicals by Differential Scanning Calorimetry
Lloyd Kahn = Total Organic Carbon in Solids Samples
PFASs = MV note analytical method not provided so use base method
PFC_IDA = USEPA 537 Modified
RSK175 = Dissolved gases (methane, ethane, and/or ethene)
SM2320B = Tritation Method
SM2540B = Solids in Water
SM2540C = Solids in Water
SM2540D = Solids in Water
SM4500-H-B = pH Value Electrometric  Method
SW6020 = Inductively Coupled Plasma
SW8260B = Volatile Organic Compounds
SW9056A = Determination of Inorganic Anions by Ion
SW9060 = Total Organic Carbon
TO15 = Canister analysis of ambient air
TO15SIM = Compendium of Methods for Determination of Toxic Organic Compounds in Ambient Air, SIM Method
WS-LC-0025 = PFOA/PFOS using LC/MS/MS

**Notes:**

PFAS = Per- and polyfluoroalkyl substances
PFOS = Perfluorooctanesulfonic acid
PFOA = Perfluorooctanoic acid

**Table 9**
**VAP Groundwater Analytical Results - 2013 to 2014**
**Interim Site Investigation Report**
**Marinette, Wisconsin**

| | | Client Sample ID: | | FTC-58-S | FTC-59-S | FTC-60-S | FTC-61-S | FTC-62-S | FTC-63-S | FTC-71 | FTC-72 | FTC-73 | FTC-74 | FTC-75 | FTC-76 | FTC-77 | FTC-82 | FTC-83 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Semi-volatiles (EPA 537 MOD)** | | **Date Sampled:** | | **10/23/2013** | **10/23/2013** | **10/23/2013** | **10/23/2013** | **10/23/2013** | **10/23/2013** | **10/23/2013** | **10/23/2013** | **10/23/2013** | **10/23/2013** | **10/23/2013** | **10/23/2013** | **10/23/2013** | **4/21/2014** | **4/21/2014** |
| Perfluorohexanoic acid | PFHxA | 307-24-4 | µg/L | <4.0 | <8.0 | <20 | **4.0 J** | **16.9** | <20 | **251** | **56.6** | **84.2** | **25.5** | **68.9** | **142** | **87.2** | **2.01 B** | **0.931 B** |
| Perfluoroheptanoic acid | PFHpA | 375-85-9 | µg/L | **15.8** | **16.0 J** | **21.9 J** | **1.1** | **6.7 J** | <20 | **77.2** | **16.3** | **10.4** | **11.4** | **13.1** | **22.1 J** | <20 | **1.41 B** | **0.412 B** |
| Perfluorooctanoic acid | PFOA | 335-67-1 | µg/L | **31.2** | **136** | **254** | **11.8** | **32.6** | **84.5** | **50.3** | **16.2** | **34.8** | **24.6** | **14.7** | **40.9 J** | <20 | **22.3 B** | **0.336 B** |
| Perfluorononanoic acid | PFNA | 375-95-1 | µg/L | <4.0 | <8.0 | <20 | **0.46** | <4.0 | <20 | <20 | <2.0 | <4.0 | **2.9 J** | <3.2 | <20 | <20 | **9.17** | **0.103 J** |
| Perfluorodecanoic acid | PFDA | 335-76-2 | µg/L | <4.0 | <8.0 | <20 | **0.23** | <4.0 | <20 | <20 | <2.0 | <4.0 | <2.0 | <3.2 | <20 | <20 | **1.17 J** | **0.248** |
| Perfluoroundecanoic acid | PFUnA | 2058-94-8 | µg/L | <4.0 | <8.0 | <20 | **0.32** | **6.9 J** | <20 | <20 | <2.0 | <4.0 | <2.0 | <3.2 | <20 | <20 | **1.27** | **0.0860 J** |
| Perfluorododecanoic acid | PFDoA | 307-55-1 | µg/L | <4.0 | <8.0 | <20 | <0.080 | <4.0 | <20 | <20 | <2.0 | <4.0 | <2.0 | <3.2 | <20 | <20 | <0.49 | <0.048 |
| Perfluorotridecanoic acid | -- | 72629-94-8 | µg/L | <4.0 | <8.0 | <20 | **0.082 J** | <4.0 | <20 | <20 | <2.0 | <4.0 | <2.0 | <3.2 | <20 | <20 | <0.49 | <0.048 |
| Perfluorotetradecanoic acid | PFTA | 376-06-7 | µg/L | <4.0 | <8.0 | <20 | <0.080 | <4.0 | <20 | <20 | <2.0 | <4.0 | <2.0 | <3.2 | <20 | <20 | <0.49 | <0.048 |
| Perfluorobutanesulfonic acid | PFBuS | 375-73-5 | µg/L | <4.0 | <8.0 | **22.1 J** | <0.080 | <4.0 | **36.1 J** | **27.5 J** | <2.0 | **10.2** | <2.0 | **3.4 J** | **26.2 J** | <20 | <0.49 | <0.048 |
| Perfluorohexanesulfonic acid | PFHxS | 355-46-4 | µg/L | <4.0 | <8.0 | <20 | **0.46** | <4.0 | <20 | <20 | <2.0 | <4.0 | <2.0 | <3.2 | <20 | <20 | **10.4** | <0.048 |
| Perfluoroheptanesulfonic acid | PHFpS | 375-92-8 | µg/L | <4.0 | <8.0 | <20 | <0.080 | <4.0 | <20 | <20 | <2.0 | <4.0 | <2.0 | <3.2 | <20 | <20 | **1.86** | <0.048 |
| Perfluorooctanesulfonic acid | PFOS | 1763-23-1 | µg/L | <4.0 | <8.0 | <20 | **0.75** | **22** | <20 | <20 | <2.0 | <4.0 | <2.0 | <3.2 | <20 | <20 | **64.0 E** | **0.566** |
| Perfluorodecanesulfonic acid | -- | 335-77-3 | µg/L | <4.0 | <8.0 | <20 | <0.080 | <4.0 | <20 | <20 | <2.0 | <4.0 | <2.0 | <3.2 | <20 | <20 | <0.49 | <0.048 |

**Notes:**
**Detections are in bold.**
< = analyte not detected above corresponding method detection limit
µg/L = micrograms per liter (parts per billion)
VAP = vertical aquifer profiling

**Laboratory Qualifiers:**
B = Analyte detected in sample and associated blank sample.
E = Concentration exceeds calibration range of laboratory instrument.
J = Estimated value. Analyte detected above method detection limit but below reporting limit.

**Table 10**
**VAP Groundwater Analytical Results - 2016 to 2019**
**Interim Site Investigation Report**
**Marinette, Wisconsin**

| Method | Chemical Name | CAS_RN | Location | SB-4 | | SB-5 | | | SB-9 | | | | SB-15 | | | SB-16 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Sample Date | 6/17/2016 | 6/17/2016 | 6/17/2016 | 6/18/2016 | 6/26/2016 | 6/20/2016 | 6/20/2016 | 6/20/2016 | 6/25/2016 | 6/24/2016 | 6/24/2016 | 6/24/2016 | 6/24/2016 |
| | | | Depth (feet) | 15-20 | 30-35 | 5-10 | 35-40 | 45-50 | 5-10 | 20-25 | 35-40 | 45-50 | 5-10 | 15-20 | 35-40 | 30-35 |
| | | | Sample Type | N | N | N | N | N | N | N | N | N | N | N | N | N |
| | | | Unit | | | | | | | | | | | | | |
| CASC-SOP CTS-10.22.0 | Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| CASC-SOP CTS-10.22.0 | Perfluoroheptanoic acid (PFHpA) | 375-85-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| CASC-SOP CTS-10.22.0 | Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| CASC-SOP CTS-10.22.0 | Perfluorononanoic acid (PFNA) | 375-95-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| CASC-SOP CTS-10.22.0 | Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| CASC-SOP CTS-10.22.0 | Perfluorooctanoic acid (PFOA) | 335-67-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | N-Methylperfluoroocatane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorodecanoic acid (PFDA) | 335-76-2 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorododecanoic acid (PFDoA) | 307-55-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluoroheptanoic acid (PFHpA) | 375-85-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorohexanoic acid (PFHxA) | 307-24-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorononanoic acid (PFNA) | 375-95-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorooctanoic acid (PFOA) | 335-67-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorotetradecanoic acid (PFTeA) | 376-06-7 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluoroundecanoic acid (PFUdA) | 2058-94-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | N-Methylperfluoroocatane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorodecanoic acid (PFDA) | 335-76-2 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorododecanoic acid (PFDoA) | 307-55-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluoroheptanoic acid (PFHpA) | 375-85-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorohexanoic acid (PFHxA) | 307-24-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorononanoic acid (PFNA) | 375-95-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorooctanoic acid (PFOA) | 335-67-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorotetradecanoic acid (PFTeA) | 376-06-7 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluoroundecanoic acid (PFUdA) | 2058-94-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | 6:2 Fluorotelomer sulfonic acid (6:2 FTSA) | 27619-97-2 | ng/L | <3.5 UH | **1,400 H** | <3.6 UH | **1,600 JH** | **2,100** | <3.6 UH | <3.6 UH | **1,500 H** | **1,700** | <3.5 UH | **100 H** | **2,000** | **2,000** |
| WS-LC-0025 | 8:2 Fluorotelomer sulfonic acid (8:2 FTSA) | 39108-34-4 | ng/L | <3.7 UH | **1,300 H** | **5.8 JH** | **1,800 H** | **700 J** | <3.8 UH | <3.8 UH | **1,400 H** | **1,500 J** | <3.7 UH | **8.0 JH** | <390 U | **1,400 J** |
| WS-LC-0025 | N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | N-Methylperfluoroocatane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | ng/L | **1.6 JHB** | **24 HB** | **0.89 JHB** | **900 HB** | **510** | **1.1 JHB** | **1.1 JHB** | **54 HB** | **870** | **1.7 JHB** | **1.9 HB** | **130 J** | <91 U |
| WS-LC-0025 | Perfluorobutanoic acid (PFBA) | 375-22-4 | ng/L | **13 H** | **220 H** | **1.8 JH** | **3,200 H** | **4,100** | **3.7 H** | <0.43 UH | **380 H** | **4,400** | **4.5 H** | **17 H** | **1,400** | **3,900** |
| WS-LC-0025 | Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | ng/L | <1.1 UH | <11 UH | <1.1 UH | <110 UH | <120 U | <1.1 UH | <1.1 UH | <11 UH | <100 U | <1.1 UH | <1.1 UH | <120 U | <120 U |
| WS-LC-0025 | Perfluorodecanoic acid (PFDA) | 335-76-2 | ng/L | <0.40 UH | **42 H** | <0.41 UH | **720 H** | <43 U | <0.41 UH | <0.41 UH | **83 H** | **280** | <0.41 UH | <0.40 UH | <43 U | <43 U |
| WS-LC-0025 | Perfluorododecanoic acid (PFDoA) | 307-55-1 | ng/L | <0.54 UH | <5.5 UH | <0.55 UH | <53 UH | <58 U | <0.54 UH | <0.54 UH | <5.5 UH | <49 U | <0.54 UH | <0.53 UH | <57 U | <58 U |
| WS-LC-0025 | Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | ng/L | <0.65 UH | **11 JH** | <0.67 UH | **330 H** | <70 U | <0.66 UH | <0.66 UH | **24 H** | **260** | <0.66 UH | **0.72 JH** | <69 U | <70 U |
| WS-LC-0025 | Perfluoroheptanoic acid (PFHpA) | 375-85-9 | ng/L | **3.7 H** | **470 H** | <0.75 UH | **4,600 H** | **7,800** | **1.6 JH** | <0.75 UH | **650 H** | **6,700** | **3.3 H** | **16 H** | **9,100** | **3,900** |
| WS-LC-0025 | Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | ng/L | **2.8 H** | **210 H** | <0.82 UH | **7,300 H** | **4,200** | **1.2 JH** | <0.81 UH | **540 H** | **7,600** | **2.6 H** | **5.3 H** | **990** | **350** |
| WS-LC-0025 | Perfluorohexanoic acid (PFHxA) | 307-24-4 | ng/L | **12 H** | **680 H** | **0.82 JH** | **13,000 H** | **21,000** | **6.8 H** | <0.73 UH | **1,300 H** | **16,000** | **5.7 H** | **24 H** | **4,800** | **11,000** |

Notes on Page 2.

**Table 10**
**VAP Groundwater Analytical Results - 2016 to 2019**
**Interim Site Investigation Report**
**Marinette, Wisconsin**

| Method | Chemical Name | CAS_RN | Location | SB-4 | | SB-5 | | | SB-9 | | | | SB-15 | | | SB-16 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Sample Date | 6/17/2016 | 6/17/2016 | 6/17/2016 | 6/18/2016 | 6/26/2016 | 6/20/2016 | 6/20/2016 | 6/20/2016 | 6/25/2016 | 6/24/2016 | 6/24/2016 | 6/24/2016 | 6/24/2016 |
| | | | Depth (feet) | 15-20 | 30-35 | 5-10 | 35-40 | 45-50 | 5-10 | 20-25 | 35-40 | 45-50 | 5-10 | 15-20 | 35-40 | 30-35 |
| | | | Sample Type | N | N | N | N | N | N | N | N | N | N | N | N | N |
| | | | Unit | | | | | | | | | | | | | |
| WS-LC-0025 | Perfluorononanoic acid (PFNA) | 375-95-1 | ng/L | <0.60 UH | **170 H** | <0.61 UH | **6,700 H** | **2,100** | <0.61 UH | <0.61 UH | **290 H** | **5,900** | **0.61 JH** | **2.7 H** | **4,700** | **2,000** |
| WS-LC-0025 | Perfluorooctane sulfonamide (PFOSA) | 754-91-6 | ng/L | **0.64 JH** | **110 H** | **1.3 JH** | **5,400 H** | **100 J** | **2.3 H** | **0.77 JH** | **270 H** | **4,000** | <0.59 UH | **1.2 JH** | <62 U | <63 U |
| WS-LC-0025 | Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | ng/L | <1.2 UH | **270 H** | <1.2 UH | **12,000 H** | **1,400 B** | <1.2 UH | <1.2 UH | **680 H** | **3,600** | **4.5 H** | **12 H** | **200 B** | **1,500 B** |
| WS-LC-0025 | Perfluorooctanoic acid (PFOA) | 335-67-1 | ng/L | **30 H** | **2,100 H** | **3.4 H** | **91,000 HE** | **190,000 EB** | **16 H** | **1.4 JH** | **5,000 H** | **150,000 E** | **21 H** | **230 H** | **59,000 B** | **16,000 B** |
| WS-LC-0025 | Perfluoropentanoic acid (PFPeA) | 2706-90-3 | ng/L | **7.7 H** | **690 H** | <0.93 UH | **8,900 H** | **11,000** | **7.8 H** | <0.92 UH | **1,100 H** | **11,000** | **6.7 H** | **31 H** | **4,300** | **16,000** |
| WS-LC-0025 | Perfluorotetradecanoic acid (PFTeA) | 376-06-7 | ng/L | <0.18 UH | <1.9 UH | <0.19 UH | <18 UH | <20 U | <0.19 UH | **2.5 HB** | <1.9 UH | <17 U | <0.18 UH | <0.18 UH | <19 U | <20 U |
| WS-LC-0025 | Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | ng/L | <0.51 UH | <5.2 UH | <0.52 UH | <50 UH | <54 U | <0.51 UH | <0.51 UH | <5.2 UH | <46 U | <0.51 UH | <0.50 UH | <54 U | <54 U |
| WS-LC-0025 | Perfluoroundecanoic acid (PFUdA) | 2058-94-8 | ng/L | <0.69 UH | **11 JH** | <0.70 UH | **260 H** | <74 U | <0.70 UH | <0.70 UH | **30 H** | <63 U | <0.69 UH | <0.68 UH | <73 U | <74 U |

**Notes:**
**Detections are in bold.**
< = analyte not detected above corresponding method detection limit
FD = field duplicate sample type
N = normal sample type
NA = not analyzed
ng/L = nanograms per liter
VAP = vertical aquifer profiling

**Laboratory Qualifiers:**
B = Analyte detected in sample and associated blank sample.
H = Exceeded holding times.
E = Concentration exceeds calibration range of laboratory instrument.
J = Estimated value. Analyte detected above method detection limit but below reporting limit.
R = rejected analyte.
U = The compound was analyzed for but not detected.

**Table 10**
**VAP Groundwater Analytical Results - 2016 to 2019**
**Interim Site Investigation Report**
**Marinette, Wisconsin**

| Method | Chemical Name | CAS_RN | Location | SB-29 | | | SB-30 | | | SB-32 | | | SB-35 | | | SB-45 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Sample Date | 8/24/2016 | 8/24/2016 | 8/24/2016 | 9/1/2016 | 9/1/2016 | 9/1/2016 | 8/23/2016 | 8/23/2016 | 8/23/2016 | 8/26/2016 | 8/26/2016 | 8/26/2016 | 8/28/2016 | 8/28/2016 |
| | | | Depth (feet) | 5-10 | 20-25 | 30-35 | 5-10 | 20-25 | 30-35 | 5-10 | 30-35 | 40-45 | 5-10 | 30-35 | 40-45 | 5-10 | 15-20 |
| | | | Sample Type | N | N | N | N | N | N | N | N | N | N | N | N | N | N |
| | | | Unit | | | | | | | | | | | | | | |
| CASC-SOP CTS-10.22.0 | Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| CASC-SOP CTS-10.22.0 | Perfluoroheptanoic acid (PFHpA) | 375-85-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| CASC-SOP CTS-10.22.0 | Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| CASC-SOP CTS-10.22.0 | Perfluorononanoic acid (PFNA) | 375-95-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| CASC-SOP CTS-10.22.0 | Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| CASC-SOP CTS-10.22.0 | Perfluorooctanoic acid (PFOA) | 335-67-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | N-Methylperfluoroocatane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorodecanoic acid (PFDA) | 335-76-2 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorododecanoic acid (PFDoA) | 307-55-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluoroheptanoic acid (PFHpA) | 375-85-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorohexanoic acid (PFHxA) | 307-24-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorononanoic acid (PFNA) | 375-95-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorooctanoic acid (PFOA) | 335-67-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorotetradecanoic acid (PFTeA) | 376-06-7 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluoroundecanoic acid (PFUdA) | 2058-94-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | N-Methylperfluoroocatane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorodecanoic acid (PFDA) | 335-76-2 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorododecanoic acid (PFDoA) | 307-55-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluoroheptanoic acid (PFHpA) | 375-85-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorohexanoic acid (PFHxA) | 307-24-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorononanoic acid (PFNA) | 375-95-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorooctanoic acid (PFOA) | 335-67-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorotetradecanoic acid (PFTeA) | 376-06-7 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluoroundecanoic acid (PFUdA) | 2058-94-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | 6:2 Fluorotelomer sulfonic acid (6:2 FTSA) | 27619-97-2 | ng/L | <3.3 U | **38 J** | **340** | <3.3 U | <3.8 U | **570** | **43** | <3.4 U | **1,600** | <3.7 U | **270** | **1,400** | **210** | **150** |
| WS-LC-0025 | 8:2 Fluorotelomer sulfonic acid (8:2 FTSA) | 39108-34-4 | ng/L | <3.5 U | <37 U | **31** | <3.5 U | <4.0 U | <4.0 U | **10 J** | <3.6 U | **1,500** | <3.9 U* | **180 H** | **2,100 H** | **27** | **370 J** |
| WS-LC-0025 | N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | N-Methylperfluoroocatane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | ng/L | **2.3 B** | <8.5 U | **2.2 B** | **1.9 B** | **1.5 JB** | **4.9 B** | **1.4 JB** | **1.6 JB** | **220 B** | **1.6 JB** | **4.1 B** | **130 B** | **4.1 B** | **2.3 B** |
| WS-LC-0025 | Perfluorobutanoic acid (PFBA) | 375-22-4 | ng/L | **4.2** | **39** | **89** | **50 B** | **0.76 JB** | **33 B** | **2.6** | **3.7** | **850** | **17 B** | **65 B** | **1,000 B** | **2,400 B** | **750 B** |
| WS-LC-0025 | Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | ng/L | <1.0 U | <11 U | <1.1 U | <1.0 U | <1.2 U | <1.2 U | <1.0 U | <1.1 U | <11 U | <1.2 U | <1.2 U | <1.2 U | <1.1 U | <1.2 U |
| WS-LC-0025 | Perfluorodecanoic acid (PFDA) | 335-76-2 | ng/L | <0.38 U | <4.1 U | <0.40 U | <0.38 U | <0.44 U | <0.44 U | <0.36 U | <0.39 U | **200** | <0.43 U | **2.2** | **180** | **51** | **67** |
| WS-LC-0025 | Perfluorododecanoic acid (PFDoA) | 307-55-1 | ng/L | <0.50 U | <5.4 U | <0.54 U | <0.50 U | <0.58 U | <0.58 U | <0.48 U | <0.51 U | <5.5 U | <0.57 U | <0.58 U | <0.58 U | <0.52 U | <0.56 U |
| WS-LC-0025 | Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | ng/L | <0.61 U | <6.6 U | <0.66 U | <0.61 U | <0.71 U | <0.71 U | <0.59 U | <0.63 U | **80** | <0.70 U | **1.8 J** | **32** | <0.63 U | **1.8 J** |
| WS-LC-0025 | Perfluoroheptanoic acid (PFHpA) | 375-85-9 | ng/L | **2.8** | **88** | **110** | <0.69 U | <0.80 U | **51** | **0.93 J** | **1.8** | **1,800** | **3.3** | **100** | **1,900** | **5,200** | **1,600** |
| WS-LC-0025 | Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | ng/L | **5.4** | **33** | **11** | <0.75 U | <0.87 U | **120** | **0.73 J** | **2.2** | **1,500** | **2.2** | **69** | **1,200** | **48** | **40** |
| WS-LC-0025 | Perfluorohexanoic acid (PFHxA) | 307-24-4 | ng/L | **5.2** | **130** | **200** | **0.96 J** | <0.78 U | **180** | **2.9** | **2.7** | **3,600** | **8.4** | **170** | **4,800** | **9,000** | **5,200** |

Notes on Page 4.

**Table 10**
**VAP Groundwater Analytical Results - 2016 to 2019**
**Interim Site Investigation Report**
**Marinette, Wisconsin**

| Method | Chemical Name | CAS_RN | Location | SB-29 | | | SB-30 | | | SB-32 | | | SB-35 | | | SB-45 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Sample Date | 8/24/2016 | 8/24/2016 | 8/24/2016 | 9/1/2016 | 9/1/2016 | 9/1/2016 | 8/23/2016 | 8/23/2016 | 8/23/2016 | 8/26/2016 | 8/26/2016 | 8/26/2016 | 8/28/2016 | 8/28/2016 |
| | | | Depth (feet) | 5-10 | 20-25 | 30-35 | 5-10 | 20-25 | 30-35 | 5-10 | 30-35 | 40-45 | 5-10 | 30-35 | 40-45 | 5-10 | 15-20 |
| | | | Sample Type | N | N | N | N | N | N | N | N | N | N | N | N | N | N |
| | | | Unit | | | | | | | | | | | | | | |
| WS-LC-0025 | Perfluorononanoic acid (PFNA) | 375-95-1 | ng/L | <0.56 U | **9.5 J** | **11** | <0.56 U | <0.65 U | **2,600** | **0.92 J** | <0.58 U | **2,100** | <0.64 U | **12** | **1,100** | **61** | **250** |
| WS-LC-0025 | Perfluorooctane sulfonamide (PFOSA) | 754-91-6 | ng/L | **0.90 JH** | <5.9 U | **1.7 JH** | **2.3 B** | **1.8 JB** | **1.7 JB** | **2.8 H** | **0.97 JH** | **360 B** | **1.6 JB** | **0.95 JB** | **300 HB** | **2.7 B** | **1.9 B** |
| WS-LC-0025 | Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | ng/L | **1.6 J** | **61** | **11** | <1.1 U | <1.3 U | **1.8 J** | **3.4** | <1.1 U | **4,000** | <1.2 U | **86** | **4,000** | **7.1** | **45** |
| WS-LC-0025 | Perfluorooctanoic acid (PFOA) | 335-67-1 | ng/L | **58** | **590** | **300** | **4.0** | **2.8** | **1,100** | **8.6** | **24** | **24,000** | **47** | **1400** | **29,000** | **3,300** | **8,400** |
| WS-LC-0025 | Perfluoropentanoic acid (PFPeA) | 2706-90-3 | ng/L | **4.2** | **97** | **240** | **2.7** | <0.99 U | **160** | **2.7** | **2.4** | **2,300** | **8.8** | **170** | **2700** | **8,900** | **3,200** |
| WS-LC-0025 | Perfluorotetradecanoic acid (PFTeA) | 376-06-7 | ng/L | <0.17 U | <1.8 U | <0.18 U | **0.53 J** | <0.20 U | <0.20 U | <0.16 U | <0.18 U | <1.9 U | **0.38 J*B** | **0.25 J*B** | **0.74 J*B** | **0.39 J*B** | **0.99 J*B** |
| WS-LC-0025 | Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | ng/L | <0.47 U | <5.1 U | <0.51 U | **0.52 J** | <0.55 U | <0.55 U | <0.45 U | <0.48 U | <5.2 U | <0.54 U | <0.54 U | <0.55 U | <0.49 U | <0.53 U |
| WS-LC-0025 | Perfluoroundecanoic acid (PFUdA) | 2058-94-8 | ng/L | <0.64 U | <6.9 U | <0.69 U | <0.64 U | <0.75 U | <0.75 U | <0.62 U | <0.66 U | **81** | <0.73 U | **1.5 J** | **84** | <0.66 U | <0.71 U |

**Notes:**
**Detections are in bold.**
< = analyte not detected above corresponding method detection limit
FD = field duplicate sample type
N = normal sample type
NA = not analyzed
ng/L = nanograms per liter
VAP = vertical aquifer profiling

**Laboratory Qualifiers:**
B = Analyte detected in sample and associated blank sample.
H = Exceeded holding times.
E = Concentration exceeds calibration range of laboratory instrument.
J = Estimated value. Analyte detected above method detection limit but below reporting limit.
R = rejected analyte.
U = The compound was analyzed for but not detected.

**Table 10**
**VAP Groundwater Analytical Results - 2016 to 2019**
**Interim Site Investigation Report**
**Marinette, Wisconsin**

| Method | Chemical Name | CAS_RN | Location | SB-45 (continued) | | SB-46 | | | | SB-47 | | | | | SB-48 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Sample Date | 8/28/2016 | 8/28/2016 | 8/30/2016 | 8/30/2016 | 8/30/2016 | 8/30/2016 | 8/29/2016 | 8/29/2016 | 8/29/2016 | 8/29/2016 | 8/29/2016 | 8/15/2017 | 8/15/2017 | 8/15/2017 |
| | | | Depth (feet) | 25-30 | 35-40 | 5-10 | 15-20 | 25-30 | 35-40 | 5-10 | 15-20 | 25-30 | 35-40 | 45-50 | 5-10 | 30-35 | 35-40 |
| | | | Sample Type | N | N | N | N | N | N | N | N | N | N | N | N | N | N |
| | | | Unit | | | | | | | | | | | | | | |
| CASC-SOP CTS-10.22.0 | Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| CASC-SOP CTS-10.22.0 | Perfluoroheptanoic acid (PFHpA) | 375-85-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| CASC-SOP CTS-10.22.0 | Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| CASC-SOP CTS-10.22.0 | Perfluorononanoic acid (PFNA) | 375-95-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| CASC-SOP CTS-10.22.0 | Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| CASC-SOP CTS-10.22.0 | Perfluorooctanoic acid (PFOA) | 335-67-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | N-Methylperfluoroocatane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorodecanoic acid (PFDA) | 335-76-2 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorododecanoic acid (PFDoA) | 307-55-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluoroheptanoic acid (PFHpA) | 375-85-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorohexanoic acid (PFHxA) | 307-24-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorononanoic acid (PFNA) | 375-95-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorooctanoic acid (PFOA) | 335-67-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorotetradecanoic acid (PFTeA) | 376-06-7 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluoroundecanoic acid (PFUdA) | 2058-94-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | N-Methylperfluoroocatane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorodecanoic acid (PFDA) | 335-76-2 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorododecanoic acid (PFDoA) | 307-55-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluoroheptanoic acid (PFHpA) | 375-85-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorohexanoic acid (PFHxA) | 307-24-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorononanoic acid (PFNA) | 375-95-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorooctanoic acid (PFOA) | 335-67-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorotetradecanoic acid (PFTeA) | 376-06-7 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluoroundecanoic acid (PFUdA) | 2058-94-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | 6:2 Fluorotelomer sulfonic acid (6:2 FTSA) | 27619-97-2 | ng/L | **93** | **1,300** | **1,700** | **1,500** | **1,200** | **1,600** | **1,400 H** | **1,200 H** | **1,000 H** | **900 H** | **1,200 H** | **45** | **24** | **42** |
| WS-LC-0025 | 8:2 Fluorotelomer sulfonic acid (8:2 FTSA) | 39108-34-4 | ng/L | **1,900** | **210** | **1,600** | **360** | **1,500** | **1,500** | **770 H** | **710 H** | **1,500 H** | **1,600 H** | **420 H** | <4.0 U | <4.0 U | <4.0 U |
| WS-LC-0025 | N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | N-Methylperfluoroocatane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | ng/L | **9.3 B** | **4.2 B** | **5.2 B** | **18 B** | **30 B** | **9.0 B** | **2.2 HB** | **310 HB** | **460 HB** | **730 HB** | **390 HB** | **3.3** | **4.1** | **6.1** |
| WS-LC-0025 | Perfluorobutanoic acid (PFBA) | 375-22-4 | ng/L | **4,000 B** | **350 B** | **270 B** | **1,300 B** | **2,000 B** | **430 B** | **120 HB** | **2,600 HB** | **1,600 HB** | **2,300 HB** | **3,600 HB** | **63 B** | **60 B** | **51 B** |
| WS-LC-0025 | Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | ng/L | <1.1 U | <1.1 U | **2.1** | <1.2 U | <1.2 U | <1.2 U | **1.7 JH** | <5.3 UH | <1.1 UH | <1.2 UH | <1.5 UH | <1.2 U | <1.2 U | <1.2 U |
| WS-LC-0025 | Perfluorodecanoic acid (PFDA) | 335-76-2 | ng/L | **490** | **7.1** | **680** | **620** | **220** | **160** | **26 H** | **770 H** | **360 H** | **310 H** | **600 H** | **1.4 J** | **0.56 J** | <0.44 U |
| WS-LC-0025 | Perfluorododecanoic acid (PFDoA) | 307-55-1 | ng/L | <0.54 U | <0.54 U | **3.1** | **2.4** | **2.4** | **1.1 J** | **45 H** | <2.6 UH | **0.72 JH** | **0.69 JH** | **3.4 H** | <0.58 U | <0.57 U | <0.58 U |
| WS-LC-0025 | Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | ng/L | **5.1** | **3.2** | **4.5** | **250** | **15** | **10** | **1.9 H** | **96 H** | **140 H** | **210 H** | **120 H** | <0.71 U | <0.70 U | <0.71 U |
| WS-LC-0025 | Perfluoroheptanoic acid (PFHpA) | 375-85-9 | ng/L | **3,800** | **430** | **530** | **1,200** | **2,500** | **710** | **340 H** | **4,900 H** | **2,400 H** | **3,100 H** | **4,800 H** | **7.3** | **18** | **62** |
| WS-LC-0025 | Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | ng/L | **220** | **59** | **48** | **560** | **540** | **250** | **3.1 H** | **2,600 H** | **3,000 H** | **4,400 H** | **3,400 H** | **1.6 J** | **1.6 J** | **6.7** |
| WS-LC-0025 | Perfluorohexanoic acid (PFHxA) | 307-24-4 | ng/L | **13,000** | **760** | **940** | **2,400** | **6,000** | **1,000** | **1,100 H** | **8,500 H** | **7,800 H** | **12,000 H** | **14,000 H** | **18** | **96** | **150** |

Notes on Page 6.

**Table 10**
**VAP Groundwater Analytical Results - 2016 to 2019**
**Interim Site Investigation Report**
**Marinette, Wisconsin**

| Method | Chemical Name | CAS_RN | Location | SB-45 (continued) | | SB-46 | | | | SB-47 | | | | | SB-48 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Sample Date | 8/28/2016 | 8/28/2016 | 8/30/2016 | 8/30/2016 | 8/30/2016 | 8/30/2016 | 8/29/2016 | 8/29/2016 | 8/29/2016 | 8/29/2016 | 8/29/2016 | 8/15/2017 | 8/15/2017 | 8/15/2017 |
| | | | Depth (feet) | 25-30 | 35-40 | 5-10 | 15-20 | 25-30 | 35-40 | 5-10 | 15-20 | 25-30 | 35-40 | 45-50 | 5-10 | 30-35 | 35-40 |
| | | | Sample Type | N | N | N | N | N | N | N | N | N | N | N | N | N | N |
| | | | Unit | | | | | | | | | | | | | | |
| WS-LC-0025 | Perfluorononanoic acid (PFNA) | 375-95-1 | ng/L | **1,200** | **45** | **380** | **1,800** | **760** | **210** | **11 H** | **3,700 H** | **3,000 H** | **2,500 H** | **3,700 H** | **2.0** | **1.1 J** | **0.73 J** |
| WS-LC-0025 | Perfluorooctane sulfonamide (PFOSA) | 754-91-6 | ng/L | **64 B** | **6.1 B** | **240** | **290** | **110** | **53** | **10 H** | **2,000 H** | **1,800 H** | **1,100 H** | **2,200 H** | **2.3 J** | <0.62 U | **0.70 J** |
| WS-LC-0025 | Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | ng/L | **3,700** | **130** | **590** | **9,500** | **2,000** | **1,600** | **8.6 H** | **9,500 H** | **5,500 H** | **6,200 H** | **8,700 H** | **14** | <1.2 U | <1.3 U |
| WS-LC-0025 | Perfluorooctanoic acid (PFOA) | 335-67-1 | ng/L | **8,600** | **6,400** | **2,500** | **4,100** | **13,000** | **4,400** | **81 H** | **65,000 H** | **29,000 H** | **24,000 H** | **80,000 H** | **27** | **37** | **1200** |
| WS-LC-0025 | Perfluoropentanoic acid (PFPeA) | 2706-90-3 | ng/L | **12,000** | **960** | **1,100** | **2,700** | **6,800** | **1,100** | **340 H** | **6,100 H** | **3,400 H** | **5,800 H** | **9,700 H** | **33** | **48** | **59** |
| WS-LC-0025 | Perfluorotetradecanoic acid (PFTeA) | 376-06-7 | ng/L | **0.98 J*B** | **1.0 J*B** | **0.65 JB** | **0.36 JB** | **0.39 JB** | **0.96 JB** | **0.41 JHB** | <0.88 UH | <0.18 UH | **0.98 JHB** | <0.25 UH | <0.20 U | <0.19 U | <0.20 U |
| WS-LC-0025 | Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | ng/L | <0.51 U | <0.51 U | <0.57 U | **1.5 J** | **1.4 J** | **0.71 J** | **7.0 H** | <2.4 UH | <0.51 UH | <0.54 UH | **0.93 JH** | **3.8** | <0.54 U | <0.55 U |
| WS-LC-0025 | Perfluoroundecanoic acid (PFUdA) | 2058-94-8 | ng/L | **100** | **0.90 J** | **580** | **150** | **53** | **94** | **24 H** | **380 H** | **45 H** | **8.5 H** | **130 H** | **2.5** | <0.73 U | <0.74 U |

**Notes:**
**Detections are in bold.**
< = analyte not detected above corresponding method detection limit
FD = field duplicate sample type
N = normal sample type
NA = not analyzed
ng/L = nanograms per liter
VAP = vertical aquifer profiling

**Laboratory Qualifiers:**
B = Analyte detected in sample and associated blank sample.
H = Exceeded holding times.
E = Concentration exceeds calibration range of laboratory instrument.
J = Estimated value. Analyte detected above method detection limit but below reporting limit.
R = rejected analyte.
U = The compound was analyzed for but not detected.

**Table 10**
**VAP Groundwater Analytical Results - 2016 to 2019**
**Interim Site Investigation Report**
**Marinette, Wisconsin**

| Method | Chemical Name | CAS_RN | Location | SB-48 (continued) | | | | | PZ-23 | | | | SB-49 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Sample Date | 8/15/2017 | 8/15/2017 | 8/16/2017 | 8/16/2017 | 8/16/2017 | 8/16/2017 | 8/17/2017 | 8/17/2017 | 8/17/2017 | 8/18/2017 | 8/18/2017 | 8/18/2017 | 8/18/2017 | 8/18/2017 |
| | | | Depth (feet) | 40-45 | 45-50 | 50-55 | 55-60 | 60-65 | 30-35 | 35-40 | 40-45 | 45-50 | 5-10 | 30-35 | 30-35 | 35-40 | 40-45 |
| | | | Sample Type | N | N | N | N | N | N | N | N | N | N | FD | N | N | N |
| | | | Unit | | | | | | | | | | | | | | |
| CASC-SOP CTS-10.22.0 | Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| CASC-SOP CTS-10.22.0 | Perfluoroheptanoic acid (PFHpA) | 375-85-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| CASC-SOP CTS-10.22.0 | Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| CASC-SOP CTS-10.22.0 | Perfluorononanoic acid (PFNA) | 375-95-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| CASC-SOP CTS-10.22.0 | Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| CASC-SOP CTS-10.22.0 | Perfluorooctanoic acid (PFOA) | 335-67-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | N-Methylperfluoroocatane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorodecanoic acid (PFDA) | 335-76-2 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorododecanoic acid (PFDoA) | 307-55-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluoroheptanoic acid (PFHpA) | 375-85-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorohexanoic acid (PFHxA) | 307-24-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorononanoic acid (PFNA) | 375-95-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorooctanoic acid (PFOA) | 335-67-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorotetradecanoic acid (PFTeA) | 376-06-7 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluoroundecanoic acid (PFUdA) | 2058-94-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | N-Methylperfluoroocatane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | ng/L | NA | NA | NA | NA | NA | **40 B** | **16 B** | **740 B** | **100 B** | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorodecanoic acid (PFDA) | 335-76-2 | ng/L | NA | NA | NA | NA | NA | **1.0 J** | <0.42 U | <0.47 U | <0.44 U | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorododecanoic acid (PFDoA) | 307-55-1 | ng/L | NA | NA | NA | NA | NA | <0.63 U | <0.56 U | <0.63 U | <0.58 U | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluoroheptanoic acid (PFHpA) | 375-85-9 | ng/L | NA | NA | NA | NA | NA | **14** | **23** | **4,900** | **530** | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | ng/L | NA | NA | NA | NA | NA | **5.5** | **5.3** | **250** | **18** | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorohexanoic acid (PFHxA) | 307-24-4 | ng/L | NA | NA | NA | NA | NA | **35** | **31** | **5,400** | **540** | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorononanoic acid (PFNA) | 375-95-1 | ng/L | NA | NA | NA | NA | NA | **4.2** | **9.6** | **120** | **10** | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | ng/L | NA | NA | NA | NA | NA | <1.4 U | <1.2 U | <1.4 U | <1.3 U | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorooctanoic acid (PFOA) | 335-67-1 | ng/L | NA | NA | NA | NA | NA | **62** | **110** | **29,000** | **2,400** | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorotetradecanoic acid (PFTeA) | 376-06-7 | ng/L | NA | NA | NA | NA | NA | **0.42 J** | <0.19 U | <0.21 U | <0.20 U | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | ng/L | NA | NA | NA | NA | NA | <0.59 U | <0.53 U | <0.59 U | <0.55 U | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluoroundecanoic acid (PFUdA) | 2058-94-8 | ng/L | NA | NA | NA | NA | NA | <0.80 U | <0.72 U | <0.80 U | <0.74 U | NA | NA | NA | NA | NA |
| WS-LC-0025 | 6:2 Fluorotelomer sulfonic acid (6:2 FTSA) | 27619-97-2 | ng/L | **51** | **35** | **51** | **54** | **55** | NA | NA | NA | NA | **7.2 J** | **530** | **150** | **420 J** | **420 J** |
| WS-LC-0025 | 8:2 Fluorotelomer sulfonic acid (8:2 FTSA) | 39108-34-4 | ng/L | <4.0 U | <4.2 U | **4.0 J** | <3.8 U | <4.3 U | NA | NA | NA | NA | <3.8 U | **49** | **10 J** | **46** | **47** |
| WS-LC-0025 | N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | N-Methylperfluoroocatane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | ng/L | **3.1** | **4.6** | **3.7** | **3.5** | **4.0** | NA | NA | NA | NA | **2.0** | **7.3** | **4.6** | **15** | **8.0** |
| WS-LC-0025 | Perfluorobutanoic acid (PFBA) | 375-22-4 | ng/L | **45 B** | **41 B** | **38 B** | **32 B** | **32 B** | NA | NA | NA | NA | **17 B** | **76 B** | **51 B** | **170 B** | **100 B** |
| WS-LC-0025 | Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | ng/L | <1.2 U | <1.3 U | <1.2 U | <1.1 U | <1.3 U | NA | NA | NA | NA | <1.1 U | <1.2 U | <1.2 U | <1.2 U | <1.2 U |
| WS-LC-0025 | Perfluorodecanoic acid (PFDA) | 335-76-2 | ng/L | **0.44 J** | **1.0 J** | **0.85 J** | **0.59 J** | **0.73 J** | NA | NA | NA | NA | <0.41 U | **1.4 J** | **0.77 J** | **3.2** | **2.4** |
| WS-LC-0025 | Perfluorododecanoic acid (PFDoA) | 307-55-1 | ng/L | <0.57 U | <0.61 U | <0.56 U | <0.54 U | <0.62 U | NA | NA | NA | NA | <0.55 U | <0.57 U | <0.58 U | <0.56 U | <0.56 U |
| WS-LC-0025 | Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | ng/L | <0.70 U | <0.75 U | <0.69 U | <0.67 U | <0.76 U | NA | NA | NA | NA | <0.67 U | **2.3** | <0.70 U | **0.99 J** | **1.0 J** |
| WS-LC-0025 | Perfluoroheptanoic acid (PFHpA) | 375-85-9 | ng/L | **12** | **33** | **9.7** | **11** | **19** | NA | NA | NA | NA | **5.8** | **130** | **31** | **270** | **150** |
| WS-LC-0025 | Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | ng/L | **2.6** | **5.2** | **2.5** | **4.4** | **8.2** | NA | NA | NA | NA | **1.7 J** | **51** | **12** | **66** | **43** |
| WS-LC-0025 | Perfluorohexanoic acid (PFHxA) | 307-24-4 | ng/L | **37** | **96** | **31** | **34** | **57** | NA | NA | NA | NA | **6.4** | **250** | **65** | **760** | **410** |

Notes on Page 8.

**Table 10**
**VAP Groundwater Analytical Results - 2016 to 2019**
**Interim Site Investigation Report**
**Marinette, Wisconsin**

| Method | Chemical Name | CAS_RN | Location | SB-48 (continued) | | | | | PZ-23 | | | | SB-49 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Sample Date | 8/15/2017 | 8/15/2017 | 8/16/2017 | 8/16/2017 | 8/16/2017 | 8/16/2017 | 8/17/2017 | 8/17/2017 | 8/17/2017 | 8/18/2017 | 8/18/2017 | 8/18/2017 | 8/18/2017 | 8/18/2017 |
| | | | Depth (feet) | 40-45 | 45-50 | 50-55 | 55-60 | 60-65 | 30-35 | 35-40 | 40-45 | 45-50 | 5-10 | 30-35 | 30-35 | 35-40 | 40-45 |
| | | | Sample Type | N | N | N | N | N | N | N | N | N | N | FD | N | N | N |
| | | | Unit | | | | | | | | | | | | | | |
| WS-LC-0025 | Perfluorononanoic acid (PFNA) | 375-95-1 | ng/L | **0.92 J** | **5.2** | **2.7** | **3.9** | **6.6** | NA | NA | NA | NA | <0.61 U | **27** | **5.9** | **44** | **30** |
| WS-LC-0025 | Perfluorooctane sulfonamide (PFOSA) | 754-91-6 | ng/L | **0.80 J** | **1.1 J** | **1.2 J** | **1.2 J** | **0.79 J** | NA | NA | NA | NA | **0.86 J** | **27 J** | **6.5 J** | **31 J** | **35 J** |
| WS-LC-0025 | Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | ng/L | <1.2 U | <1.3 U | **6.2** | **6.3** | **2.7** | NA | NA | NA | NA | <1.2 U | **51** | **7.6** | **44** | **35** |
| WS-LC-0025 | Perfluorooctanoic acid (PFOA) | 335-67-1 | ng/L | **210** | **650** | **120** | **160** | **380** | NA | NA | NA | NA | **29** | **1,900** | **380** | **8,400** | **4,700** |
| WS-LC-0025 | Perfluoropentanoic acid (PFPeA) | 2706-90-3 | ng/L | **13** | **32** | **10** | **13** | **22** | NA | NA | NA | NA | **3.8** | **180** | **41** | **360** | **210** |
| WS-LC-0025 | Perfluorotetradecanoic acid (PFTeA) | 376-06-7 | ng/L | <0.19 U | <0.21 U | <0.19 U | <0.19 U | <0.21 U | NA | NA | NA | NA | <0.19 U | <0.19 U | <0.20 U | <0.19 U | <0.19 U |
| WS-LC-0025 | Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | ng/L | <0.54 U | <0.58 U | <0.53 U | <0.51 U | <0.59 U | NA | NA | NA | NA | <0.52 U | <0.53 U | <0.54 U | <0.53 U | <0.53 U |
| WS-LC-0025 | Perfluoroundecanoic acid (PFUdA) | 2058-94-8 | ng/L | <0.73 U | <0.79 U | <0.72 U | <0.70 U | <0.80 U | NA | NA | NA | NA | <0.70 U | <0.73 U | <0.74 U | <0.71 U | <0.72 U |

**Notes:**
**Detections are in bold.**
< = analyte not detected above corresponding method detection limit
FD = field duplicate sample type
N = normal sample type
NA = not analyzed
ng/L = nanograms per liter
VAP = vertical aquifer profiling

**Laboratory Qualifiers:**
B = Analyte detected in sample and associated blank sample.
H = Exceeded holding times.
E = Concentration exceeds calibration range of laboratory instrument.
J = Estimated value. Analyte detected above method detection limit but below reporting limit.
R = rejected analyte.
U = The compound was analyzed for but not detected.

**Table 10**
**VAP Groundwater Analytical Results - 2016 to 2019**
**Interim Site Investigation Report**
**Marinette, Wisconsin**

| Method | Chemical Name | CAS_RN | Location | SB-49 (continued) | | | | | | SB-50 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Sample Date | 8/18/2017 | 8/18/2017 | 8/19/2017 | 8/19/2017 | 8/19/2017 | 8/19/2017 | 8/21/2017 | 8/21/2017 | 8/21/2017 | 8/21/2017 | 8/21/2017 | 8/21/2017 | 8/22/2017 | 8/22/2017 |
| | | | Depth (feet) | 45-50 | 50-55 | 55-60 | 60-65 | 65-70 | 70-75 | 5-10 | 30-35 | 30-35 | 35-40 | 40-45 | 45-50 | 50-55 | 55-60 |
| | | | Sample Type | N | N | N | N | N | N | N | FD | N | N | N | N | N | N |
| | | | Unit | | | | | | | | | | | | | | |
| CASC-SOP CTS-10.22.0 | Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| CASC-SOP CTS-10.22.0 | Perfluoroheptanoic acid (PFHpA) | 375-85-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| CASC-SOP CTS-10.22.0 | Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| CASC-SOP CTS-10.22.0 | Perfluorononanoic acid (PFNA) | 375-95-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| CASC-SOP CTS-10.22.0 | Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| CASC-SOP CTS-10.22.0 | Perfluorooctanoic acid (PFOA) | 335-67-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | N-Methylperfluoroocatane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorodecanoic acid (PFDA) | 335-76-2 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorododecanoic acid (PFDoA) | 307-55-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluoroheptanoic acid (PFHpA) | 375-85-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorohexanoic acid (PFHxA) | 307-24-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorononanoic acid (PFNA) | 375-95-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorooctanoic acid (PFOA) | 335-67-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorotetradecanoic acid (PFTeA) | 376-06-7 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluoroundecanoic acid (PFUdA) | 2058-94-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | N-Methylperfluoroocatane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorodecanoic acid (PFDA) | 335-76-2 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorododecanoic acid (PFDoA) | 307-55-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluoroheptanoic acid (PFHpA) | 375-85-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorohexanoic acid (PFHxA) | 307-24-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorononanoic acid (PFNA) | 375-95-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorooctanoic acid (PFOA) | 335-67-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorotetradecanoic acid (PFTeA) | 376-06-7 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluoroundecanoic acid (PFUdA) | 2058-94-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | 6:2 Fluorotelomer sulfonic acid (6:2 FTSA) | 27619-97-2 | ng/L | **320** | **290** | **230** | **210** | **150** | **110** | **21** | **93** | **100** | **210** | **100** | **99** | **90** | **95** |
| WS-LC-0025 | 8:2 Fluorotelomer sulfonic acid (8:2 FTSA) | 39108-34-4 | ng/L | **30** | **22** | **8.5 J** | **7.0 J** | **5.1 J** | <4.6 U | <3.9 U | <4.0 U | <4.6 U | **4.5 J** | <3.8 U | <4.1 U | <4.1 U | <4.0 U |
| WS-LC-0025 | N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | N-Methylperfluoroocatane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | ng/L | **7.3** | **7.2** | **13** | **12** | **8.0** | **7.3** | **6.3** | **1.3 J** | **1.4 J** | **25** | **20** | **5.1** | **3.0** | **3.1** |
| WS-LC-0025 | Perfluorobutanoic acid (PFBA) | 375-22-4 | ng/L | **90 B** | **86 B** | **130** | **210** | **130** | **160** | **9.3** | **17** | **18** | **530** | **370** | **120** | **63** | **59** |
| WS-LC-0025 | Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | ng/L | <1.2 U | <1.3 U | <1.3 U | <1.2 U | <1.2 U | <1.4 U | <1.2 U | <1.2 U | <1.4 U | <1.1 U | <1.1 U | <1.2 U | <1.2 U | <1.2 U |
| WS-LC-0025 | Perfluorodecanoic acid (PFDA) | 335-76-2 | ng/L | **1.8 J** | **1.9 J** | **1.1 J** | **1.2 J** | **0.95 J** | <0.50 U | <0.43 U | <0.44 U | <0.50 U | **2.3** | **0.86 J** | **0.68 J** | **0.88 J** | **0.52 J** |
| WS-LC-0025 | Perfluorododecanoic acid (PFDoA) | 307-55-1 | ng/L | <0.58 U | <0.61 U | <0.61 U | <0.58 U | <0.58 U | <0.67 U | <0.57 U | <0.58 U | <0.66 U | <0.55 U | <0.55 U | <0.59 U | <0.60 U | <0.58 U |
| WS-LC-0025 | Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | ng/L | <0.71 U | <0.75 U | <0.74 U | <0.71 U | <0.71 U | <0.82 U | <0.69 U | <0.71 U | <0.81 U | **2.0** | **1.2 J** | <0.72 U | <0.73 U | <0.70 U |
| WS-LC-0025 | Perfluoroheptanoic acid (PFHpA) | 375-85-9 | ng/L | **130** | **110** | **150** | **250** | **130** | **130** | **5.1** | **32** | **35** | **1,300** | **890** | **260** | **120** | **110** |
| WS-LC-0025 | Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | ng/L | **35** | **29** | **21** | **22** | **12** | **5.9** | **1.3 J** | **4.8** | **4.7** | **150** | **95** | **33** | **14** | **12** |
| WS-LC-0025 | Perfluorohexanoic acid (PFHxA) | 307-24-4 | ng/L | **370** | **340** | **490** | **1000** | **490** | **610** | **13** | **84** | **87** | **3,400** | **2,500** | **740** | **350** | **340** |

Notes on Page 10.

**Table 10**
**VAP Groundwater Analytical Results - 2016 to 2019**
**Interim Site Investigation Report**
**Marinette, Wisconsin**

| Method | Chemical Name | CAS_RN | Location | SB-49 (continued) | | | | | | SB-50 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Sample Date | 8/18/2017 | 8/18/2017 | 8/19/2017 | 8/19/2017 | 8/19/2017 | 8/19/2017 | 8/21/2017 | 8/21/2017 | 8/21/2017 | 8/21/2017 | 8/21/2017 | 8/21/2017 | 8/22/2017 | 8/22/2017 |
| | | | Depth (feet) | 45-50 | 50-55 | 55-60 | 60-65 | 65-70 | 70-75 | 5-10 | 30-35 | 30-35 | 35-40 | 40-45 | 45-50 | 50-55 | 55-60 |
| | | | Sample Type | N | N | N | N | N | N | N | FD | N | N | N | N | N | N |
| | | | Unit | | | | | | | | | | | | | | |
| WS-LC-0025 | Perfluorononanoic acid (PFNA) | 375-95-1 | ng/L | **22** | **17** | **12** | **13** | **8.2** | **7.9** | **1.9** | **11** | **11** | **73** | **25** | **13** | **10** | **7.5** |
| WS-LC-0025 | Perfluorooctane sulfonamide (PFOSA) | 754-91-6 | ng/L | **23 J** | **17 J** | **3.8 JB** | **3.4 JB** | **2.5 JB** | <0.73 U | **0.91 JB** | **0.63 JB** | **1.5 JB** | **2.5 JB** | **1.2 JB** | **1.4 JB** | **0.96 JB** | <0.63 U |
| WS-LC-0025 | Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | ng/L | **26** | **19** | **5.6** | **6.5** | **4.2** | **1.5 J** | <1.2 U | **2.9** | **2.9** | **120** | **49** | **18** | **7.0** | **5.7** |
| WS-LC-0025 | Perfluorooctanoic acid (PFOA) | 335-67-1 | ng/L | **3,500** | **3,200** | **3,800** | **6,900** | **3,500** | **2,800** | **19** | **540** | **620** | **33,000** | **23,000** | **7,300** | **3,400** | **3,200** |
| WS-LC-0025 | Perfluoropentanoic acid (PFPeA) | 2706-90-3 | ng/L | **180** | **170** | **230** | **450** | **260** | **350** | **10** | **34** | **39** | **1700** | **1200** | **350** | **170** | **160** |
| WS-LC-0025 | Perfluorotetradecanoic acid (PFTeA) | 376-06-7 | ng/L | <0.20 U | <0.21 U | <0.21 U | **0.36 J** | <0.20 U | <0.23 U | <0.19 U | <0.20 U | **0.40 J** | <0.19 U | <0.19 U | <0.20 U | <0.20 U | <0.20 U |
| WS-LC-0025 | Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | ng/L | <0.55 U | <0.58 U | <0.57 U | <0.55 U | <0.55 U | <0.63 U | <0.54 U | <0.55 U | <0.62 U | <0.52 U | <0.52 U | <0.56 U | <0.56 U | <0.54 U |
| WS-LC-0025 | Perfluoroundecanoic acid (PFUdA) | 2058-94-8 | ng/L | <0.75 U | <0.78 U | <0.78 U | <0.74 U | <0.74 U | <0.86 U | <0.73 U | <0.74 U | <0.85 U | <0.71 U | <0.71 U | <0.75 U | **5.3** | <0.74 U |

**Notes:**
**Detections are in bold.**
< = analyte not detected above corresponding method detection limit
FD = field duplicate sample type
N = normal sample type
NA = not analyzed
ng/L = nanograms per liter
VAP = vertical aquifer profiling

**Laboratory Qualifiers:**
B = Analyte detected in sample and associated blank sample.
H = Exceeded holding times.
E = Concentration exceeds calibration range of laboratory instrument.
J = Estimated value. Analyte detected above method detection limit but below reporting limit.
R = rejected analyte.
U = The compound was analyzed for but not detected.

**Table 10**
**VAP Groundwater Analytical Results - 2016 to 2019**
**Interim Site Investigation Report**
**Marinette, Wisconsin**

| | | | Location | SB-50 (continued) | | | | | VAP-01 | | | | | | VAP-02 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Sample Date | 8/22/2017 | 8/22/2017 | 8/22/2017 | 8/22/2017 | 8/22/2017 | 11/29/2017 | 11/29/2017 | 11/29/2017 | 11/30/2017 | 11/30/2017 | 11/30/2017 | 11/29/2017 | 11/29/2017 |
| | | | Depth (feet) | 60-65 | 65-70 | 70-75 | 75-80 | 80-85 | 4-8 | 10-14 | 20-24 | 30-34 | 40-44 | 50-54 | 4-8 | 14-18 |
| | | | Sample Type | N | N | N | N | N | N | N | N | N | N | N | N | N |
| Method | Chemical Name | CAS_RN | Unit | | | | | | | | | | | | | |
| CASC-SOP CTS-10.22.0 | Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | ng/L | NA | NA | NA | NA | NA | **8.28** | **10.2** | **5.17** | **1.16 J** | <0.794 U | <1.39 U | **3.51** | **6.50** |
| CASC-SOP CTS-10.22.0 | Perfluoroheptanoic acid (PFHpA) | 375-85-9 | ng/L | NA | NA | NA | NA | NA | **164** | **187** | **181** | **3.42 J** | <1.45 U | <2.54 U | **150** | **15.0** |
| CASC-SOP CTS-10.22.0 | Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | ng/L | NA | NA | NA | NA | NA | **30.9 J** | **47.0 J** | **31.1 J** | **30.6** | <0.888 U | <1.55 U | **17.7 J** | <1.30 U |
| CASC-SOP CTS-10.22.0 | Perfluorononanoic acid (PFNA) | 375-95-1 | ng/L | NA | NA | NA | NA | NA | **42.9** | **47.4** | **39.9** | <0.743 U | <0.811 U | <1.42 U | **32.6** | <1.19 U |
| CASC-SOP CTS-10.22.0 | Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | ng/L | NA | NA | NA | NA | NA | **61.3** | **97.9** | **79.1** | <1.42 U | <1.55 U | <2.71 U | **20.1** | <2.27 U |
| CASC-SOP CTS-10.22.0 | Perfluorooctanoic acid (PFOA) | 335-67-1 | ng/L | NA | NA | NA | NA | NA | **297** | **291** | **275** | **313** | <0.384 U | <0.672 U | **207** | **24.5** |
| E537 | N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | N-Methylperfluoroocatane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorodecanoic acid (PFDA) | 335-76-2 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorododecanoic acid (PFDoA) | 307-55-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluoroheptanoic acid (PFHpA) | 375-85-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorohexanoic acid (PFHxA) | 307-24-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorononanoic acid (PFNA) | 375-95-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorooctanoic acid (PFOA) | 335-67-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorotetradecanoic acid (PFTeA) | 376-06-7 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluoroundecanoic acid (PFUdA) | 2058-94-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | N-Methylperfluoroocatane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorodecanoic acid (PFDA) | 335-76-2 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorododecanoic acid (PFDoA) | 307-55-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluoroheptanoic acid (PFHpA) | 375-85-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorohexanoic acid (PFHxA) | 307-24-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorononanoic acid (PFNA) | 375-95-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorooctanoic acid (PFOA) | 335-67-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorotetradecanoic acid (PFTeA) | 376-06-7 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluoroundecanoic acid (PFUdA) | 2058-94-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | 6:2 Fluorotelomer sulfonic acid (6:2 FTSA) | 27619-97-2 | ng/L | **87** | **70** | **34** | **45** | **38** | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | 8:2 Fluorotelomer sulfonic acid (8:2 FTSA) | 39108-34-4 | ng/L | <4.3 U | <4.4 U | <4.3 U | <4.0 U | <3.7 U | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | N-Methylperfluoroocatane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | ng/L | **2.3** | **1.6 J** | <0.97 U | **0.92 J** | <0.84 U | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorobutanoic acid (PFBA) | 375-22-4 | ng/L | **47** | **28** | **8.1** | **13** | **7.8** | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | ng/L | <1.3 U | <1.3 U | <1.3 U | <1.2 U | <1.1 U | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorodecanoic acid (PFDA) | 335-76-2 | ng/L | **0.62 J** | **0.52 J** | <0.46 U | **0.51 J** | <0.40 U | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorododecanoic acid (PFDoA) | 307-55-1 | ng/L | <0.62 U | <0.63 U | <0.62 U | <0.58 U | <0.54 U | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | ng/L | <0.76 U | <0.77 U | <0.75 U | <0.71 U | <0.65 U | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluoroheptanoic acid (PFHpA) | 375-85-9 | ng/L | **87** | **43** | **4.8** | **14** | **6.3** | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | ng/L | **10** | **7.5** | **2.1** | **3.6** | **2.2** | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorohexanoic acid (PFHxA) | 307-24-4 | ng/L | **250** | **150** | **20** | **45** | **25** | NA | NA | NA | NA | NA | NA | NA | NA |

Notes on Page 12.

**Table 10**
**VAP Groundwater Analytical Results - 2016 to 2019**
**Interim Site Investigation Report**
**Marinette, Wisconsin**

| Method | Chemical Name | CAS_RN | Location | SB-50 (continued) | | | | | VAP-01 | | | | | | VAP-02 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Sample Date | 8/22/2017 | 8/22/2017 | 8/22/2017 | 8/22/2017 | 8/22/2017 | 11/29/2017 | 11/29/2017 | 11/29/2017 | 11/30/2017 | 11/30/2017 | 11/30/2017 | 11/29/2017 | 11/29/2017 |
| | | | Depth (feet) | 60-65 | 65-70 | 70-75 | 75-80 | 80-85 | 4-8 | 10-14 | 20-24 | 30-34 | 40-44 | 50-54 | 4-8 | 14-18 |
| | | | Sample Type | N | N | N | N | N | N | N | N | N | N | N | N | N |
| | | | Unit | | | | | | | | | | | | | |
| WS-LC-0025 | Perfluorononanoic acid (PFNA) | 375-95-1 | ng/L | **6.5** | **3.5** | **0.84 J** | **3.9** | **2.7** | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorooctane sulfonamide (PFOSA) | 754-91-6 | ng/L | <0.68 U | **0.76 JB** | **0.91 JB** | **0.76 JB** | **0.66 JB** | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | ng/L | **4.8** | **3.1** | **1.4 J** | **1.7 J** | <1.2 U | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorooctanoic acid (PFOA) | 335-67-1 | ng/L | **2,200** | **1,200** | **110** | **350** | **150** | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluoropentanoic acid (PFPeA) | 2706-90-3 | ng/L | **120** | **65** | **7.9** | **20** | **9.2** | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorotetradecanoic acid (PFTeA) | 376-06-7 | ng/L | <0.21 U | <0.22 U | **0.60 J** | <0.20 U | **0.34 J** | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | ng/L | <0.59 U | <0.60 U | **0.72 J** | <0.55 U | <0.50 U | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluoroundecanoic acid (PFUdA) | 2058-94-8 | ng/L | **0.98 J** | <0.81 U | <0.79 U | <0.74 U | <0.69 U | NA | NA | NA | NA | NA | NA | NA | NA |

**Notes:**
**Detections are in bold.**
< = analyte not detected above corresponding method detection limit
FD = field duplicate sample type
N = normal sample type
NA = not analyzed
ng/L = nanograms per liter
VAP = vertical aquifer profiling

**Laboratory Qualifiers:**
B = Analyte detected in sample and associated blank sample.
H = Exceeded holding times.
E = Concentration exceeds calibration range of laboratory instrument.
J = Estimated value. Analyte detected above method detection limit but below reporting limit.
R = rejected analyte.
U = The compound was analyzed for but not detected.

**Table 10**
**VAP Groundwater Analytical Results - 2016 to 2019**
**Interim Site Investigation Report**
**Marinette, Wisconsin**

| Method | Chemical Name | CAS_RN | Location | VAP-02 (continued) | | VAP-03 | | | | | | VAP-04 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Sample Date | 11/30/2017 | 11/30/2017 | 11/30/2017 | 11/30/2017 | 12/1/2017 | 12/1/2017 | 12/1/2017 | 12/1/2017 | 12/1/2017 | 12/1/2017 | 12/1/2017 | 12/1/2017 | 12/1/2017 |
| | | | Depth (feet) | 24-28 | 34-38 | 12-16 | 22-26 | 32-36 | 48-52 | 58-62 | 32-36 | 4-8 | 14-18 | 24-28 | 24-28 | 34-38 |
| | | | Sample Type | N | N | N | N | N | N | N | FD | N | N | N | FD | N |
| | | | Unit | | | | | | | | | | | | | |
| CASC-SOP CTS-10.22.0 | Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | ng/L | <1.01 U | **3.74 J** | **2.54 J** | **6.79 J** | **2.46 J** | **4.51 J** | **69.6** | **4.32** | **3.69 J** | **4.48** | **1.04 J** | **3.71 J** | **2.75 J** |
| CASC-SOP CTS-10.22.0 | Perfluoroheptanoic acid (PFHpA) | 375-85-9 | ng/L | <1.85 U | <2.83 U | **114** | **53.7** | **63.6** | **27.3** | **336** | **80.0** | <1.59 U | **5.72** | **13.4 J** | **23.2** | <1.53 U |
| CASC-SOP CTS-10.22.0 | Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | ng/L | **3.36** | **3.26** | **12.1 J** | **18.3 J** | **30.5** | **17.1 J** | **290** | **31.6** | <0.973 U | **1.93** | **2.48 J** | **3.62** | <0.934 U |
| CASC-SOP CTS-10.22.0 | Perfluorononanoic acid (PFNA) | 375-95-1 | ng/L | <1.03 U | <1.58 U | <0.758 U | <1.63 U | **27.4** | **5.29** | **153** | **28.9** | <0.889 U | **1.15 J** | <0.716 UJ | <0.836 U | <0.853 U |
| CASC-SOP CTS-10.22.0 | Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | ng/L | <1.97 U | <3.02 U | <1.45 U | <3.11 U | **65.7** | <2.44 U | **553** | **62.9** | <1.70 U | **5.58** | <1.37 UJ | **3.17** | <1.63 U |
| CASC-SOP CTS-10.22.0 | Perfluorooctanoic acid (PFOA) | 335-67-1 | ng/L | **5.50** | **15.1** | **41.9** | **51.4** | **128** | **47.3** | **1,100** | **151** | **6.99** | **29.7** | **266 J** | **577 J** | **68.1** |
| E537 | N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | N-Methylperfluoroocatane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorodecanoic acid (PFDA) | 335-76-2 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorododecanoic acid (PFDoA) | 307-55-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluoroheptanoic acid (PFHpA) | 375-85-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorohexanoic acid (PFHxA) | 307-24-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorononanoic acid (PFNA) | 375-95-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorooctanoic acid (PFOA) | 335-67-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorotetradecanoic acid (PFTeA) | 376-06-7 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluoroundecanoic acid (PFUdA) | 2058-94-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | N-Methylperfluoroocatane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorodecanoic acid (PFDA) | 335-76-2 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorododecanoic acid (PFDoA) | 307-55-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluoroheptanoic acid (PFHpA) | 375-85-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorohexanoic acid (PFHxA) | 307-24-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorononanoic acid (PFNA) | 375-95-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorooctanoic acid (PFOA) | 335-67-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorotetradecanoic acid (PFTeA) | 376-06-7 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluoroundecanoic acid (PFUdA) | 2058-94-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | 6:2 Fluorotelomer sulfonic acid (6:2 FTSA) | 27619-97-2 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | 8:2 Fluorotelomer sulfonic acid (8:2 FTSA) | 39108-34-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | N-Methylperfluoroocatane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorobutanoic acid (PFBA) | 375-22-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorodecanoic acid (PFDA) | 335-76-2 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorododecanoic acid (PFDoA) | 307-55-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluoroheptanoic acid (PFHpA) | 375-85-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorohexanoic acid (PFHxA) | 307-24-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |

Notes on Page 14.

**Table 10**
**VAP Groundwater Analytical Results - 2016 to 2019**
**Interim Site Investigation Report**
**Marinette, Wisconsin**

| Method | Chemical Name | CAS_RN | Location | VAP-02 (continued) | | VAP-03 | | | | | | VAP-04 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Sample Date | 11/30/2017 | 11/30/2017 | 11/30/2017 | 11/30/2017 | 12/1/2017 | 12/1/2017 | 12/1/2017 | 12/1/2017 | 12/1/2017 | 12/1/2017 | 12/1/2017 | 12/1/2017 | 12/1/2017 |
| | | | Depth (feet) | 24-28 | 34-38 | 12-16 | 22-26 | 32-36 | 48-52 | 58-62 | 32-36 | 4-8 | 14-18 | 24-28 | 24-28 | 34-38 |
| | | | Sample Type | N | N | N | N | N | N | N | FD | N | N | N | FD | N |
| | | | Unit | | | | | | | | | | | | | |
| WS-LC-0025 | Perfluorononanoic acid (PFNA) | 375-95-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorooctane sulfonamide (PFOSA) | 754-91-6 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorooctanoic acid (PFOA) | 335-67-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluoropentanoic acid (PFPeA) | 2706-90-3 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorotetradecanoic acid (PFTeA) | 376-06-7 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluoroundecanoic acid (PFUdA) | 2058-94-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |

**Notes:**
**Detections are in bold.**
< = analyte not detected above corresponding method detection limit
FD = field duplicate sample type
N = normal sample type
NA = not analyzed
ng/L = nanograms per liter
VAP = vertical aquifer profiling

**Laboratory Qualifiers:**
B = Analyte detected in sample and associated blank sample.
H = Exceeded holding times.
E = Concentration exceeds calibration range of laboratory instrument.
J = Estimated value. Analyte detected above method detection limit but below reporting limit.
R = rejected analyte.
U = The compound was analyzed for but not detected.

**Table 10**
**VAP Groundwater Analytical Results - 2016 to 2019**
**Interim Site Investigation Report**
**Marinette, Wisconsin**

| | | | Location | VAP-05 | | | | | | VAP-06 | | | | | VAP-07 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Sample Date | 12/1/2017 | 12/1/2017 | 12/2/2017 | 12/2/2017 | 12/2/2017 | 12/2/2017 | 12/1/2017 | 12/2/2017 | 12/2/2017 | 12/2/2017 | 12/2/2017 | 12/2/2017 | 12/2/2017 |
| | | | Depth (feet) | 8-12 | 18-22 | 28-32 | 38-42 | 48-52 | 48-52 | 4-8 | 14-18 | 24-28 | 34-38 | 34-38 | 6-10 | 16-20 |
| | | | Sample Type | N | N | N | N | N | FD | N | N | N | N | FD | N | N |
| Method | Chemical Name | CAS_RN | Unit | | | | | | | | | | | | | |
| CASC-SOP CTS-10.22.0 | Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | ng/L | **4.31 J** | **2.09 J** | <0.982 U | <1.79 U | <1.93 U | <1.43 U | **1.83 J** | <0.712 U | <1.24 U | **2.71 J** | <0.714 U | **1.97 J** | <1.11 U |
| CASC-SOP CTS-10.22.0 | Perfluoroheptanoic acid (PFHpA) | 375-85-9 | ng/L | <2.52 U | **5.51** | <1.80 U | <3.27 U | <3.54 U | <2.62 U | **1.32 J** | **10.8** | <2.27 U | <2.00 U | <1.31 U | **4.04** | <2.02 U |
| CASC-SOP CTS-10.22.0 | Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | ng/L | **2.41 J** | **4.29 J** | <1.10 U | <2.00 U | <2.16 U | <1.60 U | <0.776 U | <0.797 U | <1.39 U | <1.22 U | <0.799 U | <0.759 U | <1.24 U |
| CASC-SOP CTS-10.22.0 | Perfluorononanoic acid (PFNA) | 375-95-1 | ng/L | <1.41 U | <0.701 U | <1.00 U | <1.83 U | <1.98 U | <1.46 U | <0.709 U | <0.728 U | <1.27 U | <1.12 U | <0.730 U | <0.694 U | <1.13 U |
| CASC-SOP CTS-10.22.0 | Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | ng/L | <2.69 U | <1.34 U | <1.92 U | <3.49 U | <3.78 U | <2.80 U | **2.05** | <1.39 U | <2.42 U | <2.13 U | <1.39 U | <1.32 U | <2.16 U |
| CASC-SOP CTS-10.22.0 | Perfluorooctanoic acid (PFOA) | 335-67-1 | ng/L | **11.3** | **35.2** | <0.475 U | <0.865 U | **36.1** | **24.1** | **6.51** | **7.21** | **105** | **94.2** | **52.0** | **48.3** | **49.3** |
| E537 | N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | N-Methylperfluoroocatane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorodecanoic acid (PFDA) | 335-76-2 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorododecanoic acid (PFDoA) | 307-55-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluoroheptanoic acid (PFHpA) | 375-85-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorohexanoic acid (PFHxA) | 307-24-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorononanoic acid (PFNA) | 375-95-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorooctanoic acid (PFOA) | 335-67-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorotetradecanoic acid (PFTeA) | 376-06-7 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluoroundecanoic acid (PFUdA) | 2058-94-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | N-Methylperfluoroocatane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorodecanoic acid (PFDA) | 335-76-2 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorododecanoic acid (PFDoA) | 307-55-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluoroheptanoic acid (PFHpA) | 375-85-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorohexanoic acid (PFHxA) | 307-24-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorononanoic acid (PFNA) | 375-95-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorooctanoic acid (PFOA) | 335-67-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorotetradecanoic acid (PFTeA) | 376-06-7 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluoroundecanoic acid (PFUdA) | 2058-94-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | 6:2 Fluorotelomer sulfonic acid (6:2 FTSA) | 27619-97-2 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | 8:2 Fluorotelomer sulfonic acid (8:2 FTSA) | 39108-34-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | N-Methylperfluoroocatane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorobutanoic acid (PFBA) | 375-22-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorodecanoic acid (PFDA) | 335-76-2 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorododecanoic acid (PFDoA) | 307-55-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluoroheptanoic acid (PFHpA) | 375-85-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorohexanoic acid (PFHxA) | 307-24-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |

Notes on Page 16.

**Table 10**
**VAP Groundwater Analytical Results - 2016 to 2019**
**Interim Site Investigation Report**
**Marinette, Wisconsin**

| Method | Chemical Name | CAS_RN | Location | VAP-05 | | | | | | VAP-06 | | | | | VAP-07 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Sample Date | 12/1/2017 | 12/1/2017 | 12/2/2017 | 12/2/2017 | 12/2/2017 | 12/2/2017 | 12/1/2017 | 12/2/2017 | 12/2/2017 | 12/2/2017 | 12/2/2017 | 12/2/2017 | 12/2/2017 |
| | | | Depth (feet) | 8-12 | 18-22 | 28-32 | 38-42 | 48-52 | 48-52 | 4-8 | 14-18 | 24-28 | 34-38 | 34-38 | 6-10 | 16-20 |
| | | | Sample Type | N | N | N | N | N | FD | N | N | N | N | FD | N | N |
| | | | Unit | | | | | | | | | | | | | |
| WS-LC-0025 | Perfluorononanoic acid (PFNA) | 375-95-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorooctane sulfonamide (PFOSA) | 754-91-6 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorooctanoic acid (PFOA) | 335-67-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluoropentanoic acid (PFPeA) | 2706-90-3 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorotetradecanoic acid (PFTeA) | 376-06-7 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluoroundecanoic acid (PFUdA) | 2058-94-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |

**Notes:**
**Detections are in bold.**
< = analyte not detected above corresponding method detection limit
FD = field duplicate sample type
N = normal sample type
NA = not analyzed
ng/L = nanograms per liter
VAP = vertical aquifer profiling

**Laboratory Qualifiers:**
B = Analyte detected in sample and associated blank sample.
H = Exceeded holding times.
E = Concentration exceeds calibration range of laboratory instrument.
J = Estimated value. Analyte detected above method detection limit but below reporting limit.
R = rejected analyte.
U = The compound was analyzed for but not detected.

**Table 10**
**VAP Groundwater Analytical Results - 2016 to 2019**
**Interim Site Investigation Report**
**Marinette, Wisconsin**

| | | | Location | VAP-07 (continued) | | VAP-08 | | | VAP-09 | | | | | VAP-10 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Sample Date | 12/3/2017 | 12/3/2017 | 12/2/2017 | 12/3/2017 | 12/3/2017 | 12/3/2017 | 12/3/2017 | 12/3/2017 | 12/3/2017 | 12/4/2017 | 12/3/2017 | 12/3/2017 | 12/3/2017 | 12/3/2017 | 12/4/2017 |
| | | | Depth (feet) | 31-35 | 41-45 | 8-12 | 18-22 | 28-32 | 6-10 | 16-20 | 26-30 | 26-30 | 36-40 | 10-14 | 20-24 | 31-35 | 20-24 | 36-40 |
| | | | Sample Type | N | N | N | N | N | N | N | N | FD | N | N | N | N | FD | N |
| Method | Chemical Name | CAS_RN | Unit | | | | | | | | | | | | | | | |
| CASC-SOP CTS-10.22.0 | Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | ng/L | **3.02 J** | <0.926 U | **1.40 J** | **1.44 J** | <0.725 U | **5.09 J** | **2.02 J** | <1.03 U | <0.990 U | **1.55 J** | <1.31 U | <0.757 U | <1.07 UJ | **1.31 J** | <0.711 U |
| CASC-SOP CTS-10.22.0 | Perfluoroheptanoic acid (PFHpA) | 375-85-9 | ng/L | **23.8** | <1.69 U | <1.36 U | **1.92 J** | <1.33 U | **3.28 J** | **3.45 J** | <1.88 U | <1.81 U | <1.87 U | <2.39 U | <1.38 U | <1.96 UJ | <1.52 U | <1.30 U |
| CASC-SOP CTS-10.22.0 | Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | ng/L | **11.8** | <1.04 U | **2.74** | <0.959 U | <0.811 U | <1.26 U | <0.759 U | <1.15 U | <1.11 U | <1.14 U | <1.46 U | <0.847 U | <1.20 UJ | <0.928 U | <0.795 U |
| CASC-SOP CTS-10.22.0 | Perfluorononanoic acid (PFNA) | 375-95-1 | ng/L | **3.12** | <0.946 U | <0.762 U | <0.876 U | <0.741 U | <1.15 U | <0.694 U | <1.05 U | <1.01 U | <1.04 U | <1.33 U | <0.773 U | <1.09 UJ | <0.847 U | <0.726 U |
| CASC-SOP CTS-10.22.0 | Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | ng/L | **5.00** | <1.81 U | **6.53** | <1.67 U | <1.42 U | <2.20 U | <1.32 U | <2.01 U | <1.93 U | **1.36 J** | <2.55 U | <1.48 U | <2.09 UJ | <1.62 U | <1.39 U |
| CASC-SOP CTS-10.22.0 | Perfluorooctanoic acid (PFOA) | 335-67-1 | ng/L | **51.9** | **4.61 J** | **42.3** | **9.03** | <0.351 U | **36.0** | **194** | <0.498 U | <0.479 U | <0.494 U | <0.632 U | <0.366 U | <0.518 UJ | <0.401 U | <0.344 U |
| E537 | N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | N-Methylperfluoroocatane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorodecanoic acid (PFDA) | 335-76-2 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorododecanoic acid (PFDoA) | 307-55-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluoroheptanoic acid (PFHpA) | 375-85-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorohexanoic acid (PFHxA) | 307-24-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorononanoic acid (PFNA) | 375-95-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorooctanoic acid (PFOA) | 335-67-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorotetradecanoic acid (PFTeA) | 376-06-7 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluoroundecanoic acid (PFUdA) | 2058-94-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | N-Methylperfluoroocatane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorodecanoic acid (PFDA) | 335-76-2 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorododecanoic acid (PFDoA) | 307-55-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluoroheptanoic acid (PFHpA) | 375-85-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorohexanoic acid (PFHxA) | 307-24-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorononanoic acid (PFNA) | 375-95-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorooctanoic acid (PFOA) | 335-67-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorotetradecanoic acid (PFTeA) | 376-06-7 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluoroundecanoic acid (PFUdA) | 2058-94-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | 6:2 Fluorotelomer sulfonic acid (6:2 FTSA) | 27619-97-2 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | 8:2 Fluorotelomer sulfonic acid (8:2 FTSA) | 39108-34-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | N-Methylperfluoroocatane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorobutanoic acid (PFBA) | 375-22-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorodecanoic acid (PFDA) | 335-76-2 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorododecanoic acid (PFDoA) | 307-55-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluoroheptanoic acid (PFHpA) | 375-85-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorohexanoic acid (PFHxA) | 307-24-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |

Notes on Page 18.

**Table 10**
**VAP Groundwater Analytical Results - 2016 to 2019**
**Interim Site Investigation Report**
**Marinette, Wisconsin**

| Method | Chemical Name | CAS_RN | Location | VAP-07 (continued) | | VAP-08 | | | VAP-09 | | | | | VAP-10 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Sample Date | 12/3/2017 | 12/3/2017 | 12/2/2017 | 12/3/2017 | 12/3/2017 | 12/3/2017 | 12/3/2017 | 12/3/2017 | 12/3/2017 | 12/4/2017 | 12/3/2017 | 12/3/2017 | 12/3/2017 | 12/3/2017 | 12/4/2017 |
| | | | Depth (feet) | 31-35 | 41-45 | 8-12 | 18-22 | 28-32 | 6-10 | 16-20 | 26-30 | 26-30 | 36-40 | 10-14 | 20-24 | 31-35 | 20-24 | 36-40 |
| | | | Sample Type | N | N | N | N | N | N | N | N | FD | N | N | N | N | FD | N |
| | | | Unit | | | | | | | | | | | | | | | |
| WS-LC-0025 | Perfluorononanoic acid (PFNA) | 375-95-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorooctane sulfonamide (PFOSA) | 754-91-6 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorooctanoic acid (PFOA) | 335-67-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluoropentanoic acid (PFPeA) | 2706-90-3 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorotetradecanoic acid (PFTeA) | 376-06-7 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluoroundecanoic acid (PFUdA) | 2058-94-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |

**Notes:**
**Detections are in bold.**
< = analyte not detected above corresponding method detection limit
FD = field duplicate sample type
N = normal sample type
NA = not analyzed
ng/L = nanograms per liter
VAP = vertical aquifer profiling

**Laboratory Qualifiers:**
B = Analyte detected in sample and associated blank sample.
H = Exceeded holding times.
E = Concentration exceeds calibration range of laboratory instrument.
J = Estimated value. Analyte detected above method detection limit but below reporting limit.
R = rejected analyte.
U = The compound was analyzed for but not detected.

**Table 10**
**VAP Groundwater Analytical Results - 2016 to 2019**
**Interim Site Investigation Report**
**Marinette, Wisconsin**

| | | | Location | VAP-11 | | | | | VAP-12 | | | | VAP-13 | | | | VAP-14 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Sample Date | 12/4/2017 | 12/4/2017 | 12/5/2017 | 12/5/2017 | 12/5/2017 | 12/4/2017 | 12/4/2017 | 12/5/2017 | 12/5/2017 | 12/6/2017 | 12/6/2017 | 12/6/2017 | 12/6/2017 | 12/5/2017 | 12/5/2017 |
| | | | Depth (feet) | 10-14 | 20-24 | 30-34 | 40-44 | 40-44 | 8-12 | 18-22 | 28-32 | 38-42 | 4-8 | 14-18 | 24-28 | 24-28 | 4-8 | 14-18 |
| | | | Sample Type | N | N | N | N | FD | N | N | N | N | N | N | N | FD | N | N |
| Method | Chemical Name | CAS_RN | Unit | | | | | | | | | | | | | | | |
| CASC-SOP CTS-10.22.0 | Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | ng/L | **1.57 J** | <0.759 U | <0.781 U | <2.63 U | <0.997 U | <1.56 U | <1.11 U | **19.6 J** | <3.42 U | **4.22 J** | **8.61 J** | <1.49 U | <1.08 U | **6.90 J** | <1.10 U |
| CASC-SOP CTS-10.22.0 | Perfluoroheptanoic acid (PFHpA) | 375-85-9 | ng/L | <1.24 U | <1.39 U | <1.43 U | <4.81 U | <1.82 U | <2.85 U | <2.03 U | <2.58 U | <6.26 U | <3.91 U | <2.38 U | <2.73 U | <1.97 U | **28.2** | <2.01 U |
| CASC-SOP CTS-10.22.0 | Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | ng/L | <0.757 U | <0.849 U | <0.874 U | <2.94 U | <1.11 U | <1.75 U | <1.24 U | <1.58 U | <3.83 U | <2.39 U | <1.45 U | **4.91** | **5.90** | <1.11 U | <1.23 U |
| CASC-SOP CTS-10.22.0 | Perfluorononanoic acid (PFNA) | 375-95-1 | ng/L | <0.692 U | <0.775 U | <0.798 U | <2.69 U | <1.02 U | <1.59 U | <1.13 U | <1.44 U | <3.50 U | <2.19 U | <1.33 U | <1.53 U | <1.10 U | <1.02 U | <1.12 U |
| CASC-SOP CTS-10.22.0 | Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | ng/L | <1.32 U | <1.48 U | <1.52 U | <5.14 U | <1.95 U | <3.05 U | <2.17 U | <2.75 U | <6.68 U | **4.38 J** | <2.54 U | <2.91 U | <2.10 U | <1.94 U | <2.15 U |
| CASC-SOP CTS-10.22.0 | Perfluorooctanoic acid (PFOA) | 335-67-1 | ng/L | <0.328 U | <0.367 U | <0.378 U | <1.27 U | <0.482 U | <0.755 U | <0.537 U | <0.682 U | <1.66 U | **10.2 J** | **16.3** | **15.8 J** | **12.0** | **8.07 J** | <0.532 U |
| E537 | N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | N-Methylperfluoroocatane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorodecanoic acid (PFDA) | 335-76-2 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorododecanoic acid (PFDoA) | 307-55-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluoroheptanoic acid (PFHpA) | 375-85-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorohexanoic acid (PFHxA) | 307-24-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorononanoic acid (PFNA) | 375-95-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorooctanoic acid (PFOA) | 335-67-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorotetradecanoic acid (PFTeA) | 376-06-7 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluoroundecanoic acid (PFUdA) | 2058-94-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | N-Methylperfluoroocatane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorodecanoic acid (PFDA) | 335-76-2 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorododecanoic acid (PFDoA) | 307-55-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluoroheptanoic acid (PFHpA) | 375-85-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorohexanoic acid (PFHxA) | 307-24-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorononanoic acid (PFNA) | 375-95-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorooctanoic acid (PFOA) | 335-67-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorotetradecanoic acid (PFTeA) | 376-06-7 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluoroundecanoic acid (PFUdA) | 2058-94-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | 6:2 Fluorotelomer sulfonic acid (6:2 FTSA) | 27619-97-2 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | 8:2 Fluorotelomer sulfonic acid (8:2 FTSA) | 39108-34-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | N-Methylperfluoroocatane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorobutanoic acid (PFBA) | 375-22-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorodecanoic acid (PFDA) | 335-76-2 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorododecanoic acid (PFDoA) | 307-55-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluoroheptanoic acid (PFHpA) | 375-85-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorohexanoic acid (PFHxA) | 307-24-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |

Notes on Page 20.

**Table 10**
**VAP Groundwater Analytical Results - 2016 to 2019**
**Interim Site Investigation Report**
**Marinette, Wisconsin**

| Method | Chemical Name | CAS_RN | Location | VAP-11 | | | | | VAP-12 | | | | VAP-13 | | | | VAP-14 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Sample Date | 12/4/2017 | 12/4/2017 | 12/5/2017 | 12/5/2017 | 12/5/2017 | 12/4/2017 | 12/4/2017 | 12/5/2017 | 12/5/2017 | 12/6/2017 | 12/6/2017 | 12/6/2017 | 12/6/2017 | 12/5/2017 | 12/5/2017 |
| | | | Depth (feet) | 10-14 | 20-24 | 30-34 | 40-44 | 40-44 | 8-12 | 18-22 | 28-32 | 38-42 | 4-8 | 14-18 | 24-28 | 24-28 | 4-8 | 14-18 |
| | | | Sample Type | N | N | N | N | FD | N | N | N | N | N | N | N | FD | N | N |
| | | | Unit | | | | | | | | | | | | | | | |
| WS-LC-0025 | Perfluorononanoic acid (PFNA) | 375-95-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorooctane sulfonamide (PFOSA) | 754-91-6 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorooctanoic acid (PFOA) | 335-67-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluoropentanoic acid (PFPeA) | 2706-90-3 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorotetradecanoic acid (PFTeA) | 376-06-7 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluoroundecanoic acid (PFUdA) | 2058-94-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |

**Notes:**
**Detections are in bold.**
< = analyte not detected above corresponding method detection limit
FD = field duplicate sample type
N = normal sample type
NA = not analyzed
ng/L = nanograms per liter
VAP = vertical aquifer profiling

**Laboratory Qualifiers:**
B = Analyte detected in sample and associated blank sample.
H = Exceeded holding times.
E = Concentration exceeds calibration range of laboratory instrument.
J = Estimated value. Analyte detected above method detection limit but below reporting limit.
R = rejected analyte.
U = The compound was analyzed for but not detected.

**Table 10**
**VAP Groundwater Analytical Results - 2016 to 2019**
**Interim Site Investigation Report**
**Marinette, Wisconsin**

| | | | Location | VAP-15 | | VAP-16 | | | | | | VAP-17 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Sample Date | 12/6/2017 | 12/6/2017 | 12/7/2017 | 12/7/2017 | 12/7/2017 | 12/7/2017 | 12/7/2017 | 12/7/2017 | 12/12/2017 | 12/12/2017 | 12/12/2017 | 12/12/2017 | 12/12/2017 |
| | | | Depth (feet) | 4-8 | 14-18 | 6-10 | 16-20 | 26-30 | 36-40 | 46-50 | 36-40 | 16-20 | 26-30 | 36-40 | 46-50 | 56-60 |
| | | | Sample Type | N | N | N | N | N | N | N | FD | N | N | N | N | N |
| Method | Chemical Name | CAS_RN | Unit | | | | | | | | | | | | | |
| CASC-SOP CTS-10.22.0 | Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | ng/L | **5.05 J** | **2.19 J** | <1.87 U | <1.16 U | <1.08 U | <0.725 U | <0.893 U | NA R | <1.00 U | <1.73 U | <0.911 U | <1.52 U | <0.812 U |
| CASC-SOP CTS-10.22.0 | Perfluoroheptanoic acid (PFHpA) | 375-85-9 | ng/L | **20.9** | <1.78 U | <3.42 U | <2.11 U | <1.98 U | <1.33 U | <1.63 U | NA R | <1.84 U | <3.16 U | **1.98 J** | <2.77 U | <1.49 U |
| CASC-SOP CTS-10.22.0 | Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | ng/L | <0.820 U | <1.09 U | <2.09 U | <1.29 U | <1.21 U | **0.514 J** | <0.998 U | NA R | <1.12 U | <1.93 U | <1.02 U | <1.70 U | <0.909 U |
| CASC-SOP CTS-10.22.0 | Perfluorononanoic acid (PFNA) | 375-95-1 | ng/L | <0.749 U | <0.998 U | <1.91 U | <1.18 U | <1.11 U | <0.741 U | <0.912 U | NA R | <1.03 U | <1.77 U | <0.931 U | <1.55 U | <0.830 U |
| CASC-SOP CTS-10.22.0 | Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | ng/L | <1.43 U | <1.91 U | <3.65 U | <2.26 U | <2.12 U | <1.42 U | <1.74 U | NA R | <1.96 U | <3.38 U | <1.78 U | <2.96 U | <1.59 U |
| CASC-SOP CTS-10.22.0 | Perfluorooctanoic acid (PFOA) | 335-67-1 | ng/L | **8.28 J** | <0.473 U | <0.904 U | <0.560 U | <0.525 U | <0.351 U | <0.432 U | NA R | <0.486 U | <0.837 U | <0.441 U | **3.47 J** | <0.393 U |
| E537 | N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | N-Methylperfluoroocatane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorodecanoic acid (PFDA) | 335-76-2 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorododecanoic acid (PFDoA) | 307-55-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluoroheptanoic acid (PFHpA) | 375-85-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorohexanoic acid (PFHxA) | 307-24-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorononanoic acid (PFNA) | 375-95-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorooctanoic acid (PFOA) | 335-67-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorotetradecanoic acid (PFTeA) | 376-06-7 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluoroundecanoic acid (PFUdA) | 2058-94-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | N-Methylperfluoroocatane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorodecanoic acid (PFDA) | 335-76-2 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorododecanoic acid (PFDoA) | 307-55-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluoroheptanoic acid (PFHpA) | 375-85-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorohexanoic acid (PFHxA) | 307-24-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorononanoic acid (PFNA) | 375-95-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorooctanoic acid (PFOA) | 335-67-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorotetradecanoic acid (PFTeA) | 376-06-7 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluoroundecanoic acid (PFUdA) | 2058-94-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | 6:2 Fluorotelomer sulfonic acid (6:2 FTSA) | 27619-97-2 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | 8:2 Fluorotelomer sulfonic acid (8:2 FTSA) | 39108-34-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | N-Methylperfluoroocatane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorobutanoic acid (PFBA) | 375-22-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorodecanoic acid (PFDA) | 335-76-2 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorododecanoic acid (PFDoA) | 307-55-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluoroheptanoic acid (PFHpA) | 375-85-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorohexanoic acid (PFHxA) | 307-24-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |

Notes on Page 22.

**Table 10**
**VAP Groundwater Analytical Results - 2016 to 2019**
**Interim Site Investigation Report**
**Marinette, Wisconsin**

| Method | Chemical Name | CAS_RN | Location | VAP-15 | | VAP-16 | | | | | | VAP-17 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Sample Date | 12/6/2017 | 12/6/2017 | 12/7/2017 | 12/7/2017 | 12/7/2017 | 12/7/2017 | 12/7/2017 | 12/7/2017 | 12/12/2017 | 12/12/2017 | 12/12/2017 | 12/12/2017 | 12/12/2017 |
| | | | Depth (feet) | 4-8 | 14-18 | 6-10 | 16-20 | 26-30 | 36-40 | 46-50 | 36-40 | 16-20 | 26-30 | 36-40 | 46-50 | 56-60 |
| | | | Sample Type | N | N | N | N | N | N | N | FD | N | N | N | N | N |
| | | | Unit | | | | | | | | | | | | | |
| WS-LC-0025 | Perfluorononanoic acid (PFNA) | 375-95-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorooctane sulfonamide (PFOSA) | 754-91-6 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorooctanoic acid (PFOA) | 335-67-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluoropentanoic acid (PFPeA) | 2706-90-3 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorotetradecanoic acid (PFTeA) | 376-06-7 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluoroundecanoic acid (PFUdA) | 2058-94-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |

**Notes:**
**Detections are in bold.**
< = analyte not detected above corresponding method detection limit
FD = field duplicate sample type
N = normal sample type
NA = not analyzed
ng/L = nanograms per liter
VAP = vertical aquifer profiling

**Laboratory Qualifiers:**
B = Analyte detected in sample and associated blank sample.
H = Exceeded holding times.
E = Concentration exceeds calibration range of laboratory instrument.
J = Estimated value. Analyte detected above method detection limit but below reporting limit.
R = rejected analyte.
U = The compound was analyzed for but not detected.

**Table 10**
**VAP Groundwater Analytical Results - 2016 to 2019**
**Interim Site Investigation Report**
**Marinette, Wisconsin**

| | | | Location | VAP-18 | | | | | VAP-19 | | | | VAP-20 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Sample Date | 12/13/2017 | 12/13/2017 | 12/13/2017 | 12/13/2017 | 12/13/2017 | 12/14/2017 | 12/14/2017 | 12/14/2017 | 12/14/2017 | 12/15/2017 | 12/15/2017 | 12/15/2017 | 12/15/2017 |
| | | | Depth (feet) | 6-10 | 16-20 | 16-20 | 26-30 | 36-40 | 6-10 | 16-20 | 26-30 | 36-40 | 6-10 | 16-20 | 16-20 | 26-30 |
| | | | Sample Type | N | N | FD | N | N | N | N | N | N | N | N | FD | N |
| Method | Chemical Name | CAS_RN | Unit | | | | | | | | | | | | | |
| CASC-SOP CTS-10.22.0 | Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | ng/L | <0.873 U | <1.16 U | <0.961 U | <1.36 U | <0.968 U | <1.37 U | <1.51 U | <1.48 U | <0.780 U | <0.812 U | <0.986 U | <1.31 UJ | <1.30 U |
| CASC-SOP CTS-10.22.0 | Perfluoroheptanoic acid (PFHpA) | 375-85-9 | ng/L | <1.60 U | <2.13 U | <1.76 U | <2.49 U | <1.77 U | <2.50 UJ | <2.76 U | **87.8** | **87.3** | <1.48 U | <1.80 U | <2.40 UJ | <2.38 U |
| CASC-SOP CTS-10.22.0 | Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | ng/L | <0.976 U | <1.30 U | <1.07 U | <1.52 U | <1.08 U | <1.53 U | <1.69 U | **61.1** | **88.8** | <0.908 U | <1.10 U | <1.47 UJ | <1.45 U |
| CASC-SOP CTS-10.22.0 | Perfluorononanoic acid (PFNA) | 375-95-1 | ng/L | <0.891 U | <1.19 U | <0.982 U | <1.39 U | <0.989 U | <1.40 UJ | <1.54 U | **29.3** | **32.5** | <0.829 U | <1.01 U | <1.34 UJ | <1.33 U |
| CASC-SOP CTS-10.22.0 | Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | ng/L | <1.70 U | <2.27 U | <1.88 U | <2.66 U | <1.89 U | <2.67 U | <2.95 U | **6.53 J** | <1.52 U | <1.58 U | <1.92 U | <2.56 UJ | <2.54 U |
| CASC-SOP CTS-10.22.0 | Perfluorooctanoic acid (PFOA) | 335-67-1 | ng/L | <0.422 U | <0.563 U | <0.465 U | **61.3** | **61.3** | <0.662 UJ | **10.3** | **262** | **276** | <0.393 U | <0.477 U | <0.635 UJ | <0.629 U |
| E537 | N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | N-Methylperfluoroocatane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorodecanoic acid (PFDA) | 335-76-2 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorododecanoic acid (PFDoA) | 307-55-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluoroheptanoic acid (PFHpA) | 375-85-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorohexanoic acid (PFHxA) | 307-24-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorononanoic acid (PFNA) | 375-95-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorooctanoic acid (PFOA) | 335-67-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorotetradecanoic acid (PFTeA) | 376-06-7 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluoroundecanoic acid (PFUdA) | 2058-94-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | N-Methylperfluoroocatane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorodecanoic acid (PFDA) | 335-76-2 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorododecanoic acid (PFDoA) | 307-55-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluoroheptanoic acid (PFHpA) | 375-85-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorohexanoic acid (PFHxA) | 307-24-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorononanoic acid (PFNA) | 375-95-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorooctanoic acid (PFOA) | 335-67-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorotetradecanoic acid (PFTeA) | 376-06-7 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluoroundecanoic acid (PFUdA) | 2058-94-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | 6:2 Fluorotelomer sulfonic acid (6:2 FTSA) | 27619-97-2 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | 8:2 Fluorotelomer sulfonic acid (8:2 FTSA) | 39108-34-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | N-Methylperfluoroocatane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorobutanoic acid (PFBA) | 375-22-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorodecanoic acid (PFDA) | 335-76-2 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorododecanoic acid (PFDoA) | 307-55-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluoroheptanoic acid (PFHpA) | 375-85-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorohexanoic acid (PFHxA) | 307-24-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |

Notes on Page 24.

**Table 10**
**VAP Groundwater Analytical Results - 2016 to 2019**
**Interim Site Investigation Report**
**Marinette, Wisconsin**

| Method | Chemical Name | CAS_RN | Location | VAP-18 | | | | | VAP-19 | | | | VAP-20 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Sample Date | 12/13/2017 | 12/13/2017 | 12/13/2017 | 12/13/2017 | 12/13/2017 | 12/14/2017 | 12/14/2017 | 12/14/2017 | 12/14/2017 | 12/15/2017 | 12/15/2017 | 12/15/2017 | 12/15/2017 |
| | | | Depth (feet) | 6-10 | 16-20 | 16-20 | 26-30 | 36-40 | 6-10 | 16-20 | 26-30 | 36-40 | 6-10 | 16-20 | 16-20 | 26-30 |
| | | | Sample Type | N | N | FD | N | N | N | N | N | N | N | N | FD | N |
| | | | Unit | | | | | | | | | | | | | |
| WS-LC-0025 | Perfluorononanoic acid (PFNA) | 375-95-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorooctane sulfonamide (PFOSA) | 754-91-6 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorooctanoic acid (PFOA) | 335-67-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluoropentanoic acid (PFPeA) | 2706-90-3 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorotetradecanoic acid (PFTeA) | 376-06-7 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluoroundecanoic acid (PFUdA) | 2058-94-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |

**Notes:**
**Detections are in bold.**
< = analyte not detected above corresponding method detection limit
FD = field duplicate sample type
N = normal sample type
NA = not analyzed
ng/L = nanograms per liter
VAP = vertical aquifer profiling

**Laboratory Qualifiers:**
B = Analyte detected in sample and associated blank sample.
H = Exceeded holding times.
E = Concentration exceeds calibration range of laboratory instrument.
J = Estimated value. Analyte detected above method detection limit but below reporting limit.
R = rejected analyte.
U = The compound was analyzed for but not detected.

**Table 10**
**VAP Groundwater Analytical Results - 2016 to 2019**
**Interim Site Investigation Report**
**Marinette, Wisconsin**

| | | | Location | VAP-20 (continued) | | VAP-21 | | | | | VAP-22 | | VAP-23 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Sample Date | 12/14/2017 | 12/14/2017 | 12/22/2017 | 12/22/2017 | 12/19/2017 | 12/19/2017 | 12/22/2017 | 12/18/2017 | 12/18/2017 | 12/22/2017 | 12/22/2017 | 12/22/2017 |
| | | | Depth (feet) | 36-40 | 46-50 | 6-10 | 16-20 | 26-30 | 36-40 | 46-50 | 6-10 | 16-20 | 6-10 | 16-20 | 26-30 |
| | | | Sample Type | N | N | N | N | N | N | N | N | N | N | N | N |
| Method | Chemical Name | CAS_RN | Unit | | | | | | | | | | | | |
| CASC-SOP CTS-10.22.0 | Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | ng/L | <0.825 U | <0.883 U | <0.876 U | <0.958 U | <0.856 U | <0.980 U | <0.878 U | <0.746 U | <1.71 U | **76.7 J** | <0.815 U | <1.06 U |
| CASC-SOP CTS-10.22.0 | Perfluoroheptanoic acid (PFHpA) | 375-85-9 | ng/L | <1.51 U | <1.61 U | <1.60 U | <1.75 U | <1.57 U | <1.79 U | <1.60 U | <1.36 U | <3.13 U | **63.5** | <1.49 U | <1.94 U |
| CASC-SOP CTS-10.22.0 | Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | ng/L | <0.922 U | <0.988 U | <0.979 U | <1.07 U | <0.957 U | <1.10 U | <0.981 U | **4.96** | <1.91 U | <1.14 U | <0.912 U | <1.19 U |
| CASC-SOP CTS-10.22.0 | Perfluorononanoic acid (PFNA) | 375-95-1 | ng/L | <0.842 U | <0.902 U | <0.894 U | <0.979 U | <0.875 U | <1.00 U | <0.896 U | <0.762 U | <1.75 U | <1.05 U | <0.833 U | <1.08 U |
| CASC-SOP CTS-10.22.0 | Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | ng/L | <1.61 U | <1.72 U | <1.71 U | <1.87 U | <1.67 U | <1.91 U | <1.71 U | <1.46 U | <3.34 U | <2.00 U | <1.59 U | <2.07 U |
| CASC-SOP CTS-10.22.0 | Perfluorooctanoic acid (PFOA) | 335-67-1 | ng/L | <0.399 U | <0.427 U | **4.75** | **1140** | **48.5** | **538** | **25.9** | **15.0 J** | <0.827 UJ | **44.3** | <0.394 U | <0.514 U |
| E537 | N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | N-Methylperfluoroocatane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorodecanoic acid (PFDA) | 335-76-2 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorododecanoic acid (PFDoA) | 307-55-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluoroheptanoic acid (PFHpA) | 375-85-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorohexanoic acid (PFHxA) | 307-24-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorononanoic acid (PFNA) | 375-95-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorooctanoic acid (PFOA) | 335-67-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorotetradecanoic acid (PFTeA) | 376-06-7 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluoroundecanoic acid (PFUdA) | 2058-94-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | N-Methylperfluoroocatane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorodecanoic acid (PFDA) | 335-76-2 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorododecanoic acid (PFDoA) | 307-55-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluoroheptanoic acid (PFHpA) | 375-85-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorohexanoic acid (PFHxA) | 307-24-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorononanoic acid (PFNA) | 375-95-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorooctanoic acid (PFOA) | 335-67-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorotetradecanoic acid (PFTeA) | 376-06-7 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluoroundecanoic acid (PFUdA) | 2058-94-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | 6:2 Fluorotelomer sulfonic acid (6:2 FTSA) | 27619-97-2 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | 8:2 Fluorotelomer sulfonic acid (8:2 FTSA) | 39108-34-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | N-Methylperfluoroocatane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorobutanoic acid (PFBA) | 375-22-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorodecanoic acid (PFDA) | 335-76-2 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorododecanoic acid (PFDoA) | 307-55-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluoroheptanoic acid (PFHpA) | 375-85-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorohexanoic acid (PFHxA) | 307-24-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |

Notes on Page 26.

**Table 10**
**VAP Groundwater Analytical Results - 2016 to 2019**
**Interim Site Investigation Report**
**Marinette, Wisconsin**

| Method | Chemical Name | CAS_RN | Location | VAP-20 (continued) | | VAP-21 | | | | | VAP-22 | | VAP-23 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Sample Date | 12/14/2017 | 12/14/2017 | 12/22/2017 | 12/22/2017 | 12/19/2017 | 12/19/2017 | 12/22/2017 | 12/18/2017 | 12/18/2017 | 12/22/2017 | 12/22/2017 | 12/22/2017 |
| | | | Depth (feet) | 36-40 | 46-50 | 6-10 | 16-20 | 26-30 | 36-40 | 46-50 | 6-10 | 16-20 | 6-10 | 16-20 | 26-30 |
| | | | Sample Type | N | N | N | N | N | N | N | N | N | N | N | N |
| | | | Unit | | | | | | | | | | | | |
| WS-LC-0025 | Perfluorononanoic acid (PFNA) | 375-95-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorooctane sulfonamide (PFOSA) | 754-91-6 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorooctanoic acid (PFOA) | 335-67-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluoropentanoic acid (PFPeA) | 2706-90-3 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorotetradecanoic acid (PFTeA) | 376-06-7 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluoroundecanoic acid (PFUdA) | 2058-94-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |

**Notes:**
**Detections are in bold.**
< = analyte not detected above corresponding method detection limit
FD = field duplicate sample type
N = normal sample type
NA = not analyzed
ng/L = nanograms per liter
VAP = vertical aquifer profiling

**Laboratory Qualifiers:**
B = Analyte detected in sample and associated blank sample.
H = Exceeded holding times.
E = Concentration exceeds calibration range of laboratory instrument.
J = Estimated value. Analyte detected above method detection limit but below reporting limit.
R = rejected analyte.
U = The compound was analyzed for but not detected.

**Table 10**
**VAP Groundwater Analytical Results - 2016 to 2019**
**Interim Site Investigation Report**
**Marinette, Wisconsin**

| | | | Location | VAP-23 (continued) | | VAP-24 | | | | | | VAP-26 | VAP-28 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Sample Date | 12/22/2017 | 12/22/2017 | 12/22/2017 | 12/22/2017 | 12/22/2017 | 12/22/2017 | 12/22/2017 | 12/22/2017 | 6/12/2018 | 8/15/2018 | 8/16/2018 | 8/16/2018 |
| | | | Depth (feet) | 36-40 | 46-50 | 6-10 | 16-20 | 16-20 | 26-30 | 36-40 | 46-50 | 66-69 | 72-75 | 82-85 | 99-102 |
| | | | Sample Type | N | N | N | N | FD | N | N | N | N | N | N | N |
| Method | Chemical Name | CAS_RN | Unit | | | | | | | | | | | | |
| CASC-SOP CTS-10.22.0 | Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | ng/L | <1.28 U | <1.24 U | <0.806 U | <0.770 U | <1.48 U | <1.66 U | <1.05 U | <0.817 U | NA | NA | NA | NA |
| CASC-SOP CTS-10.22.0 | Perfluoroheptanoic acid (PFHpA) | 375-85-9 | ng/L | **28.9** | **162** | <1.47 U | <1.41 U | <2.71 U | <3.03 U | <1.92 U | <1.49 U | NA | NA | NA | NA |
| CASC-SOP CTS-10.22.0 | Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | ng/L | <1.44 U | <1.39 U | <0.901 U | <0.861 U | <1.66 U | <1.86 U | **3.18** | <0.914 U | NA | NA | NA | NA |
| CASC-SOP CTS-10.22.0 | Perfluorononanoic acid (PFNA) | 375-95-1 | ng/L | <1.31 U | <1.27 U | <0.823 U | <0.787 U | <1.51 U | <1.70 U | <1.07 U | <0.835 U | NA | NA | NA | NA |
| CASC-SOP CTS-10.22.0 | Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | ng/L | <2.51 U | <2.42 U | <1.57 U | <1.50 U | <2.89 U | <3.24 U | <2.05 U | <1.60 U | NA | NA | NA | NA |
| CASC-SOP CTS-10.22.0 | Perfluorooctanoic acid (PFOA) | 335-67-1 | ng/L | **34.0** | **395** | **16.6** | **12.3** | **18.4** | **63.4** | **24.3** | **18.0** | NA | NA | NA | NA |
| E537 | N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | N-Methylperfluoroocatane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorodecanoic acid (PFDA) | 335-76-2 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorododecanoic acid (PFDoA) | 307-55-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluoroheptanoic acid (PFHpA) | 375-85-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorohexanoic acid (PFHxA) | 307-24-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorononanoic acid (PFNA) | 375-95-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorooctanoic acid (PFOA) | 335-67-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorotetradecanoic acid (PFTeA) | 376-06-7 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluoroundecanoic acid (PFUdA) | 2058-94-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | N-Methylperfluoroocatane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorodecanoic acid (PFDA) | 335-76-2 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorododecanoic acid (PFDoA) | 307-55-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluoroheptanoic acid (PFHpA) | 375-85-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorohexanoic acid (PFHxA) | 307-24-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorononanoic acid (PFNA) | 375-95-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorooctanoic acid (PFOA) | 335-67-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorotetradecanoic acid (PFTeA) | 376-06-7 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluoroundecanoic acid (PFUdA) | 2058-94-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | 6:2 Fluorotelomer sulfonic acid (6:2 FTSA) | 27619-97-2 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | 8:2 Fluorotelomer sulfonic acid (8:2 FTSA) | 39108-34-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | <2.0 U | <1.7 U | <1.7 U | <1.7 U |
| WS-LC-0025 | N-Methylperfluoroocatane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | <3.2 U | <2.7 U | <2.7 U | <2.8 U |
| WS-LC-0025 | Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | **6.0** | <0.17 U | <0.18 U | <0.18 U |
| WS-LC-0025 | Perfluorobutanoic acid (PFBA) | 375-22-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorodecanoic acid (PFDA) | 335-76-2 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | **0.52 J** | <0.27 U | <0.27 U | <0.28 U |
| WS-LC-0025 | Perfluorododecanoic acid (PFDoA) | 307-55-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | <0.57 U | <0.48 U | <0.49 U | <0.49 U |
| WS-LC-0025 | Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluoroheptanoic acid (PFHpA) | 375-85-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | **49** | <0.22 U | <0.22 U | <0.22 U |
| WS-LC-0025 | Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | **36** | <1.7 UB | <1.8 UB | <1.8 UB |
| WS-LC-0025 | Perfluorohexanoic acid (PFHxA) | 307-24-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | **95** | <0.51 U | <0.51 U | <0.52 U |

Notes on Page 28.

**Table 10**
**VAP Groundwater Analytical Results - 2016 to 2019**
**Interim Site Investigation Report**
**Marinette, Wisconsin**

| Method | Chemical Name | CAS_RN | Location | VAP-23 (continued) | | VAP-24 | | | | | | VAP-26 | VAP-28 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Sample Date | 12/22/2017 | 12/22/2017 | 12/22/2017 | 12/22/2017 | 12/22/2017 | 12/22/2017 | 12/22/2017 | 12/22/2017 | 6/12/2018 | 8/15/2018 | 8/16/2018 | 8/16/2018 |
| | | | Depth (feet) | 36-40 | 46-50 | 6-10 | 16-20 | 16-20 | 26-30 | 36-40 | 46-50 | 66-69 | 72-75 | 82-85 | 99-102 |
| | | | Sample Type | N | N | N | N | FD | N | N | N | N | N | N | N |
| | | | Unit | | | | | | | | | | | | |
| WS-LC-0025 | Perfluorononanoic acid (PFNA) | 375-95-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | **27** | <0.24 U | <0.24 U | <0.24 U |
| WS-LC-0025 | Perfluorooctane sulfonamide (PFOSA) | 754-91-6 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | **18** | <0.47 U | <0.48 U | <0.48 U |
| WS-LC-0025 | Perfluorooctanoic acid (PFOA) | 335-67-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | **1,100 D** | <0.74 U | **0.81 J** | <0.76 U |
| WS-LC-0025 | Perfluoropentanoic acid (PFPeA) | 2706-90-3 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorotetradecanoic acid (PFTeA) | 376-06-7 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | <0.30 U | <0.25 U | <0.26 U | <0.26 U |
| WS-LC-0025 | Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | <1.3 U | <1.1 U | <1.1 U | <1.2 U |
| WS-LC-0025 | Perfluoroundecanoic acid (PFUdA) | 2058-94-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | <1.1 U | <0.96 U | <0.97 U | <0.98 U |

**Notes:**
**Detections are in bold.**
< = analyte not detected above corresponding method detection limit
FD = field duplicate sample type
N = normal sample type
NA = not analyzed
ng/L = nanograms per liter
VAP = vertical aquifer profiling

**Laboratory Qualifiers:**
B = Analyte detected in sample and associated blank sample.
H = Exceeded holding times.
E = Concentration exceeds calibration range of laboratory instrument.
J = Estimated value. Analyte detected above method detection limit but below reporting limit.
R = rejected analyte.
U = The compound was analyzed for but not detected.

**Table 10**
**VAP Groundwater Analytical Results - 2016 to 2019**
**Interim Site Investigation Report**
**Marinette, Wisconsin**

| | | | Location | VAP-29 | | | | VAP-30 | | VAP-31 | | VAP-32 | | | VAP-33 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Sample Date | 6/25/2018 | 6/25/2018 | 6/26/2018 | 6/27/2018 | 8/7/2018 | 8/8/2018 | 6/28/2018 | 6/28/2018 | 6/28/2018 | 6/28/2018 | 6/28/2018 | 6/27/2018 | 6/27/2018 | 6/27/2018 |
| | | | Depth (feet) | 5-10 | 5-10 | 25-30 | 79-82 | 59-62 | 72-80 | 6-10 | 16-20 | 6-10 | 16-20 | 24-28 | 6-10 | 16-20 | 16-20 |
| | | | Sample Type | N | FD | N | N | N | N | N | N | N | N | N | N | N | FD |
| Method | Chemical Name | CAS_RN | Unit | | | | | | | | | | | | | | |
| CASC-SOP CTS-10.22.0 | Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| CASC-SOP CTS-10.22.0 | Perfluoroheptanoic acid (PFHpA) | 375-85-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| CASC-SOP CTS-10.22.0 | Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| CASC-SOP CTS-10.22.0 | Perfluorononanoic acid (PFNA) | 375-95-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| CASC-SOP CTS-10.22.0 | Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| CASC-SOP CTS-10.22.0 | Perfluorooctanoic acid (PFOA) | 335-67-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | N-Methylperfluoroocatane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorodecanoic acid (PFDA) | 335-76-2 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorododecanoic acid (PFDoA) | 307-55-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluoroheptanoic acid (PFHpA) | 375-85-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorohexanoic acid (PFHxA) | 307-24-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorononanoic acid (PFNA) | 375-95-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorooctanoic acid (PFOA) | 335-67-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorotetradecanoic acid (PFTeA) | 376-06-7 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluoroundecanoic acid (PFUdA) | 2058-94-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | N-Methylperfluoroocatane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorodecanoic acid (PFDA) | 335-76-2 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorododecanoic acid (PFDoA) | 307-55-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluoroheptanoic acid (PFHpA) | 375-85-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorohexanoic acid (PFHxA) | 307-24-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorononanoic acid (PFNA) | 375-95-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorooctanoic acid (PFOA) | 335-67-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorotetradecanoic acid (PFTeA) | 376-06-7 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluoroundecanoic acid (PFUdA) | 2058-94-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | 6:2 Fluorotelomer sulfonic acid (6:2 FTSA) | 27619-97-2 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | 8:2 Fluorotelomer sulfonic acid (8:2 FTSA) | 39108-34-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | ng/L | <1.7 U | <1.6 U | <1.7 U | <1.7 U | <1.6 U | <1.7 U | <1.7 U | <1.7 U | <1.7 U | <1.7 U | <1.7 U | <1.7 U | <1.8 U | <1.8 U |
| WS-LC-0025 | N-Methylperfluoroocatane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | ng/L | <2.7 U | <2.7 U | <2.8 U | <2.7 U | <2.6 U | <2.7 U | <2.7 U | <2.8 U | <2.7 U | <2.7 U | <2.8 U | <2.8 U | <2.9 U | <2.9 U |
| WS-LC-0025 | Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | ng/L | **2.0** | **2.5** | <0.18 U | <0.17 U | <0.17 U | <0.17 U | **2.4** | **8.0** | **8.5** | **1.2 J** | **0.93 J** | **4.6** | **1.2 J** | **1.0 J** |
| WS-LC-0025 | Perfluorobutanoic acid (PFBA) | 375-22-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorodecanoic acid (PFDA) | 335-76-2 | ng/L | <0.27 U | <0.27 U | <0.28 U | <0.27 U | <0.26 U | <0.27 U | <0.27 U | <0.28 U | <0.27 U | <0.27 U | <0.28 U | <0.28 U | <0.29 U | <0.29 U |
| WS-LC-0025 | Perfluorododecanoic acid (PFDoA) | 307-55-1 | ng/L | <0.48 U | <0.48 U | <0.50 U | <0.48 U | <0.47 U | <0.48 U | <0.48 U | <0.49 U | <0.48 U | **0.70 J** | <0.49 U | <0.50 U | <0.51 U | <0.51 U |
| WS-LC-0025 | Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluoroheptanoic acid (PFHpA) | 375-85-9 | ng/L | **6.9** | **8.2** | **0.34 J** | <0.22 U | <0.21 U | <0.22 U | **13** | **5.3** | **40** | **6.7** | **3.5** | **90** | **2.0** | **1.8** |
| WS-LC-0025 | Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | ng/L | <0.15 U | <0.15 U | <1.8 UB | <1.7 UB | <1.7 UB | <1.7 UB | **2.3** | <1.8 UB | **2.2** | <0.15 U | <0.15 U | <1.8 UB | <1.9 UB | <1.8 UB |
| WS-LC-0025 | Perfluorohexanoic acid (PFHxA) | 307-24-4 | ng/L | **21** | **21** | <0.53 U | <0.51 U | <0.49 U | <0.51 U | **19** | **9.3** | **90** | **13** | **8.7** | **140** | **11** | **11** |

Notes on Page 30.

**Table 10**
**VAP Groundwater Analytical Results - 2016 to 2019**
**Interim Site Investigation Report**
**Marinette, Wisconsin**

| Method | Chemical Name | CAS_RN | Location | VAP-29 | | | | VAP-30 | | VAP-31 | | VAP-32 | | | VAP-33 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Sample Date | 6/25/2018 | 6/25/2018 | 6/26/2018 | 6/27/2018 | 8/7/2018 | 8/8/2018 | 6/28/2018 | 6/28/2018 | 6/28/2018 | 6/28/2018 | 6/28/2018 | 6/27/2018 | 6/27/2018 | 6/27/2018 |
| | | | Depth (feet) | 5-10 | 5-10 | 25-30 | 79-82 | 59-62 | 72-80 | 6-10 | 16-20 | 6-10 | 16-20 | 24-28 | 6-10 | 16-20 | 16-20 |
| | | | Sample Type | N | FD | N | N | N | N | N | N | N | N | N | N | N | FD |
| | | | Unit | | | | | | | | | | | | | | |
| WS-LC-0025 | Perfluorononanoic acid (PFNA) | 375-95-1 | ng/L | <0.24 U | <0.23 U | **0.28 J** | <0.24 U | <0.23 U | <0.24 U | **1.9** | <0.24 U | **0.65 J** | <0.24 U | <0.24 U | **1.8** | <0.25 U | <0.25 U |
| WS-LC-0025 | Perfluorooctane sulfonamide (PFOSA) | 754-91-6 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | ng/L | <0.47 U | <0.47 U | <0.49 U | <0.47 U | **1.5 J** | <0.47 U | **3.0** | <0.48 U | **10** | <0.47 U | <0.48 U | **5.3** | <0.50 U | <0.50 U |
| WS-LC-0025 | Perfluorooctanoic acid (PFOA) | 335-67-1 | ng/L | **4.5** | **4.3** | **1.0 J** | <0.74 U | <0.72 U | <0.74 U | **8.6** | **4.1** | **29** | **76** | **33** | **27** | **2.2** | **2.6** |
| WS-LC-0025 | Perfluoropentanoic acid (PFPeA) | 2706-90-3 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorotetradecanoic acid (PFTeA) | 376-06-7 | ng/L | <0.25 U | **0.38 J** | <0.26 U | <0.25 U | <0.25 U | <0.25 U | **0.36 J** | <0.26 U | <0.25 U | **1.3 J** | <0.26 U | <0.27 U | <0.27 U | <0.27 U |
| WS-LC-0025 | Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | ng/L | <1.1 U | <1.1 U | <1.2 U | <1.1 U | <1.1 U | <1.1 U | <1.1 U | <1.2 U | <1.1 U | <1.1 U | <1.2 U | <1.2 U | <1.2 U | <1.2 U |
| WS-LC-0025 | Perfluoroundecanoic acid (PFUdA) | 2058-94-8 | ng/L | <0.96 U | <0.95 U | <1.0 U | <0.96 U | <0.93 U | <0.96 U | <0.96 U | <0.98 U | <0.96 U | <0.96 U | <0.98 U | <1.0 U | <1.0 U | <1.0 U |

**Notes:**
**Detections are in bold.**
< = analyte not detected above corresponding method detection limit
FD = field duplicate sample type
N = normal sample type
NA = not analyzed
ng/L = nanograms per liter
VAP = vertical aquifer profiling

**Laboratory Qualifiers:**
B = Analyte detected in sample and associated blank sample.
H = Exceeded holding times.
E = Concentration exceeds calibration range of laboratory instrument.
J = Estimated value. Analyte detected above method detection limit but below reporting limit.
R = rejected analyte.
U = The compound was analyzed for but not detected.

**Table 10**
**VAP Groundwater Analytical Results - 2016 to 2019**
**Interim Site Investigation Report**
**Marinette, Wisconsin**

| | | | Location | VAP-33 (continued) | | | VAP-35 | | | | | VAP-36 | | | VAP-36 (2) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Sample Date | 6/27/2018 | 6/27/2018 | 6/27/2018 | 6/26/2018 | 6/26/2018 | 6/26/2018 | 6/26/2018 | 6/27/2018 | ####### | 6/26/2018 | 6/26/2018 | 10/26/2018 | 10/26/2018 |
| | | | Depth (feet) | 31-35 | 41-45 | 51-55 | 11-15 | 11-15 | 21-25 | 31-35 | 46-50 | 6-10 | 16-20 | 26-30 | 6-10 | 16-20 |
| | | | Sample Type | N | N | N | N | FD | N | N | N | N | N | N | N | N |
| Method | Chemical Name | CAS_RN | Unit | | | | | | | | | | | | | |
| CASC-SOP CTS-10.22.0 | Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| CASC-SOP CTS-10.22.0 | Perfluoroheptanoic acid (PFHpA) | 375-85-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| CASC-SOP CTS-10.22.0 | Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| CASC-SOP CTS-10.22.0 | Perfluorononanoic acid (PFNA) | 375-95-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| CASC-SOP CTS-10.22.0 | Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| CASC-SOP CTS-10.22.0 | Perfluorooctanoic acid (PFOA) | 335-67-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | N-Methylperfluoroocatane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorodecanoic acid (PFDA) | 335-76-2 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorododecanoic acid (PFDoA) | 307-55-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluoroheptanoic acid (PFHpA) | 375-85-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorohexanoic acid (PFHxA) | 307-24-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorononanoic acid (PFNA) | 375-95-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorooctanoic acid (PFOA) | 335-67-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorotetradecanoic acid (PFTeA) | 376-06-7 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluoroundecanoic acid (PFUdA) | 2058-94-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | N-Methylperfluoroocatane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorodecanoic acid (PFDA) | 335-76-2 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorododecanoic acid (PFDoA) | 307-55-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluoroheptanoic acid (PFHpA) | 375-85-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorohexanoic acid (PFHxA) | 307-24-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorononanoic acid (PFNA) | 375-95-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorooctanoic acid (PFOA) | 335-67-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorotetradecanoic acid (PFTeA) | 376-06-7 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluoroundecanoic acid (PFUdA) | 2058-94-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | 6:2 Fluorotelomer sulfonic acid (6:2 FTSA) | 27619-97-2 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | 8:2 Fluorotelomer sulfonic acid (8:2 FTSA) | 39108-34-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | ng/L | <1.7 U | <1.7 U | <1.7 U | <1.7 U | <1.8 U | <1.8 U | <1.9 U | <1.7 U | <1.7 U | <2.0 U | <1.7 U | <1.7 U | <1.8 U |
| WS-LC-0025 | N-Methylperfluoroocatane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | ng/L | <2.7 U | <2.8 UJ | <2.7 UJ | <2.8 U | <2.9 U | <2.9 U | <3.0 U | <2.7 U | <2.8 U | <3.3 U | <2.8 U | <2.8 U | <2.9 U |
| WS-LC-0025 | Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | ng/L | <0.18 U | <0.18 UJ | <0.18 UJ | **1.5 J** | **1.4 J** | **0.67 J** | **0.78 J** | <0.18 U | **8.2** | **3.7** | <0.18 U | **3.0** | <0.18 U |
| WS-LC-0025 | Perfluorobutanoic acid (PFBA) | 375-22-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorodecanoic acid (PFDA) | 335-76-2 | ng/L | <0.27 U | <0.28 UJ | <0.27 U | <0.28 U | <0.29 U | <0.29 U | <0.30 U | <0.27 U | <0.28 U | <0.33 U | <0.28 U | <0.28 U | <0.29 U |
| WS-LC-0025 | Perfluorododecanoic acid (PFDoA) | 307-55-1 | ng/L | <0.48 U | <0.49 U | <0.49 U | <0.50 U | <0.51 U | <0.52 U | <0.54 U | <0.48 U | <0.50 U | <0.58 U | <0.49 U | <0.49 U | <0.51 U |
| WS-LC-0025 | Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluoroheptanoic acid (PFHpA) | 375-85-9 | ng/L | <0.22 U | <0.22 UJ | <0.22 U | **3.0** | **2.8** | **3.9** | **3.9** | <0.22 U | **3.9** | **170** | <0.22 U | **5.2** | <0.23 U |
| WS-LC-0025 | Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | ng/L | <0.15 U | <0.15 U | <0.15 U | <1.8 UB | <1.8 UB | <1.9 UB | <2.0 UB | <1.8 UB | <1.8 UB | <2.1 UB | <1.8 UB | <0.15 UB | <0.16 UB |
| WS-LC-0025 | Perfluorohexanoic acid (PFHxA) | 307-24-4 | ng/L | <0.51 UJ | <0.52 UJ | **4.2** | **2.2** | **2.0** | **7.1** | **6.5** | <0.51 U | **12** | **200** | <0.52 U | **7.4** | <0.54 U |

Notes on Page 32.

**Table 10**
**VAP Groundwater Analytical Results - 2016 to 2019**
**Interim Site Investigation Report**
**Marinette, Wisconsin**

| Method | Chemical Name | CAS_RN | Location | VAP-33 (continued) | | | VAP-35 | | | | | VAP-36 | | | VAP-36 (2) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Sample Date | 6/27/2018 | 6/27/2018 | 6/27/2018 | 6/26/2018 | 6/26/2018 | 6/26/2018 | 6/26/2018 | 6/27/2018 | ####### | 6/26/2018 | 6/26/2018 | 10/26/2018 | 10/26/2018 |
| | | | Depth (feet) | 31-35 | 41-45 | 51-55 | 11-15 | 11-15 | 21-25 | 31-35 | 46-50 | 6-10 | 16-20 | 26-30 | 6-10 | 16-20 |
| | | | Sample Type | N | N | N | N | FD | N | N | N | N | N | N | N | N |
| | | | Unit | | | | | | | | | | | | | |
| WS-LC-0025 | Perfluorononanoic acid (PFNA) | 375-95-1 | ng/L | <0.24 U | <0.24 UJ | <0.24 UJ | <0.24 U | <0.25 U | <0.26 U | <0.26 U | <0.24 U | <0.25 U | **5.4** | <0.24 U | **0.75 J** | <0.25 U |
| WS-LC-0025 | Perfluorooctane sulfonamide (PFOSA) | 754-91-6 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | ng/L | <0.47 U | <0.48 UJ | <0.48 UJ | <0.49 U | <0.50 U | **0.82 J** | <0.53 U | <0.48 U | **6.4** | **2.1** | <0.48 U | **13** | <0.50 U |
| WS-LC-0025 | Perfluorooctanoic acid (PFOA) | 335-67-1 | ng/L | <0.75 U | <0.76 UJ | **1.8** | **3.7** | **4.0** | **78** | **74** | **0.98 J** | **4.0** | **300** | <0.76 U | **4.7** | **1.4 J** |
| WS-LC-0025 | Perfluoropentanoic acid (PFPeA) | 2706-90-3 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorotetradecanoic acid (PFTeA) | 376-06-7 | ng/L | <0.25 U | <0.26 UJ | <0.26 UJ | <0.26 U | <0.27 U | <0.27 U | <0.28 U | <0.26 U | <0.26 U | <0.31 U | <0.26 U | <0.26 U | <0.27 U |
| WS-LC-0025 | Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | ng/L | <1.1 U | <1.2 U | <1.1 U | <1.2 U | <1.2 U | <1.2 U | <1.3 U | <1.1 U | <1.2 U | <1.4 U | <1.2 U | <1.2 U | <1.2 U |
| WS-LC-0025 | Perfluoroundecanoic acid (PFUdA) | 2058-94-8 | ng/L | <0.96 U | <0.98 UJ | <0.97 U | <0.99 U | <1.0 U | <1.0 U | <1.1 U | <0.97 U | <1.0 U | <1.2 U | <0.98 U | <0.98 U | <1.0 U |

**Notes:**
**Detections are in bold.**
< = analyte not detected above corresponding method detection limit
FD = field duplicate sample type
N = normal sample type
NA = not analyzed
ng/L = nanograms per liter
VAP = vertical aquifer profiling

**Laboratory Qualifiers:**
B = Analyte detected in sample and associated blank sample.
H = Exceeded holding times.
E = Concentration exceeds calibration range of laboratory instrument.
J = Estimated value. Analyte detected above method detection limit but below reporting limit.
R = rejected analyte.
U = The compound was analyzed for but not detected.

**Table 10**
**VAP Groundwater Analytical Results - 2016 to 2019**
**Interim Site Investigation Report**
**Marinette, Wisconsin**

| | | | Location | VAP-36 (2) (continued) | | VAP-37 | | | VAP-38 | | | | VAP-39 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Sample Date | 10/26/2018 | 10/26/2018 | 6/25/2018 | 6/25/2018 | 6/26/2018 | 6/25/2018 | 6/25/2018 | 6/25/2018 | 6/25/2018 | 7/23/2018 | 7/23/2018 | 7/23/2018 | 7/23/2018 |
| | | | Depth (feet) | 16-20 | 26-30 | 9-13 | 19-23 | 29-33 | 11-15 | 21-25 | 31-35 | 41-45 | 6-10 | 6-10 | 16-20 | 22-26 |
| | | | Sample Type | FD | N | N | N | N | N | N | N | N | N | FD | N | N |
| Method | Chemical Name | CAS_RN | Unit | | | | | | | | | | | | | |
| CASC-SOP CTS-10.22.0 | Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| CASC-SOP CTS-10.22.0 | Perfluoroheptanoic acid (PFHpA) | 375-85-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| CASC-SOP CTS-10.22.0 | Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| CASC-SOP CTS-10.22.0 | Perfluorononanoic acid (PFNA) | 375-95-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| CASC-SOP CTS-10.22.0 | Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| CASC-SOP CTS-10.22.0 | Perfluorooctanoic acid (PFOA) | 335-67-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | N-Methylperfluoroocatane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorodecanoic acid (PFDA) | 335-76-2 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorododecanoic acid (PFDoA) | 307-55-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluoroheptanoic acid (PFHpA) | 375-85-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorohexanoic acid (PFHxA) | 307-24-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorononanoic acid (PFNA) | 375-95-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorooctanoic acid (PFOA) | 335-67-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorotetradecanoic acid (PFTeA) | 376-06-7 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluoroundecanoic acid (PFUdA) | 2058-94-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | N-Methylperfluoroocatane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorodecanoic acid (PFDA) | 335-76-2 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorododecanoic acid (PFDoA) | 307-55-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluoroheptanoic acid (PFHpA) | 375-85-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorohexanoic acid (PFHxA) | 307-24-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorononanoic acid (PFNA) | 375-95-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorooctanoic acid (PFOA) | 335-67-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorotetradecanoic acid (PFTeA) | 376-06-7 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluoroundecanoic acid (PFUdA) | 2058-94-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | 6:2 Fluorotelomer sulfonic acid (6:2 FTSA) | 27619-97-2 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | 8:2 Fluorotelomer sulfonic acid (8:2 FTSA) | 39108-34-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | ng/L | <1.8 U | <1.8 U | <2.1 U | <1.8 U | <1.8 U | <1.7 U | <2.1 U | <2.1 U | <1.7 U | <1.7 U | <1.7 U | <3.2 U | <1.9 U |
| WS-LC-0025 | N-Methylperfluoroocatane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | ng/L | <3.0 U | <2.9 U | <3.4 U | <2.9 U | <2.9 U | <2.7 U | <3.4 U | <3.4 U | <2.7 U | <2.8 U | <2.8 U | <5.3 U | <3.0 U |
| WS-LC-0025 | Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | ng/L | <0.19 U | <0.19 U | **1.1 J** | <0.18 U | **1.4 J** | <0.18 U | <0.22 U | <0.22 U | <0.18 U | **1.4 J** | **1.4 J** | **2.7 J** | **1.6 J** |
| WS-LC-0025 | Perfluorobutanoic acid (PFBA) | 375-22-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorodecanoic acid (PFDA) | 335-76-2 | ng/L | <0.30 U | <0.29 U | <0.34 U | <0.29 U | <0.29 U | <0.27 U | <0.34 U | <0.34 U | <0.27 U | <0.28 U | <0.28 U | <0.53 U | <0.30 U |
| WS-LC-0025 | Perfluorododecanoic acid (PFDoA) | 307-55-1 | ng/L | <0.53 U | <0.52 U | <0.61 U | <0.51 U | <0.51 U | <0.49 U | <0.60 U | <0.61 U | <0.48 U | <0.50 U | <0.50 U | <0.94 U | <0.54 U |
| WS-LC-0025 | Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluoroheptanoic acid (PFHpA) | 375-85-9 | ng/L | <0.24 U | <0.23 U | **1.0 J** | **1.7 J** | **1.7 J** | <0.22 U | <0.27 U | <0.28 U | <0.22 U | **2.0** | **1.8** | **6.1** | **9.5** |
| WS-LC-0025 | Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | ng/L | <0.16 UB | <0.16 UB | <2.2 UB | <1.8 UB | <1.9 UB | <0.15 U | <0.19 U | <0.19 U | <1.8 UB | **1.7 J** | **1.6 J** | <3.4 UB | <2.0 UB |
| WS-LC-0025 | Perfluorohexanoic acid (PFHxA) | 307-24-4 | ng/L | <0.56 U | <0.54 U | **1.8 J** | **2.6** | **2.2** | <0.51 U | <0.64 U | <0.64 U | <0.51 U | **2.4** | **2.6** | **9.1** | **14** |

Notes on Page 34.

**Table 10**
**VAP Groundwater Analytical Results - 2016 to 2019**
**Interim Site Investigation Report**
**Marinette, Wisconsin**

| Method | Chemical Name | CAS_RN | Location | VAP-36 (2) (continued) | | VAP-37 | | | VAP-38 | | | | VAP-39 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Sample Date | 10/26/2018 | 10/26/2018 | 6/25/2018 | 6/25/2018 | 6/26/2018 | 6/25/2018 | 6/25/2018 | 6/25/2018 | 6/25/2018 | 7/23/2018 | 7/23/2018 | 7/23/2018 | 7/23/2018 |
| | | | Depth (feet) | 16-20 | 26-30 | 9-13 | 19-23 | 29-33 | 11-15 | 21-25 | 31-35 | 41-45 | 6-10 | 6-10 | 16-20 | 22-26 |
| | | | Sample Type | FD | N | N | N | N | N | N | N | N | N | FD | N | N |
| | | | Unit | | | | | | | | | | | | | |
| WS-LC-0025 | Perfluorononanoic acid (PFNA) | 375-95-1 | ng/L | <0.26 U | <0.25 U | <0.30 U | <0.25 U | <0.25 U | <0.24 U | <0.30 U | <0.30 U | <0.24 U | <0.25 U | <0.24 U | **1.3 J** | **2.1** |
| WS-LC-0025 | Perfluorooctane sulfonamide (PFOSA) | 754-91-6 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | ng/L | <0.52 UB | <0.51 U | **1.0 J** | **1.6 J** | **2.2** | <0.48 U | <0.59 U | **2.2** | **0.77 J** | **1.7 J** | **1.8** | **2.8 J** | **2.6** |
| WS-LC-0025 | Perfluorooctanoic acid (PFOA) | 335-67-1 | ng/L | **1.8 J** | <0.80 U | **1.8 J** | **2.2** | **3.4** | <0.75 U | <0.93 U | <0.94 U | <0.75 U | **7.5** | **7.1** | **6.9** | **8.2** |
| WS-LC-0025 | Perfluoropentanoic acid (PFPeA) | 2706-90-3 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorotetradecanoic acid (PFTeA) | 376-06-7 | ng/L | <0.28 U | <0.27 U | <0.32 U | <1.8 UB | <0.27 U | <0.26 U | <0.32 U | <0.32 U | <0.25 U | <0.27 U | <0.26 U | <0.49 U | <0.29 U |
| WS-LC-0025 | Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | ng/L | <1.3 U | <1.2 U | <1.4 U | <1.2 U | <1.2 U | <1.1 U | <1.4 UJ | <1.4 U | <1.1 U | <1.2 U | <1.2 U | <2.2 U | <1.3 U |
| WS-LC-0025 | Perfluoroundecanoic acid (PFUdA) | 2058-94-8 | ng/L | <1.1 U | <1.0 U | <1.2 U | <1.0 U | <1.0 U | <0.97 U | <1.2 U | <1.2 U | <0.96 U | <1.0 U | <0.99 U | <1.9 U | <1.1 U |

**Notes:**
**Detections are in bold.**
< = analyte not detected above corresponding method detection limit
FD = field duplicate sample type
N = normal sample type
NA = not analyzed
ng/L = nanograms per liter
VAP = vertical aquifer profiling

**Laboratory Qualifiers:**
B = Analyte detected in sample and associated blank sample.
H = Exceeded holding times.
E = Concentration exceeds calibration range of laboratory instrument.
J = Estimated value. Analyte detected above method detection limit but below reporting limit.
R = rejected analyte.
U = The compound was analyzed for but not detected.

**Table 10**
**VAP Groundwater Analytical Results - 2016 to 2019**
**Interim Site Investigation Report**
**Marinette, Wisconsin**

| Method | Chemical Name | CAS_RN | Location | VAP-40 | | | | VAP-41 | | | | | VAP-42 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Sample Date | 8/21/2018 | 8/21/2018 | 8/21/2018 | 8/22/2018 | 8/22/2018 | 8/22/2018 | 8/22/2018 | 8/22/2018 | 8/22/2018 | 8/22/2018 | 8/22/2018 | 8/23/2018 | 8/23/2018 | 8/23/2018 |
| | | | Depth (feet) | 10-14 | 10-14 | 16-20 | 26-30 | 6-10 | 16-20 | 26-30 | 26-30 | 36-40 | 6-10 | 16-20 | 26-30 | 36-40 | 36-40 |
| | | | Sample Type | N | FD | N | N | N | N | N | FD | N | N | N | N | N | FD |
| | | | Unit | | | | | | | | | | | | | | |
| CASC-SOP CTS-10.22.0 | Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| CASC-SOP CTS-10.22.0 | Perfluoroheptanoic acid (PFHpA) | 375-85-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| CASC-SOP CTS-10.22.0 | Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| CASC-SOP CTS-10.22.0 | Perfluorononanoic acid (PFNA) | 375-95-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| CASC-SOP CTS-10.22.0 | Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| CASC-SOP CTS-10.22.0 | Perfluorooctanoic acid (PFOA) | 335-67-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | N-Methylperfluoroocatane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorodecanoic acid (PFDA) | 335-76-2 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorododecanoic acid (PFDoA) | 307-55-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluoroheptanoic acid (PFHpA) | 375-85-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorohexanoic acid (PFHxA) | 307-24-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorononanoic acid (PFNA) | 375-95-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorooctanoic acid (PFOA) | 335-67-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorotetradecanoic acid (PFTeA) | 376-06-7 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluoroundecanoic acid (PFUdA) | 2058-94-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | N-Methylperfluoroocatane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorodecanoic acid (PFDA) | 335-76-2 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorododecanoic acid (PFDoA) | 307-55-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluoroheptanoic acid (PFHpA) | 375-85-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorohexanoic acid (PFHxA) | 307-24-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorononanoic acid (PFNA) | 375-95-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorooctanoic acid (PFOA) | 335-67-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorotetradecanoic acid (PFTeA) | 376-06-7 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluoroundecanoic acid (PFUdA) | 2058-94-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | 6:2 Fluorotelomer sulfonic acid (6:2 FTSA) | 27619-97-2 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | 8:2 Fluorotelomer sulfonic acid (8:2 FTSA) | 39108-34-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | ng/L | <1.7 U | <1.7 U | <1.7 U | <1.7 U | <1.7 U | <1.7 U | <1.7 U | <1.7 U | <1.7 U | <1.7 U | <1.7 U | <1.7 U | <1.7 U | <1.7 U |
| WS-LC-0025 | N-Methylperfluoroocatane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | ng/L | <2.8 U | <2.9 U | <2.8 U | <2.8 U | <2.8 U | <2.8 U | <2.8 U | <2.8 U | <2.8 U | <2.8 U | <2.8 U | <2.8 U | <2.8 U | <2.8 U |
| WS-LC-0025 | Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | ng/L | <0.18 U | **0.57 J** | **2.3** | **0.31 J** | **3.2** | **2.9** | **0.48 J** | **0.48 J** | <0.18 U | <0.18 U | <0.18 U | <0.18 U | <0.18 U | <0.18 U |
| WS-LC-0025 | Perfluorobutanoic acid (PFBA) | 375-22-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorodecanoic acid (PFDA) | 335-76-2 | ng/L | <0.28 U | <0.29 U | <0.28 U | <0.28 U | <0.28 U | <0.28 U | <0.28 U | <0.28 U | <0.28 U | <0.28 U | <0.28 U | <0.28 U | <0.28 U | <0.28 U |
| WS-LC-0025 | Perfluorododecanoic acid (PFDoA) | 307-55-1 | ng/L | <0.50 U | <0.51 U | <0.50 U | <0.50 U | <0.50 U | <0.50 U | <0.50 U | <0.49 U | <0.50 U | <0.49 U | <0.50 U | <0.50 U | <0.50 U | <0.50 U |
| WS-LC-0025 | Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluoroheptanoic acid (PFHpA) | 375-85-9 | ng/L | **1.0 J** | **1.1 J** | **6.1** | **0.63 J** | **1.1 J** | **1.8** | **0.64 J** | **0.65 J** | <0.23 U | **0.32 J** | <0.23 U | <0.23 U | <0.23 U | <0.23 U |
| WS-LC-0025 | Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | ng/L | <1.8 UB | <1.8 UB | <0.18 UB | <1.8 UB | <1.8 UB | <1.8 UB | <1.8 UB | <1.8 UB | <1.8 UB | <1.8 UB | <1.8 UB | <1.8 UB | <1.8 UB | <1.8 UB |
| WS-LC-0025 | Perfluorohexanoic acid (PFHxA) | 307-24-4 | ng/L | **2.9** | **2.9** | **14** | **0.81 J** | **1.0 J** | **16** | **0.98 J** | **0.97 J** | <0.52 U | **0.88 J** | <0.53 U | <0.52 U | <0.53 U | <0.53 U |

Notes on Page 36.

**Table 10**
**VAP Groundwater Analytical Results - 2016 to 2019**
**Interim Site Investigation Report**
**Marinette, Wisconsin**

| Method | Chemical Name | CAS_RN | Location | VAP-40 | | | | VAP-41 | | | | | VAP-42 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Sample Date | 8/21/2018 | 8/21/2018 | 8/21/2018 | 8/22/2018 | 8/22/2018 | 8/22/2018 | 8/22/2018 | 8/22/2018 | 8/22/2018 | 8/22/2018 | 8/22/2018 | 8/23/2018 | 8/23/2018 | 8/23/2018 |
| | | | Depth (feet) | 10-14 | 10-14 | 16-20 | 26-30 | 6-10 | 16-20 | 26-30 | 26-30 | 36-40 | 6-10 | 16-20 | 26-30 | 36-40 | 36-40 |
| | | | Sample Type | N | FD | N | N | N | N | N | FD | N | N | N | N | N | FD |
| | | | Unit | | | | | | | | | | | | | | |
| WS-LC-0025 | Perfluorononanoic acid (PFNA) | 375-95-1 | ng/L | <0.25 U | <0.25 U | <0.24 U | **0.24 J** | <0.24 U | **0.72 J** | <0.24 U | <0.24 U | <0.24 U | **0.25 J** | <0.25 U | <0.24 U | <0.25 U | <0.25 U |
| WS-LC-0025 | Perfluorooctane sulfonamide (PFOSA) | 754-91-6 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | ng/L | <0.49 U | <0.50 U | **0.86 J** | **0.53 J** | <0.49 U | **10** | **0.83 J** | **0.65 J** | <0.49 U | **1.0 J** | <0.49 U | <0.49 U | <0.49 U | <0.50 U |
| WS-LC-0025 | Perfluorooctanoic acid (PFOA) | 335-67-1 | ng/L | **1.6 J** | **1.6 J** | **16** | **1.2 J** | **1.3 J** | **4.8** | **0.91 J** | **0.97 J** | <0.77 U | **0.78 J** | <0.78 U | <0.77 U | <0.77 U | <0.78 U |
| WS-LC-0025 | Perfluoropentanoic acid (PFPeA) | 2706-90-3 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorotetradecanoic acid (PFTeA) | 376-06-7 | ng/L | <0.27 U | <0.27 U | <0.26 U | <0.26 U | <0.26 U | <0.26 U | <0.26 U | <0.26 U | <0.26 U | <0.26 U | <0.27 U | <0.26 U | <0.26 U | <0.27 U |
| WS-LC-0025 | Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | ng/L | <1.2 U | <1.2 U | <1.2 U | <1.2 U | <1.2 U | <1.2 U | <1.2 U | <1.2 U | <1.2 U | <1.2 U | <1.2 U | <1.2 U | <1.2 U | <1.2 U |
| WS-LC-0025 | Perfluoroundecanoic acid (PFUdA) | 2058-94-8 | ng/L | <1.0 U | <1.0 U | <1.0 U | <1.0 U | <0.99 U | <0.99 U | <0.99 U | <0.98 U | <0.99 U | <0.98 U | <1.0 U | <0.99 U | <1.0 U | <1.0 U |

**Notes:**
**Detections are in bold.**
< = analyte not detected above corresponding method detection limit
FD = field duplicate sample type
N = normal sample type
NA = not analyzed
ng/L = nanograms per liter
VAP = vertical aquifer profiling

**Laboratory Qualifiers:**
B = Analyte detected in sample and associated blank sample.
H = Exceeded holding times.
E = Concentration exceeds calibration range of laboratory instrument.
J = Estimated value. Analyte detected above method detection limit but below reporting limit.
R = rejected analyte.
U = The compound was analyzed for but not detected.

**Table 10**
**VAP Groundwater Analytical Results - 2016 to 2019**
**Interim Site Investigation Report**
**Marinette, Wisconsin**

| Method | Chemical Name | CAS_RN | Location | VAP-43 | | | | | VAP-44 | | | | | VAP-45 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Sample Date | 8/29/2018 | 8/29/2018 | 8/29/2018 | 8/29/2018 | 8/29/2018 | 8/21/2018 | 8/21/2018 | 8/21/2018 | 8/21/2018 | 8/21/2018 | 8/21/2018 | 8/21/2018 | 8/21/2018 |
| | | | Depth (feet) | 11-15 | 16-20 | 16-20 | 26-30 | 36-40 | 6-10 | 16-20 | 26-30 | 26-30 | 36-40 | 6-10 | 16-20 | 26-30 |
| | | | Sample Type | N | N | FD | N | N | N | N | N | FD | N | N | N | N |
| | | | Unit | | | | | | | | | | | | | |
| CASC-SOP CTS-10.22.0 | Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| CASC-SOP CTS-10.22.0 | Perfluoroheptanoic acid (PFHpA) | 375-85-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| CASC-SOP CTS-10.22.0 | Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| CASC-SOP CTS-10.22.0 | Perfluorononanoic acid (PFNA) | 375-95-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| CASC-SOP CTS-10.22.0 | Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| CASC-SOP CTS-10.22.0 | Perfluorooctanoic acid (PFOA) | 335-67-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | N-Methylperfluoroocatane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorodecanoic acid (PFDA) | 335-76-2 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorododecanoic acid (PFDoA) | 307-55-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluoroheptanoic acid (PFHpA) | 375-85-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorohexanoic acid (PFHxA) | 307-24-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorononanoic acid (PFNA) | 375-95-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorooctanoic acid (PFOA) | 335-67-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorotetradecanoic acid (PFTeA) | 376-06-7 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluoroundecanoic acid (PFUdA) | 2058-94-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | N-Methylperfluoroocatane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorodecanoic acid (PFDA) | 335-76-2 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorododecanoic acid (PFDoA) | 307-55-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluoroheptanoic acid (PFHpA) | 375-85-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorohexanoic acid (PFHxA) | 307-24-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorononanoic acid (PFNA) | 375-95-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorooctanoic acid (PFOA) | 335-67-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorotetradecanoic acid (PFTeA) | 376-06-7 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluoroundecanoic acid (PFUdA) | 2058-94-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | 6:2 Fluorotelomer sulfonic acid (6:2 FTSA) | 27619-97-2 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | 8:2 Fluorotelomer sulfonic acid (8:2 FTSA) | 39108-34-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | ng/L | <1.8 U | <1.8 U | <1.8 U | <1.7 U | <1.7 U | <1.7 U | <1.7 U | <1.7 U | <1.8 U | <1.7 U | <1.7 U | <1.7 U | <1.7 U |
| WS-LC-0025 | N-Methylperfluoroocatane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | ng/L | <2.9 U | <2.9 U | <2.9 U | <2.8 U | <2.8 U | <2.8 U | <2.8 U | <2.8 U | <2.9 U | <2.8 U | <2.8 U | <2.8 U | <2.8 U |
| WS-LC-0025 | Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | ng/L | **1.6 J** | <0.19 U | <0.18 U | <0.18 U | <0.18 U | **0.50 J** | <0.18 U | <0.18 U | <0.19 U | **0.31 J** | **1.3 J** | **0.22 J** | **0.36 J** |
| WS-LC-0025 | Perfluorobutanoic acid (PFBA) | 375-22-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorodecanoic acid (PFDA) | 335-76-2 | ng/L | <0.29 U | <0.29 U | <0.29 U | <0.28 U | <0.28 U | <0.28 U | <0.28 U | <0.28 U | <0.29 U | **0.43 J** | <0.28 U | <0.28 U | <0.28 U |
| WS-LC-0025 | Perfluorododecanoic acid (PFDoA) | 307-55-1 | ng/L | <0.52 U | <0.51 U | <0.51 U | <0.50 U | <0.50 U | <0.50 U | <0.50 U | <0.50 U | <0.51 U | <0.49 U | <0.50 U | <0.50 U | <0.49 U |
| WS-LC-0025 | Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluoroheptanoic acid (PFHpA) | 375-85-9 | ng/L | **0.96 J** | <0.23 U | <0.23 U | <0.23 U | <0.23 U | **0.28 J** | **0.44 J** | <0.23 U | <0.23 U | <0.22 U | **6.2** | <0.23 U | **0.54 J** |
| WS-LC-0025 | Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | ng/L | <0.16 UB | <0.16 UB | <0.16 UB | <0.16 UB | <0.16 UB | <1.8 UB | <1.8 UB | <1.8 UB | <1.9 UB | <1.8 UB | <1.8 UB | <1.8 UB | <1.8 UB |
| WS-LC-0025 | Perfluorohexanoic acid (PFHxA) | 307-24-4 | ng/L | **1.3 J** | <0.54 U | <0.54 U | <0.53 U | <0.53 U | **0.60 J** | <0.52 U | <0.52 U | <0.54 U | <0.52 U | **8.3** | <0.53 U | **0.68 J** |

Notes on Page 38.

**Table 10**
**VAP Groundwater Analytical Results - 2016 to 2019**
**Interim Site Investigation Report**
**Marinette, Wisconsin**

| Method | Chemical Name | CAS_RN | Location | VAP-43 | | | | | VAP-44 | | | | | VAP-45 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Sample Date | 8/29/2018 | 8/29/2018 | 8/29/2018 | 8/29/2018 | 8/29/2018 | 8/21/2018 | 8/21/2018 | 8/21/2018 | 8/21/2018 | 8/21/2018 | 8/21/2018 | 8/21/2018 | 8/21/2018 |
| | | | Depth (feet) | 11-15 | 16-20 | 16-20 | 26-30 | 36-40 | 6-10 | 16-20 | 26-30 | 26-30 | 36-40 | 6-10 | 16-20 | 26-30 |
| | | | Sample Type | N | N | FD | N | N | N | N | N | FD | N | N | N | N |
| | | | Unit | | | | | | | | | | | | | |
| WS-LC-0025 | Perfluorononanoic acid (PFNA) | 375-95-1 | ng/L | <0.25 U | <0.25 U | <0.25 U | <0.25 U | <0.25 U | <0.25 U | **0.28 J** | <0.24 U | <0.25 U | <0.24 U | <0.24 U | <0.25 U | <0.24 U |
| WS-LC-0025 | Perfluorooctane sulfonamide (PFOSA) | 754-91-6 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | ng/L | <0.51 U | <0.50 U | <0.50 U | <0.49 U | <0.49 U | **0.68 J** | <0.49 U | <0.49 U | <0.50 U | <0.48 U | **1.2 J** | <0.49 U | <0.48 U |
| WS-LC-0025 | Perfluorooctanoic acid (PFOA) | 335-67-1 | ng/L | <0.80 U | <0.79 U | <0.79 U | <0.78 U | <0.78 U | **0.83 J** | **1.6 J** | **1.4 J** | **1.6 J** | **1.9** | **8.5** | **1.2 J** | **1.8** |
| WS-LC-0025 | Perfluoropentanoic acid (PFPeA) | 2706-90-3 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorotetradecanoic acid (PFTeA) | 376-06-7 | ng/L | <0.27 U | <0.27 U | <0.27 U | <0.27 U | <0.26 U | <0.26 U | <0.26 U | <0.26 U | <0.27 U | <0.26 U | <0.26 U | <0.26 U | <0.26 U |
| WS-LC-0025 | Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | ng/L | <1.2 U | <1.2 U | <1.2 U | <1.2 U | <1.2 U | <1.2 U | <1.2 U | <1.2 U | <1.2 U | <1.2 U | <1.2 U | <1.2 U | <1.2 U |
| WS-LC-0025 | Perfluoroundecanoic acid (PFUdA) | 2058-94-8 | ng/L | <1.0 U | <1.0 U | <1.0 U | <1.0 U | <1.0 U | <1.0 U | <0.99 U | <0.99 U | <1.0 U | <0.99 U | <0.99 U | <1.0 U | <0.98 U |

**Notes:**
**Detections are in bold.**
< = analyte not detected above corresponding method detection limit
FD = field duplicate sample type
N = normal sample type
NA = not analyzed
ng/L = nanograms per liter
VAP = vertical aquifer profiling

**Laboratory Qualifiers:**
B = Analyte detected in sample and associated blank sample.
H = Exceeded holding times.
E = Concentration exceeds calibration range of laboratory instrument.
J = Estimated value. Analyte detected above method detection limit but below reporting limit.
R = rejected analyte.
U = The compound was analyzed for but not detected.

**Table 10**
**VAP Groundwater Analytical Results - 2016 to 2019**
**Interim Site Investigation Report**
**Marinette, Wisconsin**

| | | | Location | VAP-46 | | | | | VAP-47 | | | VAP-48 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Sample Date | 8/28/2018 | 8/28/2018 | 8/28/2018 | 8/28/2018 | 8/28/2018 | 8/23/2018 | 8/23/2018 | 8/28/2018 | 10/26/2018 | 10/26/2018 | 10/26/2018 | 10/26/2018 |
| | | | Depth (feet) | 11-15 | 16-20 | 16-20 | 26-30 | 36-40 | 6-10 | 16-20 | 26-30 | 6-10 | 16-20 | 26-30 | 33-37 |
| | | | Sample Type | N | N | FD | N | N | N | N | N | N | N | N | N |
| Method | Chemical Name | CAS_RN | Unit | | | | | | | | | | | | |
| CASC-SOP CTS-10.22.0 | Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| CASC-SOP CTS-10.22.0 | Perfluoroheptanoic acid (PFHpA) | 375-85-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| CASC-SOP CTS-10.22.0 | Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| CASC-SOP CTS-10.22.0 | Perfluorononanoic acid (PFNA) | 375-95-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| CASC-SOP CTS-10.22.0 | Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| CASC-SOP CTS-10.22.0 | Perfluorooctanoic acid (PFOA) | 335-67-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | N-Methylperfluoroocatane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorodecanoic acid (PFDA) | 335-76-2 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorododecanoic acid (PFDoA) | 307-55-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluoroheptanoic acid (PFHpA) | 375-85-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorohexanoic acid (PFHxA) | 307-24-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorononanoic acid (PFNA) | 375-95-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorooctanoic acid (PFOA) | 335-67-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorotetradecanoic acid (PFTeA) | 376-06-7 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluoroundecanoic acid (PFUdA) | 2058-94-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | N-Methylperfluoroocatane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorodecanoic acid (PFDA) | 335-76-2 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorododecanoic acid (PFDoA) | 307-55-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluoroheptanoic acid (PFHpA) | 375-85-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorohexanoic acid (PFHxA) | 307-24-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorononanoic acid (PFNA) | 375-95-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorooctanoic acid (PFOA) | 335-67-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorotetradecanoic acid (PFTeA) | 376-06-7 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluoroundecanoic acid (PFUdA) | 2058-94-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | 6:2 Fluorotelomer sulfonic acid (6:2 FTSA) | 27619-97-2 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | 8:2 Fluorotelomer sulfonic acid (8:2 FTSA) | 39108-34-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | ng/L | <2.2 U | <1.7 U | <1.7 U | <1.7 U | <1.8 U | <1.7 U | <1.7 U | <1.8 U | <1.8 U | <1.9 U | <1.8 U | <1.8 U |
| WS-LC-0025 | N-Methylperfluoroocatane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | ng/L | <3.5 U | <2.8 U | <2.8 U | <2.8 U | <2.9 U | <2.8 U | <2.8 U | <2.9 U | <2.9 U | <3.0 U | <3.0 U | <2.9 U |
| WS-LC-0025 | Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | ng/L | **0.98 J** | **0.35 J** | **0.33 J** | <0.18 U | <0.19 U | <0.18 U | <0.18 U | <0.18 U | **20** | <0.20 U | <0.19 U | <0.19 U |
| WS-LC-0025 | Perfluorobutanoic acid (PFBA) | 375-22-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorodecanoic acid (PFDA) | 335-76-2 | ng/L | <0.35 U | <0.28 U | <0.28 U | <0.28 U | <0.29 U | <0.28 U | <0.28 U | <0.29 U | <0.29 U | <0.30 U | <0.30 U | <0.29 U |
| WS-LC-0025 | Perfluorododecanoic acid (PFDoA) | 307-55-1 | ng/L | <0.62 U | <0.50 U | <0.49 U | <0.50 U | <0.51 U | <0.49 U | <0.50 U | <0.51 U | <0.52 U | <0.54 U | <0.53 U | <0.52 U |
| WS-LC-0025 | Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluoroheptanoic acid (PFHpA) | 375-85-9 | ng/L | **2.8** | **0.87 J** | **0.81 J** | <0.23 U | <0.23 U | <0.22 U | <0.23 U | <0.23 U | **24** | <0.25 U | <0.24 U | <0.24 U |
| WS-LC-0025 | Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | ng/L | <0.19 UB | <0.15 UB | <0.15 UB | <0.15 UB | <0.16 UB | <1.8 UB | <1.8 UB | <0.16 UB | <0.16 UB | <0.17 UB | <0.16 UB | <0.16 UB |
| WS-LC-0025 | Perfluorohexanoic acid (PFHxA) | 307-24-4 | ng/L | **1.4 J** | **1.6 J** | **1.7 J** | <0.52 U | <0.54 U | <0.52 U | <0.53 U | <0.53 U | **30** | <0.57 U | <0.56 U | <0.55 U |

Notes on Page 40.

**Table 10**
**VAP Groundwater Analytical Results - 2016 to 2019**
**Interim Site Investigation Report**
**Marinette, Wisconsin**

| Method | Chemical Name | CAS_RN | Location | VAP-46 | | | | | VAP-47 | | | VAP-48 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Sample Date | 8/28/2018 | 8/28/2018 | 8/28/2018 | 8/28/2018 | 8/28/2018 | 8/23/2018 | 8/23/2018 | 8/28/2018 | 10/26/2018 | 10/26/2018 | 10/26/2018 | 10/26/2018 |
| | | | Depth (feet) | 11-15 | 16-20 | 16-20 | 26-30 | 36-40 | 6-10 | 16-20 | 26-30 | 6-10 | 16-20 | 26-30 | 33-37 |
| | | | Sample Type | N | N | FD | N | N | N | N | N | N | N | N | N |
| | | | Unit | | | | | | | | | | | | |
| WS-LC-0025 | Perfluorononanoic acid (PFNA) | 375-95-1 | ng/L | <0.31 U | <0.24 U | <0.24 U | <0.24 U | <0.25 U | <0.24 U | <0.24 U | <0.25 U | **2.0** | <0.27 U | <0.26 U | <0.26 U |
| WS-LC-0025 | Perfluorooctane sulfonamide (PFOSA) | 754-91-6 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | ng/L | **1.8 J** | <0.49 U | <0.49 U | <0.49 U | <0.50 U | <0.48 U | <0.49 U | **1.3 J** | **8.4** | <0.53 U | <0.52 U | <0.51 U |
| WS-LC-0025 | Perfluorooctanoic acid (PFOA) | 335-67-1 | ng/L | **8.8** | **0.89 J** | <0.76 U | <0.77 U | <0.79 U | <0.76 U | <0.77 U | **0.93 J** | **16** | <0.84 U | <0.81 U | **2.4** |
| WS-LC-0025 | Perfluoropentanoic acid (PFPeA) | 2706-90-3 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorotetradecanoic acid (PFTeA) | 376-06-7 | ng/L | <0.33 U | <0.26 U | <0.26 U | <0.26 U | <0.27 U | <0.26 U | <0.26 U | <0.27 U | <0.27 U | <0.29 U | <0.28 U | <0.27 U |
| WS-LC-0025 | Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | ng/L | <1.5 U | <1.2 U | <1.2 U | <1.2 U | <1.2 U | <1.2 U | <1.2 U | <1.2 U | <1.2 U | <1.3 U | <1.2 U | <1.2 U |
| WS-LC-0025 | Perfluoroundecanoic acid (PFUdA) | 2058-94-8 | ng/L | <1.2 U | <0.99 U | <0.99 U | <0.99 U | <1.0 U | <0.98 U | <1.0 U | <1.0 U | <1.0 U | <1.1 U | <1.1 U | <1.0 U |

**Notes:**
**Detections are in bold.**
< = analyte not detected above corresponding method detection limit
FD = field duplicate sample type
N = normal sample type
NA = not analyzed
ng/L = nanograms per liter
VAP = vertical aquifer profiling

**Laboratory Qualifiers:**
B = Analyte detected in sample and associated blank sample.
H = Exceeded holding times.
E = Concentration exceeds calibration range of laboratory instrument.
J = Estimated value. Analyte detected above method detection limit but below reporting limit.
R = rejected analyte.
U = The compound was analyzed for but not detected.

**Table 10**
**VAP Groundwater Analytical Results - 2016 to 2019**
**Interim Site Investigation Report**
**Marinette, Wisconsin**

| Method | Chemical Name | CAS_RN | Location | VAP-49 | | | VAP-50 | | | VAP-51 | | | | VAP-52 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Sample Date | 10/26/2018 | 10/26/2018 | 10/26/2018 | 11/2/2018 | 11/2/2018 | 11/2/2018 | 11/2/2018 | 11/2/2018 | 11/2/2018 | 11/2/2018 | 8/13/2019 | 8/14/2019 | 8/14/2019 |
| | | | Depth (feet) | 6-10 | 16-20 | 26-30 | 5-10 | 15-20 | 25-30 | 5-10 | 15-20 | 25-30 | 25-30 | 7-10 | 20-23 | 20-23 |
| | | | Sample Type | N | N | N | N | N | N | N | N | N | FD | N | N | FD |
| | | | Unit | | | | | | | | | | | | | |
| CASC-SOP CTS-10.22.0 | Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| CASC-SOP CTS-10.22.0 | Perfluoroheptanoic acid (PFHpA) | 375-85-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| CASC-SOP CTS-10.22.0 | Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| CASC-SOP CTS-10.22.0 | Perfluorononanoic acid (PFNA) | 375-95-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| CASC-SOP CTS-10.22.0 | Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| CASC-SOP CTS-10.22.0 | Perfluorooctanoic acid (PFOA) | 335-67-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | ng/L | NA | NA | NA | <0.47 U | <0.52 U | <0.50 U | <0.49 U | <0.50 U | <0.51 U | <0.50 U | NA | NA | NA |
| E537 | N-Methylperfluoroocatane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | ng/L | NA | NA | NA | <1.0 U | <1.1 U | <1.1 U | <1.1 U | <1.1 U | <1.1 U | <1.1 U | NA | NA | NA |
| E537 | Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | ng/L | NA | NA | NA | <0.74 U | <0.81 U | <0.79 U | <0.77 U | <0.78 U | <0.80 U | <0.78 U | NA | NA | NA |
| E537 | Perfluorodecanoic acid (PFDA) | 335-76-2 | ng/L | NA | NA | NA | <0.49 U | <0.54 U | <0.52 U | <0.51 U | <0.52 U | <0.53 U | <0.52 U | NA | NA | NA |
| E537 | Perfluorododecanoic acid (PFDoA) | 307-55-1 | ng/L | NA | NA | NA | <0.76 U | <0.83 U | <0.81 U | <0.79 U | <0.80 U | <0.82 U | <0.80 U | NA | NA | NA |
| E537 | Perfluoroheptanoic acid (PFHpA) | 375-85-9 | ng/L | NA | NA | NA | <1.2 U | <1.3 U | <1.3 U | <1.2 U | <1.3 U | <1.3 U | <1.3 U | NA | NA | NA |
| E537 | Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | ng/L | NA | NA | NA | <0.59 U | <0.65 U | <0.63 U | <0.61 U | <0.62 U | <0.64 U | <0.63 U | NA | NA | NA |
| E537 | Perfluorohexanoic acid (PFHxA) | 307-24-4 | ng/L | NA | NA | NA | <0.27 U | <0.29 U | <0.29 U | <0.28 U | <0.28 U | <0.29 U | <0.28 U | NA | NA | NA |
| E537 | Perfluorononanoic acid (PFNA) | 375-95-1 | ng/L | NA | NA | NA | <0.44 U | <0.48 U | <0.46 U | <0.45 U | <0.46 U | <0.47 U | <0.46 U | NA | NA | NA |
| E537 | Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | ng/L | NA | NA | NA | <0.88 U | <0.97 U | <0.93 U | <0.91 U | <0.93 U | <0.95 U | <0.93 U | NA | NA | NA |
| E537 | Perfluorooctanoic acid (PFOA) | 335-67-1 | ng/L | NA | NA | NA | <2.5 U | <2.7 U | <2.7 U | <2.6 U | <2.6 U | <2.7 U | <2.6 U | NA | NA | NA |
| E537 | Perfluorotetradecanoic acid (PFTeA) | 376-06-7 | ng/L | NA | NA | NA | <0.82 U | <0.90 U | <0.88 U | <0.85 U | <0.87 U | <0.89 U | <0.87 U | NA | NA | NA |
| E537 | Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | ng/L | NA | NA | NA | <0.60 U | <0.66 U | <0.64 U | <0.62 U | <0.63 U | <0.65 U | <0.64 U | NA | NA | NA |
| E537 | Perfluoroundecanoic acid (PFUdA) | 2058-94-8 | ng/L | NA | NA | NA | <0.56 U | <0.61 U | <0.59 U | <0.57 U | <0.58 U | <0.60 U | <0.59 U | NA | NA | NA |
| PFC_IDA | N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | <1.7 U | <1.8 U | <1.7 U |
| PFC_IDA | N-Methylperfluoroocatane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | <2.7 U | <2.9 U | <2.7 U |
| PFC_IDA | Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | <0.17 U | <0.19 U | <0.17 U |
| PFC_IDA | Perfluorodecanoic acid (PFDA) | 335-76-2 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | <0.27 U | <0.29 U | <0.27 U |
| PFC_IDA | Perfluorododecanoic acid (PFDoA) | 307-55-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | <0.48 U | <0.52 U | <0.48 U |
| PFC_IDA | Perfluoroheptanoic acid (PFHpA) | 375-85-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | <0.22 U | <0.23 U | <0.22 U |
| PFC_IDA | Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | <1.7 UB | <1.9 UB | <1.7 UB |
| PFC_IDA | Perfluorohexanoic acid (PFHxA) | 307-24-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | <0.50 U | <0.54 U | <0.50 U |
| PFC_IDA | Perfluorononanoic acid (PFNA) | 375-95-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | <0.23 U | <0.25 U | <0.23 U |
| PFC_IDA | Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | <0.47 U | <0.51 U | <0.47 U |
| PFC_IDA | Perfluorooctanoic acid (PFOA) | 335-67-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | <0.74 U | <0.80 U | <0.74 U |
| PFC_IDA | Perfluorotetradecanoic acid (PFTeA) | 376-06-7 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | <0.25 U | <0.27 U | <0.25 U |
| PFC_IDA | Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | <1.1 U | <1.2 U | <1.1 U |
| PFC_IDA | Perfluoroundecanoic acid (PFUdA) | 2058-94-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | <0.96 U | <1.0 U | <0.96 U |
| WS-LC-0025 | 6:2 Fluorotelomer sulfonic acid (6:2 FTSA) | 27619-97-2 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | 8:2 Fluorotelomer sulfonic acid (8:2 FTSA) | 39108-34-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | ng/L | <1.7 U | <1.8 U | <1.9 U | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | N-Methylperfluoroocatane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | ng/L | <2.7 U | <2.9 U | <3.1 U | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | ng/L | **1.1 J** | **0.41 J** | <0.20 U | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorobutanoic acid (PFBA) | 375-22-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorodecanoic acid (PFDA) | 335-76-2 | ng/L | <0.27 U | <0.29 U | <0.31 U | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorododecanoic acid (PFDoA) | 307-55-1 | ng/L | <0.49 U | <0.52 U | <0.55 U | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluoroheptanoic acid (PFHpA) | 375-85-9 | ng/L | **3.3** | **0.57 J** | <0.25 U | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | ng/L | **1.9** | <0.16 UB | <0.17 UB | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorohexanoic acid (PFHxA) | 307-24-4 | ng/L | **4.2** | **1.2 J** | <0.58 U | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |

Notes on Page 42.

**Table 10**
**VAP Groundwater Analytical Results - 2016 to 2019**
**Interim Site Investigation Report**
**Marinette, Wisconsin**

| Method | Chemical Name | CAS_RN | Location | VAP-49 | | | VAP-50 | | | VAP-51 | | | | VAP-52 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Sample Date | 10/26/2018 | 10/26/2018 | 10/26/2018 | 11/2/2018 | 11/2/2018 | 11/2/2018 | 11/2/2018 | 11/2/2018 | 11/2/2018 | 11/2/2018 | 8/13/2019 | 8/14/2019 | 8/14/2019 |
| | | | Depth (feet) | 6-10 | 16-20 | 26-30 | 5-10 | 15-20 | 25-30 | 5-10 | 15-20 | 25-30 | 25-30 | 7-10 | 20-23 | 20-23 |
| | | | Sample Type | N | N | N | N | N | N | N | N | N | FD | N | N | FD |
| | | | Unit | | | | | | | | | | | | | |
| WS-LC-0025 | Perfluorononanoic acid (PFNA) | 375-95-1 | ng/L | <0.24 U | **0.32 J** | <0.27 U | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorooctane sulfonamide (PFOSA) | 754-91-6 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | ng/L | <0.48 U | <0.51 UB | <0.54 U | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorooctanoic acid (PFOA) | 335-67-1 | ng/L | **4.9** | <0.80 U | <0.85 U | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluoropentanoic acid (PFPeA) | 2706-90-3 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorotetradecanoic acid (PFTeA) | 376-06-7 | ng/L | <0.26 U | <0.27 U | <0.29 U | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | ng/L | <1.2 U | <1.2 U | <1.3 U | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluoroundecanoic acid (PFUdA) | 2058-94-8 | ng/L | <0.97 U | <1.0 U | <1.1 U | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |

**Notes:**
**Detections are in bold.**
< = analyte not detected above corresponding method detection limit
FD = field duplicate sample type
N = normal sample type
NA = not analyzed
ng/L = nanograms per liter
VAP = vertical aquifer profiling

**Laboratory Qualifiers:**
B = Analyte detected in sample and associated blank sample.
H = Exceeded holding times.
E = Concentration exceeds calibration range of laboratory instrument.
J = Estimated value. Analyte detected above method detection limit but below reporting limit.
R = rejected analyte.
U = The compound was analyzed for but not detected.

**Table 10**
**VAP Groundwater Analytical Results - 2016 to 2019**
**Interim Site Investigation Report**
**Marinette, Wisconsin**

| Method | Chemical Name | CAS_RN | Location | VAP-52 (continued) | | | VAP-53 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Sample Date | 8/14/2019 | 8/15/2019 | 8/15/2019 | 8/16/2019 | 8/16/2019 | 8/19/2019 | 8/19/2019 | 8/19/2019 | 8/20/2019 |
| | | | Depth (feet) | 61-64 | 75-78 | 81-84 | 7-10 | 21-24 | 52-55 | 52-55 | 65-68 | 73-76 |
| | | | Sample Type | N | N | N | N | N | N | FD | N | N |
| | | | Unit | | | | | | | | | |
| CASC-SOP CTS-10.22.0 | Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| CASC-SOP CTS-10.22.0 | Perfluoroheptanoic acid (PFHpA) | 375-85-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| CASC-SOP CTS-10.22.0 | Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| CASC-SOP CTS-10.22.0 | Perfluorononanoic acid (PFNA) | 375-95-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| CASC-SOP CTS-10.22.0 | Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| CASC-SOP CTS-10.22.0 | Perfluorooctanoic acid (PFOA) | 335-67-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | N-Methylperfluoroocatane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorodecanoic acid (PFDA) | 335-76-2 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorododecanoic acid (PFDoA) | 307-55-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluoroheptanoic acid (PFHpA) | 375-85-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorohexanoic acid (PFHxA) | 307-24-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorononanoic acid (PFNA) | 375-95-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorooctanoic acid (PFOA) | 335-67-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorotetradecanoic acid (PFTeA) | 376-06-7 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| E537 | Perfluoroundecanoic acid (PFUdA) | 2058-94-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | ng/L | <1.6 U | <1.6 U | <1.7 U | <1.7 U | <1.8 U | **1.8 J** | <1.8 U | <1.9 U | <1.8 U |
| PFC_IDA | N-Methylperfluoroocatane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | ng/L | <2.6 U | <2.7 U | <2.7 U | <2.7 U | <3.0 U | <3.0 U | <3.0 U | <3.1 U | <3.0 U |
| PFC_IDA | Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | ng/L | <0.17 U | <0.17 U | <0.18 U | **0.25 J** | <0.19 U | <0.19 U | <0.19 U | <0.20 U | <0.19 U |
| PFC_IDA | Perfluorodecanoic acid (PFDA) | 335-76-2 | ng/L | <0.26 U | <0.27 U | <0.27 U | <0.27 U | <0.30 U | <0.30 U | <0.30 U | <0.31 U | <0.30 U |
| PFC_IDA | Perfluorododecanoic acid (PFDoA) | 307-55-1 | ng/L | <0.47 U | <0.48 U | <0.49 U | <0.48 U | <0.53 U | <0.53 U | <0.53 U | <0.54 U | <0.53 U |
| PFC_IDA | Perfluoroheptanoic acid (PFHpA) | 375-85-9 | ng/L | <0.21 U | <0.22 U | <0.22 U | **0.57 J** | <0.24 U | <0.24 U | <0.24 U | <0.25 U | <0.24 U |
| PFC_IDA | Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | ng/L | <1.7 UB | <1.7 UB | <1.8 UB | <1.7 UB | <1.9 UB | <1.9 UB | <1.9 UB | <2.0 UB | <1.9 UB |
| PFC_IDA | Perfluorohexanoic acid (PFHxA) | 307-24-4 | ng/L | <0.49 U | <0.50 U | <0.51 U | **1.2 J** | <0.56 U | <0.56 U | <0.56 U | <0.57 U | <0.56 U |
| PFC_IDA | Perfluorononanoic acid (PFNA) | 375-95-1 | ng/L | <0.23 U | <0.23 U | <0.24 U | <0.24 U | <0.26 U | <0.26 U | <0.26 U | <0.27 U | <0.26 U |
| PFC_IDA | Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | ng/L | <0.46 U | <0.47 U | <0.48 U | **1.5 JN** | <0.52 U | <0.52 U | <0.52 U | <0.53 U | <0.52 U |
| PFC_IDA | Perfluorooctanoic acid (PFOA) | 335-67-1 | ng/L | <0.72 U | <0.74 U | <0.75 U | **26** | <0.82 U | <0.82 U | **0.88 J** | <0.84 U | <0.82 U |
| PFC_IDA | Perfluorotetradecanoic acid (PFTeA) | 376-06-7 | ng/L | <0.25 U | <0.25 U | <0.26 U | <0.25 U | <0.28 U | <0.28 U | <0.28 U | <0.29 U | <0.28 U |
| PFC_IDA | Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | ng/L | <1.1 U | <1.1 U | <1.1 U | <1.1 U | <1.3 U | <1.3 U | <1.2 U | <1.3 U | <1.3 U |
| PFC_IDA | Perfluoroundecanoic acid (PFUdA) | 2058-94-8 | ng/L | <0.93 U | <0.95 U | <0.97 U | <0.96 U | <1.1 U | <1.1 U | <1.1 U | <1.1 U | <1.1 U |
| WS-LC-0025 | 6:2 Fluorotelomer sulfonic acid (6:2 FTSA) | 27619-97-2 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | 8:2 Fluorotelomer sulfonic acid (8:2 FTSA) | 39108-34-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | N-Methylperfluoroocatane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorobutanoic acid (PFBA) | 375-22-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorodecane sulfonic acid (PFDS) | 335-77-3 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorodecanoic acid (PFDA) | 335-76-2 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorododecanoic acid (PFDoA) | 307-55-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluoroheptanoic acid (PFHpA) | 375-85-9 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorohexane sulfonic acid (PFHxS) | 355-46-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorohexanoic acid (PFHxA) | 307-24-4 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA |

Notes on Page 44.

**Table 10**
**VAP Groundwater Analytical Results - 2016 to 2019**
**Interim Site Investigation Report**
**Marinette, Wisconsin**

| Method | Chemical Name | CAS_RN | Location | VAP-52 (continued) | | | VAP-53 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Sample Date | 8/14/2019 | 8/15/2019 | 8/15/2019 | 8/16/2019 | 8/16/2019 | 8/19/2019 | 8/19/2019 | 8/19/2019 | 8/20/2019 |
| | | | Depth (feet) | 61-64 | 75-78 | 81-84 | 7-10 | 21-24 | 52-55 | 52-55 | 65-68 | 73-76 |
| | | | Sample Type | N | N | N | N | N | N | FD | N | N |
| | | | Unit | | | | | | | | | |
| WS-LC-0025 | Perfluorononanoic acid (PFNA) | 375-95-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorooctane sulfonamide (PFOSA) | 754-91-6 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorooctane sulfonic acid (PFOS) | 1763-23-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorooctanoic acid (PFOA) | 335-67-1 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluoropentanoic acid (PFPeA) | 2706-90-3 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorotetradecanoic acid (PFTeA) | 376-06-7 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorotridecanoic acid (PFTrDA) | 72629-94-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluoroundecanoic acid (PFUdA) | 2058-94-8 | ng/L | NA | NA | NA | NA | NA | NA | NA | NA | NA |

**Notes:**
**Detections are in bold.**
< = analyte not detected above corresponding method detection limit
FD = field duplicate sample type
N = normal sample type
NA = not analyzed
ng/L = nanograms per liter
VAP = vertical aquifer profiling

**Laboratory Qualifiers:**
B = Analyte detected in sample and associated blank sample.
H = Exceeded holding times.
E = Concentration exceeds calibration range of laboratory instrument.
J = Estimated value. Analyte detected above method detection limit but below reporting limit.
R = rejected analyte.
U = The compound was analyzed for but not detected.

**Table 11**
**Groundwater Monitoring Analytical Results**
**Interim Site Investigation Report**
**Marinette, Wisconsin**

| | Location | PW-1 | FTC-2D | | FTC-2S | | FTC-34D | | FTC-34S | | | MW-100-32 | | MW-100-68 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Sample Date | 6/4/2018 | 8/28/2018 | 8/22/2019 | 8/28/2018 | 8/22/2019 | 8/28/2018 | 8/22/2019 | 8/28/2018 | 8/22/2019 | 8/22/2019 | 8/29/2018 | 8/21/2019 | 8/29/2018 | 8/21/2019 |
| | Sample Type | N | N | N | N | N | N | N | N | N | FD | N | N | N | N |
| **Chemical Name** | **Unit** | | | | | | | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | ng/L | <1.9 U | <1.9 U | <34 U | <1.9 U | <1.8 U | **390 DJ** | **340** | **8.8 J** | **19 J+** | **21 DJ** | <1.8 U | <1.7 U | <1.8 U | <1.8 U |
| N-Methylperfluoroocatane sulfonamidoacetic acid (MeFOSAA) | ng/L | <3.1 U | <3.0 U | <55 U | <3.1 U | <2.9 U | <300 U | <28 U | <3.0 U | <2.7 U | <14 U | <2.9 U | <2.7 U | <2.9 U | <2.9 U |
| Perfluorobutane sulfonic acid (PFBS) | ng/L | **0.75 J** | **4.1** | **5.1 DJ** | **1.2 J** | **3.8** | **260 J** | **220** | **1.2 J** | **1.4 J** | **1.3 JN** | <0.19 U | <0.17 U | <0.19 U | <0.18 U |
| Perfluorodecanoic acid (PFDA) | ng/L | <0.31 U | **1.8 J** | <5.5 U | **17** | **28** | **280 D** | **420** | **780 D** | **640 D** | **630 D** | <0.29 U | <0.27 U | <0.29 U | <0.29 U |
| Perfluorododecanoic acid (PFDoA) | ng/L | <0.55 U | <0.54 U | <9.8 U | <0.56 U | <0.51 U | <53 U | <5.0 U | **7.8** | **29** | **30 D** | **0.52 J** | <0.48 U | <0.51 U | <0.51 U |
| Perfluoroheptanoic acid (PFHpA) | ng/L | **39** | **310** | **350 D** | **370** | **2,300 D** | **5,200 D** | **3,400** | **810 D** | **970 D** | **960 D** | <0.24 U | **0.52 J** | **0.33 J** | <0.23 U |
| Perfluorohexane sulfonic acid (PFHxS) | ng/L | **1.4 JB** | **45** | **100 D** | **19** | **150** | **5,900 D** | **4,600 D** | **25** | **37 J+** | **35 D** | <0.16 UB | <1.7 UB | <0.16 UB | <1.8 UB |
| Perfluorohexanoic acid (PFHxA) | ng/L | **130** | **810 D** | **800 D** | **870 D** | **2,200 D** | **13,000 D** | **13,000 D** | **1,800 D** | **1,500 D** | **1,500 D** | <0.55 U | **0.70 J** | **1.2 J** | <0.54 U |
| Perfluorononanoic acid (PFNA) | ng/L | **0.59 J** | **20** | **34 DJ** | **40** | **200** | **4,100 D** | **2,800** | **120** | **210** | **220 D** | <0.26 U | <0.24 U | <0.25 U | **0.86 J** |
| Perfluorooctane sulfonic acid (PFOS) | ng/L | <0.54 U | **29** | **46 D** | **41** | **170** | **15,000 D** | **10,000 D** | **290** | **300** | **300 D** | <0.51 U | <0.47 U | <0.50 UB | <0.50 U |
| Perfluorooctanoic acid (PFOA) | ng/L | **800 D** | **7,300 D** | **5,100 D** | **160** | **2,000 D** | **26,000 D** | **25,000 D** | **550 D** | **760 D** | **720 D** | **1.0 J** | **2.2** | <0.79 U | **1.2 J** |
| Perfluorotetradecanoic acid (PFTeA) | ng/L | <0.29 U | <0.28 U | <5.2 U | <0.29 U | <0.27 U | <28 U | <2.6 U | <0.28 U | **0.74 J** | <1.3 U | **0.29 J** | <0.25 U | <0.27 U | <0.27 U |
| Perfluorotridecanoic acid (PFTrDA) | ng/L | <1.3 U | <1.3 U | <23 U | <1.3 U | <1.2 U | <130 U | <12 U | **2.2** | **8.1** | **10 D** | <1.2 U | <1.1 U | <1.2 U | <1.2 U |
| Perfluoroundecanoic acid (PFUdA) | ng/L | <1.1 U | <1.1 U | <20 U | **2.2** | **1.0 J** | <110 U | <10 U | **90** | **190** | **220 D** | <1.0 U | <0.96 U | <1.0 U | <1.0 U |

**Notes:**
**Detections are in bold.**
< = analyte not detected above corresponding method detection limit
FD = field duplicate sample type
N = normal sample type
ng/L = nanograms per liter
NA = not analyzed
Method WS-LC-0025

**Laboratory Qualifiers:**
B = Analyte detected in sample and associated blank sample.
D = Concentration is based on a diluted sample analysis.
J = The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
U = The compound was analyzed for but not detected. The associated value is the compound quantitation limit.

**Table 11**
**Groundwater Monitoring Analytical Results**
**Interim Site Investigation Report**
**Marinette, Wisconsin**

| | Location | MW-101-16 | | | MW-101-72 | | | PZ-1D | | PZ-1S | | PZ-9 | | PZ-14D | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Sample Date | 8/29/2018 | 8/29/2018 | 8/20/2019 | 8/29/2018 | 8/21/2019 | 8/21/2019 | 8/29/2018 | 8/22/2019 | 8/29/2018 | 8/22/2019 | 8/29/2018 | 8/22/2019 | 8/28/2018 | 8/28/2018 | 8/23/2019 | 8/23/2019 |
| | Sample Type | N | FD | N | N | N | FD | N | N | N | N | N | N | N | FD | N | FD |
| **Chemical Name** | **Unit** | | | | | | | | | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | ng/L | <1.9 U | <1.8 U | <1.7 U | <1.8 U | <1.7 U | <1.7 U | <1.8 U | <1.7 U | <370 U | <17 U | <1.8 U | <35 U | <92 U | <89 U | <180 U | <200 U |
| N-Methylperfluoroocatane sulfonamidoacetic acid (MeFOSAA) | ng/L | <3.0 U | <2.9 U | <2.8 U | <2.9 U | <2.8 U | <2.7 U | <2.9 U | <2.8 U | <610 U | <28 U | <2.9 U | <57 U | <150 U | <150 U | <300 U | <330 U |
| Perfluorobutane sulfonic acid (PFBS) | ng/L | **4.2** | **3.8** | **3.7** | **6.4** | **5.8** | **5.8** | **1.4 J** | <0.18 U | **96 DJ** | **40 J** | **1.4 J** | <3.7 U | **17 DJ** | **13 J** | **26 J** | **25 J** |
| Perfluorodecanoic acid (PFDA) | ng/L | <0.30 U | <0.29 U | <0.28 U | **0.64 J** | **0.97 J** | **1.0 J** | <0.29 U | <0.28 U | <61 U | <2.8 U | <0.29 U | <5.7 U | **1,400 D** | **1,200 D** | **630** | **690** |
| Perfluorododecanoic acid (PFDoA) | ng/L | <0.54 U | <0.52 U | <0.50 U | <0.51 U | <0.50 U | <0.49 U | <0.52 U | <0.50 U | <110 U | <5.0 U | <0.51 U | <10 U | <27 U | <26 U | <53 U | <58 U |
| Perfluoroheptanoic acid (PFHpA) | ng/L | **4.0** | **3.8** | **3.4** | **57** | **43** | **47** | **3.1** | **2.3** | **11,000 D** | **9,300 D** | **730 D** | **1,200 D** | **6,000 D** | **5,900 D** | **4,300** | **4,300** |
| Perfluorohexane sulfonic acid (PFHxS) | ng/L | <0.17 UB | <0.16 UB | <1.8 UB | **37** | **36** | **37** | <0.16 UB | <1.8 UB | **510 D** | **540** | **21** | **38 D** | **1,300 D** | **1,200 D** | **510** | **530** |
| Perfluorohexanoic acid (PFHxA) | ng/L | **5.1** | **5.0** | **6.0** | **110** | **96** | **93** | **43** | **48** | **6,300 D** | **7,000 D** | **2,100 D** | **3,100 D** | **12,000 D** | **12,000 D** | **11,000** | **12,000** |
| Perfluorononanoic acid (PFNA) | ng/L | **1.4 J** | **1.8 J** | **0.59 J** | **29** | **32** | **34** | <0.26 U | <0.25 U | **670 D** | **810** | **14** | **64 D** | **6,300 D** | **6,300 D** | **3,900** | **4,000** |
| Perfluorooctane sulfonic acid (PFOS) | ng/L | **5.0** | **5.4** | **1.9** | **20** | **28** | **30** | <0.51 U | <0.49 U | <110 UB | **46** | **5.4** | <10 U | **1,200 D** | **1,200 D** | **740** | **710** |
| Perfluorooctanoic acid (PFOA) | ng/L | **7.8** | **7.7** | **12** | **1,300 D** | **960 D** | **990 D** | **20** | **20** | **46,000 D** | **43,000 EJ** | **580 D** | **1,800 D** | **11,000 D** | **11,000 D** | **10,000** | **10,000** |
| Perfluorotetradecanoic acid (PFTeA) | ng/L | <0.28 U | <0.27 U | <0.26 U | <0.27 U | **0.30 J** | <0.26 U | <0.27 U | <0.26 U | <57 U | <2.6 U | **0.44 J** | <5.4 U | <14 U | <14 U | <28 U | <31 U |
| Perfluorotridecanoic acid (PFTrDA) | ng/L | <1.3 U | <1.2 U | <1.2 U | <1.2 U | <1.2 U | <1.2 U | <1.2 U | <1.2 U | <260 U | <12 U | <1.2 U | <24 U | <63 U | <61 U | <120 U | <140 U |
| Perfluoroundecanoic acid (PFUdA) | ng/L | <1.1 U | <1.0 U | <1.0 U | <1.0 U | <1.0 U | <0.97 U | <1.0 U | <1.0 U | <220 U | <9.9 U | <1.0 U | <20 U | **1,400 D** | **1,200 D** | **590** | **640** |

**Notes:**
**Detections are in bold.**
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FD = field duplicate sample type
N = normal sample type
ng/L = nanograms per liter
NA = not analyzed
Method WS-LC-0025

**Laboratory Qualifiers:**
B = Analyte detected in sample and associated blank sample.
D = Concentration is based on a diluted sample analysis.
J = The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
U = The compound was analyzed for but not detected. The associated value is the compound quantitation limit.

**Table 11**
**Groundwater Monitoring Analytical Results**
**Interim Site Investigation Report**
**Marinette, Wisconsin**

| | Location | PZ-14S | | PZ-16D | | | | PZ-16S | | PZ-19 | | PZ-22D | | PZ-22S | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Sample Date | 8/28/2018 | 8/23/2019 | 8/29/2018 | 8/29/2018 | 8/22/2019 | 8/22/2019 | 8/29/2018 | 8/22/2019 | 8/30/2018 | 8/21/2019 | 8/30/2018 | 8/21/2019 | 8/30/2018 | 8/21/2019 | 8/21/2019 |
| | Sample Type | N | N | N | FD | N | FD | N | N | N | N | N | N | N | N | FD |
| **Chemical Name** | **Unit** | | | | | | | | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | ng/L | <180 U | <19 U | <190 U | <93 U | <180 U | <170 U | <1.8 U | <1.7 U | <180 U | <1.8 U | <1.8 U | **260** | <1.8 U | <1.8 U | <1.7 U |
| N-Methylperfluoroocatane sulfonamidoacetic acid (MeFOSAA) | ng/L | <290 U | <31 U | <300 U | <150 U | <290 U | <280 U | <3.0 U | <2.8 U | <300 U | <3.0 U | <2.9 U | <14 U | <2.9 U | <2.9 U | <2.8 U |
| Perfluorobutane sulfonic acid (PFBS) | ng/L | **50 J** | **13 DJ-** | **45 J** | **35 DJ** | **56 J** | **52 J** | **1.0 J** | **0.96 J** | **45 J** | **0.57 J** | **0.86 J** | **72** | **0.53 J** | **0.53 J** | **0.51 J** |
| Perfluorodecanoic acid (PFDA) | ng/L | **3,300 D** | **2,600** | **160 J** | **190 D** | **220** | **240** | <0.30 U | <0.28 U | NA | **1.2 J** | **0.84 J** | **120** | <0.29 U | <0.29 U | <0.28 U |
| Perfluorododecanoic acid (PFDoA) | ng/L | <52 U | <5.4 U | <54 U | <27 U | <51 U | <50 U | <0.52 U | <0.50 U | <53 U | <0.53 U | <0.52 U | <2.5 U | <0.52 U | <0.51 U | <0.50 U |
| Perfluoroheptanoic acid (PFHpA) | ng/L | **9,200 D** | **3,700** | **4,500 D** | **4,000 D** | **5,400** | **5,700** | **3.0** | **4.4** | **2,500 D** | **52** | **27** | **890** | **2.7** | **2.6** | **2.3** |
| Perfluorohexane sulfonic acid (PFHxS) | ng/L | **6,700 D** | **2,200** | **850 D** | **950 D** | **930** | **940** | **3.9** | **2.4** | **940 D** | **13** | **15** | **920** | **2.3** | **2.4** | **2.2** |
| Perfluorohexanoic acid (PFHxA) | ng/L | **8,800 D** | **7,100 D** | **13,000 D** | **12,000 D** | **15,000** | **15,000** | **10** | **11** | **4,400 D** | **79** | **40** | **3,100 D** | **6.0** | **5.6** | **5.6** |
| Perfluorononanoic acid (PFNA) | ng/L | **12,000 D** | **14,000 D** | **2,200 D** | **3,000 D** | **3,900** | **3,900** | **0.43 J** | <0.24 U | **1,100 D** | **9.3** | **5.4** | **850** | <0.26 U | **0.52 J** | <0.25 U |
| Perfluorooctane sulfonic acid (PFOS) | ng/L | **6,500 D** | **2,100** | **5,400 D** | **5,700 D** | **6,300** | **6,200** | **4.9** | **3.6 JN** | **2,600 D** | **19** | **12** | **1400** | <0.51 U | <0.50 U | <0.50 U |
| Perfluorooctanoic acid (PFOA) | ng/L | **25,000 D** | **19,000 D** | **16,000 D** | **14,000 D** | **24,000** | **25,000** | **29** | **34** | **19,000 D** | **260** | **160** | **12,000 D** | **17** | **19** | **16** |
| Perfluorotetradecanoic acid (PFTeA) | ng/L | <27 U | <2.9 U | <29 U | <14 U | <27 U | <26 U | <0.28 U | <0.26 U | <28 U | <0.28 U | <0.27 U | <1.3 U | **0.62 J** | <0.27 U | <0.27 U |
| Perfluorotridecanoic acid (PFTrDA) | ng/L | <120 U | <13 U | <130 U | <64 U | <120 U | <120 U | <1.2 U | <1.2 U | <120 U | <1.2 U | <1.2 U | <6.0 U | <1.2 U | <1.2 U | <1.2 U |
| Perfluoroundecanoic acid (PFUdA) | ng/L | **1,200 D** | **1,200** | <110 U | <54 U | <100 U | <100 U | <1.0 U | <1.0 U | <110 U | <1.1 U | <1.0 U | **53** | <1.0 U | <1.0 U | <1.0 U |

**Notes:**
**Detections are in bold.**
< = analyte not detected above corresponding method detection limit
FD = field duplicate sample type
N = normal sample type
ng/L = nanograms per liter
NA = not analyzed
Method WS-LC-0025

**Laboratory Qualifiers:**
B = Analyte detected in sample and associated blank sample.
D = Concentration is based on a diluted sample analysis.
J = The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
U = The compound was analyzed for but not detected. The associated value is the compound quantitation limit.

**Table 11**
**Groundwater Monitoring Analytical Results**
**Interim Site Investigation Report**
**Marinette, Wisconsin**

| | Location | PZ-23 | |
|---|---|---|---|
| | Sample Date | 8/29/2018 | 8/22/2019 |
| | Sample Type | N | N |
| Chemical Name | Unit | | |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | ng/L | <90 U | <38 U |
| N-Methylperfluoroocatane sulfonamidoacetic acid (MeFOSAA) | ng/L | <150 U | <61 U |
| Perfluorobutane sulfonic acid (PFBS) | ng/L | **41** | **10 DJ** |
| Perfluorodecanoic acid (PFDA) | ng/L | <15 U | <6.1 U |
| Perfluorododecanoic acid (PFDoA) | ng/L | <26 U | <11 U |
| Perfluoroheptanoic acid (PFHpA) | ng/L | **4,300 D** | **3,400 D** |
| Perfluorohexane sulfonic acid (PFHxS) | ng/L | **110 D** | **120** |
| Perfluorohexanoic acid (PFHxA) | ng/L | **3,700 D** | **4,000 D** |
| Perfluorononanoic acid (PFNA) | ng/L | **45 DJ** | **41 D** |
| Perfluorooctane sulfonic acid (PFOS) | ng/L | <26 U | <11 U |
| Perfluorooctanoic acid (PFOA) | ng/L | **16,000 D** | **14,000 D** |
| Perfluorotetradecanoic acid (PFTeA) | ng/L | <14 U | <5.7 U |
| Perfluorotridecanoic acid (PFTrDA) | ng/L | <62 U | <26 U |
| Perfluoroundecanoic acid (PFUdA) | ng/L | <52 U | <22 U |

**Notes:**
**Detections are in bold.**
< = analyte not detected above corresponding method detection limit
FD = field duplicate sample type
N = normal sample type
ng/L = nanograms per liter
NA = not analyzed
Method WS-LC-0025

**Laboratory Qualifiers:**
B = Analyte detected in sample and associated blank sample.
D = Concentration is based on a diluted sample analysis.
J = The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
U = The compound was analyzed for but not detected. The associated value is the compound quantitation limit.

**Table 12**
**Hydraulic Conductivity Values Estimated from Slug Tests**
**Interim Site Investigation Report**
**Marinette, Wisconsin**

| Well ID | Screen Interval (ft bgs) | Screened Interval Description | Slug Test Type | Test Number | Hydraulic Conductivity (cm/sec) | Hydraulic Conductivity (ft/day) |
|---|---|---|---|---|---|---|
| **2016 Slug Tests** | | | | | | |
| FTC-2S | 5 - 15 | Sand (F) Silty | Baildown | 1 | 1.3E-03 | 3.7 |
| | | | Baildown | 2 | 1.3E-03 | 3.7 |
| | | | Baildown | 3 | 1.5E-03 | 4.3 |
| | | | | Mean | 1.4E-03 | 3.9 |
| PZ-1S | 36 - 41 | Clayey Silt | Pneumatic | 1 | 2.5E-05 | 7.1E-02 |
| PZ-3 | 38 - 43 | Clayey Silt | Pneumatic | 1 | 7.1E-05 | 0.2 |
| | | | Pneumatic | 2 | 7.3E-05 | 0.2 |
| PZ-6S | 4 - 19 | Sand (F-M), trace silt | Baildown | 1 | 1.5E-02 | 43 |
| | | | Baildown | 2 | 1.7E-02 | 48 |
| | | | Baildown | 3 | 1.1E-02 | 31 |
| | | | | Mean | 1.4E-02 | 41 |
| PZ-14S | 4 - 19 | Sand | Pneumatic | 1 | 2.7E-03 | 7.7 |
| | | | Pneumatic | 2 | 2.6E-03 | 7.4 |
| | | | Pneumatic | 3 | 2.9E-03 | 8.2 |
| | | | | Mean | 2.7E-03 | 7.7 |
| PZ-22s | 10 - 22 | Sand | Pneumatic | 1 | 1.2E-03 | 3.4 |
| | | | Pneumatic | 2 | 1.0E-03 | 2.8 |
| | | | Pneumatic | 3 | 1.0E-03 | 2.8 |
| | | | | Mean | 1.1E-03 | 3.0 |
| | | | | **Mean** | **3.9E-03** | **11** |
| | | | | **Geometric Mean** | **1.2E-03** | **3.5** |
| | | | | **Minimum** | **2.5E-05** | **0.1** |
| | | | | **Maximum** | **1.7E-02** | **48** |
| **2018 Slug Tests** | | | | | | |

**Table 12**
**Hydraulic Conductivity Values Estimated from Slug Tests**
**Interim Site Investigation Report**
**Marinette, Wisconsin**

| Well ID | Screen Interval (ft bgs) | Screened Interval Description | Slug Test Type | Test Number | Hydraulic Conductivity (cm/sec) | Hydraulic Conductivity (ft/day) |
|---|---|---|---|---|---|---|
| MW-100-32 | 23.3 -33.3 | Sand (F), well sorted, loose, trace to some sand (VF-M) | Solid Slug In | 1 | 1.0E-01 | 280 |
| | | | Solid Slug Out | 2 | 6.0E-01 | 1700 |
| MW-100-68 | 59.2 - 69.2 | 59.2 - 68.0': Sand (VF-F), loose, well sorted, trace sand (M)<br>68.0 - 69.2': Silt, stiff | Solid Slug In | 1 | 3.2E-02 | 91 |
| | | | Solid Slug Out | 2 | 1.4E-01 | 400 |
| MW-101-16 | 5.3 - 15.3 | Sand (F), well sorted, some silt | Solid Slug In | 1 | -- | -- |
| | | | Solid Slug Out | 2 | 1.3E-01 | 370 |
| MW-101-72 | 62.4 - 72.4 | Sand (F), trace pebbles | Solid Slug In | 1 | 3.4E-02 | 96 |
| | | | Solid Slug Out | 2 | 2.7E-01 | 770 |
| | | | | **Mean** | **1.9E-01** | **530** |
| | | | | **Geometric Mean** | **1.2E-01** | **335** |
| | | | | **Minimum** | **3.2E-02** | **91** |
| | | | | **Maximum** | **6.0E-01** | **1700** |

**Notes:**
cm/sec = centimeters per second
ft/day = feet per day

**Table 13**
**Surface Water Analytical Results**
**Interim Site Investigation Report**
**Marinette, Wisconsin**

| | | Location | SS-01 | | SS-02 | | SS-03 | | SS-04 | | SS-05 | | SW-10 | | | | | | | | SW-11 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Sample ID | SS-01 (120317) | | SS-02 (120317) | | SS-03 (120317) | | SS-04 (120317) | | SS-05 (021618) | | SW-10 (05292018) | | SW-10 (071318) | | SW-10 (101718) | | SW-10 (040219) | | SW-11 (05292018) | |
| | | Sample Date | 12/3/2017 | | 12/3/2017 | | 12/3/2017 | | 12/3/2017 | | 2/16/2018 | | 5/29/2018 | | 7/13/2018 | | 10/17/2018 | | 4/2/2019 | | 5/29/2018 | |
| | | Sample Type | N | | N | | N | | N | | N | | N | | N | | N | | N | | N | |
| Method | Chemical Name | Unit | Result | Qualifier | Result | Qualifier | Result | Qualifier | Result | Qualifier | Result | Qualifier | Result | Qualifier | Result | Qualifier | Result | Qualifier | Result | Qualifier | Result | Qualifier |
| CASC-SOP CTS-10.22.0 | Perfluorobutane sulfonic acid (PFBS) | ng/L | **4.41** | J | **22.5** | J | **2.86** | J | **7.33** | J | NA | | NA | | NA | | NA | | NA | | NA | |
| CASC-SOP CTS-10.22.0 | Perfluoroheptanoic acid (PFHpA) | ng/L | **206** | | **1,640** | | **145** | | **120** | | NA | | NA | | NA | | NA | | NA | | NA | |
| CASC-SOP CTS-10.22.0 | Perfluorohexane sulfonic acid (PFHxS) | ng/L | **21.7** | J | **467** | | **17.7** | | **46.5** | | NA | | NA | | NA | | NA | | NA | | NA | |
| CASC-SOP CTS-10.22.0 | Perfluorononanoic acid (PFNA) | ng/L | **52.9** | | **515** | | **75.7** | | **39.1** | | NA | | NA | | NA | | NA | | NA | | NA | |
| CASC-SOP CTS-10.22.0 | Perfluorooctanesulfonic acid (PFOS) | ng/L | **70.4** | | **1,860** | | **121** | | **228** | | NA | | NA | | NA | | NA | | NA | | NA | |
| CASC-SOP CTS-10.22.0 | Perfluorooctanoic acid (PFOA) | ng/L | **2,220** | | **2,760** | | **296** | | **351** | | NA | | NA | | NA | | NA | | NA | | NA | |
| PFC_IDA | N-Ethyl Perfluorooctane Sulfonamidoacetic Acid (EtFOSAA) | ng/L | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | 1.9 | U | NA | |
| PFC_IDA | N-Methylperfluoroocatane Sulfonamidoacetic Acid (MeFOSAA) | ng/L | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | 3.1 | U | NA | |
| PFC_IDA | Perfluorobutane sulfonic acid (PFBS) | ng/L | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | **2.7** | | NA | |
| PFC_IDA | Perfluorodecanoic acid (PFDA) | ng/L | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | **1.9** | J | NA | |
| PFC_IDA | Perfluorododecanoic acid (PFDoA) | ng/L | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | 0.54 | U | NA | |
| PFC_IDA | Perfluoroheptanoic acid (PFHpA) | ng/L | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | **13** | | NA | |
| PFC_IDA | Perfluorohexane sulfonic acid (PFHxS) | ng/L | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | **3.4** | | NA | |
| PFC_IDA | Perfluorohexanoic acid (PFHxA) | ng/L | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | **15** | | NA | |
| PFC_IDA | Perfluorononanoic acid (PFNA) | ng/L | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | **4.4** | | NA | |
| PFC_IDA | Perfluorooctanesulfonic acid (PFOS) | ng/L | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | **10** | | NA | |
| PFC_IDA | Perfluorooctanoic acid (PFOA) | ng/L | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | **21** | | NA | |
| PFC_IDA | Perfluorotetradecanoic acid (PFTeA) | ng/L | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | 0.29 | U | NA | |
| PFC_IDA | Perfluorotridecanoic acid (PFTrDA) | ng/L | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | 1.3 | U | NA | |
| PFC_IDA | Perfluoroundecanoic acid (PFUdA) | ng/L | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | 1.1 | U | NA | |
| SM2320B | Alkalinity | mg/L | NA | | NA | | NA | | NA | | NA | | NA | | **150** | | NA | | NA | | NA | |
| SM2540C | Total Dissolved Solids | mg/L | NA | | NA | | NA | | NA | | NA | | NA | | **360** | | NA | | NA | | NA | |
| SM2540D | Total Suspended Solids | mg/L | NA | | NA | | NA | | NA | | NA | | **6.0** | J | **7.0** | | **2.0** | J | **9.0** | | **6.5** | J |
| SM4500-H-B | pH | pH units | NA | | NA | | NA | | NA | | NA | | NA | | 7.7 | | NA | | NA | | NA | |
| SW9060 | Total Organic Carbon 2 | mg/L | NA | | NA | | NA | | NA | | NA | | NA | | **11** | | NA | | NA | | NA | |
| WS-LC-0025 | N-Ethyl Perfluorooctane Sulfonamidoacetic Acid (EtFOSAA) | ng/L | NA | | NA | | NA | | NA | | NA | | 2 | U | 9.5 | U | 1.9 | U | NA | | 2 | U |
| WS-LC-0025 | N-Methylperfluoroocatane Sulfonamidoacetic Acid (MeFOSAA) | ng/L | NA | | NA | | NA | | NA | | NA | | 3.2 | U | 16 | U | 3.1 | U | NA | | 3.2 | U |
| WS-LC-0025 | Perfluorobutane sulfonic acid (PFBS) | ng/L | NA | | NA | | NA | | NA | | **4.4** | | **3.6** | | **4.9** | J | **4.1** | | NA | | **0.30** | J |
| WS-LC-0025 | Perfluorodecanoic acid (PFDA) | ng/L | NA | | NA | | NA | | NA | | NA | | **5.1** | | 1.6 | U | **0.97** | J | NA | | 0.32 | U |
| WS-LC-0025 | Perfluorododecanoic acid (PFDoA) | ng/L | NA | | NA | | NA | | NA | | NA | | 0.57 | U | 2.8 | U | 0.55 | U | NA | | 0.58 | U |
| WS-LC-0025 | Perfluoroheptanoic acid (PFHpA) | ng/L | NA | | NA | | NA | | NA | | **130** | | **19** | | **5.6** | J | **17** | | NA | | **1.1** | J |
| WS-LC-0025 | Perfluorohexane sulfonic acid (PFHxS) | ng/L | NA | | NA | | NA | | NA | | **71** | | **5.0** | | **2.8** | J | **4.2** | | NA | | 2.1 | UB |
| WS-LC-0025 | Perfluorohexanoic acid (PFHxA) | ng/L | NA | | NA | | NA | | NA | | NA | | **27** | | **8.2** | J | **21** | | NA | | **1.1** | J |
| WS-LC-0025 | Perfluorononanoic acid (PFNA) | ng/L | NA | | NA | | NA | | NA | | **30** | | **9.6** | | **4.6** | J | **3.7** | | NA | | **0.47** | J |
| WS-LC-0025 | Perfluorooctanesulfonic acid (PFOS) | ng/L | NA | | NA | | NA | | NA | | **14** | | **28** | | **6.5** | J | **7.0** | | NA | | **1.0** | J |
| WS-LC-0025 | Perfluorooctanoic acid (PFOA) | ng/L | NA | | NA | | NA | | NA | | **380** | D | **58** | | **11** | | **26** | | NA | | **1.2** | J |
| WS-LC-0025 | Perfluorotetradecanoic acid (PFTeA) | ng/L | NA | | NA | | NA | | NA | | NA | | **0.33** | J | 1.5 | U | 0.29 | U | NA | | 0.3 | U |
| WS-LC-0025 | Perfluorotridecanoic acid (PFTrDA) | ng/L | NA | | NA | | NA | | NA | | NA | | 1.3 | U | 6.5 | U | 1.3 | U | NA | | 1.4 | U |
| WS-LC-0025 | Perfluoroundecanoic acid (PFUdA) | ng/L | NA | | NA | | NA | | NA | | NA | | **2.1** | | 5.5 | U | 1.1 | U | NA | | 1.2 | U |

**Notes:**
**Detections are in bold.**
Non-detect values are method detection limit.
CAS = Chemical Abstracts Service
FD = field duplicate sample type
mg/L = milligrams per liter
N = normal sample type
NA = not applicable
ng/L = nanograms per liter

**Laboratory Flag:**
U = The compound was analyzed for but not detected. The associated value is the compound quantitation limit.

**Laboratory Qualifiers**:
D = Dilution required for sample analysis.
J = The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+ = The result is an estimated quantity. The associated numerical value is expected to have a positive or high bias.
JN = The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification. The associated numerical value is an estimated concentration only.
UB = The compound is considered non-detect at the listed value due to associated blank contamination.
UJ = The compound was not detected above the reported sample method detection limit. However, the reported limit is approximate and may or may not represent the actual method detection limit.

**Table 13**
**Surface Water Analytical Results**
**Interim Site Investigation Report**
**Marinette, Wisconsin**

| | | Location | SW-11 (continued) | | | | SW-12 | | | | | | | | | | SW-13 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Sample ID | SW-11 (101718) | | SW-11 (040219) | | SW-12 (05292018) | | SW-12 (071318) | | SW-12 (101718) | | DUP-2 (101718) | | SW-12 (040219) | | SW-13 (05292018) | | SW-13 (101718) | | SW-13 (040219) | |
| | | Sample Date | 10/17/2018 | | 4/2/2019 | | 5/29/2018 | | 7/13/2018 | | 10/17/2018 | | 10/17/2018 | | 4/2/2019 | | 5/29/2018 | | 10/17/2018 | | 4/2/2019 | |
| | | Sample Type | N | | N | | N | | N | | N | | FD | | N | | N | | N | | N | |
| Method | Chemical Name | Units | Result | Qualifier | Result | Qualifier | Result | Qualifier | Result | Qualifier | Result | Qualifier | Result | Qualifier | Result | Qualifier | Result | Qualifier | Result | Qualifier | Result | Qualifier |
| CASC-SOP CTS-10.22.0 | Perfluorobutane sulfonic acid (PFBS) | ng/L | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | |
| CASC-SOP CTS-10.22.0 | Perfluoroheptanoic acid (PFHpA) | ng/L | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | |
| CASC-SOP CTS-10.22.0 | Perfluorohexane sulfonic acid (PFHxS) | ng/L | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | |
| CASC-SOP CTS-10.22.0 | Perfluorononanoic acid (PFNA) | ng/L | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | |
| CASC-SOP CTS-10.22.0 | Perfluorooctanesulfonic acid (PFOS) | ng/L | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | |
| CASC-SOP CTS-10.22.0 | Perfluorooctanoic acid (PFOA) | ng/L | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | |
| PFC_IDA | N-Ethyl Perfluorooctane Sulfonamidoacetic Acid (EtFOSAA) | ng/L | NA | | 1.9 | U | NA | | NA | | NA | | NA | | 1.8 | U | NA | | NA | | 1.9 | U |
| PFC_IDA | N-Methylperfluorooctane Sulfonamidoacetic Acid (MeFOSAA) | ng/L | NA | | 3.1 | U | NA | | NA | | NA | | NA | | 2.9 | U | NA | | NA | | 3.1 | U |
| PFC_IDA | Perfluorobutane sulfonic acid (PFBS) | ng/L | NA | | **0.48** | J | NA | | NA | | NA | | NA | | **2.2** | | NA | | NA | | **1.9** | J |
| PFC_IDA | Perfluorodecanoic acid (PFDA) | ng/L | NA | | 0.31 | U | NA | | NA | | NA | | NA | | **14** | | NA | | NA | | 0.31 | U |
| PFC_IDA | Perfluorododecanoic acid (PFDoA) | ng/L | NA | | 0.55 | U | NA | | NA | | NA | | NA | | 0.51 | U | NA | | NA | | 0.55 | U |
| PFC_IDA | Perfluoroheptanoic acid (PFHpA) | ng/L | NA | | **5.6** | | NA | | NA | | NA | | NA | | **65** | | NA | | NA | | **7.0** | |
| PFC_IDA | Perfluorohexane sulfonic acid (PFHxS) | ng/L | NA | | 2 | UB | NA | | NA | | NA | | NA | | **23** | | NA | | NA | | 2 | UB |
| PFC_IDA | Perfluorohexanoic acid (PFHxA) | ng/L | NA | | **4.8** | | NA | | NA | | NA | | NA | | **74** | | NA | | NA | | **7.9** | |
| PFC_IDA | Perfluorononanoic acid (PFNA) | ng/L | NA | | **0.66** | J | NA | | NA | | NA | | NA | | **30** | | NA | | NA | | **0.65** | J |
| PFC_IDA | Perfluorooctanesulfonic acid (PFOS) | ng/L | NA | | **0.97** | JN | NA | | NA | | NA | | NA | | **66** | | NA | | NA | | **1.1** | JN |
| PFC_IDA | Perfluorooctanoic acid (PFOA) | ng/L | NA | | **2.0** | | NA | | NA | | NA | | NA | | **130** | | NA | | NA | | **3.4** | |
| PFC_IDA | Perfluorotetradecanoic acid (PFTeA) | ng/L | NA | | 0.29 | U | NA | | NA | | NA | | NA | | 0.27 | U | NA | | NA | | 0.29 | U |
| PFC_IDA | Perfluorotridecanoic acid (PFTrDA) | ng/L | NA | | 1.3 | U | NA | | NA | | NA | | NA | | 1.2 | U | NA | | NA | | 1.3 | U |
| PFC_IDA | Perfluoroundecanoic acid (PFUdA) | ng/L | NA | | 1.1 | U | NA | | NA | | NA | | NA | | **4.6** | | NA | | NA | | 1.1 | U |
| SM2320B | Alkalinity | mg/L | NA | | NA | | NA | | **170** | | NA | | NA | | NA | | NA | | NA | | NA | |
| SM2540C | Total Dissolved Solids | mg/L | NA | | NA | | NA | | **490** | | NA | | NA | | NA | | NA | | NA | | NA | |
| SM2540D | Total Suspended Solids | mg/L | **3.0** | J | **2.0** | J | **3.0** | J | **24** | | **260** | J | **150** | J | **2.0** | J | **8.5** | J | **2.5** | J | **5.0** | |
| SM4500-H-B | pH | pH units | NA | | NA | | NA | | 6.8 | | NA | | NA | | NA | | NA | | NA | | NA | |
| SW9060 | Total Organic Carbon 2 | mg/L | NA | | NA | | NA | | **28** | | NA | | NA | | NA | | NA | | NA | | NA | |
| WS-LC-0025 | N-Ethyl Perfluorooctane Sulfonamidoacetic Acid (EtFOSAA) | ng/L | 1.9 | U | NA | | 2 | U | 9.5 | U | 1.9 | U | 1.9 | U | NA | | 2 | U | 1.9 | U | NA | |
| WS-LC-0025 | N-Methylperfluorooctane Sulfonamidoacetic Acid (MeFOSAA) | ng/L | 3.1 | U | NA | | 3.2 | U | 16 | U | 3.1 | U | 3.2 | U | NA | | 3.2 | U | 3.1 | U | NA | |
| WS-LC-0025 | Perfluorobutane sulfonic acid (PFBS) | ng/L | **0.35** | J | NA | | **7.3** | | **3.6** | J | **14** | | **14** | | NA | | **4.0** | | **3.3** | | NA | |
| WS-LC-0025 | Perfluorodecanoic acid (PFDA) | ng/L | 0.31 | U | NA | | **59** | | **34** | | **38** | | **40** | | NA | | 0.32 | U | 0.31 | U | NA | |
| WS-LC-0025 | Perfluorododecanoic acid (PFDoA) | ng/L | 0.54 | U | NA | | **0.76** | J | **8.5** | J | **5.8** | | **3.3** | | NA | | 0.57 | U | 0.55 | U | NA | |
| WS-LC-0025 | Perfluoroheptanoic acid (PFHpA) | ng/L | **1.9** | J | NA | | **340** | | **46** | | **300** | | **320** | | NA | | **5.0** | | **5.7** | | NA | |
| WS-LC-0025 | Perfluorohexane sulfonic acid (PFHxS) | ng/L | 2 | UB | NA | | **94** | | **16** | | **120** | | **110** | | NA | | 2.1 | UB | 2 | UB | NA | |
| WS-LC-0025 | Perfluorohexanoic acid (PFHxA) | ng/L | **1.5** | J | NA | | **490** | D | **54** | | **390** | | **370** | | NA | | **8.8** | | **6.8** | | NA | |
| WS-LC-0025 | Perfluorononanoic acid (PFNA) | ng/L | 0.27 | U | NA | | **140** | | **38** | | **120** | | **110** | | NA | | **1.5** | J | **0.65** | J | NA | |
| WS-LC-0025 | Perfluorooctanesulfonic acid (PFOS) | ng/L | 0.53 | U | NA | | **340** | | **180** | | **180** | | **180** | | NA | | **2.1** | | **0.95** | J | NA | |
| WS-LC-0025 | Perfluorooctanoic acid (PFOA) | ng/L | 0.84 | U | NA | | **1,200** | D | **170** | | **510** | D | **460** | D | NA | | **5.4** | | **3.5** | | NA | |
| WS-LC-0025 | Perfluorotetradecanoic acid (PFTeA) | ng/L | 0.29 | U | NA | | 0.3 | U | **2.0** | J | **2.0** | | **0.66** | J | NA | | 0.3 | U | 0.29 | U | NA | |
| WS-LC-0025 | Perfluorotridecanoic acid (PFTrDA) | ng/L | 1.3 | U | NA | | 1.4 | U | 6.5 | U | **4.1** | | **2.0** | | NA | | 1.3 | U | 1.3 | U | NA | |
| WS-LC-0025 | Perfluoroundecanoic acid (PFUdA) | ng/L | 1.1 | U | NA | | **19** | | **33** | | **20** | | **14** | | NA | | 1.1 | U | 1.1 | U | NA | |

**Notes:**
**Detections are in bold.**
Non-detect values are method detection limit.
CAS = Chemical Abstracts Service
FD = field duplicate sample type
mg/L = milligrams per liter
N = normal sample type
NA = not applicable
ng/L = nanograms per liter

**Laboratory Flag:**
U = The compound was analyzed for but not detected. The associated value is the compound quantitation limit.

**Laboratory Qualifiers**:
D = Dilution required for sample analysis.
J = The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+ = The result is an estimated quantity. The associated numerical value is expected to have a positive or high bias.
JN = The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification. The associated numerical value is an estimated concentration only.
UB = The compound is considered non-detect at the listed value due to associated blank contamination.
UJ = The compound was not detected above the reported sample method detection limit. However, the reported limit is approximate and may or may not represent the actual method detection limit.

**Table 13**
**Surface Water Analytical Results**
**Interim Site Investigation Report**
**Marinette, Wisconsin**

| | | Location | SW-14 | | | | | | | | | | | | SW-15 | | | | | | | | SW-16 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Sample ID | SW-14 (05302018) | | SW-14 (092818) | | SW-14 (041019) | | SW-14 (052319) | | DUP-02 (052319) | | SW-14-10022019 | | SW-15 (05302018) | | SW-15 (07112018) | | SW-15 (101618) | | SW-15 (031919) | | SW-16 (05302018) | |
| | | Sample Date | 5/30/2018 | | 9/28/2018 | | 4/10/2019 | | 5/23/2019 | | 5/23/2019 | | 10/2/2019 | | 5/30/2018 | | 7/11/2018 | | 10/16/2018 | | 3/19/2019 | | 5/30/2018 | |
| | | Sample Type | N | | N | | N | | N | | FD | | N | | N | | N | | N | | N | | N | |
| Method | Chemical Name | Units | Result | Qualifier | Result | Qualifier | Result | Qualifier | Result | Qualifier | Result | Qualifier | Result | Qualifier | Result | Qualifier | Result | Qualifier | Result | Qualifier | Result | Qualifier | Result | Qualifier |
| CASC-SOP CTS-10.22.0 | Perfluorobutane sulfonic acid (PFBS) | ng/L | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | |
| CASC-SOP CTS-10.22.0 | Perfluoroheptanoic acid (PFHpA) | ng/L | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | |
| CASC-SOP CTS-10.22.0 | Perfluorohexane sulfonic acid (PFHxS) | ng/L | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | |
| CASC-SOP CTS-10.22.0 | Perfluorononanoic acid (PFNA) | ng/L | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | |
| CASC-SOP CTS-10.22.0 | Perfluorooctanesulfonic acid (PFOS) | ng/L | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | |
| CASC-SOP CTS-10.22.0 | Perfluorooctanoic acid (PFOA) | ng/L | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | |
| PFC_IDA | N-Ethyl Perfluorooctane Sulfonamidoacetic Acid (EtFOSAA) | ng/L | NA | | NA | | 1.8 | U | 1.9 | U | 1.8 | U | 1.8 | U | NA | | NA | | NA | | **2.7** | J | NA | |
| PFC_IDA | N-Methylperfluoroocatane Sulfonamidoacetic Acid (MeFOSAA) | ng/L | NA | | NA | | 3 | U | 3 | U | 3 | U | 2.9 | U | NA | | NA | | NA | | 2.8 | U | NA | |
| PFC_IDA | Perfluorobutane sulfonic acid (PFBS) | ng/L | NA | | NA | | **2.6** | | **3.5** | | **3.7** | | **2.9** | | NA | | NA | | NA | | **4.6** | | NA | |
| PFC_IDA | Perfluorodecanoic acid (PFDA) | ng/L | NA | | NA | | **0.31** | JN | **0.42** | J | **0.58** | J | **0.51** | J | NA | | NA | | NA | | **3.2** | JN | NA | |
| PFC_IDA | Perfluorododecanoic acid (PFDoA) | ng/L | NA | | NA | | 0.53 | U | 0.54 | U | 0.53 | U | 0.52 | U | NA | | NA | | NA | | 0.5 | U | NA | |
| PFC_IDA | Perfluoroheptanoic acid (PFHpA) | ng/L | NA | | NA | | **78** | | **93** | | **95** | | **91** | | NA | | NA | | NA | | **89** | | NA | |
| PFC_IDA | Perfluorohexane sulfonic acid (PFHxS) | ng/L | NA | | NA | | **44** | | **61** | | **58** | | **47** | | NA | | NA | | NA | | **55** | | NA | |
| PFC_IDA | Perfluorohexanoic acid (PFHxA) | ng/L | NA | | NA | | **120** | | **140** | | **130** | | **120** | | NA | | NA | | NA | | **230** | | NA | |
| PFC_IDA | Perfluorononanoic acid (PFNA) | ng/L | NA | | NA | | **18** | | **35** | | **27** | | **22** | | NA | | NA | | NA | | **51** | | NA | |
| PFC_IDA | Perfluorooctanesulfonic acid (PFOS) | ng/L | NA | | NA | | **10** | | **18** | | **17** | JN | **15** | | NA | | NA | | NA | | **84** | | NA | |
| PFC_IDA | Perfluorooctanoic acid (PFOA) | ng/L | NA | | NA | | **210** | | **250** | | **240** | | **210** | | NA | | NA | | NA | | **1,900** | D | NA | |
| PFC_IDA | Perfluorotetradecanoic acid (PFTeA) | ng/L | NA | | NA | | 0.28 | U | 0.28 | U | **0.30** | J | 0.27 | U | NA | | NA | | NA | | 0.26 | U | NA | |
| PFC_IDA | Perfluorotridecanoic acid (PFTrDA) | ng/L | NA | | NA | | 1.3 | U | 1.3 | U | 1.3 | U | 1.2 | U | NA | | NA | | NA | | 1.2 | U | NA | |
| PFC_IDA | Perfluoroundecanoic acid (PFUdA) | ng/L | NA | | NA | | 1.1 | U | 1.1 | U | 1.1 | U | 1 | U | NA | | NA | | NA | | **1.5** | J | NA | |
| SM2320B | Alkalinity | mg/L | NA | | NA | | NA | | NA | | NA | | NA | | NA | | **190** | | **160** | | NA | | NA | |
| SM2540C | Total Dissolved Solids | mg/L | NA | | NA | | NA | | NA | | NA | | NA | | NA | | **680** | | **560** | | NA | | NA | |
| SM2540D | Total Suspended Solids | mg/L | 1.9 | UJ | **3.0** | J | 1.9 | U | **7.5** | | NA | | **2.0** | J | **7.5** | J | **6.5** | | **7.0** | | **27** | | **8.5** | J |
| SM4500-H-B | pH | pH units | NA | | NA | | NA | | NA | | NA | | NA | | NA | | 7.9 | | 7.4 | J | NA | | NA | |
| SW9060 | Total Organic Carbon 2 | mg/L | NA | | NA | | NA | | NA | | NA | | NA | | NA | | **12** | | **13** | | NA | | NA | |
| WS-LC-0025 | N-Ethyl Perfluorooctane Sulfonamidoacetic Acid (EtFOSAA) | ng/L | 2 | U | 1.6 | UJ | NA | | NA | | NA | | NA | | **3.3** | J | **3.0** | J | 2 | U | NA | | **3.7** | J |
| WS-LC-0025 | N-Methylperfluoroocatane Sulfonamidoacetic Acid (MeFOSAA) | ng/L | 3.2 | U | 2.6 | UJ | NA | | NA | | NA | | NA | | 3.2 | U | 2.6 | U | 3.2 | U | NA | | 3.2 | U |
| WS-LC-0025 | Perfluorobutane sulfonic acid (PFBS) | ng/L | **4.0** | | **3.9** | J | NA | | NA | | NA | | NA | | **19** | | **14** | | **5.5** | | NA | | **20** | |
| WS-LC-0025 | Perfluorodecanoic acid (PFDA) | ng/L | 0.32 | U | **0.44** | J | NA | | NA | | NA | | NA | | **3.9** | | **3.4** | | **2.3** | | NA | | **3.9** | |
| WS-LC-0025 | Perfluorododecanoic acid (PFDoA) | ng/L | 0.57 | U | 0.46 | UJ | NA | | NA | | NA | | NA | | 0.57 | U | 0.47 | U | 0.57 | U | NA | | 0.57 | U |
| WS-LC-0025 | Perfluoroheptanoic acid (PFHpA) | ng/L | **100** | | **120** | J | NA | | NA | | NA | | NA | | **150** | | **120** | | **86** | | NA | | **150** | |
| WS-LC-0025 | Perfluorohexane sulfonic acid (PFHxS) | ng/L | **63** | | **66** | J | NA | | NA | | NA | | NA | | **80** | | **75** | | **44** | | NA | | **91** | |
| WS-LC-0025 | Perfluorohexanoic acid (PFHxA) | ng/L | **160** | | **170** | J | NA | | NA | | NA | | NA | | **330** | | **260** | | **170** | | NA | | **370** | |
| WS-LC-0025 | Perfluorononanoic acid (PFNA) | ng/L | **26** | | **31** | J | NA | | NA | | NA | | NA | | **85** | | **70** | | **54** | | NA | | **92** | |
| WS-LC-0025 | Perfluorooctanesulfonic acid (PFOS) | ng/L | **13** | | **16** | J | NA | | NA | | NA | | NA | | **140** | | **130** | | **72** | | NA | | **140** | |
| WS-LC-0025 | Perfluorooctanoic acid (PFOA) | ng/L | **300** | | **320** | J | NA | | NA | | NA | | NA | | **3,100** | D | **2,300** | D | **1,100** | D | NA | | **3,200** | D |
| WS-LC-0025 | Perfluorotetradecanoic acid (PFTeA) | ng/L | 0.3 | U | 0.24 | UJ | NA | | NA | | NA | | NA | | 0.3 | U | 0.25 | U | 0.3 | U | NA | | 0.3 | U |
| WS-LC-0025 | Perfluorotridecanoic acid (PFTrDA) | ng/L | 1.3 | U | 1.1 | UJ | NA | | NA | | NA | | NA | | 1.3 | U | 1.1 | U | 1.3 | U | NA | | 1.3 | U |
| WS-LC-0025 | Perfluoroundecanoic acid (PFUdA) | ng/L | 1.1 | U | 0.91 | UJ | NA | | NA | | NA | | NA | | 1.1 | U | **1.1** | J | 1.1 | U | NA | | 1.1 | U |

**Notes:**
**Detections are in bold.**
Non-detect values are method detection limit.
CAS = Chemical Abstracts Service
FD = field duplicate sample type
mg/L = milligrams per liter
N = normal sample type
NA = not applicable
ng/L = nanograms per liter

**Laboratory Flag:**
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**Laboratory Qualifiers**:
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J+ = The result is an estimated quantity. The associated numerical value is expected to have a positive or high bias.
JN = The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification. The associated numerical value is an estimated concentration only.
UB = The compound is considered non-detect at the listed value due to associated blank contamination.
UJ = The compound was not detected above the reported sample method detection limit. However, the reported limit is approximate and may or may not represent the actual method detection limit.

**Table 13**
**Surface Water Analytical Results**
**Interim Site Investigation Report**
**Marinette, Wisconsin**

| | | Location | SW-16 (continued) | | | | | | | | SW-17 | | | | | | | | SW-18 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Sample ID | DUP-01 (05302018) | | SW-16 (071218) | | SW-16 (101618) | | SW-16 (031919) | | SW-17 (05302018) | | SW-17 (07122018) | | SW-17 (101618) | | SW-17 (031919) | | SW-18 (05302018) | | SW-18 (07122018) | |
| | | Sample Date | 5/30/2018 | | 7/12/2018 | | 10/16/2018 | | 3/19/2019 | | 5/30/2018 | | 7/12/2018 | | 10/16/2018 | | 3/19/2019 | | 5/30/2018 | | 7/12/2018 | |
| | | Sample Type | FD | | N | | N | | N | | N | | N | | N | | N | | N | | N | |
| Method | Chemical Name | Units | Result | Qualifier | Result | Qualifier | Result | Qualifier | Result | Qualifier | Result | Qualifier | Result | Qualifier | Result | Qualifier | Result | Qualifier | Result | Qualifier | Result | Qualifier |
| CASC-SOP CTS-10.22.0 | Perfluorobutane sulfonic acid (PFBS) | ng/L | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | |
| CASC-SOP CTS-10.22.0 | Perfluoroheptanoic acid (PFHpA) | ng/L | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | |
| CASC-SOP CTS-10.22.0 | Perfluorohexane sulfonic acid (PFHxS) | ng/L | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | |
| CASC-SOP CTS-10.22.0 | Perfluorononanoic acid (PFNA) | ng/L | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | |
| CASC-SOP CTS-10.22.0 | Perfluorooctanesulfonic acid (PFOS) | ng/L | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | |
| CASC-SOP CTS-10.22.0 | Perfluorooctanoic acid (PFOA) | ng/L | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | |
| PFC_IDA | N-Ethyl Perfluorooctane Sulfonamidoacetic Acid (EtFOSAA) | ng/L | NA | | NA | | NA | | **3.2** | J | NA | | NA | | NA | | **3.2** | J | NA | | NA | |
| PFC_IDA | N-Methylperfluoroocatane Sulfonamidoacetic Acid (MeFOSAA) | ng/L | NA | | NA | | NA | | 2.8 | U | NA | | NA | | NA | | 2.9 | U | NA | | NA | |
| PFC_IDA | Perfluorobutane sulfonic acid (PFBS) | ng/L | NA | | NA | | NA | | **5.1** | | NA | | NA | | NA | | **5.3** | | NA | | NA | |
| PFC_IDA | Perfluorodecanoic acid (PFDA) | ng/L | NA | | NA | | NA | | **3.1** | | NA | | NA | | NA | | **3.5** | | NA | | NA | |
| PFC_IDA | Perfluorododecanoic acid (PFDoA) | ng/L | NA | | NA | | NA | | 0.5 | U | NA | | NA | | NA | | 0.51 | U | NA | | NA | |
| PFC_IDA | Perfluoroheptanoic acid (PFHpA) | ng/L | NA | | NA | | NA | | **98** | | NA | | NA | | NA | | **110** | | NA | | NA | |
| PFC_IDA | Perfluorohexane sulfonic acid (PFHxS) | ng/L | NA | | NA | | NA | | **60** | | NA | | NA | | NA | | **68** | | NA | | NA | |
| PFC_IDA | Perfluorohexanoic acid (PFHxA) | ng/L | NA | | NA | | NA | | **240** | | NA | | NA | | NA | | **300** | | NA | | NA | |
| PFC_IDA | Perfluorononanoic acid (PFNA) | ng/L | NA | | NA | | NA | | **59** | | NA | | NA | | NA | | **64** | | NA | | NA | |
| PFC_IDA | Perfluorooctanesulfonic acid (PFOS) | ng/L | NA | | NA | | NA | | **90** | | NA | | NA | | NA | | **100** | | NA | | NA | |
| PFC_IDA | Perfluorooctanoic acid (PFOA) | ng/L | NA | | NA | | NA | | **2,000** | D | NA | | NA | | NA | | **2,600** | D | NA | | NA | |
| PFC_IDA | Perfluorotetradecanoic acid (PFTeA) | ng/L | NA | | NA | | NA | | 1.8 | UB | NA | | NA | | NA | | 0.27 | U | NA | | NA | |
| PFC_IDA | Perfluorotridecanoic acid (PFTrDA) | ng/L | NA | | NA | | NA | | 1.2 | UJ | NA | | NA | | NA | | 1.2 | U | NA | | NA | |
| PFC_IDA | Perfluoroundecanoic acid (PFUdA) | ng/L | NA | | NA | | NA | | **1.6** | J | NA | | NA | | NA | | **1.6** | J | NA | | NA | |
| SM2320B | Alkalinity | mg/L | NA | | **120** | | NA | | NA | | NA | | **190** | | NA | | NA | | NA | | **180** | |
| SM2540C | Total Dissolved Solids | mg/L | NA | | **530** | | NA | | NA | | NA | | **760** | | NA | | NA | | NA | | **850** | |
| SM2540D | Total Suspended Solids | mg/L | **11** | J | **16** | | **4.0** | J | **32** | | **6.0** | J | **7.5** | | **4.0** | J | 71 | UB | **6.5** | J | **9.5** | |
| SM4500-H-B | pH | pH units | NA | | 7.4 | | NA | | NA | | NA | | 7.6 | | NA | | NA | | NA | | 7.5 | |
| SW9060 | Total Organic Carbon 2 | mg/L | NA | | **12** | | NA | | NA | | NA | | **13** | | NA | | NA | | NA | | **12** | |
| WS-LC-0025 | N-Ethyl Perfluorooctane Sulfonamidoacetic Acid (EtFOSAA) | ng/L | **3.0** | J | 9.5 | U | **1.9** | J | NA | | **5.5** | J | **5.2** | J | **2.2** | J | NA | | 2 | U | 1.6 | U |
| WS-LC-0025 | N-Methylperfluoroocatane Sulfonamidoacetic Acid (MeFOSAA) | ng/L | 3.2 | U | 16 | U | 3.2 | U | NA | | 3.2 | U | 2.6 | U | 3.2 | U | NA | | 3.2 | U | 2.6 | U |
| WS-LC-0025 | Perfluorobutane sulfonic acid (PFBS) | ng/L | **22** | | **8.5** | J | **7.0** | | NA | | **24** | | **13** | | **8.1** | | NA | | **21** | | **15** | |
| WS-LC-0025 | Perfluorodecanoic acid (PFDA) | ng/L | **3.9** | | **6.9** | J | **2.4** | | NA | | **5.4** | | **6.1** | | **2.3** | | NA | | **0.97** | J | **1.3** | J |
| WS-LC-0025 | Perfluorododecanoic acid (PFDoA) | ng/L | 0.57 | U | **3.0** | J | 0.56 | U | NA | | 0.57 | U | 0.45 | U | 0.56 | U | NA | | 0.57 | U | 0.46 | U |
| WS-LC-0025 | Perfluoroheptanoic acid (PFHpA) | ng/L | **160** | | **37** | | **89** | | NA | | **170** | | **110** | | **83** | | NA | | **44** | | **61** | |
| WS-LC-0025 | Perfluorohexane sulfonic acid (PFHxS) | ng/L | **87** | | **37** | | **46** | | NA | | **100** | | **73** | | **53** | | NA | | **44** | | **52** | |
| WS-LC-0025 | Perfluorohexanoic acid (PFHxA) | ng/L | **380** | | **100** | | **190** | | NA | | **410** | | **240** | | **180** | | NA | | **110** | | **120** | |
| WS-LC-0025 | Perfluorononanoic acid (PFNA) | ng/L | **90** | | **18** | | **58** | | NA | | **110** | | **90** | | **59** | | NA | | **9.4** | | **13** | |
| WS-LC-0025 | Perfluorooctanesulfonic acid (PFOS) | ng/L | **140** | | **140** | | **72** | | NA | | **190** | | **190** | | **73** | | NA | | **91** | | **120** | |
| WS-LC-0025 | Perfluorooctanoic acid (PFOA) | ng/L | **3,300** | D | **300** | | **1,100** | D | NA | | **3,800** | D | **1,700** | D | **1,000** | D | NA | | **280** | | **370** | D |
| WS-LC-0025 | Perfluorotetradecanoic acid (PFTeA) | ng/L | 0.3 | U | 1.5 | U | 0.29 | U | NA | | 0.3 | U | 0.24 | U | 0.3 | U | NA | | 0.3 | U | **0.33** | J |
| WS-LC-0025 | Perfluorotridecanoic acid (PFTrDA) | ng/L | 1.3 | U | 6.5 | U | 1.3 | U | NA | | 1.3 | U | **1.9** | | 1.3 | U | NA | | 1.3 | U | 1.1 | U |
| WS-LC-0025 | Perfluoroundecanoic acid (PFUdA) | ng/L | 1.1 | U | 5.5 | U | 1.1 | U | NA | | 1.1 | U | **5.1** | | 1.1 | U | NA | | 1.1 | U | 0.93 | U |

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**Laboratory Qualifiers**:
D = Dilution required for sample analysis.
J = The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+ = The result is an estimated quantity. The associated numerical value is expected to have a positive or high bias.
JN = The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification. The associated numerical value is an estimated concentration only.
UB = The compound is considered non-detect at the listed value due to associated blank contamination.
UJ = The compound was not detected above the reported sample method detection limit. However, the reported limit is approximate and may or may not represent the actual method detection limit.

**Table 13**
**Surface Water Analytical Results**
**Interim Site Investigation Report**
**Marinette, Wisconsin**

| | | Location | SW-18 (continued) | | | | SW-19 | | | | | | | | SW-20 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Sample ID | SW-18 (101718) | | SW-18 (031919) | | SW-19 (05302018) | | SW-19 (062818) | | DUP-02 (062818) | | SW-19 (092818) | | SW-20 (05302018) | | SW-20 (071218) | | SW-20 (101818) | | SW-20 (031919) | |
| | | Sample Date | 10/17/2018 | | 3/19/2019 | | 5/30/2018 | | 6/28/2018 | | 6/28/2018 | | 9/28/2018 | | 5/30/2018 | | 7/12/2018 | | 10/18/2018 | | 3/19/2019 | |
| | | Sample Type | N | | N | | N | | N | | FD | | N | | N | | N | | N | | N | |
| Method | Chemical Name | Units | Result | Qualifier | Result | Qualifier | Result | Qualifier | Result | Qualifier | Result | Qualifier | Result | Qualifier | Result | Qualifier | Result | Qualifier | Result | Qualifier | Result | Qualifier |
| CASC-SOP CTS-10.22.0 | Perfluorobutane sulfonic acid (PFBS) | ng/L | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | |
| CASC-SOP CTS-10.22.0 | Perfluoroheptanoic acid (PFHpA) | ng/L | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | |
| CASC-SOP CTS-10.22.0 | Perfluorohexane sulfonic acid (PFHxS) | ng/L | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | |
| CASC-SOP CTS-10.22.0 | Perfluorononanoic acid (PFNA) | ng/L | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | |
| CASC-SOP CTS-10.22.0 | Perfluorooctanesulfonic acid (PFOS) | ng/L | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | |
| CASC-SOP CTS-10.22.0 | Perfluorooctanoic acid (PFOA) | ng/L | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | |
| PFC_IDA | N-Ethyl Perfluorooctane Sulfonamidoacetic Acid (EtFOSAA) | ng/L | NA | | 1.7 | U | NA | | NA | | NA | | NA | | NA | | NA | | NA | | 1.7 | U |
| PFC_IDA | N-Methylperfluorooctane Sulfonamidoacetic Acid (MeFOSAA) | ng/L | NA | | 2.8 | U | NA | | NA | | NA | | NA | | NA | | NA | | NA | | 2.8 | U |
| PFC_IDA | Perfluorobutane sulfonic acid (PFBS) | ng/L | NA | | **2.4** | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | **1.1** | J |
| PFC_IDA | Perfluorodecanoic acid (PFDA) | ng/L | NA | | **0.92** | J | NA | | NA | | NA | | NA | | NA | | NA | | NA | | 0.28 | U |
| PFC_IDA | Perfluorododecanoic acid (PFDoA) | ng/L | NA | | 0.5 | U | NA | | NA | | NA | | NA | | NA | | NA | | NA | | 0.5 | U |
| PFC_IDA | Perfluoroheptanoic acid (PFHpA) | ng/L | NA | | **27** | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | **9.1** | |
| PFC_IDA | Perfluorohexane sulfonic acid (PFHxS) | ng/L | NA | | **32** | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | **2.3** | |
| PFC_IDA | Perfluorohexanoic acid (PFHxA) | ng/L | NA | | **55** | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | **13** | |
| PFC_IDA | Perfluorononanoic acid (PFNA) | ng/L | NA | | **5.8** | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | **1.4** | J |
| PFC_IDA | Perfluorooctanesulfonic acid (PFOS) | ng/L | NA | | **49** | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | **4.7** | |
| PFC_IDA | Perfluorooctanoic acid (PFOA) | ng/L | NA | | **120** | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | **12** | |
| PFC_IDA | Perfluorotetradecanoic acid (PFTeA) | ng/L | NA | | 0.26 | U | NA | | NA | | NA | | NA | | NA | | NA | | NA | | 1.8 | UB |
| PFC_IDA | Perfluorotridecanoic acid (PFTrDA) | ng/L | NA | | 1.2 | U | NA | | NA | | NA | | NA | | NA | | NA | | NA | | 1.2 | U |
| PFC_IDA | Perfluoroundecanoic acid (PFUdA) | ng/L | NA | | 1 | U | NA | | NA | | NA | | NA | | NA | | NA | | NA | | 0.99 | U |
| SM2320B | Alkalinity | mg/L | NA | | NA | | NA | | NA | | NA | | NA | | NA | | **120** | | NA | | NA | |
| SM2540C | Total Dissolved Solids | mg/L | NA | | NA | | NA | | NA | | NA | | NA | | NA | | **480** | | NA | | NA | |
| SM2540D | Total Suspended Solids | mg/L | 1.9 | U | 8.5 | UB | **2.0** | J | **2.5** | J | NA | | **2.0** | J | **13** | J | **4.5** | J | **8.0** | | 7 | UB |
| SM4500-H-B | pH | pH units | NA | | NA | | NA | | NA | | NA | | NA | | NA | | 7.4 | | NA | | NA | |
| SW9060 | Total Organic Carbon 2 | mg/L | NA | | NA | | NA | | NA | | NA | | NA | | NA | | **13** | | NA | | NA | |
| WS-LC-0025 | N-Ethyl Perfluorooctane Sulfonamidoacetic Acid (EtFOSAA) | ng/L | 1.9 | U | NA | | 2 | U | 1.7 | U | 1.7 | U | 1.6 | UJ | 1.9 | U | 1.6 | U | 1.6 | U | NA | |
| WS-LC-0025 | N-Methylperfluorooctane Sulfonamidoacetic Acid (MeFOSAA) | ng/L | 3.1 | U | NA | | 3.2 | U | 2.8 | U | 2.8 | U | 2.6 | UJ | 3.1 | U | 2.6 | U | 2.5 | U | NA | |
| WS-LC-0025 | Perfluorobutane sulfonic acid (PFBS) | ng/L | **5.1** | | NA | | **3.5** | | **3.7** | | **3.5** | | **3.8** | J | **2.6** | | **1.3** | J | **1.7** | | NA | |
| WS-LC-0025 | Perfluorodecanoic acid (PFDA) | ng/L | **0.76** | J | NA | | 0.32 | U | 0.28 | U | 0.28 | U | **0.39** | J | **0.64** | J | **1.2** | J | 0.25 | U | NA | |
| WS-LC-0025 | Perfluorododecanoic acid (PFDoA) | ng/L | 0.56 | U | NA | | 0.57 | U | 0.49 | U | 0.49 | U | 0.46 | UJ | 0.55 | U | 0.46 | U | 0.45 | U | NA | |
| WS-LC-0025 | Perfluoroheptanoic acid (PFHpA) | ng/L | **32** | | NA | | **89** | | **89** | | **85** | | **97** | J | **11** | | **7.0** | | **11** | | NA | |
| WS-LC-0025 | Perfluorohexane sulfonic acid (PFHxS) | ng/L | **29** | | NA | | **37** | | **38** | | **37** | | **44** | J | **5.1** | | **2.3** | | **3.0** | | NA | |
| WS-LC-0025 | Perfluorohexanoic acid (PFHxA) | ng/L | **63** | | NA | | **130** | | **150** | | **140** | | **160** | J | **22** | | **14** | | **15** | | NA | |
| WS-LC-0025 | Perfluorononanoic acid (PFNA) | ng/L | **7.6** | | NA | | **23** | | **25** | | **26** | | **24** | J | **2.2** | | **1.5** | J | **1.6** | | NA | |
| WS-LC-0025 | Perfluorooctanesulfonic acid (PFOS) | ng/L | **46** | | NA | | **16** | | **21** | | **21** | | **17** | J | **8.4** | | **6.7** | | **5.2** | | NA | |
| WS-LC-0025 | Perfluorooctanoic acid (PFOA) | ng/L | **160** | | NA | | **250** | | **240** | | **230** | | **270** | J | **18** | | **10** | | **13** | | NA | |
| WS-LC-0025 | Perfluorotetradecanoic acid (PFTeA) | ng/L | 0.29 | U | NA | | 0.3 | U | 0.26 | U | 0.26 | U | 0.24 | UJ | 0.29 | U | 0.24 | U | **0.24** | J | NA | |
| WS-LC-0025 | Perfluorotridecanoic acid (PFTrDA) | ng/L | 1.3 | U | NA | | 1.3 | U | 1.2 | UJ | 1.2 | U | 1.1 | UJ | 1.3 | U | 1.1 | U | 1.1 | U | NA | |
| WS-LC-0025 | Perfluoroundecanoic acid (PFUdA) | ng/L | 1.1 | U | NA | | 1.1 | U | 0.98 | U | 0.98 | U | 0.91 | UJ | 1.1 | U | 0.92 | U | 0.9 | U | NA | |

**Notes:**
**Detections are in bold.**
Non-detect values are method detection limit.
CAS = Chemical Abstracts Service
FD = field duplicate sample type
mg/L = milligrams per liter
N = normal sample type
NA = not applicable
ng/L = nanograms per liter

**Laboratory Flag:**
U = The compound was analyzed for but not detected. The associated value is the compound quantitation limit.

**Laboratory Qualifiers**:
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J+ = The result is an estimated quantity. The associated numerical value is expected to have a positive or high bias.
JN = The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification. The associated numerical value is an estimated concentration only.
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**Table 13**
**Surface Water Analytical Results**
**Interim Site Investigation Report**
**Marinette, Wisconsin**

| | | Location | SW-20 (continued) | | SW-21 | | | | | | SW-22 | | | | | | | | SW-23 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Sample ID | DUP-01 (031919) | | SW-21 (05302018) | | SW-21 (101818) | | SW-21 (031919) | | SW-22 (05312018) | | SW-22 (101818) | | SW-22 (040419) | | SW-22-08212019 | | SW-23 (05312018) | | SW-23 (101818) | |
| | | Sample Date | 3/19/2019 | | 5/30/2018 | | 10/18/2018 | | 3/19/2019 | | 5/31/2018 | | 10/18/2018 | | 4/4/2019 | | 8/21/2019 | | 5/31/2018 | | 10/18/2018 | |
| | | Sample Type | FD | | N | | N | | N | | N | | N | | N | | N | | N | | N | |
| Method | Chemical Name | Units | Result | Qualifier | Result | Qualifier | Result | Qualifier | Result | Qualifier | Result | Qualifier | Result | Qualifier | Result | Qualifier | Result | Qualifier | Result | Qualifier | Result | Qualifier |
| CASC-SOP CTS-10.22.0 | Perfluorobutane sulfonic acid (PFBS) | ng/L | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | |
| CASC-SOP CTS-10.22.0 | Perfluoroheptanoic acid (PFHpA) | ng/L | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | |
| CASC-SOP CTS-10.22.0 | Perfluorohexane sulfonic acid (PFHxS) | ng/L | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | |
| CASC-SOP CTS-10.22.0 | Perfluorononanoic acid (PFNA) | ng/L | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | |
| CASC-SOP CTS-10.22.0 | Perfluorooctanesulfonic acid (PFOS) | ng/L | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | |
| CASC-SOP CTS-10.22.0 | Perfluorooctanoic acid (PFOA) | ng/L | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | |
| PFC_IDA | N-Ethyl Perfluorooctane Sulfonamidoacetic Acid (EtFOSAA) | ng/L | 1.8 | U | NA | | NA | | 1.7 | U | NA | | NA | | 1.9 | U | 1.7 | U | NA | | NA | |
| PFC_IDA | N-Methylperfluorooctane Sulfonamidoacetic Acid (MeFOSAA) | ng/L | 2.9 | U | NA | | NA | | 2.8 | U | NA | | NA | | 3.1 | U | 2.8 | U | NA | | NA | |
| PFC_IDA | Perfluorobutane sulfonic acid (PFBS) | ng/L | **1.4** | J | NA | | NA | | **1.1** | J | NA | | NA | | **7.1** | | **5.0** | | NA | | NA | |
| PFC_IDA | Perfluorodecanoic acid (PFDA) | ng/L | **0.34** | JN | NA | | NA | | **0.35** | J | NA | | NA | | **1.6** | J | **6.1** | | NA | | NA | |
| PFC_IDA | Perfluorododecanoic acid (PFDoA) | ng/L | 0.52 | U | NA | | NA | | 0.5 | U | NA | | NA | | 0.54 | U | 0.49 | U | NA | | NA | |
| PFC_IDA | Perfluoroheptanoic acid (PFHpA) | ng/L | **9.3** | | NA | | NA | | **7.4** | | NA | | NA | | **44** | | **260** | | NA | | NA | |
| PFC_IDA | Perfluorohexane sulfonic acid (PFHxS) | ng/L | **2.5** | | NA | | NA | | 1.8 | UB | NA | | NA | | **5.9** | | **36** | | NA | | NA | |
| PFC_IDA | Perfluorohexanoic acid (PFHxA) | ng/L | **14** | | NA | | NA | | **11** | | NA | | NA | | **68** | | **310** | | NA | | NA | |
| PFC_IDA | Perfluorononanoic acid (PFNA) | ng/L | **1.5** | J | NA | | NA | | **1.1** | J | NA | | NA | | **5.5** | | **21** | | NA | | NA | |
| PFC_IDA | Perfluorooctanesulfonic acid (PFOS) | ng/L | **4.8** | | NA | | NA | | **3.5** | | NA | | NA | | **8.4** | | **130** | | NA | | NA | |
| PFC_IDA | Perfluorooctanoic acid (PFOA) | ng/L | **12** | | NA | | NA | | **7.0** | | NA | | NA | | **150** | | **5,900** | D | NA | | NA | |
| PFC_IDA | Perfluorotetradecanoic acid (PFTeA) | ng/L | 1.9 | UB | NA | | NA | | 1.8 | UB | NA | | NA | | 2 | UB | 0.26 | U | NA | | NA | |
| PFC_IDA | Perfluorotridecanoic acid (PFTrDA) | ng/L | 1.2 | U | NA | | NA | | 1.2 | U | NA | | NA | | 1.3 | U | 1.2 | U | NA | | NA | |
| PFC_IDA | Perfluoroundecanoic acid (PFUdA) | ng/L | 1 | U | NA | | NA | | 1 | U | NA | | NA | | 1.1 | U | **1.3** | JN | NA | | NA | |
| SM2320B | Alkalinity | mg/L | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | |
| SM2540C | Total Dissolved Solids | mg/L | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | |
| SM2540D | Total Suspended Solids | mg/L | 7 | UB | **7.5** | J | **4.5** | J | **16** | | **2.5** | J | **27** | | **32** | | **7.0** | | **6.0** | | **11** | |
| SM4500-H-B | pH | pH units | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | |
| SW9060 | Total Organic Carbon 2 | mg/L | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | |
| WS-LC-0025 | N-Ethyl Perfluorooctane Sulfonamidoacetic Acid (EtFOSAA) | ng/L | NA | | 2 | U | 1.6 | U | NA | | 1.9 | U | 1.6 | U | NA | | NA | | 2 | U | 1.6 | U |
| WS-LC-0025 | N-Methylperfluorooctane Sulfonamidoacetic Acid (MeFOSAA) | ng/L | NA | | 3.2 | U | 2.6 | U | NA | | 3.2 | U | 2.6 | U | NA | | NA | | 3.2 | U | 2.6 | U |
| WS-LC-0025 | Perfluorobutane sulfonic acid (PFBS) | ng/L | NA | | **1.5** | J | **1.6** | J | NA | | **5.5** | | **65** | | NA | | NA | | **6.3** | | **1.7** | |
| WS-LC-0025 | Perfluorodecanoic acid (PFDA) | ng/L | NA | | **0.59** | J | 0.26 | U | NA | | **2.3** | | **1.8** | | NA | | NA | | **5.9** | | **0.61** | J |
| WS-LC-0025 | Perfluorododecanoic acid (PFDoA) | ng/L | NA | | 0.57 | U | 0.46 | U | NA | | 0.56 | U | 0.46 | U | NA | | NA | | 0.57 | U | 0.46 | U |
| WS-LC-0025 | Perfluoroheptanoic acid (PFHpA) | ng/L | NA | | **8.2** | | **8.6** | | NA | | **110** | | **53** | | NA | | NA | | **80** | | **11** | |
| WS-LC-0025 | Perfluorohexane sulfonic acid (PFHxS) | ng/L | NA | | 2.1 | UB | **1.5** | J | NA | | **18** | | **2.4** | | NA | | NA | | **11** | | 1.7 | UB |
| WS-LC-0025 | Perfluorohexanoic acid (PFHxA) | ng/L | NA | | **15** | | **11** | | NA | | **210** | | **98** | | NA | | NA | | **120** | | **19** | |
| WS-LC-0025 | Perfluorononanoic acid (PFNA) | ng/L | NA | | **1.7** | J | **1.1** | J | NA | | **13** | | **5.0** | | NA | | NA | | **20** | | **2.1** | |
| WS-LC-0025 | Perfluorooctanesulfonic acid (PFOS) | ng/L | NA | | **4.7** | | **3.2** | | NA | | **13** | | **4.8** | | NA | | NA | | **28** | | **2.3** | |
| WS-LC-0025 | Perfluorooctanoic acid (PFOA) | ng/L | NA | | **9.1** | | **7.5** | | NA | | **320** | | **74** | | NA | | NA | | **430** | D | **39** | |
| WS-LC-0025 | Perfluorotetradecanoic acid (PFTeA) | ng/L | NA | | **0.40** | J | 0.24 | U | NA | | 0.3 | U | 0.24 | U | NA | | NA | | 0.3 | U | 0.24 | U |
| WS-LC-0025 | Perfluorotridecanoic acid (PFTrDA) | ng/L | NA | | 1.4 | U | 1.1 | U | NA | | 1.3 | U | 1.1 | U | NA | | NA | | 1.4 | U | 1.1 | U |
| WS-LC-0025 | Perfluoroundecanoic acid (PFUdA) | ng/L | NA | | 1.1 | U | 0.91 | U | NA | | 1.1 | U | 0.92 | U | NA | | NA | | **1.6** | J | 0.92 | U |

**Notes:**
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mg/L = milligrams per liter
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**Table 13**
**Surface Water Analytical Results**
**Interim Site Investigation Report**
**Marinette, Wisconsin**

| | | Location | SW-23 (continued) | | | | SW-24 | | | | | | | | | | | | | | SW-25 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Sample ID | SW-23 (041019) | | SW-23-08212019 | | SW-24 (05312018) | | SW-24 (07162018) | | DUP-04 (07162018) | | SW-24 (101818) | | SW-24 (040419) | | SW-24-08212019 | | DUP-1 (082119) | | SW-25 (05312018) | | SW-25 (101818) | |
| | | Sample Date | 4/10/2019 | | 8/21/2019 | | 5/31/2018 | | 7/16/2018 | | 7/16/2018 | | 10/18/2018 | | 4/4/2019 | | 8/21/2019 | | 8/21/2019 | | 5/31/2018 | | 10/18/2018 | |
| | | Sample Type | N | | N | | N | | N | | FD | | N | | N | | N | | FD | | N | | N | |
| Method | Chemical Name | Units | Result | Qualifier | Result | Qualifier | Result | Qualifier | Result | Qualifier | Result | Qualifier | Result | Qualifier | Result | Qualifier | Result | Qualifier | Result | Qualifier | Result | Qualifier | Result | Qualifier |
| CASC-SOP CTS-10.22.0 | Perfluorobutane sulfonic acid (PFBS) | ng/L | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | |
| CASC-SOP CTS-10.22.0 | Perfluoroheptanoic acid (PFHpA) | ng/L | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | |
| CASC-SOP CTS-10.22.0 | Perfluorohexane sulfonic acid (PFHxS) | ng/L | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | |
| CASC-SOP CTS-10.22.0 | Perfluorononanoic acid (PFNA) | ng/L | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | |
| CASC-SOP CTS-10.22.0 | Perfluorooctanesulfonic acid (PFOS) | ng/L | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | |
| CASC-SOP CTS-10.22.0 | Perfluorooctanoic acid (PFOA) | ng/L | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | |
| PFC_IDA | N-Ethyl Perfluorooctane Sulfonamidoacetic Acid (EtFOSAA) | ng/L | 1.8 | U | 1.6 | U | NA | | NA | | NA | | NA | | 1.7 | U | 1.7 | U | 1.7 | U | NA | | NA | |
| PFC_IDA | N-Methylperfluoroocatane Sulfonamidoacetic Acid (MeFOSAA) | ng/L | 2.9 | U | 2.7 | U | NA | | NA | | NA | | NA | | 2.8 | U | 2.8 | U | 2.7 | U | NA | | NA | |
| PFC_IDA | Perfluorobutane sulfonic acid (PFBS) | ng/L | **2.0** | | **5.1** | | NA | | NA | | NA | | NA | | **6.0** | | **2.6** | | **2.3** | | NA | | NA | |
| PFC_IDA | Perfluorodecanoic acid (PFDA) | ng/L | **0.72** | J | **1.4** | J | NA | | NA | | NA | | NA | | **7.6** | | **79** | | **83** | | NA | | NA | |
| PFC_IDA | Perfluorododecanoic acid (PFDoA) | ng/L | 0.52 | U | 0.47 | U | NA | | NA | | NA | | NA | | **0.55** | J | **0.72** | J | **0.73** | JN | NA | | NA | |
| PFC_IDA | Perfluoroheptanoic acid (PFHpA) | ng/L | **30** | | **64** | | NA | | NA | | NA | | NA | | **110** | | **500** | D | **520** | D | NA | | NA | |
| PFC_IDA | Perfluorohexane sulfonic acid (PFHxS) | ng/L | **4.0** | | **7.4** | | NA | | NA | | NA | | NA | | **16** | | **75** | | **68** | | NA | | NA | |
| PFC_IDA | Perfluorohexanoic acid (PFHxA) | ng/L | **57** | | **110** | | NA | | NA | | NA | | NA | | **170** | | **660** | D | **640** | D | NA | | NA | |
| PFC_IDA | Perfluorononanoic acid (PFNA) | ng/L | **3.7** | | **7.8** | | NA | | NA | | NA | | NA | | **14** | | **89** | | **95** | | NA | | NA | |
| PFC_IDA | Perfluorooctanesulfonic acid (PFOS) | ng/L | **3.8** | | **9.1** | | NA | | NA | | NA | | NA | | **36** | | **200** | | **190** | | NA | | NA | |
| PFC_IDA | Perfluorooctanoic acid (PFOA) | ng/L | **90** | | **160** | | NA | | NA | | NA | | NA | | **910** | D | **3,400** | D | **3,600** | D | NA | | NA | |
| PFC_IDA | Perfluorotetradecanoic acid (PFTeA) | ng/L | 0.28 | U | 0.25 | U | NA | | NA | | NA | | NA | | 0.27 | U | 0.26 | U | 0.25 | U | NA | | NA | |
| PFC_IDA | Perfluorotridecanoic acid (PFTrDA) | ng/L | 1.2 | U | 1.1 | U | NA | | NA | | NA | | NA | | 1.2 | U | 1.2 | U | 1.1 | U | NA | | NA | |
| PFC_IDA | Perfluoroundecanoic acid (PFUdA) | ng/L | 1 | U | 0.95 | U | NA | | NA | | NA | | NA | | **3.0** | | **24** | | **24** | | NA | | NA | |
| SM2320B | Alkalinity | mg/L | NA | | NA | | NA | | **140** | | **140** | | NA | | NA | | NA | | NA | | NA | | NA | |
| SM2540C | Total Dissolved Solids | mg/L | NA | | NA | | NA | | **820** | | **800** | | NA | | NA | | NA | | NA | | NA | | NA | |
| SM2540D | Total Suspended Solids | mg/L | **3.0** | J | **2.0** | J | **310** | | **14** | | **14** | | **12** | | **18** | | **8.0** | | NA | | **58** | | **9.5** | |
| SM4500-H-B | pH | pH units | NA | | NA | | NA | | 7.1 | | 7.0 | | NA | | NA | | NA | | NA | | NA | | NA | |
| SW9060 | Total Organic Carbon 2 | mg/L | NA | | NA | | NA | | **10** | | **10** | | NA | | NA | | NA | | NA | | NA | | NA | |
| WS-LC-0025 | N-Ethyl Perfluorooctane Sulfonamidoacetic Acid (EtFOSAA) | ng/L | NA | | NA | | 1.9 | U | 1.6 | U | 1.7 | U | 1.6 | U | NA | | NA | | NA | | **7.1** | J | **2.6** | J |
| WS-LC-0025 | N-Methylperfluoroocatane Sulfonamidoacetic Acid (MeFOSAA) | ng/L | NA | | NA | | 3.1 | U | 2.6 | U | 2.8 | U | 2.5 | U | NA | | NA | | NA | | 3.1 | U | 2.7 | U |
| WS-LC-0025 | Perfluorobutane sulfonic acid (PFBS) | ng/L | NA | | NA | | **5.5** | | **5.0** | | **5.2** | | **21** | | NA | | NA | | NA | | **14** | | **18** | |
| WS-LC-0025 | Perfluorodecanoic acid (PFDA) | ng/L | NA | | NA | | **40** | | **81** | | **80** | | **8.3** | | NA | | NA | | NA | | **120** | | **38** | |
| WS-LC-0025 | Perfluorododecanoic acid (PFDoA) | ng/L | NA | | NA | | 0.54 | U | **0.67** | J | **1.7** | J | 0.45 | U | NA | | NA | | NA | | **3.7** | | **2.2** | |
| WS-LC-0025 | Perfluoroheptanoic acid (PFHpA) | ng/L | NA | | NA | | **630** | D | **720** | D | **720** | D | **140** | | NA | | NA | | NA | | **710** | D | **210** | |
| WS-LC-0025 | Perfluorohexane sulfonic acid (PFHxS) | ng/L | NA | | NA | | **57** | | **44** | | **39** | | **18** | | NA | | NA | | NA | | **200** | | **77** | |
| WS-LC-0025 | Perfluorohexanoic acid (PFHxA) | ng/L | NA | | NA | | **670** | D | **720** | D | **680** | D | **220** | | NA | | NA | | NA | | **870** | D | **280** | |
| WS-LC-0025 | Perfluorononanoic acid (PFNA) | ng/L | NA | | NA | | **110** | | **200** | | **210** | | **20** | | NA | | NA | | NA | | **340** | | **55** | |
| WS-LC-0025 | Perfluorooctanesulfonic acid (PFOS) | ng/L | NA | | NA | | **180** | | **210** | | **210** | | **28** | | NA | | NA | | NA | | **1,100** | D | **260** | |
| WS-LC-0025 | Perfluorooctanoic acid (PFOA) | ng/L | NA | | NA | | **6,000** | D | **1,600** | D | **1,600** | D | **680** | D | NA | | NA | | NA | | **3,800** | D | **420** | D |
| WS-LC-0025 | Perfluorotetradecanoic acid (PFTeA) | ng/L | NA | | NA | | 0.29 | U | 0.24 | U | 0.26 | U | 0.24 | U | NA | | NA | | NA | | **0.32** | J | **0.27** | J |
| WS-LC-0025 | Perfluorotridecanoic acid (PFTrDA) | ng/L | NA | | NA | | 1.3 | U | 1.1 | U | 1.2 | U | 1.1 | U | NA | | NA | | NA | | 1.3 | U | 1.1 | U |
| WS-LC-0025 | Perfluoroundecanoic acid (PFUdA) | ng/L | NA | | NA | | **7.4** | | **13** | | **17** | | **1.9** | | NA | | NA | | NA | | **50** | | **20** | |

**Notes:**
**Detections are in bold.**
Non-detect values are method detection limit.
CAS = Chemical Abstracts Service
FD = field duplicate sample type
mg/L = milligrams per liter
N = normal sample type
NA = not applicable
ng/L = nanograms per liter

**Laboratory Flag:**
U = The compound was analyzed for but not detected. The associated value is the compound quantitation limit.

**Laboratory Qualifiers**:
D = Dilution required for sample analysis.
J = The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+ = The result is an estimated quantity. The associated numerical value is expected to have a positive or high bias.
JN = The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification. The associated numerical value is an estimated concentration only.
UB = The compound is considered non-detect at the listed value due to associated blank contamination.
UJ = The compound was not detected above the reported sample method detection limit. However, the reported limit is approximate and may or may not represent the actual method detection limit.

**Table 13**
**Surface Water Analytical Results**
**Interim Site Investigation Report**
**Marinette, Wisconsin**

| | | Location | SW-25 (continued) | | | | | | SW-26 | | | | | | | | | | SW-27 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Sample ID | DUP-3 (101818) | | SW-25 (040419) | | SW-25-08212019 | | SW-26 (05312018) | | SW-26 (101718) | | SW-26 (040419) | | DUP-03 (040419) | | SW-26-08212019 | | SW-27 (05312018) | | SW-27 (07162018) | |
| | | Sample Date | 10/18/2018 | | 4/4/2019 | | 8/21/2019 | | 5/31/2018 | | 10/17/2018 | | 4/4/2019 | | 4/4/2019 | | 8/21/2019 | | 5/31/2018 | | 7/16/2018 | |
| | | Sample Type | FD | | N | | N | | N | | N | | N | | FD | | N | | N | | N | |
| Method | Chemical Name | Units | Result | Qualifier | Result | Qualifier | Result | Qualifier | Result | Qualifier | Result | Qualifier | Result | Qualifier | Result | Qualifier | Result | Qualifier | Result | Qualifier | Result | Qualifier |
| CASC-SOP CTS-10.22.0 | Perfluorobutane sulfonic acid (PFBS) | ng/L | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | |
| CASC-SOP CTS-10.22.0 | Perfluoroheptanoic acid (PFHpA) | ng/L | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | |
| CASC-SOP CTS-10.22.0 | Perfluorohexane sulfonic acid (PFHxS) | ng/L | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | |
| CASC-SOP CTS-10.22.0 | Perfluorononanoic acid (PFNA) | ng/L | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | |
| CASC-SOP CTS-10.22.0 | Perfluorooctanesulfonic acid (PFOS) | ng/L | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | |
| CASC-SOP CTS-10.22.0 | Perfluorooctanoic acid (PFOA) | ng/L | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | |
| PFC_IDA | N-Ethyl Perfluorooctane Sulfonamidoacetic Acid (EtFOSAA) | ng/L | NA | | **4.4** | J | **6.4** | J | NA | | NA | | 1.9 | U | 1.9 | U | **2.9** | J | NA | | NA | |
| PFC_IDA | N-Methylperfluoroocatane Sulfonamidoacetic Acid (MeFOSAA) | ng/L | NA | | 3.1 | U | 2.7 | U | NA | | NA | | 3.1 | U | 3 | U | 2.8 | U | NA | | NA | |
| PFC_IDA | Perfluorobutane sulfonic acid (PFBS) | ng/L | NA | | **9.3** | | **4.8** | | NA | | NA | | **2.3** | | **1.9** | J | **4.2** | | NA | | NA | |
| PFC_IDA | Perfluorodecanoic acid (PFDA) | ng/L | NA | | **40** | | **94** | | NA | | NA | | **18** | | **17** | | **45** | | NA | | NA | |
| PFC_IDA | Perfluorododecanoic acid (PFDoA) | ng/L | NA | | **1.3** | J | **3.9** | | NA | | NA | | **0.90** | J | **0.79** | J | **4.1** | | NA | | NA | |
| PFC_IDA | Perfluoroheptanoic acid (PFHpA) | ng/L | NA | | **160** | | **280** | | NA | | NA | | **67** | | **71** | | **180** | | NA | | NA | |
| PFC_IDA | Perfluorohexane sulfonic acid (PFHxS) | ng/L | NA | | **49** | | **100** | | NA | | NA | | **21** | | **23** | | **80** | | NA | | NA | |
| PFC_IDA | Perfluorohexanoic acid (PFHxA) | ng/L | NA | | **210** | | **450** | D | NA | | NA | | **87** | | **88** | | **230** | | NA | | NA | |
| PFC_IDA | Perfluorononanoic acid (PFNA) | ng/L | NA | | **60** | | **240** | | NA | | NA | | **34** | | **36** | | **100** | | NA | | NA | |
| PFC_IDA | Perfluorooctanesulfonic acid (PFOS) | ng/L | NA | | **250** | | **1,100** | D | NA | | NA | | **84** | | **83** | | **270** | | NA | | NA | |
| PFC_IDA | Perfluorooctanoic acid (PFOA) | ng/L | NA | | **680** | D | **1,100** | D | NA | | NA | | **160** | | **170** | | **430** | D | NA | | NA | |
| PFC_IDA | Perfluorotetradecanoic acid (PFTeA) | ng/L | NA | | 2 | UB | 0.26 | U | NA | | NA | | 0.29 | U | 0.28 | U | **0.70** | J | NA | | NA | |
| PFC_IDA | Perfluorotridecanoic acid (PFTrDA) | ng/L | NA | | 1.3 | U | 1.2 | U | NA | | NA | | 1.3 | U | 1.3 | U | 1.2 | U | NA | | NA | |
| PFC_IDA | Perfluoroundecanoic acid (PFUdA) | ng/L | NA | | **16** | | **47** | J+ | NA | | NA | | **7.0** | | **6.1** | | **23** | | NA | | NA | |
| SM2320B | Alkalinity | mg/L | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | **100** | |
| SM2540C | Total Dissolved Solids | mg/L | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | **330** | |
| SM2540D | Total Suspended Solids | mg/L | 1.9 | U | **6.0** | | **50** | | **220** | | **2.0** | J | 1.9 | U | 1.9 | U | **100** | | **27** | | **64** | |
| SM4500-H-B | pH | pH units | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | 6.9 | |
| SW9060 | Total Organic Carbon 2 | mg/L | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | **7.9** | |
| WS-LC-0025 | N-Ethyl Perfluorooctane Sulfonamidoacetic Acid (EtFOSAA) | ng/L | **2.3** | J | NA | | NA | | 2.2 | U | **1.9** | J | NA | | NA | | NA | | **4.2** | J | **5.8** | J |
| WS-LC-0025 | N-Methylperfluoroocatane Sulfonamidoacetic Acid (MeFOSAA) | ng/L | 2.7 | U | NA | | NA | | 3.5 | U | 3.1 | U | NA | | NA | | NA | | 3.3 | U | 2.6 | U |
| WS-LC-0025 | Perfluorobutane sulfonic acid (PFBS) | ng/L | **16** | | NA | | NA | | **10** | | **20** | | NA | | NA | | NA | | **9.1** | | **8.2** | |
| WS-LC-0025 | Perfluorodecanoic acid (PFDA) | ng/L | **34** | | NA | | NA | | **77** | | **66** | | NA | | NA | | NA | | **75** | | **76** | |
| WS-LC-0025 | Perfluorododecanoic acid (PFDoA) | ng/L | **1.7** | J | NA | | NA | | **2.7** | | **2.4** | | NA | | NA | | NA | | **4.2** | | **9.0** | |
| WS-LC-0025 | Perfluoroheptanoic acid (PFHpA) | ng/L | **200** | | NA | | NA | | **510** | D | **350** | | NA | | NA | | NA | | **430** | | **230** | |
| WS-LC-0025 | Perfluorohexane sulfonic acid (PFHxS) | ng/L | **77** | | NA | | NA | | **130** | | **130** | | NA | | NA | | NA | | **120** | | **84** | |
| WS-LC-0025 | Perfluorohexanoic acid (PFHxA) | ng/L | **290** | | NA | | NA | | **770** | D | **470** | D | NA | | NA | | NA | | **730** | D | **310** | |
| WS-LC-0025 | Perfluorononanoic acid (PFNA) | ng/L | **52** | | NA | | NA | | **190** | | **160** | | NA | | NA | | NA | | **190** | | **190** | |
| WS-LC-0025 | Perfluorooctanesulfonic acid (PFOS) | ng/L | **260** | | NA | | NA | | **510** | D | **270** | | NA | | NA | | NA | | **570** | D | **750** | D |
| WS-LC-0025 | Perfluorooctanoic acid (PFOA) | ng/L | **390** | D | NA | | NA | | **2,000** | D | **560** | D | NA | | NA | | NA | | **2,200** | D | **680** | D |
| WS-LC-0025 | Perfluorotetradecanoic acid (PFTeA) | ng/L | 0.26 | U | NA | | NA | | 0.33 | U | 0.29 | U | NA | | NA | | NA | | 0.31 | U | **0.90** | J |
| WS-LC-0025 | Perfluorotridecanoic acid (PFTrDA) | ng/L | 1.2 | U | NA | | NA | | 1.5 | U | 1.3 | U | NA | | NA | | NA | | 1.4 | U | 1.1 | U |
| WS-LC-0025 | Perfluoroundecanoic acid (PFUdA) | ng/L | **18** | | NA | | NA | | **27** | | **19** | | NA | | NA | | NA | | **29** | | **45** | |

**Notes:**
**Detections are in bold.**
Non-detect values are method detection limit.
CAS = Chemical Abstracts Service
FD = field duplicate sample type
mg/L = milligrams per liter
N = normal sample type
NA = not applicable
ng/L = nanograms per liter

**Laboratory Flag:**
U = The compound was analyzed for but not detected. The associated value is the compound quantitation limit.

**Laboratory Qualifiers**:
D = Dilution required for sample analysis.
J = The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+ = The result is an estimated quantity. The associated numerical value is expected to have a positive or high bias.
JN = The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification. The associated numerical value is an estimated concentration only.
UB = The compound is considered non-detect at the listed value due to associated blank contamination.
UJ = The compound was not detected above the reported sample method detection limit. However, the reported limit is approximate and may or may not represent the actual method detection limit.

**Table 13**
**Surface Water Analytical Results**
**Interim Site Investigation Report**
**Marinette, Wisconsin**

| | | Location | SW-27 (continued) | | | | | | SW-28 | | | | | | | | SW-29 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Sample ID | SW-27 (101718) | | SW-27 (040419) | | SW-27-08212019 | | SW-28 (07102018) | | SW-28 (101618) | | SW-28 (040219) | | SW-28 (040219) | | SW-29 (07112018) | | DUP-03 (07112018) | | SW-29 (101618) | |
| | | Sample Date | 10/17/2018 | | 4/4/2019 | | 8/21/2019 | | 7/10/2018 | | 10/16/2018 | | 4/2/2019 | | 4/2/2019 | | 7/11/2018 | | 7/11/2018 | | 10/16/2018 | |
| | | Sample Type | N | | N | | N | | N | | N | | N | | N | | N | | FD | | N | |
| Method | Chemical Name | Units | Result | Qualifier | Result | Qualifier | Result | Qualifier | Result | Qualifier | Result | Qualifier | Result | Qualifier | Result | Qualifier | Result | Qualifier | Result | Qualifier | Result | Qualifier |
| CASC-SOP CTS-10.22.0 | Perfluorobutane sulfonic acid (PFBS) | ng/L | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | |
| CASC-SOP CTS-10.22.0 | Perfluoroheptanoic acid (PFHpA) | ng/L | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | |
| CASC-SOP CTS-10.22.0 | Perfluorohexane sulfonic acid (PFHxS) | ng/L | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | |
| CASC-SOP CTS-10.22.0 | Perfluorononanoic acid (PFNA) | ng/L | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | |
| CASC-SOP CTS-10.22.0 | Perfluorooctanesulfonic acid (PFOS) | ng/L | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | |
| CASC-SOP CTS-10.22.0 | Perfluorooctanoic acid (PFOA) | ng/L | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | |
| PFC_IDA | N-Ethyl Perfluorooctane Sulfonamidoacetic Acid (EtFOSAA) | ng/L | NA | | 1.8 | U | **1.8** | J | NA | | NA | | 1.9 | U | NA | | NA | | NA | | NA | |
| PFC_IDA | N-Methylperfluoroocatane Sulfonamidoacetic Acid (MeFOSAA) | ng/L | NA | | 3 | U | 2.7 | U | NA | | NA | | 3.1 | U | NA | | NA | | NA | | NA | |
| PFC_IDA | Perfluorobutane sulfonic acid (PFBS) | ng/L | NA | | **1.5** | J | **2.6** | | NA | | NA | | **1.2** | J | NA | | NA | | NA | | NA | |
| PFC_IDA | Perfluorodecanoic acid (PFDA) | ng/L | NA | | **13** | | **35** | | NA | | NA | | **1.3** | JN | NA | | NA | | NA | | NA | |
| PFC_IDA | Perfluorododecanoic acid (PFDoA) | ng/L | NA | | **1.8** | J | **2.2** | | NA | | NA | | 0.55 | U | NA | | NA | | NA | | NA | |
| PFC_IDA | Perfluoroheptanoic acid (PFHpA) | ng/L | NA | | **46** | | **130** | | NA | | NA | | **38** | | NA | | NA | | NA | | NA | |
| PFC_IDA | Perfluorohexane sulfonic acid (PFHxS) | ng/L | NA | | **11** | | **38** | | NA | | NA | | 2 | UB | NA | | NA | | NA | | NA | |
| PFC_IDA | Perfluorohexanoic acid (PFHxA) | ng/L | NA | | **69** | | **180** | | NA | | NA | | **41** | | NA | | NA | | NA | | NA | |
| PFC_IDA | Perfluorononanoic acid (PFNA) | ng/L | NA | | **15** | | **90** | | NA | | NA | | **3.0** | | NA | | NA | | NA | | NA | |
| PFC_IDA | Perfluorooctanesulfonic acid (PFOS) | ng/L | NA | | **71** | | **320** | | NA | | NA | | **2.2** | | NA | | NA | | NA | | NA | |
| PFC_IDA | Perfluorooctanoic acid (PFOA) | ng/L | NA | | **150** | | **440** | D | NA | | NA | | **11** | | NA | | NA | | NA | | NA | |
| PFC_IDA | Perfluorotetradecanoic acid (PFTeA) | ng/L | NA | | 1.9 | UB | 0.26 | U | NA | | NA | | 2 | UB | NA | | NA | | NA | | NA | |
| PFC_IDA | Perfluorotridecanoic acid (PFTrDA) | ng/L | NA | | **1.3** | J | 1.2 | U | NA | | NA | | 1.3 | U | NA | | NA | | NA | | NA | |
| PFC_IDA | Perfluoroundecanoic acid (PFUdA) | ng/L | NA | | **5.5** | | **13** | | NA | | NA | | **1.9** | J | NA | | NA | | NA | | NA | |
| SM2320B | Alkalinity | mg/L | **66** | | NA | | NA | | **240** | | NA | | NA | | NA | | **250** | | **250** | | NA | |
| SM2540C | Total Dissolved Solids | mg/L | **180** | | NA | | NA | | **540** | | NA | | NA | | NA | | **610** | | **590** | | NA | |
| SM2540D | Total Suspended Solids | mg/L | **47** | | **2.0** | J | **4.0** | J | **34** | | **41** | | NA | | **23** | | **6.5** | | **11** | | **3.5** | J |
| SM4500-H-B | pH | pH units | 6.5 | J | NA | | NA | | 7.8 | | NA | | NA | | NA | | 7.9 | | 7.9 | | NA | |
| SW9060 | Total Organic Carbon 2 | mg/L | **12** | | NA | | NA | | **38** | | NA | | NA | | NA | | **12** | | **12** | | NA | |
| WS-LC-0025 | N-Ethyl Perfluorooctane Sulfonamidoacetic Acid (EtFOSAA) | ng/L | **3.6** | J | NA | | NA | | 1.6 | U | 2 | U | NA | | NA | | 1.6 | U | 1.6 | U | 1.9 | U |
| WS-LC-0025 | N-Methylperfluoroocatane Sulfonamidoacetic Acid (MeFOSAA) | ng/L | 3.1 | U | NA | | NA | | 2.6 | U | 3.3 | U | NA | | NA | | 2.6 | U | 2.6 | U | 3.1 | U |
| WS-LC-0025 | Perfluorobutane sulfonic acid (PFBS) | ng/L | **20** | | NA | | NA | | **2.6** | | **1.5** | J | NA | | NA | | **3.9** | | **3.9** | | **3.0** | |
| WS-LC-0025 | Perfluorodecanoic acid (PFDA) | ng/L | **48** | | NA | | NA | | **1.0** | J | 0.33 | U | NA | | NA | | 0.26 | U | 0.26 | U | 0.31 | U |
| WS-LC-0025 | Perfluorododecanoic acid (PFDoA) | ng/L | **4.0** | | NA | | NA | | 0.46 | U | 0.58 | U | NA | | NA | | **0.48** | J | 0.46 | U | 0.55 | U |
| WS-LC-0025 | Perfluoroheptanoic acid (PFHpA) | ng/L | **270** | | NA | | NA | | **43** | | **25** | | NA | | NA | | **21** | | **20** | | **18** | |
| WS-LC-0025 | Perfluorohexane sulfonic acid (PFHxS) | ng/L | **97** | | NA | | NA | | 1.7 | UB | 2.1 | UB | NA | | NA | | 1.7 | UB | 1.7 | UB | 2 | UB |
| WS-LC-0025 | Perfluorohexanoic acid (PFHxA) | ng/L | **370** | | NA | | NA | | **38** | | **31** | | NA | | NA | | **37** | | **32** | | **33** | |
| WS-LC-0025 | Perfluorononanoic acid (PFNA) | ng/L | **76** | | NA | | NA | | **6.1** | | **2.1** | | NA | | NA | | **0.56** | J | **0.58** | J | **0.55** | J |
| WS-LC-0025 | Perfluorooctanesulfonic acid (PFOS) | ng/L | **290** | | NA | | NA | | **5.6** | | **2.0** | J | NA | | NA | | **2.0** | | **1.7** | | **1.5** | J |
| WS-LC-0025 | Perfluorooctanoic acid (PFOA) | ng/L | **490** | D | NA | | NA | | **30** | | **12** | | NA | | NA | | **13** | | **12** | | **23** | |
| WS-LC-0025 | Perfluorotetradecanoic acid (PFTeA) | ng/L | **1.1** | J | NA | | NA | | 0.24 | U | 0.31 | U | NA | | NA | | 0.24 | U | 0.24 | U | 0.29 | U |
| WS-LC-0025 | Perfluorotridecanoic acid (PFTrDA) | ng/L | **3.4** | | NA | | NA | | 1.1 | U | 1.4 | U | NA | | NA | | **1.2** | J | 1.1 | U | 1.3 | U |
| WS-LC-0025 | Perfluoroundecanoic acid (PFUdA) | ng/L | **21** | | NA | | NA | | **0.99** | J | 1.2 | U | NA | | NA | | **2.9** | | 0.91 | U | 1.1 | U |

**Notes:**
**Detections are in bold.**
Non-detect values are method detection limit.
CAS = Chemical Abstracts Service
FD = field duplicate sample type
mg/L = milligrams per liter
N = normal sample type
NA = not applicable
ng/L = nanograms per liter

**Laboratory Flag:**
U = The compound was analyzed for but not detected. The associated value is the compound quantitation limit.

**Laboratory Qualifiers**:
D = Dilution required for sample analysis.
J = The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+ = The result is an estimated quantity. The associated numerical value is expected to have a positive or high bias.
JN = The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification. The associated numerical value is an estimated concentration only.
UB = The compound is considered non-detect at the listed value due to associated blank contamination.
UJ = The compound was not detected above the reported sample method detection limit. However, the reported limit is approximate and may or may not represent the actual method detection limit.

**Table 13**
**Surface Water Analytical Results**
**Interim Site Investigation Report**
**Marinette, Wisconsin**

| | | Location | SW-29 (continued) | | SW-30 | | | | | | | | SW-31 | | | | | | SW-32 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Sample ID | SW-29 (040219) | | SW-30 (07112018) | | SW-30 (101618) | | DUP-1 (101618) | | SW-30 (040219) | | SW-31 (07112018) | | SW-31 (101618) | | SW-31 (040219) | | SW-32 (07122018) | | SW-32 (101718) | | SW-32 (040219) | |
| | | Sample Date | 4/2/2019 | | 7/11/2018 | | 10/16/2018 | | 10/16/2018 | | 4/2/2019 | | 7/11/2018 | | 10/16/2018 | | 4/2/2019 | | 7/12/2018 | | 10/17/2018 | | 4/2/2019 | |
| | | Sample Type | N | | N | | N | | FD | | N | | N | | N | | N | | N | | N | | N | |
| Method | Chemical Name | Units | Result | Qualifier | Result | Qualifier | Result | Qualifier | Result | Qualifier | Result | Qualifier | Result | Qualifier | Result | Qualifier | Result | Qualifier | Result | Qualifier | Result | Qualifier | Result | Qualifier |
| CASC-SOP CTS-10.22.0 | Perfluorobutane sulfonic acid (PFBS) | ng/L | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | |
| CASC-SOP CTS-10.22.0 | Perfluoroheptanoic acid (PFHpA) | ng/L | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | |
| CASC-SOP CTS-10.22.0 | Perfluorohexane sulfonic acid (PFHxS) | ng/L | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | |
| CASC-SOP CTS-10.22.0 | Perfluorononanoic acid (PFNA) | ng/L | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | |
| CASC-SOP CTS-10.22.0 | Perfluorooctanesulfonic acid (PFOS) | ng/L | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | |
| CASC-SOP CTS-10.22.0 | Perfluorooctanoic acid (PFOA) | ng/L | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | |
| PFC_IDA | N-Ethyl Perfluorooctane Sulfonamidoacetic Acid (EtFOSAA) | ng/L | 1.9 | U | NA | | NA | | NA | | 1.9 | U | NA | | NA | | 1.9 | U | NA | | NA | | 1.9 | U |
| PFC_IDA | N-Methylperfluorooctane Sulfonamidoacetic Acid (MeFOSAA) | ng/L | 3.1 | U | NA | | NA | | NA | | 3.1 | U | NA | | NA | | 3.1 | U | NA | | NA | | 3.1 | U |
| PFC_IDA | Perfluorobutane sulfonic acid (PFBS) | ng/L | **2.4** | | NA | | NA | | NA | | **1.1** | J | NA | | NA | | **2.6** | | NA | | NA | | **2.7** | |
| PFC_IDA | Perfluorodecanoic acid (PFDA) | ng/L | 0.31 | U | NA | | NA | | NA | | 0.31 | U | NA | | NA | | **1.8** | J | NA | | NA | | **7.7** | |
| PFC_IDA | Perfluorododecanoic acid (PFDoA) | ng/L | 0.54 | U | NA | | NA | | NA | | 0.54 | U | NA | | NA | | 0.55 | U | NA | | NA | | **1.9** | J |
| PFC_IDA | Perfluoroheptanoic acid (PFHpA) | ng/L | **17** | | NA | | NA | | NA | | **13** | | NA | | NA | | **21** | | NA | | NA | | **16** | |
| PFC_IDA | Perfluorohexane sulfonic acid (PFHxS) | ng/L | 2 | UB | NA | | NA | | NA | | 2 | UB | NA | | NA | | **1.7** | J | NA | | NA | | **2.6** | |
| PFC_IDA | Perfluorohexanoic acid (PFHxA) | ng/L | **35** | | NA | | NA | | NA | | **18** | | NA | | NA | | **28** | | NA | | NA | | **22** | |
| PFC_IDA | Perfluorononanoic acid (PFNA) | ng/L | **0.73** | J | NA | | NA | | NA | | **1.4** | J | NA | | NA | | **3.2** | | NA | | NA | | **6.1** | |
| PFC_IDA | Perfluorooctanesulfonic acid (PFOS) | ng/L | **1.1** | JN | NA | | NA | | NA | | **3.0** | | NA | | NA | | **4.2** | | NA | | NA | | **4.2** | |
| PFC_IDA | Perfluorooctanoic acid (PFOA) | ng/L | **49** | | NA | | NA | | NA | | **19** | | NA | | NA | | **12** | | NA | | NA | | **17** | |
| PFC_IDA | Perfluorotetradecanoic acid (PFTeA) | ng/L | 2 | UB | NA | | NA | | NA | | 0.29 | U | NA | | NA | | 0.29 | U | NA | | NA | | 2 | UB |
| PFC_IDA | Perfluorotridecanoic acid (PFTrDA) | ng/L | 1.3 | U | NA | | NA | | NA | | 1.3 | U | NA | | NA | | 1.3 | U | NA | | NA | | 1.3 | U |
| PFC_IDA | Perfluoroundecanoic acid (PFUdA) | ng/L | 1.1 | U | NA | | NA | | NA | | 1.1 | U | NA | | NA | | **1.6** | J | NA | | NA | | **5.1** | |
| SM2320B | Alkalinity | mg/L | NA | | **130** | | NA | | NA | | NA | | **120** | | NA | | NA | | **220** | | NA | | NA | |
| SM2540C | Total Dissolved Solids | mg/L | NA | | **310** | | NA | | NA | | NA | | **160** | | NA | | NA | | **680** | | NA | | NA | |
| SM2540D | Total Suspended Solids | mg/L | **5.0** | | **16** | | **20** | | **25** | | **13** | | **76** | | **39** | | **290** | | **3.0** | J | **8.0** | | **12** | |
| SM4500-H-B | pH | pH units | NA | | 7.8 | | NA | | NA | | NA | | 8.2 | | NA | | NA | | 7.7 | | NA | | NA | |
| SW9060 | Total Organic Carbon 2 | mg/L | NA | | **9.1** | | NA | | NA | | NA | | **6.8** | | NA | | NA | | **14** | | NA | | NA | |
| WS-LC-0025 | N-Ethyl Perfluorooctane Sulfonamidoacetic Acid (EtFOSAA) | ng/L | NA | | 1.9 | U | 2.1 | U | 1.9 | U | NA | | **2.7** | J | 2 | U | NA | | 1.6 | U | 1.9 | U | NA | |
| WS-LC-0025 | N-Methylperfluorooctane Sulfonamidoacetic Acid (MeFOSAA) | ng/L | NA | | 3 | U | 3.3 | U | 3.2 | U | NA | | 3.4 | U | 3.3 | U | NA | | 2.5 | U | 3.1 | U | NA | |
| WS-LC-0025 | Perfluorobutane sulfonic acid (PFBS) | ng/L | NA | | **1.2** | J | **6.1** | | **5.8** | | NA | | **0.85** | J | **3.8** | | NA | | **5.6** | | **7.8** | | NA | |
| WS-LC-0025 | Perfluorodecanoic acid (PFDA) | ng/L | NA | | **0.51** | J | 0.33 | U | **0.35** | J | NA | | **0.57** | J | 0.33 | U | NA | | **0.31** | J | **0.45** | J | NA | |
| WS-LC-0025 | Perfluorododecanoic acid (PFDoA) | ng/L | NA | | 0.54 | U | 0.59 | U | 0.56 | U | NA | | 0.61 | U | 0.59 | U | NA | | 0.45 | U | 0.55 | U | NA | |
| WS-LC-0025 | Perfluoroheptanoic acid (PFHpA) | ng/L | NA | | **8.6** | | **29** | | **28** | | NA | | **6.1** | | **15** | | NA | | **15** | | **15** | | NA | |
| WS-LC-0025 | Perfluorohexane sulfonic acid (PFHxS) | ng/L | NA | | **2.4** | | 2.2 | UB | 2 | UB | NA | | **2.6** | | 2.1 | UB | NA | | **3.5** | | **2.5** | | NA | |
| WS-LC-0025 | Perfluorohexanoic acid (PFHxA) | ng/L | NA | | **15** | | **35** | | **33** | | NA | | **12** | | **19** | | NA | | **23** | | **23** | | NA | |
| WS-LC-0025 | Perfluorononanoic acid (PFNA) | ng/L | NA | | **3.3** | | **2.5** | | **1.6** | J | NA | | **3.3** | | **1.3** | J | NA | | **1.5** | J | **2.0** | | NA | |
| WS-LC-0025 | Perfluorooctanesulfonic acid (PFOS) | ng/L | NA | | **7.9** | | **2.1** | J | **2.4** | | NA | | **9.7** | | **5.4** | | NA | | **6.0** | | **5.3** | | NA | |
| WS-LC-0025 | Perfluorooctanoic acid (PFOA) | ng/L | NA | | **58** | | **16** | | **15** | | NA | | **58** | | **12** | | NA | | **18** | | **18** | | NA | |
| WS-LC-0025 | Perfluorotetradecanoic acid (PFTeA) | ng/L | NA | | 0.28 | U | 0.31 | U | 0.3 | U | NA | | 0.32 | U | 0.31 | U | NA | | 0.24 | U | 0.29 | U | NA | |
| WS-LC-0025 | Perfluorotridecanoic acid (PFTrDA) | ng/L | NA | | 1.3 | U | 1.4 | U | 1.3 | U | NA | | 1.4 | U | 1.4 | U | NA | | 1.1 | U | 1.3 | U | NA | |
| WS-LC-0025 | Perfluoroundecanoic acid (PFUdA) | ng/L | NA | | 1.1 | U | 1.2 | U | 1.1 | U | NA | | 1.2 | U | 1.2 | U | NA | | 0.9 | U | 1.1 | U | NA | |

**Notes:**
**Detections are in bold.**
Non-detect values are method detection limit.
CAS = Chemical Abstracts Service
FD = field duplicate sample type
mg/L = milligrams per liter
N = normal sample type
NA = not applicable
ng/L = nanograms per liter

**Laboratory Flag:**
U = The compound was analyzed for but not detected. The associated value is the compound quantitation limit.

**Laboratory Qualifiers**:
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J+ = The result is an estimated quantity. The associated numerical value is expected to have a positive or high bias.
JN = The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification. The associated numerical value is an estimated concentration only.
UB = The compound is considered non-detect at the listed value due to associated blank contamination.
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**Table 13**
**Surface Water Analytical Results**
**Interim Site Investigation Report**
**Marinette, Wisconsin**

| | | Location | SW-33 | | | | | | SW-34 | | | | | | | | SW-35 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Sample ID | SW-33 (071318) | | SW-33 (101718) | | SW-33 (040219) | | SW-34 (07162018) | | SW-34 (101618) | | SW-34 (040219) | | DUP-02 (040219) | | SW-35 (07162018) | | SW-35 (101718) | | SW-35 (040219) | |
| | | Sample Date | 7/13/2018 | | 10/17/2018 | | 4/2/2019 | | 7/16/2018 | | 10/16/2018 | | 4/2/2019 | | 4/2/2019 | | 7/16/2018 | | 10/17/2018 | | 4/2/2019 | |
| | | Sample Type | N | | N | | N | | N | | N | | N | | FD | | N | | N | | N | |
| Method | Chemical Name | Units | Result | Qualifier | Result | Qualifier | Result | Qualifier | Result | Qualifier | Result | Qualifier | Result | Qualifier | Result | Qualifier | Result | Qualifier | Result | Qualifier | Result | Qualifier |
| CASC-SOP CTS-10.22.0 | Perfluorobutane sulfonic acid (PFBS) | ng/L | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | |
| CASC-SOP CTS-10.22.0 | Perfluoroheptanoic acid (PFHpA) | ng/L | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | |
| CASC-SOP CTS-10.22.0 | Perfluorohexane sulfonic acid (PFHxS) | ng/L | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | |
| CASC-SOP CTS-10.22.0 | Perfluorononanoic acid (PFNA) | ng/L | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | |
| CASC-SOP CTS-10.22.0 | Perfluorooctanesulfonic acid (PFOS) | ng/L | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | |
| CASC-SOP CTS-10.22.0 | Perfluorooctanoic acid (PFOA) | ng/L | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | |
| PFC_IDA | N-Ethyl Perfluorooctane Sulfonamidoacetic Acid (EtFOSAA) | ng/L | NA | | NA | | 1.9 | U | NA | | NA | | 1.9 | U | 1.9 | U | NA | | NA | | 1.9 | U |
| PFC_IDA | N-Methylperfluorooctane Sulfonamidoacetic Acid (MeFOSAA) | ng/L | NA | | NA | | 3.1 | U | NA | | NA | | 3 | U | 3.1 | U | NA | | NA | | 3 | U |
| PFC_IDA | Perfluorobutane sulfonic acid (PFBS) | ng/L | NA | | NA | | **1.6** | J | NA | | NA | | **2.3** | | **2.3** | | NA | | NA | | **0.81** | J |
| PFC_IDA | Perfluorodecanoic acid (PFDA) | ng/L | NA | | NA | | **3.5** | | NA | | NA | | **1.6** | J | **1.7** | J | NA | | NA | | 0.3 | U |
| PFC_IDA | Perfluorododecanoic acid (PFDoA) | ng/L | NA | | NA | | 0.55 | U | NA | | NA | | 0.54 | U | 0.55 | U | NA | | NA | | 0.54 | U |
| PFC_IDA | Perfluoroheptanoic acid (PFHpA) | ng/L | NA | | NA | | **30** | | NA | | NA | | **13** | | **13** | | NA | | NA | | **7.7** | |
| PFC_IDA | Perfluorohexane sulfonic acid (PFHxS) | ng/L | NA | | NA | | **8.8** | | NA | | NA | | **3.1** | | **3.0** | | NA | | NA | | 2 | UB |
| PFC_IDA | Perfluorohexanoic acid (PFHxA) | ng/L | NA | | NA | | **38** | | NA | | NA | | **15** | | **15** | | NA | | NA | | **9.7** | |
| PFC_IDA | Perfluorononanoic acid (PFNA) | ng/L | NA | | NA | | **11** | | NA | | NA | | **4.3** | | **4.2** | | NA | | NA | | **0.97** | J |
| PFC_IDA | Perfluorooctanesulfonic acid (PFOS) | ng/L | NA | | NA | | **17** | | NA | | NA | | **9.4** | | **9.7** | | NA | | NA | | **1.4** | JN |
| PFC_IDA | Perfluorooctanoic acid (PFOA) | ng/L | NA | | NA | | **69** | | NA | | NA | | **18** | | **20** | | NA | | NA | | **7.6** | |
| PFC_IDA | Perfluorotetradecanoic acid (PFTeA) | ng/L | NA | | NA | | 0.29 | U | NA | | NA | | 0.28 | U | 0.29 | U | NA | | NA | | 0.28 | U |
| PFC_IDA | Perfluorotridecanoic acid (PFTrDA) | ng/L | NA | | NA | | 1.3 | U | NA | | NA | | 1.3 | U | 1.3 | U | NA | | NA | | 1.3 | U |
| PFC_IDA | Perfluoroundecanoic acid (PFUdA) | ng/L | NA | | NA | | **1.3** | J | NA | | NA | | 1.1 | U | 1.1 | U | NA | | NA | | 1.1 | U |
| SM2320B | Alkalinity | mg/L | **160** | | NA | | NA | | **140** | | NA | | NA | | NA | | **170** | | NA | | NA | |
| SM2540C | Total Dissolved Solids | mg/L | **360** | | NA | | NA | | **350** | | NA | | NA | | NA | | **370** | | NA | | NA | |
| SM2540D | Total Suspended Solids | mg/L | **2.5** | J | 1.9 | U | **5.5** | | **5.0** | | **3.5** | J | **6.5** | | **6.5** | | **12** | | 1.9 | U | **2.5** | J |
| SM4500-H-B | pH | pH units | 7.5 | | NA | | NA | | 8.0 | | NA | | NA | | NA | | 7.4 | | NA | | NA | |
| SW9060 | Total Organic Carbon 2 | mg/L | **9.2** | | NA | | NA | | **7.6** | | NA | | NA | | NA | | **10** | | NA | | NA | |
| WS-LC-0025 | N-Ethyl Perfluorooctane Sulfonamidoacetic Acid (EtFOSAA) | ng/L | 1.7 | U | 1.9 | U | NA | | 1.7 | U | 2 | U | NA | | NA | | 1.6 | U | 1.9 | U | NA | |
| WS-LC-0025 | N-Methylperfluorooctane Sulfonamidoacetic Acid (MeFOSAA) | ng/L | 2.7 | U | 3.1 | U | NA | | 2.7 | U | 3.2 | U | NA | | NA | | 2.6 | U | 3.1 | U | NA | |
| WS-LC-0025 | Perfluorobutane sulfonic acid (PFBS) | ng/L | **1.9** | | **2.8** | | NA | | **3.0** | | **3.0** | | NA | | NA | | **0.88** | J | **0.71** | J | NA | |
| WS-LC-0025 | Perfluorodecanoic acid (PFDA) | ng/L | **5.1** | | **1.7** | J | NA | | **1.0** | J | **1.1** | J | NA | | NA | | 0.26 | U | 0.31 | U | NA | |
| WS-LC-0025 | Perfluorododecanoic acid (PFDoA) | ng/L | 0.48 | U | 0.54 | U | NA | | 0.49 | U | 0.57 | U | NA | | NA | | 0.47 | U | 0.55 | U | NA | |
| WS-LC-0025 | Perfluoroheptanoic acid (PFHpA) | ng/L | **24** | | **40** | | NA | | **3.4** | | **17** | | NA | | NA | | **2.2** | | **5.2** | | NA | |
| WS-LC-0025 | Perfluorohexane sulfonic acid (PFHxS) | ng/L | **8.6** | | **14** | | NA | | 1.8 | UB | **4.8** | | NA | | NA | | 1.7 | UB | 2 | UB | NA | |
| WS-LC-0025 | Perfluorohexanoic acid (PFHxA) | ng/L | **31** | | **51** | | NA | | **4.4** | | **20** | | NA | | NA | | **3.1** | | **5.1** | | NA | |
| WS-LC-0025 | Perfluorononanoic acid (PFNA) | ng/L | **11** | | **9.9** | | NA | | **1.2** | J | **3.9** | | NA | | NA | | 0.23 | U | **0.45** | J | NA | |
| WS-LC-0025 | Perfluorooctanesulfonic acid (PFOS) | ng/L | **27** | | **13** | | NA | | **4.4** | | **7.1** | | NA | | NA | | **2.6** | | **1.2** | J | NA | |
| WS-LC-0025 | Perfluorooctanoic acid (PFOA) | ng/L | **76** | | **89** | | NA | | **7.2** | | **23** | | NA | | NA | | **49** | | **6.8** | | NA | |
| WS-LC-0025 | Perfluorotetradecanoic acid (PFTeA) | ng/L | 0.25 | U | 0.29 | U | NA | | 0.26 | U | 0.3 | U | NA | | NA | | 0.25 | U | 0.29 | U | NA | |
| WS-LC-0025 | Perfluorotridecanoic acid (PFTrDA) | ng/L | 1.1 | U | 1.3 | U | NA | | 1.1 | U | 1.3 | U | NA | | NA | | 1.1 | U | 1.3 | U | NA | |
| WS-LC-0025 | Perfluoroundecanoic acid (PFUdA) | ng/L | **3.8** | | 1.1 | U | NA | | 0.97 | U | 1.1 | U | NA | | NA | | 0.93 | U | 1.1 | U | NA | |

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**Table 13**
**Surface Water Analytical Results**
**Interim Site Investigation Report**
**Marinette, Wisconsin**

| | | Location | SW-36 | | | | | | SW-37 | | | | | | | | | | SW-38 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Sample ID | SW-36 (07162018) | | SW-36 (101618) | | SW-36 (040219) | | SW-37 (041019) | | SW-37 (051519) | | DUP-01 (051519) | | SW-37-10022019 | | DUP-01-10022019 | | SW-38 (041019) | | SW-38 (051519) | |
| | | Sample Date | 7/16/2018 | | 10/16/2018 | | 4/2/2019 | | 4/10/2019 | | 5/15/2019 | | 5/15/2019 | | 10/2/2019 | | 10/2/2019 | | 4/10/2019 | | 5/15/2019 | |
| | | Sample Type | N | | N | | N | | N | | N | | FD | | N | | FD | | N | | N | |
| Method | Chemical Name | Units | Result | Qualifier | Result | Qualifier | Result | Qualifier | Result | Qualifier | Result | Qualifier | Result | Qualifier | Result | Qualifier | Result | Qualifier | Result | Qualifier | Result | Qualifier |
| CASC-SOP CTS-10.22.0 | Perfluorobutane sulfonic acid (PFBS) | ng/L | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | |
| CASC-SOP CTS-10.22.0 | Perfluoroheptanoic acid (PFHpA) | ng/L | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | |
| CASC-SOP CTS-10.22.0 | Perfluorohexane sulfonic acid (PFHxS) | ng/L | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | |
| CASC-SOP CTS-10.22.0 | Perfluorononanoic acid (PFNA) | ng/L | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | |
| CASC-SOP CTS-10.22.0 | Perfluorooctanesulfonic acid (PFOS) | ng/L | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | |
| CASC-SOP CTS-10.22.0 | Perfluorooctanoic acid (PFOA) | ng/L | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | |
| PFC_IDA | N-Ethyl Perfluorooctane Sulfonamidoacetic Acid (EtFOSAA) | ng/L | NA | | NA | | 1.9 | U | 1.8 | U | 1.9 | U | 1.8 | U | 1.8 | U | 1.7 | U | 1.8 | U | 1.9 | U |
| PFC_IDA | N-Methylperfluorooctane Sulfonamidoacetic Acid (MeFOSAA) | ng/L | NA | | NA | | 3.1 | U | 2.9 | U | 3 | U | 3 | U | 2.9 | U | 2.8 | U | 2.9 | U | 3 | U |
| PFC_IDA | Perfluorobutane sulfonic acid (PFBS) | ng/L | NA | | NA | | **2.2** | | **1.8** | J | **3.2** | JN | 0.19 | U | **2.5** | | **2.4** | JN | 1.9 | UB | 0.2 | U |
| PFC_IDA | Perfluorodecanoic acid (PFDA) | ng/L | NA | | NA | | **18** | | 0.29 | U | 0.3 | U | 0.3 | U | 0.29 | U | 0.28 | U | 0.29 | U | 0.3 | U |
| PFC_IDA | Perfluorododecanoic acid (PFDoA) | ng/L | NA | | NA | | **0.64** | J | 0.52 | U | 0.54 | U | 0.53 | U | 0.51 | U | 0.49 | U | 0.52 | U | 0.54 | U |
| PFC_IDA | Perfluoroheptanoic acid (PFHpA) | ng/L | NA | | NA | | **74** | | **4.4** | | **5.0** | | **5.0** | | **5.1** | | **4.8** | | **3.5** | | **3.5** | |
| PFC_IDA | Perfluorohexane sulfonic acid (PFHxS) | ng/L | NA | | NA | | **21** | | 1.9 | UB | 2 | UB | 1.9 | UB | 1.9 | UB | 1.8 | UB | 1.9 | UB | 2 | UB |
| PFC_IDA | Perfluorohexanoic acid (PFHxA) | ng/L | NA | | NA | | **84** | | **5.4** | | **5.9** | | **5.8** | | **5.7** | | **6.0** | | 4.6 | UB | **5.2** | |
| PFC_IDA | Perfluorononanoic acid (PFNA) | ng/L | NA | | NA | | **37** | | **0.55** | J | **0.56** | J | **0.58** | J | **0.74** | J | **0.69** | J | **0.48** | JN | **0.38** | JN |
| PFC_IDA | Perfluorooctanesulfonic acid (PFOS) | ng/L | NA | | NA | | **77** | | **1.6** | JN | **1.8** | JN | **1.6** | J | 2.1 | UB | 2.3 | UB | 0.51 | U | 0.53 | U |
| PFC_IDA | Perfluorooctanoic acid (PFOA) | ng/L | NA | | NA | | **150** | | **6.2** | | **6.2** | | **6.5** | | **6.7** | | **6.6** | | **40** | | **51** | |
| PFC_IDA | Perfluorotetradecanoic acid (PFTeA) | ng/L | NA | | NA | | 0.29 | U | 0.27 | U | 0.28 | U | 0.28 | U | 0.27 | U | **0.48** | J | 0.28 | U | 0.28 | U |
| PFC_IDA | Perfluorotridecanoic acid (PFTrDA) | ng/L | NA | | NA | | 1.3 | U | 1.2 | U | 1.3 | U | 1.3 | U | 1.2 | U | 1.2 | U | 1.2 | U | 1.3 | U |
| PFC_IDA | Perfluoroundecanoic acid (PFUdA) | ng/L | NA | | NA | | **5.7** | | 1 | U | 1.1 | U | 1.1 | U | 1 | U | 0.98 | U | 1 | U | 1.1 | U |
| SM2320B | Alkalinity | mg/L | **290** | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | |
| SM2540C | Total Dissolved Solids | mg/L | **570** | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | |
| SM2540D | Total Suspended Solids | mg/L | **9.0** | | **3.5** | J | **2.0** | J | **3.5** | J | **5.5** | | NA | | **3.0** | J | **4.5** | J | **2.5** | J | **4.0** | J |
| SM4500-H-B | pH | pH units | 7.3 | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | |
| SW9060 | Total Organic Carbon 2 | mg/L | **12** | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | |
| WS-LC-0025 | N-Ethyl Perfluorooctane Sulfonamidoacetic Acid (EtFOSAA) | ng/L | 1.7 | U | 2 | U | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | |
| WS-LC-0025 | N-Methylperfluorooctane Sulfonamidoacetic Acid (MeFOSAA) | ng/L | 2.8 | U | 3.2 | U | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | |
| WS-LC-0025 | Perfluorobutane sulfonic acid (PFBS) | ng/L | **4.6** | | **6.1** | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | |
| WS-LC-0025 | Perfluorodecanoic acid (PFDA) | ng/L | **0.56** | J | **7.4** | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | |
| WS-LC-0025 | Perfluorododecanoic acid (PFDoA) | ng/L | 0.49 | U | 0.57 | U | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | |
| WS-LC-0025 | Perfluoroheptanoic acid (PFHpA) | ng/L | **9.3** | | **93** | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | |
| WS-LC-0025 | Perfluorohexane sulfonic acid (PFHxS) | ng/L | **2.9** | | **28** | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | |
| WS-LC-0025 | Perfluorohexanoic acid (PFHxA) | ng/L | **9.4** | | **120** | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | |
| WS-LC-0025 | Perfluorononanoic acid (PFNA) | ng/L | **1.5** | J | **28** | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | |
| WS-LC-0025 | Perfluorooctanesulfonic acid (PFOS) | ng/L | **3.9** | | **45** | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | |
| WS-LC-0025 | Perfluorooctanoic acid (PFOA) | ng/L | **17** | | **140** | | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | |
| WS-LC-0025 | Perfluorotetradecanoic acid (PFTeA) | ng/L | 0.26 | U | 0.3 | U | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | |
| WS-LC-0025 | Perfluorotridecanoic acid (PFTrDA) | ng/L | 1.2 | U | 1.3 | U | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | |
| WS-LC-0025 | Perfluoroundecanoic acid (PFUdA) | ng/L | 0.99 | U | **1.8** | J | NA | | NA | | NA | | NA | | NA | | NA | | NA | | NA | |

**Notes:**
**Detections are in bold.**
Non-detect values are method detection limit.
CAS = Chemical Abstracts Service
FD = field duplicate sample type
mg/L = milligrams per liter
N = normal sample type
NA = not applicable
ng/L = nanograms per liter

**Laboratory Flag:**
U = The compound was analyzed for but not detected. The associated value is the compound quantitation limit.

**Laboratory Qualifiers**:
D = Dilution required for sample analysis.
J = The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+ = The result is an estimated quantity. The associated numerical value is expected to have a positive or high bias.
JN = The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification. The associated numerical value is an estimated concentration only.
UB = The compound is considered non-detect at the listed value due to associated blank contamination.
UJ = The compound was not detected above the reported sample method detection limit. However, the reported limit is approximate and may or may not represent the actual method detection limit.

**Table 13**
**Surface Water Analytical Results**
**Interim Site Investigation Report**
**Marinette, Wisconsin**

| | | Location | | |
|---|---|---|---|---|
| | | Sample ID | SW-38-10022019 | |
| | | Sample Date | 10/2/2019 | |
| | | Sample Type | N | |
| Method | Chemical Name | Units | Result | Qualifier |
| CASC-SOP CTS-10.22.0 | Perfluorobutane sulfonic acid (PFBS) | ng/L | NA | |
| CASC-SOP CTS-10.22.0 | Perfluoroheptanoic acid (PFHpA) | ng/L | NA | |
| CASC-SOP CTS-10.22.0 | Perfluorohexane sulfonic acid (PFHxS) | ng/L | NA | |
| CASC-SOP CTS-10.22.0 | Perfluorononanoic acid (PFNA) | ng/L | NA | |
| CASC-SOP CTS-10.22.0 | Perfluorooctanesulfonic acid (PFOS) | ng/L | NA | |
| CASC-SOP CTS-10.22.0 | Perfluorooctanoic acid (PFOA) | ng/L | NA | |
| PFC_IDA | N-Ethyl Perfluorooctane Sulfonamidoacetic Acid (EtFOSAA) | ng/L | 1.7 | U |
| PFC_IDA | N-Methylperfluoroocatane Sulfonamidoacetic Acid (MeFOSAA) | ng/L | 2.7 | U |
| PFC_IDA | Perfluorobutane sulfonic acid (PFBS) | ng/L | 0.18 | U |
| PFC_IDA | Perfluorodecanoic acid (PFDA) | ng/L | 0.27 | U |
| PFC_IDA | Perfluorododecanoic acid (PFDoA) | ng/L | 0.48 | U |
| PFC_IDA | Perfluoroheptanoic acid (PFHpA) | ng/L | **3.6** | |
| PFC_IDA | Perfluorohexane sulfonic acid (PFHxS) | ng/L | 1.8 | UB |
| PFC_IDA | Perfluorohexanoic acid (PFHxA) | ng/L | **5.4** | |
| PFC_IDA | Perfluorononanoic acid (PFNA) | ng/L | **0.30** | J |
| PFC_IDA | Perfluorooctanesulfonic acid (PFOS) | ng/L | 1.8 | UB |
| PFC_IDA | Perfluorooctanoic acid (PFOA) | ng/L | **49** | |
| PFC_IDA | Perfluorotetradecanoic acid (PFTeA) | ng/L | 0.25 | U |
| PFC_IDA | Perfluorotridecanoic acid (PFTrDA) | ng/L | 1.1 | U |
| PFC_IDA | Perfluoroundecanoic acid (PFUdA) | ng/L | 0.96 | U |
| SM2320B | Alkalinity | mg/L | NA | |
| SM2540C | Total Dissolved Solids | mg/L | NA | |
| SM2540D | Total Suspended Solids | mg/L | **2.0** | J |
| SM4500-H-B | pH | pH units | NA | |
| SW9060 | Total Organic Carbon 2 | mg/L | NA | |
| WS-LC-0025 | N-Ethyl Perfluorooctane Sulfonamidoacetic Acid (EtFOSAA) | ng/L | NA | |
| WS-LC-0025 | N-Methylperfluoroocatane Sulfonamidoacetic Acid (MeFOSAA) | ng/L | NA | |
| WS-LC-0025 | Perfluorobutane sulfonic acid (PFBS) | ng/L | NA | |
| WS-LC-0025 | Perfluorodecanoic acid (PFDA) | ng/L | NA | |
| WS-LC-0025 | Perfluorododecanoic acid (PFDoA) | ng/L | NA | |
| WS-LC-0025 | Perfluoroheptanoic acid (PFHpA) | ng/L | NA | |
| WS-LC-0025 | Perfluorohexane sulfonic acid (PFHxS) | ng/L | NA | |
| WS-LC-0025 | Perfluorohexanoic acid (PFHxA) | ng/L | NA | |
| WS-LC-0025 | Perfluorononanoic acid (PFNA) | ng/L | NA | |
| WS-LC-0025 | Perfluorooctanesulfonic acid (PFOS) | ng/L | NA | |
| WS-LC-0025 | Perfluorooctanoic acid (PFOA) | ng/L | NA | |
| WS-LC-0025 | Perfluorotetradecanoic acid (PFTeA) | ng/L | NA | |
| WS-LC-0025 | Perfluorotridecanoic acid (PFTrDA) | ng/L | NA | |
| WS-LC-0025 | Perfluoroundecanoic acid (PFUdA) | ng/L | NA | |

**Notes:**
**Detections are in bold.**
Non-detect values are method detection limit.
CAS = Chemical Abstracts Service
FD = field duplicate sample type
mg/L = milligrams per liter
N = normal sample type
NA = not applicable
ng/L = nanograms per liter

**Laboratory Flag:**
U = The compound was analyzed for but not detected. The associated value is the compound quantitation limit.

**Laboratory Qualifiers**:
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J = The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+ = The result is an estimated quantity. The associated numerical value is expected to have a positive or high bias.
JN = The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification. The associated numerical value is an estimated concentration only.
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UJ = The compound was not detected above the reported sample method detection limit. However, the reported limit is approximate and may or may not represent the actual method detection limit.

**Table 14**
**Sediment Analytical Results**
**Interim Site Investigation Report**
**Marinette, Wisconsin**

| Chemical Name | Location | SD-01 | SD-02 | SD-03 | SD-04 | SD-05 | SD-06 | SD-07 | SD-08 | SD-08 | SD-09 | SD-10 | SD-11 | SD-12A | SD-12B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Sample Date | 6/12/2018 | 6/12/2018 | 6/12/2018 | 6/12/2018 | 6/13/2018 | 6/13/2018 | 6/13/2018 | 6/13/2018 | 6/13/2018 | 6/13/2018 | 6/13/2018 | 6/14/2018 | 6/14/2018 | 6/14/2018 |
| | Sample Type | N | N | N | N | N | N | N | N | FD | N | N | N | N | N |
| | Unit | | | | | | | | | | | | | | |
| Ethylperfluorooctane sulfonamido acetate (EtFOSAA) | µg/kg | <3.4 | <3.1 | <2.7 | <2.8 | <2.6 | <5.5 | <2.7 | <3.9 | <3.6 | <3.6 | **2.1 J** | <5.3 | **1.2 J** | **6.0 J** |
| Methylperfluorooctane sulfonamido acetate (MeFOSAA) | µg/kg | <3.4 | <3.1 | <2.7 | <2.8 | <2.6 | <5.5 | <2.7 | <3.9 | <3.6 | <3.6 | <4.0 | <5.3 | <3.5 | <9.0 |
| Perfluorobutane sulfonic acid (PFBS) | µg/kg | <0.34 | <0.31 | <0.27 | <0.28 | <0.26 | <0.55 | <0.27 | <0.39 | <0.36 | <0.36 | <0.40 | <0.53 | **0.046 J** | **0.13 J** |
| Perfluorodecanoic acid (PFDA) | µg/kg | **0.29 J** | **0.048 J** | **0.049 J** | **0.032 J** | <0.26 | <0.55 | <0.27 | <0.39 | <0.36 | **0.071 J** | **3.0** | **21** | **8.2** | **59** |
| Perfluorododecanoic acid (PFDoA) | µg/kg | **0.27 J** | <0.31 | <0.27 | <0.28 | <0.26 | **0.19 J** | <0.27 | <0.39 | <0.36 | **0.24 J** | **3.8** | **17** | **20** | **130 D** |
| Perfluoroheptanoic acid (PFHpA) | µg/kg | **0.24 J** | <0.31 | **0.12 J** | **0.047 J** | <0.26 | <0.55 | <0.27 | <0.39 | <0.36 | **0.068 J** | **0.56** | **3.3** | **2.5** | **13** |
| Perfluorohexane sulfonic acid (PFHxS) | µg/kg | <0.34 UB | <0.31 UB | <0.27 UB | <0.49 UBJ | <0.26 | <0.55 UB | <0.27 | <0.39 UB | <0.36 UB | <0.36 UB | <0.40 UB | **3.0** | <1.0 UB | **4.4** |
| Perfluorohexanoic acid (PFHxA) | µg/kg | **1.2** | **0.24 J** | **0.29** | **0.21 J** | <0.26 | <0.55 | <0.27 | <0.39 | <0.36 | **0.44** | **1.9** | **5.9** | **7.2** | **49** |
| Perfluorononanoic acid (PFNA) | µg/kg | **0.59** | **0.17 J** | **0.20 J** | **0.064 J** | <0.26 | <0.55 | <0.27 | <0.39 | <0.36 | <0.36 | **0.44** | **11** | **3.5** | **13** |
| Perfluorooctanesulfonic acid (PFOS) | µg/kg | **4.4** | **1.6** | **0.69** | **0.54 J** | <0.64 | <1.4 | <0.67 | <0.97 | <0.91 | <0.90 | **12** | **70 D** | **32** | **100 D** |
| Perfluorooctanoic acid (PFOA) | µg/kg | **4.0** | **0.89** | **3.7** | **0.43** | <0.26 | <0.55 | <0.27 | <0.39 | <0.36 | **2.0** | **13** | **23** | **16** | **86** |
| Perfluorotetradecanoic acid (PFTeA) | µg/kg | <0.34 | <0.31 | <0.27 | <0.28 | <0.26 | **0.19 J** | <0.27 | <0.39 | <0.36 | <0.36 | **1.1** | **4.5** | **15** | **120 D** |
| Perfluorotridecanoic acid (PFTriA) | µg/kg | <0.34 | <0.31 | <0.27 | <0.28 | <0.26 | **0.15 J** | <0.27 | <0.39 | <0.36 | <0.36 | <0.40 | **7.9** | **19** | **120 D** |
| Perfluoroundecanoic acid (PFUnA) | µg/kg | **1.0** | **0.15 J** | **0.058 J** | **0.051 J** | <0.26 | **0.47 J** | <0.27 | **0.12 J** | **0.099 J** | **0.27 J** | **8.8** | **32** | **18** | **67** |
| Total Organic Carbon | mg/kg | **20,000 J** | **9,300** | **3,000** | **2,000** | **16,000** | **45,000** | **26,000** | **12,000 J** | **26,000 J** | **15,000** | **12,000** | **25,000** | **16,000** | **49,000** |

**Notes:**
**Detections are in bold.**
< = analyte not detected above corresponding method detection limit
FD = field duplicate sample type
µg/kg = micrograms per kilogram
mg/kg = milligrams pe kilogram
N = normal sample type

**Laboratory Qualifiers**:
U = The compound was analyzed for but not detected. The associated value is the compound quantitation limit
D = Dilution required for sample analysis.
J = The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
UB = The compound is considered non-detect at the listed value due to associated blank contamination.
UJ = The compound was not detected above the reported sample method detection limit. However, the reported limit is approximate and may or may not represent the actual method detection limit.

**Table 14**
**Sediment Analytical Results**
**Interim Site Investigation Report**
**Marinette, Wisconsin**

| Chemical Name | Location | SD-12C | SD-13 | SD-14A | SD-14B | SD-14B | SD-14C | SD-15 | SD-16A | SD-16B | SD-16B | SD-16C | SD-17A | SD-17B | SD-17C | SD-18 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Sample Date | 6/14/2018 | 6/14/2018 | 6/14/2018 | 6/14/2018 | 6/14/2018 | 6/14/2018 | 6/14/2018 | 6/14/2018 | 6/14/2018 | 6/14/2018 | 6/14/2018 | 6/14/2018 | 6/14/2018 | 6/14/2018 | 6/14/2018 |
| | Sample Type | N | N | N | N | FD | N | N | N | N | FD | N | N | N | N | N |
| | Unit | | | | | | | | | | | | | | | |
| Ethylperfluorooctane sulfonamido acetate (EtFOSAA) | µg/kg | **0.71 J** | **2.9 J** | <3.8 | <3.5 | <3.0 | **2.7 J** | <2.5 | **2.7 J** | **1.7 J** | **0.83 J** | **1.9 J** | **8.7** | **3.4** | **9.7** | **3.1 J** |
| Methylperfluorooctane sulfonamido acetate (MeFOSAA) | µg/kg | <3.6 | <6.9 | <3.8 | <3.5 | <3.0 | <8.4 | <2.5 | <4.0 J | <2.8 | <2.6 | <3.6 | <3.1 | <2.8 | <2.9 | <3.6 |
| Perfluorobutane sulfonic acid (PFBS) | µg/kg | <0.36 | <0.69 | <0.38 | <0.35 | <0.30 | <0.84 | <0.25 | <0.40 | <0.28 | <0.26 | <0.36 | <0.31 | <0.28 | <0.29 | <0.36 |
| Perfluorodecanoic acid (PFDA) | µg/kg | **8.4** | **16** | **2.0** | **2.5** | **2.3** | **9.8** | **1.5** | **5.7** | **5.2** | **5.1** | **4.7** | **8.8** | **3.6** | **8.5** | **15** |
| Perfluorododecanoic acid (PFDoA) | µg/kg | **12** | **54** | **5.1** | **4.6** | **5.4** | **37** | **4.1** | **7.5 J** | **4.4** | **3.4** | **3.8** | **5.5** | **2.2** | **6.0** | **3.1** |
| Perfluoroheptanoic acid (PFHpA) | µg/kg | **1.9** | **6.1** | **1.3** | **1.6** | **1.3** | **5.3** | **0.68** | **2.6** | **3.6 J** | **1.9 J** | **3.6** | **1.8** | **1.8** | **3.7** | **5.5** |
| Perfluorohexane sulfonic acid (PFHxS) | µg/kg | <0.79 UB | **2.5** | <0.38 UB | <0.38 UB | <0.41 UB | **1.6** | <0.35 UB | <1.3 UB | <1.1 UB | <0.50 UB | **2.4** | <1.3 UB | <1.1 UB | **2.5** | <0.69 UB |
| Perfluorohexanoic acid (PFHxA) | µg/kg | **5.2** | **19** | **4.6** | **7.2** | **5.7** | **14** | **3.5** | **9.4** | **10 J** | **5.7 J** | **12** | **3.7** | **2.8** | **6.2** | **9.1** |
| Perfluorononanoic acid (PFNA) | µg/kg | **2.9** | **5.5** | **0.64** | **0.81** | **0.78** | **3.1** | **0.47** | **2.4** | **1.0** | **1.5** | **1.6** | **2.6** | **1.4** | **3.1** | **2.4** |
| Perfluorooctanesulfonic acid (PFOS) | µg/kg | **24** | **57** | **2.7** | **2.2** | **2.3** | **7.5** | **3.3** | **28** | **9.7** | **8.2** | **14** | **35 D** | **17** | **44 D** | **5.8** |
| Perfluorooctanoic acid (PFOA) | µg/kg | **12** | **51** | **15** | **21** | **19** | **46** | **7.8 J** | **53 D** | **270 DJ** | **120 DJ** | **190 D** | **22** | **11** | **32 D** | **550 D** |
| Perfluorotetradecanoic acid (PFTeA) | µg/kg | **7.9** | **30** | **6.3** | **8.4** | **8.2** | **32** | **2.7** | **5.0 J** | **1.8** | **1.8** | **2.8** | **2.3** | **0.75** | **3.0** | **0.66** |
| Perfluorotridecanoic acid (PFTriA) | µg/kg | **9.5** | **52** | **12** | **19** | **21** | **60** | **5.6 J** | **8.4** | **3.9** | **4.8** | **6.9** | **5.0** | <0.28 | **4.4** | <0.36 |
| Perfluoroundecanoic acid (PFUnA) | µg/kg | **15** | **38** | **1.6** | **1.7** | **1.7** | **8.2** | **5.2 J** | **11** | **6.8** | **5.1** | **5.6** | **12** | **5.6** | **12** | **3.2 J** |
| Total Organic Carbon | mg/kg | **30,000** | **110,000** | **7,800** | **15,000 J** | **4,200 J** | **140,000** | <1,000 | **8,700** | **1,300** | **3,300** | **5,200** | **16,000** | **12,000** | **5,700** | **11,000** |

**Notes:**
**Detections are in bold.**
< = analyte not detected above corresponding method detection limit
FD = field duplicate sample type
µg/kg = micrograms per kilogram
mg/kg = milligrams pe kilogram
N = normal sample type

**Laboratory Qualifiers**:
U = The compound was analyzed for but not detected. The associated value is the compound quantitation limit
D = Dilution required for sample analysis.
J = The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
UB = The compound is considered non-detect at the listed value due to associated blank contamination.
UJ = The compound was not detected above the reported sample method detection limit. However, the reported limit is approximate and may or may not represent the actual method detection limit.

**Table 15**
**Stormwater Analytical Results**
**Interim Site Investigation Report**
**Marinette, Wisconsin**

| | | Location | SW-01 | | SW-04 | | SW-04 | | SW-FTC-01 | | SW-FTC-01 | | SW-FTC-01 | | SW-FTC-01 | | SW-FTC-02 | | SW-FTC-02 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Sample Date | 3/27/2018 | | 3/27/2018 | | 3/27/2018 | | 4/5/2019 | | 5/22/2019 | | 10/21/2019 | | 10/21/2019 | | 4/5/2019 | | 5/22/2019 | |
| | | Sample Type | N | | N | | FD | | N | | N | | N | | FD | | N | | N | |
| Method | Chemical Name | Unit | Result | Qualifier | Result | Qualifier | Result | Qualifier | Result | Qualifier | Result | Qualifier | Result | Qualifier | Result | Qualifier | Result | Qualifier | Result | Qualifier |
| PFC_IDA | N-Ethyl Perfluorooctane Sulfonamidoacetic Acid (EtFOSAA) | ng/L | NA | | NA | | NA | | 36 | U | 36 | U | 37 | U | 38 | U | 1.8 | U | **2.9** | J |
| PFC_IDA | N-Methylperfluoroocatane Sulfonamidoacetic Acid (MeFOSAA) | ng/L | NA | | NA | | NA | | 59 | U | 59 | U | 61 | U | 62 | U | 3 | U | 3 | U |
| PFC_IDA | Perfluorobutane sulfonic acid (PFBS) | ng/L | NA | | NA | | NA | | 3.8 | U | 3.8 | U | 3.9 | U | 4 | U | 0.19 | U | 0.19 | U |
| PFC_IDA | Perfluorodecanoic acid (PFDA) | ng/L | NA | | NA | | NA | | **230** | | **290** | D | **300** | D | **290** | D | **21** | | **60** | |
| PFC_IDA | Perfluorododecanoic acid (PFDoA) | ng/L | NA | | NA | | NA | | **17** | J | **31** | DJ | **60** | D | **56** | D | **11** | | **28** | J |
| PFC_IDA | Perfluoroheptanoic acid (PFHpA) | ng/L | NA | | NA | | NA | | **800** | | **1,400** | D | **1,200** | D | **1,200** | D | **58** | | **1,200** | D |
| PFC_IDA | Perfluorohexane sulfonic acid (PFHxS) | ng/L | NA | | NA | | NA | | 3.2 | U | 3.2 | U | 39 | UB | 40 | UB | **3.2** | | **83** | |
| PFC_IDA | Perfluorohexanoic acid (PFHxA) | ng/L | NA | | NA | | NA | | **4,100** | | **7,400** | D | **6,000** | D | **6,300** | D | **190** | | **6,900** | D |
| PFC_IDA | Perfluorononanoic acid (PFNA) | ng/L | NA | | NA | | NA | | **150** | | **190** | D | **160** | D | **150** | D | **13** | | **82** | |
| PFC_IDA | Perfluorooctanesulfonic acid (PFOS) | ng/L | NA | | NA | | NA | | **13** | J | **19** | DJ | **29** | DJ | **30** | DJ | **11** | | **89** | |
| PFC_IDA | Perfluorooctanoic acid (PFOA) | ng/L | NA | | NA | | NA | | **930** | | **1,400** | D | **1,200** | D | **1,200** | D | **50** | | **1,200** | D |
| PFC_IDA | Perfluorotetradecanoic acid (PFTeA) | ng/L | NA | | NA | | NA | | 38 | UB | **8.1** | DJ | **20** | DJ | **23** | DJ | **4.8** | | **29** | J |
| PFC_IDA | Perfluorotridecanoic acid (PFTrDA) | ng/L | NA | | NA | | NA | | 25 | U | 25 | U | **25** | U | 26 | U | **3.6** | | **18** | J |
| PFC_IDA | Perfluoroundecanoic acid (PFUdA) | ng/L | NA | | NA | | NA | | 21 | U | **40** | D | **46** | D | **45** | D | **11** | | **14** | J |
| SM2540D | Total Suspended Solids | mg/L | **28** | | **4.5** | J | **6.0** | | NA | | **3.0** | J | **3** | J | | | **53** | | **140** | |
| WS-LC-0025 | N-Ethyl Perfluorooctane Sulfonamidoacetic Acid (EtFOSAA) | ng/L | NA | | NA | | NA | | NA | | NA | | | | | | NA | | NA | |
| WS-LC-0025 | N-Methylperfluoroocatane Sulfonamidoacetic Acid (MeFOSAA) | ng/L | NA | | NA | | NA | | NA | | NA | | | | | | NA | | NA | |
| WS-LC-0025 | Perfluorobutane sulfonic acid (PFBS) | ng/L | **3.1** | | 2 | U | 2 | U | NA | | NA | | | | | | NA | | NA | |
| WS-LC-0025 | Perfluorodecanoic acid (PFDA) | ng/L | NA | | NA | | NA | | NA | | NA | | | | | | NA | | NA | |
| WS-LC-0025 | Perfluorododecanoic acid (PFDoA) | ng/L | NA | | NA | | NA | | NA | | NA | | | | | | NA | | NA | |
| WS-LC-0025 | Perfluoroheptanoic acid (PFHpA) | ng/L | **470** | D | **1,700** | D | **1,600** | D | NA | | NA | | | | | | NA | | NA | |
| WS-LC-0025 | Perfluorohexane sulfonic acid (PFHxS) | ng/L | **110** | | 1.7 | U | 1.7 | U | NA | | NA | | | | | | NA | | NA | |
| WS-LC-0025 | Perfluorohexanoic acid (PFHxA) | ng/L | NA | | NA | | NA | | NA | | NA | | | | | | NA | | NA | |
| WS-LC-0025 | Perfluorononanoic acid (PFNA) | ng/L | **270** | | **270** | DJ | **260** | DJ | NA | | NA | | | | | | NA | | NA | |
| WS-LC-0025 | Perfluorooctanesulfonic acid (PFOS) | ng/L | **1,200** | D | **40** | D | **41** | D | NA | | NA | | | | | | NA | | NA | |
| WS-LC-0025 | Perfluorooctanoic acid (PFOA) | ng/L | **860** | D | **710** | D | **670** | D | NA | | NA | | | | | | NA | | NA | |
| WS-LC-0025 | Perfluorotetradecanoic acid (PFTeA) | ng/L | NA | | NA | | NA | | NA | | NA | | | | | | NA | | NA | |
| WS-LC-0025 | Perfluorotridecanoic acid (PFTrDA) | ng/L | NA | | NA | | NA | | NA | | NA | | | | | | NA | | NA | |
| WS-LC-0025 | Perfluoroundecanoic acid (PFUdA) | ng/L | NA | | NA | | NA | | NA | | NA | | | | | | NA | | NA | |

**Notes:**
**Detections are in bold.**
< = analyte not detected above corresponding method detection limit
FD = field duplicate sample type
mg/L = micrograms per liter
N = normal sample type
NA = not applicable
ng/L = nanograms per liter

**Laboratory Qualifiers**:
D = Dilution required for sample analysis.
J = The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample
J+ = The result is an estimated quantity. The associated numerical value is expected to have a positive or high bias.
U = The compound was analyzed for but not detected. The associated value is the compound quantitation limit
UB = Compound considered non-detect at the listed value due to associated blank contamination.
UJ = The compound was not detected above the reported sample method detection limit. However, the reported limit is approximate and may or may not represent the actual method detection limit.

**Table 15**
**Stormwater Analytical Results**
**Interim Site Investigation Report**
**Marinette, Wisconsin**

| | | Location | SW-FTC-02 | | SW-FTC-02 | | SW-FTC-03 | | SW-FTC-03 | | SW-FTC-03 | | SW-FTC-04 | | OS-01 | | OS-02 | | OS-02 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Sample Date | 5/22/2019 | | 10/21/2019 | | 4/5/2019 | | 5/22/2019 | | 10/21/2019 | | 5/22/2019 | | 11/19/2019 | | 11/19/2019 | | 11/19/2019 | |
| | | Sample Type | FD | | N | N | N | N | N | N | N | N | N | N | N | | N | | FD | |
| Method | Chemical Name | Unit | Result | Qualifier | Result | Qualifier | Result | Qualifier | Result | Qualifier | Result | Qualifier | Result | Qualifier | Result | Qualifier | Result | Qualifier | Result | Qualifier |
| PFC_IDA | N-Ethyl Perfluorooctane Sulfonamidoacetic Acid (EtFOSAA) | ng/L | 36 | U | **2.4** | J | **110** | J | **410** | D | **490** | J | **2.6** | J | <1.8 | | <1.8 | | <1.8 | |
| PFC_IDA | N-Methylperfluoroocatane Sulfonamidoacetic Acid (MeFOSAA) | ng/L | 59 | U | 3 | U | 31 | U | **7.3** | J | **310** | U | 3 | U | <2.9 | | <2.9 | | <2.9 | |
| PFC_IDA | Perfluorobutane sulfonic acid (PFBS) | ng/L | 3.8 | U | 0.19 | U | **13** | J | **29** | | **38** | J | **2.2** | | <0.19 | | 4.1 | | 3.8 | |
| PFC_IDA | Perfluorodecanoic acid (PFDA) | ng/L | **65** | D | **15** | | **340** | | **550** | D | **520** | | **25** | | 0.60 | J | 1.6 | J | 1.8 | J |
| PFC_IDA | Perfluorododecanoic acid (PFDoA) | ng/L | **25** | DJ | **5.2** | | **7.2** | J | **9.4** | J+ | 54 | U | **4.9** | | 0.66 | J | <0.51 | | <0.52 | |
| PFC_IDA | Perfluoroheptanoic acid (PFHpA) | ng/L | **1,200** | D | **36** | | **1,400** | | **1,500** | D | **2,900** | | **350** | | 0.25 | J | 60 | | 64 | |
| PFC_IDA | Perfluorohexane sulfonic acid (PFHxS) | ng/L | **80** | D | **10** | | **680** | | **670** | D | **1,200** | | **34** | | 0.29 | J B | 7.9 | B | 8.3 | B |
| PFC_IDA | Perfluorohexanoic acid (PFHxA) | ng/L | **6,000** | D | **200** | | **1,900** | | **2,600** | D | **5,000** | | **970** | D | 0.54 | J | 94 | | 97 | |
| PFC_IDA | Perfluorononanoic acid (PFNA) | ng/L | **86** | D | **8.5** | | **520** | | **510** | D | **830** | | **34** | | <0.25 | | 7.3 | | 7.5 | |
| PFC_IDA | Perfluorooctanesulfonic acid (PFOS) | ng/L | **90** | D | **20** | | **1,400** | | **2,300** | D | **5,100** | | **55** | | 2.1 | | 9.5 | | 9.8 | |
| PFC_IDA | Perfluorooctanoic acid (PFOA) | ng/L | **1,200** | D | **230** | | **1,900** | | **2,700** | D | **6,400** | | **290** | | <0.80 | | 130 | | 130 | |
| PFC_IDA | Perfluorotetradecanoic acid (PFTeA) | ng/L | 5.6 | UJ | **3.1** | | 2.9 | U | **1.4** | J | 29 | U | **3.0** | | <0.27 | | <0.27 | | <0.27 | |
| PFC_IDA | Perfluorotridecanoic acid (PFTrDA) | ng/L | 25 | UJ | **2.9** | | 13 | U | **2.0** | | 130 | U | **2.7** | | <1.2 | | <1.2 | | <1.2 | |
| PFC_IDA | Perfluoroundecanoic acid (PFUdA) | ng/L | 21 | UJ | **5.2** | | **55** | | **130** | J+ | **170** | J | **6.3** | | 3.1 | | <1.0 | | <1.0 | |
| SM2540D | Total Suspended Solids | mg/L | NA | | **23** | | NA | | **6.5** | | **10** | | **3.0** | J | 2.5 | J | 46 | | 38 | |
| WS-LC-0025 | N-Ethyl Perfluorooctane Sulfonamidoacetic Acid (EtFOSAA) | ng/L | NA | | | | NA | | NA | | | | NA | | | | | | | |
| WS-LC-0025 | N-Methylperfluoroocatane Sulfonamidoacetic Acid (MeFOSAA) | ng/L | NA | | | | NA | | NA | | | | NA | | | | | | | |
| WS-LC-0025 | Perfluorobutane sulfonic acid (PFBS) | ng/L | NA | | | | NA | | NA | | | | NA | | | | | | | |
| WS-LC-0025 | Perfluorodecanoic acid (PFDA) | ng/L | NA | | | | NA | | NA | | | | NA | | | | | | | |
| WS-LC-0025 | Perfluorododecanoic acid (PFDoA) | ng/L | NA | | | | NA | | NA | | | | NA | | | | | | | |
| WS-LC-0025 | Perfluoroheptanoic acid (PFHpA) | ng/L | NA | | | | NA | | NA | | | | NA | | | | | | | |
| WS-LC-0025 | Perfluorohexane sulfonic acid (PFHxS) | ng/L | NA | | | | NA | | NA | | | | NA | | | | | | | |
| WS-LC-0025 | Perfluorohexanoic acid (PFHxA) | ng/L | NA | | | | NA | | NA | | | | NA | | | | | | | |
| WS-LC-0025 | Perfluorononanoic acid (PFNA) | ng/L | NA | | | | NA | | NA | | | | NA | | | | | | | |
| WS-LC-0025 | Perfluorooctanesulfonic acid (PFOS) | ng/L | NA | | | | NA | | NA | | | | NA | | | | | | | |
| WS-LC-0025 | Perfluorooctanoic acid (PFOA) | ng/L | NA | | | | NA | | NA | | | | NA | | | | | | | |
| WS-LC-0025 | Perfluorotetradecanoic acid (PFTeA) | ng/L | NA | | | | NA | | NA | | | | NA | | | | | | | |
| WS-LC-0025 | Perfluorotridecanoic acid (PFTrDA) | ng/L | NA | | | | NA | | NA | | | | NA | | | | | | | |
| WS-LC-0025 | Perfluoroundecanoic acid (PFUdA) | ng/L | NA | | | | NA | | NA | | | | NA | | | | | | | |

**Notes:**
**Detections are in bold.**
< = analyte not detected above corresponding method detection limit
FD = field duplicate sample type
mg/L = micrograms per liter
N = normal sample type
NA = not applicable
ng/L = nanograms per liter

**Laboratory Qualifiers**:
D = Dilution required for sample analysis.
J = The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample
J+ = The result is an estimated quantity. The associated numerical value is expected to have a positive or high bias.
U = The compound was analyzed for but not detected. The associated value is the compound quantitation limit
UB = Compound considered non-detect at the listed value due to associated blank contamination.
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**Table 15**
**Stormwater Analytical Results**
**Interim Site Investigation Report**
**Marinette, Wisconsin**

| Method | Chemical Name | Location | OS-03 | | OS-04 | |
|---|---|---|---|---|---|---|
| | | Sample Date | 11/21/2019 | | 11/21/2019 | |
| | | Sample Type | N | | N | |
| | | Unit | Result | Qualifier | Result | Qualifier |
| PFC_IDA | N-Ethyl Perfluorooctane Sulfonamidoacetic Acid (EtFOSAA) | ng/L | <1.7 | | <1.7 | |
| PFC_IDA | N-Methylperfluoroocatane Sulfonamidoacetic Acid (MeFOSAA) | ng/L | <2.7 | | <2.7 | |
| PFC_IDA | Perfluorobutane sulfonic acid (PFBS) | ng/L | <0.18 | | <0.18 | |
| PFC_IDA | Perfluorodecanoic acid (PFDA) | ng/L | 0.94 | J | 2.8 | |
| PFC_IDA | Perfluorododecanoic acid (PFDoA) | ng/L | 0.76 | J | 0.57 | J |
| PFC_IDA | Perfluoroheptanoic acid (PFHpA) | ng/L | 5.6 | | 31 | |
| PFC_IDA | Perfluorohexane sulfonic acid (PFHxS) | ng/L | 0.34 | J B | 0.33 | J B |
| PFC_IDA | Perfluorohexanoic acid (PFHxA) | ng/L | 25 | | 52 | |
| PFC_IDA | Perfluorononanoic acid (PFNA) | ng/L | 0.61 | J | 4.5 | |
| PFC_IDA | Perfluorooctanesulfonic acid (PFOS) | ng/L | 1.4 | J | <0.48 | |
| PFC_IDA | Perfluorooctanoic acid (PFOA) | ng/L | 2.0 | | 8.4 | |
| PFC_IDA | Perfluorotetradecanoic acid (PFTeA) | ng/L | 0.35 | J | 0.35 | J |
| PFC_IDA | Perfluorotridecanoic acid (PFTrDA) | ng/L | <1.1 | | <1.2 | |
| PFC_IDA | Perfluoroundecanoic acid (PFUdA) | ng/L | <0.96 | | 1.3 | J |
| SM2540D | Total Suspended Solids | mg/L | 16 | | 52 | |
| WS-LC-0025 | N-Ethyl Perfluorooctane Sulfonamidoacetic Acid (EtFOSAA) | ng/L | | | | |
| WS-LC-0025 | N-Methylperfluoroocatane Sulfonamidoacetic Acid (MeFOSAA) | ng/L | | | | |
| WS-LC-0025 | Perfluorobutane sulfonic acid (PFBS) | ng/L | | | | |
| WS-LC-0025 | Perfluorodecanoic acid (PFDA) | ng/L | | | | |
| WS-LC-0025 | Perfluorododecanoic acid (PFDoA) | ng/L | | | | |
| WS-LC-0025 | Perfluoroheptanoic acid (PFHpA) | ng/L | | | | |
| WS-LC-0025 | Perfluorohexane sulfonic acid (PFHxS) | ng/L | | | | |
| WS-LC-0025 | Perfluorohexanoic acid (PFHxA) | ng/L | | | | |
| WS-LC-0025 | Perfluorononanoic acid (PFNA) | ng/L | | | | |
| WS-LC-0025 | Perfluorooctanesulfonic acid (PFOS) | ng/L | | | | |
| WS-LC-0025 | Perfluorooctanoic acid (PFOA) | ng/L | | | | |
| WS-LC-0025 | Perfluorotetradecanoic acid (PFTeA) | ng/L | | | | |
| WS-LC-0025 | Perfluorotridecanoic acid (PFTrDA) | ng/L | | | | |
| WS-LC-0025 | Perfluoroundecanoic acid (PFUdA) | ng/L | | | | |

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**Detections are in bold.**
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**Table 16**
**Soil Gain Size Analysis Results**
**Interim Site Investigation Report**
**Marinette, Wisconsin**

| Location | Depth (feet) | Sample Date | % Gravel | % Sand | | | % Silt | % Clay |
|---|---|---|---|---|---|---|---|---|
| | | | | % Coarse Sand | % Medium Sand | % Fine Sand | | |
| SB-4 | Sand | 6/26/2016 | 0.3 | 0.2 | 1.7 | 90.7 | 6.3 | 0.9 |
| | Silt | 6/26/2016 | 1.7 | 0.8 | 5.4 | 11.5 | 63.6 | 17.0 |
| SB-16 | Sand | 6/24/2016 | 0.0 | 0 | 0.2 | 94.8 | 4.7 | 0.3 |
| | Silt | 6/24/2016 | 5.4 | 5.9 | 7.4 | 33.9 | 28.5 | 18.9 |
| VAP-26/ MW-101B | 72-75 | 6/12/2018 | 0 | 0 | 0.2 | 57.1 | 38.1 | 4.7 |
| | 78 | 6/12/2018 | 14.2 | 6.2 | 7 | 21.5 | 30.6 | 20.5 |
| | 84 | 6/12/2018 | 21.5 | 5.6 | 11.1 | 35.7 | 17.2 | 8.9 |
| VAP-27 | 79 | 6/22/2018 | 0 | 0 | 0.3 | 41.5 | 51.9 | 6.3 |
| | 83 | 6/22/2018 | 0 | 0 | 0.3 | 2 | 42.7 | 55 |
| VAP-28 | 44 | 8/15/2018 | 0 | 0 | 2.4 | 5.5 | 75.6 | 16.5 |
| | 68 | 8/15/2018 | 1.1 | 0.1 | 2.9 | 3.9 | 67.5 | 24.5 |
| | 88 | 8/16/2018 | 1.8 | 2.3 | 62.4 | 28.3 | 2.8 | 2.4 |
| | 95 | 8/16/2018 | 3.9 | 7.7 | 12.7 | 30.9 | 26.7 | 18.1 |
| VAP-29 | 27 | 6/26/2018 | 0 | 0 | 0.1 | 77.4 | 19.3 | 3.2 |
| | 53 | 6/27/2018 | 9.2 | 5 | 6.2 | 21.6 | 43.9 | 14.1 |
| | 74 | 6/27/2018 | 0 | 0.5 | 9.6 | 44.6 | 27.8 | 17.5 |
| VAP-30/ MW-100B | 58-60 | 8/7/2018 | 0 | 0 | 2.3 | 95.8 | 0.5 | 1.4 |
| | 69 | 8/7/2018 | 0 | 0 | 2.3 | 4.3 | 66.3 | 27.1 |
| | 74 | 8/8/2018 | 8.8 | 4.5 | 9.5 | 37.4 | 24 | 15.8 |
| | 80 | 8/8/2018 | 17.9 | 8.2 | 13.5 | 37.4 | 14.3 | 8.7 |
| MW-102B | 34 | 6/5/2018 | 22 | 5.8 | 7.2 | 26.8 | 25.1 | 13.1 |
| | 43 | 6/5/2018 | 2.1 | 3.8 | 4.7 | 17.2 | 32.4 | 39.8 |
| | 50 | 6/5/2018 | 0 | 0 | 0.6 | 11.6 | 39.4 | 48.4 |
| | 57 | 6/5/2018 | 14.2 | 7.6 | 9.3 | 24.8 | 28.2 | 15.9 |

**Notes:**
Grain size analysis was completed using ASTM Method D422.
Samples from SB-4 and SB-16 were collected from targeted stratigraphic units, not discrete depth intervals.

**Table 17**
**Soil Analytical Results**
**Interim Site Investigation Report**
**Marinette, Wisconsin**

| Method | Chemical Name | Location | FTC-59 | FTC-60 | FTC-62 | FTC-71 | FTC-72 | FTC-77 | FTC-82 | FTC-83 | SS-097 | | SS-098 | SS-099 | SS-100 | SS-101 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Sample Date | 10/23/2013 | 10/23/2013 | 10/23/2013 | 10/23/2013 | 10/23/2013 | 10/23/2013 | 4/21/2014 | 4/21/2014 | 8/31/2016 | 8/31/2016 | 8/31/2016 | 8/31/2016 | 8/31/2016 | 8/31/2016 |
| | | Depth (feet) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 8 | 3 | 3 | 3 | 3 |
| | | Sample Type | N | N | N | N | N | N | N | N | N | N | N | N | N | N |
| | | Unit | | | | | | | | | | | | | | |
| PFASs | Perfluorobutane Sulfonate (PFBS) | µg/kg | <10 | <12 | <5.3 | <25 | <4.9 | <4.8 | <5.4 | <5.2 | NA | NA | NA | NA | NA | NA |
| PFASs | Perfluorodecanesulfonic acid (PFDS) | µg/kg | <10 | <12 | <5.3 | <25 | <4.9 | <4.8 | <5.4 | <5.2 | NA | NA | NA | NA | NA | NA |
| PFASs | Perfluorodecanoic acid (PFDA) | µg/kg | <10 | <12 | <5.3 | <25 | <4.9 | **47.3** | <6.9 | <6.6 | NA | NA | NA | NA | NA | NA |
| PFASs | Perfluorododecanoic acid (PFDoA) | µg/kg | <10 | <12 | <5.3 | <25 | <4.9 | **18.2** | <5.4 | <5.2 | NA | NA | NA | NA | NA | NA |
| PFASs | Perfluoroheptanesulfonic Acid (PFHpS) | µg/kg | <10 | <12 | <5.3 | <25 | <4.9 | <4.8 | <5.4 | <5.2 | NA | NA | NA | NA | NA | NA |
| PFASs | Perfluoroheptanoic acid (PFHpA) | µg/kg | <10 | <12 | <5.3 | <25 | **16.4** | <4.8 | **5.8 J** | <5.2 | NA | NA | NA | NA | NA | NA |
| PFASs | Perfluorohexane sulfonic acid (PFHxS) | µg/kg | <10 | <12 | <5.3 | <25 | <4.9 | <4.8 | <5.4 | <5.2 | NA | NA | NA | NA | NA | NA |
| PFASs | Perfluorohexanoic acid (PFHxA) | µg/kg | <10 | <12 | <5.3 | <25 | **12.6** | **11.4 J** | <5.4 | <5.2 | NA | NA | NA | NA | NA | NA |
| PFASs | Perfluorononanoic acid (PFNA) | µg/kg | <10 | <12 | <5.3 | <25 | **5.4 J** | <4.8 | **113** | <6.0 | NA | NA | NA | NA | NA | NA |
| PFASs | Perfluorooctanesulfonic acid (PFOS) | µg/kg | <10 | **19.1 J** | <5.3 | **308** | **13.5** | **580** | **234** | <5.2 | NA | NA | NA | NA | NA | NA |
| PFASs | Perfluorooctanoic acid (PFOA) | µg/kg | **35.6** | **122** | **84.9** | <25 | **35.8** | **17.6** | **14.8** | **5.3 J** | NA | NA | NA | NA | NA | NA |
| PFASs | Perfluorotetradecanoic acid (PFTeA) | µg/kg | <10 | <12 | <5.3 | <25 | <4.9 | **6 J** | <5.4 | <5.2 | NA | NA | NA | NA | NA | NA |
| PFASs | Perfluorotridecanoic acid (PFTrDA) | µg/kg | <10 | <12 | <5.3 | <25 | <4.9 | **17.6** | <6.9 | <6.6 | NA | NA | NA | NA | NA | NA |
| PFASs | Perfluoroundecanoic acid (PFUdA) | µg/kg | <10 | <12 | **6.7 J** | <25 | <4.9 | **61.2** | **10.3 J** | <7.9 | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | 6:2 Fluorotelomer Sulfonic Acid (6:2 FTSA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | **62** | **31** | **10** | **110** | **44** | **24** |
| WS-LC-0025 | 8:2 Fluorotelomer Sulfonic Acid (8:2 FTSA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | **16** | **2.7** | **3.9** | **130** | **130** | **39** |
| WS-LC-0025 | N-Ethyl Perfluorooctane Sulfonamidoacetic Acid (EtFOSAA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | N-Methylperfluoroocatane Sulfonamidoacetic Acid (MeFOSAA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorobutane sulfonic acid (PFBS) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | **0.20 JBF1** | **0.19 JB** | **0.23 B** | **0.27 B** | **0.15 JB** | **0.35 B** |
| WS-LC-0025 | Perfluorobutanoic acid (PFBA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | **1.4** | **1.3** | **1.1** | **1.9** | **0.25** | **5.7** |
| WS-LC-0025 | Perfluorodecanesulfonic acid (PFDS) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | <0.082 U | <0.089 U | <0.082 U | <0.098 U | **0.17 J** | <0.093 U |
| WS-LC-0025 | Perfluorodecanoic acid (PFDA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | **3.1** | **0.21 J** | **0.29** | **5.0** | **0.90** | **11** |
| WS-LC-0025 | Perfluorododecanoic acid (PFDoA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | <0.14 U | <0.15 U | <0.14 U | <0.16 U | **0.97** | **0.27** |
| WS-LC-0025 | Perfluoroheptanesulfonic Acid (PFHpS) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | <0.13 U | <0.15 U | <0.14 U | **0.27** | <0.14 U | <0.15 U |
| WS-LC-0025 | Perfluoroheptanoic acid (PFHpA) | µg/kg | NA | NA | 1 | NA | NA | NA | NA | NA | **2.3** | **1.4** | **0.55** | **3.6** | **0.28** | **16** |
| WS-LC-0025 | Perfluorohexane sulfonic acid (PFHxS) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | **0.75** | **0.30** | **0.20 J** | **1.4** | **0.19 J** | **1.6** |
| WS-LC-0025 | Perfluorohexanoic acid (PFHxA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | **4.7** | **3.5** | **1.1** | **8.5** | **0.85** | **41** |
| WS-LC-0025 | Perfluorononanoic acid (PFNA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | **2.1** | **0.36** | <0.095 U | **3.9** | **0.18 J** | **4.9** |
| WS-LC-0025 | Perfluorooctane Sulfonamide (PFOSA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | **38** | **3.3** | **2.4** | **46** | **7.2** | **17** |
| WS-LC-0025 | Perfluorooctanesulfonic acid (PFOS) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | **29** | **2.4** | **1.5** | **34** | **1.4** | **17** |
| WS-LC-0025 | Perfluorooctanoic acid (PFOA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | **15 F1** | **3.4** | **35** | **250** | **25** | **1300** |
| WS-LC-0025 | Perfluoropentanoic acid (PFPeA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | **5.8** | **5.5** | **0.60** | **3.2** | **0.26** | **20** |
| WS-LC-0025 | Perfluorotetradecanoic acid (PFTeA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | <0.066 U | <0.072 U | <0.066 U | <0.079 U | **0.079 J** | <0.075 U |
| WS-LC-0025 | Perfluorotridecanoic acid (PFTrDA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | <0.11 U | <0.11 U | <0.11 U | <0.12 U | **5.1** | <0.12 U |
| WS-LC-0025 | Perfluoroundecanoic acid (PFUdA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | **0.84** | **0.41** | <0.12 U | **0.47** | **1.7** | **1.4** |
| PFC_IDA | N-Ethyl Perfluorooctane Sulfonamidoacetic Acid (EtFOSAA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | N-Methylperfluoroocatane Sulfonamidoacetic Acid (MeFOSAA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorobutane sulfonic acid (PFBS) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorodecanoic acid (PFDA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorododecanoic acid (PFDoA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluoroheptanoic acid (PFHpA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorohexane sulfonic acid (PFHxS) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |

Notes on Page 2.

**Table 17**
**Soil Analytical Results**
**Interim Site Investigation Report**
**Marinette, Wisconsin**

| Method | Chemical Name | Location | FTC-59 | FTC-60 | FTC-62 | FTC-71 | FTC-72 | FTC-77 | FTC-82 | FTC-83 | SS-097 | | SS-098 | SS-099 | SS-100 | SS-101 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Sample Date | 10/23/2013 | 10/23/2013 | 10/23/2013 | 10/23/2013 | 10/23/2013 | 10/23/2013 | 4/21/2014 | 4/21/2014 | 8/31/2016 | 8/31/2016 | 8/31/2016 | 8/31/2016 | 8/31/2016 | 8/31/2016 |
| | | Depth (feet) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 8 | 3 | 3 | 3 | 3 |
| | | Sample Type | N | N | N | N | N | N | N | N | N | N | N | N | N | N |
| | | Unit | | | | | | | | | | | | | | |
| PFASs | Perfluorobutane Sulfonate (PFBS) | µg/kg | <10 | <12 | <5.3 | <25 | <4.9 | <4.8 | <5.4 | <5.2 | NA | NA | NA | NA | NA | NA |
| PFASs | Perfluorodecanesulfonic acid (PFDS) | µg/kg | <10 | <12 | <5.3 | <25 | <4.9 | <4.8 | <5.4 | <5.2 | NA | NA | NA | NA | NA | NA |
| PFASs | Perfluorodecanoic acid (PFDA) | µg/kg | <10 | <12 | <5.3 | <25 | <4.9 | **47.3** | <6.9 | <6.6 | NA | NA | NA | NA | NA | NA |
| PFASs | Perfluorododecanoic acid (PFDoA) | µg/kg | <10 | <12 | <5.3 | <25 | <4.9 | **18.2** | <5.4 | <5.2 | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorohexanoic acid (PFHxA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorononanoic acid (PFNA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorooctanesulfonic acid (PFOS) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorooctanoic acid (PFOA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorotetradecanoic acid (PFTeA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorotridecanoic acid (PFTrDA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluoroundecanoic acid (PFUdA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |

**Notes:**
**Detections are in bold.**
< = analyte not detected above corresponding method detection limit
FD = field duplicate sample type
µg/kg = micrograms per kilogram
N = normal sample type
NA = not analyzed

**Laboratory Qualifiers:**
B = Compund was found in the blank and sample.
D = Concentration is based on a diluted sample analysis.
F1 = MS and/or MSD recovery is outside acceptance limits.
J = The result is a estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
U = The compound was analyzed for but not detected. The associated value is the compound quantitation limit.

**Table 17**
**Soil Analytical Results**
**Interim Site Investigation Report**
**Marinette, Wisconsin**

| Method | Chemical Name | Location | SS-102 | SS-103 | SS-104 | SS-105 | SS-106 | SS-106 | SS-107 | SS-108 | SS-109 | SS-110 | SS-113 | | SS-114 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Sample Date | 9/1/2016 | 9/1/2016 | 9/1/2016 | 9/1/2016 | 9/1/2016 | 9/1/2016 | 9/1/2016 | 9/1/2016 | 9/1/2016 | 9/1/2016 | 6/28/2018 | 6/28/2018 | 6/28/2018 |
| | | Depth (ft) | 3 | 3 | 3 | 2 | 1 | 8 | 3 | 3 | 3 | 3 | 0-0.5 | 7.5-8 | 0-0.5 |
| | | Sample Type | N | N | N | N | N | N | N | N | N | N | N | N | N |
| | | Units | | | | | | | | | | | | | |
| PFASs | Perfluorobutane Sulfonate (PFBS) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFASs | Perfluorodecanesulfonic acid (PFDS) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFASs | Perfluorodecanoic acid (PFDA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFASs | Perfluorododecanoic acid (PFDoA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFASs | Perfluoroheptanesulfonic Acid (PFHpS) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFASs | Perfluoroheptanoic acid (PFHpA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFASs | Perfluorohexane sulfonic acid (PFHxS) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFASs | Perfluorohexanoic acid (PFHxA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFASs | Perfluorononanoic acid (PFNA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFASs | Perfluorooctanesulfonic acid (PFOS) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFASs | Perfluorooctanoic acid (PFOA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFASs | Perfluorotetradecanoic acid (PFTeA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFASs | Perfluorotridecanoic acid (PFTrDA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFASs | Perfluoroundecanoic acid (PFUdA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | 6:2 Fluorotelomer Sulfonic Acid (6:2 FTSA) | µg/kg | **53** | <0.46 U | **57** | **13** | **2.1 J** | **7.7** | **59** | **39** | **49** | **37** | NA | NA | NA |
| WS-LC-0025 | 8:2 Fluorotelomer Sulfonic Acid (8:2 FTSA) | µg/kg | **54** | <0.80 U | **100** | **120 J** | **30** | **4.0** | **210** | **80** | **8.8** | **64** | NA | NA | NA |
| WS-LC-0025 | N-Ethyl Perfluorooctane Sulfonamidoacetic Acid (EtFOSAA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | **0.59 J** | **1.2 J** | **0.98 J** |
| WS-LC-0025 | N-Methylperfluoroocatane Sulfonamidoacetic Acid (MeFOSAA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | <0.47 U | <0.49 U | <0.45 U |
| WS-LC-0025 | Perfluorobutane sulfonic acid (PFBS) | µg/kg | **0.16 JB** | **0.17 JB** | **0.17 JB** | **0.17 JB** | **0.19 JB** | **0.18 JB** | **0.24 B** | **0.20 JB** | **0.18 JB** | **0.21 JB** | <0.030 U | **0.052 J** | <0.029 U |
| WS-LC-0025 | Perfluorobutanoic acid (PFBA) | µg/kg | **0.20 J** | **0.18 J** | **0.32** | **0.22** | **0.15 J** | **0.22 J** | **0.40** | **0.30** | **0.23 J** | **0.29** | NA | NA | NA |
| WS-LC-0025 | Perfluorodecanesulfonic acid (PFDS) | µg/kg | <0.086 U | <0.085 U | **0.27** | <0.077 U | <0.091 U | <0.097 U | <0.083 U | **0.21 J** | <0.096 U | **0.27** | NA | NA | NA |
| WS-LC-0025 | Perfluorodecanoic acid (PFDA) | µg/kg | **0.27** | **0.10 J** | **0.70** | **11** | **4.0** | **0.12 J** | **21** | **1.9** | **0.37** | **2.5** | **4.5** | **4.3** | **5.0** |
| WS-LC-0025 | Perfluorododecanoic acid (PFDoA) | µg/kg | **0.20 J** | <0.14 U | <0.14 U | <0.13 U | <0.15 U | <0.16 U | <0.14 U | **4.1** | <0.16 U | **5.5** | **0.65** | **0.16 J** | **0.11 J** |
| WS-LC-0025 | Perfluoroheptanesulfonic Acid (PFHpS) | µg/kg | <0.14 U | <0.14 U | <0.14 U | <0.13 U | <0.15 U | <0.16 U | **0.15 J** | <0.16 U | **0.17 J** | <0.16 U | NA | NA | NA |
| WS-LC-0025 | Perfluoroheptanoic acid (PFHpA) | µg/kg | <0.10 U | **0.37** | **0.90** | **1.3** | **0.31** | **0.30** | **0.93** | **0.65** | **1.5** | **0.82** | **0.76** | **2.7** | **1.7** |
| WS-LC-0025 | Perfluorohexane sulfonic acid (PFHxS) | µg/kg | <0.14 U | **0.21 J** | **0.26** | **0.23** | <0.15 U | <0.16 U | **1.8** | **0.23 J** | **0.23 J** | **0.24 J** | **0.46** | **2.2** | **0.52** |
| WS-LC-0025 | Perfluorohexanoic acid (PFHxA) | µg/kg | **0.54** | **0.32** | **1.5** | **1.2** | **0.81** | **1.1** | **3.5** | **1.5** | **0.92** | **1.7** | **1.3** | **3.9** | **1.2** |
| WS-LC-0025 | Perfluorononanoic acid (PFNA) | µg/kg | <0.099 U | **1.0** | **0.66** | **0.34** | **0.35** | <0.11 U | **0.88** | **1.5** | **15** | **2.9** | **2.0** | **1.6** | **5.3** |
| WS-LC-0025 | Perfluorooctane Sulfonamide (PFOSA) | µg/kg | **0.40** | **0.15 J** | **260** | **87** | **19** | **2.7** | **110** | **22** | **1.7** | **6.3** | NA | NA | NA |
| WS-LC-0025 | Perfluorooctanesulfonic acid (PFOS) | µg/kg | **0.22 J** | **2.8** | **14** | **380** | **8.8** | **1.3** | **190** | **11** | **45** | **19** | **85 D** | **9.0** | **21** |
| WS-LC-0025 | Perfluorooctanoic acid (PFOA) | µg/kg | **0.73** | **1.4** | **80** | **73** | **5.9** | **2.0** | **75** | **25** | **23** | **33** | **3.7** | **19** | **6.5** |
| WS-LC-0025 | Perfluoropentanoic acid (PFPeA) | µg/kg | **0.20 J** | **0.31** | **0.60** | **0.54** | **0.24 J** | **0.69** | **0.82** | **0.76** | **0.83** | **0.68** | NA | NA | NA |
| WS-LC-0025 | Perfluorotetradecanoic acid (PFTeA) | µg/kg | <0.069 U | <0.069 U | <0.069 U | <0.062 U | <0.073 U | <0.078 U | <0.067 U | **1.3** | <0.077 U | <0.077 U | **0.24** | <0.067 U | <0.062 U |
| WS-LC-0025 | Perfluorotridecanoic acid (PFTrDA) | µg/kg | <0.11 U | <0.11 U | **0.37** | <0.098 U | <0.12 U | <0.12 U | <0.11 U | **6.5** | <0.12 U | **4.7** | <0.061 U | <0.064 U | <0.059 U |
| WS-LC-0025 | Perfluoroundecanoic acid (PFUdA) | µg/kg | **0.20 J** | <0.13 U | **0.46** | **7.5** | **6.2** | **0.77** | **7.8** | **2.7** | <0.14 U | **3.4** | **3.2** | **2.4** | **2.0** |
| PFC_IDA | N-Ethyl Perfluorooctane Sulfonamidoacetic Acid (EtFOSAA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | N-Methylperfluoroocatane Sulfonamidoacetic Acid (MeFOSAA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorobutane sulfonic acid (PFBS) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorodecanoic acid (PFDA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorododecanoic acid (PFDoA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluoroheptanoic acid (PFHpA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorohexane sulfonic acid (PFHxS) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |

Notes on Page 4.

**Table 17**
**Soil Analytical Results**
**Interim Site Investigation Report**
**Marinette, Wisconsin**

| Method | Chemical Name | Location | SS-102 | SS-103 | SS-104 | SS-105 | SS-106 | SS-106 | SS-107 | SS-108 | SS-109 | SS-110 | SS-113 | | SS-114 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Sample Date | 9/1/2016 | 9/1/2016 | 9/1/2016 | 9/1/2016 | 9/1/2016 | 9/1/2016 | 9/1/2016 | 9/1/2016 | 9/1/2016 | 9/1/2016 | 6/28/2018 | 6/28/2018 | 6/28/2018 |
| | | Depth (ft) | 3 | 3 | 3 | 2 | 1 | 8 | 3 | 3 | 3 | 3 | 0-0.5 | 7.5-8 | 0-0.5 |
| | | Sample Type | N | N | N | N | N | N | N | N | N | N | N | N | N |
| | | Units | | | | | | | | | | | | | |
| PFASs | Perfluorobutane Sulfonate (PFBS) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFASs | Perfluorodecanesulfonic acid (PFDS) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFASs | Perfluorodecanoic acid (PFDA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFASs | Perfluorododecanoic acid (PFDoA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorohexanoic acid (PFHxA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorononanoic acid (PFNA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorooctanesulfonic acid (PFOS) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorooctanoic acid (PFOA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorotetradecanoic acid (PFTeA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorotridecanoic acid (PFTrDA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluoroundecanoic acid (PFUdA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |

**Notes:**
**Detections are in bold.**
< = analyte not detected above corresponding method detection limit
FD = field duplicate sample type
µg/kg = micrograms per kilogram
N = normal sample type
NA = not analyzed

**Laboratory Qualifiers:**
B = Compund was found in the blank and sample.
D = Concentration is based on a diluted sample analysis.
F1 = MS and/or MSD recovery is outside acceptance limits.
J = The result is a estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
U = The compound was analyzed for but not detected. The associated value is the compound quantitation limit.

**Table 17**
**Soil Analytical Results**
**Interim Site Investigation Report**
**Marinette, Wisconsin**

| Method | Chemical Name | Location | SS-114 | SS-115 | | SS-116 | | SS-117 | | | SS-118 | | SS-119 | | SS-120 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Sample Date | 6/28/2018 | 6/28/2018 | 6/28/2018 | 6/29/2018 | 6/29/2018 | 6/29/2018 | 6/29/2018 | 6/29/2018 | 6/29/2018 | 6/29/2018 | 7/23/2018 | 7/23/2018 | 6/29/2018 | 6/29/2018 |
| | | Depth (ft) | 7.5-8 | 0-0.5 | 1-1.5 | 0-0.5 | 3-4 | 0-0.5 | 3-4 | 3-4 | 0-1 | 7-8 | 0-1 | 7-8 | 0-1 | 7-8 |
| | | Sample Type | N | N | N | N | N | N | N | FD | N | N | N | N | N | N |
| | | Units | | | | | | | | | | | | | | |
| PFASs | Perfluorobutane Sulfonate (PFBS) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFASs | Perfluorodecanesulfonic acid (PFDS) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFASs | Perfluorodecanoic acid (PFDA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFASs | Perfluorododecanoic acid (PFDoA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFASs | Perfluoroheptanesulfonic Acid (PFHpS) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFASs | Perfluoroheptanoic acid (PFHpA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFASs | Perfluorohexane sulfonic acid (PFHxS) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFASs | Perfluorohexanoic acid (PFHxA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFASs | Perfluorononanoic acid (PFNA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFASs | Perfluorooctanesulfonic acid (PFOS) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFASs | Perfluorooctanoic acid (PFOA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFASs | Perfluorotetradecanoic acid (PFTeA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFASs | Perfluorotridecanoic acid (PFTrDA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFASs | Perfluoroundecanoic acid (PFUdA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | 6:2 Fluorotelomer Sulfonic Acid (6:2 FTSA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | 8:2 Fluorotelomer Sulfonic Acid (8:2 FTSA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | N-Ethyl Perfluorooctane Sulfonamidoacetic Acid (EtFOSAA) | µg/kg | **4.4** | <0.39 U | **0.51 J** | **0.92 J** | <0.42 U | **2.2 J** | <0.42 U | <0.42 U | **0.41 J** | <0.45 U | <0.45 U | <0.44 U | <0.47 U | <0.46 U |
| WS-LC-0025 | N-Methylperfluoroocatane Sulfonamidoacetic Acid (MeFOSAA) | µg/kg | <0.51 U | <0.41 U | <0.45 U | <0.43 U | <0.44 U | <0.46 U | <0.45 U | <0.44 U | <0.43 U | <0.48 U | <0.47 U | <0.47 U | <0.49 U | <0.48 U |
| WS-LC-0025 | Perfluorobutane sulfonic acid (PFBS) | µg/kg | <0.033 U | <0.026 U | <0.029 U | <0.028 U | <0.028 U | <0.029 U | <0.029 U | <0.028 U | <0.028 U | <0.031 U | <0.030 U | <0.030 U | <0.032 U | <0.031 U |
| WS-LC-0025 | Perfluorobutanoic acid (PFBA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorodecanesulfonic acid (PFDS) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorodecanoic acid (PFDA) | µg/kg | **1.0** | **0.80** | **0.61** | **1.4** | **0.72** | **6.9** | **0.41** | **0.84** | **1.8** | **0.15 J** | **0.88** | <0.026 U | **1.5** | <0.027 U |
| WS-LC-0025 | Perfluorododecanoic acid (PFDoA) | µg/kg | <0.087 U | **0.92** | **2.8** | **0.34** | **0.39 J** | **1.1** | <0.077 U | **0.10 J** | **0.27** | <0.082 U | **0.083 J** | <0.080 U | **0.22 J** | <0.083 U |
| WS-LC-0025 | Perfluoroheptanesulfonic Acid (PFHpS) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluoroheptanoic acid (PFHpA) | µg/kg | **0.92** | **0.25** | **0.16 J** | **0.50** | **0.37** | **1.4** | **0.080 J** | **0.071 J** | **0.47** | **2.4** | **2.1** | **0.11 J** | **1.3** | **0.26** |
| WS-LC-0025 | Perfluorohexane sulfonic acid (PFHxS) | µg/kg | **0.18 J** | **0.095 J** | **0.039 J** | <0.034 U | **0.045 J** | **0.35** | <0.036 U | <0.035 U | **0.18 J** | **0.54** | **0.13 J** | <0.037 U | **0.51** | **0.038 J** |
| WS-LC-0025 | Perfluorohexanoic acid (PFHxA) | µg/kg | **0.79** | **0.40** | **0.24** | **0.63** | **0.32** | **1.5** | **0.15 J** | **0.16 J** | **0.84** | **9.5** | **1.7** | **0.83 J** | **2.1** | **0.65** |
| WS-LC-0025 | Perfluorononanoic acid (PFNA) | µg/kg | **0.21 J** | **0.24** | **0.11 J** | **0.54** | **0.26** | **2.1** | **0.16 J** | **0.33** | **0.66** | **0.68** | **5.2** | **0.12 J** | **3.2** | **0.22 J** |
| WS-LC-0025 | Perfluorooctane Sulfonamide (PFOSA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorooctanesulfonic acid (PFOS) | µg/kg | **2.2** | **0.22 J** | **0.72** | **0.67** | **0.41 J** | **11** | <0.23 U | **1.4** | **7.9** | **1.2** | **2.3** | <0.24 U | **1.4** | <0.25 U |
| WS-LC-0025 | Perfluorooctanoic acid (PFOA) | µg/kg | **5.1** | **1.0** | **8.6** | **1.3** | **0.97** | **4.1** | **0.12 J** | **0.20 J** | **7.0** | **5.4** | **1.6** | **0.12 J** | **4.2** | **0.36** |
| WS-LC-0025 | Perfluoropentanoic acid (PFPeA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorotetradecanoic acid (PFTeA) | µg/kg | <0.070 U | **0.56** | **0.24** | **0.11 J** | <0.061 U | **0.34** | <0.062 U | <0.061 U | **0.091 J** | <0.066 U | <0.065 U | <0.065 U | **0.082 J** | <0.067 U |
| WS-LC-0025 | Perfluorotridecanoic acid (PFTrDA) | µg/kg | <0.066 U | **1.6** | **3.0** | <0.056 U | <0.057 UJ | <0.060 U | <0.058 U | **0.064 J** | <0.057 U | <0.063 U | **0.14 J** | <0.061 U | **0.25** | <0.063 U |
| WS-LC-0025 | Perfluoroundecanoic acid (PFUdA) | µg/kg | **0.29** | **1.2** | **1.9** | **0.83** | **0.86** | **8.6** | **0.17 J** | **0.32** | **1.9** | <0.044 U | **0.37** | <0.043 U | **0.88** | <0.045 U |
| PFC_IDA | N-Ethyl Perfluorooctane Sulfonamidoacetic Acid (EtFOSAA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | N-Methylperfluoroocatane Sulfonamidoacetic Acid (MeFOSAA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorobutane sulfonic acid (PFBS) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorodecanoic acid (PFDA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorododecanoic acid (PFDoA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluoroheptanoic acid (PFHpA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorohexane sulfonic acid (PFHxS) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |

Notes on Page 6.

**Table 17**
**Soil Analytical Results**
**Interim Site Investigation Report**
**Marinette, Wisconsin**

| Method | Chemical Name | Location | SS-114 | SS-115 | | SS-116 | | SS-117 | | | SS-118 | | SS-119 | | SS-120 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Sample Date | 6/28/2018 | 6/28/2018 | 6/28/2018 | 6/29/2018 | 6/29/2018 | 6/29/2018 | 6/29/2018 | 6/29/2018 | 6/29/2018 | 6/29/2018 | 7/23/2018 | 7/23/2018 | 6/29/2018 | 6/29/2018 |
| | | Depth (ft) | 7.5-8 | 0-0.5 | 1-1.5 | 0-0.5 | 3-4 | 0-0.5 | 3-4 | 3-4 | 0-1 | 7-8 | 0-1 | 7-8 | 0-1 | 7-8 |
| | | Sample Type | N | N | N | N | N | N | N | FD | N | N | N | N | N | N |
| | | Units | | | | | | | | | | | | | | |
| PFASs | Perfluorobutane Sulfonate (PFBS) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFASs | Perfluorodecanesulfonic acid (PFDS) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFASs | Perfluorodecanoic acid (PFDA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFASs | Perfluorododecanoic acid (PFDoA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorohexanoic acid (PFHxA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorononanoic acid (PFNA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorooctanesulfonic acid (PFOS) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorooctanoic acid (PFOA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorotetradecanoic acid (PFTeA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorotridecanoic acid (PFTrDA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluoroundecanoic acid (PFUdA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |

**Notes:**
**Detections are in bold.**
< = analyte not detected above corresponding method detection limit
FD = field duplicate sample type
µg/kg = micrograms per kilogram
N = normal sample type
NA = not analyzed

**Laboratory Qualifiers:**
B = Compund was found in the blank and sample.
D = Concentration is based on a diluted sample analysis.
F1 = MS and/or MSD recovery is outside acceptance limits.
J = The result is a estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
U = The compound was analyzed for but not detected. The associated value is the compound quantitation limit.

**Table 17**
**Soil Analytical Results**
**Interim Site Investigation Report**
**Marinette, Wisconsin**

| | | Location | SS-121 | | SS-122 | | SS-123 | | SS-124 | | | SS-125 | | SS-126 | | SS-127 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Sample Date | 6/29/2018 | 6/29/2018 | 6/29/2018 | 6/29/2018 | 6/29/2018 | 6/29/2018 | 7/23/2018 | 7/23/2018 | 7/23/2018 | 6/29/2018 | 6/29/2018 | 6/29/2018 | 6/29/2018 | 6/29/2018 | 6/29/2018 |
| | | Depth (ft) | 0-1 | 7-8 | 0-0.5 | 7-8 | 0-1 | 7-8 | 0-1 | 7-8 | 7-8 | 0-1 | 7-8 | 0-1 | 7-8 | 0-0.5 | 7-8 |
| | | Sample Type | N | N | N | N | N | N | N | N | FD | N | N | N | N | N | N |
| Method | Chemical Name | Units | | | | | | | | | | | | | | | |
| PFASs | Perfluorobutane Sulfonate (PFBS) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFASs | Perfluorodecanesulfonic acid (PFDS) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFASs | Perfluorodecanoic acid (PFDA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFASs | Perfluorododecanoic acid (PFDoA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFASs | Perfluoroheptanesulfonic Acid (PFHpS) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFASs | Perfluoroheptanoic acid (PFHpA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFASs | Perfluorohexane sulfonic acid (PFHxS) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFASs | Perfluorohexanoic acid (PFHxA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFASs | Perfluorononanoic acid (PFNA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFASs | Perfluorooctanesulfonic acid (PFOS) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFASs | Perfluorooctanoic acid (PFOA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFASs | Perfluorotetradecanoic acid (PFTeA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFASs | Perfluorotridecanoic acid (PFTrDA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFASs | Perfluoroundecanoic acid (PFUdA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | 6:2 Fluorotelomer Sulfonic Acid (6:2 FTSA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | 8:2 Fluorotelomer Sulfonic Acid (8:2 FTSA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | N-Ethyl Perfluorooctane Sulfonamidoacetic Acid (EtFOSAA) | µg/kg | <0.41 U | <0.46 U | <0.47 U | <0.46 U | <0.39 U | <0.44 U | **0.49 J** | <0.46 U | <0.46 U | <0.44 U | <0.46 U | <0.44 U | <0.44 U | <0.39 U | <0.44 U |
| WS-LC-0025 | N-Methylperfluoroocatane Sulfonamidoacetic Acid (MeFOSAA) | µg/kg | <0.43 U | <0.48 U | <0.50 U | <0.48 U | <0.41 U | <0.46 U | <0.45 U | <0.49 U | <0.48 U | <0.46 U | <0.48 U | <0.47 U | <0.46 U | <0.41 U | <0.47 U |
| WS-LC-0025 | Perfluorobutane sulfonic acid (PFBS) | µg/kg | <0.027 U | <0.031 U | <0.032 U | <0.031 U | <0.026 U | <0.029 U | <0.029 U | <0.031 U | <0.031 U | <0.030 U | <0.031 U | <0.030 U | <0.030 U | <0.027 U | <0.030 U |
| WS-LC-0025 | Perfluorobutanoic acid (PFBA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorodecanesulfonic acid (PFDS) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorodecanoic acid (PFDA) | µg/kg | **7.6** | **1.0** | **80 D** | **2.6** | **2.0** | **0.44** | **1.5** | **0.055 J** | **0.068 J** | **1.7** | **0.052 J** | **1.4** | **0.071 J** | **0.56** | **0.11 J** |
| WS-LC-0025 | Perfluorododecanoic acid (PFDoA) | µg/kg | **1.8** | <0.083 U | **4.8** | <0.083 U | **1.4** | <0.079 U | **0.35** | <0.083 U | <0.082 U | **0.23 J** | <0.083 U | **0.12 J** | <0.079 U | **0.74** | <0.080 U |
| WS-LC-0025 | Perfluoroheptanesulfonic Acid (PFHpS) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluoroheptanoic acid (PFHpA) | µg/kg | **0.92** | **0.44** | **11** | **1.6** | **0.53** | **0.11 J** | **2.3** | **1.3** | **1.4** | **2.1** | **0.062 J** | **0.75** | **0.24** | **0.46** | **0.49** |
| WS-LC-0025 | Perfluorohexane sulfonic acid (PFHxS) | µg/kg | **0.12 J** | **0.080 J** | **5.1** | **3.9** | <0.033 U | <0.037 U | **0.24** | **0.13 J** | **0.11 J** | **0.31** | <0.038 U | **0.062 J** | <0.037 U | **0.091 J** | <0.037 U |
| WS-LC-0025 | Perfluorohexanoic acid (PFHxA) | µg/kg | **1.7** | **0.50** | **12** | **1.8** | **3.1** | **1.2** | **3.6** | **3.8** | **3.8** | **3.2** | **0.37** | **1.4** | **0.33** | **0.89** | **0.72** |
| WS-LC-0025 | Perfluorononanoic acid (PFNA) | µg/kg | **2.0** | **1.0** | **41 D** | **4.4** | **0.53** | **0.25** | **1.9** | **0.068 J** | **0.093 J** | **7.8** | <0.044 U | **2.9** | **0.49** | **0.34** | **0.26** |
| WS-LC-0025 | Perfluorooctane Sulfonamide (PFOSA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorooctanesulfonic acid (PFOS) | µg/kg | **4.4** | **19** | **28 D** | **12** | **0.41 J** | **0.60** | **5.4** | **2.7** | **2.3** | **6.5** | <0.25 U | **5.8** | **6.9** | **0.38 J** | **0.33 J** |
| WS-LC-0025 | Perfluorooctanoic acid (PFOA) | µg/kg | **27 D** | **7.8** | **440 D** | **12** | **2.0** | **0.15 J** | **4.1** | **7.2** | **5.8** | **5.0** | <0.11 U | **1.4** | **0.41** | **1.8** | **0.35** |
| WS-LC-0025 | Perfluoropentanoic acid (PFPeA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorotetradecanoic acid (PFTeA) | µg/kg | **0.73** | <0.067 U | **2.3** | <0.067 U | **0.60** | <0.064 U | **0.093 J** | <0.067 U | <0.066 U | **0.068 J** | <0.067 U | <0.065 U | <0.064 U | **0.27** | <0.065 U |
| WS-LC-0025 | Perfluorotridecanoic acid (PFTrDA) | µg/kg | <0.056 U | <0.063 U | **61 D** | **0.097 J** | **0.56** | <0.060 U | **0.65** | <0.063 U | <0.063 U | **0.31** | <0.063 U | <0.061 U | <0.060 U | <0.054 U | <0.061 U |
| WS-LC-0025 | Perfluoroundecanoic acid (PFUdA) | µg/kg | **5.4** | **0.14 J** | **99 D** | **2.2** | **2.1** | <0.042 U | **1.7** | **0.050 J** | **0.098 J** | **0.97** | <0.044 U | **0.43** | <0.043 U | **1.4** | **0.053 J** |
| PFC_IDA | N-Ethyl Perfluorooctane Sulfonamidoacetic Acid (EtFOSAA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | N-Methylperfluoroocatane Sulfonamidoacetic Acid (MeFOSAA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorobutane sulfonic acid (PFBS) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorodecanoic acid (PFDA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorododecanoic acid (PFDoA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluoroheptanoic acid (PFHpA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorohexane sulfonic acid (PFHxS) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |

Notes on Page 8.

**Table 17**
**Soil Analytical Results**
**Interim Site Investigation Report**
**Marinette, Wisconsin**

| Method | Chemical Name | Location | SS-121 | | SS-122 | | SS-123 | | SS-124 | | | SS-125 | | SS-126 | | SS-127 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Sample Date | 6/29/2018 | 6/29/2018 | 6/29/2018 | 6/29/2018 | 6/29/2018 | 6/29/2018 | 7/23/2018 | 7/23/2018 | 7/23/2018 | 6/29/2018 | 6/29/2018 | 6/29/2018 | 6/29/2018 | 6/29/2018 | 6/29/2018 |
| | | Depth (ft) | 0-1 | 7-8 | 0-0.5 | 7-8 | 0-1 | 7-8 | 0-1 | 7-8 | 7-8 | 0-1 | 7-8 | 0-1 | 7-8 | 0-0.5 | 7-8 |
| | | Sample Type | N | N | N | N | N | N | N | N | FD | N | N | N | N | N | N |
| | | Units | | | | | | | | | | | | | | | |
| PFASs | Perfluorobutane Sulfonate (PFBS) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFASs | Perfluorodecanesulfonic acid (PFDS) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFASs | Perfluorodecanoic acid (PFDA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFASs | Perfluorododecanoic acid (PFDoA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorohexanoic acid (PFHxA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorononanoic acid (PFNA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorooctanesulfonic acid (PFOS) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorooctanoic acid (PFOA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorotetradecanoic acid (PFTeA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorotridecanoic acid (PFTrDA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluoroundecanoic acid (PFUdA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |

**Notes:**
**Detections are in bold.**
< = analyte not detected above corresponding method detection limit
FD = field duplicate sample type
µg/kg = micrograms per kilogram
N = normal sample type
NA = not analyzed

**Laboratory Qualifiers:**
B = Compund was found in the blank and sample.
D = Concentration is based on a diluted sample analysis.
F1 = MS and/or MSD recovery is outside acceptance limits.
J = The result is a estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
U = The compound was analyzed for but not detected. The associated value is the compound quantitation limit.

**Table 17**
**Soil Analytical Results**
**Interim Site Investigation Report**
**Marinette, Wisconsin**

| | | Location | SS-128 | | SS-129 | SS-130 | SS-131 | SS-132 | SS-133 | SS-134 | SS-135 | SS-136 | SS-137 | SS-138 | SS-139 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Sample Date | 7/23/2018 | 7/23/2018 | 7/23/2018 | 7/17/2019 | 7/17/2019 | 7/16/2019 | 7/30/2019 | 7/17/2019 | 7/17/2019 | 7/17/2019 | 7/16/2019 | 7/16/2019 | 7/16/2019 |
| | | Depth (ft) | 7-8 | 7-8 | 2-3 | 0.5-1.5 | 0.5-2 | 0.75-1 | 0.8-1.39 | 0.8-1.7 | 0.69-1.6 | 0.6-2 | 0.5-1.2 | 0.5-1.5 | 0.5-1.2 |
| | | Sample Type | N | FD | N | N | N | N | N | N | N | N | N | N | N |
| Method | Chemical Name | Units | | | | | | | | | | | | | |
| PFASs | Perfluorobutane Sulfonate (PFBS) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFASs | Perfluorodecanesulfonic acid (PFDS) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFASs | Perfluorodecanoic acid (PFDA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFASs | Perfluorododecanoic acid (PFDoA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFASs | Perfluoroheptanesulfonic Acid (PFHpS) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFASs | Perfluoroheptanoic acid (PFHpA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFASs | Perfluorohexane sulfonic acid (PFHxS) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFASs | Perfluorohexanoic acid (PFHxA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFASs | Perfluorononanoic acid (PFNA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFASs | Perfluorooctanesulfonic acid (PFOS) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFASs | Perfluorooctanoic acid (PFOA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFASs | Perfluorotetradecanoic acid (PFTeA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFASs | Perfluorotridecanoic acid (PFTrDA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFASs | Perfluoroundecanoic acid (PFUdA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | 6:2 Fluorotelomer Sulfonic Acid (6:2 FTSA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | 8:2 Fluorotelomer Sulfonic Acid (8:2 FTSA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | N-Ethyl Perfluorooctane Sulfonamidoacetic Acid (EtFOSAA) | µg/kg | <0.47 U | <0.45 U | **240 D** | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | N-Methylperfluoroocatane Sulfonamidoacetic Acid (MeFOSAA) | µg/kg | <0.50 U | <0.47 U | **0.71 J** | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorobutane sulfonic acid (PFBS) | µg/kg | <0.032 U | <0.030 U | <0.026 U | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorobutanoic acid (PFBA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorodecanesulfonic acid (PFDS) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorodecanoic acid (PFDA) | µg/kg | **1.1** | **0.79** | **12** | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorododecanoic acid (PFDoA) | µg/kg | <0.086 U | <0.081 U | **0.16 J** | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluoroheptanesulfonic Acid (PFHpS) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluoroheptanoic acid (PFHpA) | µg/kg | **3.9** | **5.6** | **2.1** | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorohexane sulfonic acid (PFHxS) | µg/kg | **0.86** | **0.73** | **1.3** | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorohexanoic acid (PFHxA) | µg/kg | **4.9 J** | **8.3 J** | **2.3** | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorononanoic acid (PFNA) | µg/kg | **1.1** | **1.2** | **0.59** | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorooctane Sulfonamide (PFOSA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorooctanesulfonic acid (PFOS) | µg/kg | **4.5** | **3.2** | **450 D** | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorooctanoic acid (PFOA) | µg/kg | **66 DJ** | **190 DJ** | **87 D** | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluoropentanoic acid (PFPeA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorotetradecanoic acid (PFTeA) | µg/kg | <0.069 U | <0.065 U | <0.056 UJ | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluorotridecanoic acid (PFTrDA) | µg/kg | <0.065 U | <0.061 U | <0.053 U | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| WS-LC-0025 | Perfluoroundecanoic acid (PFUdA) | µg/kg | **1.5 J** | **0.20 J** | **0.12 J** | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | N-Ethyl Perfluorooctane Sulfonamidoacetic Acid (EtFOSAA) | µg/kg | NA | NA | NA | <0.48 U | <0.44 U | **1.3 J** | **12** | <0.41 U | **190 DJ** | <0.47 U | <0.48 U | <0.44 U | <44 U |
| PFC_IDA | N-Methylperfluoroocatane Sulfonamidoacetic Acid (MeFOSAA) | µg/kg | NA | NA | NA | <0.51 U | <0.47 U | <0.45 U | **0.83 J** | <0.43 U | **1.0 J** | <0.50 U | <0.51 U | <0.46 U | <46 U |
| PFC_IDA | Perfluorobutane sulfonic acid (PFBS) | µg/kg | NA | NA | NA | <0.033 U | <0.030 U | <0.029 U | **0.031 J** | <0.028 U | <0.026 U | <0.032 U | <0.033 U | <0.029 U | <3.0 U |
| PFC_IDA | Perfluorodecanoic acid (PFDA) | µg/kg | NA | NA | NA | **0.12 J** | **7.5** | **0.54** | **55 D** | **0.14 J** | **42** | **1.8** | **3.3** | **0.045 J** | **42** |
| PFC_IDA | Perfluorododecanoic acid (PFDoA) | µg/kg | NA | NA | NA | <0.088 U | <0.081 U | **0.27** | **13** | <0.075 U | **0.077 J** | **0.39** | **0.14 J** | <0.079 U | <8.0 U |
| PFC_IDA | Perfluoroheptanoic acid (PFHpA) | µg/kg | NA | NA | NA | **0.38** | **0.45** | **0.30** | **6.4 J-** | **0.24** | **1.4** | **0.14 J** | **0.66** | **0.85** | **25** |
| PFC_IDA | Perfluorohexane sulfonic acid (PFHxS) | µg/kg | NA | NA | NA | **0.081 J** | **0.72** | **0.053 J** | **9.3** | **0.078 J** | **0.49** | **0.12 J** | **0.13 J** | <0.036 U | <3.7 U |

Notes on Page 10.

**Table 17**
**Soil Analytical Results**
**Interim Site Investigation Report**
**Marinette, Wisconsin**

| Method | Chemical Name | Location | SS-128 | | SS-129 | SS-130 | SS-131 | SS-132 | SS-133 | SS-134 | SS-135 | SS-136 | SS-137 | SS-138 | SS-139 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Sample Date | 7/23/2018 | 7/23/2018 | 7/23/2018 | 7/17/2019 | 7/17/2019 | 7/16/2019 | 7/30/2019 | 7/17/2019 | 7/17/2019 | 7/17/2019 | 7/16/2019 | 7/16/2019 | 7/16/2019 |
| | | Depth (ft) | 7-8 | 7-8 | 2-3 | 0.5-1.5 | 0.5-2 | 0.75-1 | 0.8-1.39 | 0.8-1.7 | 0.69-1.6 | 0.6-2 | 0.5-1.2 | 0.5-1.5 | 0.5-1.2 |
| | | Sample Type | N | FD | N | N | N | N | N | N | N | N | N | N | N |
| | | Units | | | | | | | | | | | | | |
| PFASs | Perfluorobutane Sulfonate (PFBS) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFASs | Perfluorodecanesulfonic acid (PFDS) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFASs | Perfluorodecanoic acid (PFDA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFASs | Perfluorododecanoic acid (PFDoA) | µg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PFC_IDA | Perfluorohexanoic acid (PFHxA) | µg/kg | NA | NA | NA | **0.37** | **0.57** | **0.33** | **14** | **0.27** | **2.5** | **0.46** | **1.8** | **0.46** | **33** |
| PFC_IDA | Perfluorononanoic acid (PFNA) | µg/kg | NA | NA | NA | **1.4** | **0.30** | **0.44** | **31 D** | **1.1** | **1.2** | **0.83** | **3.7** | **0.52** | **63** |
| PFC_IDA | Perfluorooctanesulfonic acid (PFOS) | µg/kg | NA | NA | NA | **3.1** | **18** | **17** | **800 D** | **8.3** | **210 D** | **14** | **5.2** | **0.59** | <24 U |
| PFC_IDA | Perfluorooctanoic acid (PFOA) | µg/kg | NA | NA | NA | **0.56** | **1.6** | **10 J** | **32 D** | **0.88** | **110** | **3.7** | **2.0** | **0.82** | **1100** |
| PFC_IDA | Perfluorotetradecanoic acid (PFTeA) | µg/kg | NA | NA | NA | <0.071 U | <0.065 U | <0.062 U | **5.4 J-** | <0.060 U | <0.056 U | <0.069 U | <0.071 U | <0.064 U | <6.4 U |
| PFC_IDA | Perfluorotridecanoic acid (PFTrDA) | µg/kg | NA | NA | NA | <0.067 U | <0.061 U | **0.096 J** | **31 D** | <0.057 U | <0.053 U | **0.33** | <0.067 U | <0.060 U | <6.1 U |
| PFC_IDA | Perfluoroundecanoic acid (PFUdA) | µg/kg | NA | NA | NA | **0.086 J** | **1.4** | **0.91** | **72 D** | <0.040 U | **0.14 J** | **5.0** | **0.75** | <0.042 U | **83** |

**Notes:**
**Detections are in bold.**
< = analyte not detected above corresponding method detection limit
FD = field duplicate sample type
µg/kg = micrograms per kilogram
N = normal sample type
NA = not analyzed

**Laboratory Qualifiers:**
B = Compund was found in the blank and sample.
D = Concentration is based on a diluted sample analysis.
F1 = MS and/or MSD recovery is outside acceptance limits.
J = The result is a estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
U = The compound was analyzed for but not detected. The associated value is the compound quantitation limit.

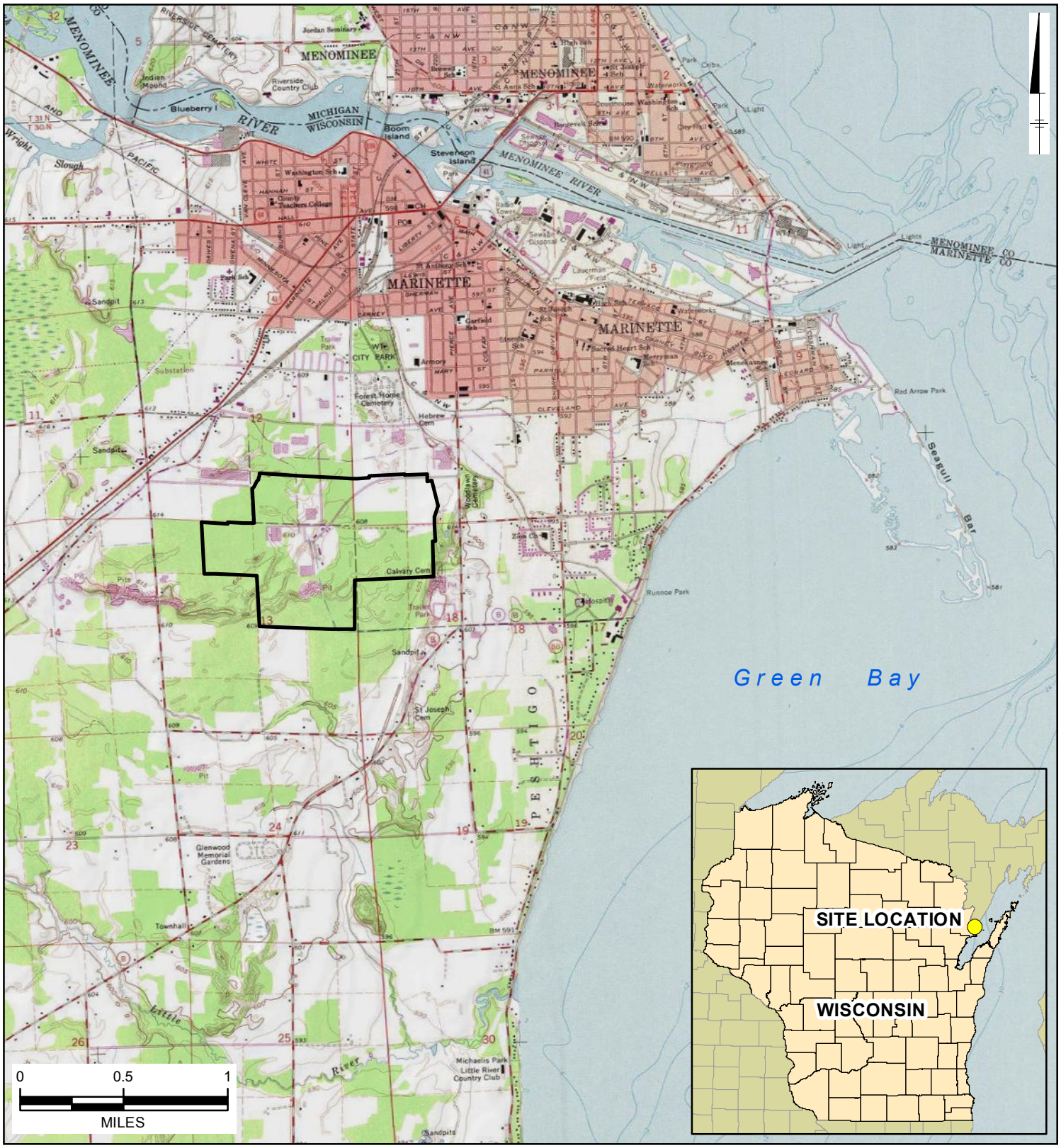
**Table 18**
**Synthetic Precipitation Leaching Procedure Test Analytical Results**
**Interim Site Investigation Report**
**Marinette, Wisconsin**

| | | Location | SS-130 | | SS-132 | | SS-134 | | SS-135 | | SS-136 | | SS-137 | | SS-138 | | SS-139 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Sample Date | 7/17/2019 | | 7/16/2019 | | 7/17/2019 | | 7/17/2019 | | 7/17/2019 | | 7/16/2019 | | 7/16/2019 | | 7/16/2019 | |
| | | Sample Depth (feet) | 0.5-1.5 | | 0.75-1 | | 0.8-1.7 | | 0.7-1.6 | | 0.6-2 | | 0.5-1.2 | | 0.5-1.5 | | 0.5-1.2 | |
| | | Sample Type | N | | N | | N | | N | | N | | N | | N | | N | |
| Method | Chemical Name | Unit | Result | Qualifier | Result | Qualifier | Result | Qualifier | Result | Qualifier | Result | Qualifier | Result | Qualifier | Result | Qualifier | Result | Qualifier |
| PFC_IDA | N-Ethyl Perfluorooctane Sulfonamidoacetic Acid (EtFOSAA) | ng/L | <1.7 | U | <1.8 | U | **3.5** | J | **4,600** | D | **15** | J | <1.7 | U | <1.7 | U | <1.7 | U |
| PFC_IDA | N-Methylperfluoroocatane Sulfonamidoacetic Acid (MeFOSAA) | ng/L | <2.8 | U | <2.9 | U | <2.8 | U | **91** | | <2.7 | U | <2.8 | U | <2.8 | U | **15** | J |
| PFC_IDA | Perfluorobutane sulfonic acid (PFBS) | ng/L | <0.18 | U | <0.19 | U | <0.18 | U | <0.17 | U | <0.17 | U | <0.18 | U | <0.18 | U | **0.50** | J |
| PFC_IDA | Perfluorodecanoic acid (PFDA) | ng/L | **1.1** | J | **37** | | **4.9** | | **1,200** | D | **29** | | **150** | | **1.3** | J | **1,100** | D |
| PFC_IDA | Perfluorododecanoic acid (PFDoA) | ng/L | <0.49 | U | <0.51 | U | <0.49 | U | **0.49** | J | **3.3** | | **1.3** | J | <0.50 | U | **12** | |
| PFC_IDA | Perfluoroheptanoic acid (PFHpA) | ng/L | **8.8** | | **8.2** | | **11** | | **8.0** | | **3.7** | | **24** | | **33** | | **630** | D |
| PFC_IDA | Perfluorohexane sulfonic acid (PFHxS) | ng/L | <1.8 | UB | <1.9 | UB | **2.8** | | <1.7 | UB | <1.7 | UB | **3.4** | | <1.8 | UB | **61** | |
| PFC_IDA | Perfluorohexanoic acid (PFHxA) | ng/L | **9.0** | | **8.4** | | **12** | | **43** | | **5.9** | | **63** | | **18** | | **260** | |
| PFC_IDA | Perfluorononanoic acid (PFNA) | ng/L | **22** | | **15** | | **49** | | **41** | | **18** | | **160** | | **20** | | **2,900** | D |
| PFC_IDA | Perfluorooctanesulfonic acid (PFOS) | ng/L | **37** | | **1,300** | D | **330** | | **6,900** | D | **210** | | **180** | | **18** | | **1,000** | D |
| PFC_IDA | Perfluorooctanoic acid (PFOA) | ng/L | **11** | | **34** | | **33** | | **180** | | **10** | | **20** | | **30** | | **2,900** | D |
| PFC_IDA | Perfluorotetradecanoic acid (PFTeA) | ng/L | <1.8 | UB | <0.27 | U | <0.26 | U | <1.7 | UB | <0.25 | U | <0.26 | U | <0.27 | U | <0.27 | U |
| PFC_IDA | Perfluorotridecanoic acid (PFTrDA) | ng/L | <1.2 | U | <1.2 | U | <1.2 | U | <1.1 | U | <1.1 | U | <1.2 | U | <1.2 | U | <1.2 | U |
| PFC_IDA | Perfluoroundecanoic acid (PFUdA) | ng/L | <0.98 | U | **2.4** | | <0.98 | U | **2.7** | | **72** | | **22** | | <1.0 | U | **1,500** | D |

**Notes:**
**Detections are in bold.**
< = analyte not detected above corresponding method detection limit
FD = field duplicate sample type
N = normal sample type
ng/L = nanograms per liter

**Laboratory Qualifiers:**
D = Concentration is based on a diluted sample analysis.
J = The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
U = The compound was analyzed for but not detected. The associated value is the compound quantitation limit.
UB = The compound is considered nondetect at the listed value due to associated blank contamination.

# FIGURES




LEGEND:

APPROXIMATE SITE PROPERTY BOUNDARY

NOTES:

1. TOPOGRAPHIC MAP SOURCE: COPYRIGHT:© 2013 NATIONAL GEOGRAPHIC SOCIETY, I-CUBED, ACCESSED APRIL, 2020.

TYCO FIRE TECHNOLOGY CENTER
MARINETTE, WISCONSIN

**INTERIM SITE INVESTIGATION REPORT**

**SITE LOCATION**

ARCADIS

FIGURE
1

LEGEND:

DITCH/STREAM

NOTES:

1. IMAGERY SOURCE: 4/27/2016, DIGITALGLOBE, VIVID - USA.

0 225 450

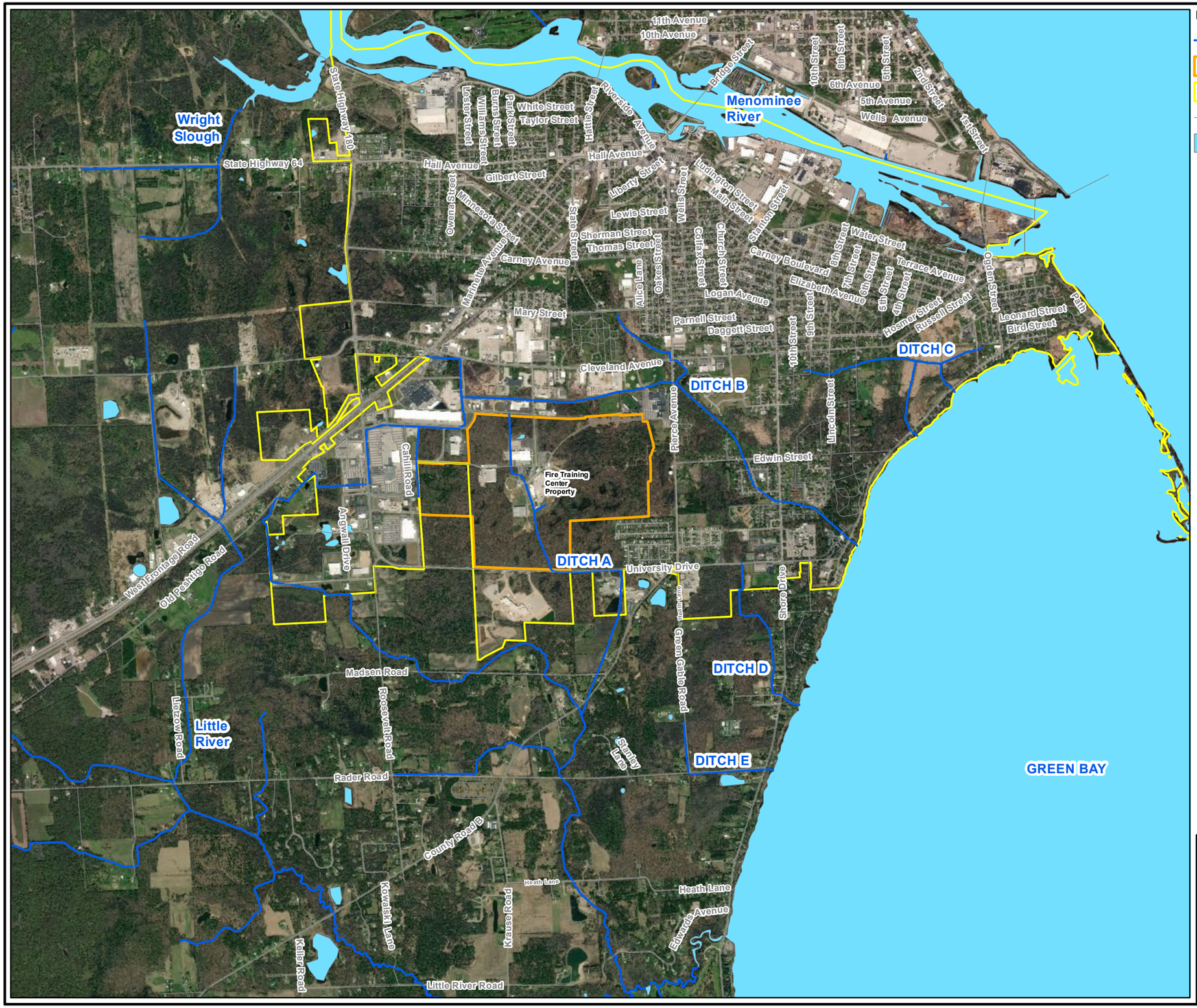
GRAPHIC SCALE IN FEET

TYCO FIRE TECHNOLOGY CENTER
MARINETTE, WISCONSIN
**INTERIM SITE INVESTIGATION REPORT**

**FTC OPERATIONS AREA LAYOUT**

ARCADIS

FIGURE
**2**




LEGEND:

- DITCH/STREAM
- APPROXIMATE SITE PROPERTY BOUNDARY
- APPROXIMATE MARINETTE CITY BOUNDARY
- ROAD
- WATERBODY

NOTES:

1. CITY BOUNDARY DATA SOURCE: WISCONSIN LEGISLATIVE TECHNOLOGY SERVICES BUREAU, WISCONSIN COUNTY CLERKS AND LAND INFORMATION OFFICES, ACCESSED FALL 2017.
2. DITCH/STREAM DATA SOURCE: U.S. GEOLOGICAL SURVEY NATIONAL HYDROGRAPHY DATASET, ACCESSED FALL 2017.
3. ROAD DATA SOURCE: OPEN STREET MAP, ACCESSED FALL 2017.
4. AERIAL IMAGERY: 4/27/2016 DIGITALGLOBE, VIVID-USA

0 1,100 2,200

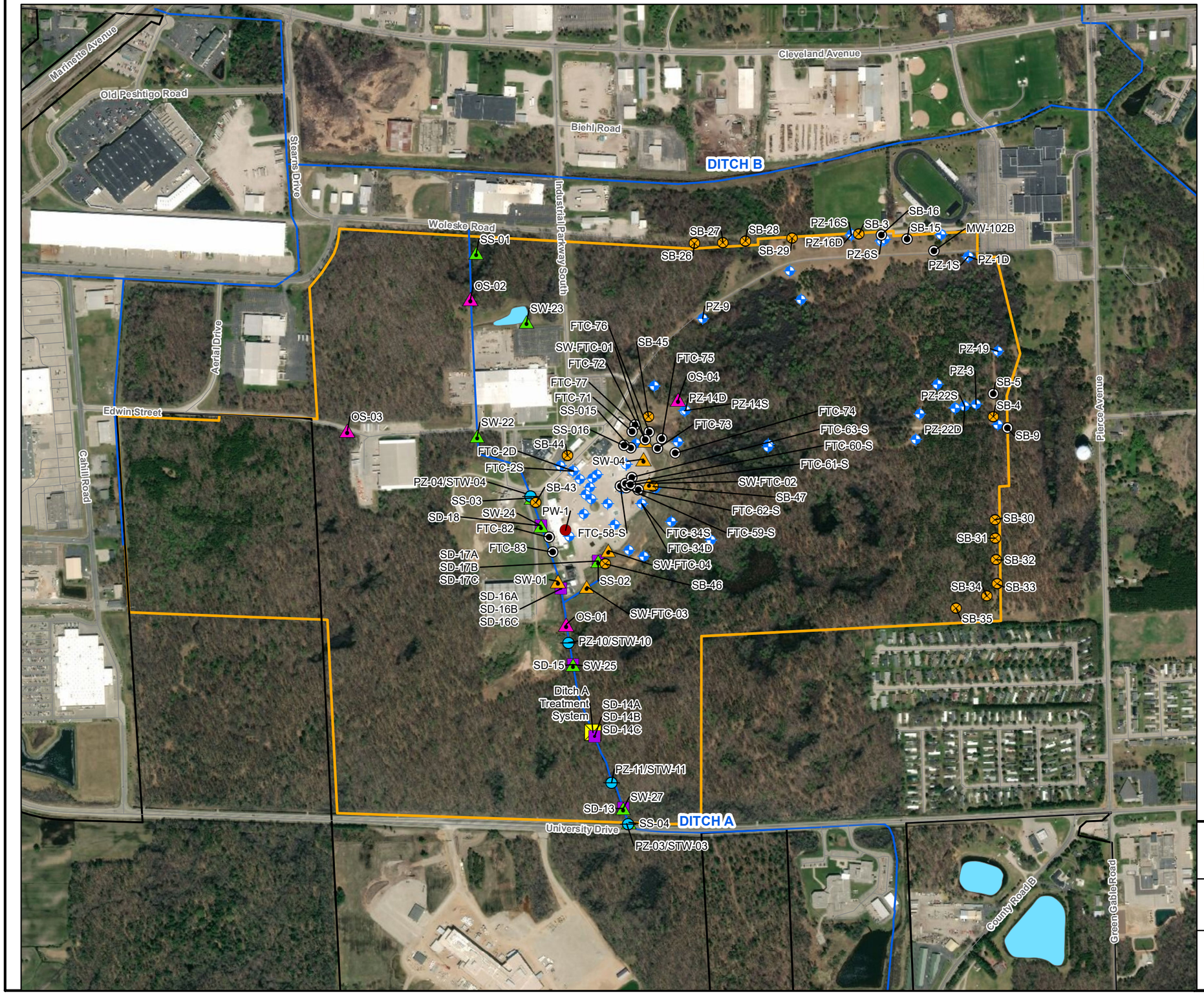
GRAPHIC SCALE IN FEET

TYCO FIRE TECHNOLOGY CENTER
MARINETTE, WISCONSIN
**INTERIM SITE INVESTIGATION REPORT**

**INVESTIGATION AREA**

ARCADIS

FIGURE
3




LEGEND:

- VAP LOCATION
- OUTFALL SAMPLE LOCATION
- STORMWATER RUNOFF LOCATION
- PZ/STW PAIRS
- HPT LOCATIONS
- MONITORING WELL
- SURFACE WATER SAMPLE AND VELOCITY MEASUREMENT
- SITE PRODUCTION WELL (ABANDONED 2019)
- DITCHTREATMENT SYSTEM
- APPROXIMATE SITE PROPERTY BOUNDARY
- APPROXIMATE MARINETTE CITY BOUNDARY
- ROAD
- DITCH/STREAM
- WATERBODY

NOTES:

1. SOIL TYPE INVESTIGATIONS ARE INTENTIONALLY NOT SHOWN FOR LEGIBILITY.
2. LOCATIONS OF HISTORICAL MONITORING WELLS NOT PART OF THE PFAS INVESTIGATION ARE SHOWN BUT NOT LABELED.

0 500 1,000

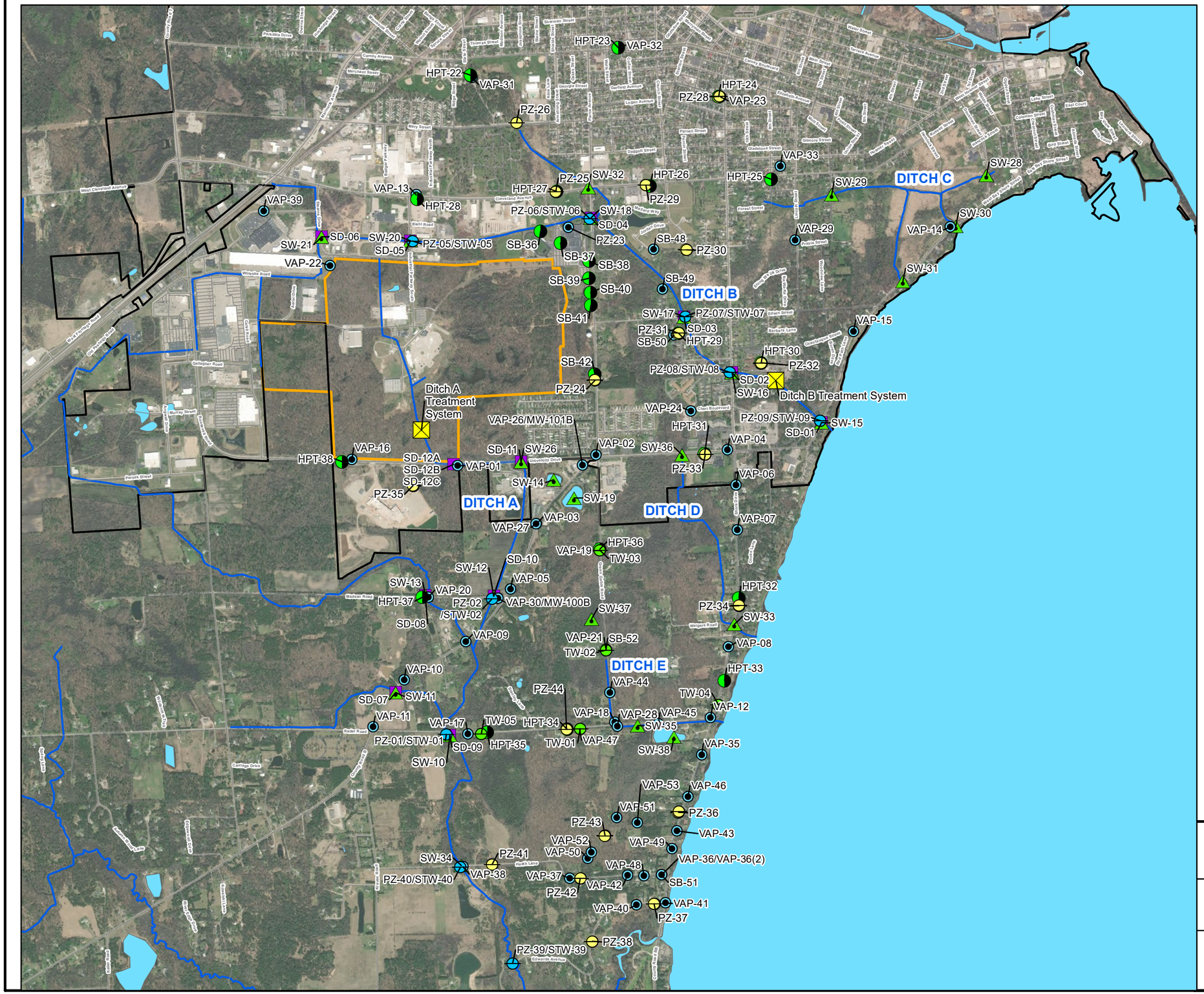
GRAPHIC SCALE IN FEET

TYCO FIRE TECHNOLOGY CENTER
MARINETTE, WISCONSIN
**INTERIM SITE INVESTIGATION REPORT**

**COMPREHENSIVE ON-SITE INVESTIGATION LOCATIONS**

ARCADIS

FIGURE
4




LEGEND:

- CLUSTERED MONITORING WELLS
- CLUSTERED PIEZOMETER LOCATION
- PZ/STW PAIRS
- TEMPORARY PIEZOMETER
- HPT LOCATIONS
- SEDIMENT SAMPLE
- VAP LOCATION
- SURFACE WATER SAMPLE AND VELOCITY MEASUREMENT
- APPROXIMATE SITE PROPERTY BOUNDARY
- APPROXIMATE MARINETTE CITY BOUNDARY
- ROAD
- DITCH/STREAM
- WATERBODY

NOTES:
1. HPT-25 AND HPT-35 ALSO HAD A SOIL BORING COMPLETED AT THE LOCATION
2. CLUSTERED PIEZOMETER AND MONITORING WELL IDS ARE SHOWN SEPARATELY

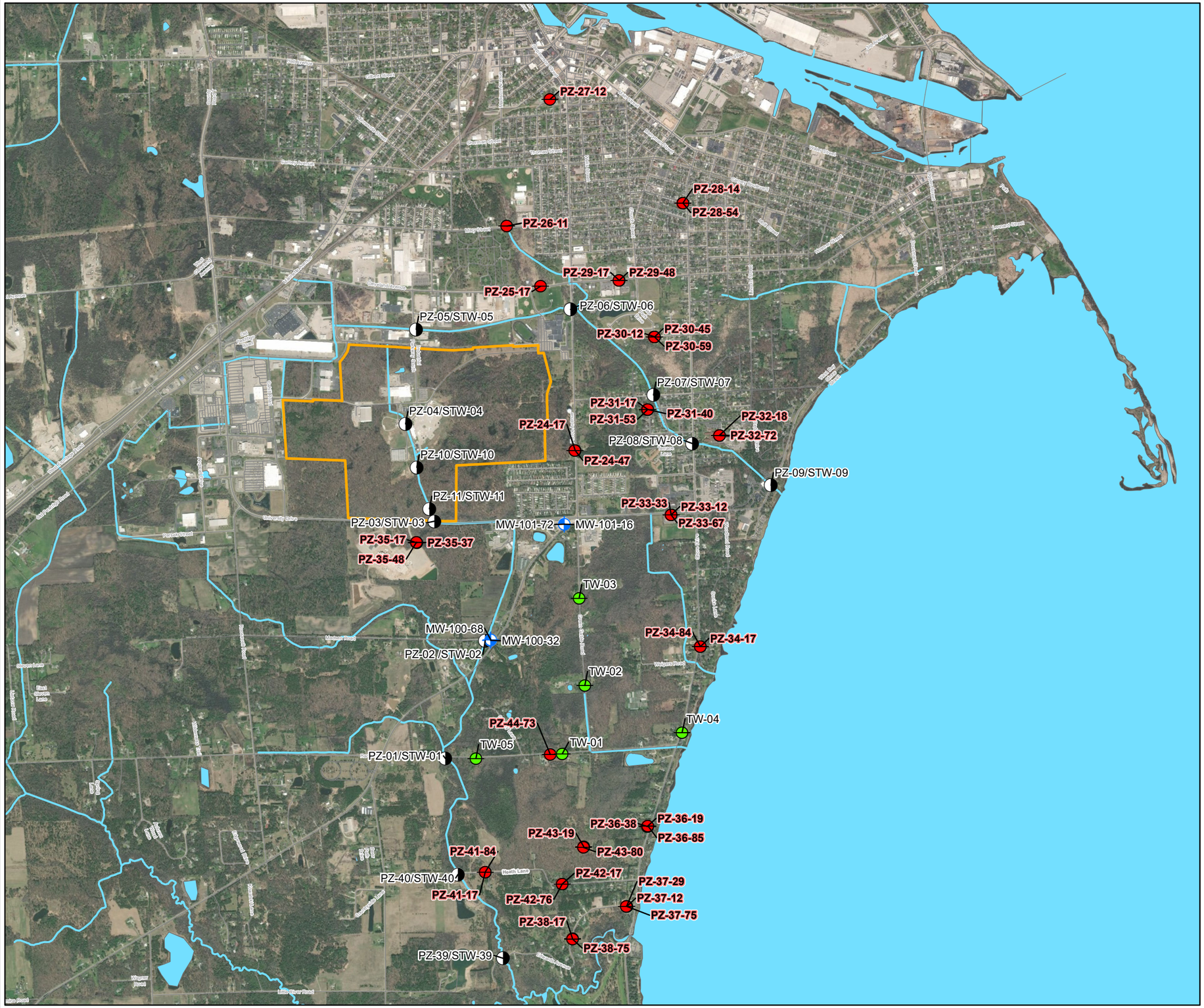
0 2,000 4,000
GRAPHIC SCALE IN FEET

TYCO FIRE TECHNOLOGY CENTER
MARINETTE, WISCONSIN
**INTERIM SITE INVESTIGATION REPORT**

**COMPREHENSIVE OFF-SITE INVESTIGATION LOCATIONS**

ARCADIS

FIGURE
5




LEGEND:

- PIEZOMETER INSTALLATION
- IN-STREAM PIEZOMETER AND STILLING WELL PAIR
- MONITORING WELL
- TEMPORARY WELL
- ROAD
- DITCH/STREAM
- WATERBODY
- APPROXIMATE SITE PROPERTY BOUNDARY

NOTES:

1. DITCH/STREAM 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: 5/14/2017 DIGITALGLOBE, VIVID-USA.

0 2,000 4,000

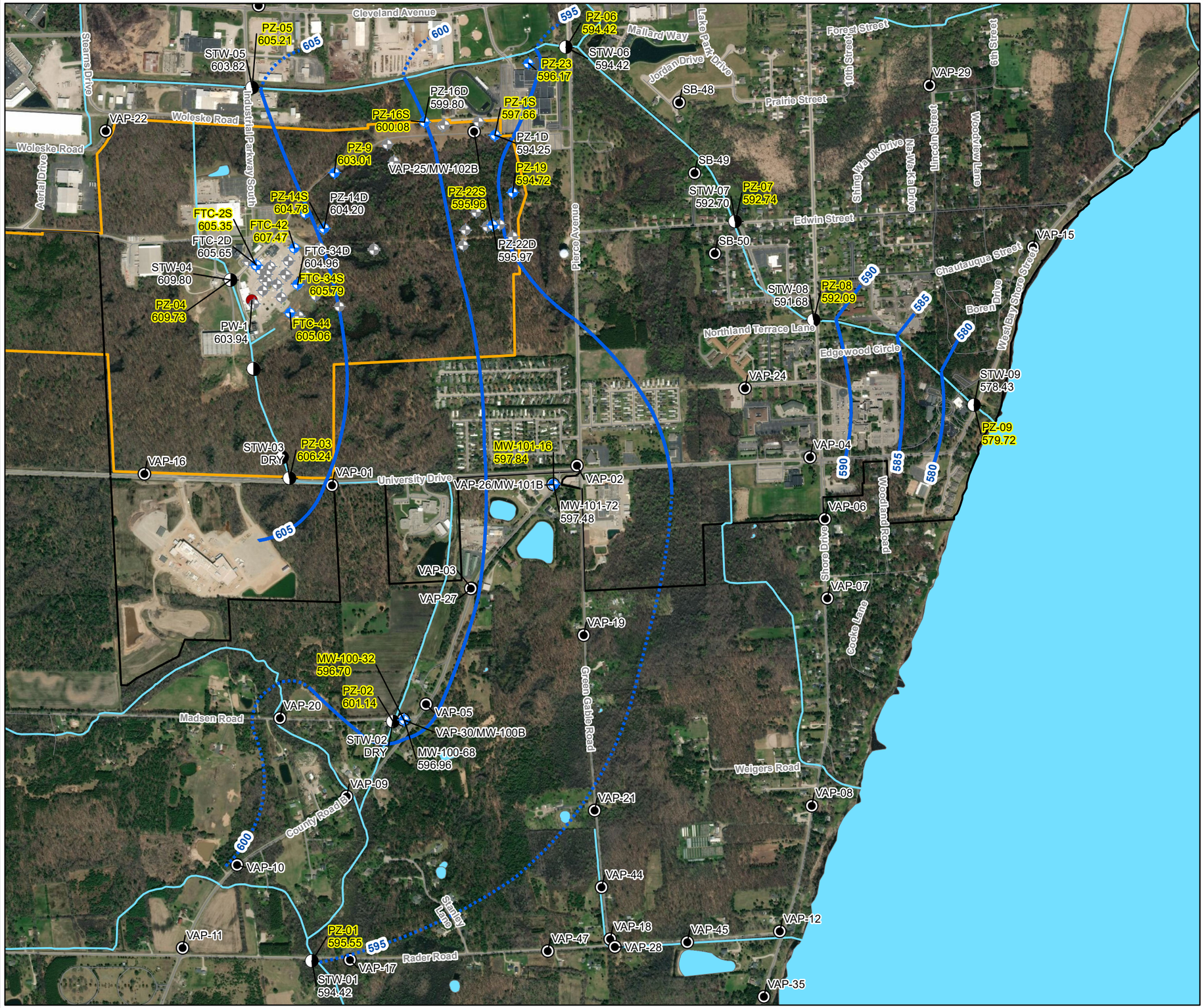
GRAPHIC SCALE IN FEET

TYCO FIRE TECHNOLOGY CENTER
MARINETTE, WISCONSIN
**INTERIM SITE INVESTIGATION REPORT**

**OFFSITE PIEZOMETER AND MONITORING WELL LOCATIONS**

ARCADIS

FIGURE
**6**




LEGEND:

- MONITORING WELL
- SITE PRODUCTION WELL (ABANDONED IN 2019)
- STREAM PIEZOMETER/STILLING WELL PAIR
- VAP BORING
- MONITORING WELL (WATER LEVEL NOT MEASURED)
- APPROXIMATE SITE PROPERTY BOUNDARY
- APPROXIMATE MARINETTE CITY BOUNDARY
- ROAD
- DITCH/STREAM
- WATERBODY
- AUGUST 2018 GROUNDWATER ELEVATION CONTOUR (DASHED WHERE INFERRED)

NOTES:

1. DEPTH TO WATER AT PIEZOMETER AND STILLING WELL PAIRS PZ/STW-01 THROUGH PZ/STW-09 WAS MEASURED ON 8/31/2018.
2. DEPTH TO GROUNDWATER WAS MEASURED AT REPRESENTATIVE PERMANENT WELLS ON 8/27/2018. WELLS THAT ARE SHOWN IN GRAY WERE NOT GAUGED DURING THIS EVENT.
3. HIGHLIGHTED WELLS WERE USED FOR CONTOURING THE SHALLOW GROUNDWATER POTENTIOMETRIC SURFACE. THE WATER ELEVATIONS MEASURED AT STILLING WELLS AND DEEPER GROUNDWATER WELLS HAVE ALSO BEEN PROVIDED FOR REFERENCE.
4. CITY BOUNDARY DATA SOURCE: WISCONSIN LEGISLATIVE TECHNOLOGY SERVICES BUREAU, WISCONSIN COUNTY CLERKS AND LAND INFORMATION OFFICES, ACCESSED FALL 2017.
5. DITCH/STREAM DATA SOURCE: U.S. GEOLOGICAL SURVEY NATIONAL HYDROGRAPHY DATASET, ACCESSED FALL 2017.
6. ROAD DATA SOURCE: OPEN STREET MAP, ACCESSED FALL 2017.
7. AERIAL IMAGERY: 4/27/2016 DIGITALGLOBE, VIVID-USA
8. VAP = VERTICAL AQUIFER PROFILING

0 1,100 2,200

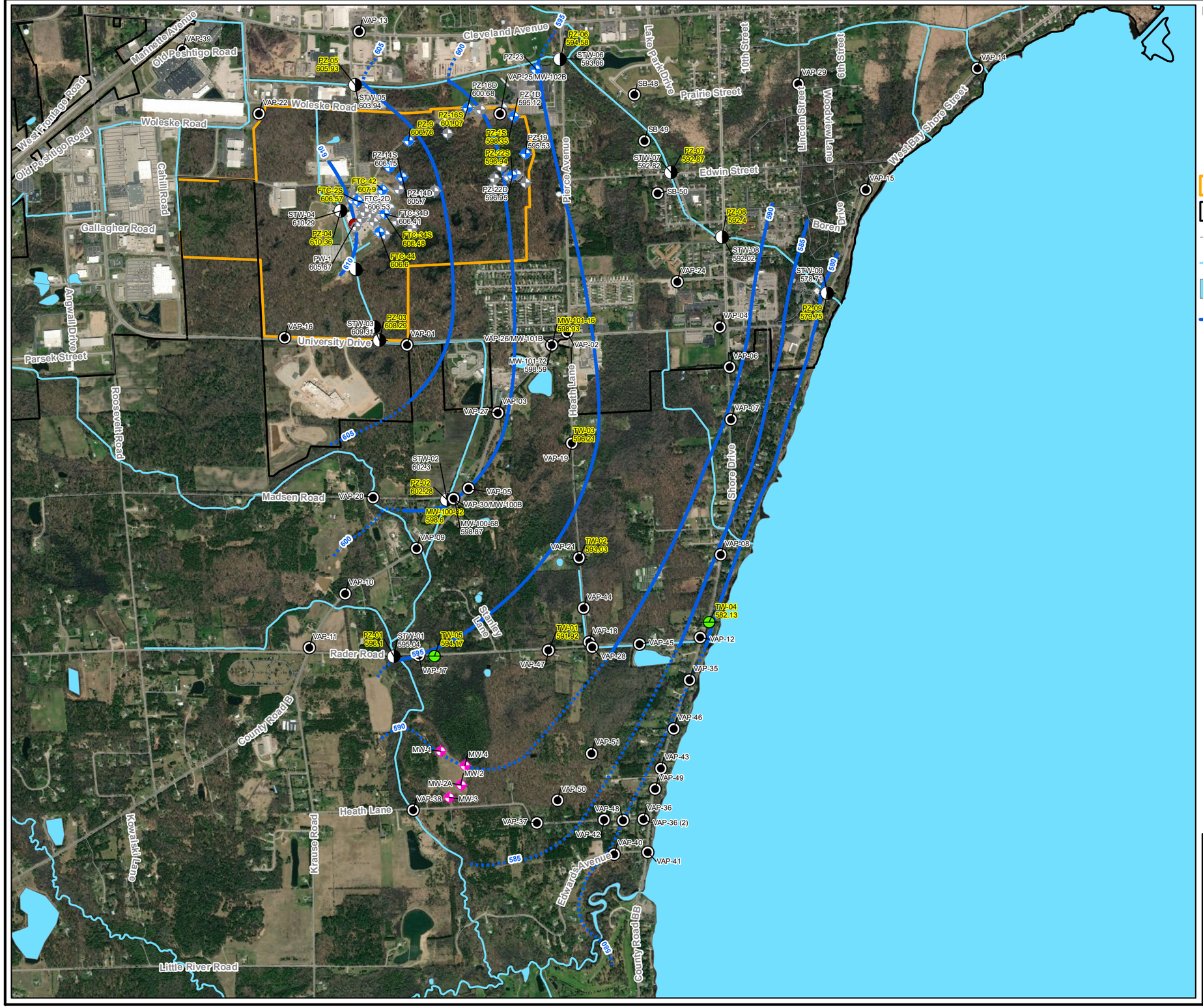
GRAPHIC SCALE IN FEET

TYCO FIRE TECHNOLOGY CENTER
MARINETTE, WISCONSIN
**INTERIM SITE INVESTIGATION REPORT**

**SHALLOW GROUNDWATER POTENTIOMETRIC SURFACE - AUGUST 2018**

ARCADIS

FIGURE
7




LEGEND:

- MONITORING WELL
- STREAM PIEZOMETER/STILLING WELL PAIR
- TEMPORARY PIEZOMETER
- SITE PRODUCTION WELL (ABANDONED IN 2019)
- MONITORING WELL (WATER LEVEL NOT MEASURED)
- HEATH LANE LANDFILL WELL
- APPROXIMATE SITE PROPERTY BOUNDARY
- APPROXIMATE MARINETTE CITY BOUNDARY
- ROAD
- DITCH/STREAM
- WATERBODY
- NOVEMBER 2018 GROUNDWATER ELEVATION CONTOUR (DASHED WHERE INFERRED)

NOTES:

1. DEPTH TO WATER AT PIEZOMETER AND STILLING WELL PAIRS PZ/STW-01 THROUGH PZ/STW-09 WAS MEASURED ON 11/9/2018.
2. DEPTH TO GROUNDWATER WAS MEASURED AT REPRESENTATIVE PERMANENT AND TEMPORARY WELLS ON 11/15/2018. WELLS THAT ARE SHOWN IN GRAY WERE NOT GAUGED DURING THIS EVENT.
3. HIGHLIGHTED WELLS WERE USED FOR CONTOURING THE SHALLOW GROUNDWATER POTENTIOMETRIC SURFACE. THE WATER ELEVATIONS MEASURED AT STILLING WELLS AND DEEPER GROUNDWATER WELLS HAVE ALSO BEEN PROVIDED FOR REFERENCE.
4. WATER LEVEL DATA FROM DECEMBER 2013 FOR WELLS ASSOCIATED WITH THE HEATH LANE LANDFILL WERE REVIEWED AND CONSIDERED WITH RESPECT TO GRADIENT DIRECTION.
5. THE LOCATIONS OF THE HEATH LANE LANDFILL WELLS ARE APPROXIMATE.
6. CITY BOUNDARY DATA SOURCE: WISCONSIN LEGISLATIVE TECHNOLOGY SERVICES BUREAU, WISCONSIN COUNTY CLERKS AND LAND INFORMATION OFFICES, ACCESSED FALL 2017.
7. DITCH/STREAM DATA SOURCE: U.S. GEOLOGICAL SURVEY NATIONAL HYDROGRAPHY DATASET, ACCESSED FALL 2017.
8. ROAD DATA SOURCE: OPEN STREET MAP, ACCESSED FALL 2017.
9. AERIAL IMAGERY: 4/27/2016 DIGITALGLOBE, VIVID-USA.

0 1,100 2,200

GRAPHIC SCALE IN FEET

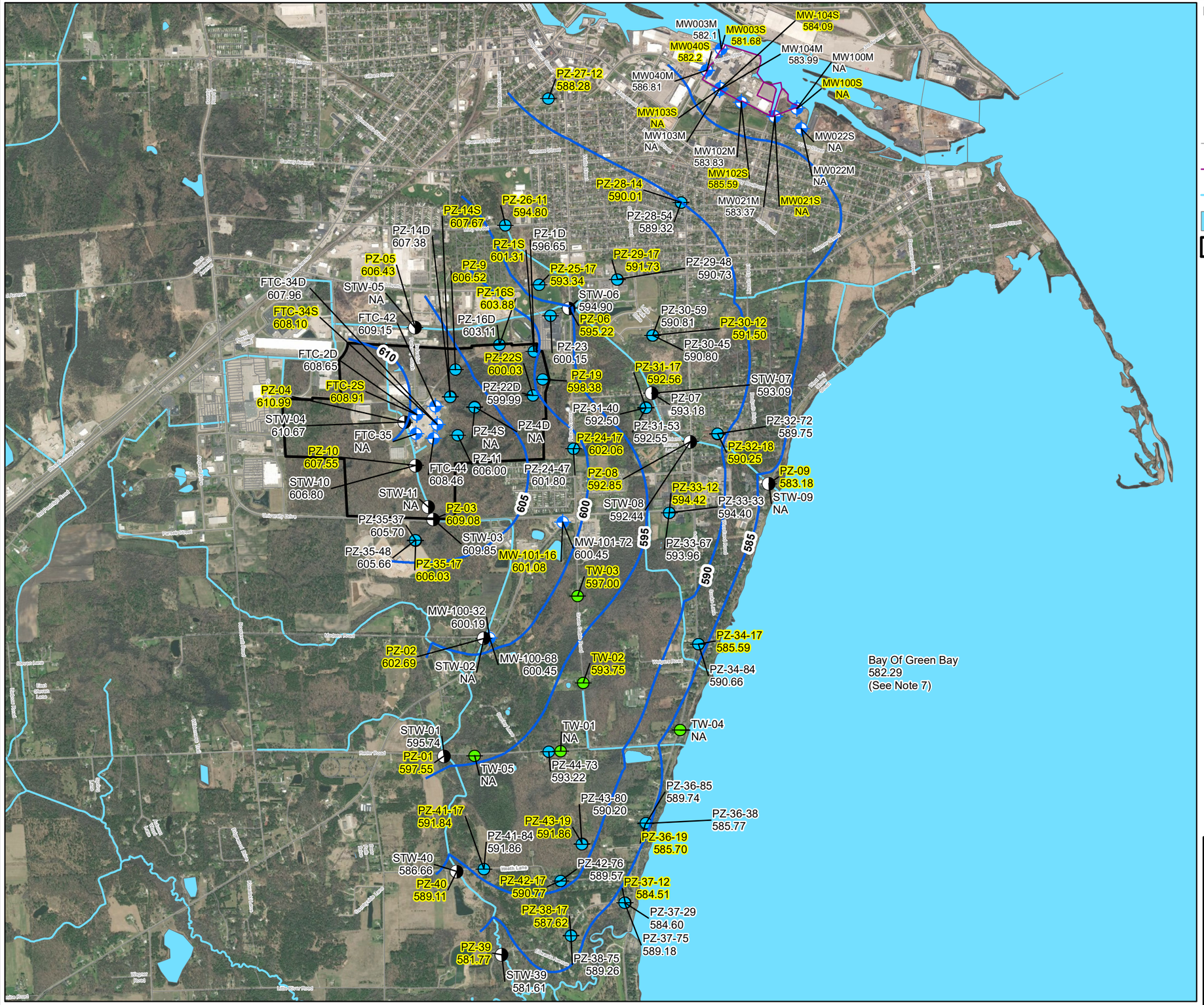
TYCO FIRE TECHNOLOGY CENTER
MARINETTE, WISCONSIN

**INTERIM SITE INVESTIGATION REPORT**

**SHALLOW GROUNDWATER POTENTIOMETRIC SURFACE - NOVEMBER 2018**

ARCADIS

FIGURE
8




LEGEND:

- MONITORING WELL
- PIEZOMETER
- IN-STREAM PIEZOMETER AND STILLING WELL PAIR
- TEMPORARY PIEZOMETER
- ROAD
- HYDRAULIC CONTAINMENT WALL
- DITCH/STREAM
- WATERBODY
- APPROXIMATE SITE PROPERTY BOUNDARY

NOTES:

1. WELLS AND PIEZOMETERS WERE USED FOR CONTOURING THE GROUNDWATER POTENTIOMETRIC SURFACE.
2. WATER LEVELS POSTED FOR PIEZOMETER/STILLING WELL PAIRS ARE FOR THE PIEZOMETERS. STILLING WELL MEASUREMENTS NOT AVAILABLE.
3. DITCH/STREAM DATA SOURCE: U.S. GEOLOGICAL SURVEY NATIONAL HYDROGRAPHY DATASET, ACCESSED FALL 2017.
4. ROAD DATA SOURCE: OPEN STREET MAP, ACCESSED FALL 2017.
5. AERIAL IMAGERY: 5/14/2017 DIGITALGLOBE, VIVID-USA
6. POSTED WATER- EVEL ELEVATIONS IN FEET ABOVE MEAN SEA LEVEL (AMSL), BASED ON MEASUREMENTS COMPLETED 10/16/2019 - 10/17/2019.
7. BAY OF GREEN BAY SURFACE ELEVATION (582.29) AS REPORTED BY NOAA/NOS MENOMINEE, MI, STATION #9087088 FOR 10/16/2019.
8. NA = LOCATION DATA NOT AVAILABLE FOR GROUNDWATER

0 2,000 4,000

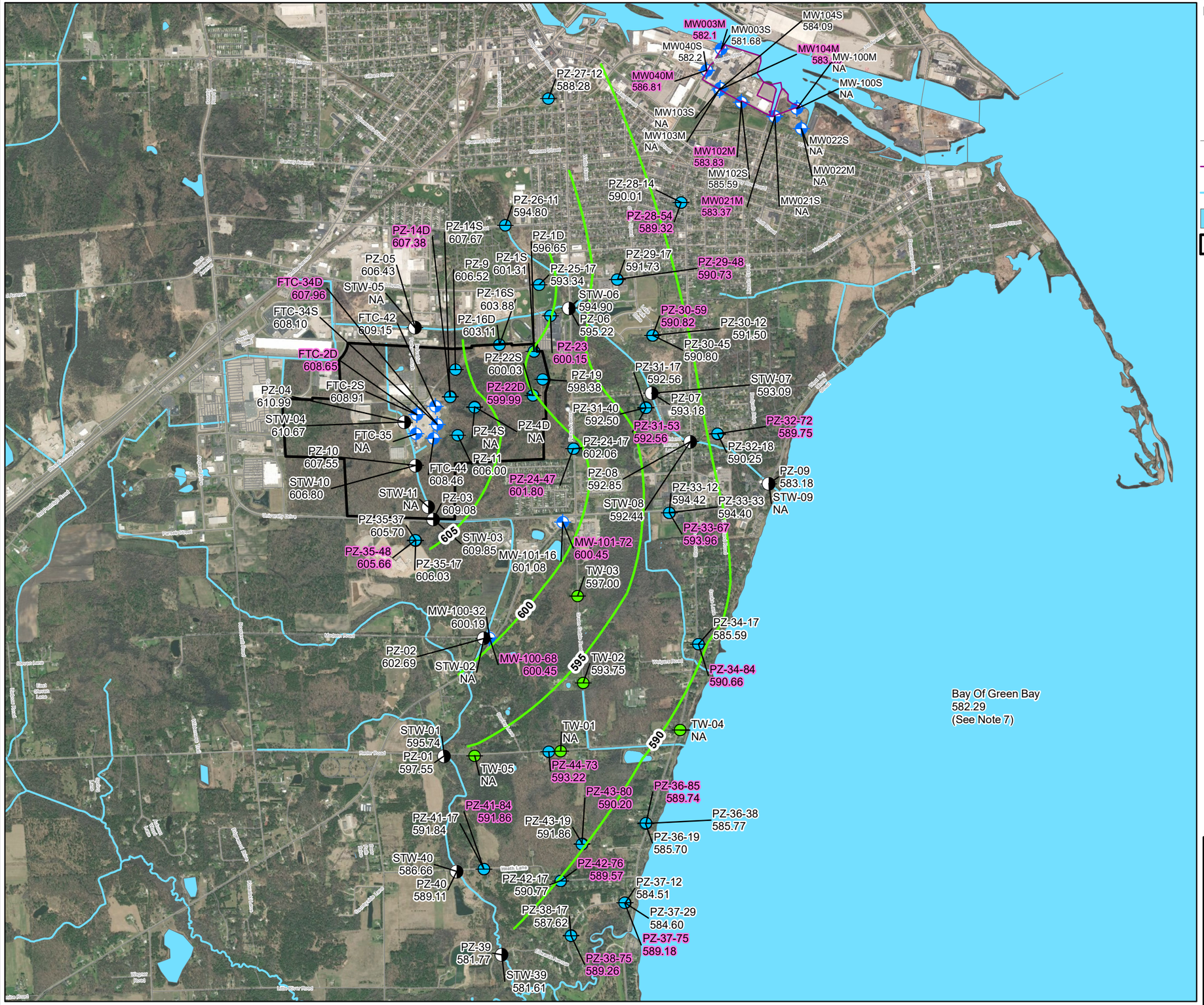
GRAPHIC SCALE IN FEET

TYCO FIRE TECHNOLOGY CENTER
MARINETTE, WISCONSIN
**INTERIM SITE INVESTIGATION REPORT**

**SHALLOW SAND POTENTIOMETRIC SURFACE - OCTOBER 2019**

ARCADIS

FIGURE
9




LEGEND:

- MONITORING WELL
- PIEZOMETER
- IN-STREAM PIEZOMETER AND STILLING WELL PAIR
- TEMPORARY PIEZOMETER
- ROAD
- HYDRAULIC CONTAINMENT WALL
- DITCH/STREAM
- WATERBODY
- APPROXIMATE SITE PROPERTY BOUNDARY

NOTES:

1. WELLS AND PIEZOMETERS WERE USED FOR CONTOURING THE GROUNDWATER POTENTIOMETRIC SURFACE.
2. WATER LEVELS POSTED FOR PIEZOMETER/STILLING WELL PAIRS ARE FOR THE PIEZOMETERS. STILLING WELL MEASUREMENTS NOT AVAILABLE.
3. DITCH/STREAM DATA SOURCE: U.S. GEOLOGICAL SURVEY NATIONAL HYDROGRAPHY DATASET, ACCESSED FALL 2017.
4. ROAD DATA SOURCE: OPEN STREET MAP, ACCESSED FALL 2017.
5. AERIAL IMAGERY: 5/14/2017 DIGITALGLOBE, VIVID-USA
6. POSTED WATER LEVEL ELEVATIONS IN FEET ABOVE MEAN SEA LEVEL (AMSL), BASED ON MEASUREMENTS COMPLETED 10/16/2019 - 10/17/2019.
7. BAY OF GREEN BAY SURFACE ELEVATION (582.29) AS REPORTED BY NOAA/NOS MENOMINEE, MI, STATION #9087088 FOR 10/16/2019.
8. NA = LOCATION DATA NOT AVAILABLE FOR GROUNDWATER

0 2,000 4,000

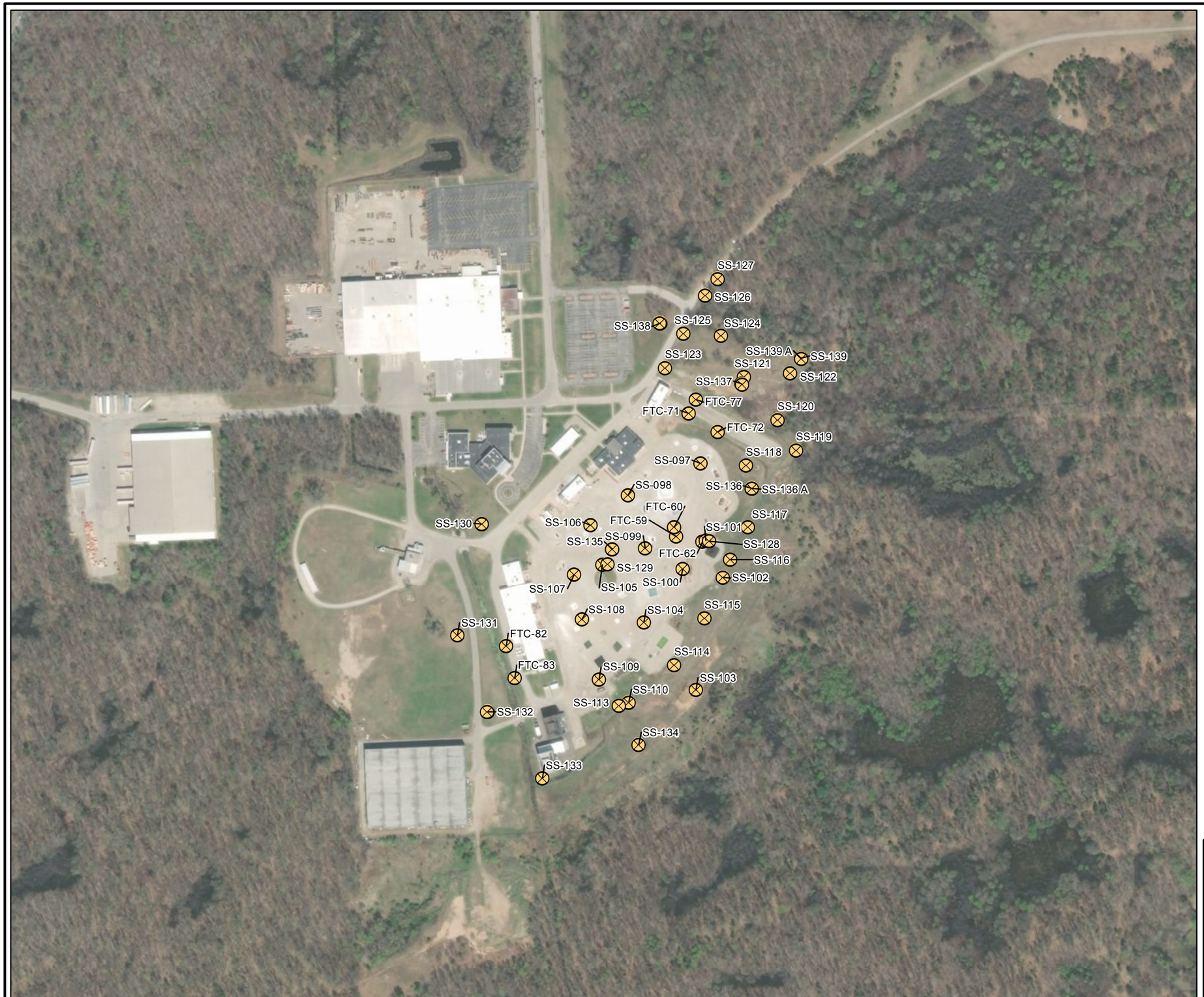
GRAPHIC SCALE IN FEET

TYCO FIRE TECHNOLOGY CENTER
MARINETTE, WISCONSIN
**INTERIM SITE INVESTIGATION**

**DEEP SAND POTENTIOMETRIC SURFACE - OCTOBER 2019**

ARCADIS

FIGURE
**10**




LEGEND:

SOIL SAMPLE LOCATION

NOTE:

1. AERIAL IMAGERY: USDA FSA NAIP 2015

0 300 600 Feet

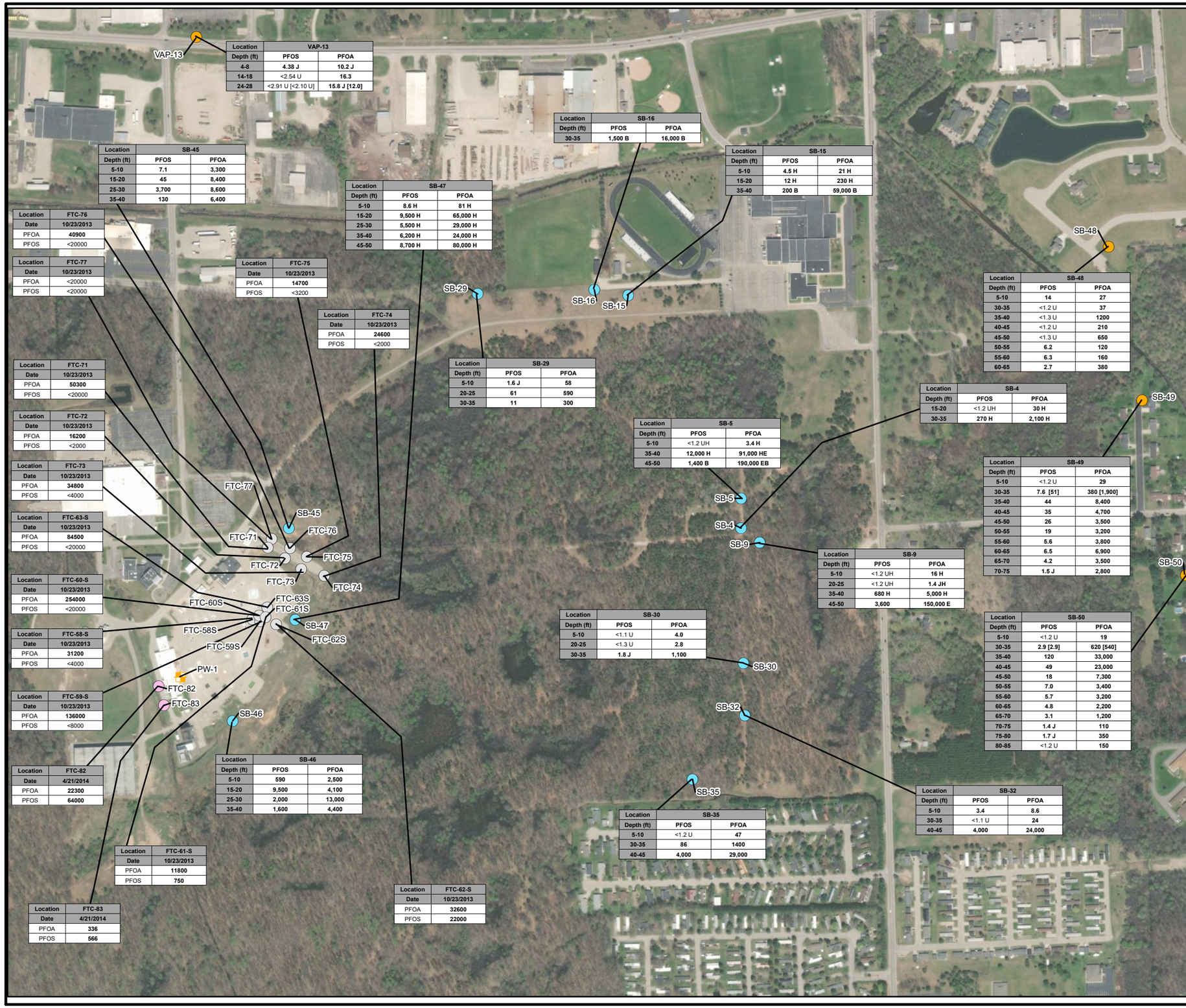
GRAPHIC SCALE

TYCO FIRE TECHNOLOGY CENTER
MARINETTE, WISCONSIN
**INTERIM SITE INVESTIGATION REPORT**

## SOIL INVESTIGATION LOCATIONS

ARCADIS

FIGURE
11




| Location | VAP-13 | |
|---|---|---|
| Depth (ft) | PFOS | PFOA |
| 4-8 | 4.38 J | 10.2 J |
| 14-18 | <2.54 U | 16.3 |
| 24-28 | <2.91 U [<2.10 U] | 15.8 J [12.0] |

| Location | SB-45 | |
|---|---|---|
| Depth (ft) | PFOS | PFOA |
| 5-10 | 7.1 | 3,300 |
| 15-20 | 45 | 8,400 |
| 25-30 | 3,700 | 8,600 |
| 35-40 | 130 | 6,400 |

| Location | SB-47 | |
|---|---|---|
| Depth (ft) | PFOS | PFOA |
| 5-10 | 8.6 H | 81 H |
| 15-20 | 9,500 H | 65,000 H |
| 25-30 | 5,500 H | 29,000 H |
| 35-40 | 6,200 H | 24,000 H |
| 45-50 | 8,700 H | 80,000 H |

| Location | SB-16 | |
|---|---|---|
| Depth (ft) | PFOS | PFOA |
| 30-35 | 1,500 B | 16,000 B |

| Location | SB-15 | |
|---|---|---|
| Depth (ft) | PFOS | PFOA |
| 5-10 | 4.5 H | 21 H |
| 15-20 | 12 H | 230 H |
| 35-40 | 200 B | 59,000 B |

| Location | FTC-76 |
|---|---|
| Date | 10/23/2013 |
| PFOA | 40900 |
| PFOS | <20000 |

| Location | FTC-77 |
|---|---|
| Date | 10/23/2013 |
| PFOA | <20000 |
| PFOS | <20000 |

| Location | FTC-75 |
|---|---|
| Date | 10/23/2013 |
| PFOA | 14700 |
| PFOS | <3200 |

| Location | FTC-74 |
|---|---|
| Date | 10/23/2013 |
| PFOA | 24600 |
| PFOS | <2000 |

| Location | FTC-71 |
|---|---|
| Date | 10/23/2013 |
| PFOA | 50300 |
| PFOS | <20000 |

| Location | FTC-72 |
|---|---|
| Date | 10/23/2013 |
| PFOA | 16200 |
| PFOS | <2000 |

| Location | FTC-73 |
|---|---|
| Date | 10/23/2013 |
| PFOA | 34800 |
| PFOS | <4000 |

| Location | FTC-63-S |
|---|---|
| Date | 10/23/2013 |
| PFOA | 84500 |
| PFOS | <20000 |

| Location | FTC-60-S |
|---|---|
| Date | 10/23/2013 |
| PFOA | 254000 |
| PFOS | <20000 |

| Location | FTC-58-S |
|---|---|
| Date | 10/23/2013 |
| PFOA | 31200 |
| PFOS | <4000 |

| Location | FTC-59-S |
|---|---|
| Date | 10/23/2013 |
| PFOA | 136000 |
| PFOS | <8000 |

| Location | FTC-82 |
|---|---|
| Date | 4/21/2014 |
| PFOA | 22300 |
| PFOS | 64000 |

| Location | FTC-83 |
|---|---|
| Date | 4/21/2014 |
| PFOA | 336 |
| PFOS | 566 |

| Location | FTC-61-S |
|---|---|
| Date | 10/23/2013 |
| PFOA | 11800 |
| PFOS | 750 |

| Location | FTC-62-S |
|---|---|
| Date | 10/23/2013 |
| PFOA | 32600 |
| PFOS | 22000 |

| Location | SB-29 | |
|---|---|---|
| Depth (ft) | PFOS | PFOA |
| 5-10 | 1.6 J | 58 |
| 20-25 | 61 | 590 |
| 30-35 | 11 | 300 |

| Location | SB-46 | |
|---|---|---|
| Depth (ft) | PFOS | PFOA |
| 5-10 | 590 | 2,500 |
| 15-20 | 9,500 | 4,100 |
| 25-30 | 2,000 | 13,000 |
| 35-40 | 1,600 | 4,400 |

| Location | SB-48 | |
|---|---|---|
| Depth (ft) | PFOS | PFOA |
| 5-10 | 14 | 27 |
| 30-35 | <1.2 U | 37 |
| 35-40 | <1.3 U | 1200 |
| 40-45 | <1.2 U | 210 |
| 45-50 | <1.3 U | 650 |
| 50-55 | 6.2 | 120 |
| 55-60 | 6.3 | 160 |
| 60-65 | 2.7 | 380 |

| Location | SB-4 | |
|---|---|---|
| Depth (ft) | PFOS | PFOA |
| 15-20 | <1.2 UH | 30 H |
| 30-35 | 270 H | 2,100 H |

| Location | SB-5 | |
|---|---|---|
| Depth (ft) | PFOS | PFOA |
| 5-10 | <1.2 UH | 3.4 H |
| 35-40 | 12,000 H | 91,000 HE |
| 45-50 | 1,400 B | 190,000 EB |

| Location | SB-49 | |
|---|---|---|
| Depth (ft) | PFOS | PFOA |
| 5-10 | <1.2 U | 29 |
| 30-35 | 7.6 [51] | 380 [1,900] |
| 35-40 | 44 | 8,400 |
| 40-45 | 35 | 4,700 |
| 45-50 | 26 | 3,500 |
| 50-55 | 19 | 3,200 |
| 55-60 | 5.6 | 3,800 |
| 60-65 | 6.5 | 6,900 |
| 65-70 | 4.2 | 3,500 |
| 70-75 | 1.5 J | 2,800 |

| Location | SB-9 | |
|---|---|---|
| Depth (ft) | PFOS | PFOA |
| 5-10 | <1.2 UH | 16 H |
| 20-25 | <1.2 UH | 1.4 JH |
| 35-40 | 680 H | 5,000 H |
| 45-50 | 3,600 | 150,000 E |

| Location | SB-50 | |
|---|---|---|
| Depth (ft) | PFOS | PFOA |
| 5-10 | <1.2 U | 19 |
| 30-35 | 2.9 [2.9] | 620 [540] |
| 35-40 | 120 | 33,000 |
| 40-45 | 49 | 23,000 |
| 45-50 | 18 | 7,300 |
| 50-55 | 7.0 | 3,400 |
| 55-60 | 5.7 | 3,200 |
| 60-65 | 4.8 | 2,200 |
| 65-70 | 3.1 | 1,200 |
| 70-75 | 1.4 J | 110 |
| 75-80 | 1.7 J | 350 |
| 80-85 | <1.2 U | 150 |

| Location | SB-30 | |
|---|---|---|
| Depth (ft) | PFOS | PFOA |
| 5-10 | <1.1 U | 4.0 |
| 20-25 | <1.3 U | 2.8 |
| 30-35 | 1.8 J | 1,100 |

| Location | SB-32 | |
|---|---|---|
| Depth (ft) | PFOS | PFOA |
| 5-10 | 3.4 | 8.6 |
| 30-35 | <1.1 U | 24 |
| 40-45 | 4,000 | 24,000 |

| Location | SB-35 | |
|---|---|---|
| Depth (ft) | PFOS | PFOA |
| 5-10 | <1.2 U | 47 |
| 30-35 | 86 | 1400 |
| 40-45 | 4,000 | 29,000 |

LEGEND:

- 2013 VAP BORING LOCATIONS
- 2014 VAP BORING LOCATIONS
- 2016 VAP BORING LOCATIONS
- 2017 VAP BORING LOCATIONS
- PRODUCTION WELL (ABANDONED 2019)

NOTES:

1. VAP = VERTICAL AQUIFER PROFILING
2. PFOA = PERFLUOROOCTANOIC ACID
3. PFOS = PERFLUOROOCTANESULFONIC ACID
4. PFOA/PFOS REPORTED IN UNITS OF NANOGRAM PER LITER (ng/L)
5. QUALIFIERS ARE DEFINED AS:
< = COMPOUND NOT DETECTED AT METHOD DETECTION LIMIT.
B = ANALYTE DETECTED IN SAMPLE AND ASSOCIATED BLANK SAMPLE.
E = CONCENTRATION EXCEEDS CALIBRATION RANGE OF LABORATORY SAMPLE
H = EXCEEDED HOLDING TIME.
J = THE COMPOUND WAS POSITIVELY IDENTIFIED; HOWEVER, THE ASSOCIATED NUMERICAL VALUE IS AN ESTIMATED CONCENTRATION ONLY
U = THE COMPOUND WAS ANALYZED FOR BUT NOT DETECTED.
6. CITY BOUNDARY DATA SOURCE: WISCONSIN LEGISLATIVE TECHNOLOGY SERVICES BUREAU, WISCONSIN COUNTY CLERKS AND LAND INFORMATION OFFICES, ACCESSED FALL 2017.
DITCH/STREAM AND WATERBODY DATA SOURCE: U.S. GEOLOGICAL SURVEY NATIONAL HYDROGRAPHY DATASET, ACCESSED FALL 2017.
7. ROAD DATA SOURCE: OPEN STREET MAP, ACCESSED FALL 2017.
8. BOLD = DETECTION
9. FIELD DUPLICATES ARE SHOWIN BRACKETS []

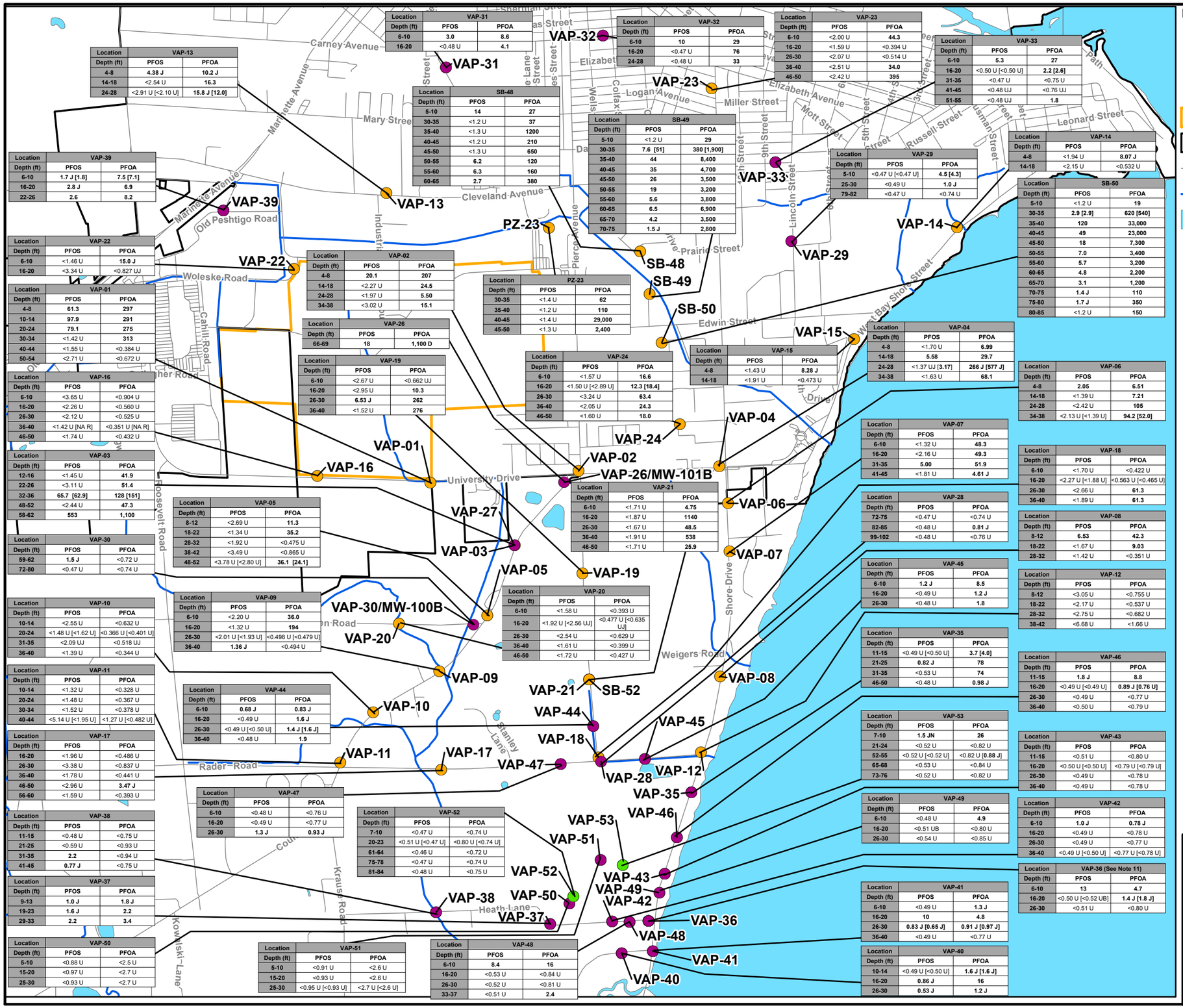
0 500 1,000 Feet

TYCO FIRE TECHNOLOGY CENTER
MARINETTE, WISCONSIN
**INTERIM SITE INVESTIGATION REPORT**

**2013 - 2014 & 2016 - 2017**
**ANALYTICAL VAP RESULTS**

ARCADIS

FIGURE
12




LEGEND:

- 2017 VAP BORING LOCATION
- 2018 VAP BORING LOCATION
- 2019 VAP BORING LOCATION
- APPROXIMATE SITE PROPERTY BOUNDARY
- APPROXIMATE MARINETTE CITY BOUNDARY
- ROAD
- DITCH/STREAM
- WATERBODY

NOTES:

1. VAP = VERTICAL AQUIFER PROFILING
2. PFOA = PERFLUOROOCTANOIC ACID
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4. PFOA/PFOS REPORTED IN UNITS OF NANOGRAM PER LITER (ng/L).
6. QUALIFIERS ARE DEFINED AS:
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B = ANALYTE DETECTED IN SAMPLE AND ASSOCIATED BLANK SAMPLE.
H = EXCEEDED HOLDING TIME.
J = THE COMPOUND WAS POSITIVELY IDENTIFIED; HOWEVER, THE ASSOCIATED NUMERICAL VALUE IS AN ESTIMATED CONCENTRATION ONLY
NA = NOT ANALYZED
R = REJECTED ANALYTE
U = THE COMPOUND WAS ANALYZED FOR BUT NOT DETECTED.
6. CITY BOUNDARY DATA SOURCE: WISCONSIN LEGISLATIVE TECHNOLOGY SERVICES BUREAU, WISCONSIN COUNTY CLERKS AND LAND INFORMATION OFFICES, ACCESSED FALL 2017.
7. DITCH/STREAM AND WATERBODY DATA SOURCE: U.S. GEOLOGICAL SURVEY NATIONAL HYDROGRAPHY DATASET, ACCESSED FALL 2017.
8. ROAD DATA SOURCE: OPEN STREET MAP, ACCESSED FALL 2017.
9. BOLD = DETECTION.
10. FIELD DUPLICATES ARE SHOWN IN BRACKETS [].
11. VAP-36 WAS SAMPLED 6/26/2018 AND THEN RESAMPLED 10/26/2018 AT ADJACENT LOCATION VAP-36(2) TO EVALUATE SUSPECTED ERRONEOUS RESULTS. RESULTS OF RESAMPLING ARE SHOWN.

0 1,800 3,600

GRAPHIC SCALE IN FEET

| Location | VAP-13 | |
|---|---|---|
| Depth (ft) | PFOS | PFOA |
| 4-8 | 4.38 J | 10.2 J |
| 14-18 | <2.54 U | 16.3 |
| 24-28 | <2.91 U [<2.10 U] | 15.8 J [12.0] |

| Location | VAP-31 | |
|---|---|---|
| Depth (ft) | PFOS | PFOA |
| 6-10 | 3.0 | 8.6 |
| 16-20 | <0.48 U | 4.1 |

| Location | VAP-32 | |
|---|---|---|
| Depth (ft) | PFOS | PFOA |
| 6-10 | 10 | 29 |
| 16-20 | <0.47 U | 76 |
| 24-28 | <0.48 U | 33 |

| Location | VAP-23 | |
|---|---|---|
| Depth (ft) | PFOS | PFOA |
| 6-10 | <2.00 U | 44.3 |
| 16-20 | <1.59 U | <0.394 U |
| 26-30 | <2.07 U | <0.514 U |
| 36-40 | <2.51 U | 34.0 |
| 46-50 | <2.42 U | 395 |

| Location | VAP-33 | |
|---|---|---|
| Depth (ft) | PFOS | PFOA |
| 6-10 | 5.3 | 27 |
| 16-20 | <0.50 U [<0.50 U] | 2.2 [2.6] |
| 31-35 | <0.47 U | <0.75 U |
| 41-45 | <0.48 UJ | <0.76 UJ |
| 51-55 | <0.48 UJ | 1.8 |

| Location | SB-48 | |
|---|---|---|
| Depth (ft) | PFOS | PFOA |
| 5-10 | 14 | 27 |
| 30-35 | <1.2 U | 37 |
| 35-40 | <1.3 U | 1200 |
| 40-45 | <1.2 U | 210 |
| 45-50 | <1.3 U | 650 |
| 50-55 | 6.2 | 120 |
| 55-60 | 6.3 | 160 |
| 60-65 | 2.7 | 380 |

| Location | SB-49 | |
|---|---|---|
| Depth (ft) | PFOS | PFOA |
| 5-10 | <1.2 U | 29 |
| 30-35 | 7.6 [51] | 380 [1,900] |
| 35-40 | 44 | 8,400 |
| 40-45 | 35 | 4,700 |
| 45-50 | 26 | 3,500 |
| 50-55 | 19 | 3,200 |
| 55-60 | 5.6 | 3,800 |
| 60-65 | 6.5 | 6,900 |
| 65-70 | 4.2 | 3,500 |
| 70-75 | 1.5 J | 2,800 |

| Location | VAP-14 | |
|---|---|---|
| Depth (ft) | PFOS | PFOA |
| 4-8 | <1.94 U | 8.07 J |
| 14-18 | <2.15 U | <0.532 U |

| Location | VAP-29 | |
|---|---|---|
| Depth (ft) | PFOS | PFOA |
| 5-10 | <0.47 U [<0.47 U] | 4.5 [4.3] |
| 25-30 | <0.49 U | 1.0 J |
| 79-82 | <0.47 U | <0.74 U |

| Location | SB-50 | |
|---|---|---|
| Depth (ft) | PFOS | PFOA |
| 5-10 | <1.2 U | 19 |
| 30-35 | 2.9 [2.9] | 620 [540] |
| 35-40 | 120 | 33,000 |
| 40-45 | 49 | 23,000 |
| 45-50 | 18 | 7,300 |
| 50-55 | 7.0 | 3,400 |
| 55-60 | 5.7 | 3,200 |
| 60-65 | 4.8 | 2,200 |
| 65-70 | 3.1 | 1,200 |
| 70-75 | 1.4 J | 110 |
| 75-80 | 1.7 J | 350 |
| 80-85 | <1.2 U | 150 |

| Location | VAP-39 | |
|---|---|---|
| Depth (ft) | PFOS | PFOA |
| 6-10 | 1.7 J [1.8] | 7.5 [7.1] |
| 16-20 | 2.8 J | 6.9 |
| 22-26 | 2.6 | 8.2 |

| Location | VAP-22 | |
|---|---|---|
| Depth (ft) | PFOS | PFOA |
| 6-10 | <1.46 U | 15.0 J |
| 16-20 | <3.34 U | <0.827 UJ |

| Location | VAP-01 | |
|---|---|---|
| Depth (ft) | PFOS | PFOA |
| 4-8 | 61.3 | 297 |
| 10-14 | 97.9 | 291 |
| 20-24 | 79.1 | 275 |
| 30-34 | <1.42 U | 313 |
| 40-44 | <1.55 U | <0.384 U |
| 50-54 | <2.71 U | <0.672 U |

| Location | VAP-02 | |
|---|---|---|
| Depth (ft) | PFOS | PFOA |
| 4-8 | 20.1 | 207 |
| 14-18 | <2.27 U | 24.5 |
| 24-28 | <1.97 U | 5.50 |
| 34-38 | <3.02 U | 15.1 |

| Location | VAP-26 | |
|---|---|---|
| Depth (ft) | PFOS | PFOA |
| 66-69 | 18 | 1,100 D |

| Location | PZ-23 | |
|---|---|---|
| Depth (ft) | PFOS | PFOA |
| 30-35 | <1.4 U | 62 |
| 35-40 | <1.2 U | 110 |
| 40-45 | <1.4 U | 29,000 |
| 45-50 | <1.3 U | 2,400 |

| Location | VAP-16 | |
|---|---|---|
| Depth (ft) | PFOS | PFOA |
| 6-10 | <3.65 U | <0.904 U |
| 16-20 | <2.26 U | <0.560 U |
| 26-30 | <2.12 U | <0.525 U |
| 36-40 | <1.42 U [NA R] | <0.351 U [NA R] |
| 46-50 | <1.74 U | <0.432 U |

| Location | VAP-19 | |
|---|---|---|
| Depth (ft) | PFOS | PFOA |
| 6-10 | <2.67 U | <0.662 UJ |
| 16-20 | <2.95 U | 10.3 |
| 26-30 | 6.53 J | 262 |
| 36-40 | <1.52 U | 276 |

| Location | VAP-24 | |
|---|---|---|
| Depth (ft) | PFOS | PFOA |
| 6-10 | <1.57 U | 16.6 |
| 16-20 | <1.50 U [<2.89 U] | 12.3 [18.4] |
| 26-30 | <3.24 U | 63.4 |
| 36-40 | <2.05 U | 24.3 |
| 46-50 | <1.60 U | 18.0 |

| Location | VAP-15 | |
|---|---|---|
| Depth (ft) | PFOS | PFOA |
| 4-8 | <1.43 U | 8.28 J |
| 14-18 | <1.91 U | <0.473 U |

| Location | VAP-04 | |
|---|---|---|
| Depth (ft) | PFOS | PFOA |
| 4-8 | <1.70 U | 6.99 |
| 14-18 | 5.58 | 29.7 |
| 24-28 | <1.37 UJ [3.17] | 266 J [577 J] |
| 34-38 | <1.63 U | 68.1 |

| Location | VAP-06 | |
|---|---|---|
| Depth (ft) | PFOS | PFOA |
| 4-8 | 2.05 | 6.51 |
| 14-18 | <1.39 U | 7.21 |
| 24-28 | <2.42 U | 105 |
| 34-38 | <2.13 U [<1.39 U] | 94.2 [52.0] |

| Location | VAP-03 | |
|---|---|---|
| Depth (ft) | PFOS | PFOA |
| 12-16 | <1.45 U | 41.9 |
| 22-26 | <3.11 U | 51.4 |
| 32-36 | 65.7 [62.9] | 128 [151] |
| 48-52 | <2.44 U | 47.3 |
| 58-62 | 553 | 1,100 |

| Location | VAP-21 | |
|---|---|---|
| Depth (ft) | PFOS | PFOA |
| 6-10 | <1.71 U | 4.75 |
| 16-20 | <1.87 U | 1140 |
| 26-30 | <1.67 U | 48.5 |
| 36-40 | <1.91 U | 538 |
| 46-50 | <1.71 U | 25.9 |

| Location | VAP-07 | |
|---|---|---|
| Depth (ft) | PFOS | PFOA |
| 6-10 | <1.32 U | 48.3 |
| 16-20 | <2.16 U | 49.3 |
| 31-35 | 5.00 | 51.9 |
| 41-45 | <1.81 U | 4.61 J |

| Location | VAP-18 | |
|---|---|---|
| Depth (ft) | PFOS | PFOA |
| 6-10 | <1.70 U | <0.422 U |
| 16-20 | <2.27 U [<1.88 U] | <0.563 U [<0.465 U] |
| 26-30 | <2.66 U | 61.3 |
| 36-40 | <1.89 U | 61.3 |

| Location | VAP-05 | |
|---|---|---|
| Depth (ft) | PFOS | PFOA |
| 8-12 | <2.69 U | 11.3 |
| 18-22 | <1.34 U | 35.2 |
| 28-32 | <1.92 U | <0.475 U |
| 38-42 | <3.49 U | <0.865 U |
| 48-52 | <3.78 U [<2.80 U] | 36.1 [24.1] |

| Location | VAP-28 | |
|---|---|---|
| Depth (ft) | PFOS | PFOA |
| 72-75 | <0.47 U | <0.74 U |
| 82-85 | <0.48 U | 0.81 J |
| 99-102 | <0.48 U | <0.76 U |

| Location | VAP-08 | |
|---|---|---|
| Depth (ft) | PFOS | PFOA |
| 8-12 | 6.53 | 42.3 |
| 18-22 | <1.67 U | 9.03 |
| 28-32 | <1.42 U | <0.351 U |

| Location | VAP-30 | |
|---|---|---|
| Depth (ft) | PFOS | PFOA |
| 59-62 | 1.5 J | <0.72 U |
| 72-80 | <0.47 U | <0.74 U |

| Location | VAP-45 | |
|---|---|---|
| Depth (ft) | PFOS | PFOA |
| 6-10 | 1.2 J | 8.5 |
| 16-20 | <0.49 U | 1.2 J |
| 26-30 | <0.48 U | 1.8 |

| Location | VAP-12 | |
|---|---|---|
| Depth (ft) | PFOS | PFOA |
| 8-12 | <3.05 U | <0.755 U |
| 18-22 | <2.17 U | <0.537 U |
| 28-32 | <2.75 U | <0.682 U |
| 38-42 | <6.68 U | <1.66 U |

| Location | VAP-09 | |
|---|---|---|
| Depth (ft) | PFOS | PFOA |
| 6-10 | <2.20 U | 36.0 |
| 16-20 | <1.32 U | 194 |
| 26-30 | <2.01 U [<1.93 U] | <0.498 U [<0.479 U] |
| 36-40 | 1.36 J | <0.494 U |

| Location | VAP-20 | |
|---|---|---|
| Depth (ft) | PFOS | PFOA |
| 6-10 | <1.58 U | <0.393 U |
| 16-20 | <1.92 U [<2.56 UJ] | <0.477 U [<0.635 UJ] |
| 26-30 | <2.54 U | <0.629 U |
| 36-40 | <1.61 U | <0.399 U |
| 46-50 | <1.72 U | <0.427 U |

| Location | VAP-35 | |
|---|---|---|
| Depth (ft) | PFOS | PFOA |
| 11-15 | <0.49 U [<0.50 U] | 3.7 [4.0] |
| 21-25 | 0.82 J | 78 |
| 31-35 | <0.53 U | 74 |
| 46-50 | <0.48 U | 0.98 J |

| Location | VAP-46 | |
|---|---|---|
| Depth (ft) | PFOS | PFOA |
| 11-15 | 1.8 J | 8.8 |
| 16-20 | <0.49 U [<0.49 U] | 0.89 J [0.76 U] |
| 26-30 | <0.49 U | <0.77 U |
| 36-40 | <0.50 U | <0.79 U |

| Location | VAP-10 | |
|---|---|---|
| Depth (ft) | PFOS | PFOA |
| 10-14 | <2.55 U | <0.632 U |
| 20-24 | <1.48 U [<1.62 U] | <0.366 U [<0.401 U] |
| 31-35 | <2.09 UJ | <0.518 UJ |
| 36-40 | <1.39 U | <0.344 U |

| Location | VAP-11 | |
|---|---|---|
| Depth (ft) | PFOS | PFOA |
| 10-14 | <1.32 U | <0.328 U |
| 20-24 | <1.48 U | <0.367 U |
| 30-34 | <1.52 U | <0.378 U |
| 40-44 | <5.14 U [<1.95 U] | <1.27 U [<0.482 U] |

| Location | VAP-44 | |
|---|---|---|
| Depth (ft) | PFOS | PFOA |
| 6-10 | 0.68 J | 0.83 J |
| 16-20 | <0.49 U | 1.6 J |
| 26-30 | <0.49 U [<0.50 U] | 1.4 J [1.6 J] |
| 36-40 | <0.48 U | 1.9 |

| Location | VAP-53 | |
|---|---|---|
| Depth (ft) | PFOS | PFOA |
| 7-10 | 1.5 JN | 26 |
| 21-24 | <0.52 U | <0.82 U |
| 52-55 | <0.52 U [<0.52 U] | <0.82 U [0.88 J] |
| 65-68 | <0.53 U | <0.84 U |
| 73-76 | <0.52 U | <0.82 U |

| Location | VAP-43 | |
|---|---|---|
| Depth (ft) | PFOS | PFOA |
| 11-15 | <0.51 U | <0.80 U |
| 16-20 | <0.50 U [<0.50 U] | <0.79 U [<0.79 U] |
| 26-30 | <0.49 U | <0.78 U |
| 36-40 | <0.49 U | <0.78 U |

| Location | VAP-17 | |
|---|---|---|
| Depth (ft) | PFOS | PFOA |
| 16-20 | <1.96 U | <0.486 U |
| 26-30 | <3.38 U | <0.837 U |
| 36-40 | <1.78 U | <0.441 U |
| 46-50 | <2.96 U | 3.47 J |
| 56-60 | <1.59 U | <0.393 U |

| Location | VAP-47 | |
|---|---|---|
| Depth (ft) | PFOS | PFOA |
| 6-10 | <0.48 U | <0.76 U |
| 16-20 | <0.49 U | <0.77 U |
| 26-30 | 1.3 J | 0.93 J |

| Location | VAP-52 | |
|---|---|---|
| Depth (ft) | PFOS | PFOA |
| 7-10 | <0.47 U | <0.74 U |
| 20-23 | <0.51 U [<0.47 U] | <0.80 U [<0.74 U] |
| 61-64 | <0.46 U | <0.72 U |
| 75-78 | <0.47 U | <0.74 U |
| 81-84 | <0.48 U | <0.75 U |

| Location | VAP-49 | |
|---|---|---|
| Depth (ft) | PFOS | PFOA |
| 6-10 | <0.48 U | 4.9 |
| 16-20 | <0.51 UB | <0.80 U |
| 26-30 | <0.54 U | <0.85 U |

| Location | VAP-42 | |
|---|---|---|
| Depth (ft) | PFOS | PFOA |
| 6-10 | 1.0 J | 0.78 J |
| 16-20 | <0.49 U | <0.78 U |
| 26-30 | <0.49 U | <0.77 U |
| 36-40 | <0.49 U [<0.50 U] | <0.77 U [<0.78 U] |

| Location | VAP-38 | |
|---|---|---|
| Depth (ft) | PFOS | PFOA |
| 11-15 | <0.48 U | <0.75 U |
| 21-25 | <0.59 U | <0.93 U |
| 31-35 | 2.2 | <0.94 U |
| 41-45 | 0.77 J | <0.75 U |

| Location | VAP-36 (See Note 11) | |
|---|---|---|
| Depth (ft) | PFOS | PFOA |
| 6-10 | 13 | 4.7 |
| 16-20 | <0.50 U [<0.52 UB] | 1.4 J [1.8 J] |
| 26-30 | <0.51 U | <0.80 U |

| Location | VAP-37 | |
|---|---|---|
| Depth (ft) | PFOS | PFOA |
| 9-13 | 1.0 J | 1.8 J |
| 19-23 | 1.6 J | 2.2 |
| 29-33 | 2.2 | 3.4 |

| Location | VAP-41 | |
|---|---|---|
| Depth (ft) | PFOS | PFOA |
| 6-10 | <0.49 U | 1.3 J |
| 16-20 | 10 | 4.8 |
| 26-30 | 0.83 J [0.65 J] | 0.91 J [0.97 J] |
| 36-40 | <0.49 U | <0.77 U |

| Location | VAP-50 | |
|---|---|---|
| Depth (ft) | PFOS | PFOA |
| 5-10 | <0.88 U | <2.5 U |
| 15-20 | <0.97 U | <2.7 U |
| 25-30 | <0.93 U | <2.7 U |

| Location | VAP-51 | |
|---|---|---|
| Depth (ft) | PFOS | PFOA |
| 5-10 | <0.91 U | <2.6 U |
| 15-20 | <0.93 U | <2.6 U |
| 25-30 | <0.95 U [<0.93 U] | <2.7 U [<2.6 U] |

| Location | VAP-48 | |
|---|---|---|
| Depth (ft) | PFOS | PFOA |
| 6-10 | 8.4 | 16 |
| 16-20 | <0.53 U | <0.84 U |
| 26-30 | <0.52 U | <0.81 U |
| 33-37 | <0.51 U | 2.4 |

| Location | VAP-40 | |
|---|---|---|
| Depth (ft) | PFOS | PFOA |
| 10-14 | <0.49 U [<0.50 U] | 1.6 J [1.6 J] |
| 16-20 | 0.86 J | 16 |
| 26-30 | 0.53 J | 1.2 J |

TYCO FIRE TECHNOLOGY CENTER
MARINETTE, WISCONSIN
**INTERIM SITE INVESTIGATION REPORT**

**2017 - 2019 ANALYTICAL VAP RESULTS**

ARCADIS

FIGURE
13

| Location | PZ-16D | |
|---|---|---|
| Date | PFOS | PFOA |
| 8/2018 | **5700 D** | **16000 D** |
| 8/2019 | **6300** | **25000** |

| Location | PZ-23 | |
|---|---|---|
| Date | PFOS | PFOA |
| 8/2018 | < 26 U | **16000 D** |
| 8/2019 | < 11 U | **14000 D** |

| Location | PZ-16S | |
|---|---|---|
| Date | PFOS | PFOA |
| 8/2018 | **4.9** | **29** |
| 8/2019 | **3.6 JN** | **34** |

| Location | PZ-1D | |
|---|---|---|
| Date | PFOS | PFOA |
| 8/2018 | < 0.51 U | **20** |
| 8/2019 | < 0.49 U | **20** |

| Location | PZ-9 | |
|---|---|---|
| Date | PFOS | PFOA |
| 8/2018 | **5.4** | **580 D** |
| 8/2019 | < 10 U | **1800 D** |

| Location | PZ-1S | |
|---|---|---|
| Date | PFOS | PFOA |
| 8/2018 | < 110 UB | **46000 D** |
| 8/2019 | **46** | **43000 EJ** |

| Location | PZ-14D | |
|---|---|---|
| Date | PFOS | PFOA |
| 8/2018 | **1200 D** | **11000 D** |
| 8/2019 | **740** | **10000** |

| Location | PZ-19 | |
|---|---|---|
| Date | PFOS | PFOA |
| 8/2018 | **2600 D** | **19000 D** |
| 8/2019 | **19** | **260** |

| Location | PZ-14S | |
|---|---|---|
| Date | PFOS | PFOA |
| 8/2018 | **6500 D** | **25000 D** |
| 8/2019 | **2100** | **19000 D** |

| Location | PZ-22D | |
|---|---|---|
| Date | PFOS | PFOA |
| 8/2018 | **12** | **160** |
| 8/2019 | **1400** | **12000 D** |

| Location | PZ-22S | |
|---|---|---|
| Date | PFOS | PFOA |
| 8/2018 | < 0.51 U | **17** |
| 8/2019 | < 0.50 U | **19** |

| Location | FTC-2D | |
|---|---|---|
| Date | PFOS | PFOA |
| 8/2018 | **29** | **7300 D** |
| 8/2019 | **46 D** | **5100 D** |

| Location | FTC-34S | |
|---|---|---|
| Date | PFOS | PFOA |
| 8/2018 | **290** | **550 D** |
| 8/2019 | **300** | **760 D** |

| Location | FTC-2S | |
|---|---|---|
| Date | PFOS | PFOA |
| 8/2018 | **41** | **160** |
| 8/2019 | **170** | **2000 D** |

| Location | FTC-34D | |
|---|---|---|
| Date | PFOS | PFOA |
| 8/2018 | **15000 D** | **26000 D** |
| 8/2019 | **10000 D** | **25000 D** |

| Location | PW-1 | |
|---|---|---|
| Date | PFOS | PFOA |
| 6/2018 | <0.54 U | **800 D** |

| Location | MW-101-16 | |
|---|---|---|
| Date | PFOS | PFOA |
| 8/2018 | **5.4** | **7.8** |
| 8/2019 | **1.9** | **12** |

| Location | MW-101-72 | |
|---|---|---|
| Date | PFOS | PFOA |
| 8/2018 | **20** | **1300 D** |
| 8/2019 | **30** | **990 D** |

| Location | MW-100-32 | |
|---|---|---|
| Date | PFOS | PFOA |
| 8/2018 | < 0.51 U | **1.0 J** |
| 8/2019 | < 0.47 U | **2.2** |

| Location | MW-100-68 | |
|---|---|---|
| Date | PFOS | PFOA |
| 8/2018 | < 0.50 UB | < 0.79 U |
| 8/2019 | < 0.50 U | **1.2 J** |

LEGEND:

- MONITORING WELLS
- SITE PRODUCTION WELL
- APPROXIMATE SITE PROPERTY BOUNDARY
- APPROXIMATE MARINETTE CITY BOUNDARY
- ROAD
- DITCH/STREAM
- WATERBODY

NOTES:

1. CITY BOUNDARY DATA SOURCE: WISCONSIN LEGISLATIVE TECHNOLOGY SERVICES BUREAU, WISCONSIN COUNTY CLERKS AND LAND INFORMATION OFFICES, ACCESSED FALL 2017.
2. DITCH/STREAM DATA SOURCE: U.S. GEOLOGICAL SURVEY NATIONAL HYDROGRAPHY DATASET, ACCESSED FALL 2017.
3. ROAD DATA SOURCE: OPEN STREET MAP, ACCESSED FALL 2017.
4. AERIAL IMAGERY: 4/27/2016 DIGITALGLOBE, VIVID-USA.
5. PFOS = PERFLUOROOCTANE SULFONIC ACID.
6. PFOA = PERFLUOROOCTANOIC ACID.
7. D = DILUTION REQUIRED FOR SAMPLE ANALYSIS.
8. U = INDICATES THE ANALYTE WAS ANALYZED FOR BUT NOT DETECTED.
9. J = THE RESULT IS AN ESTIMATED QUANTITY. THE ASSOCIATED NUMERICAL VALUE IS THE APPROXIMATE CONCENTRATION OF THE ANALYTE IN THE SAMPLE.
10. B = THE COMPOUND HAS BEEN FOUND IN THE SAMPLE AS WELL AS ITS ASSOCIATED BLANK, ITS PRESENCE IN THE SAMPLE MAY BE SUSPECT.
11. E = CONCENTRATION EXCEEDS CALIBRATION RANGE OF LABORATORY INSTRUMENT.
12. N = NORMAL SAMPLE TYPE.
13. UNIT OF MEASUREMENT USED IS NANOGRAMS PER LITER (NG/L).
14. DETECTIONS ARE IN BOLD.
15. FIELD DUPLICATE VALUES HAVE NOT BEEN REPORTED, THE HIGHER VALUE HAS BEEN REPORTED

0 800 1,600
GRAPHIC SCALE IN FEET

TYCO FIRE TECHNOLOGY CENTER
MARINETTE, WISCONSIN
**INTERIM SITE INVESTIGATION REPORT**

**ANALYTICAL MONITORING WELL DATA**

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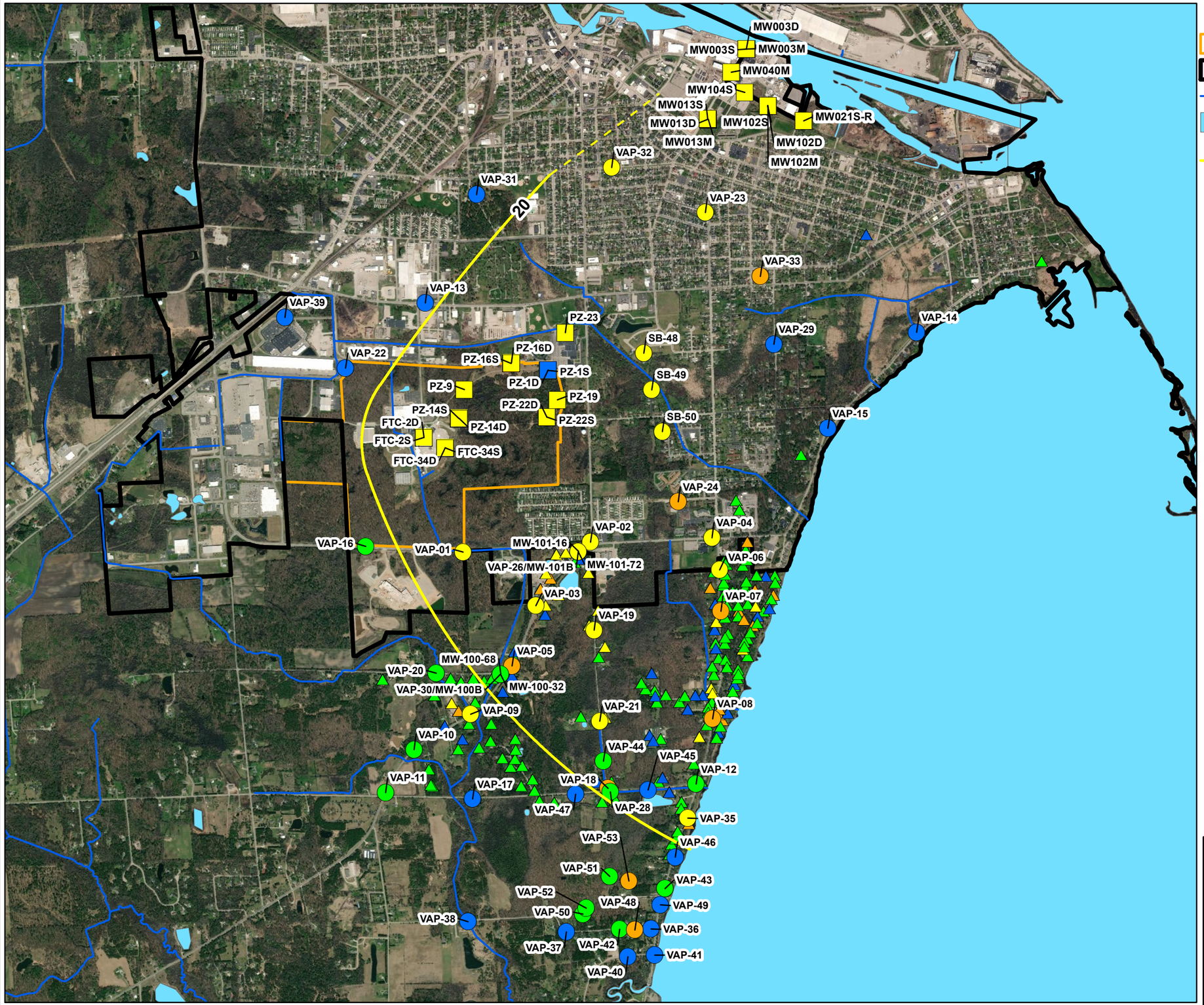
FIGURE
**14**




## LEGEND:

- APPROXIMATE SITE PROPERTY BOUNDARY
- APPROXIMATE MARINETTE CITY BOUNDARY
- DITCH/STREAM
- WATERBODY
- APPROXIMATE WESTERN EXTENT OF GROUNDWATER WHERE COMBINED PFOS AND PFOA DETECTED ABOVE 20 ppt AND POTENTIALLY ASSOCIATED WITH THE FTC OR STANTON STREET SITES (DASHED WHERE INFERRED)

### TOTAL PFOS AND PFOA IN GROUNDWATER

VAP BORING (MAX RESULT AT ANY SAMPLE DEPTH)

- ND - 2 ppt
- 2 - 20 ppt
- 20 - 70 ppt
- >70 ppt

MONITORING WELL SAMPLE RESULT (AUGUST 2019)

- ND - 2 ppt
- 2 - 20 ppt
- 20 - 70 ppt
- >70 ppt

RESIDENTIAL WELL SAMPLING RESULT (SPRING 2019)

- ND - 2 ppt
- 2 - 20 ppt
- 20 - 70 ppt
- >70 ppt

NOTES:

1.FIGURE PROVIDES REPRESENTATIVE ONSITE DATA AND DOES NOT REFLECT A COMPREHENSIVE DATASET FOR THE FTC SITE

2. RESIDENTIAL WELL LOCATIONS ARE APPROXIMATE

3. ppt = PARTS PER TRILLION
PFOA = PERFLUOROOCTANOIC ACID
PFOS = PERFLUOROOCTANESULFONIC ACID
VAP = VERTICAL AQUIFER PROFILE
FTC = FIRE TRAINING CENTER

4. SERVICE LAYER CREDITS: SOURCE: ESRI, DIGITALGLOBE, GEOEYE, EARTHSTAR GEOGRAPHICS, CNES/AIRBUS DS, USDA, USGS, AEROGRID, IGN, AND THE GIS USER COMMUNITY

0 1,200 2,400

GRAPHIC SCALE IN FEET

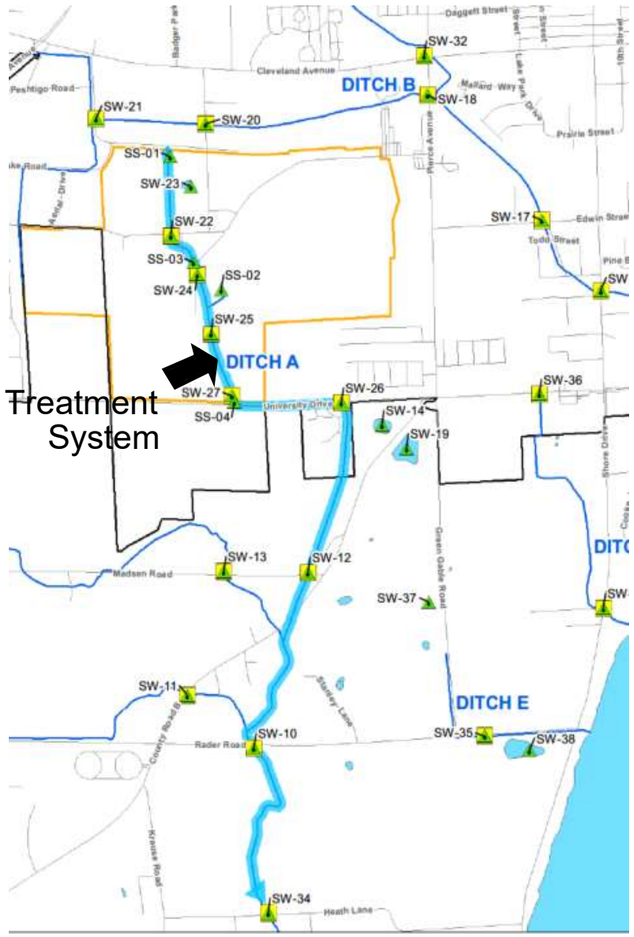
TYCO FIRE TECHNOLOGY CENTER
MARINETTE, WISCONSIN
**INTERIM SITE INVESTIGATION REPORT**

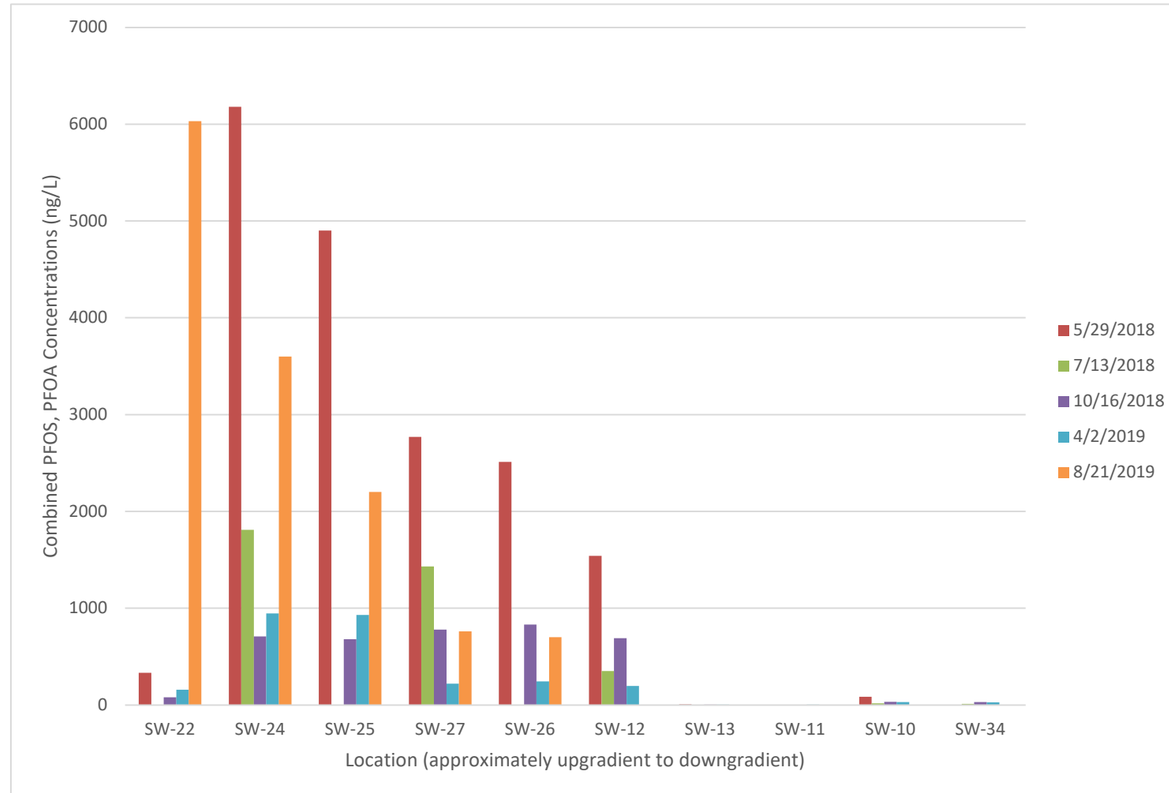
**DETECTIONS OF PFOA AND PFOS IN GROUNDWATER**

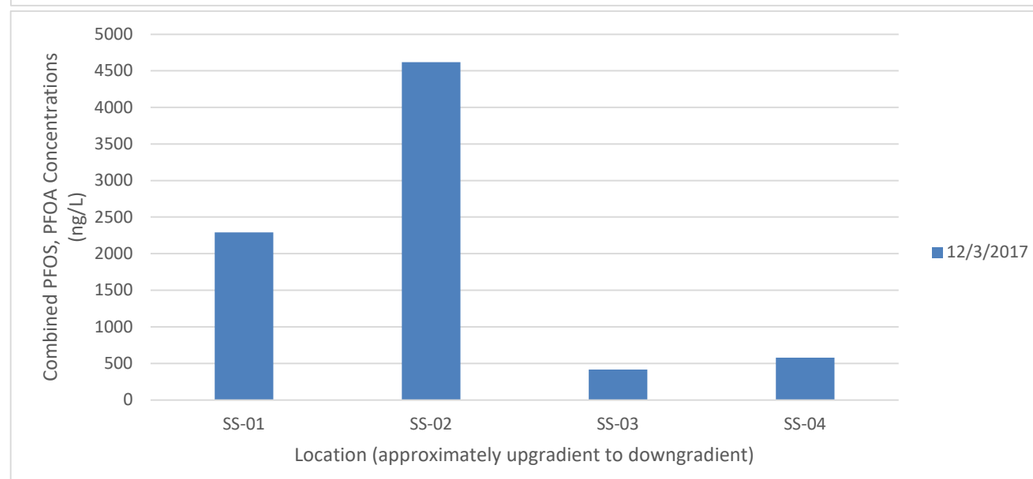
ARCADIS

FIGURE
15

# PFOS + PFOA in Surface Water (2017 - 2019)

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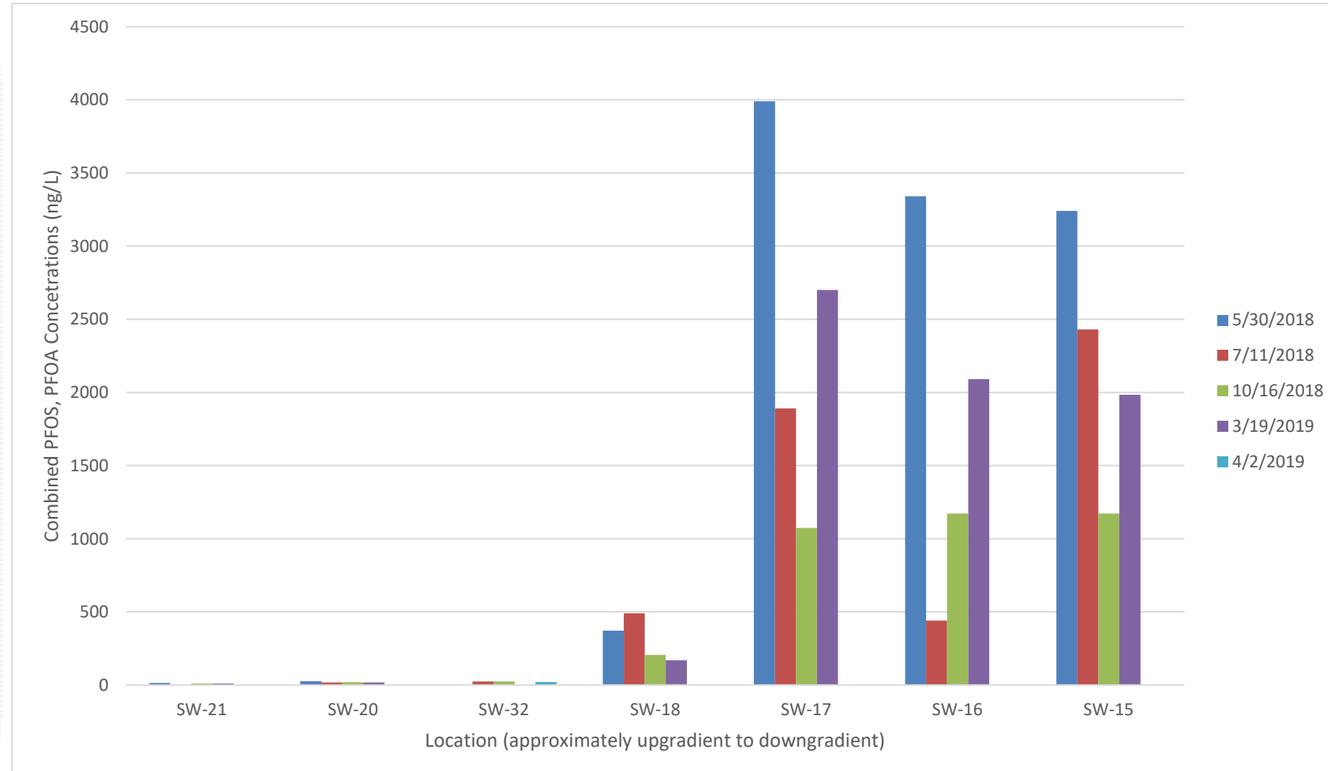
TYCO FIRE TECHOLOGY CENTER
MARINETTE, WISCONSIN
**INTERIM SITE INVESTIGATION REPORT**

DITCH A
SURFACE WATER
ANALYTICAL RESULTS

**FIGURE**

**16**

# PFOS + PFOA in Surface Water (2018 - 2019)




NOTE: 1. DATA PRESENTED ON THIS FIGURE WERE COLLECTED BEFORE THE DITCH B TREATMENT SYSTEM BEGAN OPERATION IN OCTOBER 2019.

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**INTERIM SITE INVESTIGATION REPORT**

DITCH B
SURFACE WATER ANALYTICAL RESULTS

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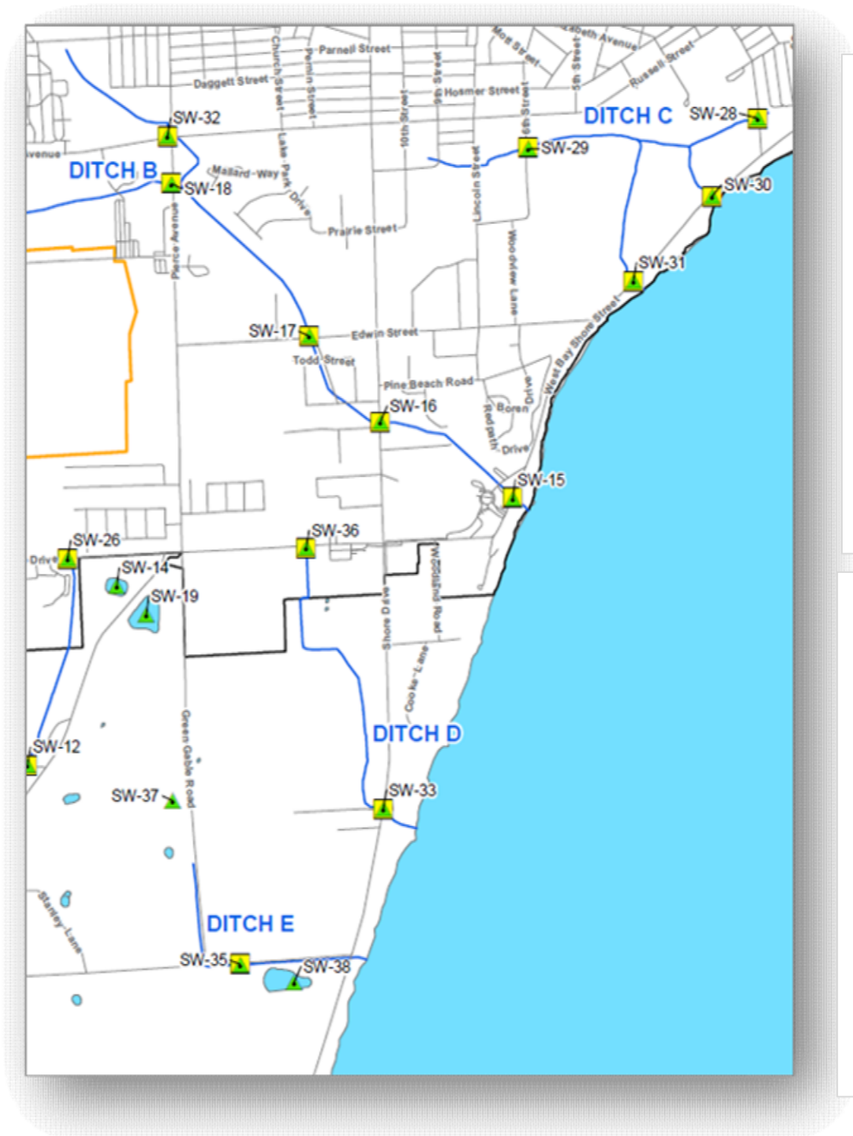
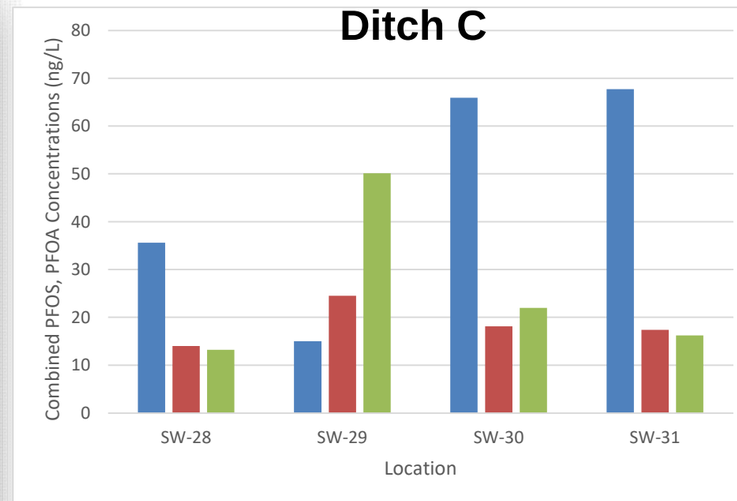
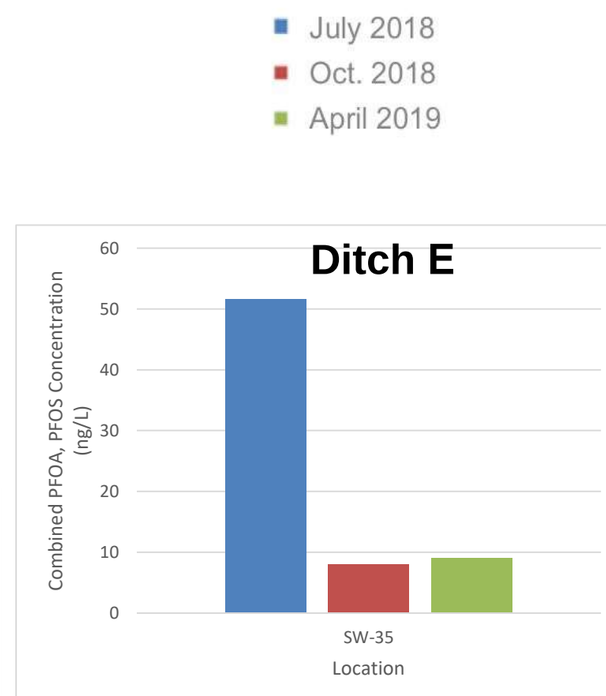
FIGURE
**17**




## PFOS + PFOA in Surface Water (2018 - 2019)



TYCO FIRE TECHOLOGY CENTER
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**INTERIM SITE INVESTIGATION REPORT**

DITCH C, D, AND E
SURFACE WATER ANALYTICAL RESULTS

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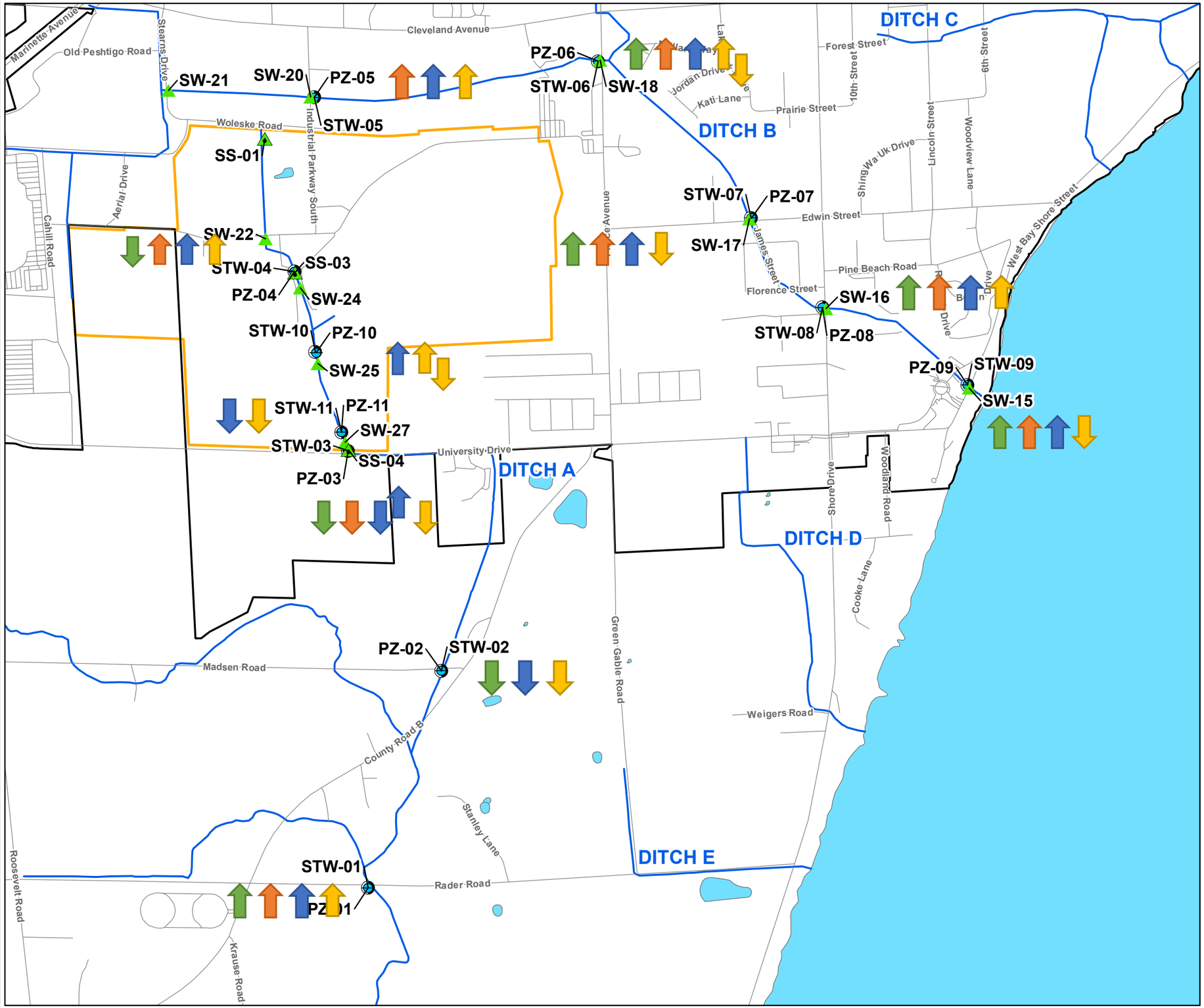
FIGURE
**18**




LEGEND:

- SURFACE WATER SAMPLE
- PIEZOMETER
- STILLING WELL
- APPROXIMATE SITE PROPERTY BOUNDARY
- APPROXIMATE MARINETTE CITY BOUNDARY
- ROAD
- DITCH/STREAM
- WATERBODY
- AUGUST 2018
- OCTOBER/NOVEMBER 2018
- MARCH THROUGH MAY 2019
- MAY/JUNE 2019
- GAINING STREAM: GROUNDWATER ELEVATION IS HIGHER THAN SURFACE WATER ELEVATION
- LOSING STREAM: GROUNDWATER ELEVATION IS LOWER THAN SURFACE WATER ELEVATION
- CHANGED FROM LOSING TO GAINING MID-EVENT
- CHANGED FROM GAINING TO LOSING MID-EVENT

NOTES:

1. CITY BOUNDARY DATA SOURCE: WISCONSIN LEGISLATIVE TECHNOLOGY SERVICES BUREAU, WISCONSIN COUNTY CLERKS AND LAND INFORMATION OFFICES, ACCESSED FALL 2017.
2. DITCH/STREAM AND WATERBODY DATA SOURCE: U.S. GEOLOGICAL SURVEY NATIONAL HYDROGRAPHY DATASET, ACCESSED FALL 2017.
3. ROAD DATA SOURCE: OPEN STREET MAP, ACCESSED FALL 2017.

0 1,500 3,000

GRAPHIC SCALE IN FEET

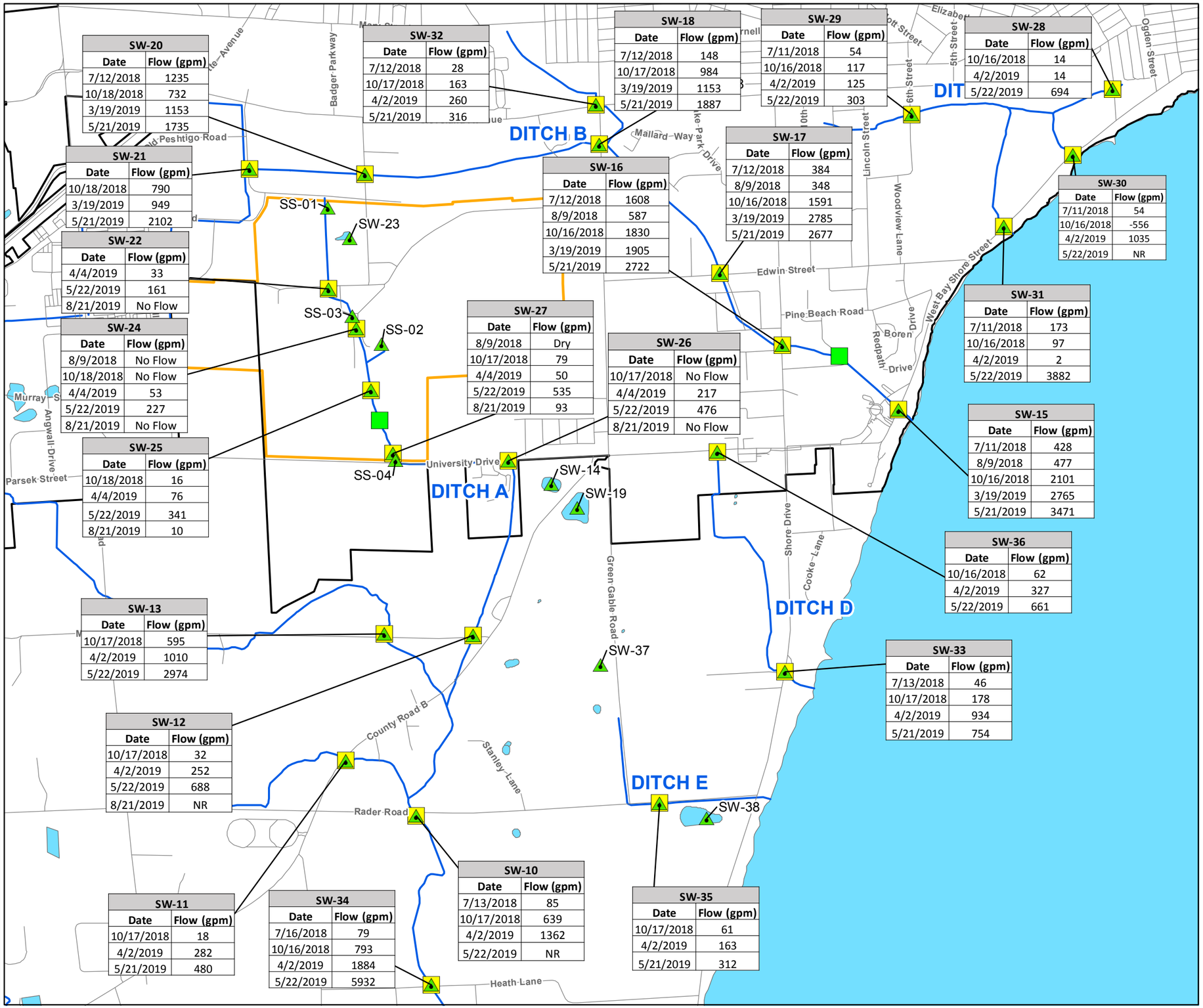
TYCO FIRE TECHNOLOGY CENTER
MARINETTE, WISCONSIN

**INTERIM SITE INVESTIGATION REPORT**

**SURFACE WATER-GROUNDWATER INTERACTIONS**

ARCADIS

FIGURE
19




| SW-20 | |
|---|---|
| Date | Flow (gpm) |
| 7/12/2018 | 1235 |
| 10/18/2018 | 732 |
| 3/19/2019 | 1153 |
| 5/21/2019 | 1735 |

| SW-21 | |
|---|---|
| Date | Flow (gpm) |
| 10/18/2018 | 790 |
| 3/19/2019 | 949 |
| 5/21/2019 | 2102 |

| SW-22 | |
|---|---|
| Date | Flow (gpm) |
| 4/4/2019 | 33 |
| 5/22/2019 | 161 |
| 8/21/2019 | No Flow |

| SW-24 | |
|---|---|
| Date | Flow (gpm) |
| 8/9/2018 | No Flow |
| 10/18/2018 | No Flow |
| 4/4/2019 | 53 |
| 5/22/2019 | 227 |
| 8/21/2019 | No Flow |

| SW-25 | |
|---|---|
| Date | Flow (gpm) |
| 10/18/2018 | 16 |
| 4/4/2019 | 76 |
| 5/22/2019 | 341 |
| 8/21/2019 | 10 |

| SW-13 | |
|---|---|
| Date | Flow (gpm) |
| 10/17/2018 | 595 |
| 4/2/2019 | 1010 |
| 5/22/2019 | 2974 |

| SW-12 | |
|---|---|
| Date | Flow (gpm) |
| 10/17/2018 | 32 |
| 4/2/2019 | 252 |
| 5/22/2019 | 688 |
| 8/21/2019 | NR |

| SW-11 | |
|---|---|
| Date | Flow (gpm) |
| 10/17/2018 | 18 |
| 4/2/2019 | 282 |
| 5/21/2019 | 480 |

| SW-34 | |
|---|---|
| Date | Flow (gpm) |
| 7/16/2018 | 79 |
| 10/16/2018 | 793 |
| 4/2/2019 | 1884 |
| 5/22/2019 | 5932 |

| SW-10 | |
|---|---|
| Date | Flow (gpm) |
| 7/13/2018 | 85 |
| 10/17/2018 | 639 |
| 4/2/2019 | 1362 |
| 5/22/2019 | NR |

| SW-35 | |
|---|---|
| Date | Flow (gpm) |
| 10/17/2018 | 61 |
| 4/2/2019 | 163 |
| 5/21/2019 | 312 |

| SW-32 | |
|---|---|
| Date | Flow (gpm) |
| 7/12/2018 | 28 |
| 10/17/2018 | 163 |
| 4/2/2019 | 260 |
| 5/21/2019 | 316 |

| SW-18 | |
|---|---|
| Date | Flow (gpm) |
| 7/12/2018 | 148 |
| 10/17/2018 | 984 |
| 3/19/2019 | 1153 |
| 5/21/2019 | 1887 |

| SW-16 | |
|---|---|
| Date | Flow (gpm) |
| 7/12/2018 | 1608 |
| 8/9/2018 | 587 |
| 10/16/2018 | 1830 |
| 3/19/2019 | 1905 |
| 5/21/2019 | 2722 |

| SW-27 | |
|---|---|
| Date | Flow (gpm) |
| 8/9/2018 | Dry |
| 10/17/2018 | 79 |
| 4/4/2019 | 50 |
| 5/22/2019 | 535 |
| 8/21/2019 | 93 |

| SW-26 | |
|---|---|
| Date | Flow (gpm) |
| 10/17/2018 | No Flow |
| 4/4/2019 | 217 |
| 5/22/2019 | 476 |
| 8/21/2019 | No Flow |

| SW-29 | |
|---|---|
| Date | Flow (gpm) |
| 7/11/2018 | 54 |
| 10/16/2018 | 117 |
| 4/2/2019 | 125 |
| 5/22/2019 | 303 |

| SW-17 | |
|---|---|
| Date | Flow (gpm) |
| 7/12/2018 | 384 |
| 8/9/2018 | 348 |
| 10/16/2018 | 1591 |
| 3/19/2019 | 2785 |
| 5/21/2019 | 2677 |

| SW-28 | |
|---|---|
| Date | Flow (gpm) |
| 10/16/2018 | 14 |
| 4/2/2019 | 14 |
| 5/22/2019 | 694 |

| SW-30 | |
|---|---|
| Date | Flow (gpm) |
| 7/11/2018 | 54 |
| 10/16/2018 | -556 |
| 4/2/2019 | 1035 |
| 5/22/2019 | NR |

| SW-31 | |
|---|---|
| Date | Flow (gpm) |
| 7/11/2018 | 173 |
| 10/16/2018 | 97 |
| 4/2/2019 | 2 |
| 5/22/2019 | 3882 |

| SW-15 | |
|---|---|
| Date | Flow (gpm) |
| 7/11/2018 | 428 |
| 8/9/2018 | 477 |
| 10/16/2018 | 2101 |
| 3/19/2019 | 2765 |
| 5/21/2019 | 3471 |

| SW-36 | |
|---|---|
| Date | Flow (gpm) |
| 10/16/2018 | 62 |
| 4/2/2019 | 327 |
| 5/22/2019 | 661 |

| SW-33 | |
|---|---|
| Date | Flow (gpm) |
| 7/13/2018 | 46 |
| 10/17/2018 | 178 |
| 4/2/2019 | 934 |
| 5/21/2019 | 754 |

LEGEND:

- SURFACE WATER SAMPLE
- DITCH TREATMENT SYSTEM
- VELOCITY MEASUREMENT LOCATION
- APPROXIMATE SITE PROPERTY BOUNDARY
- APPROXIMATE MARINETTE CITY BOUNDARY
- ROAD
- DITCH/STREAM
- WATERBODY

NOTES:

1. THE MAY 2018 VELOCITY MEASUREMENTS WERE NOT USED FOR CALCULATING FLOW.
2. NR = DATA NOT RECORDED DURING FIELD EVENT.
3. CITY BOUNDARY DATA SOURCE: WISCONSIN LEGISLATIVE TECHNOLOGY SERVICES BUREAU, WISCONSIN COUNTY CLERKS AND LAND INFORMATION OFFICES, ACCESSED FALL 2017.
4. DITCH/STREAM AND WATERBODY DATA SOURCE: U.S. GEOLOGICAL SURVEY NATIONAL HYDROGRAPHY DATASET, ACCESSED FALL 2017.
5. ROAD DATA SOURCE: OPEN STREET MAP, ACCESSED FALL 2017.
6. GPM = GALLONS PER MINUTE
7. NO FLOW = STANDING WATER WAS OBSERVED AT THE LOCATION BUT VELOCITY MEASUREMENTS WERE RECORDED AS 0 IN ALL DIRECTIONS.
8. THE DITCH A SURFACE WATER TREATMENT SYSTEM WAS INSTALLED IN DECEMBER 2018, THE DITCH B SURFACE WATER TREATMENT SYSTEM WAS INSTALLED IN NOVEMBER 2019.

0 1,500 3,000

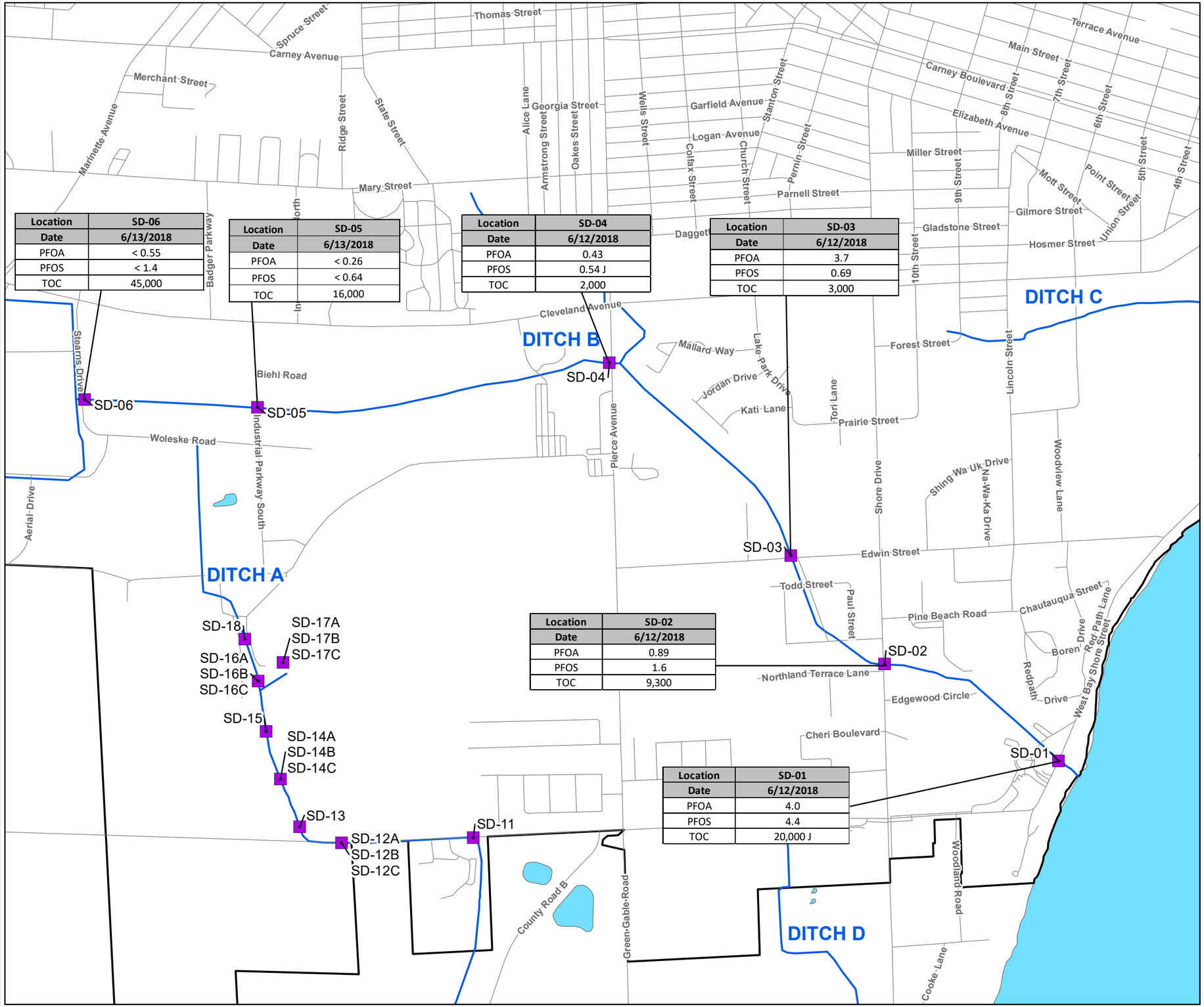
GRAPHIC SCALE IN FEET

TYCO FIRE TECHNOLOGY CENTER
MARINETTE, WISCONSIN
**INTERIM SITE INVESTIGATION REPORT**

**HISTORIC CALCULATED SURFACE WATER FLOW RATES**

ARCADIS

FIGURE
**20**




| Location | SD-06 |
|---|---|
| Date | 6/13/2018 |
| PFOA | < 0.55 |
| PFOS | < 1.4 |
| TOC | 45,000 |

| Location | SD-05 |
|---|---|
| Date | 6/13/2018 |
| PFOA | < 0.26 |
| PFOS | < 0.64 |
| TOC | 16,000 |

| Location | SD-04 |
|---|---|
| Date | 6/12/2018 |
| PFOA | 0.43 |
| PFOS | 0.54 J |
| TOC | 2,000 |

| Location | SD-03 |
|---|---|
| Date | 6/12/2018 |
| PFOA | 3.7 |
| PFOS | 0.69 |
| TOC | 3,000 |

| Location | SD-02 |
|---|---|
| Date | 6/12/2018 |
| PFOA | 0.89 |
| PFOS | 1.6 |
| TOC | 9,300 |

| Location | SD-01 |
|---|---|
| Date | 6/12/2018 |
| PFOA | 4.0 |
| PFOS | 4.4 |
| TOC | 20,000 J |

LEGEND:

- SEDIMENT SAMPLE
- APPROXIMATE MARINETTE CITY BOUNDARY
- ROAD
- DITCH/STREAM
- WATERBODY

0 1,000 2,000
GRAPHIC SCALE IN FEET

NOTES:

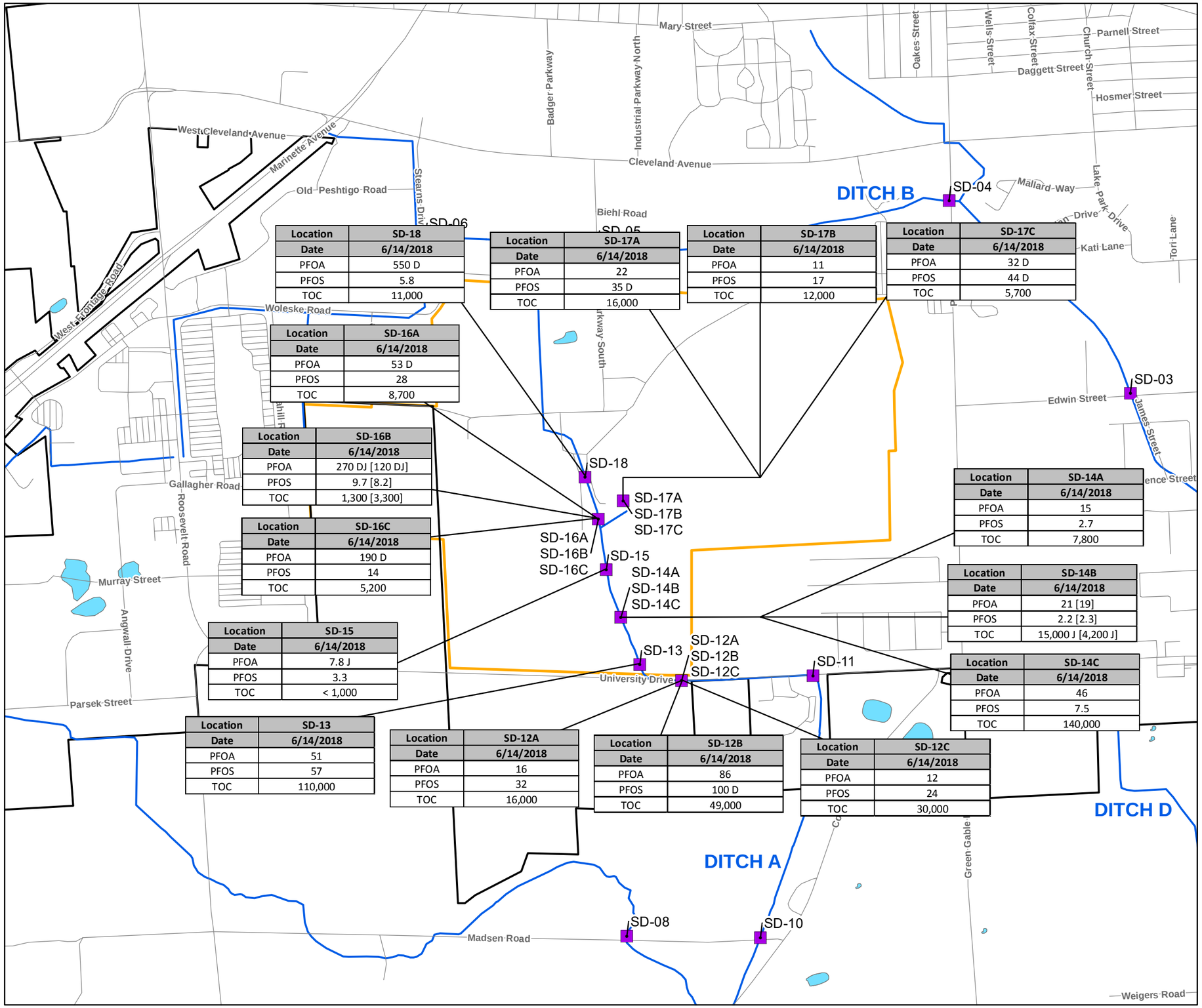
1. PFOA = PERFLUOROOCTANOIC ACID
2. PFOS = PERFLUOROOCTANESULFONIC ACID
3. TOC = TOTAL ORGANIC CARBON
4. TOC REPORTED IN UNITS OF MILLIGRAM PER KILOGRAM (mg/kg). PFOA AND PFOS REPORTED IN UNITS OF MICROGRAM PER KILOGRAM (µg/kg).
5. QUALIFIERS ARE DEFINED AS:
< = COMPOUND NOT DETECTED AT METHOD DETECTION LIMIT.
J = THE COMPOUND WAS POSITIVELY IDENTIFIED; HOWEVER, THE ASSOCIATED NUMERICAL VALUE IS AN ESTIMATED CONCENTRATION ONLY.
6. CITY BOUNDARY DATA SOURCE: WISCONSIN LEGISLATIVE TECHNOLOGY SERVICES BUREAU, WISCONSIN COUNTY CLERKS AND LAND INFORMATION OFFICES, ACCESSED FALL 2017.
7. DITCH/STREAM AND WATERBODY DATA SOURCE: U.S. GEOLOGICAL SURVEY NATIONAL HYDROGRAPHY DATASET, ACCESSED FALL 2017.
8. ROAD DATA SOURCE: OPEN STREET MAP, ACCESSED FALL 2017.

TYCO FIRE TECHNOLOGY CENTER
MARINETTE, WISCONSIN
**INTERIM SITE INVESTIGATION REPORT**

**JUNE 2018**
**SEDIMENT SAMPLE**
**ANALYTICAL RESULTS - NORTH**

ARCADIS

FIGURE
**21**




| Location | SD-18 |
|---|---|
| Date | 6/14/2018 |
| PFOA | 550 D |
| PFOS | 5.8 |
| TOC | 11,000 |

| Location | SD-17A |
|---|---|
| Date | 6/14/2018 |
| PFOA | 22 |
| PFOS | 35 D |
| TOC | 16,000 |

| Location | SD-17B |
|---|---|
| Date | 6/14/2018 |
| PFOA | 11 |
| PFOS | 17 |
| TOC | 12,000 |

| Location | SD-17C |
|---|---|
| Date | 6/14/2018 |
| PFOA | 32 D |
| PFOS | 44 D |
| TOC | 5,700 |

| Location | SD-16A |
|---|---|
| Date | 6/14/2018 |
| PFOA | 53 D |
| PFOS | 28 |
| TOC | 8,700 |

| Location | SD-16B |
|---|---|
| Date | 6/14/2018 |
| PFOA | 270 DJ [120 DJ] |
| PFOS | 9.7 [8.2] |
| TOC | 1,300 [3,300] |

| Location | SD-16C |
|---|---|
| Date | 6/14/2018 |
| PFOA | 190 D |
| PFOS | 14 |
| TOC | 5,200 |

| Location | SD-14A |
|---|---|
| Date | 6/14/2018 |
| PFOA | 15 |
| PFOS | 2.7 |
| TOC | 7,800 |

| Location | SD-14B |
|---|---|
| Date | 6/14/2018 |
| PFOA | 21 [19] |
| PFOS | 2.2 [2.3] |
| TOC | 15,000 J [4,200 J] |

| Location | SD-14C |
|---|---|
| Date | 6/14/2018 |
| PFOA | 46 |
| PFOS | 7.5 |
| TOC | 140,000 |

| Location | SD-15 |
|---|---|
| Date | 6/14/2018 |
| PFOA | 7.8 J |
| PFOS | 3.3 |
| TOC | < 1,000 |

| Location | SD-13 |
|---|---|
| Date | 6/14/2018 |
| PFOA | 51 |
| PFOS | 57 |
| TOC | 110,000 |

| Location | SD-12A |
|---|---|
| Date | 6/14/2018 |
| PFOA | 16 |
| PFOS | 32 |
| TOC | 16,000 |

| Location | SD-12B |
|---|---|
| Date | 6/14/2018 |
| PFOA | 86 |
| PFOS | 100 D |
| TOC | 49,000 |

| Location | SD-12C |
|---|---|
| Date | 6/14/2018 |
| PFOA | 12 |
| PFOS | 24 |
| TOC | 30,000 |

LEGEND:

- SEDIMENT SAMPLE
- APPROXIMATE SITE PROPERTY BOUNDARY
- APPROXIMATE MARINETTE CITY BOUNDARY
- ROAD
- DITCH/STREAM
- WATERBODY

NOTES:

1. FTC = FIRE TECHNOLOGY CENTER
2. PFOA = PERFLUOROOCTANOIC ACID
3. PFOS = PERFLUOROOCTANESULFONIC ACID
4. TOC = TOTAL ORGANIC CARBON
5. TOC REPORTED IN UNITS OF MILLIGRAM PER KILOGRAM (mg/kg). PFOA AND PFOS REPORTED IN UNITS OF MICROGRAM PER KILOGRAM (µg/kg).
6. QUALIFIERS ARE DEFINED AS:
< = COMPOUND NOT DETECTED AT METHOD DETECTION LIMIT.
J = THE COMPOUND WAS POSITIVELY IDENTIFIED; HOWEVER, THE ASSOCIATED NUMERICAL VALUE IS AN ESTIMATED CONCENTRATION ONLY.
D = DILUTION REQUIRED FOR SAMPLE ANALYSIS.
7. FIELD DUPLICATE RESULTS ARE INCLUDED IN BRACKETS.
8. CITY BOUNDARY DATA SOURCE: WISCONSIN LEGISLATIVE TECHNOLOGY SERVICES BUREAU, WISCONSIN COUNTY CLERKS AND LAND INFORMATION OFFICES, ACCESSED FALL 2017.
9. DITCH/STREAM AND WATERBODY DATA SOURCE: U.S. GEOLOGICAL SURVEY NATIONAL HYDROGRAPHY DATASET, ACCESSED FALL 2017.
10. ROAD DATA SOURCE: OPEN STREET MAP, ACCESSED FALL 2017.

0 1,000 2,000

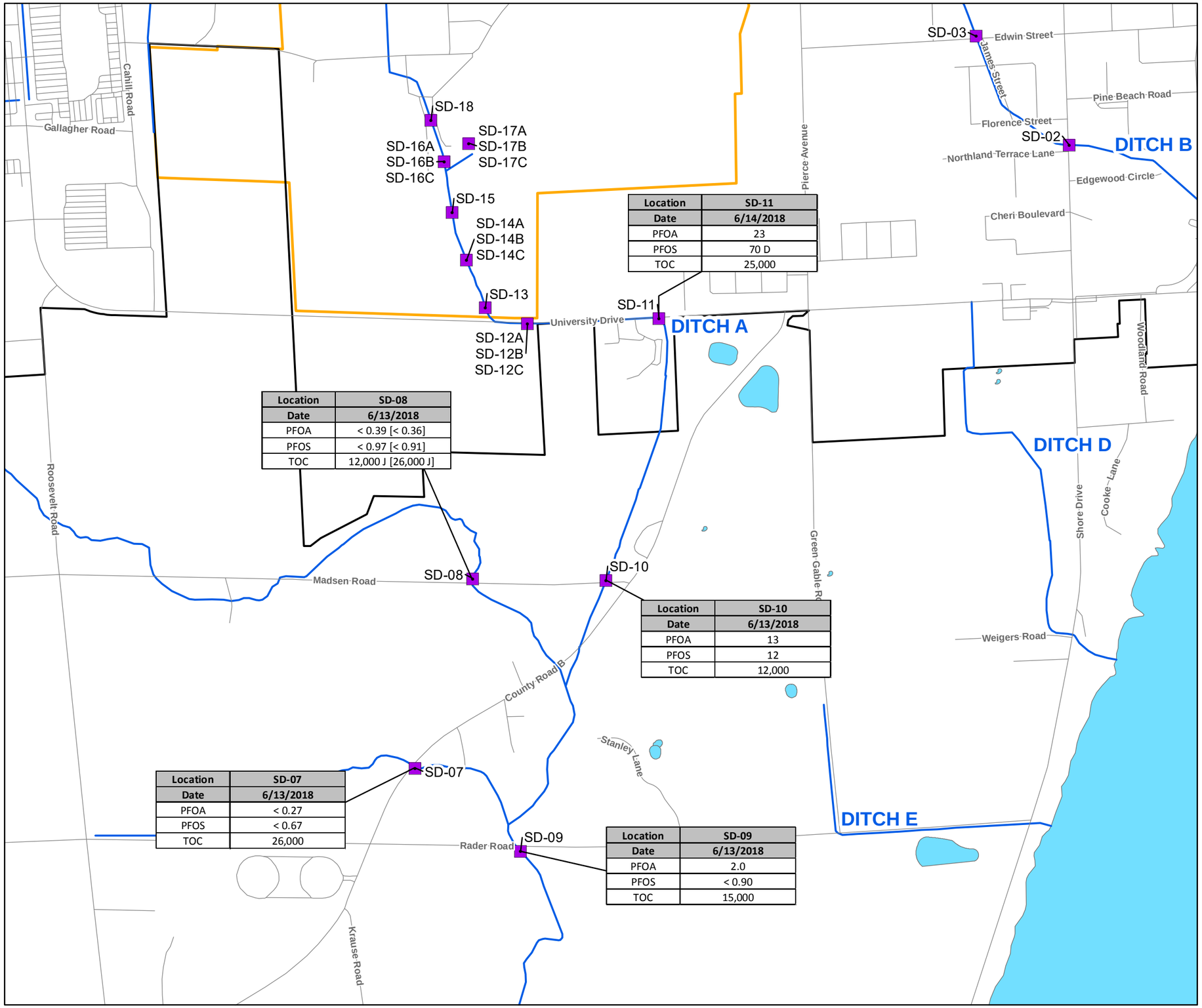
GRAPHIC SCALE IN FEET

TYCO FIRE TECHNOLOGY CENTER
MARINETTE, WISCONSIN
**INTERIM SITE INVESTIGATION REPORT**

**JUNE 2018**
**SEDIMENT SAMPLE**
**ANALYTICAL RESULTS - FTC**

ARCADIS

FIGURE
**22**




| Location | SD-11 |
|---|---|
| Date | 6/14/2018 |
| PFOA | 23 |
| PFOS | 70 D |
| TOC | 25,000 |

| Location | SD-08 |
|---|---|
| Date | 6/13/2018 |
| PFOA | < 0.39 [< 0.36] |
| PFOS | < 0.97 [< 0.91] |
| TOC | 12,000 J [26,000 J] |

| Location | SD-10 |
|---|---|
| Date | 6/13/2018 |
| PFOA | 13 |
| PFOS | 12 |
| TOC | 12,000 |

| Location | SD-07 |
|---|---|
| Date | 6/13/2018 |
| PFOA | < 0.27 |
| PFOS | < 0.67 |
| TOC | 26,000 |

| Location | SD-09 |
|---|---|
| Date | 6/13/2018 |
| PFOA | 2.0 |
| PFOS | < 0.90 |
| TOC | 15,000 |

LEGEND:

- SEDIMENT SAMPLE
- APPROXIMATE SITE PROPERTY BOUNDARY
- APPROXIMATE MARINETTE CITY BOUNDARY
- ROAD
- DITCH/STREAM
- WATERBODY

NOTES:

1. PFOA = PERFLUOROOCTANOIC ACID
2. PFOS = PERFLUOROOCTANESULFONIC ACID
3. TOC = TOTAL ORGANIC CARBON
4. TOC REPORTED IN UNITS OF MILLIGRAM PER KILOGRAM (mg/kg). PFOA AND PFOS REPORTED IN UNITS OF MICROGRAM PER KILOGRAM (µg/kg).
5. QUALIFIERS ARE DEFINED AS:
J = THE RESULT IS AN ESTIMATED QUANTITY. THE ASSOCIATED NUMERICAL VALUE IS THE APPROXIMATE CONCENTRATION OF THE ANALYTE IN THE SAMPLE.
< = COMPOUND NOT DETECTED AT METHOD DETECTION LIMIT.
D = DILUTION REQUIRED FOR SAMPLE ANALYSIS.
6. FIELD DUPLICATE RESULTS ARE INCLUDED IN BRACKETS.
7. CITY BOUNDARY DATA SOURCE: WISCONSIN LEGISLATIVE TECHNOLOGY SERVICES BUREAU, WISCONSIN COUNTY CLERKS AND LAND INFORMATION OFFICES, ACCESSED FALL 2017.
8. DITCH/STREAM AND WATERBODY DATA SOURCE: U.S. GEOLOGICAL SURVEY NATIONAL HYDROGRAPHY DATASET, ACCESSED FALL 2017.
9. ROAD DATA SOURCE: OPEN STREET MAP, ACCESSED FALL 2017.

0 1,000 2,000

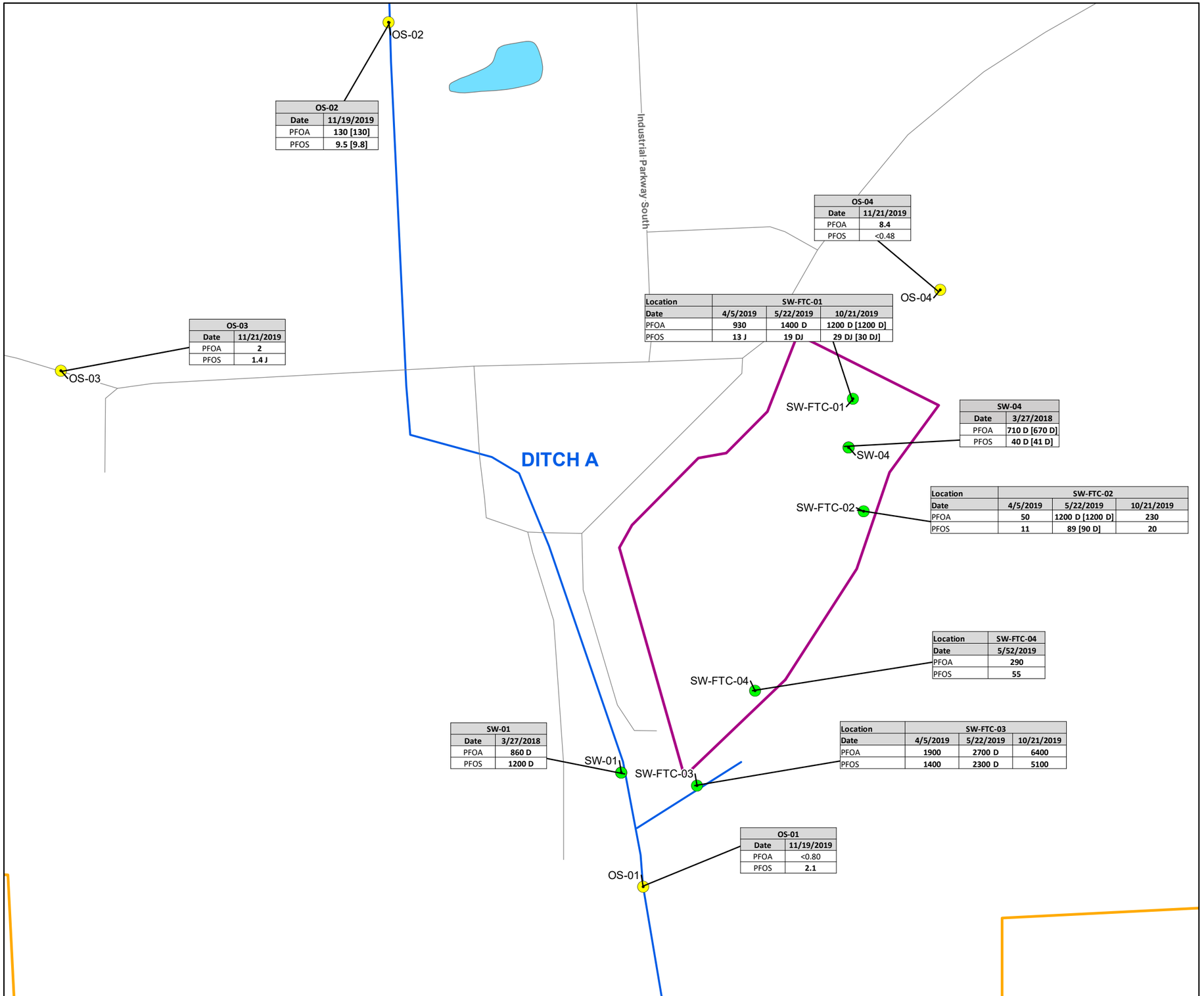
GRAPHIC SCALE IN FEET

TYCO FIRE TECHNOLOGY CENTER
MARINETTE, WISCONSIN
**INTERIM SITE INVESTIGATION REPORT**

**JUNE 2018**
**SEDIMENT SAMPLE**
**ANALYTICAL RESULTS - SOUTH**

ARCADIS

FIGURE
**23**




| OS-02 | |
|---|---|
| Date | 11/19/2019 |
| PFOA | 130 [130] |
| PFOS | 9.5 [9.8] |

| OS-03 | |
|---|---|
| Date | 11/21/2019 |
| PFOA | 2 |
| PFOS | 1.4 J |

| OS-04 | |
|---|---|
| Date | 11/21/2019 |
| PFOA | 8.4 |
| PFOS | <0.48 |

| Location | SW-FTC-01 | | |
|---|---|---|---|
| Date | 4/5/2019 | 5/22/2019 | 10/21/2019 |
| PFOA | 930 | 1400 D | 1200 D [1200 D] |
| PFOS | 13 J | 19 DJ | 29 DJ [30 DJ] |

| SW-04 | |
|---|---|
| Date | 3/27/2018 |
| PFOA | 710 D [670 D] |
| PFOS | 40 D [41 D] |

| Location | SW-FTC-02 | | |
|---|---|---|---|
| Date | 4/5/2019 | 5/22/2019 | 10/21/2019 |
| PFOA | 50 | 1200 D [1200 D] | 230 |
| PFOS | 11 | 89 [90 D] | 20 |

| Location | SW-FTC-04 |
|---|---|
| Date | 5/52/2019 |
| PFOA | 290 |
| PFOS | 55 |

| SW-01 | |
|---|---|
| Date | 3/27/2018 |
| PFOA | 860 D |
| PFOS | 1200 D |

| Location | SW-FTC-03 | | |
|---|---|---|---|
| Date | 4/5/2019 | 5/22/2019 | 10/21/2019 |
| PFOA | 1900 | 2700 D | 6400 |
| PFOS | 1400 | 2300 D | 5100 |

| OS-01 | |
|---|---|
| Date | 11/19/2019 |
| PFOA | <0.80 |
| PFOS | 2.1 |

LEGEND:

- OUTFALL SAMPLE LOCATION
- STORMWATER RUNOFF LOCATION
- APPROXIMATE SITE PROPERTY BOUNDARY
- OUTDOOR TRAINING/TESTING AREA
- ROAD
- DITCH/STREAM
- WATERBODY

ABBREVIATIONS:

PFOA = PERFLUOROOCTANOIC ACID
PFOS = PERFLUOROOCTANESULFONIC ACID
ALL CONCENTRATIONS REPORTED IN UNITS OF NANOGRAM PER LITER (ng/L)
BOLD = DETECTIONS
D = DILUTION
J = THE ANALYTE WAS POSITIVELY IDENTIFIED; HOWEVER, THE ASSOCIATED NUMERICAL VALUE IS AN ESTIMATED CONCENTRATION ONLY.
ng/L
< = THE ANALYTE WAS NOT DETECTED ABOVE THE LIMIT OF DETECTION = NANOGRAMS PER LITER

NOTES:

1. FIELD DUPLICATE RESULTS ARE INCLUDED IN BRACKETS.
2. CITY BOUNDARY DATA SOURCE: WISCONSIN LEGISLATIVE TECHNOLOGY SERVICES BUREAU, WISCONSIN COUNTY CLERKS AND LAND INFORMATION OFFICES, ACCESSED FALL 2017.
3. DITCH/STREAM AND WATERBODY DATA SOURCE: U.S. GEOLOGICAL SURVEY NATIONAL HYDROGRAPHY DATASET, ACCESSED FALL 2017.
4. ROAD DATA SOURCE: OPEN STREET MAP, ACCESSED FALL 2017.
5. SW-01 AND SW-04 ARE APPROXIMATE LOCATIONS, EXACT LOCATIONS WERE NOT RECORDED DURING SAMPLE COLLECTION.

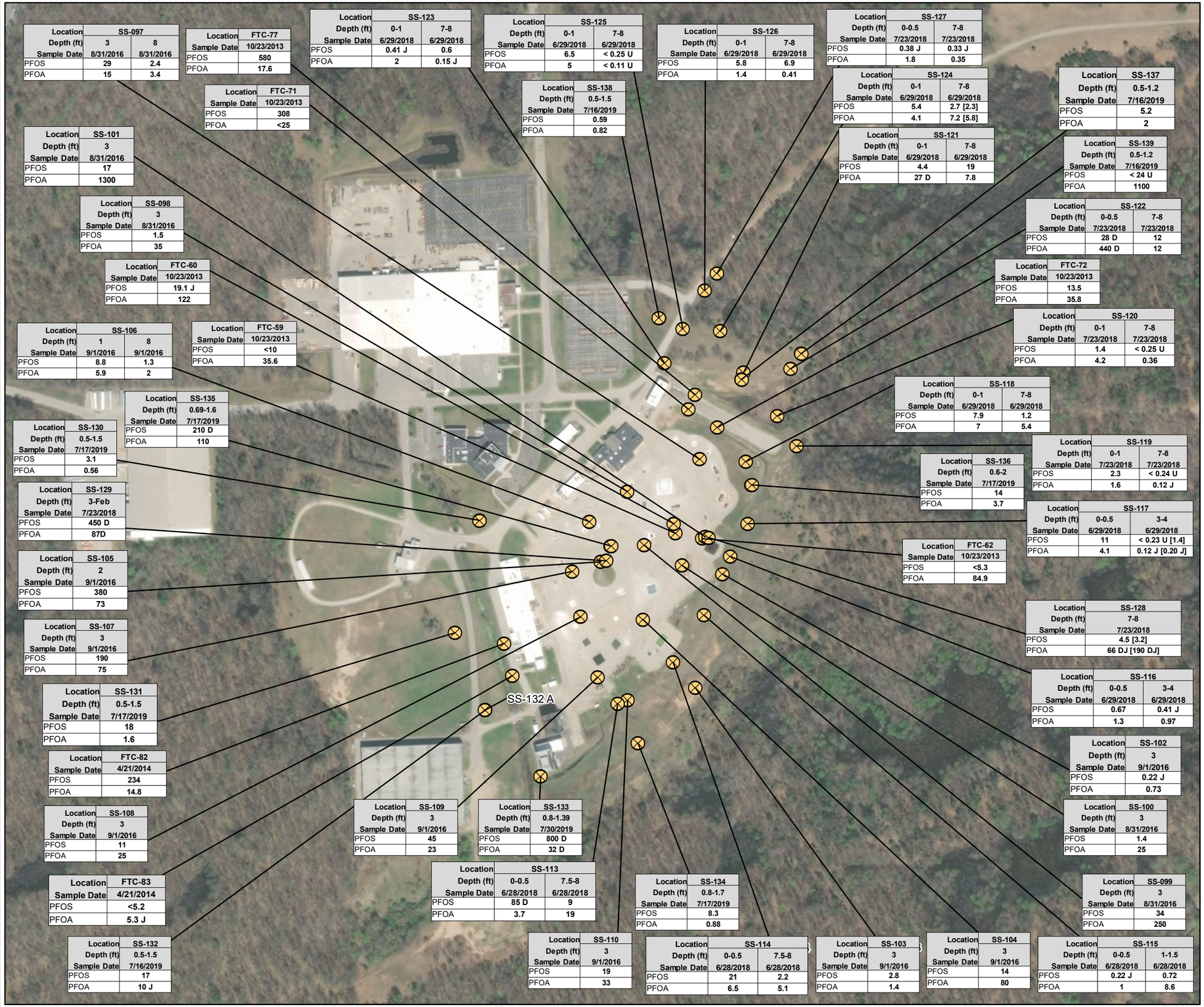
0 250 500
GRAPHIC SCALE IN FEET

TYCO FIRE TECHNOLOGY CENTER
MARINETTE, WISCONSIN
**INTERIM SITE INVESTIGATION REPORT**

**STORMWATER RUNOFF ANALYTICAL RESULTS**

ARCADIS

FIGURE
**24**




| Location | SS-097 | |
|---|---|---|
| Depth (ft) | 3 | 8 |
| Sample Date | 8/31/2016 | 8/31/2016 |
| PFOS | 29 | 2.4 |
| PFOA | 15 | 3.4 |

| Location | FTC-77 |
|---|---|
| Sample Date | 10/23/2013 |
| PFOS | 580 |
| PFOA | 17.6 |

| Location | FTC-71 |
|---|---|
| Sample Date | 10/23/2013 |
| PFOS | 308 |
| PFOA | <25 |

| Location | SS-123 | |
|---|---|---|
| Depth (ft) | 0-1 | 7-8 |
| Sample Date | 6/29/2018 | 6/29/2018 |
| PFOS | 0.41 J | 0.6 |
| PFOA | 2 | 0.15 J |

| Location | SS-125 | |
|---|---|---|
| Depth (ft) | 0-1 | 7-8 |
| Sample Date | 6/29/2018 | 6/29/2018 |
| PFOS | 6.5 | < 0.25 U |
| PFOA | 5 | < 0.11 U |

| Location | SS-138 |
|---|---|
| Depth (ft) | 0.5-1.5 |
| Sample Date | 7/16/2019 |
| PFOS | 0.59 |
| PFOA | 0.82 |

| Location | SS-126 | |
|---|---|---|
| Depth (ft) | 0-1 | 7-8 |
| Sample Date | 6/29/2018 | 6/29/2018 |
| PFOS | 5.8 | 6.9 |
| PFOA | 1.4 | 0.41 |

| Location | SS-127 | |
|---|---|---|
| Depth (ft) | 0-0.5 | 7-8 |
| Sample Date | 7/23/2018 | 7/23/2018 |
| PFOS | 0.38 J | 0.33 J |
| PFOA | 1.8 | 0.35 |

| Location | SS-124 | |
|---|---|---|
| Depth (ft) | 0-1 | 7-8 |
| Sample Date | 6/29/2018 | 6/29/2018 |
| PFOS | 5.4 | 2.7 [2.3] |
| PFOA | 4.1 | 7.2 [5.8] |

| Location | SS-121 | |
|---|---|---|
| Depth (ft) | 0-1 | 7-8 |
| Sample Date | 6/29/2018 | 6/29/2018 |
| PFOS | 4.4 | 19 |
| PFOA | 27 D | 7.8 |

| Location | SS-137 |
|---|---|
| Depth (ft) | 0.5-1.2 |
| Sample Date | 7/16/2019 |
| PFOS | 5.2 |
| PFOA | 2 |

| Location | SS-139 |
|---|---|
| Depth (ft) | 0.5-1.2 |
| Sample Date | 7/16/2019 |
| PFOS | < 24 U |
| PFOA | 1100 |

| Location | SS-101 |
|---|---|
| Depth (ft) | 3 |
| Sample Date | 8/31/2016 |
| PFOS | 17 |
| PFOA | 1300 |

| Location | SS-098 |
|---|---|
| Depth (ft) | 3 |
| Sample Date | 8/31/2016 |
| PFOS | 1.5 |
| PFOA | 35 |

| Location | FTC-60 |
|---|---|
| Sample Date | 10/23/2013 |
| PFOS | 19.1 J |
| PFOA | 122 |

| Location | SS-122 | |
|---|---|---|
| Depth (ft) | 0-0.5 | 7-8 |
| Sample Date | 7/23/2018 | 7/23/2018 |
| PFOS | 28 D | 12 |
| PFOA | 440 D | 12 |

| Location | FTC-72 |
|---|---|
| Sample Date | 10/23/2013 |
| PFOS | 13.5 |
| PFOA | 35.8 |

| Location | SS-106 | |
|---|---|---|
| Depth (ft) | 1 | 8 |
| Sample Date | 9/1/2016 | 9/1/2016 |
| PFOS | 8.8 | 1.3 |
| PFOA | 5.9 | 2 |

| Location | FTC-59 |
|---|---|
| Sample Date | 10/23/2013 |
| PFOS | <10 |
| PFOA | 35.6 |

| Location | SS-120 | |
|---|---|---|
| Depth (ft) | 0-1 | 7-8 |
| Sample Date | 7/23/2018 | 7/23/2018 |
| PFOS | 1.4 | < 0.25 U |
| PFOA | 4.2 | 0.36 |

| Location | SS-135 |
|---|---|
| Depth (ft) | 0.69-1.6 |
| Sample Date | 7/17/2019 |
| PFOS | 210 D |
| PFOA | 110 |

| Location | SS-118 | |
|---|---|---|
| Depth (ft) | 0-1 | 7-8 |
| Sample Date | 6/29/2018 | 6/29/2018 |
| PFOS | 7.9 | 1.2 |
| PFOA | 7 | 5.4 |

| Location | SS-130 |
|---|---|
| Depth (ft) | 0.5-1.5 |
| Sample Date | 7/17/2019 |
| PFOS | 3.1 |
| PFOA | 0.56 |

| Location | SS-119 | |
|---|---|---|
| Depth (ft) | 0-1 | 7-8 |
| Sample Date | 7/23/2018 | 7/23/2018 |
| PFOS | 2.3 | < 0.24 U |
| PFOA | 1.6 | 0.12 J |

| Location | SS-136 |
|---|---|
| Depth (ft) | 0.6-2 |
| Sample Date | 7/17/2019 |
| PFOS | 14 |
| PFOA | 3.7 |

| Location | SS-129 |
|---|---|
| Depth (ft) | 3-Feb |
| Sample Date | 7/23/2018 |
| PFOS | 450 D |
| PFOA | 87D |

| Location | SS-117 | |
|---|---|---|
| Depth (ft) | 0-0.5 | 3-4 |
| Sample Date | 6/29/2018 | 6/29/2018 |
| PFOS | 11 | < 0.23 U [1.4] |
| PFOA | 4.1 | 0.12 J [0.20 J] |

| Location | FTC-62 |
|---|---|
| Sample Date | 10/23/2013 |
| PFOS | <5.3 |
| PFOA | 84.9 |

| Location | SS-105 |
|---|---|
| Depth (ft) | 2 |
| Sample Date | 9/1/2016 |
| PFOS | 380 |
| PFOA | 73 |

| Location | SS-128 |
|---|---|
| Depth (ft) | 7-8 |
| Sample Date | 7/23/2018 |
| PFOS | 4.5 [3.2] |
| PFOA | 66 DJ [190 DJ] |

| Location | SS-107 |
|---|---|
| Depth (ft) | 3 |
| Sample Date | 9/1/2016 |
| PFOS | 190 |
| PFOA | 75 |

| Location | SS-116 | |
|---|---|---|
| Depth (ft) | 0-0.5 | 3-4 |
| Sample Date | 6/29/2018 | 6/29/2018 |
| PFOS | 0.67 | 0.41 J |
| PFOA | 1.3 | 0.97 |

| Location | SS-131 |
|---|---|
| Depth (ft) | 0.5-1.5 |
| Sample Date | 7/17/2019 |
| PFOS | 18 |
| PFOA | 1.6 |

| Location | SS-102 |
|---|---|
| Depth (ft) | 3 |
| Sample Date | 9/1/2016 |
| PFOS | 0.22 J |
| PFOA | 0.73 |

| Location | FTC-82 |
|---|---|
| Sample Date | 4/21/2014 |
| PFOS | 234 |
| PFOA | 14.8 |

| Location | SS-109 |
|---|---|
| Depth (ft) | 3 |
| Sample Date | 9/1/2016 |
| PFOS | 45 |
| PFOA | 23 |

| Location | SS-133 |
|---|---|
| Depth (ft) | 0.8-1.39 |
| Sample Date | 7/30/2019 |
| PFOS | 800 D |
| PFOA | 32 D |

| Location | SS-100 |
|---|---|
| Depth (ft) | 3 |
| Sample Date | 8/31/2016 |
| PFOS | 1.4 |
| PFOA | 25 |

| Location | SS-108 |
|---|---|
| Depth (ft) | 3 |
| Sample Date | 9/1/2016 |
| PFOS | 11 |
| PFOA | 25 |

| Location | SS-113 | |
|---|---|---|
| Depth (ft) | 0-0.5 | 7.5-8 |
| Sample Date | 6/28/2018 | 6/28/2018 |
| PFOS | 85 D | 9 |
| PFOA | 3.7 | 19 |

| Location | SS-134 |
|---|---|
| Depth (ft) | 0.8-1.7 |
| Sample Date | 7/17/2019 |
| PFOS | 8.3 |
| PFOA | 0.88 |

| Location | SS-099 |
|---|---|
| Depth (ft) | 3 |
| Sample Date | 8/31/2016 |
| PFOS | 34 |
| PFOA | 250 |

| Location | FTC-83 |
|---|---|
| Sample Date | 4/21/2014 |
| PFOS | <5.2 |
| PFOA | 5.3 J |

| Location | SS-132 |
|---|---|
| Depth (ft) | 0.5-1.5 |
| Sample Date | 7/16/2019 |
| PFOS | 17 |
| PFOA | 10 J |

| Location | SS-110 |
|---|---|
| Depth (ft) | 3 |
| Sample Date | 9/1/2016 |
| PFOS | 19 |
| PFOA | 33 |

| Location | SS-114 | |
|---|---|---|
| Depth (ft) | 0-0.5 | 7.5-8 |
| Sample Date | 6/28/2018 | 6/28/2018 |
| PFOS | 21 | 2.2 |
| PFOA | 6.5 | 5.1 |

| Location | SS-103 |
|---|---|
| Depth (ft) | 3 |
| Sample Date | 9/1/2016 |
| PFOS | 2.8 |
| PFOA | 1.4 |

| Location | SS-104 |
|---|---|
| Depth (ft) | 3 |
| Sample Date | 9/1/2016 |
| PFOS | 14 |
| PFOA | 80 |

| Location | SS-115 | |
|---|---|---|
| Depth (ft) | 0-0.5 | 1-1.5 |
| Sample Date | 6/28/2018 | 6/28/2018 |
| PFOS | 0.22 J | 0.72 |
| PFOA | 1 | 8.6 |

LEGEND:

⊗ SOIL SAMPLE LOCATION

NOTES:
1. PFOS = PERFLUOROOCTANE SULFONIC ACID
2. PFOA = PERFLUOROOCTANOIC ACID
3. ALL CONCENTRATIONS REPORTED IN UNITS OF MICROGRAMS PER KILOGRAM (µG/KG)
4. SAMPLE DEPTH RANGES ARE IN UNITS OF FEET BELOW GROUND SURFACE.
5. IMAGERY SOURCE: 4/27/2016, DIGITALGLOBE, VIVID - USA.
6. FIELD DUPLICATE RESULTS ARE INCLUDED IN BRACKETS.
7. AERIAL IMAGERY: USDA FSA NAIP 2015
8. J = THE COMPOUND WAS POSITIVELY IDENTIFIED; HOWEVER, THE ASSOCIATED NUMERICAL VALUE IS AN ESTIMATED CONCENTRATION ONLY.
9. D = DILUTION REQUIRED FOR SAMPLE ANALYSIS
10. FT = FEET
11. U = THE COMPOUND WAS ANALYZED FOR BUT NOT DETECTED. THE ASSOCIATED VALUE IS THE COMPOUND QUANTITATION LIMIT.
WDNR = WISCONSIN DEPARTMENT OF NATURAL RESOURCES
12. THE NON-INDUSTRIAL AND INDUSTRIAL WDNR DIRECT CONTACT SOIL RESIDUAL CONTAMINANT LEVELS (JUNE 2018) FOR PFOA AND PFOS ARE 1.26 MG/KG AND 16.4 MG/KG, RESPECTIVELY.

GRAPHIC SCALE

0 300 600 Feet

TYCO FIRE TECHNOLOGY CENTER
MARINETTE, WISCONSIN
**INTERIM SITE INVESTIGATION REPORT**

## SOIL ANALYTICAL RESULTS

ARCADIS

FIGURE
25

# APPENDIX A

## Submittal Certification

# NR 712.09 CERTIFICATION

I, Benjamin J. Verburg, hereby certify that I am a registered professional engineer in the State of Wisconsin, registered in accordance with the requirements of ch. A-E 4, Wis. Adm. Code; that this document has been prepared in accordance with the Rules of Professional Conduct in ch. A-E 8, Wis. Adm. Code; and that, to the best of my knowledge, all information contained in this document is correct and the document was prepared in compliance with all applicable requirements in chs. NR 700 to 726, Wis. Adm. Code.

Signature, title and P.E. number

P.E. stamp

I, Christopher S. Peters, hereby certify that I am a hydrogeologist as that term is defined in s. NR 712.03 (1), Wis. Adm. Code, am registered in accordance with the requirements of ch. GHSS 2, Wis. Adm. Code, or licensed in accordance with the requirements of ch. GHSS 3, Wis. Adm. Code, and that, to the best of my knowledge, all of the information contained in this document is correct and the document was prepared in compliance with all applicable requirements in chs. NR 700 to 726 Wis. Adm. Code.

WI PG 1054-013

Signature, title and P.E. number

P.E. stamp

# APPENDIX B

## Boring and Abandonment Logs

State of Wisconsin
Department of Natural Resources

# Soil Boring Log Information

Form 4400-122 Rev. 7-98

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☐ Other ☒ _____



| Facility/Project Name | License/Permit/Monitoring Number | Boring Number |
|---|---|---|
| Tyco/WI001519.0002 | | SB-1 |

| Boring Drilled By: Name of crew chief (first, last) and Firm | Date Drilling Started | Date Drilling Completed | Drilling Method |
|---|---|---|---|
| First Name Last Name Firm Dakota Tech | 06/04/2016 | 06/04/2016 | Direct Push |

| WI Unique Well No. | DNR Well ID No. | Well Name | Final Static Water Level | Surface Elevation | Borehole Diameter |
|---|---|---|---|---|---|
| | | | _____ Feet | _____ Feet MSL | _____ inches |

Local Grid Origin ☐ (estimated: ☐ ) or Boring Location ☐
State Plane _____ N, _____ E S☐/C☐/N☐ ☐E ☐W Lat _____ Long _____
_____ 1/4 of _____ 1/4 of Section _____ ,T _____ N,R _____

Local Grid Location ☐N ☐E _____ Feet ☐S _____ Feet ☒W

| Facility ID | County | County Code | Civil Town/City/or Village |
|---|---|---|---|
| | Marinette | 38 | Marinette |

| Sample Number and Type | Length Att. & Recovered (in) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Soil Properties: Compressive Strength | Moisture Content | Liquid Limit | Plastic Limit | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | 0 | 0-6′<br>0-6.0′ Fine to medium sand, hand auger. | | | | | | | | | | |
| | | | 2 | | | | | | | | | | | |
| | | | 4 | | | | | | | | | | | |
| | | | 6 | 6-10′<br>6.0-10.0′ Sand: Fine to medium, well sorted, wet, loose, brown (10 YR 3/6). | | | | 6-8<br>0 | | | | | | |
| 2 | 48 | | 8 | | | | | 8-10<br>0 | | | | | | |
| | | | 10 | 10-15′<br>10.0-14.0′ Sand: Fine to medium, well sorted, wet, | | | | 10-12<br>0 | | | | | | |
| 3 | 48 | | | | | | | | | | | | | |

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature

Firm ARCADIS
126 N. Jefferson St., Suite 400
Milwaukee, WI (414) 276-7742

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| Sample Number and Type | Sample Length All. & Recovered (in) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Soil Properties: Compressive Strength | Moisture Content | Liquid Limit | Plastic Limit | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | loose, brown (10 YR 3/6).<br>14.0-15.0′ No recovery. | | | | | | | | | | |
| | | | 12 | | | | | 12-14<br>0 | | | | | | |
| | | | 14 | | | | | 14-16<br>0 | | | | | | |
| 4 | 36 | | | 15-20′<br>15.0-18.0′ Sand: Fine to medium, mostly medium, well sorted, wet, loose, brown (10 YR 4/4).<br>18.0-20.0′ No recovery. | | | | 16-18<br>0.1 | | | | | | |
| | | | 16 | | | | | | | | | | | |
| | | | 18 | | | | | 18-20<br>0 | | | | | | |
| | | | 20 | | | | | | | | | | | |
| 5 | 33.6 | | | 20-25′<br>20.0-22.8′ Sand: Fine to medium, mostly medium, well sorted, wet, loose, brown (10 YR 4/4).<br>22.8-25.0′ No recovery. | | | | 20-22<br>0 | | | | | | |
| | | | 22 | | | | | 22-24<br>0 | | | | | | |
| | | | 24 | | | | | 24-26<br>0 | | | | | | |
| 6 | 36 | | | 25-30′<br>25.0-26.4′ Sand: Fine to medium, mostly medium, well sorted, wet, loose, brown (10 YR 4/4).<br>26.4-28.0′ Sand: Fine to coarse, poorly sorted, wet, loose, grayish (10 YR 4/2), subangular to subround gravel <0.2″, trace clay nodules 0.1″.<br>28.0-30.0′ No recovery. | | | | | | | | | | |
| | | | 26 | | | | | 26-28<br>0 | | | | | | |
| | | | 28 | | | | | 28-30<br>0 | | | | | | |

Boring Number SB-1



| Sample Number and Type | Sample Length All. & Recovered (in) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Soil Properties: Compressive Strength | Moisture Content | Liquid Limit | Plastic Limit | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 30 | | | | | | | | | | | |
| 7 | 36 | | 32 | 30-35′<br>30.0-31.6′ Sand: Fine to coarse, poorly sorted, wet, loose, grayish (10 YR 4/2), subangular to subround gravel <0.2″, trace clay nodules 0.1″.<br>31.6-35.0′ Silty Clay: Medium plastic, trace sub-angular to subround gravel <0.3″ trace fine to coarse sand, soft, wet, brown (10 YR 3/6). 33 to 33.6 crushed rock. | | | | 30-32<br>0.1<br>32-34<br>0<br>34-35<br>0 | | | | | | |
| | | | 34 | | | | | | | | | | | |
| | | | 36 | EOB @ 35′ | | | | | | | | | | |
| | | | 38 | | | | | | | | | | | |
| | | | 40 | | | | | | | | | | | |
| | | | 42 | | | | | | | | | | | |
| | | | 44 | | | | | | | | | | | |
| | | | 46 | | | | | | | | | | | |

State of Wisconsin
Department of Natural Resources

# Soil Boring Log Information

Form 4400-122 Rev. 7-98

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☐ Other ☒ _____



| Facility/Project Name | License/Permit/Monitoring Number | Boring Number |
|---|---|---|
| Tyco/WI001519.0002 | | SB-2 |

| Boring Drilled By: Name of crew chief (first, last) and Firm | Date Drilling Started | Date Drilling Completed | Drilling Method |
|---|---|---|---|
| First Name Last Name<br>Firm Dakota Tech | 06/04/2016 | 06/04/2016 | Direct Push |

| WI Unique Well No. | DNR Well ID No. | Well Name | Final Static Water Level | Surface Elevation | Borehole Diameter |
|---|---|---|---|---|---|
| | | | _____ Feet | _____ Feet MSL | _____ inches |

Local Grid Origin ☐ (estimated: ☐ ) or Boring Location ☐
State Plane _____ N, _____ E S☐/C☐/N☐ ☐E ☐W Lat _____ Long _____
_____ 1/4 of _____ 1/4 of Section _____ ,T _____ N,R _____

Local Grid Location
☐N ☐E
_____ Feet ☐S _____ Feet ☒W

| Facility ID | County | County Code | Civil Town/City/or Village |
|---|---|---|---|
| | Marinette | 38 | Marinette |

| Sample Number and Type | Length Att. & Recovered (in) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Soil Properties: Compressive Strength | Moisture Content | Liquid Limit | Plastic Limit | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | 0<br>2<br>4 | 0-6'<br>0-6.0' Fine to medium sand, hand auger. | | | | | | | | | | |
| 2 | 48 | | 6<br>8 | 6-10'<br>6.0-10.0' Sand: Fine to medium, well sorted, wet, loose, brown (10 YR 3/6). | | | | 6-8<br>0<br>8-10<br>0 | | | | | | |
| 3 | 48 | | 10 | 10-15'<br>10.0-14.0' Sand: Fine to medium, well sorted, wet, | | | | 10-12<br>0 | | | | | | |

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature

Firm ARCADIS
126 N. Jefferson St., Suite 400
Milwaukee, WI (414) 276-7742

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| Sample Number and Type | Sample Length All. & Recovered (in) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Soil Properties: Compressive Strength | Moisture Content | Liquid Limit | Plastic Limit | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | loose, brown (10 YR 3/6).<br>12.8-15.0' No recovery. | | | | | | | | | | |
| | | | 12 | | | | | 12-14<br>0.7 | | | | | | |
| | | | 14 | | | | | | | | | | | |
| 4 | 24 | | | 15-20'<br>15.0-17.0' Sand: Fine to medium, mostly medium, well sorted, wet, loose, brown (10 YR 4/4).<br>17.0-20.0' No recovery. | | | | 15-17<br>0.8 | | | | | | |
| | | | 16 | | | | | | | | | | | |
| | | | 18 | | | | | | | | | | | |
| | | | 20 | | | | | | | | | | | |
| 5 | 27.6 | | | 20-25'<br>20.0-21.0' Sand: Fine to medium, mostly medium, well sorted, wet, loose, brown (10 YR 4/4).<br>21.0-22.3' Sand: Fine to coarse, poorly sorted, wet, loose, grayish brown (10 YR 4/2), trace subround to subangular gravel 2.2".<br>22.3-25.0' No recovery. | | | | 20-22<br>0.8 | | | | | | |
| | | | 22 | | | | | 22-24<br>0.2 | | | | | | |
| | | | 24 | | | | | 24-26<br>0.7 | | | | | | |
| 6 | 39.6 | | | 25-30'<br>25.0-28.3' Sand: Fine to coarse, poorly sorted, wet, loose, grayish brown (10 YR 4/2), trace subround to subangular gravel 2.2".<br>28.3-30.0' No recovery. | | | | 26-28<br>0.6 | | | | | | |
| | | | 26 | | | | | | | | | | | |
| | | | 28 | | | | | | | | | | | |

Boring Number SB-2



| Sample Number and Type | Sample Length All. & Recovered (in) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Soil Properties: Compressive Strength | Moisture Content | Liquid Limit | Plastic Limit | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 30 | | | | | | | | | | | |
| 7 | 36 | | 32<br>34 | 30-35'<br>30.0-31.5' Sand: Fine to coarse, poorly sorted, wet, loose, grayish brown (10 YR 4/2), trace subround to subangular gravel 2.2".<br>31.5-33.5' Clay: Silty, medium to coarse plastic, trace subangular to subround gravel <0.3" trace fine sand, soft, wet, brown (10 YR 3/6).<br>33.5-35.0' No recovery. | | | | 30-32<br>0.3<br>32-34<br>0.6 | | | | | | |
| | | | 36<br>38<br>40<br>42<br>44<br>46 | EOB @ 35' | | | | | | | | | | |

State of Wisconsin
Department of Natural Resources

# Soil Boring Log Information

Form 4400-122 Rev. 7-98

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☐ Other ☒ _____



| Facility/Project Name | License/Permit/Monitoring Number | Boring Number |
|---|---|---|
| Tyco/WI001519.0002 | | SB-3 |

| Boring Drilled By: Name of crew chief (first, last) and Firm | Date Drilling Started | Date Drilling Completed | Drilling Method |
|---|---|---|---|
| First Name Last Name<br>Firm Dakota Tech | 06/15/2016 | 06/15/2016 | Direct Push |

| WI Unique Well No. | DNR Well ID No. | Well Name | Final Static Water Level | Surface Elevation | Borehole Diameter |
|---|---|---|---|---|---|
| | | | _____ Feet | _____ Feet MSL | _____ inches |

Local Grid Origin ☐ (estimated: ☐ ) or Boring Location ☐
State Plane _____ N, _____ E S☐/C☐/N☐ ☐E ☐W Lat _____ Long _____
_____ 1/4 of _____ 1/4 of Section _____ ,T _____ N,R _____

Local Grid Location ☐N ☐E _____ Feet ☐S _____ Feet ☒W

| Facility ID | County | County Code | Civil Town/City/or Village |
|---|---|---|---|
| | Marinette | 38 | Marinette |

| Sample Number and Type | Length Att. & Recovered (in) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Soil Properties: Compressive Strength | Moisture Content | Liquid Limit | Plastic Limit | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 72 | | 0<br>2<br>4 | 0-6'<br>0-6.0' Fine to medium sand, hand auger. | | | | | | | | | | |
| 2 | 48 | | 6<br>8 | 6-10'<br>6.0-10.0' Sand: Fine to medium, well sorted, wet, loose, brown (10 YR 3/6). | | | | 6-8<br>0.1<br>8-10<br>0.2 | | | | | | |
| 3 | 60 | | 10 | 10-15'<br>10.0-15.0' Sand: Fine to medium, well sorted, wet, | | | | 10-12<br>0.1 | | | | | | |

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature

Firm ARCADIS
126 N. Jefferson St., Suite 400
Milwaukee, WI (414) 276-7742

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| Sample Number and Type | Sample Length All. & Recovered (in) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Soil Properties: Compressive Strength | Moisture Content | Liquid Limit | Plastic Limit | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | loose, brown (10 YR 3/6). | | | | | | | | | | |
| | | | 12 | | | | | 12-14<br>0.2 | | | | | | |
| | | | 14 | | | | | 14-16<br>0.1 | | | | | | |
| 4 | 24 | | | 15-20'<br>15.0-20.0' Sand: Fine to medium, well sorted, wet, loose, brown (10 YR 3/6). | | | | | | | | | | |
| | | | 16 | | | | | 16-18<br>0.3 | | | | | | |
| | | | 18 | | | | | 18-20<br>0.2 | | | | | | |
| | | | 20 | | | | | | | | | | | |
| 5 | 27.6 | | | 20-25'<br>20.0-22.0' Sand: Fine to medium, mostly medium, trace subangular to subround, gravel <0.2", trace coarse sand, well sorted, wet, loose, brown (10 YR 3/4).<br>22.0-25.0' No recovery. | | | | 20-22<br>0 | | | | | | |
| | | | 22 | | | | | 22-24<br>0 | | | | | | |
| | | | 24 | | | | | 24-26<br>0 | | | | | | |
| 6 | 39.6 | | | 25-30'<br>25.0-28.5' Sand: Fine to coarse, poorly sorted, wet, loose, grayish brown (10 YR 4/2), little subangular to subround gravel 0.2".<br>28.5-30.0' No recovery. | | | | | | | | | | |
| | | | 26 | | | | | 26-28<br>0.3 | | | | | | |
| | | | 28 | | | | | | | | | | | |

Boring Number SB-3



| Sample Number and Type | Sample Length All. & Recovered (in) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Soil Properties: Compressive Strength | Moisture Content | Liquid Limit | Plastic Limit | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 30 | | | | | | | | | | | |
| 7 | 45.6 | | | 30-35'<br>30.0-31.0' Sand: Fine to coarse, poorly sorted, wet, loose, grayish brown (10 YR 4/2), little subangular to subround gravel 0.2".<br>31.0-33.8' Silt: Clayey, nonplastic, trace fine sand, some subangular to subround gravel <0.8", poorly sorted, medium dense, moist to wet, brown (10 YR 4/3).<br>33.8-35.0' No recovery.<br>Refusal at 35'. | | | | 30-32<br>0.2<br><br>32-34<br>0.1 | | | | | | |
| | | | 32 | | | | | | | | | | | |
| | | | 34 | | | | | | | | | | | |
| | | | | EOB @ 35' | | | | | | | | | | |
| | | | 36 | | | | | | | | | | | |
| | | | 38 | | | | | | | | | | | |
| | | | 40 | | | | | | | | | | | |
| | | | 42 | | | | | | | | | | | |
| | | | 44 | | | | | | | | | | | |
| | | | 46 | | | | | | | | | | | |

State of Wisconsin
Department of Natural Resources

# Soil Boring Log Information

Form 4400-122 Rev. 7-98

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☐ Other ☒ _____



| Facility/Project Name | License/Permit/Monitoring Number | Boring Number |
|---|---|---|
| Tyco/WI001519.0002 | | SB-4 |

| Boring Drilled By: Name of crew chief (first, last) and Firm | Date Drilling Started | Date Drilling Completed | Drilling Method |
|---|---|---|---|
| First Name Last Name<br>Firm Dakota Tech | 06/16/2016 | 06/26/2016 | Direct Push |

| WI Unique Well No. | DNR Well ID No. | Well Name | Final Static Water Level | Surface Elevation | Borehole Diameter |
|---|---|---|---|---|---|
| | | | _____ Feet | _____ Feet MSL | _____ inches |

Local Grid Origin ☐ (estimated: ☐ ) or Boring Location ☐
State Plane _____ N, _____ E S☐/C☐/N☐ ☐E ☐W Lat _____ Long _____
_____ 1/4 of _____ 1/4 of Section _____ ,T _____ N,R _____

Local Grid Location ☐N ☐E _____ Feet ☐S _____ Feet ☒W

| Facility ID | County | County Code | Civil Town/City/or Village |
|---|---|---|---|
| | Marinette | 38 | Marinette |

| Sample Number and Type | Length Att. & Recovered (in) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Soil Properties: Compressive Strength | Moisture Content | Liquid Limit | Plastic Limit | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 72 | | 0<br>2<br>4 | 0-6'<br>0-6.0' Fine to medium sand, hand auger. | | | | | | | | | | |
| 2 | 48 | | 6<br>8 | 6-10'<br>6.0-10.0' Sand: Fine to medium, well sorted, wet, loose, brown (10 YR 3/6). | | | | 6-8<br>0.9<br>8-10<br>0.8 | | | | | | |
| 3 | 32.4 | | 10 | 10-15'<br>10.0-12.7' Sand: Fine to medium, well sorted, wet, | | | | 10-12<br>1.0 | | | | | | |

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature

Firm ARCADIS
126 N. Jefferson St., Suite 400
Milwaukee, WI (414) 276-7742

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Boring Number SB-4



| Sample Number and Type | Sample Length All. & Recovered (in) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Soil Properties: Compressive Strength | Moisture Content | Liquid Limit | Plastic Limit | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | loose, brown (10 YR 3/6).<br>12.7-15.0' No recovery. | | | | | | | | | | |
| | | | 12 | | | | | 12-14<br>1.1 | | | | | | |
| | | | 14 | | | | | | | | | | | |
| 4 | 26.4 | | | 15-20'<br>15.0-17.2' Sand: Fine to medium, well sorted, wet, loose, brown (10 YR 3/6).<br>17.2-20.0' No recovery. | | | | 15-17<br>1.0 | | | | | | |
| | | | 16 | | | | | | | | | | | |
| | | | 18 | | | | | | | | | | | |
| | | | 20 | | | | | | | | | | | |
| 5 | 40.8 | | | 20-25'<br>20.0-20.5' Sand: Fine to medium, well sorted, wet, loose, brown (10 YR 3/6).<br>20.5-23.4' Sand: Fine to medium, mostly medium, well sorted, wet, loose, brown (10 YR 4/4).<br>23.4-25.0' No recovery. | | | | 20-22<br>0.7 | | | | | | |
| | | | 22 | | | | | 22-24<br>1.1 | | | | | | |
| | | | 24 | | | | | | | | | | | |
| 6 | 33.6 | | | 25-30'<br>25.0-27.8'Sand: Fine to medium, mostly medium, well sorted, wet, loose, brown (10 YR 4/4), trace clay nodules at <0.3" and trace coarse sand.<br>27.8-30.0' No recovery. | | | | 25-27<br>0.5 | | | | | | |
| | | | 26 | | | | | 27-29<br>1.1 | | | | | | |
| | | | 28 | | | | | | | | | | | |

Boring Number SB-4



| Sample Number and Type | Sample Length All. & Recovered (in) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Soil Properties: Compressive Strength | Moisture Content | Liquid Limit | Plastic Limit | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 30 | | | | | | | | | | | |
| 7 | 60 | | | 30-35′<br>30.0-35.0′ No sample broken rods. Interval resumed on 6/26/16.<br>30.0-35.0′ Sand: Fine to coarse, poorly sorted, wet, loose, brown (10 YR 4/2), little pebbles <0.1″. | | | | 30-32<br>1.0 | | | | | | |
| | | | 32 | | | | | 32-34<br>0.9 | | | | | | |
| | | | 34 | | | | | 34-36<br>0.7 | | | | | | |
| 8 | 60 | | | 35-40′<br>35.0-40.0′Sand: Fine to coarse, poorly sorted, wet, loose, brown (10 YR 4/2), little pebbles <0.1″. | | | | | | | | | | |
| | | | 36 | | | | | 36-38<br>1.5 | | | | | | |
| | | | 38 | | | | | 38-40<br>1.3 | | | | | | |
| | | | 40 | | | | | | | | | | | |
| 9 | 60 | | | 40-45′<br>40-44.5′ Sand: Fine to coarse, poorly sorted, wet, loose, brown (10 YR 4/2), little pebbles <0.1″.<br>44.5′-45.0′ Clayey Silt: Nonplastic, trace fine sand, some subangular to subround gravel <0.8″, poorly sorted, medium dense, moist to wet, brown (10 YR 4/5). | | | | 40-42<br>2.1 | | | | | | |
| | | | 42 | | | | | 42-44<br>2.2 | | | | | | |
| | | | 44 | | | | | 44-46<br>1.8 | | | | | | |
| 10 | 48 | | | 45-50′<br>45.0-49.0′ Clayey Silt: Nonplastic, trace fine sand, some subangular to subround gravel <0.8″, poorly sorted, medium dense, moist to wet, brown (10 YR 4/5).<br>Refusal at 49′. | | | | 46-48<br>2.7 | | | | | | |
| | | | 46 | | | | | 49-50<br>1.4 | | | | | | |
| | | | 50 | EOB @ 50′ | | | | | | | | | | |

State of Wisconsin
Department of Natural Resources

# Soil Boring Log Information

Form 4400-122 Rev. 7-98

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☐ Other ☒ _____



| Facility/Project Name | License/Permit/Monitoring Number | Boring Number |
|---|---|---|
| Tyco/WI001519.0002 | | SB-5 |

| Boring Drilled By: Name of crew chief (first, last) and Firm | Date Drilling Started | Date Drilling Completed | Drilling Method |
|---|---|---|---|
| First Name Charles/Guy Last Name<br>Firm Dakota Tech | 06/17/2016 | 06/28/2016 | Direct Push |

| WI Unique Well No. | DNR Well ID No. | Well Name | Final Static Water Level | Surface Elevation | Borehole Diameter |
|---|---|---|---|---|---|
| | | | _____ Feet | _____ Feet MSL | _____ inches |

Local Grid Origin ☐ (estimated: ☐ ) or Boring Location ☐
State Plane _____ N, _____ E S☐/C☐/N☐ ☐E ☐W Lat _____ Long _____
_____ 1/4 of _____ 1/4 of Section _____ ,T _____ N,R _____

Local Grid Location ☐N ☐E _____ Feet ☐S _____ Feet ☒W

| Facility ID | County | County Code | Civil Town/City/or Village |
|---|---|---|---|
| | Marinette | 38 | Marinette |

| Sample Number and Type | Length Att. & Recovered (in) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Soil Properties: Compressive Strength | Moisture Content | Liquid Limit | Plastic Limit | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 72 | | 0<br>2<br>4 | 0-6'<br>0-6.0' Fine to medium sand, hand auger. | | | | | | | | | | |
| 2 | 48 | | 6<br>8 | 6-10'<br>6.0-10.0' Sand: Fine to medium, well sorted, wet, loose, brown (10 YR 3/6). | | | | 6-8<br>0.2<br>8-10<br>0.1 | | | | | | |
| 3 | | | 10 | 10-15'<br>10.0-12.2' Sand: Fine to medium, well sorted, wet, | | | | 10-12<br>0.2 | | | | | | |

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature

Firm ARCADIS
126 N. Jefferson St., Suite 400
Milwaukee, WI (414) 276-7742

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| Sample Number and Type | Sample Length All. & Recovered (in) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Soil Properties: Compressive Strength | Moisture Content | Liquid Limit | Plastic Limit | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 12<br>14 | loose, brown (10 YR 3/6), fine to coarse sand from 11.8 to 12.0'.<br>12.7-15.0' No recovery. | | | | 14-16<br>0.1 | | | | | | |
| 4 | 26.4 | | 16<br>18 | 15-20'<br>15.0-17.7' Sand: Fine to medium, well sorted, wet, loose, brown (10 YR 3/6), mostly medium sand from 15.2 to 15.6, slight change in color. 16.4 to 16.7 (10 YR 3/4), 16.7 to 17.7 (10 YR 4/6).<br>17.7-20.0' No recovery. | | | | 16-18<br>0.2 | | | | | | |
| 5 | 54 | | 20<br>22<br>24 | 20-25'<br>20.0-23.5' Sand: Fine to medium, well sorted, wet, loose, brown (10 YR 3/6), with some coarse sand from 23.0-23.5' and medium dense.<br>23.5-24.5' Sand: Fine to coarse, wet, poorly sorted, medium dense, brownish gray (10 YR 4/2).<br>24.5-25.0' No recovery. | | | | 20-22<br>0.4<br>22-24<br>0.3<br>24-26<br>0.1 | | | | | | |
| 6 | 37.2 | | 26<br>28 | 25-30'<br>25.0-28.1' Sand: Fine to coarse, wet, poorly sorted, medium dense, brownish gray (10 YR 4/2).<br>28.1-30.0' No recovery. | | | | 26-28<br>0.7 | | | | | | |

Boring Number SB-5



| Sample Number and Type | Sample Length All. & Recovered (in) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Soil Properties: Compressive Strength | Moisture Content | Liquid Limit | Plastic Limit | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 30 | | | | | | | | | | | |
| 7 | 33.6 | | 32<br>34 | 30-35'<br>30.0-32.8' Sand: Fine to coarse, wet, poorly sorted, medium dense, brownish gray (10 YR 4/2).<br>32.8-35.0' No recovery. | | | | 30-32<br>0.8<br>32-34<br>0.3 | | | | | | |
| 8 | 26.4 | | 36<br>38 | 35-40'<br>35.0-37.2' Sand: Fine to coarse, wet, poorly sorted, medium dense, brownish gray (10 YR 4/2).<br>37.2-40.0' No recovery. | | | | 35-37<br>0.2 | | | | | | |
| | | | 40 | | | | | | | | | | | |
| 9 | 60 | | 42<br>44 | 40-45'<br>40-40.8' Sand: Fine, well sorted, trace silt, wet, medium dense, brown (10 YR 4/4).<br>40.8-45.0' Silt: Clayey, trace fine sand, well sorted, wet, soft, brown (10 YR 4/4). | | | | 40-42<br>0.3<br>42-44<br>0.4<br>44-46<br>0.2 | | | | | | |
| 10 | 54 | | 46<br>50 | 45-50'<br>45.0-47.3' Silt: Clayey, trace fine sand, well sorted, wet, soft, brown (10 YR 4/4) with subangualr to subround gravel <0.6".<br>47.3-49.5' Silt: Clayey, trace fine sand, well sorted, dry to moist, dense, little subangular to subround <0.4" gravel, brown (10 YR 4/4).<br>EOB @ 50' | | | | 46-48<br>0.3<br>48-50<br>0.4 | | | | | | |

State of Wisconsin
Department of Natural Resources

# Soil Boring Log Information

Form 4400-122 Rev. 7-98

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☐ Other ☒ _____



| Facility/Project Name | License/Permit/Monitoring Number | Boring Number |
|---|---|---|
| Tyco/WI001519.0002 | | SB-6 |

| Boring Drilled By: Name of crew chief (first, last) and Firm | Date Drilling Started | Date Drilling Completed | Drilling Method |
|---|---|---|---|
| First Name Charles/Darin Last Name<br>Firm Dakota Tech | 06/30/2016 | 07/01/2016 | Direct Push |

| WI Unique Well No. | DNR Well ID No. | Well Name | Final Static Water Level | Surface Elevation | Borehole Diameter |
|---|---|---|---|---|---|
| | | | _____ Feet | _____ Feet MSL | _____ inches |

Local Grid Origin ☐ (estimated: ☐ ) or Boring Location ☐
State Plane _____ N, _____ E S☐/C☐/N☐ ☐E ☐W Lat _____ Long _____
_____ 1/4 of _____ 1/4 of Section _____ ,T _____ N,R _____

Local Grid Location
_____ Feet ☐N ☐S _____ Feet ☐E ☒W

| Facility ID | County | County Code | Civil Town/City/or Village |
|---|---|---|---|
| | Marinette | 38 | Marinette |

| Sample Number and Type | Length Att. & Recovered (in) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Soil Properties: Compressive Strength | Moisture Content | Liquid Limit | Plastic Limit | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 25.2 | | 0<br>2<br>4 | 0-5'<br>0-0.4' Top Soil.<br>0.4-2.1' Sand: Fine to medium, well sorted, dry, loose, brown (10 YR 3/6).<br>2.1-5.0' No Recovery. | | | | 0-2<br>0.4 | | | | | | |
| 2 | 27.6 | | 6<br>8 | 5-10'<br>5.0-7.2' Sand: Fine to medium, well sorted, dry, loose, brown (10 YR 3/6).<br>7.2-10.0' No recovery. | | | | 5-7<br>0.3 | | | | | | |
| 3 | 30 | | 10 | 10-15'<br>10.0-12.3' Sand: Fine to medium, well sorted, wet, | | | | 10-12<br>0.4 | | | | | | |

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature

Firm ARCADIS
126 N. Jefferson St., Suite 400
Milwaukee, WI (414) 276-7742

This form is authorized by Chapters 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats. Completion of this form is mandatory. Failure to file this form may result in forfeiture of between $10 and $25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any purpose. NOTE: See instructions for more information, including where the completed from should be sent.

| Sample Number and Type | Sample Length All. & Recovered (in) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Soil Properties: Compressive Strength | Moisture Content | Liquid Limit | Plastic Limit | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 12<br>14 | loose, brown (10 YR 3/6).<br>12.3-15.0' No recovery. | | | | | | | | | | |
| 4 | 25.2 | | 16<br>18 | 15-20'<br>15.0-17.1' Sand: Fine to medium, well sorted, wet, loose, brown (10 YR 3/6).<br>17.1-20.0' No recovery. | | | | 15-17<br>0.5 | | | | | | |
| 5 | 37.2 | | 20<br>22<br>24 | 20-25'<br>20.0-22.1' Sand: Fine to medium, well sorted, wet, loose, brown (10 YR 3/6).<br>22.1-23.1' Sand: Fine to medium, mostly medium, loose, wet, well sorted, brown (10 YR 4/4).<br>23.1-25.0' No recovery. | | | | 20-22<br>0.2<br>22-24<br>0.2 | | | | | | |
| 6 | 19.2 | | 26<br>28 | 25-30'<br>25.0-26.6' Sand: Fine to medium, mostly medium, loose, wet, well sorted, brown (10 YR 4/4), fine sand from 25.9-26.3', grayish brown (10 YR 4/2).<br>26.6-30.0 No recovery. | | | | 25-27<br>0.6 | | | | | | |

Boring Number SB-6



| Sample Number and Type | Sample Length All. & Recovered (in) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Soil Properties: Compressive Strength | Moisture Content | Liquid Limit | Plastic Limit | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | |
| 7 | 33.6 | | 30<br>32<br>34 | 30-35′<br>30.0-34.1′ Sand: Fine to coarse, poorly sorted, wet, loose, grayish brown (10 YR 4/2).<br>34.1-35.0′ No recovery. | | | | 30-32<br>0.7<br>32-34<br>0.7 | | | | | | |
| 8 | 26.4 | | 36<br>38<br>40 | 35-40′<br>35.0-40.0′ Sand: Fine to coarse, poorly sorted, wet, loose, grayish brown (10 YR 4/2). | | | | 35-37<br>1.3<br>37-19<br>1.2<br>39-41<br>1.8 | | | | | | |
| 9 | 60 | | 42<br>44 | 40-45′<br>40.0-45.0′ Sand: Fine to coarse, poorly sorted, wet, loose, grayish brown (10 YR 4/2). | | | | 41-43<br>2.2<br>43-45<br>3.6 | | | | | | |
| 10 | 54 | | 46 | 45-50′<br>45.0-47.1′ Sand: Fine to coarse, poorly sorted, wet, loose, grayish brown (10 YR 4/2).<br>47.1-50.0′ No recovery. | | | | 45-48<br>3.1 | | | | | | |

Boring Number SB-6



| Sample Number and Type | Sample Length All. & Recovered (in) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Soil Properties: Compressive Strength | Moisture Content | Liquid Limit | Plastic Limit | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 48 | | | | | | | | | | | |
| 11 | 24 | | 50<br>52<br>54 | 50-55′<br>50.0-51.5′ Sand: Fine to coarse, poorly sorted, wet, loose, grayish brown (10 YR 4/2).<br>51.5-52.0′ Sand: Fine to medium, well sorted, dry, dense, grayish brown (10 YR 4/4).<br>52.0-55.0′ No Recovery. | | | | 50-52<br>5.4<br>52-54<br>8.1<br>54-56<br>7.2 | | | | | | |
| 12 | 60 | | 56<br>58 | 55-60′<br>55.0-58.5′ Sand: Fine to coarse, poorly sorted, wet, loose, grayish brown (10 YR 4/2).<br>58.5-60.0′ Clayey Silt: Trace fine sand, some sub-angular to subround gravel <0.4″, poorly sorted, moist to wet, brown (10 YR 4/4), dense. | | | | 56-58<br>8.8<br>58-60<br>5.4 | | | | | | |
| 13 | 24 | | 60 | 60-62′<br>Clayey Silt: Trace fine sand, some subangular to subround gravel <0.4″, poorly sorted, moist to wet, brown (10 YR 4/4), dense.<br>Refusal at 62.0′. | | | | | | | | | | |
| | | | 62<br>64 | EOB @ 50′ | | | | | | | | | | |

State of Wisconsin
Department of Natural Resources

# Soil Boring Log Information

Form 4400-122 Rev. 7-98

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☐ Other ☒ _____



| Facility/Project Name | License/Permit/Monitoring Number | Boring Number |
|---|---|---|
| Tyco/WI001519.0002 | | SB-8 |

| Boring Drilled By: Name of crew chief (first, last) and Firm | Date Drilling Started | Date Drilling Completed | Drilling Method |
|---|---|---|---|
| First Name Charles/Darin Last Name<br>Firm Dakota Tech | 06/27/2016 | 06/28/2016 | Direct Push |

| WI Unique Well No. | DNR Well ID No. | Well Name | Final Static Water Level | Surface Elevation | Borehole Diameter |
|---|---|---|---|---|---|
| | | | _____ Feet | _____ Feet MSL | _____ inches |

Local Grid Origin ☐ (estimated: ☐ ) or Boring Location ☐
State Plane _____ N, _____ E S☐/C☐/N☐ ☐E ☐W Lat _____ Long _____
_____ 1/4 of _____ 1/4 of Section _____ ,T _____ N,R _____

Local Grid Location
☐N ☐E
_____ Feet ☐S _____ Feet ☒W

| Facility ID | County | County Code | Civil Town/City/or Village |
|---|---|---|---|
| | Marinette | 38 | Marinette |

| Sample Number and Type | Length Att. & Recovered (in) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Soil Properties: Compressive Strength | Moisture Content | Liquid Limit | Plastic Limit | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 30 | | 0<br>2<br>4 | 0-5'<br>0-0.3' Top Soil.<br>0.3-2.5' Sand: Fine to medium, well sorted, dry, loose, brown (10 YR 3/6).<br>2.5-5.0' No Recovery. | | | | 0-2<br>0.6 | | | | | | |
| 2 | 32.4 | | 6<br>8 | 5-10'<br>5.0-7.7' Sand: Fine to medium, well sorted, wet, loose, brown (10 YR 3/6).<br>7.7-10.0' No recovery. | | | | 5-7<br>0.4 | | | | | | |
| 3 | 37.2 | | 10 | 10-15'<br>10.0-13.1' Sand: Fine to medium, well sorted, wet, | | | | 10-12<br>0.7 | | | | | | |

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature

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| Sample Number and Type | Sample Length All. & Recovered (in) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Soil Properties: Compressive Strength | Moisture Content | Liquid Limit | Plastic Limit | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 12<br>14 | loose, brown (10 YR 3/6).<br>31.1-15.0' No recovery. | | | | 12-14<br>0.3 | | | | | | |
| 4 | 34.8 | | 16<br>18<br>20 | 15-20'<br>15.0-17.9 Sand: Fine to medium, mostly medium, well sorted, wet, loose, brown (10 YR 4/2).<br>17.9-20.0' No recovery. | | | | 15-17<br>0.4 | | | | | | |
| 5 | 44.4 | | 22<br>24 | 20-25'<br>20.0-22.1' Sand: Fine to medium, mostly medium, well sorted, wet, loose, brown (10 YR 4/2).<br>22.1-23.7' Sand: Fine, well sorted, wet, loose to medium dense, brown (10 YR 4/4), trace silt.<br>23.7-25.0' No recovery. | | | | 20-22<br>0.4<br>22-24<br>0.7 | | | | | | |
| 6 | 21.6 | | 26<br>28 | 25-30'<br>25.0-26.8' Sand: Fine, well sorted, wet, loose to medium dense, brown (10 YR 4/4), trace silt.<br>26.8-30.0 No recovery. | | | | 25-27<br>0.4 | | | | | | |

Boring Number SB-8



| Sample Number and Type | Sample Length All. & Recovered (in) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Soil Properties: Compressive Strength | Moisture Content | Liquid Limit | Plastic Limit | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 30 | | | | | | | | | | | |
| 7 | 60 | | | 30-35′<br>30.0-35.0′ Sand: Fine to coarse, poorly sorted, wet, loose, grayish brown (10 YR 4/2). | | | | 30-32<br>0.8 | | | | | | |
| | | | 32 | | | | | 32-34<br>0.1 | | | | | | |
| | | | 34 | | | | | 34-36<br>0.3 | | | | | | |
| 8 | 49.2 | | | 35-40′<br>35.0-39.1′ Sand: Fine to coarse, poorly sorted, wet, loose, grayish brown (10 YR 4/2).<br>39.1-40.0 No recovery. | | | | | | | | | | |
| | | | 36 | | | | | 36-38<br>0.3 | | | | | | |
| | | | 38 | | | | | 38-40<br>0.5 | | | | | | |
| | | | 40 | | | | | | | | | | | |
| 9 | 37.2 | | | 40-45′<br>40.0-43.1′ Sand: Fine to coarse, poorly sorted, wet, loose, grayish brown (10 YR 4/2).<br>43.1-45.0′ Sand: Fine to coarse, poorly sorted, wet, loose, grayish brown (10 YR 4/2). | | | | 40-42<br>0.6 | | | | | | |
| | | | 42 | | | | | 42-44<br>0.9 | | | | | | |
| | | | 44 | | | | | 44-46<br>1.1 | | | | | | |
| 10 | 60 | | | 45-50′<br>45.0-50.0′ Sand: Fine to coarse, poorly sorted, wet, loose, grayish brown (10 YR 4/2). | | | | | | | | | | |
| | | | 46 | | | | | 46-48<br>0.6 | | | | | | |

Boring Number SB-8



| Sample Number and Type | Sample Length All. & Recovered (in) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Soil Properties: Compressive Strength | Moisture Content | Liquid Limit | Plastic Limit | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 48 | | | | | 48-50<br>0.6 | | | | | | |
| 11 | 42 | | 50<br>52<br>54 | 50-55'<br>50.0-52.5' Clayey Silt: Trace fine sand, well sorted, medium dense to soft, moist, brown (10 YR 4/4).<br>52.5-53.5' Clayey Silt: Trace fine sand, some sub-angular to subround gravel <0.4", poorly sorted, soft, wet, brown (10 YR 4/4).<br>53.5-55" No recovery. | | | | 50-52<br>0.9<br>52-54<br>0.7 | | | | | | |
| 12 | 48 | | 56<br>58 | 55-60'<br>55.0-57.2' Clayey Silt: Trace fines and, some sub-angular to subround gravel <0.4", poorly sorted, soft, wet, brown (10 YR 4/4).<br>57.2-59.0' Clayey Silt: Trace fine sand, some sub-angular to subround gravel <0.4", poorly sorted, soft, dry, dense, brown (10 YR 4/4).<br>59.0' Refusal. | | | | | | | | | |
| | | | 60<br>62<br>64 | EOB @ 59' | | | | | | | | | | |

State of Wisconsin
Department of Natural Resources

# Soil Boring Log Information

Form 4400-122 Rev. 7-98

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☐ Other ☒ _____



| Facility/Project Name | License/Permit/Monitoring Number | Boring Number |
|---|---|---|
| Tyco/WI001519.0002 | | SB-10 |

| Boring Drilled By: Name of crew chief (first, last) and Firm | Date Drilling Started | Date Drilling Completed | Drilling Method |
|---|---|---|---|
| First Name Charles/Darin Last Name<br>Firm Dakota Tech | 06/25/2016 | 06/25/2016 | Direct Push |

| WI Unique Well No. | DNR Well ID No. | Well Name | Final Static Water Level | Surface Elevation | Borehole Diameter |
|---|---|---|---|---|---|
| | | | _____ Feet | _____ Feet MSL | _____ inches |

Local Grid Origin ☐ (estimated: ☐ ) or Boring Location ☐
State Plane _____ N, _____ E S☐/C☐/N☐ ☐E ☐W Lat _____ Long _____
_____ 1/4 of _____ 1/4 of Section _____ ,T _____ N,R _____

Local Grid Location
_____ Feet ☐N ☐S _____ Feet ☐E ☒W

| Facility ID | County | County Code | Civil Town/City/or Village |
|---|---|---|---|
| | Marinette | 38 | Marinette |

| Sample Number and Type | Length Att. & Recovered (in) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Soil Properties: Compressive Strength | Moisture Content | Liquid Limit | Plastic Limit | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 38.4 | | 0<br>2<br>4 | 0-5'<br>0-0.4' Top Soil.<br>0.4-3.2' Sand: Fine to medium, well sorted, dry, loose, brown (10 YR 3/6).<br>3.2-5.0' No Recovery. | | | | 0-2<br>0.4<br>2-4<br>0.6<br>4-6<br>0.3 | | | | | | |
| 2 | 33.6 | | 6<br>8 | 5-10'<br>5.0-7.8' Sand: Fine to medium, well sorted, wet, loose, brown (10 YR 3/6).<br>7.8-10.0' No recovery. | | | | 6-8<br>0.2 | | | | | | |
| 3 | 30 | | 10 | 10-15'<br>10.0-12.5' Sand: Fine to medium, well sorted, wet, | | | | 10-12<br>0.4 | | | | | | |

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature

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Milwaukee, WI (414) 276-7742

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| Sample Number and Type | Sample Length All. & Recovered (in) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Soil Properties: Compressive Strength | Moisture Content | Liquid Limit | Plastic Limit | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | loose, brown (10 YR 3/6).<br>12.5-15.0' No recovery. | | | | | | | | | | |
| | | | 12 | | | | | 12-14<br>0.6 | | | | | | |
| | | | 14 | | | | | 14-16<br>0.6 | | | | | | |
| 4 | 37.2 | | | 15-20'<br>15.0-16.2' Sand: Fine to medium, well sorted, wet, loose, brown (10 YR 3/6).<br>16.2-18.1' Sand: Fine to medium, mostly medium, well sorted, wet, loose, brown (10 YR 4/4).<br>18.1-20.' No recovery. | | | | | | | | | | |
| | | | 16 | | | | | 16-18<br>0.4 | | | | | | |
| | | | 18 | | | | | | | | | | | |
| | | | 20 | | | | | | | | | | | |
| 5 | 48 | | | 20-25'<br>20.0-24.0' Sand: Fine to coarse, poorly sorted, wet, loose, grayish brown (10 YR 4/2), fine sand from 22.2 to 22.4 and 23.1 to 23.4.<br>24.0-25.0' No recovery. | | | | 20-22<br>0.5 | | | | | | |
| | | | 22 | | | | | 22-24<br>0.7 | | | | | | |
| | | | 24 | | | | | | | | | | | |
| 6 | 60 | | | 25-30'<br>25.0-30.0' Sand: Fine to coarse, poorly sorted, wet, loose, grayish brown (10 YR 4/2), fine sand from 22.2 to 22.4 and 23.1 to 23.4, trace small pebbles. | | | | | | | | | | |
| | | | 26 | | | | | 26-28<br>0.7 | | | | | | |
| | | | 28 | | | | | 28-30<br>0.6 | | | | | | |

Boring Number SB-10



| Sample Number and Type | Sample Length All. & Recovered (in) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Soil Properties: Compressive Strength | Moisture Content | Liquid Limit | Plastic Limit | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | |
| 7 | 60 | | 30 | 30-35′<br>30.0-35.0′ Sand: Fine to coarse, poorly sorted, wet, loose, grayish brown (10 YR 4/2), little gravel <0.7″. | | | | 30-32<br>0.7 | | | | | | |
| | | | 32 | | | | | 32-34<br>0.5 | | | | | | |
| | | | 34 | | | | | 34-36<br>0.4 | | | | | | |
| 8 | 42 | | 36 | 35-40′<br>35.0-38.5′ Clayey Silt: Nonplastic trace fine sand, some subangular to subround gravel <1″, poorly sorted, medium dense, wet, brown (10 YR 4/3), moist and dense from 37.5 to 38.5′.<br>Refusal at 38.5′. | | | | 36-38<br>0.6 | | | | | | |
| | | | 38 | | | | | | | | | | | |
| | | | 40 | EOB @ 40′. | | | | | | | | | | |
| | | | 42 | | | | | | | | | | | |
| | | | 44 | | | | | | | | | | | |
| | | | 46 | | | | | | | | | | | |

State of Wisconsin
Department of Natural Resources

# Soil Boring Log Information

Form 4400-122 Rev. 7-98

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☐ Other ☒ _____



| Facility/Project Name | License/Permit/Monitoring Number | Boring Number |
|---|---|---|
| Tyco/WI001519.0002 | | SB-11 |

| Boring Drilled By: Name of crew chief (first, last) and Firm | Date Drilling Started | Date Drilling Completed | Drilling Method |
|---|---|---|---|
| First Name Charles/Darin Last Name<br>Firm Dakota Tech | 06/26/2016 | 06/27/2016 | Direct Push |

| WI Unique Well No. | DNR Well ID No. | Well Name | Final Static Water Level | Surface Elevation | Borehole Diameter |
|---|---|---|---|---|---|
| | | | _____ Feet | _____ Feet MSL | _____ inches |

Local Grid Origin ☐ (estimated: ☐ ) or Boring Location ☐
State Plane _____ N, _____ E S☐/C☐/N☐ ☐E ☐W Lat _____ Long _____
_____ 1/4 of _____ 1/4 of Section _____ ,T _____ N,R _____

Local Grid Location
_____ Feet ☐N ☐S _____ Feet ☐E ☒W

| Facility ID | County | County Code | Civil Town/City/or Village |
|---|---|---|---|
| | Marinette | 38 | Marinette |

| Sample Number and Type | Length Att. & Recovered (in) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Soil Properties: Compressive Strength | Moisture Content | Liquid Limit | Plastic Limit | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 30 | | 0<br>2<br>4 | 0-5'<br>0-0.4' Top Soil.<br>0.4-2.5' Sand: Fine to medium, well sorted, dry, loose, brown (10 YR 3/6).<br>2.5-5.0' No Recovery. | | | | 0-2<br>0.1<br>2-4<br>0.4 | | | | | | |
| 2 | 32.4 | | 6<br>8 | 5-10'<br>5.0-7.7' Sand: Fine to medium, well sorted, wet, loose, brown (10 YR 3/6).<br>7.7-10.0' No recovery. | | | | 5-7<br>0.3<br>7-9<br>0.4 | | | | | | |
| 3 | 28.8 | | 10 | 10-15'<br>10.0-12.4' Sand: Fine to medium, well sorted, wet, | | | | 10-12<br>0.0 | | | | | | |

I hereby certify that the information on this form is true and correct to the best of my knowledge.

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| Sample Number and Type | Sample Length All. & Recovered (in) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Soil Properties: Compressive Strength | Moisture Content | Liquid Limit | Plastic Limit | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | loose, brown (10 YR 3/6).<br>12.4-15.0' No recovery. | | | | | | | | | | |
| | | | 12 | | | | | 12-14<br>0.8 | | | | | | |
| | | | 14 | | | | | 14-16<br>0.2 | | | | | | |
| 4 | 37.2 | | | 15-20'<br>15.0-15.7' Sand: Fine to medium, well sorted, wet, loose, brown (10 YR 3/6).<br>15.7-18.5' Sand: Fine to medium, mostly medium, well sorted, wet, loose, brown (10 YR 4/2).<br>18.5-20.' No recovery. | | | | 16-18<br>0.3 | | | | | | |
| | | | 16 | | | | | | | | | | | |
| | | | 18 | | | | | | | | | | | |
| | | | 20 | | | | | | | | | | | |
| 5 | 48 | | | 20-25'<br>20.0-21.1' Sand: Fine to medium, mostly medium, well sorted, wet, loose, brown (10 YR 4/2).<br>21.1-23.2' Sand: Fine to coarse, poorly sorted, wet, loose, grayish brown (10 YR 4/2), little pebbles <0.2".<br>23.2-25.0' No recovery. | | | | 20-22<br>0.2<br>22-24<br>0.4 | | | | | | |
| | | | 22 | | | | | | | | | | | |
| | | | 24 | | | | | | | | | | | |
| 6 | 60 | | | 25-30'<br>25.0-27.2' Sand: Fine to coarse, poorly sorted, wet, loose, grayish brown (10 YR 4/2), little pebbles <0.2".<br>27.2-28.0' Sand: Fine to medium, mostly medium, well sorted, wet, loose, brown (10 YR 4/2).<br>28.0-30.0' No recovery. | | | | 25-26<br>0.6<br>27-29<br>0.7 | | | | | | |
| | | | 26 | | | | | | | | | | | |
| | | | 28 | | | | | | | | | | | |

Boring Number SB-11



| Sample Number and Type | Sample Length All. & Recovered (in) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Soil Properties: Compressive Strength | Moisture Content | Liquid Limit | Plastic Limit | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 30 | | | | | | | | | | | |
| 7 | 48 | | | 30-35'<br>30.0-34.0' Sand: Fine to coarse, poorly sorted, wet, loose, grayish brown (10 YR 4/2), little pebbles <0.2".<br>34.0-35.0' No recovery. | | | | 30-32<br>0.9 | | | | | | |
| | | | 32 | | | | | 32-34<br>0.6 | | | | | | |
| | | | 34 | | | | | 34-36<br>0.5 | | | | | | |
| 8 | 60 | | 36 | 35-40'<br>35.0-40.0' Sand: Fine to coarse, poorly sorted, wet, loose, grayish brown (10 YR 4/2), little pebbles <0.2". | | | | 36-38<br>1.2 | | | | | | |
| | | | 38 | | | | | 38-40<br>1.1 | | | | | | |
| | | | 40 | | | | | | | | | | | |
| 9 | 30 | | | 40-45'<br>40.0-41.5' Sand: Fine to coarse, poorly sorted, wet, loose, grayish brown (10 YR 4/2), little pebbles <0.2".<br>41.5-42.5' Clayey Silt: Trace fine sand, some sub-angular to subround <0.4", poorly sorted, dense, moist, brown (10 YR 4/3).<br>Refusal at 42.5'. | | | | 40-42<br>1.9 | | | | | | |
| | | | 42 | | | | | | | | | | | |
| | | | 44 | | | | | | | | | | | |
| | | | | EOB @ 45'. | | | | | | | | | | |
| | | | 46 | | | | | | | | | | | |

State of Wisconsin
Department of Natural Resources

# Soil Boring Log Information

Form 4400-122 Rev. 7-98

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☐ Other ☒ _____



| Facility/Project Name | License/Permit/Monitoring Number | Boring Number |
|---|---|---|
| Tyco/WI001519.0002 | | SB-13 |

| Boring Drilled By: Name of crew chief (first, last) and Firm | Date Drilling Started | Date Drilling Completed | Drilling Method |
|---|---|---|---|
| First Name Charles/Darin Last Name<br>Firm Dakota Tech | 06/26/2016 | 06/27/2016 | Direct Push |

| WI Unique Well No. | DNR Well ID No. | Well Name | Final Static Water Level | Surface Elevation | Borehole Diameter |
|---|---|---|---|---|---|
| | | | _____ Feet | _____ Feet MSL | _____ inches |

Local Grid Origin ☐ (estimated: ☐ ) or Boring Location ☐
State Plane _____ N, _____ E S☐/C☐/N☐ ☐E ☐W Lat _____ Long _____
_____ 1/4 of _____ 1/4 of Section _____ ,T _____ N,R _____

Local Grid Location
☐N ☐E
_____ Feet ☐S _____ Feet ☒W

| Facility ID | County | County Code | Civil Town/City/or Village |
|---|---|---|---|
| | Marinette | 38 | Marinette |

| Sample Number and Type | Length Att. & Recovered (in) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Soil Properties: Compressive Strength | Moisture Content | Liquid Limit | Plastic Limit | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 36 | | 0 | 0-5'<br>0-0.3' Top Soil.<br>0.3-3.0' Sand: Fine to medium, well sorted, dry, loose, brown (10 YR 3/6).<br>3.0-5.0' No Recovery. | | | | 0-2<br>0.2<br>2-4<br>0.3<br>4-6<br>0.2 | | | | | | |
| 2 | 36 | | 6<br>8 | 5-10'<br>5.0-8.0' Sand: Fine to medium, well sorted, wet, loose, brown (10 YR 3/6).<br>8.0-10.0' No recovery. | | | | 6-8<br>0.3<br>8-10 | | | | | | |
| 3 | 33.6 | | 10 | 10-15'<br>10.0-12.8' Sand: Fine to medium, well sorted, wet, | | | | 10-12<br>0.4 | | | | | | |

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature

Firm ARCADIS
126 N. Jefferson St., Suite 400
Milwaukee, WI (414) 276-7742

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Boring Number SB-13



| Sample Number and Type | Sample Length All. & Recovered (in) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Soil Properties: Compressive Strength | Moisture Content | Liquid Limit | Plastic Limit | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | loose, brown (10 YR 3/6).<br>12.8-15.0' No recovery. | | | | | | | | | | |
| | | | 12 | | | | | 12-14<br>0.3 | | | | | | |
| | | | 14 | | | | | 14-16<br>0.3 | | | | | | |
| 4 | 37.2 | | | 15-20'<br>15.0-17.1' Sand: Fine to medium, some coarse sand, well sorted, dry, loose, brown (10 YR 3/6).<br>17.1-20.0' No recovery. | | | | 16-18<br>0.3 | | | | | | |
| | | | 16 | | | | | | | | | | | |
| | | | 18 | | | | | | | | | | | |
| | | | 20 | | | | | | | | | | | |
| 5 | 48 | | | 20-25'<br>20.0-24.5' Sand: Fine to coarse, poorly sorted, wet, loose, grayish brown (10 YR 4/2).<br>24.5-25' No recovery. | | | | 20-22<br>0.3 | | | | | | |
| | | | 22 | | | | | 22-24<br>0.2 | | | | | | |
| | | | 24 | | | | | 24-26 | | | | | | |
| 6 | 60 | | | 25-30'<br>25.0-29. 0' Sand: Fine to coarse, poorly sorted, wet, loose, grayish brown (10 YR 4/2).<br>29.0-30.0' No recovery. | | | | 26-28 | | | | | | |
| | | | 26 | | | | | | | | | | | |
| | | | 28 | | | | | 28-30<br>0.8 | | | | | | |

Boring Number SB-13



| Sample Number and Type | Sample Length All. & Recovered (in) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Soil Properties: Compressive Strength | Moisture Content | Liquid Limit | Plastic Limit | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 30 | | | | | | | | | | | |
| 7 | 60 | | 32 | 30-35′<br>30.0-30.3′ Sand: Fine to coarse, poorly sorted, wet, loose, grayish brown (10 YR 4/2).<br>30.3-30.5′ Clayey Silt: Non plastic, trace fine sand, some subround to subangular gravel <0.8″, poorly sorted medium dense, moist to wet, brown (10 YR 4/3). | | | | 30-32<br>0.6<br>32-34<br>1.1<br>34-36<br>0.4 | | | | | | |
| 8 | 42 | | 36<br>38 | 35-40′<br>35.0-38.5′ Clayey Silt: Non plastic, trace fine sand, some subround to subangular gravel <0.8″, poorly sorted medium dense, moist to wet, brown (10 YR 4/3).<br>38.5 Refusal | | | | 36-38<br>0.3 | | | | | | |
| | | | 40<br>42<br>44<br>46 | EOB @ 40′. | | | | | | | | | | |

State of Wisconsin
Department of Natural Resources

# Soil Boring Log Information

Form 4400-122 Rev. 7-98

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☐ Other ☒ _____



| Facility/Project Name | License/Permit/Monitoring Number | Boring Number |
|---|---|---|
| Tyco/WI001519.0002 | | SB-14 |

| Boring Drilled By: Name of crew chief (first, last) and Firm | Date Drilling Started | Date Drilling Completed | Drilling Method |
|---|---|---|---|
| First Name Charles/Darin Last Name<br>Firm Dakota Tech | 06/23/2016 | 06/23/2016 | Direct Push |

| WI Unique Well No. | DNR Well ID No. | Well Name | Final Static Water Level | Surface Elevation | Borehole Diameter |
|---|---|---|---|---|---|
| | | | _____ Feet | _____ Feet MSL | _____ inches |

Local Grid Origin ☐ (estimated: ☐ ) or Boring Location ☐
State Plane _____ N, _____ E S☐/C☐/N☐ ☐E ☐W Lat _____ Long _____
_____ 1/4 of _____ 1/4 of Section _____ ,T _____ N,R _____

Local Grid Location
_____ Feet ☐N ☐S _____ Feet ☐E ☒W

| Facility ID | County | County Code | Civil Town/City/or Village |
|---|---|---|---|
| | Marinette | 38 | Marinette |

| Sample Number and Type | Length Att. & Recovered (in) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Soil Properties: Compressive Strength | Moisture Content | Liquid Limit | Plastic Limit | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 30 | | 0 | 0-5'<br>0-0.3' Top Soil.<br>0.3-2.5' Sand: Fine to medium, well sorted, dry to moist, loose, brown (10 YR 3/6).<br>2.5-5.0' No Recovery. | | | | 0-2<br>0.5<br>2-4<br>0.5<br>4-6<br>0.8 | | | | | | |
| | | | 2 | | | | | | | | | | | |
| | | | 4 | | | | | | | | | | | |
| 2 | 30 | | 6 | 5-10'<br>5.0-7.5' Sand: Fine to medium, well sorted, wet, loose, brown (10 YR 3/6).<br>7.5-10.0' No recovery. | | | | 6-8<br>0.8 | | | | | | |
| | | | 8 | | | | | | | | | | | |
| | | | 10 | | | | | | | | | | | |
| 3 | 30 | | | 10-15'<br>10.0-12.8' Sand: Fine to medium, well sorted, wet, | | | | 10-12<br>0.3 | | | | | | |

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature

Firm ARCADIS
126 N. Jefferson St., Suite 400
Milwaukee, WI (414) 276-7742

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Boring Number SB-14



| Sample Number and Type | Sample Length All. & Recovered (in) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Soil Properties: Compressive Strength | Moisture Content | Liquid Limit | Plastic Limit | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | loose, brown (10 YR 3/6).<br>12.5-15.0' No recovery. | | | | | | | | | | |
| | | | 12 | | | | | 12-14<br>0.2 | | | | | | |
| | | | 14 | | | | | 14-16<br>0.8 | | | | | | |
| 4 | 30 | | | 15-20'<br>15.0-16.3' Sand: Fine to medium, well sorted, loose, brown (10 YR 3/6).<br>16.3-17.5' Sand: Fine to coarse, poorly sorted, wet, looe, brown (10 YR 3/4).<br>17.5-20.0' No recovery. | | | | 16-18<br>0.8 | | | | | | |
| | | | 16 | | | | | | | | | | | |
| | | | 18 | | | | | | | | | | | |
| | | | 20 | | | | | | | | | | | |
| 5 | 60 | | | 20-25'<br>20.0-25.0' Sand: Fine to coarse, poorly sorted, wet, looe, brown (10 YR 3/4). | | | | 20-22<br>0.8 | | | | | | |
| | | | 22 | | | | | 22-24<br>0.8 | | | | | | |
| | | | 24 | | | | | 24-26<br>1.6 | | | | | | |
| 6 | 60 | | | 25-30'<br>25.0-27.9' Sand: Fine to coarse, poorly sorted, wet, looe, brown (10 YR 3/4).<br>27.9-29.3' Clayey Silt: Nonplastic, trace fine sand, some subangular to subround gravel <0.8", poorly sorted, medium dense, wet, brown (10 YR 4/3).<br>29.3-30.0' Clayey Silt: Nonplastic, trace fine sand, some subangular to subround gravel <0.8", poorly sorted, medium dense, dry to moist, brown (10 YR 4/3). | | | | 26-28<br>1.3 | | | | | | |
| | | | 26 | | | | | | | | | | | |
| | | | 28 | | | | | 28-30<br>1.4 | | | | | | |

Boring Number SB-14



| Sample Number and Type | Sample Length All. & Recovered (in) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Soil Properties: Compressive Strength | Moisture Content | Liquid Limit | Plastic Limit | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | |
| 7 | 48 | | 30 | 30-35′<br>30.0-34.0′ Clayey Silt: Nonplastic, trace fine sand, some subangular to subround gravel <0.8″, poorly sorted, medium dense, dry to moist, brown (10 YR 4/3).<br>34.0′ Refusal | | | | 30-32<br>1.8<br>32-34<br>2.1 | | | | | | |
| | | | 32 | | | | | | | | | | | |
| | | | 34 | | | | | | | | | | | |
| | | | | EOB @ 35′. | | | | | | | | | | |
| | | | 36 | | | | | | | | | | | |
| | | | 38 | | | | | | | | | | | |
| | | | 40 | | | | | | | | | | | |
| | | | 42 | | | | | | | | | | | |
| | | | 44 | | | | | | | | | | | |
| | | | 46 | | | | | | | | | | | |

State of Wisconsin
Department of Natural Resources

# Soil Boring Log Information

Form 4400-122 Rev. 7-98

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☐ Other ☒ _____



| Facility/Project Name | License/Permit/Monitoring Number | Boring Number |
|---|---|---|
| Tyco/WI001519.0002 | | SB-15 |

| Boring Drilled By: Name of crew chief (first, last) and Firm | Date Drilling Started | Date Drilling Completed | Drilling Method |
|---|---|---|---|
| First Name Charles/Darin Last Name<br>Firm Dakota Tech | 06/25/2016 | 06/25/2016 | Direct Push |

| WI Unique Well No. | DNR Well ID No. | Well Name | Final Static Water Level | Surface Elevation | Borehole Diameter |
|---|---|---|---|---|---|
| | | | _____ Feet | _____ Feet MSL | _____ inches |

Local Grid Origin ☐ (estimated: ☐ ) or Boring Location ☐
State Plane _____ N, _____ E S☐/C☐/N☐ ☐E ☐W Lat _____ Long _____
_____ 1/4 of _____ 1/4 of Section _____ ,T _____ N,R _____

Local Grid Location
_____ Feet ☐N ☐S _____ Feet ☐E ☒W

| Facility ID | County | County Code | Civil Town/City/or Village |
|---|---|---|---|
| | Marinette | 38 | Marinette |

| Sample Number and Type | Length Att. & Recovered (in) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Soil Properties: Compressive Strength | Moisture Content | Liquid Limit | Plastic Limit | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 37.2 | | 0 | 0-5'<br>0-0.4' Top Soil.<br>0.4-3.1' Sand: Fine to medium, well sorted, dry, loose, brown (10 YR 3/6).<br>3.1-5.0' No Recovery. | | | | 0-2<br>0.5<br>2-4<br>0.5<br>4-6<br>0.8 | | | | | | |
| 2 | 34.8 | | 6 | 5-10'<br>5.0-7.9' Sand: Fine to medium, well sorted, wet, loose, brown (10 YR 3/6).<br>7.9-10.0' No recovery. | | | | 6-8<br>0.8 | | | | | | |
| 3 | 33.6 | | 10 | 10-15'<br>10.0-12.8' Sand: Fine to medium, well sorted, wet, | | | | 10-12<br>0.3 | | | | | | |

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature

Firm ARCADIS
126 N. Jefferson St., Suite 400
Milwaukee, WI (414) 276-7742

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| Sample Number and Type | Sample Length All. & Recovered (in) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Soil Properties: Compressive Strength | Moisture Content | Liquid Limit | Plastic Limit | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | loose, brown (10 YR 3/6).<br>12.8-15.0' No recovery. | | | | | | | | | | |
| | | | 12 | | | | | 12-14<br>0.8 | | | | | | |
| | | | 14 | | | | | | | | | | | |
| 4 | 38.4 | | | 15-20'<br>15.0-16.1' Sand: Fine to medium, well sorted, loose, brown (10 YR 3/6).<br>16.1-18.2' Sand: Fine to medium, mostly medium, well sorted, wet, loose, brown (10 YR 3/6).<br>18.2-20.0' No recovery. | | | | 15-17<br>0.5<br>17-19<br>0.5 | | | | | | |
| | | | 16 | | | | | | | | | | | |
| | | | 18 | | | | | | | | | | | |
| | | | 20 | | | | | | | | | | | |
| 5 | 42 | | | 20-25'<br>20.0-23.5' Sand: Fine to medium, mostly medium, well sorted, wet, loose, brown (10 YR 4/2).<br>23.5-25.0' No recovery. | | | | 20-22<br>0.7<br>22-24<br>0.9<br>24-26<br>0.6 | | | | | | |
| | | | 22 | | | | | | | | | | | |
| | | | 24 | | | | | | | | | | | |
| 6 | 38.4 | | | 25-30'<br>25.0-26.2' Sand: Fine to medium, mostly medium, well sorted, wet, loose, brown (10 YR 4/2).<br>26.2-28.2' Sand: Fine to coarse, poorly sorted, wet, loose, brown (10 YR 4/2).<br>28.2-30.0' No recovery. | | | | 26-28<br>0.7 | | | | | | |
| | | | 26 | | | | | | | | | | | |
| | | | 28 | | | | | | | | | | | |

Boring Number SB-15



| Sample Number and Type | Sample Length All. & Recovered (in) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Soil Properties: Compressive Strength | Moisture Content | Liquid Limit | Plastic Limit | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 30 | | | | | | | | | | | |
| 7 | 51.6 | | | 30-35'<br>30.0-33.1' Sand: Fine to coarse, poorly sorted, wet, loose, brown (10 YR 4/2).<br>33.1-34.3' Clayey Silt: Nonplastic, trace fine sand, some subangular to subround gravel <0.8", poorly sorted, dense, moist, brown (10 YR4/3). | | | | 30-32<br>0.7 | | | | | | |
| | | | 32 | | | | | 32-34<br>0.8 | | | | | | |
| | | | 34 | | | | | 34-36<br>0.8 | | | | | | |
| 8 | 54 | | | 35-40'<br>35.0-39.4' Clayey Silt: Nonplastic, trace fine sand, some subangular to subround gravel <0.8", poorly sorted, dense, moist, brown (10 YR4/3), large gravel pieces at 37.4 and 38.7'.<br>Refusal at approximately 40'. | | | | 36-38<br>1.2 | | | | | | |
| | | | 36 | | | | | | | | | | | |
| | | | 38 | | | | | 38-40<br>1.6 | | | | | | |
| | | | 40 | EOB @ 40'. | | | | | | | | | | |
| | | | 42 | | | | | | | | | | | |
| | | | 44 | | | | | | | | | | | |
| | | | 46 | | | | | | | | | | | |

State of Wisconsin
Department of Natural Resources

# Soil Boring Log Information

Form 4400-122 Rev. 7-98

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☐ Other ☒ _____



| Facility/Project Name | License/Permit/Monitoring Number | Boring Number |
|---|---|---|
| Tyco/WI001519.0002 | | SB-16 |

| Boring Drilled By: Name of crew chief (first, last) and Firm | Date Drilling Started | Date Drilling Completed | Drilling Method |
|---|---|---|---|
| First Name Charles/Darin Last Name<br>Firm Dakota Tech | 06/24/2016 | 06/24/2016 | Direct Push |

| WI Unique Well No. | DNR Well ID No. | Well Name | Final Static Water Level | Surface Elevation | Borehole Diameter |
|---|---|---|---|---|---|
| | | | _____ Feet | _____ Feet MSL | _____ inches |

Local Grid Origin ☐ (estimated: ☐ ) or Boring Location ☐
State Plane _____ N, _____ E S☐/C☐/N☐ ☐E ☐W Lat _____ Long _____
_____ 1/4 of _____ 1/4 of Section _____ ,T _____ N,R _____

Local Grid Location
☐N ☐E
_____ Feet ☐S _____ Feet ☒W

| Facility ID | County | County Code | Civil Town/City/or Village |
|---|---|---|---|
| | Marinette | 38 | Marinette |

| Sample Number and Type | Length All. & Recovered (in) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Soil Properties: Compressive Strength | Moisture Content | Liquid Limit | Plastic Limit | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 27.6 | | 0 | 0-5'<br>0-0.4' Top Soil.<br>0.4-2.3' Sand: Fine to medium, well sorted, dry, loose, brown (10 YR 3/6).<br>2.3-5.0' No Recovery. | | | | 0-2<br>0.3<br>2-4<br>0.4<br>4-6<br>0.4 | | | | | | |
| | | | 2 | | | | | | | | | | | |
| | | | 4 | | | | | | | | | | | |
| 2 | 21.6 | | 6 | 5-10'<br>5.0-6.8' Sand: Fine to medium, well sorted, wet, loose, brown (10 YR 3/6).<br>6.8-10.0' No recovery. | | | | | | | | | | |
| | | | 8 | | | | | | | | | | | |
| | | | 10 | | | | | | | | | | | |
| 3 | 25.2 | | | 10-15'<br>10.0-12.1' Sand: Fine to medium, well sorted, wet, | | | | 10-12<br>0.4 | | | | | | |

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature

Firm ARCADIS
126 N. Jefferson St., Suite 400
Milwaukee, WI (414) 276-7742

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| Sample Number and Type | Sample Length All. & Recovered (in) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Soil Properties: Compressive Strength | Moisture Content | Liquid Limit | Plastic Limit | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 12<br>14 | loose, brown (10 YR 3/6).<br>12.1-15.0' No recovery. | | | | | | | | | | |
| 4 | 33.6 | | 16<br>18 | 15-20'<br>15.0-15.6' Sand: Fine to medium, well sorted, wet, loose, brown (10 YR 3/6).<br>15.6-17.8' Sand: Fine to medium, mostly medium, well sorted, wet, loose, brown (10 YR 4/2).<br>17.8-20.0' No recovery. | | | | 15-17<br>0.7 | | | | | | |
| 5 | 22.8 | | 20<br>22<br>24 | 20-25'<br>20.0-21.9' Sand: Fine to medium, mostly medium, well sorted, wet, loose, brown (10 YR 4/2).<br>21.9-25.0' No recovery. | | | | 20-22<br>0.9 | | | | | | |
| 6 | 20.4 | | 26<br>28 | 25-30'<br>25.0-26.7' Sand: Fine to coarse, poorly sorted, wet, loose, brown (10 YR 4/2). | | | | 25-27<br>0.6 | | | | | | |

| Sample Number and Type | Sample Length All. & Recovered (in) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Soil Properties: Compressive Strength | Moisture Content | Liquid Limit | Plastic Limit | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 30 | | | | | | | | | | | |
| 7 | 39.6 | | 32<br>34 | 30-35'<br>30.0-33.4' Sand: Fine to coarse, poorly sorted, wet, loose, brown (10 YR 4/2).<br>31.4-33.3' Clayey Silt: Nonplastic, trace fine sand, some subangular to subround gravel <0.8", poorly sorted, meduim dense to soft, wet, brown (10 YR 4/3).<br>33.3-35.0' No recovery. | | | | 30-32<br>0.9<br>32-34<br>0.7<br>34-36<br>0.8 | | | | | | |
| 8 | 60 | | 36<br>38 | 35-40'<br>35.0-36.7' Clayey Silt: Nonplastic, trace fine sand, some subangular to subround gravel <0.8", poorly sorted, meduim dense to soft, wet, brown (10 YR 4/3).<br>36.7-40.0' Clayey Silt: Nonplastic, trace fine sand, some subangular to subround gravel <0.8", poorly sorted, meduim dense to soft, dry to moist, brown (10 YR 4/3). | | | | 36-38<br>0.9<br>38-40<br>0.6 | | | | | | |
| | | | 40<br>42<br>44<br>46 | EOB @ 40'. | | | | | | | | | | |

State of Wisconsin
Department of Natural Resources

# Soil Boring Log Information

Form 4400-122 Rev. 7-98

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☐ Other ☒ _____



| Facility/Project Name | License/Permit/Monitoring Number | Boring Number |
|---|---|---|
| Tyco/WI001519.0002 | | SB-19 |

| Boring Drilled By: Name of crew chief (first, last) and Firm | Date Drilling Started | Date Drilling Completed | Drilling Method |
|---|---|---|---|
| First Name Charles/Darin Last Name<br>Firm Dakota Tech | 06/28/2016 | 06/28/2016 | Direct Push |

| WI Unique Well No. | DNR Well ID No. | Well Name | Final Static Water Level | Surface Elevation | Borehole Diameter |
|---|---|---|---|---|---|
| | | | _____ Feet | _____ Feet MSL | _____ inches |

Local Grid Origin ☐ (estimated: ☐ ) or Boring Location ☐
State Plane _____ N, _____ E S☐/C☐/N☐ ☐E ☐W Lat _____ Long _____
_____ 1/4 of _____ 1/4 of Section _____ ,T _____ N,R _____

Local Grid Location ☐N ☐E _____ Feet ☐S _____ Feet ☒W

| Facility ID | County | County Code | Civil Town/City/or Village |
|---|---|---|---|
| | Marinette | 38 | Marinette |

| Sample Number and Type | Length Att. & Recovered (in) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Soil Properties: Compressive Strength | Moisture Content | Liquid Limit | Plastic Limit | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 72 | | 0<br>2<br>4 | 0-6'<br>0-6.0' Hand Auger. Fine to medium sand. | | | | | | | | | | |
| 2 | 33.6 | | 6<br>8 | 6-10'<br>6.0-8.8' Sand; Fine to medium, well sorted, wet, loose, brown (10 YR 3/6).<br>8.8-10.0' No recovery. | | | | 6-8<br>0.3<br>8-10<br>0.2 | | | | | | |
| 3 | 38.4 | | 10 | 10-15'<br>10.0-13.2' Sand: Fine to medium, well sorted, wet, | | | | 10-12<br>0.4 | | | | | | |

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature

Firm ARCADIS
126 N. Jefferson St., Suite 400
Milwaukee, WI (414) 276-7742

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| Sample Number and Type | Sample Length All. & Recovered (in) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Soil Properties: Compressive Strength | Moisture Content | Liquid Limit | Plastic Limit | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | loose, brown (10 YR 3/6).<br>13.2-15.0' No recovery. | | | | | | | | | | |
| | | | 12 | | | | | 12-14<br>0.2 | | | | | | |
| | | | 14 | | | | | 14-16<br>0.4 | | | | | | |
| 4 | 46.8 | | | 15-20'<br>15.0-18.9' Sand: Fine to medium, mostly medium, well sorted, wet, loose, brown (10 YR 4/2).<br>18.9-20.0 No recovery. | | | | | | | | | | |
| | | | 16 | | | | | | | | | | | |
| | | | 18 | | | | | 18-20<br>0.2 | | | | | | |
| | | | 20 | | | | | | | | | | | |
| 5 | 25.2 | | | 20-25'<br>20.0-22.1' Sand: Fine to coarse, poorly sorted, wet, loose, brown (10 YR 4/2).<br>22.1-25.0' No recovery. | | | | 20-22<br>0.4 | | | | | | |
| | | | 22 | | | | | | | | | | | |
| | | | 24 | | | | | | | | | | | |
| 6 | 60 | | | 25-30'<br>25.0-30.0' Sand: Fine to coarse, poorly sorted, wet, loose, brown (10 YR 4/2), with some pebbles <0.1". | | | | 25-27<br>0.3 | | | | | | |
| | | | 26 | | | | | | | | | | | |
| | | | | | | | | 27-29<br>0.3 | | | | | | |
| | | | 28 | | | | | | | | | | | |

Boring Number SB-19



| Sample Number and Type | Sample Length All. & Recovered (in) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Soil Properties: Compressive Strength | Moisture Content | Liquid Limit | Plastic Limit | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 30 | | | | | | | | | | | |
| 7 | 48 | | 32<br>34 | 30-35'<br>30.0-34.0' Sand: Fine to coarse, poorly sorted, wet, loose, brown (10 YR 4/2), with some pebbles <0.1".<br>34.0-35.0' No recovery. | | | | 31-33<br>0.3<br>33-35<br>0.4 | | | | | | |
| 8 | 48 | | 36<br>38 | 35-40'<br>35.0-39.0' Clayey Silt: Trace fine sand, well sorted, moist, dense, brown (10 YR 4/4), some subangular to subround gravel <0.6".<br>Refusal at 39'. | | | | 35-37<br>0.7<br>37-39<br>0.9 | | | | | | |
| | | | 40<br>42<br>44<br>46 | EOB @ 40'. | | | | | | | | | | |

State of Wisconsin
Department of Natural Resources

# Soil Boring Log Information

Form 4400-122 Rev. 7-98

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☐ Other ☒ _____



| Facility/Project Name | License/Permit/Monitoring Number | Boring Number |
|---|---|---|
| Tyco/WI001519.0002 | | SB-20 |

| Boring Drilled By: Name of crew chief (first, last) and Firm | Date Drilling Started | Date Drilling Completed | Drilling Method |
|---|---|---|---|
| First Name Last Name Firm Dakota Tech | 06/29/2016 | 06/29/2016 | Direct Push |

| WI Unique Well No. | DNR Well ID No. | Well Name | Final Static Water Level | Surface Elevation | Borehole Diameter |
|---|---|---|---|---|---|
| | | | _____ Feet | _____ Feet MSL | _____ inches |

Local Grid Origin ☐ (estimated: ☐ ) or Boring Location ☐
State Plane _____ N, _____ E S☐/C☐/N☐ ☐E ☐W Lat _____ Long _____
_____ 1/4 of _____ 1/4 of Section _____ ,T _____ N,R _____

Local Grid Location ☐N ☐E _____ Feet ☐S _____ Feet ☒W

| Facility ID | County | County Code | Civil Town/City/or Village |
|---|---|---|---|
| | Marinette | 38 | Marinette |

| Sample Number and Type | Length Att. & Recovered (in) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Soil Properties: Compressive Strength | Moisture Content | Liquid Limit | Plastic Limit | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | 0 | 0-35′<br>0-35.0′ Blind drill. | | | | | | | | | | |
| | | | 2 | | | | | | | | | | | |
| | | | 4 | | | | | | | | | | | |
| | | | 6 | | | | | | | | | | | |
| | | | 8 | | | | | | | | | | | |
| | | | 10 | | | | | | | | | | | |

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature

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126 N. Jefferson St., Suite 400
Milwaukee, WI (414) 276-7742

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tyco/wi1519/marinette/graphics/logs/sb20.ai

Boring Number SB-20



| Sample | | | | | | | | | Soil Properties | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number and Type | Length All. & Recovered (in) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Compressive Strength | Moisture Content | Liquid Limit | Plastic Limit | P 200 | RQD/ Comments |
| | | | 12 | | | | | | | | | | | |
| | | | 14 | | | | | | | | | | | |
| | | | 16 | | | | | | | | | | | |
| | | | 18 | | | | | | | | | | | |
| | | | 20 | | | | | | | | | | | |
| | | | 22 | | | | | | | | | | | |
| | | | 24 | | | | | | | | | | | |
| | | | 26 | | | | | | | | | | | |
| | | | 28 | | | | | | | | | | | |

Boring Number SB-20



| Sample Number and Type | Sample Length All. & Recovered (in) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Soil Properties: Compressive Strength | Moisture Content | Liquid Limit | Plastic Limit | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 30 | | | | | | | | | | | |
| | | | 32 | | | | | | | | | | | |
| | | | 34 | | | | | | | | | | | |
| 2 | 18 | | 36 | 35-40'<br>35.0-36.0' Sand: Fine to coarse, poorly sorted, wet, loose, grayish brown (10 YR 4/4), trace pebbles <0.1".<br>36.0-36.5' Clayey Silt: Trace fine sand, well sorted, dry to moist, dense, brown (10 YR 4/4).<br>36.5-40.0' No recovery. | | | | 35-37<br>2.3 | | | | | |
| | | | 38 | | | | | | | | | | | |
| | | | 40 | EOB @ 40' | | | | | | | | | | |
| | | | 42 | | | | | | | | | | | |
| | | | 44 | | | | | | | | | | | |
| | | | 46 | | | | | | | | | | | |

State of Wisconsin
Department of Natural Resources

# Soil Boring Log Information

Form 4400-122 Rev. 7-98

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☐ Other ☒ _____



| Facility/Project Name | License/Permit/Monitoring Number | Boring Number |
|---|---|---|
| Tyco/WI001519.0002 | | SB-21 |

| Boring Drilled By: Name of crew chief (first, last) and Firm | Date Drilling Started | Date Drilling Completed | Drilling Method |
|---|---|---|---|
| First Name Charles/Darin Last Name<br>Firm Dakota Tech | 07/01/2016 | 07/01/2016 | Direct Push |

| WI Unique Well No. | DNR Well ID No. | Well Name | Final Static Water Level | Surface Elevation | Borehole Diameter |
|---|---|---|---|---|---|
| | | | _____ Feet | _____ Feet MSL | _____ inches |

Local Grid Origin ☐ (estimated: ☐ ) or Boring Location ☐
State Plane _____ N, _____ E S☐/C☐/N☐ ☐E ☐W Lat _____ Long _____
_____ 1/4 of _____ 1/4 of Section _____ ,T _____ N,R _____

Local Grid Location ☐N ☐E _____ Feet ☐S _____ Feet ☒W

| Facility ID | County | County Code | Civil Town/City/or Village |
|---|---|---|---|
| | Marinette | 38 | Marinette |

| Sample Number and Type | Length Att. & Recovered (in) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Soil Properties: Compressive Strength | Moisture Content | Liquid Limit | Plastic Limit | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 72 | | 0<br>2<br>4 | 0-6'<br>0-6.0' Hand Auger. Fine to medium sand. | | | | | | | | | | |
| 2 | 48 | | 6<br>8 | 6-10'<br>6.0-10.0' Sand; Fine to medium, well sorted, wet, loose, brown (10 YR 5/6). | | | | 6-8<br>0.4<br>8-10<br>0.4 | | | | | | |
| 3 | 60 | | 10 | 10-15'<br>10.0-15.0' Sand: Fine to medium, well sorted, wet, | | | | 10-12<br>0.9 | | | | | | |

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature

Firm ARCADIS
126 N. Jefferson St., Suite 400
Milwaukee, WI (414) 276-7742

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Boring Number SB-21



| Sample Number and Type | Sample Length All. & Recovered (in) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Soil Properties: Compressive Strength | Moisture Content | Liquid Limit | Plastic Limit | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | loose, brown (10 YR 3/6). | | | | | | | | | | |
| | | | 12 | | | | | 12-14 0.5 | | | | | | |
| | | | 14 | | | | | 14-16 0.6 | | | | | | |
| 4 | 60 | | | 15-20′ 15.0-20.0′ Sand: Fine to medium, well sorted, wet, loose brown (10 YR 3/6). | | | | | | | | | | |
| | | | 16 | | | | | 16-18 1.1 | | | | | | |
| | | | 18 | | | | | 18-20 0.7 | | | | | | |
| | | | 20 | | | | | | | | | | | |
| 5 | 60 | | | 20-25′ 20.0-25.0′ Sand: Fine to medium, well sorted, wet, loose grayish brown (10 YR 4/2). | | | | 20-22 0.9 | | | | | | |
| | | | 22 | | | | | 22-24 1.8 | | | | | | |
| | | | 24 | | | | | 24-26 1.6 | | | | | | |
| 6 | 60 | | | 25-30′ 25.0-30.0′ Sand: Fine to medium, well sorted, wet, loose grayish brown (10 YR 4/2). | | | | | | | | | | |
| | | | 26 | | | | | 26-28 2.1 | | | | | | |
| | | | 28 | | | | | 28-30 1.7 | | | | | | |

Boring Number SB-21



| Sample Number and Type | Sample Length All. & Recovered (in) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Soil Properties: Compressive Strength | Moisture Content | Liquid Limit | Plastic Limit | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | |
| 7 | 60 | | 30 | 30-35′<br>30.0-35.0′ Sand: Fine to coarse, poorly sorted, wet, loose, grayish brown (10 YR 4/2). | | | | 30-32<br>2.4 | | | | | | |
| | | | 32 | | | | | 32-34<br>2.8 | | | | | | |
| | | | 34 | | | | | 34-36<br>3.1 | | | | | | |
| 8 | 60 | | 36 | 35-40′<br>35.0-39.5′ Sand: Fine to coarse, poorly sorted, wet, loose, grayish brown (10 YR 4/2).<br>39.5-40.0′ Clayey Silt: Trace fine sand, well sorted, moist, dense, brown (10 YR 4/4). | | | | 36-38<br>3.7 | | | | | | |
| | | | 38 | | | | | 38-40<br>3.4 | | | | | | |
| 9 | 60 | | 40 | 40-45′<br>40.0-45.0′ Clayey Silt: Trace fine sand, well sorted, moist, dense, brown (10 YR 4/4).<br>Refusal at 45′. | | | | 40-42<br>5.1 | | | | | | |
| | | | 42 | | | | | 42-44<br>4.7 | | | | | | |
| | | | 44 | | | | | 44-46<br>4.0 | | | | | | |
| | | | | EOB @ 45′. | | | | | | | | | | |
| | | | 46 | | | | | | | | | | | |

State of Wisconsin
Department of Natural Resources

# Soil Boring Log Information

Form 4400-122 Rev. 7-98

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☐ Other ☒ _____



| Facility/Project Name | License/Permit/Monitoring Number | Boring Number |
|---|---|---|
| Tyco/WI001519.0002 | | SB-22 |

| Boring Drilled By: Name of crew chief (first, last) and Firm | Date Drilling Started | Date Drilling Completed | Drilling Method |
|---|---|---|---|
| First Name Charles/Darin Last Name<br>Firm Dakota Tech | 07/06/2016 | 07/06/2016 | Direct Push |

| WI Unique Well No. | DNR Well ID No. | Well Name | Final Static Water Level | Surface Elevation | Borehole Diameter |
|---|---|---|---|---|---|
| | | | _____ Feet | _____ Feet MSL | _____ inches |

Local Grid Origin ☐ (estimated: ☐ ) or Boring Location ☐
State Plane _____ N, _____ E S☐/C☐/N☐ ☐E ☐W Lat _____ Long _____
_____ 1/4 of _____ 1/4 of Section _____ ,T _____ N,R _____

Local Grid Location ☐N ☐E _____ Feet ☐S _____ Feet ☒W

| Facility ID | County | County Code | Civil Town/City/or Village |
|---|---|---|---|
| | Marinette | 38 | Marinette |

| Sample Number and Type | Length Att. & Recovered (in) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Soil Properties: Compressive Strength | Moisture Content | Liquid Limit | Plastic Limit | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 72 | | 0<br>2<br>4 | 0-6'<br>0-6.0' Hand Auger. Fine to medium sand. | | | | | | | | | | |
| 2 | 25.2 | | 6<br>8 | 6-10'<br>6.0-8.1' Sand; Fine to medium, well sorted, wet, loose, brown (10 YR 3/6).<br>8.1-10.0' No recovery. | | | | 6-8<br>0.6 | | | | | | |
| 3 | 48 | | 10 | 10-15'<br>10.0-14.0' Sand: Fine to medium, well sorted, wet, | | | | 10-12<br>1.4 | | | | | | |

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature

Firm ARCADIS
126 N. Jefferson St., Suite 400
Milwaukee, WI (414) 276-7742

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| Sample Number and Type | Sample Length All. & Recovered (in) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Soil Properties: Compressive Strength | Moisture Content | Liquid Limit | Plastic Limit | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | loose, brown (10 YR 3/6).<br>14.0-15.0' No recovery. | | | | | | | | | | |
| | | | 12 | | | | | 12-14<br>1.2 | | | | | | |
| | | | 14 | | | | | 14-16<br>1.3 | | | | | | |
| 4 | 31.5 | | | 15-20'<br>15.0-17.0' Sand: Fine to medium, well sorted, wet, loose brown (10 YR 3/6).<br>17.0-17.6' Sand: Fine to coarse, wet, loose, poorly sorted, brown (10 YR 4/4).<br>17.6-20.0' No recovery. | | | | | | | | | | |
| | | | 16 | | | | | 16-18<br>1.3 | | | | | | |
| | | | 18 | | | | | | | | | | | |
| | | | 20 | | | | | | | | | | | |
| 5 | 42 | | | 20-25'<br>20.0-22.8' Sand: Fine to medium, mostly medium, wet, loose, well sorted, brown (10 YR 4/4).<br>22.8-23.5' Sand: Fine to coarse, wet, loose, poorly sorted, brown (10 YR 4/4).<br>23.5-25.0' No recovery. | | | | 20-22 | | | | | | |
| | | | 22 | | | | | 22-24 | | | | | | |
| | | | 24 | | | | | 24-26<br>2.9 | | | | | | |
| 6 | 54 | | | 25-30'<br>25.0-29.5' Sand: Fine to coarse, wet, loose, poorly sorted, brown (10 YR 4/4).<br>29.5-30.0' No recovery. | | | | | | | | | | |
| | | | 26 | | | | | 26-28<br>2.4 | | | | | | |
| | | | 28 | | | | | 28-30<br>3.1 | | | | | | |

Boring Number SB-22



| Sample Number and Type | Sample Length All. & Recovered (in) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Soil Properties: Compressive Strength | Moisture Content | Liquid Limit | Plastic Limit | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 30 | | | | | | | | | | | |
| 7 | 49.2 | | 32<br>34 | 30-35'<br>30.0-34.1'Clayey Silt: Nonplastic, trace fine sand, some subangular to subround gravel, <0.8", poorly sorted, dense to medium dense brown (10 YR 4/3), wet from 30.0-32.4', moist from 32.4-34.1'.<br>34.1-35.0' No recovery. | | | | 30-32<br>4.3<br>32-34<br>4.1<br>34-36<br>5.1 | | | | | | |
| 8 | 21.6 | | 36<br>38 | 35-40'<br>35.0-36.8' Clayey Silt: Nonplastic, trace fine sand, some subangular to subround gravel, <0.8", poorly sorted, dense to medium dense brown (10 YR 4/3), moist.<br>36.8-38.5' No recovery.<br>38.5' Refusal. | | | | | | | | | | |
| | | | 40<br>42<br>44<br>46 | EOB @ 40'. | | | | | | | | | | |

State of Wisconsin
Department of Natural Resources

# Soil Boring Log Information

Form 4400-122 Rev. 7-98

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☐ Other ☒ _____



| Facility/Project Name | License/Permit/Monitoring Number | Boring Number |
|---|---|---|
| Tyco/WI001519.0002 | | SB-23 |

| Boring Drilled By: Name of crew chief (first, last) and Firm | Date Drilling Started | Date Drilling Completed | Drilling Method |
|---|---|---|---|
| First Name Charles/Darin Last Name<br>Firm Dakota Tech | 07/06/2016 | 07/06/2016 | Direct Push |

| WI Unique Well No. | DNR Well ID No. | Well Name | Final Static Water Level | Surface Elevation | Borehole Diameter |
|---|---|---|---|---|---|
| | | | _____ Feet | _____ Feet MSL | _____ inches |

Local Grid Origin ☐ (estimated: ☐ ) or Boring Location ☐
State Plane _____ N, _____ E S☐/C☐/N☐ ☐E ☐W Lat _____ Long _____
_____ 1/4 of _____ 1/4 of Section _____ ,T _____ N,R _____

Local Grid Location ☐N ☐E _____ Feet ☐S _____ Feet ☒W

| Facility ID | County | County Code | Civil Town/City/or Village |
|---|---|---|---|
| | Marinette | 38 | Marinette |

| Sample Number and Type | Length Att. & Recovered (in) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Soil Properties: Compressive Strength | Moisture Content | Liquid Limit | Plastic Limit | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 72 | | 0<br>2<br>4 | 0-6'<br>0-6.0' Hand Auger. Fine to medium sand. | | | | | | | | | | |
| 2 | 12 | | 6<br>8 | 6-10'<br>6.0-8.0' Sand; Fine to medium, wet, loose, well sorted, brown (10 YR 3/6).<br>8.0-10.0' No recovery. | | | | 6-8<br>0.4 | | | | | | |
| 3 | 26.4 | | 10 | 10-15'<br>10.0-12.2' Sand: Fine to medium, wet, loose, well | | | | 10-12<br>0.9 | | | | | | |

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature

Firm ARCADIS
126 N. Jefferson St., Suite 400
Milwaukee, WI (414) 276-7742

This form is authorized by Chapters 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats. Completion of this form is mandatory. Failure to file this form may result in forfeiture of between $10 and $25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any purpose. NOTE: See instructions for more information, including where the completed from should be sent.

| Sample Number and Type | Sample Length All. & Recovered (in) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Soil Properties: Compressive Strength | Moisture Content | Liquid Limit | Plastic Limit | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 12<br>14 | brown (10 YR 3/6).<br>12.2-15.0' No recovery. | | | | | | | | | | |
| 4 | 37.2 | | 16<br>18 | 15-20'<br>15.0-18.1' Sand: Fine to medium, mostly medium, loose, well sorted, brown (10 YR 4/4).<br>18.1-20.0' No recovery. | | | | 15-17<br>0.6<br>17-19<br>0.6 | | | | | | |
| 5 | 48 | | 20<br>22<br>24 | 20-25'<br>20.0-22.9' Sand: Fine to medium, mostly medium, loose, well sorted, brown (10 YR 4/4).<br>22.9-24.0' Sand: Fine to coarse, loose, wet, poorly sorted, grayish brown (10 YR 4/2).<br>24.0-25.0' No recovery. | | | | 20-22<br>0.7<br>22-24<br>1.0 | | | | | | |
| 6 | 22.8 | | 26<br>28 | 25-30'<br>25.0-26.9' Sand: Fine to coarse, loose, wet, poorly sorted, grayish brown (10 YR 4/2).<br>26.9-30.0' No recovery. | | | | 25-27 | | | | | | |

Boring Number SB-23



| Sample Number and Type | Sample Length All. & Recovered (in) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Soil Properties: Compressive Strength | Moisture Content | Liquid Limit | Plastic Limit | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 30 | | | | | | | | | | | |
| 7 | 20.4 | | | 30-35'<br>30.0-31.7'Clayey Silt: Nonplastic, trace fine sand, some subangular to subround gravel, <0.7", poorly sorted, dense, wet.<br>31.7-35.0' No recovery. | | | | 30-32<br>1.9 | | | | | | |
| | | | 32 | | | | | | | | | | | |
| | | | 34 | | | | | | | | | | | |
| 8 | 36 | | | 35-40'<br>35.0-38.0' Clayey Silt: Nonplastic, trace fine sand, some subangular to subround gravel, <0.7", poorly sorted, dense, wet.<br>38.0' Refusal. | | | | 35-37<br>3.0<br>37-39<br>1.8 | | | | | | |
| | | | 36 | | | | | | | | | | | |
| | | | 38 | | | | | | | | | | | |
| | | | 40 | EOB @ 40'. | | | | | | | | | | |
| | | | 42 | | | | | | | | | | | |
| | | | 44 | | | | | | | | | | | |
| | | | 46 | | | | | | | | | | | |

State of Wisconsin
Department of Natural Resources

# Soil Boring Log Information

Form 4400-122 Rev. 7-98

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☐ Other ☒ _____



| Facility/Project Name | License/Permit/Monitoring Number | Boring Number |
|---|---|---|
| Tyco/WI001519.0002 | | SB-25 |

| Boring Drilled By: Name of crew chief (first, last) and Firm | Date Drilling Started | Date Drilling Completed | Drilling Method |
|---|---|---|---|
| First Name Charles/Darin Last Name<br>Firm Dakota Tech | 07/08/2016 | 07/08/2016 | Direct Push |

| WI Unique Well No. | DNR Well ID No. | Well Name | Final Static Water Level | Surface Elevation | Borehole Diameter |
|---|---|---|---|---|---|
| | | | _____ Feet | _____ Feet MSL | _____ inches |

Local Grid Origin ☐ (estimated: ☐ ) or Boring Location ☐
State Plane _____ N, _____ E S☐/C☐/N☐ ☐E ☐W Lat _____ Long _____
_____ 1/4 of _____ 1/4 of Section _____ ,T _____ N,R _____

Local Grid Location
_____ Feet ☐N ☐S _____ Feet ☐E ☒W

| Facility ID | County | County Code | Civil Town/City/or Village |
|---|---|---|---|
| | Marinette | 38 | Marinette |

| Sample Number and Type | Length Att. & Recovered (in) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Soil Properties: Compressive Strength | Moisture Content | Liquid Limit | Plastic Limit | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 0 | Blind Drill to 35 feet. | | | | | | | | | | |
| | | | 2 | | | | | | | | | | | |
| | | | 4 | | | | | | | | | | | |
| | | | 6 | | | | | | | | | | | |
| | | | 8 | | | | | | | | | | | |
| | | | 10 | | | | | | | | | | | |

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature

Firm ARCADIS
126 N. Jefferson St., Suite 400
Milwaukee, WI (414) 276-7742

This form is authorized by Chapters 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats. Completion of this form is mandatory. Failure to file this form may result in forfeiture of between $10 and $25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any purpose. NOTE: See instructions for more information, including where the completed from should be sent.

tyco/wi1519/marinette/graphics/logs/sb25.ai

Boring Number SB-25



| Sample | | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Soil Properties | | | | | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number and Type | Length All. & Recovered (in) | | | | | | | | Compressive Strength | Moisture Content | Liquid Limit | Plastic Limit | P 200 | |
| | | | 12 | | | | | | | | | | | |
| | | | 14 | | | | | | | | | | | |
| | | | 16 | | | | | | | | | | | |
| | | | 18 | | | | | | | | | | | |
| | | | 20 | | | | | | | | | | | |
| | | | 22 | | | | | | | | | | | |
| | | | 24 | | | | | | | | | | | |
| | | | 26 | | | | | | | | | | | |
| | | | 28 | | | | | | | | | | | |

Boring Number SB-25



| Sample Number and Type | Sample Length All. & Recovered (in) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Soil Properties: Compressive Strength | Moisture Content | Liquid Limit | Plastic Limit | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 30 | | | | | | | | | | | |
| | | | 32 | | | | | | | | | | | |
| | | | 34 | | | | | | | | | | | |
| 2 | 54 | | 36 | 35-40′<br>35.0-39.5′ Sand: Fine to coarse, poorly sorted, wet, medium dense, grayish brown (10 YR 4/2).<br>39.5-40.0 No recovery. | | | | 35-37<br>0.4<br>37-39<br>0.6<br>39-41<br>0.4 | | | | | | |
| | | | 38 | | | | | | | | | | | |
| | | | 40 | | | | | | | | | | | |
| 3 | 42 | | 42 | 40-45′<br>40.0-43.5′ Sand: Fine to coarse, poorly sorted, wet, medium dense, grayish brown (10 YR 4/2).<br>43.5-50.0′ No recovery. | | | | 41-43<br>0.7 | | | | | | |
| | | | 44 | | | | | | | | | | | |
| 4 | 60 | | 46 | 45-50′<br>45.0-50.0′ Sand: Fine to coarse, poorly sorted, wet, medium dense, grayish brown (10 YR 4/2). | | | | 45-47<br>0.7 | | | | | | |

Boring Number SB-25



| Sample Number and Type | Sample Length All. & Recovered (in) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Soil Properties: Compressive Strength | Moisture Content | Liquid Limit | Plastic Limit | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 48 | | | | | 49-51<br>0.3 | | | | | | |
| 6 | 60 | | 50<br>52<br>54 | 50-55'<br>50.0-55.0' Clayey Silt: Nonplastic, trace fine sand, some subangular to subround <0.5", poorly sorted, wet to moist, medium dense. | | | | 53-55<br>0.9 | | | | | | |
| 7 | 60 | | 56<br>58 | 55-60'<br>55.0-60.0'Clayey Silt: Nonplastic, trace fine sand, some subangular to subround <0.5", poorly sorted, wet to moist, medium dense.<br>Refusal at 60'. | | | | 55-57<br>0.8<br>57-59<br>0.4<br>59-61<br>0.7 | | | | | | |
| | | | 60<br>62<br>64 | EOB @ 60' | | | | | | | | | | |

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# Sample/Core Log

Boring/Well SB-35 Project/No. Ansul FTC/Tyco-WI001519.0003 Page 1 of 2

Site Location Marinette, WI Drilling Started 9/1/16 12:20 Drilling Completed 9/1/16 16:25

Total Depth Drilled 50 Feet Hole Diameter 2.5 inches Type of Sample/Coring Device geoprobe Liner

Length and Diameter of Coring Device 5' X 2" Sampling Interval continuous feet

Drilling Fluid Used None Drilling Method geoprobe

Drilling Contractor DAKOTA Driller Guy Paquette Helper Logan McCouth

Prepared By Bruce Ewan Hammer Weight NA Hammer Drop NA ins.

0-2' SAND/SILT: brown (7.5 YR 4/4), little silt, trace subrounded to subangular gravel from 0.25" to 0.5" diameter, fine to coarse sand, predominately fine, moderately sorted, black staining, loose, no to low cohesiveness, saturated, slight odor.

PID Background = 0.0 ppm

| Time | Sample/Core Depth (feet below land surface) From | To | Core Recovery (feet) | PID/FID (ppm) | Sample/Core Description |
|---|---|---|---|---|---|
| 14:25 | 0 | 5 | 3 | 2=4.6 | 0-0.5 silt/sand/organics: very dark brown (10 yr 3/2) silt & vf gr sand mixed with |
| | | | | 3=5.4 | organic material, woody, rootlets, loose, v moist, moist |
| | | | | | 0.5-3: sand: strong brown (7.5 yr 5/8) vf gr sand, very silty, well sorted loose, ~~wet~~ v moist to wet @ 2' |
| 14:30 | 5 | 10 | 2 | 7=8.8 | sand: strong brown (7.5 yr 4/6) vf gr, well sorted, some f gr, very silty loose, wet |
| 14:35 | 10 | 15 | 4 | 12=10.6 | 10-13: sand: g/a more f gr, wet |
| | | | | 14=9.7 | 13-14 silt: brown (7.5 yr 4/4) loose to slightly firm, trace vf gr sd, wet |
| 15:03 | 15 | 20 | 4 | 17=5.7 | silt/sand: brown (7.5 yr 4/2) |
| | | | | 19=11.7 | silt to extremely fine gr sand, trace vf gr well sorted, slightly firm to loose, some silt, wet |
| 15:30 | 20 | 25 | 3 | 22=9.0 | silt/sand: g/a, some clay below 22' |
| 15:51 | | | | 23=45.2 | wet, v sl. phenol like odor |
| | 25 | 30 | 3 | 25=[illegible] | sand: brown (7.5 yr 4/2), vf-f gr, well sorted, some silt, loose, wet |
| | | | | 27=8.7 | 27.5-28: sand: brown (7.5 yr 4/2) |
| | | | | 28=29.6 | vf-med gr, higher % medium gr, trace c/r gr, some silt, loose, trace f gravel, ~~wet~~ angular-subangular, wet |
| 16:19 | 30 | 35 | 2 | 32=16.2 | sand: brown (7.5 yr 4/2) mostly vf-med gr, some c/r gr, silty, moderately well sorted, loose, wet, in probe tip vf-c/r gr, poorly sorted, w/ gravel angular-subangular & rock fragment |

H:\soilboring.xls
5/31/2005 9:36 AM

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## Sample/Core Log (Cont.d)

Boring/Well SB-35

Prepared by BF



| Time | Sample/Core Depth (feet below land surface) From | To | Core Recovery (feet) | Time/Hydraulic Pressure or Blows per 6 Inches | Sample/Core Description |
|---|---|---|---|---|---|
| 15:20 | 35 | 40 | 2 | 37=9.1 | SAND: Brown (7.5yr 4/2) vf-medgr, trace crsgr, silty, moderatly well sorted, loose, wet, some phenol type odor |
| 15:50 | 40 | 45 | 3 | 42=7.4 | 40-42: SAND: Brown (7.5yr 4/2) vf-medgr, |
| | | | | 43-9.8 | some silt, moderatly well sorted, |
| | | | | | loose, wet, VSLi phenol type odor |
| | | | | | 42-43: SAND: Brown (7.5yr 4/2) |
| | | | | | vf gr, well sorted, some silt, loose |
| | | | | | wet, vSLi phenol type odor |
| 16:20 | 45 | 50 | 4 | 47=12.4 | 45-45.5 SAND: a/a, wet, odor |
| | | | | 49-48.7 | 45.5-49: CLAY: Brown (7.5yr 5/3) |
| | | | | | soft, very silty, slightly plastic, |
| | | | | | wet, some phenol Like odor |
| | | | | | 16:25 End borehole at 50' |

soilboring.xls
10/01/02

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**ARCADIS**

# Sample/Core Log

Boring/Well SB-47 Project/No. Ansul Fire/Tyco-WI001919.0003 Page 1 of 1

Site Location Manitowoc, WI Drilling Started 9-2-16 07:55 Drilling Completed 9-2-16 11:25

Total Depth Drilled 50 Feet Hole Diameter 2.5 inches Type of Sample/Coring Device geoprobe Liner

Length and Diameter of Coring Device 5' x 2" Sampling Interval continuous feet

Drilling Fluid Used None Drilling Method geoprobe

Drilling Contractor DAKOTA Driller Guy Pagarette Helper Logan McCauth

Prepared By Bruce Evans Hammer Weight NA Hammer Drop NA ins.

0-2' SAND/SILT: brown (7.5 YR 4/4), little silt, trace subrounded to subangular gravel from 0.25" to 0.5" diameter, fine to coarse sand, predominately fine, moderately sorted, black staining, loose, no to low cohesiveness, saturated, slight odor.

PID Background = 0.0

| Time | Sample/Core Depth (feet below land surface) From | To | Core Recovery (feet) | PID/FID (ppm) | Sample/Core Description |
|---|---|---|---|---|---|
| 07:55 | 0 | 5 | 2 | 2=5.2 | Sand: strong Brown (7.5yr 5/8) very fine - f gr, some med gr, well sorted, some silt, loose, moist to wet at 2- |
| 08:00 | 5 | 10 | 4 | 7=4.8<br>9=20.1 | Sand: Brown (7.5yr 5/4) vf-f gr well sorted, very silty, loose, wet |
| 08:03 | 10 | 15 | 4.5 | 12=12.3<br>14=12.4 | Sand: a/a, slt trace med gr, wet |
| 08:10 | 15 | 20 | 4 | 17=6.1<br>19=7.5 | 15-18: sand: Brown (7.5yr 5/4) vf-med gr, some silt, well sorted, wet<br>18-19: sand: Brown (7.5yr 5/2) vf-f gr, very silty, loose to somewhat firm, wet, slight phenol like odor |
| 08:23 | 20 | 25 | 3 | 22=10.8<br>23=27.7 | Sand: Brown (7.5yr 4/2) vf-med gr, higher % med gr, trace crse gr moderately sorted, some silt, v. slight trace f gravel, angular-subangular, wet, strong phenol like odor |
| 08:56 | 25 | 30 | 3 | 26=7.7 | Sand: a/a, wet, odor (note sample echo at of liner when retrieved) |
| 09:26 | 30 | 35 | 3 | 32=15.9<br>33=84.6 | Sand: Brown (7.5yr 4/2) f - med gr, some vf-crs grain, moderately well sorted, some silt, loose, wet, phenol like odor |
| 10:07 | 35 | 40 | 4 | 37=4.2<br>39=19.7 | 35-38: sand: a/a, wet, phenolic like odor<br>38-39: sand: Brown (7.5yr 4/2) vf-f gr, silty, well sorted, loose, wet, strong phenol like odor |

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## Sample/Core Log (Cont.d)

Boring/Well SB-47

Prepared by BE



| Time | Sample/Core Depth (feet below land surface) From | To | Core Recovery (feet) | Time/Hydraulic Pressure or Blows per 6 Inches | Sample/Core Description |
|---|---|---|---|---|---|
| 10:46 | 40 | 45 | 3 | 42=13.5 | 40-42.5 Sand: Brown (7.5yr 4/2) vf-very |
| | | | | 43=22.2 | coarse gr, poorly sorted, trace |
| | | | | | silt, trace f. gravel, angular-~~subrounded~~ |
| | | | | | subangular, loose, wet, phenol like odor |
| | | | | | 42.5-43 Sand/Gravel: Brown (7.5yr 4/2) |
| | | | | | med-vcrs sand, ~~[illegible]~~ some vf-fgr, |
| | | | | | with f-med gravel angular-subangular, |
| | | | | | poorly sorted, loose, wet, phenol like odor |
| 11:16 | 45 | 50 | 4 | 47=3.5 | 45-46.5 Sand: g/a No gravel, wet odor |
| | | | | 49=11.3 | 46.5-47.5 Sand/Gravel: g/a wet, odor |
| | | | | | 47.5-49: Clay/silt/sand/Gravel: |
| | | | | | Reddish Gray (5YR 5/2) clay and silt |
| | | | | | mixed with mostly vf-med gr sand, |
| | | | | | f-vcrs gravel, angular-subangular |
| | | | | | soft ~~to~~ to slightly firm, non-plastic, |
| | | | | | wet, strong phenol like odor (tillite |
| | | | | | material) |
| | | | | | |
| | | | | | 11:25 End borehole at 50' |

soilboring.xls
10/01/02

DRAFT

**ARCADIS**

# Sample/Core Log

Boring/Well PZ-23 Project/No. ANSUL FTC/WI001589.0001.00001 Page 1 of 2

Site Location Marinette, WI

Drilling Started 8/16/17 15:25 Drilling Completed 8/18/17 07:45

Total Depth Drilled 50 Feet Hole Diameter 6 inches

Type of Sample/Coring Device Rotasonic core barrel

Length and Diameter of Coring Device 5' x 4"

Sampling Interval continuous feet

Drilling Fluid Used water - City of Marinette

Drilling Method Rotasonic

Drilling Contractor Cascade

Driller Dennis Schwentkal Helper Nathan Kurowski

Prepared By Bruce Evans (BE)

Hammer Weight NA Hammer Drop NA ins.

0-2' SAND/SILT: brown (7.5 YR 4/4), little silt, trace subrounded to subangular gravel from 0.25" to 0.5" diameter, fine to coarse sand, predominately fine, moderately sorted, black staining, loose, no to low cohesiveness, saturated, slight odor.

PID Background = 0.0 ppm

| Time | Sample/Core Depth (feet below land surface) From | To | Core Recovery (feet) | PID/FID (ppm) | Sample/Core Description |
|---|---|---|---|---|---|
| | 0 | 30 | – | – | Blind Drill / See core log for SB-37 |
| | ~~30~~ | ~~35~~ | | | 18:00 End Drilling for day for PZ-23 |
| | | | | | 6" casing and core depth at 30' / water |
| | | | | | sample to 35' |
| | | | | | 07:50 Resume Drilling PZ-23 from 30' |
| 8/17/17 08:20 | 30 | 35 | 4 | 6.1-33.4 | 30-32: Sand/Silt: Brown (7.5yr 5/3) vf-fgr sand, very silty mixed with silt/layers firm silt, sand, loose, trace f-crs gravel, angular-subrounded 32-34 Silt/~~Sand~~/gravel: Brown (7.5yr 4/3) firm silt, clayey with f-vcrs gravel, angular-subangular, cobbles to >2" dia, some vf-crs sand in silt matrix with gravel 33-34 very hard, dense, pulverized by drilling, wet |
| | | 37 ~~40~~ | | | |
| 09:45 | 35 | | 2 | 5.6-8.2 | Silt/clay/Gravel: Reddish Brown (5yr 4/3) clayey silt matrix with f-vcrs gravel angular-subangular, cobbles to >3" dia very firm, hard, dense, some vf-crs sand, poorly sorted, wet-moist, Till like Material |
| 10:40 | ~~37~~ | ~~40~~ | ~~3~~ | | |
| | 37 | 40 | 3 | 1.0-4.6 | 37-39 Silt/Sand/Gravel: Reddish Brown (5yr 4/3) silt/gravel a/a mixed with mostly vf-f sand, some med-crs gr poorly sorted, sand, loose, silt firm, wet 39-40 Gravel/Silt/Clay: Brown (7.5yr 4/4) silt/clay mixed with mostly fine gravel moderately well sorted, somewhat loose, sticky, wet |

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## Sample/Core Log (Cont.d)

Boring/Well: PZ-23

Prepared by: BE



| Time | Sample/Core Depth (feet below land surface) From | To | Core Recovery (feet) | Time/Hydraulic Pressure or Blows per 6 Inches | Sample/Core Description |
|---|---|---|---|---|---|
| 12:55 | 40 | 45 | 5 | 3.4-5.7 | 40-42: Sand/gravel: Brown (7.5yr 4/3) |
| | | | | | vf-f gr sand, silty, moderately well sorted, |
| | | | | | with f-med gravel, angular-subround, |
| | | | | | moderately well sorted, loose, traces clay |
| | | | | | layers, silty, soft, plastic, wet |
| | | | | | 42-43.5: Sand: Reddish brown (5yr 4/3) |
| | | | | | vf-med gr, some crs gr, poorly sorted |
| | | | | | trace clay layers Reddish brown (2.5yr 4/4) |
| | | | | | soft, plastic, sand loose, wet |
| | | | | | 43.5-45: Silt/clay: silt: Dark Reddish gray |
| | | | | | (5yr 4/2) clay: Reddish Brown (2.5yr 4/4) |
| | | | | | silt/clay in thin layers (varves) 1/4-1/8" thick |
| | | | | | horizontal bedding, silt firm, clay soft |
| | | | | | plastic, also some vf-gr sand layers, interbedded |
| | | | | | in sequence, overall section firm, hard, wet |
| 17:38 | 45 | 48 | 3 | 7.2-15.5 | 45-46: Silt/clay/sand: a/a layered/ |
| | | | | | varved, wet |
| | | | | | 46-48: Clay/silt/sand/gravel |
| | | | | | light gray (7.5yr 6/1) clay/silt matrix |
| | | | | | with vf-crs sand, f-v crs gravel |
| | | | | | angular-subangular, cobbles to 3" dia |
| | | | | | soft, sticky, clay plastic, wet |
| | | | | | 17:50 End drilling for day at 48' sampled depth (casing 45-) |
| 8/18/17 07:35 | ~~48~~ | ~~50~~ | | | 07:20 Resumed drilling core 48-50' |
| | 48 | 50 | 1 | 13.6-40.9 | Limestone: Gray (7.5yr 6/1) broken pieces |
| | | | | | Limestone mixed with pulverized/powdered |
| | | | | | Limestone (clay like) sticky soft/ Limestone is |
| | | | | | Grayish brown (10yr 5/2) to light grayish brown (10yr 6/2) |
| | | | | | dense, hard, brittle, microcrystalline, some fossils, wet |
| | | | | | 07:45 End Bore hole at 50' |

Top Limestone 48'

State of Wisconsin
Department of Natural Resources

# Soil Boring Log Information

Form 4400-122 Rev. 7-98

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☐ Other ☒ _____



| Facility/Project Name | License/Permit/Monitoring Number | Boring Number |
|---|---|---|
| Ansul FTC/WI001589.0001.00001 | | SB-48 |

| Boring Drilled By: Name of crew chief (first, last) and Firm | Date Drilling Started | Date Drilling Completed | Drilling Method |
|---|---|---|---|
| First Name Dennis/Nathen Last Name Schweethal/Kurowski Firm Cascade Drilling | 8/15/17 | 8/16/17 | Rotasonic |

| WI Unique Well No. | DNR Well ID No. | Well Name | Final Static Water Level | Surface Elevation | Borehole Diameter |
|---|---|---|---|---|---|
| | | | _____ Feet | _____ Feet MSL | 6 inches |

Local Grid Origin ☐ (estimated: ☐ ) or Boring Location ☐
State Plane _____ N, _____ E S☐/C☐/N☐ ☐E ☐W Lat _____ Long _____
_____ 1/4 of _____ 1/4 of Section _____ ,T _____ N,R _____

Local Grid Location ☐N ☐E _____ Feet ☐S _____ Feet ☒W

| Facility ID | County | County Code | Civil Town/City/or Village |
|---|---|---|---|
| | Marinette | 38 | Marinette |

| Sample Number and Type | Length Att. & Recovered (in) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Soil Properties: Compressive Strength | Moisture Content | Liquid Limit | Plastic Limit | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 48 | | 0 | 0-5/<br>0-1.0' Silt/Sand: Dark brown (7.5 YR 3/2) silt with very fine to fine grain sand, loose, organic material, rootlets, moist.<br>1.0-3.5' Sand: Brown (7.5 YR 5/4) very fine to fine/ grain some medium to coarse sand, moderately well sorted, slight trace fine to medium gravel angular to subangular, loose, moist. At 3.5' black layer organic material.<br>3.5-4.0" Sand/Gravel: Brown (7.5 YR 5/2) very fine to coarse grain, silty, very poorly sorted with fine to coarse gravel, angular to subangular, loose, moist to dry. | | | | 0.7-1.1 | | | | | | |
| 2 | 48 | | 5 | 5-10/<br>5.0-7.0' Silt/Sand/Organics: Very dark brown (7.5 YR 2.5/2) silt with very fine grain sand and organic material, peat like rootlets, decayed wood, loose to sticky, wet.<br>7.0-9.0' Sand: Dark brown (7.5 YR 3/2) mostly very fine to fine gain, some medium to coarse grain, silty, poorly sorted, some fine to medium gravel, angular to subangular, loose, wet. | | | | 2.2 - 0.8 | | | | | | |
| 3 | 24 | | 10 | 10-15/<br>Sand: Brown (7.5 YR 4/2) mostly very fine to fine grain, silty, some medium very coarse grain, moderately well sorted, loose, wet. | | | | 0.0 - 0.2 | | | | | | |

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature

Firm ARCADIS
126 N. Jefferson St., Suite 400
Milwaukee, WI (414) 276-7742

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| Sample Number and Type | Sample Length All. & Recovered (in) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Soil Properties: Compressive Strength | Moisture Content | Liquid Limit | Plastic Limit | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | |
| 4 | 48 | | 15 | 15-20/<br>15.0-20.0' Sand: Brown (2.5 YR 4/2) mostly fine to medium grain well sorted, some very fine grain, trace coarse grain, loose, wet. | | | | 0-0.3 | | | | | | |
| 5 | 48 | | 20 | 20-25/<br>20.0-25.0' Sand: As above, variable percent fine and medium grain sand, loose, wet. | | | | 0.4 - 4.4 | | | | | | |
| 6 | 60 | | 25 | 25-30/<br>25.0-26.5' Sand: As above with some clayey organic material, loose, wet.<br>26.5-30.0' Clay/Organics: Black (7.5 YR 2.5/1) soft, plastic clay mixed with organic peat like material, rootlets, decayed wood, reeds, soft to slightly firm, traces very fine to medium grain sand, some silt, wet, silt seam, 2" thick at 29', brown (7.5 YR 4/2), loose to slight firm, wet. | | | | 0.1 - 3.2 | | | | | | |
| 7 | 54 | | 30 | 30-35/<br>30.0-34.0' Clay/Organics/Sand: Clay-organic material as above with some very fine grain sand layers 1-2" thick. Brown (7.5 YR 4/2) loose, wet decaying pine cone at 32.5'<br>34.0-35.0' Sand: Brown (7.5 YR 4/2) very fine to fine grain well sorted, several thin <0.5" layers, clay/organics, as above, trace white shell fragments, loose, wet. | | | | 0.0 - 2.2 | | | | | | |
| 8 | 24 | | 35 | 35-40/<br>35.0-40.0' Sand: Brown (7.5 YR 4/2) very fine to fine grain, well sorted trace medium to very coarse | | | | 1.5 - 5.6 | | | | | | |

| Sample Number and Type | Sample Length All. & Recovered (in) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Soil Properties: Compressive Strength | Moisture Content | Liquid Limit | Plastic Limit | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | grain, loose, wet. | | | | | | | | | | |
| 9 | 48 | | 40 | 40-45/<br>40.0-45.0' Sand: Brown (;7.5 YR 4/2), mostly very fine to fine grain, silty, some medium to very coarse grain, moderately sorted, loose, wet, slight trace shell fragments. | | | | 0.9 - 3.0 | | | | | | |
| 10 | 24 | | 45 | 45-50/<br>45.0-50.0' Sand: Dark brown (7.5 YR 3/2) vey fine grain well sorted, very silty, slight trace fine to coarse grain, traces white shell fragments, loose, wet.<br>End drilling for day sample and casing depth of 50'. | | | | 0.5 - 2.5 | | | | | | |
| 11 | 48 | | 50 | 50-55/<br>50.0-54.0' Sand: Brown (7.5 YR 4/3) mostly fine grain some very fine and medium grain, moderately well sorted, loose, slight trace, fine to medium gravel, angular to subangular, wet.<br>54.0-55.0' Sand: Brown (7.5 YR 4/2) very fine grain, very silty, well sorted, trace clay, loose to slightly firm, wet. | | | | 0.0 - 1.9 | | | | | | |
| 12 | 24 | | 55 | 55-60/<br>55.0-60.0' Silt: Brown (7.5 YR 5/3) very clayey, soft to slightly firm, very slightly plastic, some very fine grain sand, in matrix and very ?? in bedding, wet. | | | | 0.0 | | | | | | |
| 13 | -- | | 60 | 60-65/<br>No recovery. | | | | -- | | | | | | |

| Sample Number and Type | Sample Length All. & Recovered (in) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Soil Properties: Compressive Strength | Moisture Content | Liquid Limit | Plastic Limit | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | |
| 14 | 48 | | 65 | 65-70/<br>65.0-70.0' Limestone: Gray (7.5 YR 6/1) pulverized powder to grayish brown (10 YR 5/2) broken pieces, angular broken pieces limestone to approximately 3" diameter mixed with powdered pulverized limestone, loose to firm, powdered limestone, clay like, limestone micro crystalline hard, dense, brittle, some fossiles, possibly some-what micocoarse, trace calcite in vug or frature, wet. | | | | 2.9-22.8 | | | | | |
| | | | 70 | EOB @ 70' | | | | | | | | | | |
| | | | 75 | | | | | | | | | | | |
| | | | 80 | | | | | | | | | | | |
| | | | 85 | | | | | | | | | | | |

State of Wisconsin
Department of Natural Resources

# Soil Boring Log Information

Form 4400-122 Rev. 7-98

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☐ Other ☒ _____



| Facility/Project Name | License/Permit/Monitoring Number | Boring Number |
|---|---|---|
| Ansul FTC/WI001589.0001.00001 | | SB-49 |

| Boring Drilled By: Name of crew chief (first, last) and Firm | Date Drilling Started | Date Drilling Completed | Drilling Method |
|---|---|---|---|
| First Name Dennis/Nathen Last Name Schweethal/Kurowski Firm Cascade Drilling | 8/18/17 | 8/19/17 | Rotasonic |

| WI Unique Well No. | DNR Well ID No. | Well Name | Final Static Water Level | Surface Elevation | Borehole Diameter |
|---|---|---|---|---|---|
| | | | _____ Feet | _____ Feet MSL | 6 inches |

Local Grid Origin ☐ (estimated: ☐ ) or Boring Location ☐
State Plane _____ N, _____ E S☐/C☐/N☐ ☐E ☐W Lat _____ Long _____
_____ 1/4 of _____ 1/4 of Section _____ ,T _____ N,R _____

Local Grid Location ☐N ☐E _____ Feet ☐S _____ Feet ☒W

| Facility ID | County | County Code | Civil Town/City/or Village |
|---|---|---|---|
| | Marinette | 38 | Marinette |

| Sample Number and Type | Length Att. & Recovered (in) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Soil Properties: Compressive Strength | Moisture Content | Liquid Limit | Plastic Limit | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 36 | | 0 | 0-5/<br>0-0.5' Organic Material: Leaves/grass cuttings, rootlets, twigs, loose, moist.<br>0.5-1.0' Gravel/Silt: Brown (2.5 YR 4/4) fine to very coarse gravel, angular to subround, mixed with silt, loose, moist.<br>1.0-3.0' Sand: Strong brown (7.5 YR 5/6), very fine grain, silty, well sorted, some fine to coarse gravel angular to subangular, loose, moist. | | | | 2.3 - 4.4 | | | | | | |
| 2 | 36 | | 5 | 5-10/<br>5.0-6.0' Silt/Sand/Gravel: Brown (7.5 YR 4/3) silt mixed with very fine to coarse sand, poorly sorted, fine to medium gravel, angular to subround, loose, wet.<br>6.0-8.0' Sand: Brown (75. YR 4/2) very fine to medium grain, moderately sorted, some, silt, loose, wet. | | | | 0.7 - 1.7 | | | | | | |
| 3 | 24 | | 10 | 10-15/<br>10.0-15.0' Silt: Brown (7.5 YR 5/3) very sandy with very fine grain sand, loose to slightly firm, wet. | | | | 2.3 - 4.0 | | | | | | |

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature

Firm ARCADIS
126 N. Jefferson St., Suite 400
Milwaukee, WI (414) 276-7742

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tyco/wi001589/graphics/logs/sb49.ai

| Sample Number and Type | Sample Length All. & Recovered (in) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Soil Properties: Compressive Strength | Moisture Content | Liquid Limit | Plastic Limit | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | |
| 4 | 60 | | 15 | 15-20/<br>15.0-17.0' Silt: Brown (7.5 YR 4/3) slightly firm to loose, wet.<br>17.0-20.0' Silt: As above with varying percent very fine to fine grain sand, wet. | | | | 0.7 - 4.7 | | | | | | |
| 5 | 48 | | 20 | 20-25/<br>20.0-25.0' Sand: Brown (7.5 YR 4/3) very fine grain, some fine grain well sorted, trace silt, loose, wet. | | | | 2.4 - 3.5 | | | | | | |
| 6 | 60 | | 25 | 25-30/<br>25.0-26.5' Sand: As above, wet.<br>26.5-27.0' Silt: Brown (7.5 YR 4/3) firm, some clay, wet.<br>27.0-30.0' Sand: Brown (7.5 YR 5/2) fine grain, well sorted, some very fine and medium grain, loose, wet. | | | | 1.5 - 6.8 | | | | | | |
| 7 | 48 | | 30 | 30-35/<br>30.0-33.0' Sand: Brown (7.5 YR 4/3) mostly fine to medium grain, some very fine and coarse grain, moderately sorted, loose, wet.<br>33.5-35.0' Silt: Brown (7.5 YR 5/2) mostly firm to slightly loose, some very fine grain sand, wet. | | | | 0.1 - 14.0 | | | | | | |
| 8 | 48 | | 35 | 35-40/<br>35.0-40.0' Sand: Brown (7.5 YR 4/3) very fine grain, some fine grain, trace silt, loose, wet. | | | | 2.6 - 4.9 | | | | | | |

| Sample Number and Type | Sample Length All. & Recovered (in) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Soil Properties: Compressive Strength | Moisture Content | Liquid Limit | Plastic Limit | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | |
| 9 | 36 | | 40 | 40-45/<br>40.0-45.0' Silt: Brown (7.5 YR 5/2), very sandy with very fine grain sand, soft to loose, wet, some clay. | | | | 0.1 - 6.0 | | | | | | |
| 10 | 48 | | 45 | 45-50/<br>45.0-50.0' Clay: Pinkish gray (5 RY 6/2) very silty, soft, moderately plastic, wet.<br><br>End drilling for day sample to 55'/6" casing. | | | | 5.0 - 8.5 | | | | | | |
| 11 | 36 | | 50 | 50-55/<br>50.0-55.0' Clay: As above, silty, wet. | | | | 1.2 - 2.8 | | | | | | |
| 12 | -- | | 55 | 55-60/<br>55.0-60.0' No recovery extremely soft. | | | | -- | | | | | | |
| 13 | 48 | | 60 | 60-65/<br>60.0-65.0' Silt/Sand/Gravel: Brown (7.5 YR 5/2) silt and very fine to coarse sand, poorly sorted, clayey | | | | 1.3 - 2.6 | | | | | | |

| Sample Number and Type | Sample Length All. & Recovered (in) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Soil Properties: Compressive Strength | Moisture Content | Liquid Limit | Plastic Limit | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | with fine to very coarse gravel, angular to sub-angular, to approximately 2"diameter, firm to compacted to slighlty loose, sticky, wet. | | | | | | | | | | |
| 14 | -- | | 65 | 65-70/<br>65.0-70.0' No recovery. | | | | -- | | | | | | |
| 15 | 42 | | 70 | 70-75/<br>70.0-75.0' Silt/Sand/Gravel: As above firm, crumbly, to somewhat loose/gravel like silt to sand matrix, wet. | | | | 0.3 - 8.9 | | | | | | |
| 16 | 24 | | 75 | 75-77/<br>75.0-77.0' Silt/Sand/Gravel: As above extremely hard to dense, gravel and cobbles to >2" diameter in silt/sand matrix, wet. | | | | 12.6 - 14.4 | | | | | | |
| 17 | 36 | | 77 | 77-80/<br>77.0-78.0' Silt/Gravel: Gray (7.5 YR 6/1) extremely hard dense silt with fine to coarse gravel, angular to subangular, some very fine to coarse sand, moist, dark grayish brown layer at 77.5'.<br>78.0-80' Limestone: Light gray (7.5 YR 2/1) to grayish brown (10 YR 5/2) broken pieces of limestone to 3" diameter pucklike, with pulverized/powered limestone, moist and clay like, pulverized material soft to compacted, wet. Limestone pieces are grayish brown (10 YR 5/2) hard, dense, brittle, microcrystalline, some fossils, some places appear slighlty micritic, some sporaticacilte. Limestone section appears more weathered 78-79, more puliverized material, less pieces, more competant 79-80 more larger broken pieces (pucklike) and less pulverized/powdered limestome slight odor 78-80'. | | | | 2.4 - 15.9 | | | | | | |
| | | | 80 | EOB @ 80' | | | | | | | | | | |

State of Wisconsin
Department of Natural Resources

# Soil Boring Log Information

Form 4400-122 Rev. 7-98

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☐ Other ☒ _____



| Facility/Project Name | License/Permit/Monitoring Number | Boring Number |
|---|---|---|
| Ansul FTC/WI001589.0001.00001 | | SB-50 |

| Boring Drilled By: Name of crew chief (first, last) and Firm | Date Drilling Started | Date Drilling Completed | Drilling Method |
|---|---|---|---|
| First Name Dennis/Nathen Last Name Schweethal/Kurowski<br>Firm Cascade Drilling | 8/21/17 | 8/22/17 | Rotasonic |

| WI Unique Well No. | DNR Well ID No. | Well Name | Final Static Water Level | Surface Elevation | Borehole Diameter |
|---|---|---|---|---|---|
| | | | _____ Feet | _____ Feet MSL | 6 inches |

Local Grid Origin ☐ (estimated: ☐ ) or Boring Location ☐
State Plane _____ N, _____ E S☐/C☐/N☐ ☐E ☐W Lat _____ Long _____
_____ 1/4 of _____ 1/4 of Section _____ ,T _____ N,R _____

Local Grid Location
☐N ☐E
_____ Feet ☐S _____ Feet ☒W

| Facility ID | County | County Code | Civil Town/City/or Village |
|---|---|---|---|
| | Marinette | 38 | Marinette |

| Sample Number and Type | Length Att. & Recovered (in) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Soil Properties: Compressive Strength | Moisture Content | Liquid Limit | Plastic Limit | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 36 | | 0 | 0-5/<br>0-0.5' Asphalt.<br>0.5-3.0' Sand: Strong brown (7.5 YR 5/8), very fine grain well sorted, some fine to medium grain 2-3', loose, moist. | | | | 0.0 - 0.2 | | | | | | |
| 2 | 12 | | 5 | 5-10/<br>5.0-10.0' Sand: Brown (7.5 YR 4/4) very fine grain, very silty, loose, well sorted, wet. | | | | 0.6 | | | | | | |
| 3 | 48 | | 10 | 10-15/<br>10.0-15.0' Sand: As above, wet. | | | | 0.0 - 0.6 | | | | | | |

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature

Firm ARCADIS
126 N. Jefferson St., Suite 400
Milwaukee, WI (414) 276-7742

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tyco/wi001589/graphics/logs/sb50.ai

| Sample Number and Type | Sample Length All. & Recovered (in) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Soil Properties: Compressive Strength | Moisture Content | Liquid Limit | Plastic Limit | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | |
| 4 | 60 | | 15 | 15-20/<br>15.0-17.0' Silt: Brown (7.5 YR 4/3) very sandy with very fine grain sand, loose to slightly firm, wet.<br>17.0-20.0' Sand: Brown (7.5 YR 4/3), very fine to fine grain, well sorted, some silt, loose, wet. | | | | 0.4 - 4.8 | | | | | | |
| 5 | 54 | | 20 | 20-25/<br>20.0-25.0' Sand: As above, wet. | | | | 2.8 - 7.0 | | | | | | |
| 6 | 48 | | 25 | 25-30/<br>25.0-30.0' Sand: Brown (7.5 YR 4/3) very fine grain, well sorted, some silt, loose, wet. | | | | 0.3 - 8.2 | | | | | | |
| 7 | 48 | | 30 | 30-35/<br>30.0-32.0' Sand: Brown (7.5 YR 4/3) very fine grain well sorted, some silt, some fine to coarse gravel, angular to subangular, loose, wet.<br>32.0-34.5' Sand: Brown (7.5 YR 4/3) very fine to fine grain, well sorted, loose, no gravel, wet. | | | | 0.2 - 2.4 | | | | | | |
| 8 | 36 | | 35 | 35-40/<br>35.0-40.0' Sand: Brown (7.5 YR 4/3) very fine to fine grain, well sorted, some silt, loose, wet. | | | | 0.7 - 8.2 | | | | | | |

| Sample Number and Type | Sample Length All. & Recovered (in) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Soil Properties: Compressive Strength | Moisture Content | Liquid Limit | Plastic Limit | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | |
| 9 | 36 | | 40 | 40-45/<br>40.0-45.0' Silt: Brown (7.5 YR 4/3), very fine grain, well sorted, very silty, loose, wet.<br><br>End drilling for day at 50' casing/sample | | | | 1.8 - 5.4 | | | | | | |
| 10 | 36 | | 45 | 45-50/<br>45.0-47.0' Sand: As above, wet.<br>47.0-48.0' Clay: Brown (7.5 YR 5/2) soft to slightly firm, very silty, moderately plastic wet. | | | | 0.0 | | | | | | |
| 11 | 36 | | 50 | 50-55/<br>50.0-52.0' Clay: As above, wet.<br>52.0-53.0' Silt: Brown (7.5 YR 4/3) soft to slighlty firm, very clayey, trace very fine to fine grain sand, trace fine to coarse gravel, angular to subangular, wet, slightly plastic. | | | | 0.0 | | | | | | |
| 12 | 48 | | 55 | 55-60/<br>55.0-60.0' Silt: As above, no sand, less gravel, wet. | | | | 0,5 - 1.9 | | | | | | |
| 13 | 48 | | 60 | 60-65/<br>60.0-62.0' Silt: As above.<br>62.0-64.0' Silt: Brown (7.5 YR 4/3) very clayey, | | | | 0.4 - 2.7 | | | | | | |

| Sample Number and Type | Sample Length All. & Recovered (in) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Soil Properties: Compressive Strength | Moisture Content | Liquid Limit | Plastic Limit | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | slightly firm, slightly plastic, trace clay layers <1/4" thick, yellowish red (5 YR 4/6) soft, plastic, wet. | | | | | | | | | | |
| 14 | 24 | | 65 | 65-70/<br>65.0-70.0' Silt/Sand/Gravel: Reddish gray (5 YR 5/2) clayey silt with mostly very fine to fine grain sand, some medium to coarse grain, poorly sorted, and fine to very coarse gravel, angular to subangular, cobbles to >2" diameter, somewhat loose to somewhat firm, somewhat plastic silt, wet. | | | | 1.1 - 1.2 | | | | | | |
| 15 | 60 | | 70 | 70-75/<br>70.0-74.0' Sand/Silt/Gravel: Reddish gray (5 YR 5/2), very fine to medium sand, some coarse grain, poorly sorted, with silt and fine to medium gravel, angular to subangular, loose, wet.<br>74.0-75.0' Silt/Sand/Gravel: Reddish gray (5 YR 5/2), silt with very fine to fine sand, moderately sorted, fine to coarse gravel, angular to subangular, loose to slightly firm, wet. | | | | 1.6 - 2.0 | | | | | | |
| 16 | 60 | | 75 | 75-80/<br>75.0-80.0' Silt/Gravel: Reddish gray (5 YR 5/2), clayey silt, very hard, dense, some very fine to coarse sand with fine to very coarse gravel, angular to subangular, cobbles to >3" diameter, silt crumbly, loose where pulverized by drilling, wet to moist. | | | | 15.5 - 19.2 | | | | | | |
| 17 | 48 | | 80 | 80-85/<br>80.0-81.0' Silt/Gravel: As above, with very fine to medium grain sand, wet.<br>81.0-84.0' Limestone: Light gray (5 YR 7/1) to grayish brown (10 YR 5/2) broken pieces limestone mixed with pulverized/powdered limestone, powdered limestone loose to clay like soft. Limestone pieces angular to approximately 3" diameter often puck like/microcrystalline, dense, hard, brittle, some fossiles, somewhat micriticin patches, wet, slight odor. | | | | 16.4 - 32.1 | | | | | | |
| | | | 80 | EOB @ 85'. Top bedrock 81'. | | | | | | | | | | |

DRAFT

**ARCADIS**

# Sample/Core Log

Boring/Well VAP-02 Project/No. WI007605.0002.0008 // Angel FK Page 1 of 2

Site Location Marinette, WI

Drilling Started 11-29-17 08:47 Drilling Completed 11-29-17 13:45

Total Depth Drilled 45 Feet Hole Diameter 3 inches Type of Sample/Coring Device geoprobe Liner

Length and Diameter of Coring Device 5' x 1" / 5' x 2" Sampling Interval continuous

Drilling Fluid Used None Drilling Method geoprobe

Drilling Contractor GESTRA Driller Mitch Ponfil Helper Brett Moude

Prepared By Bruce Evans Hammer Weight N/A Hammer Drop N/A ins.

0-2' SAND/SILT: brown (7.5 YR 4/4), little silt, trace subrounded to subangular gravel from 0.25" to 0.5" diameter, fine to coarse sand, predominately fine, moderately sorted, black staining, loose, no to low cohesiveness, saturated, slight odor.

| Time | Sample/Core Depth (feet below land surface) From | To | Core Recovery (feet) | PID/FID (ppm) | Sample/Core Description |
|---|---|---|---|---|---|
| 08:50 | 0 | 5 | 4 | – | 0-1: silt/sand (topsoil): very dark brown (7.5YR 2.5/2) to black (2.5/1) vf-f sand mixed with silt grass at surface & some roots/rts/organic material loose, moist |
| | | | | | 1-4: sand: strong brown (7.5YR 5/8) fine sand, some vf grain silt, well sorted, loose, very moist - wet at 3-4ft |
| 08:55 | 5 | 10 | 3.5 | – | sand: strong brown (7.5YR 4/6), mostly fine grain, some vf grain, well sorted, loose, wet |
| 09:00 | 10 | 15 | 5 | – | 10-11: sand: a/a wet |
| | | | | | 11-15: sand: brown (7.5YR 4/4), vf grain well sorted, some silt, loose, wet |
| 09:20 | 15 | 20 | 5 | – | 15-16: sand: a/a, wet |
| | | | | | 16-17: silt: brown (7.5YR 5/3), loose, trace vf grain sand, wet |
| | | | | | 17-20: sand: brown (7.5YR 5/3), mostly f grain, some med-vf grain, moderately well sorted, loose, wet |
| 09:48 | 20 | 25 | 5 | – | 20-23: sand: a/a wet |
| | | | | | 23-25: sand: brown (7.5YR 4/2) vf-f grain, trace med grain, moderately well sorted, loose, wet |
| 10:55 | 25 | 30 | 5 | – | sand: a/a vf-f grain, wet |
| 12:07 | 30 | 35 | 5 | – | sand: brown (7.5YR 4/2) mostly f grain some vf-med grain, moderately well sorted, loose, wet |

ARCADIS

# Sample/Core Log (Cont.d)

Boring/Well: VAP-02

Prepared by: BE



| time | Sample/Core Depth (feet below land surface) From | To | Core Recovery (feet) | Time/Hydraulic Pressure or Blows per 6 Inches | Sample/Core Description |
|---|---|---|---|---|---|
| 12:35 | 35 | 40 | 3.5 | — | 35-36.8: Silt: Brown (7.5yr 5/4) Trace clay, loose, wet |
| | | | | | 36.8-38.5: Sand: Brown (7.5yr 5/2), VF-f gr, some med gr, moderately well sorted, loose, wet |
| 13:40 | 40 | 45 | 5 | - | Sand: 5/4, more medium sand, wet |
| | | | | | 13:45 stop drilling at 45' to begin VAP sampling |

State of Wisconsin
Department of Natural Resources

# Soil Boring Log Information

Form 4400-122 Rev. 7-98

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☐ Other ☒ _____



| Facility/Project Name | License/Permit/Monitoring Number | Boring Number |
|---|---|---|
| Ansul FTC/WI001589.0001.00001 | | PZ-23 |

| Boring Drilled By: Name of crew chief (first, last) and Firm | Date Drilling Started | Date Drilling Completed | Drilling Method |
|---|---|---|---|
| First Name Dennis/Nathen Last Name Schweethal/Kurowski Firm Cascade Drilling | 8/16/17 | 8/18/17 | Rotasonic |

| WI Unique Well No. | DNR Well ID No. | Well Name | Final Static Water Level | Surface Elevation | Borehole Diameter |
|---|---|---|---|---|---|
| | | | _____ Feet | _____ Feet MSL | 6 inches |

Local Grid Origin ☐ (estimated: ☐ ) or Boring Location ☐
State Plane _____ N, _____ E S☐/C☐/N☐ ☐E ☐W Lat _____ Long _____
_____ 1/4 of _____ 1/4 of Section _____ ,T _____ N,R _____

Local Grid Location ☐N ☐E _____ Feet ☐S _____ Feet ☒W

| Facility ID | County | County Code | Civil Town/City/or Village |
|---|---|---|---|
| | Marinette | 38 | Marinette |

| Sample Number and Type | Length Att. & Recovered (in) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Soil Properties: Compressive Strength | Moisture Content | Liquid Limit | Plastic Limit | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | -- | | 0 | 0-30/ Blind drill. See core log for SB-37. 18:00 End drilling for day for PZ-23 6" casing and core depth at 30'/water sample to 35'. | | | | -- | | | | | | |
| 2 | 48 | | 30 | 30-35/ 30.0-32.0' Sand/Silt: Brown (7.5 YR 5/3) very fine to coarse grain sand, very silty mixed with silt layers firm silt, sand, loose, trace fine to coarse gravel, angular to subangular. 32.0-34.0' Silt/Gravel: Brown (7.5 YR 4/3) firm silt, clayey with fine to very coarse gravel, angular to subangular, cobbles to >2" diameter, some very fine to coarse sand in silt matrix with gravel 33-34 very hard, dense, pulverized by drilling, wet. | | | | 1.1-33.4 | | | | | | |
| 3 | 24 | | 35 | 35-37/ 35.0-37.0' Silt/Clay/Gravel: Reddish brown (5 YR 4/3) clayey silt matrix with fine to very coarse gravel angular to subangular, cobbles to >3" diameter very firm, hard, dense, some very fine to coarse sand poorly sorted, wet to moist, till like material. | | | | 5.6-8.2 | | | | | | |
| 4 | 36 | | 37 | 37-40/ 37.0-39.0' Silt/Sand/Gravel: Reddish brown (5 YR 4/3) silt/gravel as above mixed with mostly very fine to fine sand, some medium to coarse grain poorly sorted, sand, loose silt firm, wet. 39.0-40.0' Gravel/Silt/Clay: Brown (7.5 YR 4/4) silt/clay mixed with mostly fine gravel moderately well sorted, somewhat loose, sticky, wet. | | | | 1.0-4.6 | | | | | | |

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature

Firm ARCADIS
126 N. Jefferson St., Suite 400
Milwaukee, WI (414) 276-7742

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tyco/wi001589/graphics/logs/pz23.ai

Boring Number PZ-23



| Sample Number and Type | Sample Length All. & Recovered (in) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Soil Properties: Compressive Strength | Moisture Content | Liquid Limit | Plastic Limit | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5 | 60 | | 40 | 40-45/<br>40.0-42.0' Sand/Gravel: Brown (7.5 YR 4/3) very fine to fine grain sand, silty, moderately well sorted, with fine to medium gravel, angular to sub-round, moderately well sorted, loose, traces clay layers, silty, soft, plastic, wet.<br>42.0-43.5' Sand: Reddish brown (5 YR 4/3) very fine to medium grain, some coarse grain, poorly sorted trace clay layers reddish brown (2.5 YR 4/4) soft, plastic, sand loose, wet.<br>43.5-45.0'Silt/Clay: Silt dark reddish gray (5 YR 4/2) clay, reddish brown (2.5 YR 4/4) silt/clay in thin layers (varves) 1/4-1/8" thick horizontal bedding, silt firm, clay soft plastic, also some very fine grain sand layers, interbedded in sequence, overall section firm, hard, wet. | | | | 3.4-5.7 | | | | | | |
| | | | 45 | | | | | | | | | | | |
| 6 | 36 | | | 45-48/<br>45.0-46.0' Silt/Clay/Sand: As above, layered/ varved, wet.<br>46.0-48.0' Clay/Silt/Sand/Gravel: Light gray (7.5 YR 6/1), clay/silt matrix with very fine to coarse sand, fine to very coarse gravel angular to subangular, cobbles to 3" diameter soft, sticky, clay plastic, wet.<br><br>End drilling for day at 48'. | | | | 7.2-15.5 | | | | | | |
| | | | 48 | | | | | | | | | | | |
| 7 | 12 | | | 48-50/<br>48.0-50.0' Limestone: Gray (7.5 YR 6/1) broken pieces limestone mized with pulverized/powdered limestone (clay like) sticky soft/limestone is grayish brown (10 YR 5/2) to light grayish brown (10 YR 6/2) dense, hard, brittle, microcryst???, some fossils, wet.<br><br>EOB @ 50'. Top Limestone 48' | | | | 13.6-40.9 | | | | | | |
| | | | 50 | | | | | | | | | | | |

State of Wisconsin
Department of Natural Resources

# Soil Boring Log Information

Form 4400-122 Rev. 7-98

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☒ Other ☐ _____



| Facility/Project Name | License/Permit/Monitoring Number | Boring Number |
|---|---|---|
| Tyco FTC | | MW-100B |

| Boring Drilled By: Name of crew chief (first, last) and Firm | Date Drilling Started | Date Drilling Completed | Drilling Method |
|---|---|---|---|
| First Name Roy Last Name Buckgnburger Firm Cascade | 06/05/2018 | 07/05/2018 | Sonic |

| WI Unique Well No. | DNR Well ID No. | Well Name | Final Static Water Level | Surface Elevation | Borehole Diameter |
|---|---|---|---|---|---|
| | | | _____ Feet | 602.16 Feet MSL | 12-6 inches |

Local Grid Origin ☐ (estimated: ☐ ) or Boring Location ☒
State Plane 457303.99 N, 2578839.38 E S ☐/C ☒/N ☐ E ☐ W Lat _____ Long _____
_____ 1/4 of _____ 1/4 of Section _____ ,T _____ N,R _____

Local Grid Location
_____ Feet ☐ N ☐ S _____ Feet ☐ E ☐ W

| Facility ID | County | County Code | Civil Town/City/or Village |
|---|---|---|---|
| 438005590 | Marinette | 38 | Marinette |

| Sample Number and Type | Length Att. & Recovered (in) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Soil Properties: Compressive Strength | Moisture Content | Liquid Limit | Plastic Limit | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 30 | | 0 | 0-5'/ Sand: Top soil black, silt, fine sand to 6", tan to brown very fine sand, trace dark to gray silt layers with rootlets | | | | | | | | | | |
| 2 | 98.4 | | 5 | 5-15'/ Sand: Fine sand to very fine sand, tan, well sorted, loose, wet. | | | | | | | | | | |
| 3 | 115.2 | | 15 | 15-25'/<br>15.0-16.0' Silt/Fine Sand: Brown with medium gray to brown clay (5 YR 5/4) layering approximately 0.5" thick, moist to wet.<br>16.0-19.0' Sand: Brown (7.5 YR 4/3) moderately firm to fine sand to very fine sand, wet, loose, well sorted.<br>19.0-23.0' Sand: Fine to medium sand, well sorted, wet, brown (7.5 YR 4/3). | | | | | | | | | | |
| 4 | | | 25 | | | | | | | | | | | |

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature

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Milwaukee, WI (414) 276-7742

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Boring Number MW-100B



| Sample Number and Type | Sample Length All. & Recovered (in) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Soil Properties: Compressive Strength | Moisture Content | Liquid Limit | Plastic Limit | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 | 112.8 | | | 25-35'/ Sand: Brown (7.5 YR 4/3) fine sand, well sorted, wet, loose, trace to some medium sand to very fine sand. | | | | | | | | | | |
| | | | 35 | | | | | | | | | | | |
| 5 | 116.4 | | | 35-45'/ Sand: Brown (7.5 YR 4/3), very fine sand to fine sand, well sorted, loose, wet, trace to some medium sand. | | | | | | | | | | |
| | | | 45 | | | | | | | | | | | |
| 6 | 120 | | | 45-55'/<br>45.0-47.0' Sand: Pink to gray (7.5 YR 6/2) silty, clayey, well sorted, wet, loose.<br>47.0-55.0' Silt/Clay/gravel: Brown (7.5 YR 4/3), silty clay gravel, some very fine sand to coarse, very hard, dry. | | | | | | | | | | |
| | | | 55 | | | | | | | | | | | |
| 7 | 60 | | | 55-62'/ Sand: Brown (7.5 YR 4/3) very fine to fine grain, well sorted trace medium grain, loose, wet (note much sand heave). | | | | | | | | | | |
| | | | 62 | | | | | | | | | | | |
| 8 | 120 | | | 62-72'/<br>62.0-68.0' Sand: Same as above.<br>68.0-69.0' Silt: Red to brown (7.5 YR 4/3), stiff, wet.<br>69.0-70.0' Silt: As above with red brown (2.5 YR 4/4) clay in layers/varves, plastic, firm.<br>70.0-72.0' Silt/Fine Sand/Gravel: Red to gray (5 YR 5/2), very hard, silt, trace clay, very fine sand to fine sand, some medium sand to coarse, moderately sorted, some large cobbles, 3" fine to coarse, gravel, angular to subangular | | | | | | | | | | |
| | | | 72 | | | | | | | | | | | |

Boring Number MW-100B



| Sample Number and Type | Sample Length All. & Recovered (in) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Soil Properties: Compressive Strength | Moisture Content | Liquid Limit | Plastic Limit | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9 | 48 | | | 72-76'/ 72.0-76.0' Silt/Sand/Gravel: Dark red to brown (5 YR 4/2), silty clay, very fine sand to fine sand, some medium to coarse, fine to coarse gravel, gravel angular to subangular, pebbles and cobbles up to 2", trace boulder, wet, firm to hard, slightly plastic. | | | | | | | | | | |
| | | | 76 | | | | | | | | | | | |
| 10 | 48 | | | 76-80'/ 76.0-78.0' Silt/Sand/Gravel: Same as above. 78.0-79.0' Silt/Sand/Gravel: Gray (5 YR 5/1), very hard, heterogeneous mix, gravel subangular up to 1", dry. 79.0-80.0' Sand/Silt: Red to gray (5 YR 5/2), very fine sand to coarse, poorly sorted, much fine to coarse gravel, angular to subangular, gravel to 1.5", loose, wet, trace to some clay. | | | | | | | | | | |
| | | | 80 | | | | | | | | | | | |
| 11 | 16.8 | | | 80-83'/ Dolostone: Gray to brown (10 YR 5/2), microcrystalline, some fossils, some micritic layers, horizontal bedding, wet. | | | | | | | | | | |
| | | | 83 | | | | | | | | | | | |
| 12 | 48 | | | 83-90'/ Dolostone/Limestone: As above horizontal bedding/some fracturing along bedding places, wet, some thin layers with many fossils <1" thick, traces calcite filled vugs, < 1/8" to 1" diameter also traces shaley laminations. | | | | | | | | | | |
| | | | 90 | | | | | | | | | | | |
| 13 | | | | 90-105'/ Dolostone/Limestone: Gray to brown (10 YR 5/2), microcrystalline, hard, dense horizontal layering, some shaley layers, interbedded, some fossils, some micritic layers with soft sediment deformations features traces vugs filled with calcite to 1/2" diameter, some chemical-solution-like alteration (pits/fractures) in horizontal layering, wet. | | | | | | | | | | |
| | | | 105 | | | | | | | | | | | |
| 14 | | | | 105-125'/ Dolostone: As above, increasing shale layers 1-2" thick, shale dark green to gray (GLEY 1 4/1), many fossils in shaled layers. | | | | | | | | | | |
| | | | 125 | | | | | | | | | | | |
| 15 | | | | 125-150'/ Dolostone: As above, increasing amount of shale. | | | | | | | | | | |

Boring Number MW-100B



| Sample | | | | | | | | | Soil Properties | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number and Type | Length All. & Recovered (in) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Compressive Strength | Moisture Content | Liquid Limit | Plastic Limit | P 200 | RQD/ Comments |
| 15 | | | | | | | | | | | | | | |
| 16 | | | 150 | 150-165'/ Shale/Dolostone: Dolostone with interbedded shale gray to brown (10 YR 5/2), microcrystalline, hard, microfractures with calcite, shale dark gray (10 YR 4/1) 1-2 mm to 1" layers, some clasts, trace fossils. | | | | | | | | | | |
| 17 | | | 165 | 165-185'/ Shale/Dolostone: As above, highly fossilized zone with interbedded shale at 182 to 183', oolites laminated with shale layers up to 1 to 2", shale gray to green (5 YR 5/2), dolostone gray to brown (10 YR 5/2), high percent shale through dolostone, hard dense. | | | | | | | | | |

Boring Number MW-100B



| Sample | | | | | | | | | Soil Properties | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number and Type | Length All. & Recovered (in) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Compressive Strength | Moisture Content | Liquid Limit | Plastic Limit | P 200 | RQD/ Comments |
| 17 | | | | | | | | | | | | | | |
| | | | 185 | 185-205'/ Dolostone/Limestone/Shale: Limestone, dark gray (Gley 1 4/1), shale gray green (5 Gley 5/2), hard dense microcrystalline, interbedded silt, many fossils, some vugs filled with calcite, horizontal bedding, some soft sediment deformations features, some horizontal fracturing, wet, limestone micritic. | | | | | | | | | | |
| 18 | | | | | | | | | | | | | | |
| | | | 205 | EOB @205'. | | | | | | | | | | |

State of Wisconsin
Department of Natural Resources

# Soil Boring Log Information

Form 4400-122 Rev. 7-98

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☒ Other ☐ _____



| Facility/Project Name | License/Permit/Monitoring Number | Boring Number |
|---|---|---|
| Tyco FTC | | VAP-26/MW-101B |

| Boring Drilled By: Name of crew chief (first, last) and Firm | Date Drilling Started | Date Drilling Completed | Drilling Method |
|---|---|---|---|
| First Name Roy Last Name Buckenburger Firm Cascade | 06/08/2018 | 06/29/2018 | Sonic |

| WI Unique Well No. | DNR Well ID No. | Well Name | Final Static Water Level | Surface Elevation | Borehole Diameter |
|---|---|---|---|---|---|
| | | | _____ Feet | 603.51 Feet MSL | 12-6 inches |

Local Grid Origin ☐ (estimated: ☐ ) or Boring Location ☒
State Plane 459904.05 N, 2580493.53 E S☐/C☒/N☐ ☐E ☐W Lat _____ Long _____
_____ 1/4 of _____ 1/4 of Section _____ ,T _____ N,R _____

Local Grid Location
_____ Feet ☐N ☐S _____ Feet ☐E ☐W

| Facility ID | County | County Code | Civil Town/City/or Village |
|---|---|---|---|
| 438005590 | Marinette | 38 | Marinette |

| Sample Number and Type | Length Att. & Recovered (in) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Soil Properties: Compressive Strength | Moisture Content | Liquid Limit | Plastic Limit | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 12 | | 0 | 0-5'/ Sand: Brown (10 YR 3/4), fine sand, some silt, well sorted, no odor. | | | | | | | | | | |
| 2 | 96 | | 5 | 5-15'/ Sand: As above, but wet. | | | | | | | | | | |
| 3 | 108 | | 15 | 15-25'/ 15.0-18.0' Sand: As above (5-15). 18.0-25.0' Sand: Fine to medium well sorted, some silt loose, moist, grayish brown (10 YR 5/3). 22.0-23.0' Sand: As above, brown (10 YR 3/4), no odor. | | | | | | | | | | |
| 4 | 120 | | 25 | 25-35'/ 25.0-30.0' Same as 18-25. 30.0-35.0' Sand: Fine some silt, well sorted, loose, moist brown (10 YR 4/6), no odor. | | | | | | | | | | |
| 5 | 120 | | 35 | 35-45'/ Sand: Medium to coarse, poorly sorted, moist to wet, loose grayish brown (10 YR 5/3), no odor. | | | | | | | | | | |
| 6 | 30 | | 45 | 45-55'/ Sand: Brown, fine grains, wet, trace pebbles. | | | | | | | | | | |
| 7 | 120 | | 55 | 55-65'/ Sand: As above. | | | | | | | | | | |
| | | | 65 | | | | | | | | | | | |

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature

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Milwaukee, WI (414) 276-7742

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Boring Number VAP-26/MW-101B



| Sample Number and Type | Sample Length All. & Recovered (in) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Soil Properties: Compressive Strength | Moisture Content | Liquid Limit | Plastic Limit | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 8 | 120 | | 65 | 65-75'/<br>Sand: As above.<br>72': Gradation change to silt/sand, fine grain, soft, moist, trace red to brown mottling. | | | | | | | | | | |
| 9 | 60 | | 75 | 75-80'/<br>75.5-77.5' Silt/Sand: Red-brownsilt/fine sand, some gray mottling, moist.<br>77.5-80' Silt/Sand/Clay: Till, soft with pebbles, cobbles, rounded, gray, trace medium to coarse grain. Fine to medium sand lens, 2" thick, at 79'. | | | | | | | | | | |
| 10 | 95 | | 80 | 80-87'/<br>81.0-85.5' Sand: Gray fine to medium with pebbles and cobbles, moist.<br>85.5' Silt/Clay/Sand: Hard dry till , trace fine sand with cobbles, pebbles rounded.<br>87' Bedrock: limestone, gray, weathered, some gray material on fractured surfaces, competent. | | | | | | | | | | |
| 11 | 63 | | 87 | 87-97'/ Limestone: gray limestone, some thin bedding. | | | | | | | | | | |
| 12 | 71 | | 97 | 97-115'/ Limestone: Light gray (5 YR 7/1) to grayish brown (10 YR 5/2) fragments up to 2.5" thick, some small angular fragments. | | | | | | | | | | |
| 13 | 140 | | 115 | 115-135'/<br>115-120' Limestone: As above, many small fossiles, some dark gray fine laminations, trace pitting.<br>120-125' Limestone: More competent, some evidence of shaley/mycritic fine bedding, possible soft sediment deformation, trace horizontal fractures.<br>125-135' Limestone: As above, many small fossils, some dark gray fine laminations, trace pitting. | | | | | | | | | | |
| 14 | 110 | | 135 | 135-140'/<br>135.0-137.0' Limestone: Shaley, broken up angular fragments (10 YR 5/2), trace vug with mineralization.<br>149' Limestone: Shaley (10 YR 4/1) interbedding with limestone rubble inclusions, trace pyrite. | | | | | | | | | | |
| 15 | 95 | | 150 | 150-165' Limestone: Gray to dark gray microcrystalline, trace pit vug, many small fossils, trace veins with white large infill rock is 5Y 3/1, trace 0.5-1" shell fossil, hard. | | | | | | | | | | |
| 16 | 60 | | 165 | 165-185'/<br>Limestone; gray to dark gray (5 YR 5/1-4/1) hard, dense, microcrystalline, many fossils, some thin layers/lenses shale, greenish gray (Gley 1 5/1) , some soft sediment, deformation features, horizontal bedding and fracturing, possible worm burrows, wet. | | | | | | | | | | |

Boring Number VAP-26/MW-101B



| Sample | | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Soil Properties | | | | | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number and Type | Length All. & Recovered (in) | | | | | | | | Compressive Strength | Moisture Content | Liquid Limit | Plastic Limit | P 200 | |
| 17 | 57 | | 185 | 185-205' Limestone: As above, very hard, poor recovery due to pulverization of rock, less shale. | | | | | | | | | | |
| | | | 205 | EOB @205' | | | | | | | | | | |

State of Wisconsin
Department of Natural Resources

# Soil Boring Log Information

Form 4400-122 Rev. 7-98

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☒ Other ☐ _____



| Facility/Project Name | License/Permit/Monitoring Number | Boring Number |
|---|---|---|
| Tyco FTC | | MW-102B |

| Boring Drilled By: Name of crew chief (first, last) and Firm | Date Drilling Started | Date Drilling Completed | Drilling Method |
|---|---|---|---|
| First Name Roy Last Name Buckenburger Firm Cascade | 06/05/2018 | 07/05/2018 | Sonic |

| WI Unique Well No. | DNR Well ID No. | Well Name | Final Static Water Level | Surface Elevation | Borehole Diameter |
|---|---|---|---|---|---|
| | | | _____ Feet | 604.9 Feet MSL | 12-6 inches |

Local Grid Origin ☐ (estimated: ☐ ) or Boring Location ☒
State Plane 463801.72 N, 2579620.21 E S☐/C☒/N☐ E☐ W Lat _____ Long _____
_____ 1/4 of _____ 1/4 of Section _____ ,T _____ N,R _____

Local Grid Location
_____ Feet ☐ N ☐ S _____ Feet ☐ E ☐ W

| Facility ID | County | County Code | Civil Town/City/or Village |
|---|---|---|---|
| 438005590 | Marinette | 38 | Marinette |

| Sample Number and Type | Length Att. & Recovered (in) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Soil Properties: Compressive Strength | Moisture Content | Liquid Limit | Plastic Limit | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 27 | | 0 | 0-5'/<br>0.0-0.5' Silt: Some sand/organics, moderate sorted, dry, soft, dark brown (7.5 YR 3/2).<br>0.5-2.3' Sand: Very fine grained, well sorted, loose, dry, strong brown (7.5 YR 5/6).<br>2.3-5.0' No recovery. | | | | | | | | | | |
| 2 | 120 | | 5 | 5-15'/<br>5.0-14.0' Sand: Very fine to fine grained, well sorted, loose, wet, strong brown (7.5 YR 5/6).<br>14.0-15.0' Same as above but fine grained. | | | | | | | | | | |
| 3 | | | 15 | 15-25'/<br>15.0-16.0 As above.<br>16.0-25.0' Sand: Very fine to fine grained, some medium grained, well sorted, loose, wet, brown (7.5 YR 4/3), less very fine grained below 20' silt layer at 18' clayey/slightly firm. | | | | | | | | | | |
| 4 | 120 | | 25 | 25-35'/<br>25.0-29.0' Sand: Brown (7.5 YR 5/3) fine to medium grained, moderate well sorted, loose, wet.<br>29.0-30.0' Sand: Medium grained, some fine to coarse grained, loose, wet , moderate well sorted, brown (7.5 YR 5/3).<br>30.0-32.0' Silt/Sand: Silt mixed with very fine to coarse sand, very clayey, some coarse to gravel up to 3" (angular to subrounded), slightly plastic, slightly firm to loose, wet, brown (7.5 YR 4/2).<br>32.0-35.0' Silt/Sand/Gravel: Brown (7.5 YR 4/2) clayey silt mixed with mostly very fine to fine sand, some medium to coarse sand/gravel (angular to subround), very firm to coarse cobbles up to 3" firm/dense, very moist. | | | | | | | | | | |
| | | | 35 | | | | | | | | | | | |

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature

Firm ARCADIS
126 N. Jefferson St., Suite 400
Milwaukee, WI (414) 276-7742

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Boring Number MW-102B



| Sample Number and Type | Sample Length All. & Recovered (in) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Soil Properties: Compressive Strength | Moisture Content | Liquid Limit | Plastic Limit | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5 | | | 35 | 35-45'/<br>35.0-42.0': Silt/Sand/Clay: As above, dense hard, moist.<br>42.0-45.0': Clay: Silty some gravel up to 3", very hard/dense, moist, medium plastic, brown (7.5 YR 4/2), trace very fine to fine sand, gravel is angular to subrounded. | | | | | | | | | | |
| 6 | | | 45 | 45-55'/<br>45.0-52.0' Silt/Clay: Silt (gray 7.5 YR 6/1), clay (reddish brown 5 YR 4/4); interbedded silt and clay, bedding 1/4 to 1/2" thick and varved, silt is clayey, slightly plastic, firm to slightly loose, moist, clay is highly plsric, somewhat firm, moist, trace gravel/cobble up to 3" (angular to suborund) from 41.5 to 42 feet. | | | | | | | | | | |
| 7 | | | 55 | 55-60'/<br>55.0-58.0' Silt/Sand/Gravel: Gray (5 YR 6/1), silt with mostly very fine to fine sand, fine to coarse gravel and cobbles to 3", mostly angualr to sub-angular, firm, moist.<br>58.0-60.0' Gravel/Sand/Silt: Fine to coarse gravel and cobbles to 2" also broken rock fragments mostly angular, some very fine to medium sand/ silt, very clayey, mostly loose, wet, hard drilling from 55-60. | | | | | | | | | | |
| 8 | | | 60 | 60-70'/<br>Limestone: Light gray (5 YR 7/1) to grayish brown (10 YR 5/2), broken pieces are angular up to 3" diameter, puck-like, micro crystalline, dense, hard, little brittle, trace fossils, micritic in patches, little evidence of vertical fracturing, breaks horizontally trace calcite. | | | | | | | | | | |
| 9 | | | 70 | 70-85'/<br>70.0-82.0' Limestone: Grayish brown (10 YR 5/2) broken pieces are subangular, puck-like, breaks horizontally, trace celecite dense hard.<br>82.0-85.0' Limestone: Gray (2.5 YR 6/1), light gray micro-crystalline dense, hard, angular pieces, some calcite and trace calcite veining. | | | | | | | | | | |
| 10 | | | 85 | 85-105'/<br>Limestone: As 82 to 85 with trace fossils (crinoids) and little calcite, trace bedding place visible horizontal fractures, angular pieces more breakage. | | | | | | | | | | |
| 11 | | | 105 | 105-125'/<br>Limestone: As above, but less fossils. | | | | | | | | | | |
| 12 | | | | 125-145'/<br>Limestone: As above 85-105 with less calcite, trace laminations (more fossils than 105-125). | | | | | | | | | | |
| 13 | | | | 145-150'/<br>No recovery. | | | | | | | | | | |
| 14 | 8 | | | 150-165'/<br>Dolostone:, (5 Y 3/1), small angular chips and fragments some larger up to 2.5", rock flour, very poor recovery. | | | | | | | | | | |

Boring Number MW-102B



| Sample Number and Type | Sample Length All. & Recovered (in) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Soil Properties: Compressive Strength | Moisture Content | Liquid Limit | Plastic Limit | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 15 | 24 | | 165 | 165-185'/ Dolostone: As above, heavily broken up, angular, fragments 0.5-2.5", fossils, possible calcified burrows, some shale fragments. | | | | | | | | | | |
| | | | 185 | | | | | | | | | | | |
| 16 | 39 | | | 185-205'/ Dolostone: As above, dark gray brown (2.5 Y 4/2) angular fragments 0.5-3", some disks, fossils, trace pyrite, trace soft sediment deformation. | | | | | | | | | | |
| | | | 205 | EOB @205' | | | | | | | | | | |

State of Wisconsin
Department of Natural Resources

# Soil Boring Log Information

Form 4400-122 Rev. 7-98

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☒ Other ☐ _____



| Facility/Project Name | License/Permit/Monitoring Number | Boring Number |
|---|---|---|
| Tyco FTC | | SB-51 |

| Boring Drilled By: Name of crew chief (first, last) and Firm | Date Drilling Started | Date Drilling Completed | Drilling Method |
|---|---|---|---|
| First Name Charles Last Name Grenson<br>Firm Dakota Drilling | 8/21/2018 | 8/21/2018 | Geoprobe |

| WI Unique Well No. | DNR Well ID No. | Well Name | Final Static Water Level | Surface Elevation | Borehole Diameter |
|---|---|---|---|---|---|
| | | | _____ Feet | 589.29 Feet MSL | 2 inches |

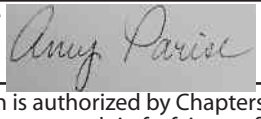
Local Grid Origin ☐ (estimated: ☐ ) or Boring Location ☒
State Plane 451884.06 N, 2582042.31 E S☐/C☒/N☐ ☐E ☐W Lat _____ Long _____
_____ 1/4 of _____ 1/4 of Section _____ ,T _____ N,R _____

Local Grid Location
_____ Feet ☐N ☐S _____ Feet ☐E ☐W

| Facility ID | County | County Code | Civil Town/City/or Village |
|---|---|---|---|
| 438005590 | Marinette | 38 | Marinette |

| Sample Number and Type | Length Att. & Recovered (in) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Soil Properties: Compressive Strength | Moisture Content | Liquid Limit | Plastic Limit | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 36 | | | 0-5'/<br>0-2': 10YR 6/4, light brown, sand, well sorted, loose moist<br>2-3': 10YR 6/5, same as above<br>3-5': No recovery | | | | | | | | | | |
| | 36 | | 5 | 5-10'/<br>5-8': 10YR 5/6, dark brown, sand, well sorted, loose wet<br>8-10': No recovery | | | | | | | | | | |
| | 36 | | 10 | 10-15'/<br>10-12': 10YR 5/3, dark gray, sand, well sorted, loose, wet<br>12-13': 10YR 4/4, same as above<br>13-15': No recovery | | | | | | | | | | |
| | 36 | | 15 | 15-20'/<br>15-18': 10YR 4/3, dark gray, sand, well sorted, loose, wet<br>18-20': No recovery | | | | | | | | | | |
| | 36 | | 20 | 20-25'/<br>20-23': Same as above<br>23-25': No recovery | | | | | | | | | | |
| | 36 | | 25 | 25-30'/<br>25-26': Same as above, medium grained<br>26-28': Same as 10YR 4/3, dark gray, sand/clay mixture<br>28-30': No recovery<br>30' hit resistance | | | | | | | | | | |

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature 

Firm ARCADIS
126 N. Jefferson St., Suite 400
Milwaukee, WI (414) 276-7742

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State of Wisconsin
Department of Natural Resources

# Soil Boring Log Information

Form 4400-122 Rev. 7-98

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☒ Other ☐ _____



| Facility/Project Name | License/Permit/Monitoring Number | Boring Number |
|---|---|---|
| Tyco FTC | | SB-52 |

| Boring Drilled By: Name of crew chief (first, last) and Firm | Date Drilling Started | Date Drilling Completed | Drilling Method |
|---|---|---|---|
| First Name Guy Last Name Paquette<br>Firm Dakota Drilling | 8/21/2018 | 8/28/2018 | Geoprobe |

| WI Unique Well No. | DNR Well ID No. | Well Name | Final Static Water Level | Surface Elevation | Borehole Diameter |
|---|---|---|---|---|---|
| | | | _____ Feet | 593.67 Feet MSL | 2 inches |

Local Grid Origin ☐ (estimated: ☐ ) or Boring Location ☒
State Plane 456299.15 N, 2580951.93 E S☐/C☒/N☐ ☐E ☐W Lat _____ Long _____
_____ 1/4 of _____ 1/4 of Section _____ ,T _____ N,R _____

Local Grid Location
_____ Feet ☐N ☐S _____ Feet ☐E ☐W

| Facility ID | County | County Code | Civil Town/City/or Village |
|---|---|---|---|
| 438005590 | Marinette | 38 | Marinette |

| Sample Number and Type | Length Att. & Recovered (in) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Soil Properties: Compressive Strength | Moisture Content | Liquid Limit | Plastic Limit | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 36 | | | 0-5'/<br>0-1': 10YR 3/3, silt, dark brown, loose, moist, some organic material (rootlets)<br>1-1.5': 10YR 5/6, silt, orangish brown, loose, moist, well sorted<br>1.5-3': 10YR 4/6 sand, brown, loose, wet, well sorted<br>3-5': No recovery | | | | | | | | | | |
| | | | 5 | | | | | | | | | | | |
| | 36 | | | 5-10'/<br>5-8': 10YR 4/3, dark gray, loose, wet, medium grained, well sorted<br>8-10': No recovery | | | | | | | | | | |
| | | | 10 | | | | | | | | | | | |
| | 48 | | | 10-15'/<br>10-14': 10YR 4/3, same as above<br>14-15': No recovery | | | | | | | | | | |
| | | | 15 | | | | | | | | | | | |
| | 36 | | | 15-20'/<br>15-18': 10YR 4/4, sand, brown, fine grained, well sorted, loose, wet<br>18-20': No recovery | | | | | | | | | | |
| | | | 20 | | | | | | | | | | | |
| | 36 | | | 20-25'/<br>20-23': 10YR 4/3, brownish gray, same as above<br>23-25': No recovery | | | | | | | | | | |
| | | | 25 | | | | | | | | | | | |
| | 36 | | | 25-30'/<br>25-28': 10YR 5/4, brownish gray, same as above<br>30-35': Sleeve jammed, appears to be sand | | | | | | | | | | |

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature Amy Parise

Firm ARCADIS
126 N. Jefferson St., Suite 400
Milwaukee, WI (414) 276-7742

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State of Wisconsin
Department of Natural Resources

# Soil Boring Log Information

Form 4400-122 Rev. 7-98

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☒ Other ☐ _____



| Facility/Project Name | License/Permit/Monitoring Number | Boring Number |
|---|---|---|
| Tyco FTC | | SS-113 |

| Boring Drilled By: Name of crew chief (first, last) and Firm | Date Drilling Started | Date Drilling Completed | Drilling Method |
|---|---|---|---|
| First Name David Last Name Foote<br>Firm Braun Intertec/Range Drilling | 06/28/2018 | 06/28/2018 | Geoprobe |

| WI Unique Well No. | DNR Well ID No. | Well Name | Final Static Water Level | Surface Elevation | Borehole Diameter |
|---|---|---|---|---|---|
| | | | _____ Feet | 609.20 Feet MSL | 2 inches |

Local Grid Origin ☐ (estimated: ☐ ) or Boring Location ☒
State Plane 461709.47 N, 2577394.31 E S☐/C☒/N☐ ☐E ☐W Lat _____ Long _____
_____ 1/4 of _____ 1/4 of Section _____ ,T _____ N,R _____

Local Grid Location
☐N ☐E
_____ Feet ☐S _____ Feet ☐W

| Facility ID | County | County Code | Civil Town/City/or Village |
|---|---|---|---|
| 438005590 | Marinette | 38 | Marinette |

| Sample Number and Type | Length Att. & Recovered (in) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Soil Properties: Compressive Strength | Moisture Content | Liquid Limit | Plastic Limit | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 36 | | | 0-5'/<br>0-0.8':<br>Sand, dark reddish brown, (5YR 3/4) very fine grained, well sorted, silty, loose, some organic material-rootlets, moist<br>0.8-1.2':<br>Sand/clay, very dark grayish brown (10YR 3/2), soft, slightly plastic, very fine sand, much organic material-reeds and rootlets, very moist to wet<br>1.2-3':<br>Brown, sand (7.5YR 4/3) very fine to fine grain, well sorted, some silt, loose, wet<br>3-5':<br>No recovery | | | | | | | | | | |
| | | | 5 | | | | | | | | | | | |
| | 36 | | | 5-8'/<br>5-8':<br>Sand, as above, wet, shean and odor<br>Borehole terminated at 8' | | | | | | | | | | |
| | | | 10 | | | | | | | | | | | |

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature Amy Parise

Firm ARCADIS
126 N. Jefferson St., Suite 400
Milwaukee, WI (414) 276-7742

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tyco/WI001605/graphics/logs/mw101b VAP26.ai

State of Wisconsin
Department of Natural Resources

# Soil Boring Log Information

Form 4400-122 Rev. 7-98

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☒ Other ☐ _____



| Facility/Project Name | License/Permit/Monitoring Number | Boring Number |
|---|---|---|
| Tyco FTC | | SS-114 |

| Boring Drilled By: Name of crew chief (first, last) and Firm | Date Drilling Started | Date Drilling Completed | Drilling Method |
|---|---|---|---|
| First Name David Last Name Foote<br>Firm Braun Intertec/Range Drilling | 06/28/2018 | 06/28/2018 | Geoprobe |

| WI Unique Well No. | DNR Well ID No. | Well Name | Final Static Water Level | Surface Elevation | Borehole Diameter |
|---|---|---|---|---|---|
| | | | _____ Feet | 608.56 Feet MSL | 2 inches |

Local Grid Origin ☐ (estimated: ☐ ) or Boring Location ☒
State Plane 461833.48 N, 2577561.63 E S☐/C☒/N☐ ☐E ☐W Lat _____ Long _____
_____ 1/4 of _____ 1/4 of Section _____ ,T _____ N,R _____

Local Grid Location ☐N ☐E _____ Feet ☐S _____ Feet ☐W

| Facility ID | County | County Code | Civil Town/City/or Village |
|---|---|---|---|
| 438005590 | Marinette | 38 | Marinette |

| Sample Number and Type | Length Att. & Recovered (in) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Soil Properties: Compressive Strength | Moisture Content | Liquid Limit | Plastic Limit | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 36 | | 5 | 0-5'/<br>0-0.5':<br>Sand, dark reddish brown, (5YR 3/4) very fine grained, well sorted, silty, loose, some organic material-rootlets, moist<br>0.5-0.8':<br>Sand/clay, very dark grayish brown (10YR 3/2), soft, slightly plastic, very fine sand, much organic material-reeds and rootlets, very moist to wet<br>0.8-3':<br>Sand, brown (7.5YR 4/3) very fine to fine grain, well sorted, loose, wet<br>3-5':<br>No recovery | | | | | | | | | | |
| 2 | 36 | | 10 | 5-8'/<br>5-8':<br>Sand, as above, wet<br>Borehole terminated at 8' | | | | | | | | | | |

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature Amy Parise

Firm ARCADIS
126 N. Jefferson St., Suite 400
Milwaukee, WI (414) 276-7742

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tyco/WI001605/graphics/logs/mw101b VAP26.ai

State of Wisconsin
Department of Natural Resources

# Soil Boring Log Information

Form 4400-122 Rev. 7-98

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☒ Other ☐ _____



| Facility/Project Name | License/Permit/Monitoring Number | Boring Number |
|---|---|---|
| Tyco FTC | | SS-115 |

| Boring Drilled By: Name of crew chief (first, last) and Firm | Date Drilling Started | Date Drilling Completed | Drilling Method |
|---|---|---|---|
| First Name David Last Name Foote<br>Firm Braun Intertec/Range Drilling | 06/28/2018 | 06/28/2018 | Geoprobe |

| WI Unique Well No. | DNR Well ID No. | Well Name | Final Static Water Level | Surface Elevation | Borehole Diameter |
|---|---|---|---|---|---|
| | | | _____ Feet | 608.74 Feet MSL | 2 inches |

Local Grid Origin ☐ (estimated: ☐ ) or Boring Location ☒
State Plane 461975.28 N, 2577653.98 E S☐/C☒/N☐ ☐E ☐W Lat _____ Long _____
_____ 1/4 of _____ 1/4 of Section _____ ,T _____ N,R _____

Local Grid Location
_____ Feet ☐N ☐S _____ Feet ☐E ☐W

| Facility ID | County | County Code | Civil Town/City/or Village |
|---|---|---|---|
| 438005590 | Marinette | 38 | Marinette |

| Sample Number and Type | Length Att. & Recovered (in) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Soil Properties: Compressive Strength | Moisture Content | Liquid Limit | Plastic Limit | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 36.5 | | | 0-5'/<br><br>0-0.5':<br>Sand/silt/gravel, brown (10YR 4/3) very fine to coarse sand, silt with fine to coarse gravel, angular to sub-angular, loose, very moist<br><br>0.5-3':<br>Sand, strong brown (7.5YR 5/6) very fine grained, well sorted, silty, loose, wet<br><br>3-5':<br>No recovery | | | | | | | | | |
| | | | 5 | | | | | | | | | | | |
| 2 | 36 | | | 5-8'/<br><br>5-8':<br>Sand, very fine to fine grained, strong brown (7.5YR 5/8), some silt, loose, wet<br><br>Borehole terminated at 8' | | | | | | | | | |
| | | | 10 | | | | | | | | | | | |

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature Amy Parise

Firm ARCADIS
126 N. Jefferson St., Suite 400
Milwaukee, WI (414) 276-7742

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tyco/WI001605/graphics/logs/mw101b VAP26.ai

State of Wisconsin
Department of Natural Resources

# Soil Boring Log Information

Form 4400-122 Rev. 7-98

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☒ Other ☐ _____



| Facility/Project Name | License/Permit/Monitoring Number | Boring Number |
|---|---|---|
| Tyco FTC | | SS-116 |

| Boring Drilled By: Name of crew chief (first, last) and Firm | Date Drilling Started | Date Drilling Completed | Drilling Method |
|---|---|---|---|
| First Name David Last Name Foote<br>Firm Braun Intertec/Range Drilling | 06/29/2018 | 06/29/2018 | Geoprobe |

| WI Unique Well No. | DNR Well ID No. | Well Name | Final Static Water Level | Surface Elevation | Borehole Diameter |
|---|---|---|---|---|---|
| | | | _____ Feet | 609.37 Feet MSL | 2 inches |

Local Grid Origin ☐ (estimated: ☐ ) or Boring Location ☒
State Plane 462152.80 N, 2577733.21 E S☐/C☒/N☐ ☐E ☐W Lat _____ Long _____
_____ 1/4 of _____ 1/4 of Section _____ ,T _____ N,R _____

Local Grid Location
_____ Feet ☐N ☐S _____ Feet ☐E ☐W

| Facility ID | County | County Code | Civil Town/City/or Village |
|---|---|---|---|
| 438005590 | Marinette | 38 | Marinette |

| Sample Number and Type | Length Att. & Recovered (in) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Soil Properties: Compressive Strength | Moisture Content | Liquid Limit | Plastic Limit | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 48 | | | 0-5'/<br><br>0-0.5':<br>Sand, dark yellowish brown (10YR 3/6), fine grained, well sorted, loose, silty, some organic material - rootlets, moist<br><br>0.5-4':<br>Sand, strong brown (7.5YR 5/8) very fine to fine grained, well sorted, some silt, loose, wet<br><br>4-5':<br>No recovery | | | | | | | | | | |
| | | | 5 | | | | | | | | | | | |
| 2 | 36 | | | 5-8'/<br><br>5-8':<br>Sand, same as above, wet<br><br>Borehole terminated at 8' | | | | | | | | | | |
| | | | 10 | | | | | | | | | | | |

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature

Firm ARCADIS
126 N. Jefferson St., Suite 400
Milwaukee, WI (414) 276-7742

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State of Wisconsin
Department of Natural Resources

# Soil Boring Log Information

Form 4400-122 Rev. 7-98

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☒ Other ☐ _____



| Facility/Project Name | License/Permit/Monitoring Number | Boring Number |
|---|---|---|
| Tyco FTC | | SS-117 |

| Boring Drilled By: Name of crew chief (first, last) and Firm | Date Drilling Started | Date Drilling Completed | Drilling Method |
|---|---|---|---|
| First Name David Last Name Foote<br>Firm Braun Intertec/Range Drilling | 06/29/2018 | 06/29/2018 | Geoprobe |

| WI Unique Well No. | DNR Well ID No. | Well Name | Final Static Water Level | Surface Elevation | Borehole Diameter |
|---|---|---|---|---|---|
| | | | _____ Feet | 609.12 Feet MSL | 2 inches |

Local Grid Origin ☐ (estimated: ☐ ) or Boring Location ☒
State Plane 462251.26 N, 2577786.68 E S☐/C☒/N☐ ☐E ☐W Lat _____ Long _____
_____ 1/4 of _____ 1/4 of Section _____ ,T _____ N,R _____

Local Grid Location
_____ Feet ☐N ☐S _____ Feet ☐E ☐W

| Facility ID | County | County Code | Civil Town/City/or Village |
|---|---|---|---|
| 438005590 | Marinette | 38 | Marinette |

| Sample Number and Type | Length Att. & Recovered (in) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Soil Properties: Compressive Strength | Moisture Content | Liquid Limit | Plastic Limit | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 48 | | 5 | 0-5'/<br><br>0-0.5':<br>Sand/silt/clay, dark yellowish brown (10YR 4/4) fine grained, sub-angular pebbles, some organic material-rootlets, reeds, moist<br><br>0.5-4':<br>Sand, brown, (7.5YR 4/3), fine grained, well sorted, loose, wet<br><br>4-5':<br>No recovery | | | | | | | | | | |
| 2 | 36 | | 10 | 5-8'/<br><br>5-8':<br>Sand, same as above, wet<br><br>Borehole terminated at 8' | | | | | | | | | | |

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature Amy Parise

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126 N. Jefferson St., Suite 400
Milwaukee, WI (414) 276-7742

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State of Wisconsin
Department of Natural Resources

# Soil Boring Log Information

Form 4400-122 Rev. 7-98

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☒ Other ☐ _____



| Facility/Project Name | License/Permit/Monitoring Number | Boring Number |
|---|---|---|
| Tyco FTC | | SS-118 |

| Boring Drilled By: Name of crew chief (first, last) and Firm | Date Drilling Started | Date Drilling Completed | Drilling Method |
|---|---|---|---|
| First Name David Last Name Foote<br>Firm Braun Intertec/Range Drilling | 06/29/2018 | 06/29/2018 | Geoprobe |

| WI Unique Well No. | DNR Well ID No. | Well Name | Final Static Water Level | Surface Elevation | Borehole Diameter |
|---|---|---|---|---|---|
| | | | _____ Feet | 609.70 Feet MSL | 2 inches |

Local Grid Origin ☐ (estimated: ☐ ) or Boring Location ☒
State Plane 462438.79 N, 2577780.59 E S☐/C☒/N☐ ☐E ☐W Lat _____ Long _____
_____ 1/4 of _____ 1/4 of Section _____ ,T _____ N,R _____

Local Grid Location
_____ Feet ☐N ☐S _____ Feet ☐E ☐W

| Facility ID | County | County Code | Civil Town/City/or Village |
|---|---|---|---|
| 438005590 | Marinette | 38 | Marinette |

| Sample Number and Type | Length Att. & Recovered (in) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Soil Properties: Compressive Strength | Moisture Content | Liquid Limit | Plastic Limit | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 36 | | | 0-5'/<br>0-1':<br>Sand/silt, dark brown (7.5YR 3/3), fine grained, well sorted, silty, loose, some organic material-rootlets, moist<br>1-1.5':<br>Sand, brown (7.5YR 5/4) fine grained, sub-angular pebbles, loose, moist, odor<br>1.5-3':<br>Sand, very dark brown (7.5YR 2.5/3) some clay, well sorted, fine grained, loose, moist, odor<br>3-5':<br>No Recovery | | | | | | | | | |
| | | | 5 | | | | | | | | | | | |
| 2 | 36 | | | 5-8'/<br>5-7':<br>Sand, same as 1.5-3, wet<br>7-8':<br>Sand/clay, brown (7.5YR 5/3) very fine grained, well sorted, loose, wet, odor<br>Borehole terminated at 8' | | | | | | | | | | |
| | | | 10 | | | | | | | | | | | |

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature Amy Parise

Firm ARCADIS
126 N. Jefferson St., Suite 400
Milwaukee, WI (414) 276-7742

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State of Wisconsin
Department of Natural Resources

# Soil Boring Log Information

Form 4400-122 Rev. 7-98

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☒ Other ☐ _____



| Facility/Project Name | License/Permit/Monitoring Number | Boring Number |
|---|---|---|
| Tyco FTC | | SS-119 |

| Boring Drilled By: Name of crew chief (first, last) and Firm | Date Drilling Started | Date Drilling Completed | Drilling Method |
|---|---|---|---|
| First Name David Last Name Foote<br>Firm Braun Intertec/Range Drilling | 07/23/2018 | 07/23/2018 | Geoprobe |

| WI Unique Well No. | DNR Well ID No. | Well Name | Final Static Water Level | Surface Elevation | Borehole Diameter |
|---|---|---|---|---|---|
| | | | _____ Feet | 608.69 Feet MSL | 2 inches |

Local Grid Origin ☐ (estimated: ☐ ) or Boring Location ☒
State Plane 462485.12 N, 2577932.90 E S☐/C☒/N☐ ☐E ☐W Lat _____ Long _____
_____ 1/4 of _____ 1/4 of Section _____ ,T _____ N,R _____

Local Grid Location
_____ Feet ☐N ☐S _____ Feet ☐E ☐W

| Facility ID | County | County Code | Civil Town/City/or Village |
|---|---|---|---|
| 438005590 | Marinette | 38 | Marinette |

| Sample Number and Type | Length Att. & Recovered (in) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Soil Properties: Compressive Strength | Moisture Content | Liquid Limit | Plastic Limit | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 36 | | 5 | 0-5'/<br>0-1':<br>Silt, strong brown (7.5YR 4/6), moderately sorted, fine grained, sub-angular gravel, some organic material (rootlets) moist, loose<br>1-3':<br>Sand, yellowish brown (10YR 5/8), well sorted, fine grained, wet loose<br>3-5':<br>No recovery | | | | | | | | | | |
| 2 | 36 | | 10 | 5-8'/<br>5-8':<br>Sand, strong brown (7.5YR 5/6) same as 1-3ft, wet<br>Borehole terminated at 8' | | | | | | | | | | |

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature Amy Parise

Firm ARCADIS
126 N. Jefferson St., Suite 400
Milwaukee, WI (414) 276-7742

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State of Wisconsin
Department of Natural Resources

# Soil Boring Log Information

Form 4400-122 Rev. 7-98

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☒ Other ☐ _____



| Facility/Project Name | License/Permit/Monitoring Number | Boring Number |
|---|---|---|
| Tyco FTC | | SS-120 |

| Boring Drilled By: Name of crew chief (first, last) and Firm | Date Drilling Started | Date Drilling Completed | Drilling Method |
|---|---|---|---|
| First Name David Last Name Foote<br>Firm Braun Intertec/Range Drilling | 06/29/2018 | 06/29/2018 | Geoprobe |

| WI Unique Well No. | DNR Well ID No. | Well Name | Final Static Water Level | Surface Elevation | Borehole Diameter |
|---|---|---|---|---|---|
| | | | _____ Feet | 608.25 Feet MSL | 2 inches |

Local Grid Origin ☐ (estimated: ☐ ) or Boring Location ☒
State Plane 240354.70 N, 0355653.50 E S☐/C☒/N☐ ☐E ☐W Lat _____ Long _____
_____ 1/4 of _____ 1/4 of Section _____ ,T _____ N,R _____

Local Grid Location
_____ Feet ☐N ☐S _____ Feet ☐E ☐W

| Facility ID | County | County Code | Civil Town/City/or Village |
|---|---|---|---|
| 438005590 | Marinette | 38 | Marinette |

| Sample Number and Type | Length Att. & Recovered (in) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Soil Properties: Compressive Strength | Moisture Content | Liquid Limit | Plastic Limit | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 48 | | | 0-5'/<br><br>0-1':<br>Sand/clay, very dark brown (7.5YR 2.5/3) fine grained, well sorted, slightly plastic, some organic material-rootlets, wet, odor<br><br>1-4':<br>Sand, dark yellowish brown (10YR 3/6) fine grained, well sorted, loose, wet<br><br>4-5':<br>No recovery | | | | | | | | | | |
| | | | 5 | | | | | | | | | | | |
| 2 | 36 | | | 5-8'/<br><br>5-8':<br>Sand, same as above, wet<br><br>Borehole terminated at 8' | | | | | | | | | | |
| | | | 10 | | | | | | | | | | | |

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature

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126 N. Jefferson St., Suite 400
Milwaukee, WI (414) 276-7742

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State of Wisconsin
Department of Natural Resources

# Soil Boring Log Information

Form 4400-122 Rev. 7-98

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☒ Other ☐ _____



| Facility/Project Name | License/Permit/Monitoring Number | Boring Number |
|---|---|---|
| Tyco FTC | | SS-121 |

| Boring Drilled By: Name of crew chief (first, last) and Firm | Date Drilling Started | Date Drilling Completed | Drilling Method |
|---|---|---|---|
| First Name David Last Name Foote<br>Firm Braun Intertec/Range Drilling | 06/29/2018 | 06/29/2018 | Geoprobe |

| WI Unique Well No. | DNR Well ID No. | Well Name | Final Static Water Level | Surface Elevation | Borehole Diameter |
|---|---|---|---|---|---|
| | | | _____ Feet | 610.90 Feet MSL | 2 inches |

Local Grid Origin ☐ (estimated: ☐ ) or Boring Location ☒
State Plane 462706.45 N, 2577773.41 E S☐/C☒/N☐ ☐E ☐W Lat _____ Long _____
_____ 1/4 of _____ 1/4 of Section _____ ,T _____ N,R _____

Local Grid Location
_____ Feet ☐N ☐S _____ Feet ☐E ☐W

| Facility ID | County | County Code | Civil Town/City/or Village |
|---|---|---|---|
| 438005590 | Marinette | 38 | Marinette |

| Sample Number and Type | Length Att. & Recovered (in) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Soil Properties: Compressive Strength | Moisture Content | Liquid Limit | Plastic Limit | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 48 | | | 0-5'/<br><br>0-1':<br>Sand/silt/gravel, dark brown (7.5YR 3/3) well sorted, fine grained, sub-angular gravel, some organic material-rootlets, moist<br><br>1-4':<br>Sand, brown (7.5YR 4/4) well sorted, fine grained, loose, moist, some silt<br><br>4-5':<br>No recovery | | | | | | | | | | |
| | | | 5 | | | | | | | | | | | |
| 2 | 36 | | | 5-8'/<br><br>5-8':<br>Sand, same as 1-4', wet<br><br>Borehole terminated at 8' | | | | | | | | | | |
| | | | 10 | | | | | | | | | | | |

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature

Firm ARCADIS
126 N. Jefferson St., Suite 400
Milwaukee, WI (414) 276-7742

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State of Wisconsin
Department of Natural Resources

# Soil Boring Log Information

Form 4400-122 Rev. 7-98

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☒ Other ☐ _____



| Facility/Project Name | License/Permit/Monitoring Number | Boring Number |
|---|---|---|
| Tyco FTC | | SS-122 |

| Boring Drilled By: Name of crew chief (first, last) and Firm | Date Drilling Started | Date Drilling Completed | Drilling Method |
|---|---|---|---|
| First Name David Last Name Foote<br>Firm Braun Intertec/Range Drilling | 06/29/2018 | 06/29/2018 | Geoprobe |

| WI Unique Well No. | DNR Well ID No. | Well Name | Final Static Water Level | Surface Elevation | Borehole Diameter |
|---|---|---|---|---|---|
| | | | _____ Feet | 608.47 Feet MSL | 2 inches |

Local Grid Origin ☐ (estimated: ☐ ) or Boring Location ☒
State Plane 2405/6,66 N, 03557/3,10 E S☐/C☒/N☐ ☐E ☐W Lat _____ Long _____
_____ 1/4 of _____ 1/4 of Section _____ ,T _____ N,R _____

Local Grid Location
_____ Feet ☐N ☐S _____ Feet ☐E ☐W

| Facility ID | County | County Code | Civil Town/City/or Village |
|---|---|---|---|
| 438005590 | Marinette | 38 | Marinette |

| Sample Number and Type | Length Att. & Recovered (in) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Soil Properties: Compressive Strength | Moisture Content | Liquid Limit | Plastic Limit | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 24 | | | 0-5'/<br><br>0-0.5':<br>Sand/clay/gravel, very dark brown (7.5YR 2.5/3), well sorted, fine grained, sub-angular gravel, some organic material-rootlets, loose, moist<br><br>0.5-2':<br>Sand, brown (7.5YR 5/4) fine grained, well sorted, loose, wet<br><br>2-5':<br>No recovery | | | | | | | | | | |
| | | | 5 | | | | | | | | | | | |
| 2 | 36 | | | 5-8'/<br><br>5-8':<br>Sand, same as above, wet<br><br>Borehole terminated at 8' | | | | | | | | | | |
| | | | 10 | | | | | | | | | | | |

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature Amy Parise

Firm ARCADIS
126 N. Jefferson St., Suite 400
Milwaukee, WI (414) 276-7742

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State of Wisconsin
Department of Natural Resources

# Soil Boring Log Information

Form 4400-122 Rev. 7-98

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☒ Other ☐ _____



| Facility/Project Name | License/Permit/Monitoring Number | Boring Number |
|---|---|---|
| Tyco FTC | | SS-123 |

| Boring Drilled By: Name of crew chief (first, last) and Firm | Date Drilling Started | Date Drilling Completed | Drilling Method |
|---|---|---|---|
| First Name David Last Name Foote<br>Firm Braun Intertec/Range Drilling | 06/29/2018 | 06/29/2018 | Geoprobe |

| WI Unique Well No. | DNR Well ID No. | Well Name | Final Static Water Level | Surface Elevation | Borehole Diameter |
|---|---|---|---|---|---|
| | | | _____ Feet | 610.98 Feet MSL | 2 inches |

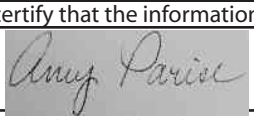
Local Grid Origin ☐ (estimated: ☐ ) or Boring Location ☒
State Plane 240513.72 N, 0355313.0 E S☐/C☐/N☐ ☐E ☐W Lat _____ Long _____
_____ 1/4 of _____ 1/4 of Section _____, T _____ N, R _____

Local Grid Location
☐N ☐E
_____ Feet ☐S _____ Feet ☐W

| Facility ID | County | County Code | Civil Town/City/or Village |
|---|---|---|---|
| | Marinette | 38 | Marinette |

| Sample Number and Type | Length Att. & Recovered (in) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Soil Properties: Compressive Strength | Moisture Content | Liquid Limit | Plastic Limit | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 48 | | 5 | 0-5'/<br>0+1':<br>Sand/silt-ep_tcj* b_pi wcjjmugqf `pmu l &/ .WP 2-2'*<br>kmbcp_rcjw qmprcb* dg l c ep_g l cb* jmmqc* qs `+<br>_l esj_p ep_tcj* k mgqr* mpe_l ga k_rcpg_j+pmmrjcrq<br>/+0,3¦ :<br>Sand, qrpm l e brown (7.5YR 2-4) fine grained ucjj<br>qmprcb* qm k c qgjr* jmmqc* k mgqr<br>0,3+1¦:<br>Sand-aj_w very dark brown (7.5YR 2.5/3) some clay,<br>well sorted, fine grained, loose, moist, odor<br>3-4':<br>sand same as 1-2.5', moist<br>4-5':<br>No Recovery | | | | | | | | | |
| 2 | 36 | | 10 | 5-8'/<br>5-8':<br>Sand, same as 3-4 ft, wet<br>Borehole terminated at 8' | | | | | | | | | |

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature 

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State of Wisconsin
Department of Natural Resources

# Soil Boring Log Information

Form 4400-122 Rev. 7-98

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☒ Other ☐ _____



| Facility/Project Name | License/Permit/Monitoring Number | Boring Number |
|---|---|---|
| Tyco FTC | | SS-124 |

| Boring Drilled By: Name of crew chief (first, last) and Firm | Date Drilling Started | Date Drilling Completed | Drilling Method |
|---|---|---|---|
| First Name David Last Name Foote<br>Firm Braun Intertec/Range Drilling | 07/23/2018 | 07/23/2018 | Geoprobe |

| WI Unique Well No. | DNR Well ID No. | Well Name | Final Static Water Level | Surface Elevation | Borehole Diameter |
|---|---|---|---|---|---|
| | | | _____ Feet | 609.64 Feet MSL | 2 inches |

Local Grid Origin ☐ (estimated: ☐ ) or Boring Location ☒
State Plane 240610,32 N, 03555.1,21 E S☐/C☒/N☐ ☐E ☐W Lat _____ Long _____
_____ 1/4 of _____ 1/4 of Section _____ ,T _____ N,R _____

Local Grid Location
_____ Feet ☐N ☐S _____ Feet ☐E ☐W

| Facility ID | County | County Code | Civil Town/City/or Village |
|---|---|---|---|
| 438005590 | Marinette | 38 | Marinette |

| Sample Number and Type | Length Att. & Recovered (in) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Soil Properties: Compressive Strength | Moisture Content | Liquid Limit | Plastic Limit | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 36 | | | 0-5'/<br>0-1':<br>Silt, dark yellowish brown (10YR 3/4)), moderately sorted, fine grained, subangular gravel, some organic material (rootlets), moist, loose<br>1-3':<br>Sand, yellowish brown (10YR 5/8), well sorted, fine grained, wet, loose<br>3-5':<br>No recovery | | | | | | | | | | |
| | | | 5 | | | | | | | | | | | |
| 2 | 36 | | | 5-8'/<br>5-8': Sand, dark yellowish brown (10YR 3/4), same as 1-3', wet<br>Borehole terminated at 8' | | | | | | | | | | |
| | | | 10 | | | | | | | | | | | |

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature Amy Parise

Firm ARCADIS
126 N. Jefferson St., Suite 400
Milwaukee, WI (414) 276-7742

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tyco/WI001605/graphics/logs/mw101b VAP26.ai

State of Wisconsin
Department of Natural Resources

# Soil Boring Log Information

Form 4400-122 Rev. 7-98

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☒ Other ☐ _____



| Facility/Project Name | License/Permit/Monitoring Number | Boring Number |
|---|---|---|
| Tyco FTC | | SS-125 |

| Boring Drilled By: Name of crew chief (first, last) and Firm | Date Drilling Started | Date Drilling Completed | Drilling Method |
|---|---|---|---|
| First Name David Last Name Foote<br>Firm Braun Intertec/Range Drilling | 06/29/2018 | 06/29/2018 | Geoprobe |

| WI Unique Well No. | DNR Well ID No. | Well Name | Final Static Water Level | Surface Elevation | Borehole Diameter |
|---|---|---|---|---|---|
| | | | _____ Feet | 610.23 Feet MSL | 2 inches |

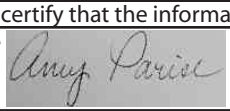
Local Grid Origin ☐ (estimated: ☐ ) or Boring Location ☒
State Plane 240616,7. N, 035537.,42 E S☐/C☒/N☐ ☐E ☐W Lat _____ Long _____
_____ 1/4 of _____ 1/4 of Section _____ ,T _____ N,R _____

Local Grid Location
_____ Feet ☐N ☐S _____ Feet ☐E ☐W

| Facility ID | County | County Code | Civil Town/City/or Village |
|---|---|---|---|
| 438005590 | Marinette | 38 | Marinette |

| Sample Number and Type | Length Att. & Recovered (in) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Soil Properties: Compressive Strength | Moisture Content | Liquid Limit | Plastic Limit | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 36 | | | 0-5'/<br><br>0-1':<br>Sand/clay/gravel, very dark brown (7.5YR 2.5/3) moderately sorted, fine grained sub-angular gravel, loose, some organic material-rootlets, loose, moist<br><br>1-3':<br>Sand, brown (7.5YR 5/4) well sorted, fine grained, loose, wet<br><br>3-5':<br>No recovery | | | | | | | | | | |
| | | | 5 | | | | | | | | | | | |
| 2 | 36 | | | 5-8'/<br><br>5-8':<br>Sand, same as above, wet<br><br>Borehole terminated at 8' | | | | | | | | | | |
| | | | 10 | | | | | | | | | | | |

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature 

Firm ARCADIS
126 N. Jefferson St., Suite 400
Milwaukee, WI (414) 276-7742

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tyco/WI001605/graphics/logs/mw101b VAP26.ai

State of Wisconsin
Department of Natural Resources

# Soil Boring Log Information

Form 4400-122 Rev. 7-98

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☒ Other ☐ _____



| Facility/Project Name | License/Permit/Monitoring Number | Boring Number |
|---|---|---|
| Tyco FTC | | SS-126 |

| Boring Drilled By: Name of crew chief (first, last) and Firm | Date Drilling Started | Date Drilling Completed | Drilling Method |
|---|---|---|---|
| First Name David Last Name Foote<br>Firm Braun Intertec/Range Drilling | 06/29/2018 | 06/29/2018 | Geoprobe |

| WI Unique Well No. | DNR Well ID No. | Well Name | Final Static Water Level | Surface Elevation | Borehole Diameter |
|---|---|---|---|---|---|
| | | | _____ Feet | 610.36 Feet MSL | 2 inches |

Local Grid Origin ☐ (estimated: ☐ ) or Boring Location ☒
State Plane 240732,62 N, 0355433,76 E S☐/C☒/N☐ ☐E ☐W Lat _____ Long _____
_____ 1/4 of _____ 1/4 of Section _____ ,T _____ N,R _____

Local Grid Location
_____ Feet ☐N ☐S _____ Feet ☐E ☐W

| Facility ID | County | County Code | Civil Town/City/or Village |
|---|---|---|---|
| 438005590 | Marinette | 38 | Marinette |

| Sample Number and Type | Length Att. & Recovered (in) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Soil Properties: Compressive Strength | Moisture Content | Liquid Limit | Plastic Limit | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 36 | | | 0-5'/<br><br>0-1':<br>Sand/clay/gravel, very dark brown (7.5YR 2.5/3), well sorted, fine grained, sub-angular gravel, some organic material-rootlets, loose, moist<br><br>1-3':<br>Sand, brown (7.5YR 5/4) well sorted, fine grained, loose, moist<br><br>3-5':<br>No recovery | | | | | | | | | | |
| | | | 5 | | | | | | | | | | | |
| 2 | 36 | | | 5-8'/<br><br>5-8':<br>Sand, same as above, wet<br><br>Borehole terminated at 8' | | | | | | | | | | |
| | | | 10 | | | | | | | | | | | |

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature

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tyco/WI001605/graphics/logs/mw101b VAP26.ai

State of Wisconsin
Department of Natural Resources

# Soil Boring Log Information

Form 4400-122 Rev. 7-98

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☑ Other ☐ _____

Page 1 of 1

| Facility/Project Name | License/Permit/Monitoring Number | Boring Number |
|---|---|---|
| Rwam DRA | | QQ+/05 |

| Boring Drilled By: Name of crew chief (first, last) and Firm | Date Drilling Started | Date Drilling Completed | Drilling Method |
|---|---|---|---|
| First Name David Last Name Foote<br>Firm Braun Intertec/Range Drilling | .4-07-0./6 | .4-07-0./6 | Ecmnpm`c |

| WI Unique Well No. | DNR Well ID No. | Well Name | Final Static Water Level | Surface Elevation | Borehole Diameter |
|---|---|---|---|---|---|
| | | | _____ Feet | 4/..2 Feet MSL | 0 inches |

Local Grid Origin ☐ (estimated: ☐ ) or Boring Location ☑
State Plane 241..3,45 N, 0355471,2/ E S☐/C☒/N☐ ☐E ☐W Lat _____ Long _____
_____ 1/4 of _____ 1/4 of Section _____ ,T _____ N,R _____

Local Grid Location
_____ Feet ☐N ☐S _____ Feet ☐E ☐W

| Facility ID | County | County Code | Civil Town/City/or Village |
|---|---|---|---|
| 438005590 | K_pg l crrc | 16 | K_pg l crrc |

| Sample Number and Type | Length Att. & Recovered (in) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Soil Properties: Compressive Strength | Moisture Content | Liquid Limit | Plastic Limit | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 48 | | 5 | 0-5'/<br><br>0-0.5':<br>Silt/sand/gravel, dark yellowish brown (10YR 3/4) well sorted, fine grained, sub-angular gravel, some organic material-rootlets, loose, moist<br><br>0.5-4':<br>Sand, reddish yellow (7.5YR 6/8) well sorted, fine grained, loose, moist<br><br>4-5':<br>No recovery | | | | | | | | | | |
| 2 | 36 | | 10 | 5-8'/<br><br>5-8':<br>Sand, same as above, wet<br><br>Borehole terminated at 8' | | | | | | | | | | |

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature Amy Parise

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126 N. Jefferson St., Suite 400
Milwaukee, WI (414) 276-7742

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tyco/WI001605/graphics/logs/mw101b VAP26.ai

State of Wisconsin
Department of Natural Resources

# Soil Boring Log Information

Form 4400-122 Rev. 7-98

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☒ Other ☐ _____



| Facility/Project Name | License/Permit/Monitoring Number | Boring Number |
|---|---|---|
| Tyco FTC | | SS-128 |

| Boring Drilled By: Name of crew chief (first, last) and Firm | Date Drilling Started | Date Drilling Completed | Drilling Method |
|---|---|---|---|
| First Name David Last Name Foote<br>Firm Braun Intertec/Range Drilling | 07/23/2018 | 07/23/2018 | Geoprobe |

| WI Unique Well No. | DNR Well ID No. | Well Name | Final Static Water Level | Surface Elevation | Borehole Diameter |
|---|---|---|---|---|---|
| | | | _____ Feet | 610.31 Feet MSL | 2 inches |

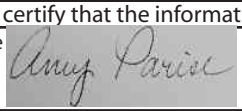
Local Grid Origin ☐ (estimated: ☐ ) or Boring Location ☒
State Plane 2400.7,07 N, 0355446,50 E S☐/C☒/N☐ ☐E ☐W Lat _____ Long _____
_____ 1/4 of _____ 1/4 of Section _____ ,T _____ N,R _____

Local Grid Location
_____ Feet ☐N ☐S _____ Feet ☐E ☐W

| Facility ID | County | County Code | Civil Town/City/or Village |
|---|---|---|---|
| 438005590 | Marinette | 38 | Marinette |

| Sample Number and Type | Length Att. & Recovered (in) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Soil Properties: Compressive Strength | Moisture Content | Liquid Limit | Plastic Limit | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 36 | | | 0-5'/<br>0-1':<br>Silt, dark yellowish brown (10YR 4/4) moderately sorted, fine grained, sub-angular gravel, moist, loose<br>1-2':<br>Sand, yellowish brown (10YR 5/6), well sorted, fine grained, moist, loose<br>2-3':<br>Sand, strong brown (7.5YR 4/6) same as 1-2', moist<br>3-5':<br>No recovery | | | | | | | | | | |
| | | | 5 | | | | | | | | | | | |
| 2 | 36 | | | 5-8'/<br>5-8':<br>Sand, same as 2-3', wet<br>Borehole terminated at 8' | | | | | | | | | | |
| | | | 10 | | | | | | | | | | | |

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature 

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126 N. Jefferson St., Suite 400
Milwaukee, WI (414) 276-7742

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tyco/WI001605/graphics/logs/mw101b VAP26.ai

State of Wisconsin
Department of Natural Resources

# Soil Boring Log Information

Form 4400-122 Rev. 7-98

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☒ Other ☐ _____



| Facility/Project Name | License/Permit/Monitoring Number | Boring Number |
|---|---|---|
| Tyco FTC | | SS-129 |

| Boring Drilled By: Name of crew chief (first, last) and Firm | Date Drilling Started | Date Drilling Completed | Drilling Method |
|---|---|---|---|
| First Name David Last Name Foote<br>Firm Braun Intertec/Range Drilling | 07/23/2018 | 07/23/2018 | Geoprobe |

| WI Unique Well No. | DNR Well ID No. | Well Name | Final Static Water Level | Surface Elevation | Borehole Diameter |
|---|---|---|---|---|---|
| | | | _____ Feet | 612.18 Feet MSL | 2 inches |

Local Grid Origin ☐ (estimated: ☐ ) or Boring Location ☒
State Plane 240/17,// N, 0355137.76 E S☐/C☒/N☐ ☐E ☐W Lat _____ Long _____
_____ 1/4 of _____ 1/4 of Section _____ ,T _____ N,R _____

Local Grid Location
_____ Feet ☐N ☐S _____ Feet ☐E ☐W

| Facility ID | County | County Code | Civil Town/City/or Village |
|---|---|---|---|
| 438005590 | Marinette | 38 | Marinette |

| Sample Number and Type | Length Att. & Recovered (in) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Soil Properties: Compressive Strength | Moisture Content | Liquid Limit | Plastic Limit | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 36 | | 5 | 0-5'/<br><br>0-1':<br>Silt and clay, brown, (7.5YR 4/3) moderately sorted, fine grained, sub-angular gravel, loose, moist<br><br>1-3':<br>Sand, strong brown (7.5YR 4/6) well sorted, fine grained, loose, moist<br><br>3-5':<br>No recovery | | | | | | | | | | |
| 2 | 36 | | 10 | 5-8'/<br><br>5-8':<br>Sand, same as 1-3 ft, wet, odor apparent<br><br>Borehole terminated at 8' | | | | | | | | | | |

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature Amy Parise

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126 N. Jefferson St., Suite 400
Milwaukee, WI (414) 276-7742

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State of Wisconsin
Department of Natural Resources

# Soil Boring Log Information

Form 4400-122 Rev. 7-98

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☒ Other ☐ _____



| Facility/Project Name | License/Permit/Monitoring Number | Boring Number |
|---|---|---|
| Marinette | | VAP-27 |

| Boring Drilled By: Name of crew chief (first, last) and Firm | Date Drilling Started | Date Drilling Completed | Drilling Method |
|---|---|---|---|
| First Name Ben Last Name Price Firm Cascade | 06/22/2018 | 06/29/2018 | Sonic |

| WI Unique Well No. | DNR Well ID No. | Well Name | Final Static Water Level | Surface Elevation | Borehole Diameter |
|---|---|---|---|---|---|
| | | | _____ Feet | 610.05 Feet MSL | 8-6 inches |

Local Grid Origin ☐ (estimated: ☐ ) or Boring Location ☒
State Plane 458754.43 N, 2579584.99 E S☐ /C☒ / ☐ E ☐ W Lat _____ Long _____
_____ 1/4 of _____ 1/4 of Section _____ ,T _____ N N,R _____

Local Grid Location
☐ N ☐ E
_____ Feet ☐ S _____ Feet ☐ W

| Facility ID | County | County Code | Civil Town/City/or Village |
|---|---|---|---|
| 438005590 | Marinette | 38 | Marinette |

| Sample Number and Type | Length Att. & Recovered (in) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Soil Properties: Compressive Strength | Moisture Content | Liquid Limit | Plastic Limit | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 40 | | 0 | 0-5'/ Silt and Topsoil: Fine sand with organics 6" brown to tan fine, gravel fill with asphalt. Tan fine to medium clean, well sorted, rounded dry. | | | | | | | | | | |
| | | | 5 | 5-15'/ Sand: Brown, fine to medium grain, loose, wet. | | | | | | | | | | |
| 2 | 35 | | | | | | | | | | | | | |
| | | | 15 | 15-35'/<br>15-20' Sand: Brown, fine to medium grain, loose, wet.<br>20-22' Sand: As above, some red to brown silt in sand.<br>22-23' Sand: Trace red to brown silty layers 1-3 mm thick.<br>23-25' Sand: Brown fine to medium.<br>25-30' Sand: Gradual transition to light gray fine to coarse grain. | | | | | | | | | | |
| 3 | 205 | | | | | | | | | | | | | |
| | | | 35 | 35-55'/<br>35-45' Sand: As above.<br>45-55' Sand: As above, light gray to tan. | | | | | | | | | | |
| 4 | 170 | | | | | | | | | | | | | |
| | | | 55 | 55-65'/ Sand: Slightly finer, more compacted. | | | | | | | | | | |
| 5 | 68 | | | | | | | | | | | | | |
| | | | 45 | | | | | | | | | | | |

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature

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126 N. Jefferson St., Suite 400
Milwaukee, WI (414) 276-7742

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Boring Number VAP-27



| Sample Number and Type | Sample Length All. & Recovered (in) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Soil Properties: Compressive Strength | Moisture Content | Liquid Limit | Plastic Limit | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6 | 32 | | 65 | 65-72'/<br>Sand: Trace rock fragments approximately 3" wide. | | | | | | | | | | |
| 7 | 87 | | 72 | 72-80'/<br>72-74' Sand: As above.<br>74-80' Sand/Silt: Gray fine grain sand, silt, trace medium gravel at 76.5'. | | | | | | | | | | |
| 8 | 83 (expanded) | | 80 | 80-85'/ Silt/Clay: Gray with red to brown fine and layers approixmately 1-2 mm thick very hard, trace fine sand seams 1-2 mm thick, dry.<br>82': red brown clay, trace silt, trace gray mottle, very hard, dry.<br>84.5': gray clay trace silt, very hard, slightly more plastic. | | | | | | | | | | |
| 9 | 28 | | 85 | 85-87.5'/Silt/Sand/Clay: Gray, fine sand with gravel, cobbles, trace boulder rounded, dry, till. Bedrock at 87.5', limestone chips, fragments at core barrel tip. | | | | | | | | | | |
| | | | 87.5 | EOB @ 87.5'. | | | | | | | | | | |

State of Wisconsin
Department of Natural Resources

# Soil Boring Log Information

Form 4400-122 Rev. 7-98

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☒ Other ☐ _____



| Facility/Project Name | License/Permit/Monitoring Number | Boring Number |
|---|---|---|
| Tyco FTC | | VAP-28 |

| Boring Drilled By: Name of crew chief (first, last) and Firm | Date Drilling Started | Date Drilling Completed | Drilling Method |
|---|---|---|---|
| First Name Roy Last Name Buckenberger Firm Cascade | 08/15/2018 | 08/16/2018 | Sonic |

| WI Unique Well No. | DNR Well ID No. | Well Name | Final Static Water Level | Surface Elevation | Borehole Diameter |
|---|---|---|---|---|---|
| | | | _____ Feet | 594.21 Feet MSL | 8-6 inches |

Local Grid Origin ☐ (estimated: ☐ ) or Boring Location ☒
State Plane 454795.86 N, 2581175.38 E S☐/C☒/N☐ ☐E ☐W Lat _____ Long _____
_____ 1/4 of _____ 1/4 of Section _____ ,T _____ N,R _____

Local Grid Location ☐N ☐E _____ Feet ☐S _____ Feet ☐W

| Facility ID | County | County Code | Civil Town/City/or Village |
|---|---|---|---|
| 438005590 | Marinette | 38 | Marinette |

| Sample Number and Type | Length Att. & Recovered (in) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Soil Properties: Compressive Strength | Moisture Content | Liquid Limit | Plastic Limit | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 24 | | 0 | 0-5'/<br>0.0-2.0' Silt/Organics: Very dark brown (7.5 YR 2.5/3) silt mixed with organic material, some very fine to medium sand, loose, rootlets, organics decayed leaves/grass, moist.<br>2.0-5.0' No recovery. | | | | | | | | | | |
| 2 | 60 | | 5 | 5-10'/<br>5.0-6.0' Silt/Organics: As above, moist.<br>6.0-10.0' Sand: Brown (7.5 YR 4/5) very fine to fine grain, trace medium grain, moderately well sorted, loose, wet. | | | | | | | | | | |
| 3 | 24 | | 10 | 10-15'/<br>10.0-12.0' Sand: As above, wet.<br>12.0-15.0' No recovery. | | | | | | | | | | |
| 4 | 60 | | 15 | 15-20'/<br>15.0-17.4' Sand: As above, wet.<br>17.4-20.0' Sand: Brown (7.5 YR 4/2) very fine grain, well sorted, some silt, loose, wet. | | | | | | | | | | |
| 5 | 60 | | 20 | 20-25'/<br>20.0-21.5' Sand: As above, very fine grain, wet.<br>21.5-22.0' Silt: Brown (7.5 YR 4/2), mostly firm with clay laminations/clay reddish brown (7 YR 4/4), soft, plastic, wet.<br>22.0-25.0' Sand: Brown (7.5YR 4/3) moderately mostly fine grain, some very fine to medium grain, well sorted, loose, wet. | | | | | | | | | | |
| 6 | 60 | | 25 | 25-30'/ | | | | | | | | | | |

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature

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126 N. Jefferson St., Suite 400
Milwaukee, WI (414) 276-7742

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Boring Number VAP-28



| Sample Number and Type | Sample Length All. & Recovered (in) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Soil Properties: Compressive Strength | Moisture Content | Liquid Limit | Plastic Limit | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 25.0-28.0′ Sand: As above, fine to medium grain, wet.<br>28.0-30.0′ Silt: Brown (7.5 YR 5/2) firm to slightly soft, wet. | | | | | | | | | | |
| 7 | 60 | | 30 | 30-35′/<br>30.0-35.0′ Silt: As above becoming more firm below 32′, wet to very moist. | | | | | | | | | | |
| 8 | 60 | | 35 | 35-40′/ Silt: Reddish gray (5 YR 5/2) firm to slightly soft, trace clay, wet. | | | | | | | | | | |
| 9 | 60 | | 40 | 40-45′/ Silt: As above, very firm to hard at 4′, 2″ layer with very fine grain sand, slightly loose at 42′, wet. | | | | | | | | | | |
| 10 | 0 | | 45 | 45-50′/ No recovery. | | | | | | | | | | |
| 11 | 60 | | 50 | 50-55′/ Silt: Reddish gray (5 YR 5/2) slighlty firm to some-what soft, some clay, slightly plastic, trace very fine grain sand in several layers <1″ thick, wet. | | | | | | | | | | |
| 12 | 60 | | 55 | 55-60′/ Clay: Reddish gray (5 YR 5/2) somewhat soft to slightly firm, plastic, some silt, traces very fine to coarse sand below 58′ mixed in clay matix, wet. | | | | | | | | | | |
| 13 | 60 | | 60 | 60-65′/ Clay: As above, soft, plastic, sticky, wet. | | | | | | | | | | |
| 14 | 60 | | 65 | 65-70′/<br>65.0-69.5′ Clay: As above, wet.<br>69.5-70.0′ Clay/Silt/Sand/Gravel: Reddish gray (5 YR 5/2) soft plastic clay mixed with silt, very fine to coarse sand, fine to coarse gravel, mostly sub-angular, very poorly sorted, soft, sticky, wet. | | | | | | | | | | |
| 15 | 60 | | 70 | 70-75′/<br>Sand: Brown (7.5 YR 4/3) medium grain some very fine to fine grain, moderately well sorted, loose, wet. | | | | | | | | | | |

Boring Number VAP-28



| Sample Number and Type | Sample Length All. & Recovered (in) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Soil Properties: Compressive Strength | Moisture Content | Liquid Limit | Plastic Limit | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 75 | | | | | | | | | | | |
| 16 | | | | 75-80'/ No recovery. | | | | | | | | | | |
| | | | 80 | | | | | | | | | | | |
| 17 | | | | 80-85'/ No recovery. | | | | | | | | | | |
| | | | 85 | | | | | | | | | | | |
| 18 | 60 | | | 85-90'/ Sand: Brown (7.5 YR 4/5) medium to coarse grain, some fine grain, moderately well sorted, loose, wet. | | | | | | | | | | |
| | | | 90 | | | | | | | | | | | |
| 19 | 60 | | | 90-95'/<br>90.0-92.0' Clay: Dark reddish gray (5 YR 5/2) very silty clay, moderately firm to slightly soft, plastic, wet.<br>92.0-94.5' Clay: As above, somewhat softer, much fine to coarse gravel angular to subangular, cobbles to +2" diameter, wet.<br>94.5-95.0' Clay/Silt/Sand/Gravel: Dark reddish brown (5 YR 5/2) clay and silt mixed with very fine to coarse sand, fine to very coarse gravel sand, gravel angular to subangular, wet. | | | | | | | | | | |
| | | | 95 | | | | | | | | | | | |
| 20 | 60 | | | 95-100'/<br>95.0-99.0' Clay/Silt/Sand/Gravel: Reddish brown (5 YR 5/4) silt, clayey, mixed with very fine to coarse sand, fine to very coarse gravel angular to subangular, very fine firm to slightly soft, poorly sorted sand/gravel, wet.<br>99.5'-100': Clay/Limestone: Light gray (5 YR 7/1) soft clay to most likely powdered bedrock mixed with pieces/chips limestone, angular broken pieces grayish brown (10 YR 5/2), hard, dense microcrystalline, sticky, wet. | | | | | | | | | | |
| | | | 100 | | | | | | | | | | | |
| 21 | 24 | | | 100-102'/ Dolostone/limestone: Grayish brown (10 YR 5/2) hard, dense, micro-crystalline, horizontal bedding, trace fossils, trace vugs at calcite, wet. | | | | | | | | | | |
| | | | 102 | EOB @ 102' | | | | | | | | | | |

State of Wisconsin
Department of Natural Resources

# Soil Boring Log Information

Form 4400-122 Rev. 7-98

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☒ Other ☐ _____



| Facility/Project Name | License/Permit/Monitoring Number | Boring Number |
|---|---|---|
| Tyco FTC | | VAP-29 |

| Boring Drilled By: Name of crew chief (first, last) and Firm | Date Drilling Started | Date Drilling Completed | Drilling Method |
|---|---|---|---|
| First Name Roy Last Name Buckenburger Firm Cascade | 06/25/2018 | 06/27/2018 | Sonic |

| WI Unique Well No. | DNR Well ID No. | Well Name | Final Static Water Level | Surface Elevation | Borehole Diameter |
|---|---|---|---|---|---|
| | | | _____ Feet | 590.18 Feet MSL | 8-6 inches |

Local Grid Origin ☐ (estimated: ☐ ) or Boring ☒
State Plane 464314.25 Location 2584653.86 N E S ☐ /C ☒ /N ☐ E ☐ W
_____ 1/4 of _____ 1/4 of Section _____ ,T _____ N,R _____
Lat _____ Long _____

Local Grid Location
_____ Feet ☐ N ☐ S _____ Feet ☐ E ☐ W

| Facility ID | County | County Code | Civil Town/City/or Village |
|---|---|---|---|
| 438005590 | Marinette | 38 | Marinette |

| Sample Number and Type | Length Att. & Recovered (in) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Soil Properties: Compressive Strength | Moisture Content | Liquid Limit | Plastic Limit | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 12 | | 0 | 0-5'/ Silt/Sand/Gravel: Dark brown (10 YR 4/3) silt mixed with very fine to coarse sand , fine to medium gravel, angular to subround, very poorly sorted, loose, moist, much rootlets some organic material, grass at surface. | | | | | | | | | | |
| 2 | 60 | | 5 | 5-10'/ 5.0-7.0' Silt: Very dark grayish brown (10 YR 3/2) silt, very sandy with very fine grain sand, clayey, trace organic material/rootlets soft to somewhat loose, wet. 7.0-10.0' Sand: Brown (10 YR 5/3) moderately fine grain , well sorted, some very fine and medium grain, loose, wet. | | | | | | | | | | |
| 3 | 120 | | 10 | 10-20'/ 10.0-15.0' Sand: brown (10 YR 4/3), mostly very fine grain, well sorted, some fine grain, some silt, loose, wet. 15.0-20.0' Sand: Grayish brown (10 YR 5/2) very fine grain, well sorted, some fine grain, very silty, loose, wet. | | | | | | | | | | |
| 4 | 120 | | 20 | 20-30'/ 20.0-21.0' Sand: As above, very fine grain, wet. 21.0-24.0' Silt/Sand: Brown (7.5 YR 5/2) silt, very sandy with very fine grain sand, slight clayey, loose, wet. 24.0-25.0' Sand: Brown (10 YR 5/3) very fine grain well sorted, some silt, loose, wet. 25.0-30.0 Sand/Silt: Grayish brown (10 YR 5/2) very fine to extremely fine grain sand with silt grading to sand silt some clayey layers, well sorted sand, loose, wet. | | | | | | | | | | |

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature

Firm ARCADIS
126 N. Jefferson St., Suite 400
Milwaukee, WI (414) 276-7742

This form is authorized by Chapters 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats. Completion of this form is mandatory. Failure to file this form may result in forfeiture of between $10 and $25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any purpose. NOTE: See instructions for more information, including where the completed from should be sent.

Boring Number VAP-29



| Sample Number and Type | Sample Length All. & Recovered (in) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Soil Properties: Compressive Strength | Moisture Content | Liquid Limit | Plastic Limit | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | |
| 5 | 120 | | 30 | 30-40'/<br>30.0-37.0' Sand: Brown (10 YR 4/3) very fine to fine grain, more very fine grain, well sorted, some silt, loose, wet<br>37.0-40.0' Clay: Brown (7.5 YR 5/2) firm, very silty, moderatery plastic ,very silt trace gravel, fine to medium, subangular, very slight trace yellowish red (5 YR 46) clay laminations <1/8" thick. | | | | | | | | | | |
| 6 | 12 | | 40 | 40-45'/<br>40.0-41.0' Clay: Brown (7.5 YR 5/2) firm, very silty, slightly, plastic, wet.<br>41.0-45.0' No recovery. | | | | | | | | | | |
| 7 | 120 | | 45 | 45-55'/<br>45.0-50.0' Clay: Brown (7.5 YR 5/3) soft, very silty, somewhat plastic, muddy, disturbed soil from groundwater sample attempt, trace gravel to pebbles to 2"+ diameter, mostly angular below 43', wet.<br>50.0-52.0' Clay: As above, firm, wet.<br>52.0-55.0' Clay/Silt/Sand/Gravel: Brown (7.5 YR 5/2) mostly clay and silt matrix with very fine to coarse sand, fine to coarse gravel, angular to subangular, cobbles to 3" diameter , somewhat firm to moderately soft, somewhat plastic, wet. | | | | | | | | | | |
| 8 | 60 | | 55 | 55-60'/ Clay/Silt/Sand/Gravel: Brown (7.5 YR 4/5) clay-silt matrix with very fine to coarse sand, fine to coarse gravel, angular to subangular, very poorly sorted, extremely hard, firm, very dense, cobbles to 3" diameter, moist. | | | | | | | | | | |
| 9 | 60 | | 60 | 60-65'/ Clay/Silt/Sand/Gravel: As above, less sand/gravel/cobbles, extremely hard, moist. | | | | | | | | | | |
| 10 | 60 | | 65 | 65-70'/<br>65.0-66.0' Clay/Silt/Sand/Gravel: Same as above.<br>66.0-67.0' Silt/Clay: Gray (7.5 YR 6/2) and brown (7.5 YR 3/4) alternating fine laminations, hard.<br>67.0-69.0' Silt/Clay: Brown (7.5 YR 3/4) and hard, very slight plastic, trace gravel.<br>69.0-70.0' Silt/Clay: Gray, hard, fine, red to brown varving | | | | | | | | | | |
| 11 | 8 | | 70 | 70-75'/<br>70.0-72.0' Same as above. | | | | | | | | | | |

Boring Number VAP-29



| Sample | | | | | | | | | Soil Properties | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number and Type | Length All. & Recovered (in) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Compressive Strength | Moisture Content | Liquid Limit | Plastic Limit | P 200 | RQD/ Comments |
| | | | | 72.0-75.0' Sand/Silt: Brown (7.5 YR 4/2), mostly very fine to fine sand with some medium to coarse, poorly sorted, much gravel angular to subangular, fine to coarse, cobbles, up to 2", firm to slightly loose. | | | | | | | | | | |
| | | | 75 | | | | | | | | | | | |
| 12 | | | | 75.0-80.0'/<br>75.0-79.0' Sand/Silt: As above, very moist to wet.<br>79.0-80.0' Sand/Silt: As above, increased medium to coarse sand, mostly loose, wet. | | | | | | | | | | |
| | | | 80 | | | | | | | | | | | |
| 13 | | | | 80.0-84.0'/ Limestone: Gray to brown (10 YR 5/2), microcrystalline, horizontal fractures and bedding, some fossils, wet. | | | | | | | | | | |
| | | | 84 | | | | | | | | | | | |

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Draft

# Sample/Core Log

Boring/Well: TW-01 Project/No.: Marinette/WI001605.0009.00003 Page 1 of 1

Site Location: Marinette, WI Drilling Started: 10-30-18 15:50 Drilling Completed: 10-30-18 17:10

Total Depth Drilled: 20 Feet Hole Diameter: 8 inches Type of Sample/Coring Device: split spoon

Length and Diameter of Coring Device: 2' X 2" Sampling Interval: 2 feet

Drilling Fluid Used: None Drilling Method: Auger

Drilling Contractor: Braun Intertec Driller: Mike Heinzen Helper: Mitch Sullivan

Prepared By: Bruce Evans (BE) Hammer Weight: 140 Hammer Drop: 30 ins.

0-2' SAND/SILT: brown (7.5 YR 4/4), little silt, trace subrounded to subangular gravel from 0.25" to 0.5" diameter, fine to coarse sand, predominately fine, moderately sorted, black staining, loose, no to low cohesiveness, saturated, slight odor.

NO PID

| Sample/Core Depth (feet below land surface) From | To | Core Recovery (feet) | Blows ~~PID/FID~~ (ppm) | Sample/Core Description |
|---|---|---|---|---|
| 0 | 2 | 1.0 | 3-2-3-6 | 0-0.5 SILT/SAND/organics/ Topsoil: Dark Brown (10YR 3/6) silt with vf-fgr sd, trace f-crs gravel, much grass/roots/ decaying organics, loose, moist |
| 2 | 4 | | | 0.5-1: SAND: Dark Brown (10yr 3/6) some layers grayish brown (10yr 5/2); vf gr, well sorted, loose, trace Road Base gravel, angular 0.5-0.7, loose, moist |
| 2 | 4 | 1.5 | 3-5-5-5 | SAND: Brown (10yr 5/3), very fine gr, well sorted, some silt, loose, v moist |
| 4 | 6 | 1.0 | 2-3-4-4 | SAND: Brown (7.5yr 4/4) very fine gr, very silty, well sorted, loose, wet |
| 6 | 8 | 2 | 1-3-4-3 | SAND: a/a changing to Dark Brown (7.5yr 3/4) trace fine gr, wet |
| 8 | 10 | 1.7 | 1-1-1-1 | SAND: Brown (7.5yr 4/2), vf-fgr, some silt, well sorted, loose, wet |
| 10 | 12 | 1.8 | 1-1-2-2 | SAND: Brown (7.5yr 4/3), vf gr, very silty well sorted, loose, wet |
| 12 | 14 | 2.0 | 3-5-11-15 | SAND: Brown (7.5yr 4/3) mostly fgr, some vf or medgr, moderately well sorted, loose, some silt, wet |
| 14 | 16 | 0 | ~~4-4-4-6~~ | No Recovery / Sand heave |
| 16 | 18 | 2 | 4-4-4-6 | 16-17.5 SAND heave, a/a 12-14, wet 17.5-18: SAND Brown (7.5yr 4/2) very fgr sand, silty, grading to sandy silt, well sorted, loose, wet |
| 18 | 20 | 2.0 | 5-6-12-13 | SAND: Brown (7.5yr 4/2) fine gr, well sorted some vf gr & silt, loose, wet, (heave?) |

17:10 End Borehole at 20'
Prep to set well screen 10-20'

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5/31/2005 9:36 AM

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# Sample/Core Log

Boring/Well TW-02 Project/No. W1001605 0009.00004 Page 1 of 2

Site Location Mannette, WI Drilling Started 1200 Drilling Completed 1515

Total Depth Drilled 20 Feet Hole Diameter 2 inches Type of Sample/ Coring Device Hollow Stem auger

Length and Diameter of Coring Device _____ Sampling Interval 2 feet

Land-Surface Elev. _____ feet ☐ Surveyed ☐ Estimated Datum _____

Drilling Fluid Used _____ Drilling Method Split-Spoon

Drilling Contractor Braun Intertec Driller Mike Helper Mitch

Prepared By A. Parish Hammer Weight _____ Hammer Drop _____ ins.

| Sample/Core Depth (feet below land surface) From | To | Core Recovery (feet) | Time/Hydraulic Pressure or Blows per 6 Inches | Sample/Core Description |
|---|---|---|---|---|
| 0 | 2 | 1.5 | 2,2,1,3 | ~~0.5~~ 0-.5, organic material, sub angular |
| | | | | pebbles |
| | | | | .5-1 10YR 2/2, dark brown, sand, |
| | | | | medium grained, well sorted, moist |
| | | | | 1.5-2 no recovery |
| 2 | 4 | 1 | 3,3,4,5 | 2-3 10YR 4/6, brown, sand, fine grained, |
| | | | | well sorted, wet |
| | | | | 3-4 no recovery |
| 4 | 6 | 1 | 2,5,5,6 | 4-5 10YR 3/6, brown, sand, fine grained, |
| | | | | well sorted, wet |
| | | | | 5-6 no recovery |
| 6 | 8 | 1 | 4,5,8,10 | 6-7 same as above |
| | | | | 7-8 no recovery |
| 8 | 10 | 1 | ~~4,8,12,17~~ | 8-9 10YR 4/4, gray brown, medium grained, |
| | | | 2,6,9,10 | well sorted, wet |
| | | | | 9-10 no recovery |
| 10 | 12 | 1 | 4,8,12,17 | 10-11 same as above |
| | | | | 11-12 no recovery |
| 12 | 14 | 1 | 6,7,10,12 | 12-13 same as above |
| | | | | 13-14 no recovery |
| | | | | |

soilboring.xls
10/01/02

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# Sample/Core Log

Boring/Well TW-02 Project/No. W1001605.0009.00004 Page 2 of 2

Site Location Marinette, WI Drilling Started 1200 Drilling Completed 1515

Total Depth Drilled 20 Feet Hole Diameter 2 inches Type of Sample/ Coring Device Hollow Stem ~~auger~~ auger

Length and Diameter of Coring Device Sampling Interval 2 feet

Land-Surface Elev. feet ☐ Surveyed ☐ Estimated Datum

Drilling Fluid Used Drilling Method split-spoon

Drilling Contractor Braun Intertec Driller Mike Helper Mitch

Prepared By A. Pansh Hammer Weight Hammer Drop ins.

| Sample/Core Depth (feet below land surface) From | To | Core Recovery (feet) | Time/Hydraulic Pressure or Blows per 6 Inches | Sample/Core Description |
|---|---|---|---|---|
| 14 | 16 | 1 | 3,5,12,15 | 14-15 10YR 4/4, gray brown, sand, |
| | | | | medium grained, well sorted, wet |
| | | | | 15-16 no recovery |
| 16 | 18 | 0 | 5,9,13,16 | No recovery, sample fell out trying to |
| | | | | free rod |
| 18 | 20 | 1 | 5,6,10,13 | 18-19 same as 14-15 |
| | | | | 19-20 no recovery |

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# Sample/Core Log

Boring/Well TW-03 Project/No. WI001605.0009.00004 Page 1 of 2

Site Location Marinette, WI Drilling Started 1535 Drilling Completed 1715

Total Depth Drilled 22 Feet Hole Diameter 2 inches Type of Sample/Coring Device Hollow stem auger

Length and Diameter of Coring Device _____ Sampling Interval 2 feet

Land-Surface Elev. _____ feet ☐ Surveyed ☐ Estimated Datum _____

Drilling Fluid Used _____ Drilling Method Split-Spoon

Drilling Contractor Braun Intertec Driller Mike Helper Mitch

Prepared By A. Pansh Hammer Weight _____ Hammer Drop _____ ins.

| Sample/Core Depth (feet below land surface) From | To | Core Recovery (feet) | Time/Hydraulic Pressure or Blows per 6 Inches | Sample/Core Description |
|---|---|---|---|---|
| 0 | 2 | 1 | 2,2,2,1 | 0-1 organic material, pieces of asphalt, |
| | | | | sand/silt mixture |
| | | | | 1-2 no recovery |
| 2 | 4 | 1.5 | 2,1,4,5 | ~~2.0-3~~ 2-2.5 same as above |
| | | | | 2.5-3.5 10YR 4/6, sand, fine grained, |
| | | | | well sorted, wet, grayish brown |
| | | | | 3.5-4 no recovery |
| 4 | 6 | 1 | 2,2,3,3 | 4-5 same as 2.5-3.5 |
| | | | | 5-6 no recovery |
| 6 | 8 | 1 | 1,3,4,3 | 6-7 same as 4-5 |
| | | | | 7-8 no recovery |
| 8 | 10 | 1 | ~~1,1,2,5~~ 1,1,1,1 | 8-9 same as above |
| | | | | 9-10 no recovery |
| 10 | 12 | 1 | 1,1,2,5 | 10-11 same as above, but medium grained |
| | | | | 11-12 no recovery |
| 12 | 14 | 1 | 4,6,10,12 | 12-13 same as above, 10YR 4/4 |
| | | | | 13-14 no recovery |
| 14 | 16 | 1 | 2,6,12,13 | 14-15 same as above, 10YR 4/3, dark grayish |
| | | | | brown |
| | | | | 15-16 no recovery |
| | | | | |

soilboring.xls
10/01/02

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# Sample/Core Log

Boring/Well TW-03 Project/No. W1001605.0009.00004 Page 2 of 2

Site Location Marinette, WI Drilling Started 1535 Drilling Completed 1715

Total Depth Drilled 22 Feet Hole Diameter 2 inches Type of Sample/ Coring Device Hollow stem auger

Length and Diameter of Coring Device _____ Sampling Interval 2 feet

Land-Surface Elev. _____ feet ☐ Surveyed ☐ Estimated Datum _____

Drilling Fluid Used _____ Drilling Method split-spoon

Drilling Contractor Braun Intertec Driller Mike Helper Mitch

Prepared By A. Parish Hammer Weight _____ Hammer Drop _____ ins.

| Sample/Core Depth (feet below land surface) From | To | Core Recovery (feet) | Time/Hydraulic Pressure or Blows per 6 Inches | Sample/Core Description |
|---|---|---|---|---|
| 16 | 18 | 1 | 4,8,13,16 | 16-17 10YR 4/3 dark grayish brown, sand, |
| | | | | fine grained, well sorted, wet |
| | | | | 17-18 no recovery |
| 18 | 20 | 1 | 5,10,13,16 | 18-19 same as above |
| | | | | 19-20 no recovery |

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# Sample/Core Log

Boring/Well TW-04 Project/No. WI001605.0009.00004 Page 1 of 2

Site Location Marinette, WI Drilling Started 1145 Drilling Completed 1430

Total Depth Drilled 20 Feet Hole Diameter 2 inches Type of Sample/ Coring Device Hollow Stem auger

Length and Diameter of Coring Device Sampling Interval 2 feet

Land-Surface Elev. ____ feet ☐ Surveyed ☐ Estimated Datum

Drilling Fluid Used Drilling Method Split-Spoon

Drilling Contractor Braun Intertec Driller Mike Helper Mitch

Prepared By A. Parish Hammer Weight ____ Hammer Drop ____ ins.

| Sample/Core Depth (feet below land surface) From | To | Core Recovery (feet) | Time/Hydraulic Pressure or Blows per 6 Inches | Sample/Core Description |
|---|---|---|---|---|
| 0 | 2 | 1 | 1,2,3,4 | 0-0.5 organic material, subangular |
| | | | | pebbles, dry |
| | | | | 0.5-1 10YR 5/6, light brown, sand, |
| | | | | medium grained, well sorted, moist |
| | | | | 1-2 no recovery |
| 2 | 4 | 1 | 3,4,4,4 | 2-3 same as above, 10YR 5/4 |
| | | | | 3-4 no recovery |
| 4 | 6 | 1 | 4,4,5,4 | 4-5 same as 2-3 |
| | | | | 5-6 no recovery |
| 6 | 8 | 1.5 | 5,5,4,5 | 6-7.5 same as above, fine grained |
| | | | | 7.5-8 no recovery |
| 8 | 10 | 1.5 | 3,4,4,3 | 8-9 same as 6-7.5 |
| | | | | 9-9.5 10YR 5/8, carmel brown, sand/silt/clay |
| | | | | mixture, slightly plastic, fine grained, moist |
| | | | | 9.5-10 no recovery |
| 10 | 12 | 1.5 | 11,11,10,9 | 10-11.5 same as above, less clay |
| | | | | 11.5-12 no recovery |
| 12 | 14 | 1 | 3,4,7,7 | 12-13 10YR 4/4, grayish brown, sand, |
| | | | | med-fine grained, well sorted, wet |
| | | | | 13-14 no recovery |
| | | | | |

soilboring.xls
10/01/02

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# Sample/Core Log

Boring/Well TW-04 Project/No. WI001605.0009.00004 Page 2 of 2

Site Location Marinette, WI Drilling Started 1145 Drilling Completed 1430

Total Depth Drilled 20 Feet Hole Diameter 2 inches Type of Sample/ Coring Device Hollow Stem auger

Length and Diameter of Coring Device _____ Sampling Interval 2 feet

Land-Surface Elev. _____ feet ☐ Surveyed ☐ Estimated Datum _____

Drilling Fluid Used _____ Drilling Method Split-Spoon

Drilling Contractor Braun Intertec Driller Mike Helper Mitch

Prepared By A. Parish Hammer Weight _____ Hammer Drop _____ ins.

| Sample/Core Depth (feet below land surface) From | To | Core Recovery (feet) | Time/Hydraulic Pressure or Blows per 6 Inches | Sample/Core Description |
|---|---|---|---|---|
| 14 | 16 | 1.5 | 13,21,23,18 | 14-15.5 10YR 4/4, grayish brown, sand, |
| | | | | medium grained, well sorted, wet |
| | | | | 15.5-16 no recovery |
| 16 | 18 | 1 | 2,5,5,8 | 16-17 same as above |
| | | | | 17-18 no recovery |
| 18 | 20 | 1.5 | 1,2,5,5 | 18-19.5 same as above |
| | | | | 19.5 20 no recovery |

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10/01/02

5 coarse
1 fine
2 1/2 chips

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# Sample/Core Log

Boring/Well TW-05 Project/No. W1001605.0009.00004 Page 1 of 2

Site Location Marinette, WI Drilling Started 1500 Drilling Completed 1830

Total Depth Drilled 20 Feet Hole Diameter 2 inches Type of Sample/ Coring Device Hollow stem auger

Length and Diameter of Coring Device _____ Sampling Interval 2 feet

Land-Surface Elev. _____ feet ☐ Surveyed ☐ Estimated Datum _____

Drilling Fluid Used _____ Drilling Method Split-Spoon

Drilling Contractor Braun Intertec Driller Mike Helper Mitch

Prepared By A. Pansh Hammer Weight _____ Hammer Drop _____ ins.

| Sample/Core Depth (feet below land surface) From | To | Core Recovery (feet) | Time/Hydraulic Pressure or Blows per 6 Inches | Sample/Core Description |
|---|---|---|---|---|
| 0 | 2 | 1 | 1,2,2,3 | 0-0.5 organic material, subangular |
| | | | | pebbles, dry |
| | | | | 0.5-1 10YR 4/6, brown, sand, medium |
| | | | | grained, well sorted, moist |
| | | | | 1-2 no recovery |
| 2 | 4 | 1 | 2,2,3,3 | 2-3 same as 0.5-1 |
| | | | | 3-4 no recovery |
| 4 | 6 | 1 | 2,2,3,2 | 4-5 10YR 3/6, dark brown, silt/clay mixture, |
| | | | | fine grained, well sorted, moist |
| | | | | 5-6 no recovery |
| 6 | 8 | 1 | 3,4,7,8 | 6-7 10YR 4/3, grayish brown, silt/clay |
| | | | | mixture, fine grained, well sorted, wet |
| | | | | 7-8 no recovery |
| 8 | 10 | 1 | 5,5,4,2 | 8-9 same as above |
| | | | | 9-10 no recovery |
| 10 | 12 | 1 | 5,6,7,5 | 10-11 10YR 5/4, tan, sand, medium grained, |
| | | | | well sorted, wet |
| | | | | 11-12 no recovery |
| 12 | 14 | 1 | 3,4,9,9 | 12-13 same as above |
| | | | | 13-14 no recovery |
| | | | | |

soilboring.xls
10/01/02

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# Sample/Core Log

Boring/Well TW-05 Project/No. W1001605.0009.00004 Page 2 of 2

Site Location Marinette, WI Drilling Started 1500 Drilling Completed 1830

Total Depth Drilled 20 Feet Hole Diameter 2 inches Type of Sample/ Coring Device Hollow Stem auger

Length and Diameter of Coring Device _____ Sampling Interval 2 feet

Land-Surface Elev. _____ feet ☐ Surveyed ☐ Estimated Datum _____

Drilling Fluid Used _____ Drilling Method Split-Spoon

Drilling Contractor Braun Intertec Driller Mike Helper Mitch

Prepared By A. Parish Hammer Weight _____ Hammer Drop _____ ins.

| Sample/Core Depth (feet below land surface) From | To | Core Recovery (feet) | Time/Hydraulic Pressure or Blows per 6 Inches | Sample/Core Description |
|---|---|---|---|---|
| 14 | 16 | 1.5 | 3,7,12,13 | 14-15.5 10YR 4/3, grayish brown, sand, |
| | | | | medium grained, well sorted, wet |
| | | | | 15.5-16 no recovery |
| 16 | 18 | 1 | 7,9,8,10 | 16-17 Same as above |
| | | | | 17-18 no recovery |
| 18 | 20 | 1 | 2,3,4,4 | 18-19 Same as above |
| | | | | 19-20 no recovery |

soilboring.xls
10/01/02

State of Wis., Dept. of Natural Resources
dnr.wi.gov

# Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)



**Notice:** Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and chs. NR 141 and 812, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between $10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

[X] **Verification Only of Fill and Seal**

**Route to DNR Bureau:**
[ ] Drinking Water [ ] Watershed/Wastewater [X] Remediation/Redevelopment
[ ] Waste Management [ ] Other: _____

## 1. Well Location Information

County: Marinette
WI Unique Well # of Removed Well: ___ ___ ___ ___ ___
Hicap #:

Latitude / Longitude (see instructions): State Plane - N, E
457303.99 N, 2578839.38 E
Format Code: [ ] DD [ ] DDM
Method Code: [ ] GPS008 [ ] SCR002 [X] OTH001

¼ / ¼: ¼:
or Gov't Lot #:
Section:
Township: N
Range: [ ] E [ ] W

Well Street Address: Madson Rd
Well City, Village or Town: Peshtigo
Well ZIP Code: 54157
Subdivision Name:
Lot #:

Reason for Removal from Service: Temporary borehole; no well installed
WI Unique Well # of Replacement Well: ___ ___ ___ ___ ___

## 2. Facility / Owner Information

Facility Name: Tyco FTC
Facility ID (FID or PWS): 438005590
License/Permit/Monitoring #:
Original Well Owner: Tyco
Present Well Owner: Tyco
Mailing Address of Present Owner: 2700 Industrial Parkway South
City of Present Owner: Marinette
State: WI
ZIP Code: 54143

## 3. Filled & Sealed Well / Drillhole / Borehole Information

[ ] Monitoring Well
[ ] Water Well
[X] Borehole / Drillhole

Original Construction Date (mm/dd/yyyy): 08/15/2018
If a Well Construction Report is available, please attach.

Construction Type:
[X] Drilled [ ] Driven (Sandpoint) [ ] Dug
[ ] Other (specify): _____

Formation Type:
[X] Unconsolidated Formation [X] Bedrock

Total Well Depth From Ground Surface (ft.): 205 ft
Casing Diameter (in.): 6 in
Lower Drillhole Diameter (in.): 6 in
Casing Depth (ft.): 90 ft

Was well annular space grouted? [X] Yes [ ] No [ ] Unknown
If yes, to what depth (feet)? 90 ft
Depth to Water (feet): 5 ft

## 4. Pump, Liner, Screen, Casing & Sealing Material

| | Yes | No | N/A |
|---|---|---|---|
| Pump and piping removed? | [ ] | [ ] | [X] |
| Liner(s) removed? | [ ] | [ ] | [X] |
| Liner(s) perforated? | [ ] | [ ] | [X] |
| Screen removed? | [ ] | [ ] | [X] |
| Casing left in place? | [X] | [ ] | [ ] |
| Was casing cut off below surface? | [X] | [ ] | [ ] |
| Did sealing material rise to surface? | [X] | [ ] | [ ] |
| Did material settle after 24 hours? | [ ] | [X] | [ ] |
| If yes, was hole retopped? | [ ] | [ ] | [X] |
| If bentonite chips were used, were they hydrated with water from a known safe source? | [ ] | [ ] | [X] |

Required Method of Placing Sealing Material
[ ] Conductor Pipe-Gravity [X] Conductor Pipe-Pumped
[ ] Screened & Poured (Bentonite Chips) [ ] Other (Explain): _____

Sealing Materials
[X] Neat Cement Grout [ ] Concrete
[ ] Sand-Cement (Concrete) Grout [ ] Bentonite Chips

*For Monitoring Wells and Monitoring Well Boreholes Only:*
[ ] Bentonite Chips [ ] Bentonite - Cement Grout
[ ] Granular Bentonite [ ] Bentonite - Sand Slurry

## 5. Material Used to Fill Well / Drillhole

| Material | From (ft.) | To (ft.) | No. Yards, Sacks Sealant or Volume (circle one) | Mix Ratio or Mud Weight |
|---|---|---|---|---|
| Bentonite/Cement Grout | Surface | 205 ft | Approximately 240 gallons | Standard 15.2 lbs |
| | | | | |
| | | | | |

## 6. Comments

MW-100B (VAP-30)

## 7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing: Arcadis, Bruce Evans
License #: 484-13
Date of Filling & Sealing or Verification (mm/dd/yyyy): 09/05/2018
Street or Route: 126 N. Jefferson Street, Suite 400
Telephone Number: ( 414 ) 276-7742
City: Milwaukee
State: WI
ZIP Code: 53202
Signature of Person Doing Work: Bruce Evans
Date Signed: 09/06/2018

**DNR Use Only**
Date Received:
Noted By:
Comments:

State of Wis., Dept. of Natural Resources
dnr.wi.gov

# Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)



**Notice:** Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and chs. NR 141 and 812, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between $10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

[X] **Verification Only of Fill and Seal**

**Route to DNR Bureau:**
[ ] Drinking Water [ ] Watershed/Wastewater [X] Remediation/Redevelopment
[ ] Waste Management [ ] Other: _____

## 1. Well Location Information

County: Marinette
WI Unique Well # of Removed Well: _ _ _ _ _
Hicap #:

Latitude / Longitude (see instructions): State Plane - N, E
459904.05 N, 2580493.53 E
Format Code: [ ] DD [ ] DDM
Method Code: [ ] GPS008 [ ] SCR002 [X] OTH001

¼ / ¼: ¼:
or Gov't Lot #:
Section:
Township: N
Range: [ ] E [ ] W

Well Street Address: City Hwy B
Well City, Village or Town: Marinette
Well ZIP Code: 54143
Subdivision Name:
Lot #:

Reason for Removal from Service: Temporary borehole; no well installed
WI Unique Well # of Replacement Well: _ _ _ _ _

## 2. Facility / Owner Information

Facility Name: Tyco FTC
Facility ID (FID or PWS): 438005590
License/Permit/Monitoring #:
Original Well Owner: Tyco
Present Well Owner: Tyco
Mailing Address of Present Owner: 2700 Industrial Parkway South
City of Present Owner: Marinette
State: WI
ZIP Code: 54143

## 3. Filled & Sealed Well / Drillhole / Borehole Information

[ ] Monitoring Well
[ ] Water Well
[X] Borehole / Drillhole

Original Construction Date (mm/dd/yyyy): 06/29/2018
If a Well Construction Report is available, please attach.

Construction Type:
[X] Drilled [ ] Driven (Sandpoint) [ ] Dug
[ ] Other (specify): _____

Formation Type:
[X] Unconsolidated Formation [ ] Bedrock

Total Well Depth From Ground Surface (ft.): 205 ft
Casing Diameter (in.): 6 in
Lower Drillhole Diameter (in.): 6 in
Casing Depth (ft.): 97 ft

Was well annular space grouted? [ ] Yes [ ] No [ ] Unknown
If yes, to what depth (feet)? 97 ft
Depth to Water (feet): 10 ft

## 4. Pump, Liner, Screen, Casing & Sealing Material

| | Yes | No | N/A |
|---|---|---|---|
| Pump and piping removed? | [ ] | [ ] | [X] |
| Liner(s) removed? | [ ] | [ ] | [X] |
| Liner(s) perforated? | [ ] | [ ] | [X] |
| Screen removed? | [ ] | [ ] | [X] |
| Casing left in place? | [X] | [ ] | [ ] |
| Was casing cut off below surface? | [X] | [ ] | [ ] |
| Did sealing material rise to surface? | [X] | [ ] | [ ] |
| Did material settle after 24 hours? | [ ] | [X] | [ ] |
| If yes, was hole retopped? | [ ] | [ ] | [X] |
| If bentonite chips were used, were they hydrated with water from a known safe source? | [ ] | [ ] | [X] |

Required Method of Placing Sealing Material
[ ] Conductor Pipe-Gravity [X] Conductor Pipe-Pumped
[ ] Screened & Poured (Bentonite Chips) [ ] Other (Explain): _____

Sealing Materials
[X] Neat Cement Grout [ ] Concrete
[ ] Sand-Cement (Concrete) Grout [ ] Bentonite Chips

*For Monitoring Wells and Monitoring Well Boreholes Only:*
[X] Bentonite Chips [ ] Bentonite - Cement Grout
[ ] Granular Bentonite [ ] Bentonite - Sand Slurry

## 5. Material Used to Fill Well / Drillhole

| Material | From (ft.) | To (ft.) | No. Yards, Sacks Sealant or Volume (circle one) | Mix Ratio or Mud Weight |
|---|---|---|---|---|
| Bentonite/Cement Grout | Surface | 205 ft | Approximately 240 gallons | Standard 15.2 lbs |
| | | | | |
| | | | | |

## 6. Comments

MW-101B (VAP-26)

## 7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing: Arcadis, Bruce Evans
License #: 484-13
Date of Filling & Sealing or Verification (mm/dd/yyyy): 09/04/2018
Street or Route: 126 N. Jefferson Street, Suite 400
Telephone Number: ( 414 ) 276-7742
City: Milwaukee
State: WI
ZIP Code: 53202
Signature of Person Doing Work:
Date Signed: 09/06/2018

**DNR Use Only**
Date Received:
Noted By:
Comments:

State of Wis., Dept. of Natural Resources
dnr.wi.gov

# Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)



**Notice:** Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and chs. NR 141 and 812, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between $10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

[x] **Verification Only of Fill and Seal**

**Route to DNR Bureau:**
[ ] Drinking Water [ ] Watershed/Wastewater [x] Remediation/Redevelopment
[ ] Waste Management [ ] Other: _____

## 1. Well Location Information

County: Marinette
WI Unique Well # of Removed Well: ___ ___ ___ ___ ___
Hicap #:

Latitude / Longitude (see instructions): State Plane - N, E
463801.72 N, 2579620.21 E
Format Code: [ ] DD [ ] DDM
Method Code: [ ] GPS008 [ ] SCR002 [x] OTH001

¼ / ¼: ¼:
or Gov't Lot #:
Section:
Township: N
Range: [ ] E [ ] W

Well Street Address: Madson Rd
Well City, Village or Town: Marinette
Well ZIP Code: 54143
Subdivision Name:
Lot #:

Reason for Removal from Service: Temporary borehole; no well installed
WI Unique Well # of Replacement Well: ___ ___ ___ ___ ___

## 2. Facility / Owner Information

Facility Name: Tyco FTC
Facility ID (FID or PWS): 438005590
License/Permit/Monitoring #:
Original Well Owner: Tyco
Present Well Owner: Tyco
Mailing Address of Present Owner: 2700 Industrial Parkway South
City of Present Owner: Marinette
State: WI
ZIP Code: 54143

## 3. Filled & Sealed Well / Drillhole / Borehole Information

[ ] Monitoring Well
[ ] Water Well
[x] Borehole / Drillhole

Original Construction Date (mm/dd/yyyy): 07/05/2018
If a Well Construction Report is available, please attach.

Construction Type:
[x] Drilled [ ] Driven (Sandpoint) [ ] Dug
[ ] Other (specify): _____

Formation Type:
[x] Unconsolidated Formation [x] Bedrock

Total Well Depth From Ground Surface (ft.): 205 ft
Casing Diameter (in.): 6 in
Lower Drillhole Diameter (in.): 6 in
Casing Depth (ft.): 70 ft

Was well annular space grouted? [x] Yes [ ] No [ ] Unknown
If yes, to what depth (feet)? 70 ft
Depth to Water (feet): 10 ft

## 4. Pump, Liner, Screen, Casing & Sealing Material

| | Yes | No | N/A |
|---|---|---|---|
| Pump and piping removed? | [ ] | [ ] | [x] |
| Liner(s) removed? | [ ] | [ ] | [x] |
| Liner(s) perforated? | [ ] | [ ] | [x] |
| Screen removed? | [ ] | [ ] | [x] |
| Casing left in place? | [x] | [ ] | [ ] |
| Was casing cut off below surface? | [x] | [ ] | [ ] |
| Did sealing material rise to surface? | [x] | [ ] | [ ] |
| Did material settle after 24 hours? | [ ] | [x] | [ ] |
| If yes, was hole retopped? | [ ] | [ ] | [x] |
| If bentonite chips were used, were they hydrated with water from a known safe source? | [ ] | [ ] | [x] |

Required Method of Placing Sealing Material
[ ] Conductor Pipe-Gravity [x] Conductor Pipe-Pumped
[ ] Screened & Poured (Bentonite Chips) [ ] Other (Explain): _____

Sealing Materials
[x] Neat Cement Grout [ ] Concrete
[ ] Sand-Cement (Concrete) Grout [ ] Bentonite Chips

*For Monitoring Wells and Monitoring Well Boreholes Only:*
[ ] Bentonite Chips [ ] Bentonite - Cement Grout
[ ] Granular Bentonite [ ] Bentonite - Sand Slurry

## 5. Material Used to Fill Well / Drillhole

| Material | From (ft.) | To (ft.) | No. Yards, Sacks Sealant or Volume (circle one) | Mix Ratio or Mud Weight |
|---|---|---|---|---|
| Bentonite/Cement Grout | Surface | 205 ft | Approximately 240 gallons | Standard 15.2 lbs |
| | | | | |
| | | | | |

## 6. Comments

MW-102B

## 7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing: Arcadis, Bruce Evans
License #: 484-13
Date of Filling & Sealing or Verification (mm/dd/yyyy): 09/05/2018
Street or Route: 126 N. Jefferson Street, Suite 400
Telephone Number: ( 414 ) 276-7742
City: Milwaukee
State: WI
ZIP Code: 53202
Signature of Person Doing Work:
Date Signed: 09/06/2018

**DNR Use Only**
Date Received:
Noted By:
Comments:

State of Wis., Dept. of Natural Resources
dnr.wi.gov

# Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)



**Notice:** Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and chs. NR 141 and 812, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between $10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

[X] **Verification Only of Fill and Seal**

**Route to DNR Bureau:**
[ ] Drinking Water [ ] Watershed/Wastewater [X] Remediation/Redevelopment
[ ] Waste Management [ ] Other: _____

## 1. Well Location Information

County: Marinette
WI Unique Well # of Removed Well: ___ ___ ___ ___ ___
Hicap #:

Latitude / Longitude (see instructions): State Plane - N, E
458754.43 N, 2579584.99 E
Format Code: [ ] DD [ ] DDM
Method Code: [ ] GPS008 [ ] SCR002 [x] OTH001

¼ / ¼: ¼:
or Gov't Lot #:
Section:
Township: N
Range: [ ] E [ ] W

Well Street Address: City Hwy B

Well City, Village or Town: Peshtigo
Well ZIP Code: 54157

Subdivision Name:
Lot #:

Reason for Removal from Service: Temporary Borehole
WI Unique Well # of Replacement Well: ___ ___ ___ ___ ___

## 2. Facility / Owner Information

Facility Name: Tyco FTC
Facility ID (FID or PWS): 438005590
License/Permit/Monitoring #:
Original Well Owner: Tyco
Present Well Owner: Tyco
Mailing Address of Present Owner: 2700 Industrial Parkway South
City of Present Owner: Marinette
State: WI
ZIP Code: 54143

## 3. Filled & Sealed Well / Drillhole / Borehole Information

[ ] Monitoring Well
[ ] Water Well
[X] Borehole / Drillhole

Original Construction Date (mm/dd/yyyy): 06/25/2018
If a Well Construction Report is available, please attach.

Construction Type:
[X] Drilled [ ] Driven (Sandpoint) [ ] Dug
[ ] Other (specify): _____

Formation Type:
[X] Unconsolidated Formation [ ] Bedrock

Total Well Depth From Ground Surface (ft.): 87.5 ft
Casing Diameter (in.): N/A
Lower Drillhole Diameter (in.): 6 in
Casing Depth (ft.): N/A

Was well annular space grouted? [ ] Yes [X] No [ ] Unknown
If yes, to what depth (feet)? 97 ft
Depth to Water (feet): 10 ft

## 4. Pump, Liner, Screen, Casing & Sealing Material

| | Yes | No | N/A |
|---|---|---|---|
| Pump and piping removed? | [ ] | [ ] | [X] |
| Liner(s) removed? | [ ] | [ ] | [X] |
| Liner(s) perforated? | [ ] | [ ] | [X] |
| Screen removed? | [ ] | [ ] | [X] |
| Casing left in place? | [ ] | [ ] | [X] |
| Was casing cut off below surface? | [ ] | [ ] | [X] |
| Did sealing material rise to surface? | [X] | [ ] | [ ] |
| Did material settle after 24 hours? | [X] | [ ] | [ ] |
| If yes, was hole retopped? | [X] | [ ] | [ ] |
| If bentonite chips were used, were they hydrated with water from a known safe source? | [ ] | [ ] | [X] |

Required Method of Placing Sealing Material
[ ] Conductor Pipe-Gravity [X] Conductor Pipe-Pumped
[ ] Screened & Poured (Bentonite Chips) [ ] Other (Explain): _____

Sealing Materials
[X] Neat Cement Grout Bentonite [ ] Concrete
[ ] Sand-Cement (Concrete) Grout [ ] Bentonite Chips

*For Monitoring Wells and Monitoring Well Boreholes Only:*
[ ] Bentonite Chips [ ] Bentonite - Cement Grout
[ ] Granular Bentonite [ ] Bentonite - Sand Slurry

## 5. Material Used to Fill Well / Drillhole

| Material | From (ft.) | To (ft.) | No. Yards, Sacks Sealant or Volume (circle one) | Mix Ratio or Mud Weight |
|---|---|---|---|---|
| Bentonite Grout | Surface | 87.5 | Approximately 180 gallons | 3 Bag/45 gallons |
| | | | | |
| | | | | |

## 6. Comments

VAP-27

## 7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing: Arcadis, Bruce Evans
License #: 484-13
Date of Filling & Sealing or Verification (mm/dd/yyyy): 6/25/2018
Street or Route: 126 N. Jefferson Street, Suite 400
Telephone Number: ( 414 ) 276-7742
City: Milwaukee
State: WI
ZIP Code: 53202
Signature of Person Doing Work: Bruce Evans
Date Signed: 09/06/2018

**DNR Use Only**
Date Received:
Noted By:
Comments:

State of Wis., Dept. of Natural Resources
dnr.wi.gov

# Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)



**Notice:** Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and chs. NR 141 and 812, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between $10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

[X] **Verification Only of Fill and Seal**

**Route to DNR Bureau:**
[ ] Drinking Water [ ] Watershed/Wastewater [X] Remediation/Redevelopment
[ ] Waste Management [ ] Other: _____

## 1. Well Location Information

County: Marinette
WI Unique Well # of Removed Well: ___ ___ ___ ___ ___
Hicap #:

Latitude / Longitude (see instructions): State Plane - N, E
454795.86 N, 2581175.38 E
Format Code: [ ] DD [ ] DDM
Method Code: [ ] GPS008 [ ] SCR002 [x] OTH001

¼ / ¼: ¼:
or Gov't Lot #:
Section:
Township: N
Range: [ ] E [ ] W

Well Street Address: Radar Rd
Well City, Village or Town: Peshtigo
Well ZIP Code: 54157
Subdivision Name:
Lot #:

Reason for Removal from Service: Temporary Borehole
WI Unique Well # of Replacement Well: ___ ___ ___ ___ ___

## 2. Facility / Owner Information

Facility Name: Tyco FTC
Facility ID (FID or PWS): 438005590
License/Permit/Monitoring #:
Original Well Owner: Tyco
Present Well Owner: Tyco
Mailing Address of Present Owner: 2700 Industrial Parkway South
City of Present Owner: Marinette
State: WI
ZIP Code: 54143

## 3. Filled & Sealed Well / Drillhole / Borehole Information

[ ] Monitoring Well
[ ] Water Well
[X] Borehole / Drillhole

Original Construction Date (mm/dd/yyyy): 08/16/2018
If a Well Construction Report is available, please attach.

Construction Type:
[X] Drilled [ ] Driven (Sandpoint) [ ] Dug
[ ] Other (specify): _____

Formation Type:
[X] Unconsolidated Formation [ ] Bedrock

Total Well Depth From Ground Surface (ft.): 102 ft
Casing Diameter (in.): N/A
Lower Drillhole Diameter (in.): 6 in
Casing Depth (ft.): N/A

Was well annular space grouted? [ ] Yes [X] No [ ] Unknown
If yes, to what depth (feet)? N/A
Depth to Water (feet): 10 ft

## 4. Pump, Liner, Screen, Casing & Sealing Material

| | Yes | No | N/A |
|---|---|---|---|
| Pump and piping removed? | [ ] | [ ] | [X] |
| Liner(s) removed? | [ ] | [ ] | [X] |
| Liner(s) perforated? | [ ] | [ ] | [X] |
| Screen removed? | [ ] | [ ] | [X] |
| Casing left in place? | [ ] | [ ] | [X] |
| Was casing cut off below surface? | [ ] | [ ] | [X] |
| Did sealing material rise to surface? | [X] | [ ] | [ ] |
| Did material settle after 24 hours? | [X] | [ ] | [ ] |
| If yes, was hole retopped? | [X] | [ ] | [ ] |
| If bentonite chips were used, were they hydrated with water from a known safe source? | [ ] | [ ] | [X] |

Required Method of Placing Sealing Material
[ ] Conductor Pipe-Gravity [X] Conductor Pipe-Pumped
[ ] Screened & Poured (Bentonite Chips) [ ] Other (Explain): _____

Sealing Materials
[X] Neat Cement Grout Bentonite [ ] Concrete
[ ] Sand-Cement (Concrete) Grout [ ] Bentonite Chips

*For Monitoring Wells and Monitoring Well Boreholes Only:*
[ ] Bentonite Chips [ ] Bentonite - Cement Grout
[ ] Granular Bentonite [ ] Bentonite - Sand Slurry

## 5. Material Used to Fill Well / Drillhole

| Material | From (ft.) | To (ft.) | No. Yards, Sacks Sealant or Volume (circle one) | Mix Ratio or Mud Weight |
|---|---|---|---|---|
| Bentonite Grout | Surface | 102 | Approximately 180 gallons | 3 bags/45 gallons |
| | | | | |
| | | | | |

## 6. Comments

VAP-28

## 7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing: Arcadis, Bruce Evans
License #: 484-13
Date of Filling & Sealing or Verification (mm/dd/yyyy): 08/17/2018
Street or Route: 126 N. Jefferson Street, Suite 400
Telephone Number: ( 414 ) 276-7742
City: Milwaukee
State: WI
ZIP Code: 53202
Signature of Person Doing Work: Bruce Evans
Date Signed: 09/06/2018

**DNR Use Only**
Date Received:
Noted By:
Comments:

State of Wis., Dept. of Natural Resources
dnr.wi.gov

# Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)



**Notice:** Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and chs. NR 141 and 812, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between $10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

[X] **Verification Only of Fill and Seal**

**Route to DNR Bureau:**
[ ] Drinking Water [ ] Watershed/Wastewater [X] Remediation/Redevelopment
[ ] Waste Management [ ] Other: _____

## 1. Well Location Information

County: Marinette
WI Unique Well # of Removed Well: ___ ___ ___ ___ ___
Hicap #:

Latitude / Longitude (see instructions): State Plane - N, E
464314.25 N, 2584653.86 E
Format Code: [ ] DD [ ] DDM
Method Code: [ ] GPS008 [ ] SCR002 [X] OTH001

¼ / ¼: ¼: Section: Township: N Range: [ ] E [ ] W
or Gov't Lot #:

Well Street Address: Lincoln
Well City, Village or Town: Marinette
Well ZIP Code: 54143
Subdivision Name:
Lot #:

Reason for Removal from Service: Temporary Borehole
WI Unique Well # of Replacement Well: ___ ___ ___ ___ ___

## 2. Facility / Owner Information

Facility Name: Tyco FTC
Facility ID (FID or PWS): 438005590
License/Permit/Monitoring #:
Original Well Owner: Tyco
Present Well Owner: Tyco
Mailing Address of Present Owner: 2700 Industrial Parkway South
City of Present Owner: Marinette State: WI ZIP Code: 54143

## 3. Filled & Sealed Well / Drillhole / Borehole Information

[ ] Monitoring Well
[ ] Water Well
[X] Borehole / Drillhole

Original Construction Date (mm/dd/yyyy): 06/27/2018
If a Well Construction Report is available, please attach.

Construction Type:
[X] Drilled [ ] Driven (Sandpoint) [ ] Dug
[ ] Other (specify): _____

Formation Type:
[X] Unconsolidated Formation [ ] Bedrock

Total Well Depth From Ground Surface (ft.): 84 ft
Casing Diameter (in.): N/A
Lower Drillhole Diameter (in.): 6 in
Casing Depth (ft.): N/A

Was well annular space grouted? [ ] Yes [X] No [ ] Unknown
If yes, to what depth (feet)? N/A
Depth to Water (feet): 10 ft

## 4. Pump, Liner, Screen, Casing & Sealing Material

| | Yes | No | N/A |
|---|---|---|---|
| Pump and piping removed? | [ ] | [ ] | [X] |
| Liner(s) removed? | [ ] | [ ] | [X] |
| Liner(s) perforated? | [ ] | [ ] | [X] |
| Screen removed? | [ ] | [ ] | [X] |
| Casing left in place? | [ ] | [ ] | [X] |
| Was casing cut off below surface? | [ ] | [ ] | [X] |
| Did sealing material rise to surface? | [X] | [ ] | [ ] |
| Did material settle after 24 hours? | [X] | [ ] | [ ] |
| If yes, was hole retopped? | [X] | [ ] | [ ] |
| If bentonite chips were used, were they hydrated with water from a known safe source? | [ ] | [ ] | [X] |

Required Method of Placing Sealing Material
[ ] Conductor Pipe-Gravity [X] Conductor Pipe-Pumped
[ ] Screened & Poured (Bentonite Chips) [ ] Other (Explain): _____

Sealing Materials
[X] Neat Cement Grout Bentonite [ ] Concrete
[ ] Sand-Cement (Concrete) Grout [ ] Bentonite Chips

*For Monitoring Wells and Monitoring Well Boreholes Only:*
[ ] Bentonite Chips [ ] Bentonite - Cement Grout
[ ] Granular Bentonite [ ] Bentonite - Sand Slurry

## 5. Material Used to Fill Well / Drillhole

| Material | From (ft.) | To (ft.) | No. Yards, Sacks Sealant or Volume (circle one) | Mix Ratio or Mud Weight |
|---|---|---|---|---|
| Bentonite Grout | Surface | 84 | Approximately 120 gallons | 3 bags/45 gallons |
| | | | | |
| | | | | |

## 6. Comments

VAP-29

## 7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing: Arcadis, Bruce Evans
License #: 484-13
Date of Filling & Sealing or Verification (mm/dd/yyyy): 6/28/2018
Street or Route: 126 N. Jefferson Street, Suite 400
Telephone Number: ( 414 ) 276-7742
City: Milwaukee State: WI ZIP Code: 53202
Signature of Person Doing Work:
Date Signed: 09/06/2018

**DNR Use Only**
Date Received:
Noted By:
Comments:

State of Wis., Dept. of Natural Resources
dnr.wi.gov

# Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)



**Notice:** Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and chs. NR 141 and 812, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between $10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

[X] **Verification Only of Fill and Seal**

**Route to DNR Bureau:**
[ ] Drinking Water [ ] Watershed/Wastewater [X] Remediation/Redevelopment
[ ] Waste Management [ ] Other: _____

## 1. Well Location Information

County: Marinette
WI Unique Well # of Removed Well: ___ ___ ___ ___ ___
Hicap #:

Latitude / Longitude (see instructions): State Plane - N, E
467496.78 N, 2578332.58 E
Format Code: [ ] DD [ ] DDM
Method Code: [ ] GPS008 [ ] SCR002 [X] OTH001

¼ / ¼: ¼:
or Gov't Lot #:
Section:
Township: N
Range: [ ] E [ ] W

Well Street Address: State St
Well City, Village or Town: Marinette
Well ZIP Code: 54143
Subdivision Name:
Lot #:

Reason for Removal from Service: Temporary Borehole
WI Unique Well # of Replacement Well: ___ ___ ___ ___ ___

## 2. Facility / Owner Information

Facility Name: Tyco FTC
Facility ID (FID or PWS): 438005590
License/Permit/Monitoring #:
Original Well Owner: Tyco
Present Well Owner: Tyco
Mailing Address of Present Owner: 2700 Industrial Parkway South
City of Present Owner: Marinette
State: WI
ZIP Code: 54143

## 3. Filled & Sealed Well / Drillhole / Borehole Information

[ ] Monitoring Well
[ ] Water Well
[X] Borehole / Drillhole

Original Construction Date (mm/dd/yyyy): 06/28/2018
If a Well Construction Report is available, please attach.

Construction Type:
[ ] Drilled [ ] Driven (Sandpoint) [ ] Dug
[X] Other (specify): Geoprobe, direct push

Formation Type:
[X] Unconsolidated Formation [ ] Bedrock

Total Well Depth From Ground Surface (ft.): 10 ft
Casing Diameter (in.):
Lower Drillhole Diameter (in.): 2 in
Casing Depth (ft.):

Was well annular space grouted? [ ] Yes [X] No [ ] Unknown
If yes, to what depth (feet)?
Depth to Water (feet)

## 4. Pump, Liner, Screen, Casing & Sealing Material

| | Yes | No | N/A |
|---|---|---|---|
| Pump and piping removed? | [ ] | [ ] | [X] |
| Liner(s) removed? | [ ] | [ ] | [X] |
| Liner(s) perforated? | [ ] | [ ] | [X] |
| Screen removed? | [ ] | [ ] | [X] |
| Casing left in place? | [ ] | [ ] | [X] |
| Was casing cut off below surface? | [ ] | [ ] | [X] |
| Did sealing material rise to surface? | [ ] | [ ] | [X] |
| Did material settle after 24 hours? | [ ] | [ ] | [X] |
| If yes, was hole retopped? | [ ] | [ ] | [X] |
| If bentonite chips were used, were they hydrated with water from a known safe source? | [ ] | [ ] | [X] |

Required Method of Placing Sealing Material
[X] Conductor Pipe-Gravity [ ] Conductor Pipe-Pumped
[ ] Screened & Poured (Bentonite Chips) [ ] Other (Explain): _____

Sealing Materials
[ ] Neat Cement Grout [ ] Concrete
[ ] Sand-Cement (Concrete) Grout [ ] Bentonite Chips

*For Monitoring Wells and Monitoring Well Boreholes Only:*
[X] Bentonite Chips [ ] Bentonite - Cement Grout
[ ] Granular Bentonite [ ] Bentonite - Sand Slurry

## 5. Material Used to Fill Well / Drillhole

| Material | From (ft.) | To (ft.) | No. Yards, Sacks Sealant or Volume (circle one) | Mix Ratio or Mud Weight |
|---|---|---|---|---|
| Bentonite | Surface | 10 | | |
| | | | | |
| | | | | |

## 6. Comments

VAP-31

## 7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing: Braun Intertec/Range Drilling, Arcadis (Amy Parish)
License #:
Date of Filling & Sealing or Verification (mm/dd/yyyy): 6/28/2018
Street or Route: 126 N. Jefferson Street, Suite 400
Telephone Number: ( 414 ) 276-7742
City: Milwaukee
State: WI
ZIP Code: 53202
Signature of Person Doing Work: Amy Parish
Date Signed: 9/27/2018

**DNR Use Only**
Date Received:
Noted By:
Comments:

State of Wis., Dept. of Natural Resources
dnr.wi.gov

# Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)



**Notice:** Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and chs. NR 141 and 812, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between $10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

[X] **Verification Only of Fill and Seal**

**Route to DNR Bureau:**
[ ] Drinking Water [ ] Watershed/Wastewater [X] Remediation/Redevelopment
[ ] Waste Management [ ] Other: _____

## 1. Well Location Information

County: Marinette
WI Unique Well # of Removed Well: _ _ _ _ _
Hicap #:

Latitude / Longitude (see instructions): State Plane - N, E
467496.78 N, 2578332.58 E
Format Code: [ ] DD [ ] DDM
Method Code: [ ] GPS008 [ ] SCR002 [X] OTH001

¼ / ¼: ¼ or Gov't Lot #: Section: Township: N Range: [ ] E [ ] W

Well Street Address: State St
Well City, Village or Town: Marinette
Well ZIP Code: 54143
Subdivision Name:
Lot #:

Reason for Removal from Service: Temporary Borehole
WI Unique Well # of Replacement Well: _ _ _ _ _

## 2. Facility / Owner Information

Facility Name: Tyco FTC
Facility ID (FID or PWS): 438005590
License/Permit/Monitoring #:
Original Well Owner: Tyco
Present Well Owner: Tyco
Mailing Address of Present Owner: 2700 Industrial Parkway South
City of Present Owner: Marinette State: WI ZIP Code: 54143

## 3. Filled & Sealed Well / Drillhole / Borehole Information

[ ] Monitoring Well
[ ] Water Well
[X] Borehole / Drillhole

Original Construction Date (mm/dd/yyyy): 06/28/2018
If a Well Construction Report is available, please attach.

Construction Type:
[ ] Drilled [ ] Driven (Sandpoint) [ ] Dug
[X] Other (specify): Geoprobe, direct push

Formation Type:
[X] Unconsolidated Formation [ ] Bedrock

Total Well Depth From Ground Surface (ft.): 20 ft
Casing Diameter (in.):
Lower Drillhole Diameter (in.): 2 in
Casing Depth (ft.):

Was well annular space grouted? [ ] Yes [X] No [ ] Unknown
If yes, to what depth (feet)?
Depth to Water (feet)

## 4. Pump, Liner, Screen, Casing & Sealing Material

| | Yes | No | N/A |
|---|---|---|---|
| Pump and piping removed? | [ ] | [ ] | [X] |
| Liner(s) removed? | [ ] | [ ] | [X] |
| Liner(s) perforated? | [ ] | [ ] | [X] |
| Screen removed? | [ ] | [ ] | [X] |
| Casing left in place? | [ ] | [ ] | [X] |
| Was casing cut off below surface? | [ ] | [ ] | [X] |
| Did sealing material rise to surface? | [ ] | [ ] | [X] |
| Did material settle after 24 hours? | [ ] | [ ] | [X] |
| If yes, was hole retopped? | [ ] | [ ] | [X] |
| If bentonite chips were used, were they hydrated with water from a known safe source? | [ ] | [ ] | [X] |

Required Method of Placing Sealing Material
[X] Conductor Pipe-Gravity [ ] Conductor Pipe-Pumped
[ ] Screened & Poured (Bentonite Chips) [ ] Other (Explain): _____

Sealing Materials
[ ] Neat Cement Grout [ ] Concrete
[ ] Sand-Cement (Concrete) Grout [ ] Bentonite Chips

*For Monitoring Wells and Monitoring Well Boreholes Only:*
[X] Bentonite Chips [ ] Bentonite - Cement Grout
[ ] Granular Bentonite [ ] Bentonite - Sand Slurry

## 5. Material Used to Fill Well / Drillhole

| Material | From (ft.) | To (ft.) | No. Yards, Sacks Sealant or Volume (circle one) | Mix Ratio or Mud Weight |
|---|---|---|---|---|
| Bentonite | Surface | 20 | | |
| | | | | |
| | | | | |

## 6. Comments

VAP-31

## 7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing: Braun Intertec/Range Drilling, Arcadis (Amy Parish)
License #:
Date of Filling & Sealing or Verification (mm/dd/yyyy): 6/28/2018
Street or Route: 126 N. Jefferson Street, Suite 400
Telephone Number: ( 414 ) 276-7742
City: Milwaukee State: WI ZIP Code: 53202
Signature of Person Doing Work: Amy Parish
Date Signed: 9/27/2018

**DNR Use Only**
Date Received:
Noted By:
Comments:

State of Wis., Dept. of Natural Resources
dnr.wi.gov

# Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)



**Notice:** Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and chs. NR 141 and 812, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between $10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

[X] **Verification Only of Fill and Seal**

**Route to DNR Bureau:**
[ ] Drinking Water [ ] Watershed/Wastewater [X] Remediation/Redevelopment
[ ] Waste Management [ ] Other: _____

## 1. Well Location Information

County: Marinette
WI Unique Well # of Removed Well: ___ ___ ___ ___ ___
Hicap #:

Latitude / Longitude (see instructions): State Plane - N, E
467496.78 N, 2578332.58 E
Format Code: [ ] DD [ ] DDM
Method Code: [ ] GPS008 [ ] SCR002 [X] OTH001

¼ / ¼: ¼:
or Gov't Lot #:
Section:
Township: N
Range: [ ] E [ ] W

Well Street Address: State St
Well City, Village or Town: Marinette
Well ZIP Code: 54143
Subdivision Name:
Lot #:

Reason for Removal from Service: Temporary Borehole
WI Unique Well # of Replacement Well: ___ ___ ___ ___ ___

## 2. Facility / Owner Information

Facility Name: Tyco FTC
Facility ID (FID or PWS): 438005590
License/Permit/Monitoring #:
Original Well Owner: Tyco
Present Well Owner: Tyco
Mailing Address of Present Owner: 2700 Industrial Parkway South
City of Present Owner: Marinette
State: WI
ZIP Code: 54143

## 3. Filled & Sealed Well / Drillhole / Borehole Information

[ ] Monitoring Well
[ ] Water Well
[X] Borehole / Drillhole

Original Construction Date (mm/dd/yyyy): 06/28/2018
If a Well Construction Report is available, please attach.

Construction Type:
[ ] Drilled [ ] Driven (Sandpoint) [ ] Dug
[X] Other (specify): Geoprobe, direct push

Formation Type:
[X] Unconsolidated Formation [ ] Bedrock

Total Well Depth From Ground Surface (ft.): 25 ft
Casing Diameter (in.):
Lower Drillhole Diameter (in.): 2 in
Casing Depth (ft.):

Was well annular space grouted? [ ] Yes [X] No [ ] Unknown
If yes, to what depth (feet)?
Depth to Water (feet)

## 4. Pump, Liner, Screen, Casing & Sealing Material

| | Yes | No | N/A |
|---|---|---|---|
| Pump and piping removed? | [ ] | [ ] | [X] |
| Liner(s) removed? | [ ] | [ ] | [X] |
| Liner(s) perforated? | [ ] | [ ] | [X] |
| Screen removed? | [ ] | [ ] | [X] |
| Casing left in place? | [ ] | [ ] | [X] |
| Was casing cut off below surface? | [ ] | [ ] | [X] |
| Did sealing material rise to surface? | [ ] | [ ] | [X] |
| Did material settle after 24 hours? | [ ] | [ ] | [X] |
| If yes, was hole retopped? | [ ] | [ ] | [X] |
| If bentonite chips were used, were they hydrated with water from a known safe source? | [ ] | [ ] | [X] |

Required Method of Placing Sealing Material
[X] Conductor Pipe-Gravity [ ] Conductor Pipe-Pumped
[ ] Screened & Poured (Bentonite Chips) [ ] Other (Explain): _____

Sealing Materials
[ ] Neat Cement Grout [ ] Concrete
[ ] Sand-Cement (Concrete) Grout [ ] Bentonite Chips

*For Monitoring Wells and Monitoring Well Boreholes Only:*
[X] Bentonite Chips [ ] Bentonite - Cement Grout
[ ] Granular Bentonite [ ] Bentonite - Sand Slurry

## 5. Material Used to Fill Well / Drillhole

| Material | From (ft.) | To (ft.) | No. Yards, Sacks Sealant or Volume (circle one) | Mix Ratio or Mud Weight |
|---|---|---|---|---|
| Bentonite | Surface | 25 | | |
| | | | | |
| | | | | |

## 6. Comments

VAP-31

## 7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing: Braun Intertec/Range Drilling, Arcadis (Amy Parish)
License #:
Date of Filling & Sealing or Verification (mm/dd/yyyy): 6/28/2018
Street or Route: 126 N. Jefferson Street, Suite 400
Telephone Number: ( 414 ) 276-7742
City: Milwaukee
State: WI
ZIP Code: 53202
Signature of Person Doing Work: Amy Parish
Date Signed: 9/27/2018

**DNR Use Only**
Date Received:
Noted By:
Comments:

State of Wis., Dept. of Natural Resources
dnr.wi.gov

# Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)



**Notice:** Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and chs. NR 141 and 812, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between $10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

[X] **Verification Only of Fill and Seal**

**Route to DNR Bureau:**
[ ] Drinking Water [ ] Watershed/Wastewater [X] Remediation/Redevelopment
[ ] Waste Management [ ] Other: _____

## 1. Well Location Information

County: Marinette
WI Unique Well # of Removed Well: _ _ _ _ _
Hicap #:

Latitude / Longitude (see instructions): State Plane - N, E
468074.79 N, 2581205.21 E
Format Code: [ ] DD [ ] DDM
Method Code: [ ] GPS008 [ ] SCR002 [X] OTH001

¼ / ¼: ¼: or Gov't Lot #:
Section:
Township: N
Range: [ ] E [ ] W

Well Street Address: Carney Avenue
Well City, Village or Town: Marinette
Well ZIP Code: 54143
Subdivision Name:
Lot #:

Reason for Removal from Service: Temporary Borehole
WI Unique Well # of Replacement Well: _ _ _ _ _

## 2. Facility / Owner Information

Facility Name: Tyco FTC
Facility ID (FID or PWS): 438005590
License/Permit/Monitoring #:
Original Well Owner: Tyco
Present Well Owner: Tyco
Mailing Address of Present Owner: 2700 Industrial Parkway South
City of Present Owner: Marinette
State: WI
ZIP Code: 54143

## 3. Filled & Sealed Well / Drillhole / Borehole Information

[ ] Monitoring Well
[ ] Water Well
[X] Borehole / Drillhole

Original Construction Date (mm/dd/yyyy): 06/28/2018
If a Well Construction Report is available, please attach.

Construction Type:
[ ] Drilled [ ] Driven (Sandpoint) [ ] Dug
[X] Other (specify): Geoprobe, direct push

Formation Type:
[X] Unconsolidated Formation [ ] Bedrock

Total Well Depth From Ground Surface (ft.): 10 ft
Casing Diameter (in.):
Lower Drillhole Diameter (in.): 2 in
Casing Depth (ft.):

Was well annular space grouted? [ ] Yes [X] No [ ] Unknown
If yes, to what depth (feet)?
Depth to Water (feet)

## 4. Pump, Liner, Screen, Casing & Sealing Material

| | Yes | No | N/A |
|---|---|---|---|
| Pump and piping removed? | [ ] | [ ] | [X] |
| Liner(s) removed? | [ ] | [ ] | [X] |
| Liner(s) perforated? | [ ] | [ ] | [X] |
| Screen removed? | [ ] | [ ] | [X] |
| Casing left in place? | [ ] | [ ] | [X] |
| Was casing cut off below surface? | [ ] | [ ] | [X] |
| Did sealing material rise to surface? | [ ] | [ ] | [X] |
| Did material settle after 24 hours? | [ ] | [ ] | [X] |
| If yes, was hole retopped? | [ ] | [ ] | [X] |
| If bentonite chips were used, were they hydrated with water from a known safe source? | [ ] | [ ] | [X] |

Required Method of Placing Sealing Material
[X] Conductor Pipe-Gravity [ ] Conductor Pipe-Pumped
[ ] Screened & Poured (Bentonite Chips) [ ] Other (Explain): _____

Sealing Materials
[ ] Neat Cement Grout [ ] Concrete
[ ] Sand-Cement (Concrete) Grout [ ] Bentonite Chips

*For Monitoring Wells and Monitoring Well Boreholes Only:*
[X] Bentonite Chips [ ] Bentonite - Cement Grout
[ ] Granular Bentonite [ ] Bentonite - Sand Slurry

## 5. Material Used to Fill Well / Drillhole

| Material | From (ft.) | To (ft.) | No. Yards, Sacks Sealant or Volume (circle one) | Mix Ratio or Mud Weight |
|---|---|---|---|---|
| Bentonite | Surface | 10 | | |
| | | | | |
| | | | | |

## 6. Comments

VAP-32

## 7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing: Braun Intertec/Range Drilling, Arcadis (Amy Parish)
License #:
Date of Filling & Sealing or Verification (mm/dd/yyyy): 6/28/2018
Street or Route: 126 N. Jefferson Street, Suite 400
Telephone Number: ( 414 ) 276-7742
City: Milwaukee
State: WI
ZIP Code: 53202
Signature of Person Doing Work: Amy Parish
Date Signed: 9/27/2018

**DNR Use Only**
Date Received:
Noted By:
Comments:

State of Wis., Dept. of Natural Resources
dnr.wi.gov

# Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)



**Notice:** Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and chs. NR 141 and 812, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between $10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

[X] **Verification Only of Fill and Seal**

**Route to DNR Bureau:**
[ ] Drinking Water [ ] Watershed/Wastewater [X] Remediation/Redevelopment
[ ] Waste Management [ ] Other: _____

## 1. Well Location Information

County: Marinette
WI Unique Well # of Removed Well: ___ ___ ___ ___ ___
Hicap #:

Latitude / Longitude (see instructions): State Plane - N, E
468074.79 N, 2581205.21 E
Format Code: [ ] DD [ ] DDM
Method Code: [ ] GPS008 [ ] SCR002 [X] OTH001

¼ / ¼: ¼:
or Gov't Lot #:
Section:
Township: N
Range: [ ] E [ ] W

Well Street Address: Carney Avenue
Well City, Village or Town: Marinette
Well ZIP Code: 54143
Subdivision Name:
Lot #:

Reason for Removal from Service: Temporary Borehole
WI Unique Well # of Replacement Well: ___ ___ ___ ___ ___

## 2. Facility / Owner Information

Facility Name: Tyco FTC
Facility ID (FID or PWS): 438005590
License/Permit/Monitoring #:
Original Well Owner: Tyco
Present Well Owner: Tyco
Mailing Address of Present Owner: 2700 Industrial Parkway South
City of Present Owner: Marinette
State: WI
ZIP Code: 54143

## 3. Filled & Sealed Well / Drillhole / Borehole Information

[ ] Monitoring Well
[ ] Water Well
[X] Borehole / Drillhole

Original Construction Date (mm/dd/yyyy): 06/28/2018
If a Well Construction Report is available, please attach.

Construction Type:
[ ] Drilled [ ] Driven (Sandpoint) [ ] Dug
[X] Other (specify): Geoprobe, direct push

Formation Type:
[X] Unconsolidated Formation [ ] Bedrock

Total Well Depth From Ground Surface (ft.): 20 ft
Casing Diameter (in.):
Lower Drillhole Diameter (in.): 2 in
Casing Depth (ft.):

Was well annular space grouted? [ ] Yes [X] No [ ] Unknown
If yes, to what depth (feet)?
Depth to Water (feet)

## 4. Pump, Liner, Screen, Casing & Sealing Material

| | Yes | No | N/A |
|---|---|---|---|
| Pump and piping removed? | [ ] | [ ] | [X] |
| Liner(s) removed? | [ ] | [ ] | [X] |
| Liner(s) perforated? | [ ] | [ ] | [X] |
| Screen removed? | [ ] | [ ] | [X] |
| Casing left in place? | [ ] | [ ] | [X] |
| Was casing cut off below surface? | [ ] | [ ] | [X] |
| Did sealing material rise to surface? | [ ] | [ ] | [X] |
| Did material settle after 24 hours? | [ ] | [ ] | [X] |
| If yes, was hole retopped? | [ ] | [ ] | [X] |
| If bentonite chips were used, were they hydrated with water from a known safe source? | [ ] | [ ] | [X] |

Required Method of Placing Sealing Material
[X] Conductor Pipe-Gravity [ ] Conductor Pipe-Pumped
[ ] Screened & Poured (Bentonite Chips) [ ] Other (Explain): _____

Sealing Materials
[ ] Neat Cement Grout [ ] Concrete
[ ] Sand-Cement (Concrete) Grout [ ] Bentonite Chips

*For Monitoring Wells and Monitoring Well Boreholes Only:*
[X] Bentonite Chips [ ] Bentonite - Cement Grout
[ ] Granular Bentonite [ ] Bentonite - Sand Slurry

## 5. Material Used to Fill Well / Drillhole

| Material | From (ft.) | To (ft.) | No. Yards, Sacks Sealant or Volume (circle one) | Mix Ratio or Mud Weight |
|---|---|---|---|---|
| Bentonite | Surface | 20 | | |
| | | | | |
| | | | | |

## 6. Comments

VAP-32

## 7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing: Braun Intertec/Range Drilling, Arcadis (Amy Parish)
License #:
Date of Filling & Sealing or Verification (mm/dd/yyyy): 6/28/2018
Street or Route: 126 N. Jefferson Street, Suite 400
Telephone Number: ( 414 ) 276-7742
City: Milwaukee
State: WI
ZIP Code: 53202
Signature of Person Doing Work: Amy Parish
Date Signed: 9/27/2018

**DNR Use Only**
Date Received:
Noted By:
Comments:

State of Wis., Dept. of Natural Resources
dnr.wi.gov

# Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)



**Notice:** Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and chs. NR 141 and 812, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between $10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

[X] **Verification Only of Fill and Seal**

**Route to DNR Bureau:**
[ ] Drinking Water [ ] Watershed/Wastewater [X] Remediation/Redevelopment
[ ] Waste Management [ ] Other: _____

## 1. Well Location Information

County: Marinette
WI Unique Well # of Removed Well: _ _ _ _ _
Hicap #:

Latitude / Longitude (see instructions): State Plane - N, E
468074.79 N, 2581205.21 E
Format Code: [ ] DD [ ] DDM
Method Code: [ ] GPS008 [ ] SCR002 [X] OTH001

¼ / ¼: ¼: Section: Township: N Range: [ ] E [ ] W
or Gov't Lot #:

Well Street Address: Carney Avenue
Well City, Village or Town: Marinette
Well ZIP Code: 54143
Subdivision Name:
Lot #:

Reason for Removal from Service: Temporary Borehole
WI Unique Well # of Replacement Well: _ _ _ _ _

## 2. Facility / Owner Information

Facility Name: Tyco FTC
Facility ID (FID or PWS): 438005590
License/Permit/Monitoring #:
Original Well Owner: Tyco
Present Well Owner: Tyco
Mailing Address of Present Owner: 2700 Industrial Parkway South
City of Present Owner: Marinette
State: WI
ZIP Code: 54143

## 3. Filled & Sealed Well / Drillhole / Borehole Information

[ ] Monitoring Well
[ ] Water Well
[X] Borehole / Drillhole

Original Construction Date (mm/dd/yyyy): 06/28/2018
If a Well Construction Report is available, please attach.

Construction Type:
[ ] Drilled [ ] Driven (Sandpoint) [ ] Dug
[X] Other (specify): Geoprobe, direct push

Formation Type:
[X] Unconsolidated Formation [ ] Bedrock

Total Well Depth From Ground Surface (ft.): 28 ft
Casing Diameter (in.):
Lower Drillhole Diameter (in.): 2 in
Casing Depth (ft.):

Was well annular space grouted? [ ] Yes [X] No [ ] Unknown
If yes, to what depth (feet)?
Depth to Water (feet)

## 4. Pump, Liner, Screen, Casing & Sealing Material

| | Yes | No | N/A |
|---|---|---|---|
| Pump and piping removed? | [ ] | [ ] | [X] |
| Liner(s) removed? | [ ] | [ ] | [X] |
| Liner(s) perforated? | [ ] | [ ] | [X] |
| Screen removed? | [ ] | [ ] | [X] |
| Casing left in place? | [ ] | [ ] | [X] |
| Was casing cut off below surface? | [ ] | [ ] | [X] |
| Did sealing material rise to surface? | [ ] | [ ] | [X] |
| Did material settle after 24 hours? | [ ] | [ ] | [X] |
| If yes, was hole retopped? | [ ] | [ ] | [X] |
| If bentonite chips were used, were they hydrated with water from a known safe source? | [ ] | [ ] | [X] |

Required Method of Placing Sealing Material
[X] Conductor Pipe-Gravity [ ] Conductor Pipe-Pumped
[ ] Screened & Poured (Bentonite Chips) [ ] Other (Explain): _____

Sealing Materials
[ ] Neat Cement Grout [ ] Concrete
[ ] Sand-Cement (Concrete) Grout [ ] Bentonite Chips

*For Monitoring Wells and Monitoring Well Boreholes Only:*
[X] Bentonite Chips [ ] Bentonite - Cement Grout
[ ] Granular Bentonite [ ] Bentonite - Sand Slurry

## 5. Material Used to Fill Well / Drillhole

| Material | From (ft.) | To (ft.) | No. Yards, Sacks Sealant or Volume (circle one) | Mix Ratio or Mud Weight |
|---|---|---|---|---|
| Bentonite | Surface | 28 | | |
| | | | | |
| | | | | |

## 6. Comments

VAP-32

## 7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing: Braun Intertec/Range Drilling, Arcadis (Amy Parish)
License #:
Date of Filling & Sealing or Verification (mm/dd/yyyy): 6/28/2018
Street or Route: 126 N. Jefferson Street, Suite 400
Telephone Number: ( 414 ) 276-7742
City: Milwaukee
State: WI
ZIP Code: 53202
Signature of Person Doing Work: Amy Parish
Date Signed: 9/27/2018

**DNR Use Only**
Date Received:
Noted By:
Comments:

State of Wis., Dept. of Natural Resources
dnr.wi.gov

# Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)



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[X] **Verification Only of Fill and Seal**

**Route to DNR Bureau:**
[ ] Drinking Water [ ] Watershed/Wastewater [X] Remediation/Redevelopment
[ ] Waste Management [ ] Other: _____

## 1. Well Location Information

County: Marinette
WI Unique Well # of Removed Well: _ _ _ _ _
Hicap #:

Latitude / Longitude (see instructions): State Plane - N, E
468074.79 N, 2581205.21 E
Format Code: [ ] DD [ ] DDM
Method Code: [ ] GPS008 [ ] SCR002 [X] OTH001

¼ / ¼: ¼: or Gov't Lot #:
Section:
Township: N
Range: [ ] E [ ] W

Well Street Address: Carney Avenue
Well City, Village or Town: Marinette
Well ZIP Code: 54143
Subdivision Name:
Lot #:

Reason for Removal from Service: Temporary Borehole
WI Unique Well # of Replacement Well: _ _ _ _ _

## 2. Facility / Owner Information

Facility Name: Tyco FTC
Facility ID (FID or PWS): 438005590
License/Permit/Monitoring #:
Original Well Owner: Tyco
Present Well Owner: Tyco
Mailing Address of Present Owner: 2700 Industrial Parkway South
City of Present Owner: Marinette
State: WI
ZIP Code: 54143

## 3. Filled & Sealed Well / Drillhole / Borehole Information

[ ] Monitoring Well
[ ] Water Well
[X] Borehole / Drillhole

Original Construction Date (mm/dd/yyyy): 06/28/2018
If a Well Construction Report is available, please attach.

Construction Type:
[ ] Drilled [ ] Driven (Sandpoint) [ ] Dug
[X] Other (specify): Geoprobe, direct push

Formation Type:
[X] Unconsolidated Formation [ ] Bedrock

Total Well Depth From Ground Surface (ft.): 30 ft
Casing Diameter (in.):
Lower Drillhole Diameter (in.): 2 in
Casing Depth (ft.):

Was well annular space grouted? [ ] Yes [X] No [ ] Unknown
If yes, to what depth (feet)?
Depth to Water (feet)

## 4. Pump, Liner, Screen, Casing & Sealing Material

| | Yes | No | N/A |
|---|---|---|---|
| Pump and piping removed? | [ ] | [ ] | [X] |
| Liner(s) removed? | [ ] | [ ] | [X] |
| Liner(s) perforated? | [ ] | [ ] | [X] |
| Screen removed? | [ ] | [ ] | [X] |
| Casing left in place? | [ ] | [ ] | [X] |
| Was casing cut off below surface? | [ ] | [ ] | [X] |
| Did sealing material rise to surface? | [ ] | [ ] | [X] |
| Did material settle after 24 hours? | [ ] | [ ] | [X] |
| If yes, was hole retopped? | [ ] | [ ] | [X] |
| If bentonite chips were used, were they hydrated with water from a known safe source? | [ ] | [ ] | [X] |

Required Method of Placing Sealing Material
[X] Conductor Pipe-Gravity [ ] Conductor Pipe-Pumped
[ ] Screened & Poured (Bentonite Chips) [ ] Other (Explain): _____

Sealing Materials
[ ] Neat Cement Grout [ ] Concrete
[ ] Sand-Cement (Concrete) Grout [ ] Bentonite Chips

*For Monitoring Wells and Monitoring Well Boreholes Only:*
[X] Bentonite Chips [ ] Bentonite - Cement Grout
[ ] Granular Bentonite [ ] Bentonite - Sand Slurry

## 5. Material Used to Fill Well / Drillhole

| Material | From (ft.) | To (ft.) | No. Yards, Sacks Sealant or Volume (circle one) | Mix Ratio or Mud Weight |
|---|---|---|---|---|
| Bentonite | Surface | 30 | | |
| | | | | |
| | | | | |

## 6. Comments

VAP-32

## 7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing: Braun Intertec/Range Drilling, Arcadis (Amy Parish)
License #:
Date of Filling & Sealing or Verification (mm/dd/yyyy): 6/28/2018
Street or Route: 126 N. Jefferson Street, Suite 400
Telephone Number: ( 414 ) 276-7742
City: Milwaukee
State: WI
ZIP Code: 53202
Signature of Person Doing Work: Amy Parish
Date Signed: 9/27/2018

**DNR Use Only**
Date Received:
Noted By:
Comments:

State of Wis., Dept. of Natural Resources
dnr.wi.gov

# Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)



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[X] **Verification Only of Fill and Seal**

**Route to DNR Bureau:**
[ ] Drinking Water [ ] Watershed/Wastewater [X] Remediation/Redevelopment
[ ] Waste Management [ ] Other: _____

## 1. Well Location Information

County: Marinette
WI Unique Well # of Removed Well: _ _ _ _ _
Hicap #:

Latitude / Longitude (see instructions): State Plane - N, E
465756.08 N, 2584363.77 E
Format Code: [ ] DD [ ] DDM
Method Code: [ ] GPS008 [ ] SCR002 [X] OTH001

¼ / ¼: ¼: Section: Township: N Range: [ ] E [ ] W
or Gov't Lot #:

Well Street Address: Hosmer Street
Well City, Village or Town: Marinette
Well ZIP Code: 54143
Subdivision Name:
Lot #:

Reason for Removal from Service: Temporary Borehole
WI Unique Well # of Replacement Well: _ _ _ _ _

## 2. Facility / Owner Information

Facility Name: Tyco FTC
Facility ID (FID or PWS): 438005590
License/Permit/Monitoring #:
Original Well Owner: Tyco
Present Well Owner: Tyco
Mailing Address of Present Owner: 2700 Industrial Parkway South
City of Present Owner: Marinette
State: WI
ZIP Code: 54143

## 3. Filled & Sealed Well / Drillhole / Borehole Information

[ ] Monitoring Well
[ ] Water Well
[X] Borehole / Drillhole

Original Construction Date (mm/dd/yyyy): 06/27/2018
If a Well Construction Report is available, please attach.

Construction Type:
[ ] Drilled [ ] Driven (Sandpoint) [ ] Dug
[X] Other (specify): Geoprobe, direct push

Formation Type:
[X] Unconsolidated Formation [ ] Bedrock

Total Well Depth From Ground Surface (ft.): 10 ft
Casing Diameter (in.):
Lower Drillhole Diameter (in.): 2 in
Casing Depth (ft.):

Was well annular space grouted? [ ] Yes [X] No [ ] Unknown
If yes, to what depth (feet)?
Depth to Water (feet)

## 4. Pump, Liner, Screen, Casing & Sealing Material

| | Yes | No | N/A |
|---|---|---|---|
| Pump and piping removed? | [ ] | [ ] | [X] |
| Liner(s) removed? | [ ] | [ ] | [X] |
| Liner(s) perforated? | [ ] | [ ] | [X] |
| Screen removed? | [ ] | [ ] | [X] |
| Casing left in place? | [ ] | [ ] | [X] |
| Was casing cut off below surface? | [ ] | [ ] | [X] |
| Did sealing material rise to surface? | [ ] | [ ] | [X] |
| Did material settle after 24 hours? | [ ] | [ ] | [X] |
| If yes, was hole retopped? | [ ] | [ ] | [X] |
| If bentonite chips were used, were they hydrated with water from a known safe source? | [ ] | [ ] | [X] |

Required Method of Placing Sealing Material
[X] Conductor Pipe-Gravity [ ] Conductor Pipe-Pumped
[ ] Screened & Poured (Bentonite Chips) [ ] Other (Explain): _____

Sealing Materials
[ ] Neat Cement Grout [ ] Concrete
[ ] Sand-Cement (Concrete) Grout [ ] Bentonite Chips

*For Monitoring Wells and Monitoring Well Boreholes Only:*
[X] Bentonite Chips [ ] Bentonite - Cement Grout
[ ] Granular Bentonite [ ] Bentonite - Sand Slurry

## 5. Material Used to Fill Well / Drillhole

| Material | From (ft.) | To (ft.) | No. Yards, Sacks Sealant or Volume (circle one) | Mix Ratio or Mud Weight |
|---|---|---|---|---|
| Bentonite | Surface | 10 | | |
| | | | | |
| | | | | |

## 6. Comments

VAP-33

## 7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing: Braun Intertec/Range Drilling, Arcadis (Amy Parish)
License #:
Date of Filling & Sealing or Verification (mm/dd/yyyy): 6/27/2018
Street or Route: 126 N. Jefferson Street, Suite 400
Telephone Number: ( 414 ) 276-7742
City: Milwaukee
State: WI
ZIP Code: 53202
Signature of Person Doing Work: Amy Parish
Date Signed: 9/27/2018

**DNR Use Only**
Date Received:
Noted By:
Comments:

State of Wis., Dept. of Natural Resources
dnr.wi.gov

# Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)



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[X] **Verification Only of Fill and Seal**

**Route to DNR Bureau:**
[ ] Drinking Water [ ] Watershed/Wastewater [X] Remediation/Redevelopment
[ ] Waste Management [ ] Other: _____

## 1. Well Location Information

County: Marinette
WI Unique Well # of Removed Well: ___ ___ ___ ___ ___
Hicap #:

Latitude / Longitude (see instructions): State Plane - N, E
465756.08 N, 2584363.77 E
Format Code: [ ] DD [ ] DDM
Method Code: [ ] GPS008 [ ] SCR002 [X] OTH001

¼ / ¼: ¼: Section: Township: N Range: [ ] E [ ] W
or Gov't Lot #:

Well Street Address: Hosmer Street

Well City, Village or Town: Marinette
Well ZIP Code: 54143

Subdivision Name:
Lot #:

Reason for Removal from Service: Temporary Borehole
WI Unique Well # of Replacement Well: ___ ___ ___ ___ ___

## 2. Facility / Owner Information

Facility Name: Tyco FTC

Facility ID (FID or PWS): 438005590

License/Permit/Monitoring #:

Original Well Owner: Tyco

Present Well Owner: Tyco

Mailing Address of Present Owner: 2700 Industrial Parkway South

City of Present Owner: Marinette
State: WI
ZIP Code: 54143

## 3. Filled & Sealed Well / Drillhole / Borehole Information

[ ] Monitoring Well
[ ] Water Well
[X] Borehole / Drillhole

Original Construction Date (mm/dd/yyyy): 06/27/2018

If a Well Construction Report is available, please attach.

Construction Type:
[ ] Drilled [ ] Driven (Sandpoint) [ ] Dug
[X] Other (specify): Geoprobe, direct push

Formation Type:
[X] Unconsolidated Formation [ ] Bedrock

Total Well Depth From Ground Surface (ft.): 20 ft
Casing Diameter (in.):

Lower Drillhole Diameter (in.): 2 in
Casing Depth (ft.):

Was well annular space grouted? [ ] Yes [X] No [ ] Unknown

If yes, to what depth (feet)?
Depth to Water (feet)

## 4. Pump, Liner, Screen, Casing & Sealing Material

| | Yes | No | N/A |
|---|---|---|---|
| Pump and piping removed? | [ ] | [ ] | [X] |
| Liner(s) removed? | [ ] | [ ] | [X] |
| Liner(s) perforated? | [ ] | [ ] | [X] |
| Screen removed? | [ ] | [ ] | [X] |
| Casing left in place? | [ ] | [ ] | [X] |
| Was casing cut off below surface? | [ ] | [ ] | [X] |
| Did sealing material rise to surface? | [ ] | [ ] | [X] |
| Did material settle after 24 hours? | [ ] | [ ] | [X] |
| If yes, was hole retopped? | [ ] | [ ] | [X] |
| If bentonite chips were used, were they hydrated with water from a known safe source? | [ ] | [ ] | [X] |

Required Method of Placing Sealing Material
[X] Conductor Pipe-Gravity [ ] Conductor Pipe-Pumped
[ ] Screened & Poured (Bentonite Chips) [ ] Other (Explain): _____

Sealing Materials
[ ] Neat Cement Grout [ ] Concrete
[ ] Sand-Cement (Concrete) Grout [ ] Bentonite Chips

*For Monitoring Wells and Monitoring Well Boreholes Only:*
[X] Bentonite Chips [ ] Bentonite - Cement Grout
[ ] Granular Bentonite [ ] Bentonite - Sand Slurry

## 5. Material Used to Fill Well / Drillhole

| Material | From (ft.) | To (ft.) | No. Yards, Sacks Sealant or Volume (circle one) | Mix Ratio or Mud Weight |
|---|---|---|---|---|
| Bentonite | Surface | 20 | | |
| | | | | |
| | | | | |

## 6. Comments

VAP-33

## 7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing: Braun Intertec/Range Drilling, Arcadis (Amy Parish)
License #:
Date of Filling & Sealing or Verification (mm/dd/yyyy): 6/27/2018

Street or Route: 126 N. Jefferson Street, Suite 400
Telephone Number: ( 414 ) 276-7742

City: Milwaukee
State: WI
ZIP Code: 53202
Signature of Person Doing Work: Amy Parise
Date Signed: 9/27/2018

**DNR Use Only**
Date Received:
Noted By:
Comments:

State of Wis., Dept. of Natural Resources
dnr.wi.gov

# Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)



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[X] **Verification Only of Fill and Seal**

**Route to DNR Bureau:**
[ ] Drinking Water [ ] Watershed/Wastewater [X] Remediation/Redevelopment
[ ] Waste Management [ ] Other: _____

## 1. Well Location Information

County: Marinette
WI Unique Well # of Removed Well: ___ ___ ___ ___ ___
Hicap #:

Latitude / Longitude (see instructions): State Plane - N, E
465756.08 N, 2584363.77 E
Format Code: [ ] DD [ ] DDM
Method Code: [ ] GPS008 [ ] SCR002 [X] OTH001

¼ / ¼: ¼:
or Gov't Lot #:
Section:
Township: N
Range: [ ] E [ ] W

Well Street Address: Hosmer Street

Well City, Village or Town: Marinette
Well ZIP Code: 54143

Subdivision Name:
Lot #:

Reason for Removal from Service: Temporary Borehole
WI Unique Well # of Replacement Well: ___ ___ ___ ___ ___

## 2. Facility / Owner Information

Facility Name: Tyco FTC
Facility ID (FID or PWS): 438005590
License/Permit/Monitoring #:
Original Well Owner: Tyco
Present Well Owner: Tyco
Mailing Address of Present Owner: 2700 Industrial Parkway South
City of Present Owner: Marinette
State: WI
ZIP Code: 54143

## 3. Filled & Sealed Well / Drillhole / Borehole Information

[ ] Monitoring Well
[ ] Water Well
[X] Borehole / Drillhole

Original Construction Date (mm/dd/yyyy): 06/27/2018
If a Well Construction Report is available, please attach.

Construction Type:
[ ] Drilled [ ] Driven (Sandpoint) [ ] Dug
[X] Other (specify): Geoprobe, direct push

Formation Type:
[X] Unconsolidated Formation [ ] Bedrock

Total Well Depth From Ground Surface (ft.): 35 ft
Casing Diameter (in.):
Lower Drillhole Diameter (in.): 2 in
Casing Depth (ft.):

Was well annular space grouted? [ ] Yes [X] No [ ] Unknown
If yes, to what depth (feet)?
Depth to Water (feet)

## 4. Pump, Liner, Screen, Casing & Sealing Material

| | Yes | No | N/A |
|---|---|---|---|
| Pump and piping removed? | [ ] | [ ] | [X] |
| Liner(s) removed? | [ ] | [ ] | [X] |
| Liner(s) perforated? | [ ] | [ ] | [X] |
| Screen removed? | [ ] | [ ] | [X] |
| Casing left in place? | [ ] | [ ] | [X] |
| Was casing cut off below surface? | [ ] | [ ] | [X] |
| Did sealing material rise to surface? | [ ] | [ ] | [X] |
| Did material settle after 24 hours? | [ ] | [ ] | [X] |
| If yes, was hole retopped? | [ ] | [ ] | [X] |
| If bentonite chips were used, were they hydrated with water from a known safe source? | [ ] | [ ] | [X] |

Required Method of Placing Sealing Material
[X] Conductor Pipe-Gravity [ ] Conductor Pipe-Pumped
[ ] Screened & Poured (Bentonite Chips) [ ] Other (Explain): _____

Sealing Materials
[ ] Neat Cement Grout [ ] Concrete
[ ] Sand-Cement (Concrete) Grout [ ] Bentonite Chips

*For Monitoring Wells and Monitoring Well Boreholes Only:*
[X] Bentonite Chips [ ] Bentonite - Cement Grout
[ ] Granular Bentonite [ ] Bentonite - Sand Slurry

## 5. Material Used to Fill Well / Drillhole

| Material | From (ft.) | To (ft.) | No. Yards, Sacks Sealant or Volume (circle one) | Mix Ratio or Mud Weight |
|---|---|---|---|---|
| Bentonite | Surface | 35 | | |
| | | | | |
| | | | | |

## 6. Comments

VAP-33

## 7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing: Braun Intertec/Range Drilling, Arcadis (Amy Parish)
License #:
Date of Filling & Sealing or Verification (mm/dd/yyyy): 6/27/2018
Street or Route: 126 N. Jefferson Street, Suite 400
Telephone Number: ( 414 ) 276-7742
City: Milwaukee
State: WI
ZIP Code: 53202
Signature of Person Doing Work: Amy Parise
Date Signed: 9/27/2018

**DNR Use Only**
Date Received:
Noted By:
Comments:

State of Wis., Dept. of Natural Resources
dnr.wi.gov

# Well / Drillhole / Borehole Filling & Sealing Report

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[X] **Verification Only of Fill and Seal**

**Route to DNR Bureau:**
[ ] Drinking Water [ ] Watershed/Wastewater [X] Remediation/Redevelopment
[ ] Waste Management [ ] Other: _____

## 1. Well Location Information

County: Marinette
WI Unique Well # of Removed Well: _ _ _ _ _
Hicap #:

Latitude / Longitude (see instructions): State Plane - N, E
465756.08 N, 2584363.77 E
Format Code: [ ] DD [ ] DDM
Method Code: [ ] GPS008 [ ] SCR002 [X] OTH001

¼ / ¼: ¼: Section: Township: N Range: [ ] E [ ] W
or Gov't Lot #:

Well Street Address: Hosmer Street

Well City, Village or Town: Marinette
Well ZIP Code: 54143

Subdivision Name:
Lot #:

Reason for Removal from Service: Temporary Borehole
WI Unique Well # of Replacement Well: _ _ _ _ _

## 2. Facility / Owner Information

Facility Name: Tyco FTC
Facility ID (FID or PWS): 438005590
License/Permit/Monitoring #:
Original Well Owner: Tyco
Present Well Owner: Tyco
Mailing Address of Present Owner: 2700 Industrial Parkway South
City of Present Owner: Marinette
State: WI
ZIP Code: 54143

## 3. Filled & Sealed Well / Drillhole / Borehole Information

[ ] Monitoring Well
[ ] Water Well
[X] Borehole / Drillhole

Original Construction Date (mm/dd/yyyy): 06/27/2018
If a Well Construction Report is available, please attach.

Construction Type:
[ ] Drilled [ ] Driven (Sandpoint) [ ] Dug
[X] Other (specify): Geoprobe, direct push

Formation Type:
[X] Unconsolidated Formation [ ] Bedrock

Total Well Depth From Ground Surface (ft.): 45 ft
Casing Diameter (in.):
Lower Drillhole Diameter (in.): 2 in
Casing Depth (ft.):

Was well annular space grouted? [ ] Yes [X] No [ ] Unknown
If yes, to what depth (feet)?
Depth to Water (feet)

## 4. Pump, Liner, Screen, Casing & Sealing Material

| | Yes | No | N/A |
|---|---|---|---|
| Pump and piping removed? | [ ] | [ ] | [X] |
| Liner(s) removed? | [ ] | [ ] | [X] |
| Liner(s) perforated? | [ ] | [ ] | [X] |
| Screen removed? | [ ] | [ ] | [X] |
| Casing left in place? | [ ] | [ ] | [X] |
| Was casing cut off below surface? | [ ] | [ ] | [X] |
| Did sealing material rise to surface? | [ ] | [ ] | [X] |
| Did material settle after 24 hours? | [ ] | [ ] | [X] |
| If yes, was hole retopped? | [ ] | [ ] | [X] |
| If bentonite chips were used, were they hydrated with water from a known safe source? | [ ] | [ ] | [X] |

Required Method of Placing Sealing Material
[X] Conductor Pipe-Gravity [ ] Conductor Pipe-Pumped
[ ] Screened & Poured (Bentonite Chips) [ ] Other (Explain): _____

Sealing Materials
[ ] Neat Cement Grout [ ] Concrete
[ ] Sand-Cement (Concrete) Grout [ ] Bentonite Chips

*For Monitoring Wells and Monitoring Well Boreholes Only:*
[X] Bentonite Chips [ ] Bentonite - Cement Grout
[ ] Granular Bentonite [ ] Bentonite - Sand Slurry

## 5. Material Used to Fill Well / Drillhole

| Material | From (ft.) | To (ft.) | No. Yards, Sacks Sealant or Volume (circle one) | Mix Ratio or Mud Weight |
|---|---|---|---|---|
| Bentonite | Surface | 45 | | |
| | | | | |
| | | | | |

## 6. Comments

VAP-33

## 7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing: Braun Intertec/Range Drilling, Arcadis (Amy Parish)
License #:
Date of Filling & Sealing or Verification (mm/dd/yyyy): 6/27/2018
Street or Route: 126 N. Jefferson Street, Suite 400
Telephone Number: ( 414 ) 276-7742
City: Milwaukee
State: WI
ZIP Code: 53202
Signature of Person Doing Work: Amy Parish
Date Signed: 9/27/2018

**DNR Use Only**
Date Received:
Noted By:
Comments:

State of Wis., Dept. of Natural Resources
dnr.wi.gov

# Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)



**Notice:** Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and chs. NR 141 and 812, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between $10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

[X] **Verification Only of Fill and Seal**

**Route to DNR Bureau:**
[ ] Drinking Water [ ] Watershed/Wastewater [X] Remediation/Redevelopment
[ ] Waste Management [ ] Other: _____

## 1. Well Location Information

County: Marinette
WI Unique Well # of Removed Well: _ _ _ _ _
Hicap #:

Latitude / Longitude (see instructions): State Plane - N, E
465756.08 N, 2584363.77 E
Format Code: [ ] DD [ ] DDM
Method Code: [ ] GPS008 [ ] SCR002 [X] OTH001

¼ / ¼: ¼: Section: Township: N Range: [ ] E [ ] W
or Gov't Lot #:

Well Street Address: Hosmer Street

Well City, Village or Town: Marinette
Well ZIP Code: 54143

Subdivision Name:
Lot #:

Reason for Removal from Service: Temporary Borehole
WI Unique Well # of Replacement Well: _ _ _ _ _

## 2. Facility / Owner Information

Facility Name: Tyco FTC
Facility ID (FID or PWS): 438005590
License/Permit/Monitoring #:
Original Well Owner: Tyco
Present Well Owner: Tyco
Mailing Address of Present Owner: 2700 Industrial Parkway South
City of Present Owner: Marinette
State: WI
ZIP Code: 54143

## 3. Filled & Sealed Well / Drillhole / Borehole Information

[ ] Monitoring Well
[ ] Water Well
[X] Borehole / Drillhole

Original Construction Date (mm/dd/yyyy): 06/27/2018
If a Well Construction Report is available, please attach.

Construction Type:
[ ] Drilled [ ] Driven (Sandpoint) [ ] Dug
[X] Other (specify): Geoprobe, direct push

Formation Type:
[X] Unconsolidated Formation [ ] Bedrock

Total Well Depth From Ground Surface (ft.): 55 ft
Casing Diameter (in.):
Lower Drillhole Diameter (in.): 2 in
Casing Depth (ft.):

Was well annular space grouted? [ ] Yes [X] No [ ] Unknown
If yes, to what depth (feet)?
Depth to Water (feet)

## 4. Pump, Liner, Screen, Casing & Sealing Material

| | Yes | No | N/A |
|---|---|---|---|
| Pump and piping removed? | [ ] | [ ] | [X] |
| Liner(s) removed? | [ ] | [ ] | [X] |
| Liner(s) perforated? | [ ] | [ ] | [X] |
| Screen removed? | [ ] | [ ] | [X] |
| Casing left in place? | [ ] | [ ] | [X] |
| Was casing cut off below surface? | [ ] | [ ] | [X] |
| Did sealing material rise to surface? | [ ] | [ ] | [X] |
| Did material settle after 24 hours? | [ ] | [ ] | [X] |
| If yes, was hole retopped? | [ ] | [ ] | [X] |
| If bentonite chips were used, were they hydrated with water from a known safe source? | [ ] | [ ] | [X] |

Required Method of Placing Sealing Material
[X] Conductor Pipe-Gravity [ ] Conductor Pipe-Pumped
[ ] Screened & Poured (Bentonite Chips) [ ] Other (Explain): _____

Sealing Materials
[ ] Neat Cement Grout [ ] Concrete
[ ] Sand-Cement (Concrete) Grout [ ] Bentonite Chips

*For Monitoring Wells and Monitoring Well Boreholes Only:*
[X] Bentonite Chips [ ] Bentonite - Cement Grout
[ ] Granular Bentonite [ ] Bentonite - Sand Slurry

## 5. Material Used to Fill Well / Drillhole

| Material | From (ft.) | To (ft.) | No. Yards, Sacks Sealant or Volume (circle one) | Mix Ratio or Mud Weight |
|---|---|---|---|---|
| Bentonite | Surface | 55 | | |
| | | | | |
| | | | | |

## 6. Comments

VAP-33

## 7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing: Braun Intertec/Range Drilling, Arcadis (Amy Parish)
License #:
Date of Filling & Sealing or Verification (mm/dd/yyyy): 6/27/2018

Street or Route: 126 N. Jefferson Street, Suite 400
Telephone Number: ( 414 ) 276-7742

City: Milwaukee
State: WI
ZIP Code: 53202
Signature of Person Doing Work: Amy Parish
Date Signed: 9/27/2018

**DNR Use Only**
Date Received:
Noted By:
Comments:

State of Wis., Dept. of Natural Resources
dnr.wi.gov

# Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)



**Notice:** Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and chs. NR 141 and 812, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between $10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

[X] **Verification Only of Fill and Seal**

**Route to DNR Bureau:**
[ ] Drinking Water [ ] Watershed/Wastewater [X] Remediation/Redevelopment
[ ] Waste Management [ ] Other: _____

## 1. Well Location Information

County: Marinette
WI Unique Well # of Removed Well: _ _ _ _ _
Hicap #:

Latitude / Longitude (see instructions): State Plane - N, E
454240.83 N, 2582822.89 E
Format Code: [ ] DD [ ] DDM
Method Code: [ ] GPS008 [ ] SCR002 [X] OTH001

¼ / ¼: ¼: or Gov't Lot #:
Section:
Township: N
Range: [ ] E [ ] W

Well Street Address: Shore Drive
Well City, Village or Town: Peshtigo
Well ZIP Code: 54157
Subdivision Name:
Lot #:

Reason for Removal from Service: Temporary Borehole
WI Unique Well # of Replacement Well: _ _ _ _ _

## 2. Facility / Owner Information

Facility Name: Tyco FTC
Facility ID (FID or PWS): 438005590
License/Permit/Monitoring #:
Original Well Owner: Tyco
Present Well Owner: Tyco
Mailing Address of Present Owner: 2700 Industrial Parkway South
City of Present Owner: Marinette
State: WI
ZIP Code: 54143

## 3. Filled & Sealed Well / Drillhole / Borehole Information

[ ] Monitoring Well
[ ] Water Well
[X] Borehole / Drillhole

Original Construction Date (mm/dd/yyyy): 06/26/2018
If a Well Construction Report is available, please attach.

Construction Type:
[ ] Drilled [ ] Driven (Sandpoint) [ ] Dug
[X] Other (specify): Geoprobe, direct push

Formation Type:
[X] Unconsolidated Formation [ ] Bedrock

Total Well Depth From Ground Surface (ft.): 15 ft
Casing Diameter (in.):
Lower Drillhole Diameter (in.): 2 in
Casing Depth (ft.):

Was well annular space grouted? [ ] Yes [X] No [ ] Unknown
If yes, to what depth (feet)?
Depth to Water (feet)

## 4. Pump, Liner, Screen, Casing & Sealing Material

| | Yes | No | N/A |
|---|---|---|---|
| Pump and piping removed? | [ ] | [ ] | [X] |
| Liner(s) removed? | [ ] | [ ] | [X] |
| Liner(s) perforated? | [ ] | [ ] | [X] |
| Screen removed? | [ ] | [ ] | [X] |
| Casing left in place? | [ ] | [ ] | [X] |
| Was casing cut off below surface? | [ ] | [ ] | [X] |
| Did sealing material rise to surface? | [ ] | [ ] | [X] |
| Did material settle after 24 hours? | [ ] | [ ] | [X] |
| If yes, was hole retopped? | [ ] | [ ] | [X] |
| If bentonite chips were used, were they hydrated with water from a known safe source? | [ ] | [ ] | [X] |

Required Method of Placing Sealing Material
[X] Conductor Pipe-Gravity [ ] Conductor Pipe-Pumped
[ ] Screened & Poured (Bentonite Chips) [ ] Other (Explain): _____

Sealing Materials
[ ] Neat Cement Grout [ ] Concrete
[ ] Sand-Cement (Concrete) Grout [ ] Bentonite Chips

*For Monitoring Wells and Monitoring Well Boreholes Only:*
[X] Bentonite Chips [ ] Bentonite - Cement Grout
[ ] Granular Bentonite [ ] Bentonite - Sand Slurry

## 5. Material Used to Fill Well / Drillhole

| Material | From (ft.) | To (ft.) | No. Yards, Sacks Sealant or Volume (circle one) | Mix Ratio or Mud Weight |
|---|---|---|---|---|
| Bentonite | Surface | 15 | | |
| | | | | |
| | | | | |

## 6. Comments

VAP-35

## 7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing: Braun Intertec/Range Drilling, Arcadis (Amy Parish)
License #:
Date of Filling & Sealing or Verification (mm/dd/yyyy): 6/26/2018
Street or Route: 126 N. Jefferson Street, Suite 400
Telephone Number: ( 414 ) 276-7742
City: Milwaukee
State: WI
ZIP Code: 53202
Signature of Person Doing Work: Amy Parise
Date Signed: 9/27/2018

**DNR Use Only**
Date Received:
Noted By:
Comments:

State of Wis., Dept. of Natural Resources
dnr.wi.gov

# Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)



**Notice:** Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and chs. NR 141 and 812, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between $10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

[X] **Verification Only of Fill and Seal**

**Route to DNR Bureau:**
[ ] Drinking Water [ ] Watershed/Wastewater [X] Remediation/Redevelopment
[ ] Waste Management [ ] Other: _____

## 1. Well Location Information

County: Marinette
WI Unique Well # of Removed Well: _ _ _ _ _
Hicap #:

Latitude / Longitude (see instructions): State Plane - N, E
454240.83 N, 2582822.89 E
Format Code: [ ] DD [ ] DDM
Method Code: [ ] GPS008 [ ] SCR002 [X] OTH001

¼ / ¼: ¼: or Gov't Lot #:
Section:
Township: N
Range: [ ] E [ ] W

Well Street Address: Shore Drive
Well City, Village or Town: Peshtigo
Well ZIP Code: 54157
Subdivision Name:
Lot #:

Reason for Removal from Service: Temporary Borehole
WI Unique Well # of Replacement Well: _ _ _ _ _

## 2. Facility / Owner Information

Facility Name: Tyco FTC
Facility ID (FID or PWS): 438005590
License/Permit/Monitoring #:
Original Well Owner: Tyco
Present Well Owner: Tyco
Mailing Address of Present Owner: 2700 Industrial Parkway South
City of Present Owner: Marinette
State: WI
ZIP Code: 54143

## 3. Filled & Sealed Well / Drillhole / Borehole Information

[ ] Monitoring Well
[ ] Water Well
[X] Borehole / Drillhole

Original Construction Date (mm/dd/yyyy): 06/27/2018
If a Well Construction Report is available, please attach.

Construction Type:
[ ] Drilled [ ] Driven (Sandpoint) [ ] Dug
[X] Other (specify): Geoprobe, direct push

Formation Type:
[X] Unconsolidated Formation [ ] Bedrock

Total Well Depth From Ground Surface (ft.): 50 ft
Casing Diameter (in.):
Lower Drillhole Diameter (in.): 2 in
Casing Depth (ft.):

Was well annular space grouted? [ ] Yes [X] No [ ] Unknown
If yes, to what depth (feet)?
Depth to Water (feet)

## 4. Pump, Liner, Screen, Casing & Sealing Material

| | Yes | No | N/A |
|---|---|---|---|
| Pump and piping removed? | [ ] | [ ] | [X] |
| Liner(s) removed? | [ ] | [ ] | [X] |
| Liner(s) perforated? | [ ] | [ ] | [X] |
| Screen removed? | [ ] | [ ] | [X] |
| Casing left in place? | [ ] | [ ] | [X] |
| Was casing cut off below surface? | [ ] | [ ] | [X] |
| Did sealing material rise to surface? | [ ] | [ ] | [X] |
| Did material settle after 24 hours? | [ ] | [ ] | [X] |
| If yes, was hole retopped? | [ ] | [ ] | [X] |
| If bentonite chips were used, were they hydrated with water from a known safe source? | [ ] | [ ] | [X] |

Required Method of Placing Sealing Material
[X] Conductor Pipe-Gravity [ ] Conductor Pipe-Pumped
[ ] Screened & Poured (Bentonite Chips) [ ] Other (Explain): _____

Sealing Materials
[ ] Neat Cement Grout [ ] Concrete
[ ] Sand-Cement (Concrete) Grout [ ] Bentonite Chips

*For Monitoring Wells and Monitoring Well Boreholes Only:*
[X] Bentonite Chips [ ] Bentonite - Cement Grout
[ ] Granular Bentonite [ ] Bentonite - Sand Slurry

## 5. Material Used to Fill Well / Drillhole

| Material | From (ft.) | To (ft.) | No. Yards, Sacks Sealant or Volume (circle one) | Mix Ratio or Mud Weight |
|---|---|---|---|---|
| Bentonite | Surface | 50 | | |
| | | | | |
| | | | | |

## 6. Comments

VAP-35

## 7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing: Braun Intertec/Range Drilling, Arcadis (Amy Parish)
License #:
Date of Filling & Sealing or Verification (mm/dd/yyyy): 6/27/2018
Street or Route: 126 N. Jefferson Street, Suite 400
Telephone Number: ( 414 ) 276-7742
City: Milwaukee
State: WI
ZIP Code: 53202
Signature of Person Doing Work: Amy Parise
Date Signed: 9/27/2018

**DNR Use Only**
Date Received:
Noted By:
Comments:

State of Wis., Dept. of Natural Resources
dnr.wi.gov

# Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)



**Notice:** Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and chs. NR 141 and 812, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between $10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

[X] **Verification Only of Fill and Seal**

**Route to DNR Bureau:**
[ ] Drinking Water [ ] Watershed/Wastewater [X] Remediation/Redevelopment
[ ] Waste Management [ ] Other: _____

## 1. Well Location Information

County: Marinette
WI Unique Well # of Removed Well: ___ ___ ___ ___ ___
Hicap #:

Latitude / Longitude (see instructions): State Plane - N, E
454240.83 N, 2582822.89 E
Format Code: [ ] DD [ ] DDM
Method Code: [ ] GPS008 [ ] SCR002 [X] OTH001

¼ / ¼: ¼:
or Gov't Lot #:
Section:
Township: N
Range: [ ] E [ ] W

Well Street Address: Shore Drive
Well City, Village or Town: Peshtigo
Well ZIP Code: 54157
Subdivision Name:
Lot #:

Reason for Removal from Service: Temporary Borehole
WI Unique Well # of Replacement Well: ___ ___ ___ ___ ___

## 2. Facility / Owner Information

Facility Name: Tyco FTC
Facility ID (FID or PWS): 438005590
License/Permit/Monitoring #:
Original Well Owner: Tyco
Present Well Owner: Tyco
Mailing Address of Present Owner: 2700 Industrial Parkway South
City of Present Owner: Marinette
State: WI
ZIP Code: 54143

## 3. Filled & Sealed Well / Drillhole / Borehole Information

[ ] Monitoring Well
[ ] Water Well
[X] Borehole / Drillhole

Original Construction Date (mm/dd/yyyy): 06/26/2018
If a Well Construction Report is available, please attach.

Construction Type:
[ ] Drilled [ ] Driven (Sandpoint) [ ] Dug
[X] Other (specify): Geoprobe, direct push

Formation Type:
[X] Unconsolidated Formation [ ] Bedrock

Total Well Depth From Ground Surface (ft.): 25 ft
Casing Diameter (in.):
Lower Drillhole Diameter (in.): 2 in
Casing Depth (ft.):

Was well annular space grouted? [ ] Yes [X] No [ ] Unknown
If yes, to what depth (feet)?
Depth to Water (feet)

## 4. Pump, Liner, Screen, Casing & Sealing Material

| | Yes | No | N/A |
|---|---|---|---|
| Pump and piping removed? | [ ] | [ ] | [X] |
| Liner(s) removed? | [ ] | [ ] | [X] |
| Liner(s) perforated? | [ ] | [ ] | [X] |
| Screen removed? | [ ] | [ ] | [X] |
| Casing left in place? | [ ] | [ ] | [X] |
| Was casing cut off below surface? | [ ] | [ ] | [X] |
| Did sealing material rise to surface? | [ ] | [ ] | [X] |
| Did material settle after 24 hours? | [ ] | [ ] | [X] |
| If yes, was hole retopped? | [ ] | [ ] | [X] |
| If bentonite chips were used, were they hydrated with water from a known safe source? | [ ] | [ ] | [X] |

Required Method of Placing Sealing Material
[X] Conductor Pipe-Gravity [ ] Conductor Pipe-Pumped
[ ] Screened & Poured (Bentonite Chips) [ ] Other (Explain): _____

Sealing Materials
[ ] Neat Cement Grout [ ] Concrete
[ ] Sand-Cement (Concrete) Grout [ ] Bentonite Chips

*For Monitoring Wells and Monitoring Well Boreholes Only:*
[X] Bentonite Chips [ ] Bentonite - Cement Grout
[ ] Granular Bentonite [ ] Bentonite - Sand Slurry

## 5. Material Used to Fill Well / Drillhole

| Material | From (ft.) | To (ft.) | No. Yards, Sacks Sealant or Volume (circle one) | Mix Ratio or Mud Weight |
|---|---|---|---|---|
| Bentonite | Surface | 25 | | |
| | | | | |
| | | | | |

## 6. Comments

VAP-35

## 7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing: Braun Intertec/Range Drilling, Arcadis (Amy Parish)
License #:
Date of Filling & Sealing or Verification (mm/dd/yyyy): 6/26/2018
Street or Route: 126 N. Jefferson Street, Suite 400
Telephone Number: ( 414 ) 276-7742
City: Milwaukee
State: WI
ZIP Code: 53202
Signature of Person Doing Work: Amy Parish
Date Signed: 9/27/2018

**DNR Use Only**
Date Received:
Noted By:
Comments:

State of Wis., Dept. of Natural Resources
dnr.wi.gov

# Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)



**Notice:** Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and chs. NR 141 and 812, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between $10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

[X] **Verification Only of Fill and Seal**

**Route to DNR Bureau:**
[ ] Drinking Water [ ] Watershed/Wastewater [X] Remediation/Redevelopment
[ ] Waste Management [ ] Other: _____

## 1. Well Location Information

County: Marinette
WI Unique Well # of Removed Well: _ _ _ _ _
Hicap #:

Latitude / Longitude (see instructions): State Plane - N, E
454240.83 N, 2582822.89 E
Format Code: [ ] DD [ ] DDM
Method Code: [ ] GPS008 [ ] SCR002 [X] OTH001

¼ / ¼: ¼: or Gov't Lot #:
Section:
Township: N
Range: [ ] E [ ] W

Well Street Address: Shore Drive
Well City, Village or Town: Peshtigo
Well ZIP Code: 54157
Subdivision Name:
Lot #:

Reason for Removal from Service: Temporary Borehole
WI Unique Well # of Replacement Well: _ _ _ _ _

## 2. Facility / Owner Information

Facility Name: Tyco FTC
Facility ID (FID or PWS): 438005590
License/Permit/Monitoring #:
Original Well Owner: Tyco
Present Well Owner: Tyco
Mailing Address of Present Owner: 2700 Industrial Parkway South
City of Present Owner: Marinette
State: WI
ZIP Code: 54143

## 3. Filled & Sealed Well / Drillhole / Borehole Information

[ ] Monitoring Well
[ ] Water Well
[X] Borehole / Drillhole

Original Construction Date (mm/dd/yyyy): 06/27/2018
If a Well Construction Report is available, please attach.

Construction Type:
[ ] Drilled [ ] Driven (Sandpoint) [ ] Dug
[X] Other (specify): Geoprobe, direct push

Formation Type:
[X] Unconsolidated Formation [ ] Bedrock

Total Well Depth From Ground Surface (ft.): 60 ft
Casing Diameter (in.):
Lower Drillhole Diameter (in.): 2 in
Casing Depth (ft.):

Was well annular space grouted? [ ] Yes [X] No [ ] Unknown
If yes, to what depth (feet)?
Depth to Water (feet)

## 4. Pump, Liner, Screen, Casing & Sealing Material

| | Yes | No | N/A |
|---|---|---|---|
| Pump and piping removed? | [ ] | [ ] | [X] |
| Liner(s) removed? | [ ] | [ ] | [X] |
| Liner(s) perforated? | [ ] | [ ] | [X] |
| Screen removed? | [ ] | [ ] | [X] |
| Casing left in place? | [ ] | [ ] | [X] |
| Was casing cut off below surface? | [ ] | [ ] | [X] |
| Did sealing material rise to surface? | [ ] | [ ] | [X] |
| Did material settle after 24 hours? | [ ] | [ ] | [X] |
| If yes, was hole retopped? | [ ] | [ ] | [X] |
| If bentonite chips were used, were they hydrated with water from a known safe source? | [ ] | [ ] | [X] |

Required Method of Placing Sealing Material
[X] Conductor Pipe-Gravity [ ] Conductor Pipe-Pumped
[ ] Screened & Poured (Bentonite Chips) [ ] Other (Explain): _____

Sealing Materials
[ ] Neat Cement Grout [ ] Concrete
[ ] Sand-Cement (Concrete) Grout [ ] Bentonite Chips

*For Monitoring Wells and Monitoring Well Boreholes Only:*
[X] Bentonite Chips [ ] Bentonite - Cement Grout
[ ] Granular Bentonite [ ] Bentonite - Sand Slurry

## 5. Material Used to Fill Well / Drillhole

| Material | From (ft.) | To (ft.) | No. Yards, Sacks Sealant or Volume (circle one) | Mix Ratio or Mud Weight |
|---|---|---|---|---|
| Bentonite | Surface | 60 | | |
| | | | | |
| | | | | |

## 6. Comments

VAP-35

## 7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing: Braun Intertec/Range Drilling, Arcadis (Amy Parish)
License #:
Date of Filling & Sealing or Verification (mm/dd/yyyy): 6/27/2018
Street or Route: 126 N. Jefferson Street, Suite 400
Telephone Number: ( 414 ) 276-7742
City: Milwaukee
State: WI
ZIP Code: 53202
Signature of Person Doing Work: Amy Parise
Date Signed: 9/27/2018

**DNR Use Only**
Date Received:
Noted By:
Comments:

State of Wis., Dept. of Natural Resources
dnr.wi.gov

# Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)



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[X] **Verification Only of Fill and Seal**

**Route to DNR Bureau:**
[ ] Drinking Water [ ] Watershed/Wastewater [X] Remediation/Redevelopment
[ ] Waste Management [ ] Other: _____

## 1. Well Location Information

County: Marinette
WI Unique Well # of Removed Well: ___ ___ ___ ___ ___
Hicap #:

Latitude / Longitude (see instructions): State Plane - N, E
454240.83 N, 2582822.89 E
Format Code: [ ] DD [ ] DDM
Method Code: [ ] GPS008 [ ] SCR002 [X] OTH001

¼ / ¼: ¼: Section: Township: N Range: [ ] E [ ] W
or Gov't Lot #:

Well Street Address: Shore Drive
Well City, Village or Town: Peshtigo
Well ZIP Code: 54157
Subdivision Name:
Lot #:

Reason for Removal from Service: Temporary Borehole
WI Unique Well # of Replacement Well: ___ ___ ___ ___ ___

## 2. Facility / Owner Information

Facility Name: Tyco FTC
Facility ID (FID or PWS): 438005590
License/Permit/Monitoring #:
Original Well Owner: Tyco
Present Well Owner: Tyco
Mailing Address of Present Owner: 2700 Industrial Parkway South
City of Present Owner: Marinette
State: WI
ZIP Code: 54143

## 3. Filled & Sealed Well / Drillhole / Borehole Information

[ ] Monitoring Well
[ ] Water Well
[X] Borehole / Drillhole

Original Construction Date (mm/dd/yyyy): 06/26/2018
If a Well Construction Report is available, please attach.

Construction Type:
[ ] Drilled [ ] Driven (Sandpoint) [ ] Dug
[X] Other (specify): Geoprobe, direct push

Formation Type:
[X] Unconsolidated Formation [ ] Bedrock

Total Well Depth From Ground Surface (ft.): 35 ft
Casing Diameter (in.):
Lower Drillhole Diameter (in.): 2 in
Casing Depth (ft.):

Was well annular space grouted? [ ] Yes [X] No [ ] Unknown
If yes, to what depth (feet)?
Depth to Water (feet)

## 4. Pump, Liner, Screen, Casing & Sealing Material

| | Yes | No | N/A |
|---|---|---|---|
| Pump and piping removed? | [ ] | [ ] | [X] |
| Liner(s) removed? | [ ] | [ ] | [X] |
| Liner(s) perforated? | [ ] | [ ] | [X] |
| Screen removed? | [ ] | [ ] | [X] |
| Casing left in place? | [ ] | [ ] | [X] |
| Was casing cut off below surface? | [ ] | [ ] | [X] |
| Did sealing material rise to surface? | [ ] | [ ] | [X] |
| Did material settle after 24 hours? | [ ] | [ ] | [X] |
| If yes, was hole retopped? | [ ] | [ ] | [X] |
| If bentonite chips were used, were they hydrated with water from a known safe source? | [ ] | [ ] | [X] |

Required Method of Placing Sealing Material
[X] Conductor Pipe-Gravity [ ] Conductor Pipe-Pumped
[ ] Screened & Poured (Bentonite Chips) [ ] Other (Explain): _____

Sealing Materials
[ ] Neat Cement Grout [ ] Concrete
[ ] Sand-Cement (Concrete) Grout [ ] Bentonite Chips

*For Monitoring Wells and Monitoring Well Boreholes Only:*
[X] Bentonite Chips [ ] Bentonite - Cement Grout
[ ] Granular Bentonite [ ] Bentonite - Sand Slurry

## 5. Material Used to Fill Well / Drillhole

| Material | From (ft.) | To (ft.) | No. Yards, Sacks Sealant or Volume (circle one) | Mix Ratio or Mud Weight |
|---|---|---|---|---|
| Bentonite | Surface | 35 | | |
| | | | | |
| | | | | |

## 6. Comments

VAP-35

## 7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing: Braun Intertec/Range Drilling, Arcadis (Amy Parish)
License #:
Date of Filling & Sealing or Verification (mm/dd/yyyy): 6/26/2018
Street or Route: 126 N. Jefferson Street, Suite 400
Telephone Number: (414 )276-7742
City: Milwaukee
State: WI
ZIP Code: 53202
Signature of Person Doing Work: Amy Parish
Date Signed: 9/27/2018

**DNR Use Only**
Date Received:
Noted By:
Comments:

State of Wis., Dept. of Natural Resources
dnr.wi.gov

# Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)



**Notice:** Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and chs. NR 141 and 812, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between $10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

[X] **Verification Only of Fill and Seal**

**Route to DNR Bureau:**
[ ] Drinking Water [ ] Watershed/Wastewater [X] Remediation/Redevelopment
[ ] Waste Management [ ] Other: _____

## 1. Well Location Information

County: Marinette
WI Unique Well # of Removed Well: ___ ___ ___ ___ ___
Hicap #:

Latitude / Longitude (see instructions): State Plane - N, E
451884.06 N, 2582042.31 E
Format Code: [ ] DD [ ] DDM
Method Code: [ ] GPS008 [ ] SCR002 [X] OTH001

¼ / ¼: ¼: Section: Township: N Range: [ ] E [ ] W
or Gov't Lot #:

Well Street Address: Heath Lane
Well City, Village or Town: Peshtigo
Well ZIP Code: 54157
Subdivision Name:
Lot #:

Reason for Removal from Service: Temporary Borehole
WI Unique Well # of Replacement Well: ___ ___ ___ ___ ___

## 2. Facility / Owner Information

Facility Name: Tyco FTC
Facility ID (FID or PWS): 438005590
License/Permit/Monitoring #:
Original Well Owner: Tyco
Present Well Owner: Tyco
Mailing Address of Present Owner: 2700 Industrial Parkway South
City of Present Owner: Marinette State: WI ZIP Code: 54143

## 3. Filled & Sealed Well / Drillhole / Borehole Information

[ ] Monitoring Well
[ ] Water Well
[X] Borehole / Drillhole

Original Construction Date (mm/dd/yyyy): 06/26/2018
If a Well Construction Report is available, please attach.

Construction Type:
[ ] Drilled [ ] Driven (Sandpoint) [ ] Dug
[X] Other (specify): Geoprobe, direct push

Formation Type:
[X] Unconsolidated Formation [ ] Bedrock

Total Well Depth From Ground Surface (ft.): 10 ft
Casing Diameter (in.):
Lower Drillhole Diameter (in.): 2 in
Casing Depth (ft.):

Was well annular space grouted? [ ] Yes [X] No [ ] Unknown
If yes, to what depth (feet)?
Depth to Water (feet)

## 4. Pump, Liner, Screen, Casing & Sealing Material

| | Yes | No | N/A |
|---|---|---|---|
| Pump and piping removed? | [ ] | [ ] | [X] |
| Liner(s) removed? | [ ] | [ ] | [X] |
| Liner(s) perforated? | [ ] | [ ] | [X] |
| Screen removed? | [ ] | [ ] | [X] |
| Casing left in place? | [ ] | [ ] | [X] |
| Was casing cut off below surface? | [ ] | [ ] | [X] |
| Did sealing material rise to surface? | [ ] | [ ] | [X] |
| Did material settle after 24 hours? | [ ] | [ ] | [X] |
| If yes, was hole retopped? | [ ] | [ ] | [X] |
| If bentonite chips were used, were they hydrated with water from a known safe source? | [ ] | [ ] | [X] |

Required Method of Placing Sealing Material
[X] Conductor Pipe-Gravity [ ] Conductor Pipe-Pumped
[ ] Screened & Poured (Bentonite Chips) [ ] Other (Explain): _____

Sealing Materials
[ ] Neat Cement Grout [ ] Concrete
[ ] Sand-Cement (Concrete) Grout [ ] Bentonite Chips

*For Monitoring Wells and Monitoring Well Boreholes Only:*
[X] Bentonite Chips [ ] Bentonite - Cement Grout
[ ] Granular Bentonite [ ] Bentonite - Sand Slurry

## 5. Material Used to Fill Well / Drillhole

| Material | From (ft.) | To (ft.) | No. Yards, Sacks Sealant or Volume (circle one) | Mix Ratio or Mud Weight |
|---|---|---|---|---|
| Bentonite | Surface | 10 | | |
| | | | | |
| | | | | |

## 6. Comments

VAP-36

## 7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing: Braun Intertec/Range Drilling, Arcadis (Amy Parish)
License #:
Date of Filling & Sealing or Verification (mm/dd/yyyy): 6/26/2018
Street or Route: 126 N. Jefferson Street, Suite 400
Telephone Number: ( 414 ) 276-7742
City: Milwaukee State: WI ZIP Code: 53202
Signature of Person Doing Work: Amy Parish
Date Signed: 9/27/2018

**DNR Use Only**
Date Received:
Noted By:
Comments:

State of Wis., Dept. of Natural Resources
dnr.wi.gov

# Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)



**Notice:** Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and chs. NR 141 and 812, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between $10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

[X] **Verification Only of Fill and Seal**

**Route to DNR Bureau:**
[ ] Drinking Water [ ] Watershed/Wastewater [X] Remediation/Redevelopment
[ ] Waste Management [ ] Other: _____

## 1. Well Location Information

County: Marinette
WI Unique Well # of Removed Well: ___ ___ ___ ___ ___
Hicap #:

Latitude / Longitude (see instructions): State Plane - N, E
451884.06 N, 2582042.31 E
Format Code: [ ] DD [ ] DDM
Method Code: [ ] GPS008 [ ] SCR002 [X] OTH001

¼ / ¼: ¼:
or Gov't Lot #:
Section:
Township: N
Range: [ ] E [ ] W

Well Street Address: Heath Lane
Well City, Village or Town: Peshtigo
Well ZIP Code: 54157
Subdivision Name:
Lot #:

Reason for Removal from Service: Temporary Borehole
WI Unique Well # of Replacement Well: ___ ___ ___ ___ ___

## 2. Facility / Owner Information

Facility Name: Tyco FTC
Facility ID (FID or PWS): 438005590
License/Permit/Monitoring #:
Original Well Owner: Tyco
Present Well Owner: Tyco
Mailing Address of Present Owner: 2700 Industrial Parkway South
City of Present Owner: Marinette
State: WI
ZIP Code: 54143

## 3. Filled & Sealed Well / Drillhole / Borehole Information

[ ] Monitoring Well
[ ] Water Well
[X] Borehole / Drillhole

Original Construction Date (mm/dd/yyyy): 06/26/2018
If a Well Construction Report is available, please attach.

Construction Type:
[ ] Drilled [ ] Driven (Sandpoint) [ ] Dug
[X] Other (specify): Geoprobe, direct push

Formation Type:
[X] Unconsolidated Formation [ ] Bedrock

Total Well Depth From Ground Surface (ft.): 20 ft
Casing Diameter (in.):
Lower Drillhole Diameter (in.): 2 in
Casing Depth (ft.):

Was well annular space grouted? [ ] Yes [X] No [ ] Unknown
If yes, to what depth (feet)?
Depth to Water (feet)

## 4. Pump, Liner, Screen, Casing & Sealing Material

| | Yes | No | N/A |
|---|---|---|---|
| Pump and piping removed? | [ ] | [ ] | [X] |
| Liner(s) removed? | [ ] | [ ] | [X] |
| Liner(s) perforated? | [ ] | [ ] | [X] |
| Screen removed? | [ ] | [ ] | [X] |
| Casing left in place? | [ ] | [ ] | [X] |
| Was casing cut off below surface? | [ ] | [ ] | [X] |
| Did sealing material rise to surface? | [ ] | [ ] | [X] |
| Did material settle after 24 hours? | [ ] | [ ] | [X] |
| If yes, was hole retopped? | [ ] | [ ] | [X] |
| If bentonite chips were used, were they hydrated with water from a known safe source? | [ ] | [ ] | [X] |

Required Method of Placing Sealing Material
[X] Conductor Pipe-Gravity [ ] Conductor Pipe-Pumped
[ ] Screened & Poured (Bentonite Chips) [ ] Other (Explain): _____

Sealing Materials
[ ] Neat Cement Grout [ ] Concrete
[ ] Sand-Cement (Concrete) Grout [ ] Bentonite Chips

*For Monitoring Wells and Monitoring Well Boreholes Only:*
[X] Bentonite Chips [ ] Bentonite - Cement Grout
[ ] Granular Bentonite [ ] Bentonite - Sand Slurry

## 5. Material Used to Fill Well / Drillhole

| Material | From (ft.) | To (ft.) | No. Yards, Sacks Sealant or Volume (circle one) | Mix Ratio or Mud Weight |
|---|---|---|---|---|
| Bentonite | Surface | 20 | | |
| | | | | |
| | | | | |

## 6. Comments

VAP-36

## 7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing: Braun Intertec/Range Drilling, Arcadis (Amy Parish)
License #:
Date of Filling & Sealing or Verification (mm/dd/yyyy): 6/26/2018
Street or Route: 126 N. Jefferson Street, Suite 400
Telephone Number: ( 414 ) 276-7742
City: Milwaukee
State: WI
ZIP Code: 53202
Signature of Person Doing Work: Amy Parish
Date Signed: 9/27/2018

**DNR Use Only**
Date Received:
Noted By:
Comments:

State of Wis., Dept. of Natural Resources
dnr.wi.gov

# Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)



**Notice:** Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and chs. NR 141 and 812, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between $10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

[X] **Verification Only of Fill and Seal**

**Route to DNR Bureau:**
[ ] Drinking Water [ ] Watershed/Wastewater [X] Remediation/Redevelopment
[ ] Waste Management [ ] Other: _____

## 1. Well Location Information

County: Marinette
WI Unique Well # of Removed Well: _ _ _ _ _
Hicap #:

Latitude / Longitude (see instructions): State Plane - N, E
451884.06 N, 2582042.31 E
Format Code: [ ] DD [ ] DDM
Method Code: [ ] GPS008 [ ] SCR002 [X] OTH001

¼ / ¼: ¼: Section: Township: N Range: [ ] E [ ] W
or Gov't Lot #:

Well Street Address: Heath Lane
Well City, Village or Town: Peshtigo
Well ZIP Code: 54157
Subdivision Name:
Lot #:

Reason for Removal from Service: Temporary Borehole
WI Unique Well # of Replacement Well: _ _ _ _ _

## 2. Facility / Owner Information

Facility Name: Tyco FTC
Facility ID (FID or PWS): 438005590
License/Permit/Monitoring #:
Original Well Owner: Tyco
Present Well Owner: Tyco
Mailing Address of Present Owner: 2700 Industrial Parkway South
City of Present Owner: Marinette
State: WI
ZIP Code: 54143

## 3. Filled & Sealed Well / Drillhole / Borehole Information

[ ] Monitoring Well
[ ] Water Well
[X] Borehole / Drillhole

Original Construction Date (mm/dd/yyyy): 06/26/2018
If a Well Construction Report is available, please attach.

Construction Type:
[ ] Drilled [ ] Driven (Sandpoint) [ ] Dug
[X] Other (specify): Geoprobe, direct push

Formation Type:
[X] Unconsolidated Formation [ ] Bedrock

Total Well Depth From Ground Surface (ft.): 30 ft
Casing Diameter (in.):
Lower Drillhole Diameter (in.): 2 in
Casing Depth (ft.):

Was well annular space grouted? [ ] Yes [X] No [ ] Unknown
If yes, to what depth (feet)?
Depth to Water (feet)

## 4. Pump, Liner, Screen, Casing & Sealing Material

| | Yes | No | N/A |
|---|---|---|---|
| Pump and piping removed? | [ ] | [ ] | [X] |
| Liner(s) removed? | [ ] | [ ] | [X] |
| Liner(s) perforated? | [ ] | [ ] | [X] |
| Screen removed? | [ ] | [ ] | [X] |
| Casing left in place? | [ ] | [ ] | [X] |
| Was casing cut off below surface? | [ ] | [ ] | [X] |
| Did sealing material rise to surface? | [ ] | [ ] | [X] |
| Did material settle after 24 hours? | [ ] | [ ] | [X] |
| If yes, was hole retopped? | [ ] | [ ] | [X] |
| If bentonite chips were used, were they hydrated with water from a known safe source? | [ ] | [ ] | [X] |

Required Method of Placing Sealing Material
[X] Conductor Pipe-Gravity [ ] Conductor Pipe-Pumped
[ ] Screened & Poured (Bentonite Chips) [ ] Other (Explain): _____

Sealing Materials
[ ] Neat Cement Grout [ ] Concrete
[ ] Sand-Cement (Concrete) Grout [ ] Bentonite Chips

*For Monitoring Wells and Monitoring Well Boreholes Only:*
[X] Bentonite Chips [ ] Bentonite - Cement Grout
[ ] Granular Bentonite [ ] Bentonite - Sand Slurry

## 5. Material Used to Fill Well / Drillhole

| Material | From (ft.) | To (ft.) | No. Yards, Sacks Sealant or Volume (circle one) | Mix Ratio or Mud Weight |
|---|---|---|---|---|
| Bentonite | Surface | 30 | | |
| | | | | |
| | | | | |

## 6. Comments

VAP-36

## 7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing: Braun Intertec/Range Drilling, Arcadis (Amy Parish)
License #:
Date of Filling & Sealing or Verification (mm/dd/yyyy): 6/26/2018
Street or Route: 126 N. Jefferson Street, Suite 400
Telephone Number: ( 414 ) 276-7742
City: Milwaukee
State: WI
ZIP Code: 53202
Signature of Person Doing Work: Amy Parise
Date Signed: 9/27/2018

**DNR Use Only**
Date Received:
Noted By:
Comments:

State of Wis., Dept. of Natural Resources
dnr.wi.gov

# Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)



**Notice:** Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and chs. NR 141 and 812, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between $10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

[X] **Verification Only of Fill and Seal**

**Route to DNR Bureau:**
[ ] Drinking Water [ ] Watershed/Wastewater [X] Remediation/Redevelopment
[ ] Waste Management [ ] Other: _____

## 1. Well Location Information

County: Marinette
WI Unique Well # of Removed Well: ___ ___ ___ ___ ___
Hicap #:

Latitude / Longitude (see instructions): State Plane - N, E
451884.06 N, 2582042.31 E
Format Code: [ ] DD [ ] DDM
Method Code: [ ] GPS008 [ ] SCR002 [X] OTH001

¼ / ¼: ¼: Section: Township: N Range: [ ] E [ ] W
or Gov't Lot #:

Well Street Address: Heath Lane
Well City, Village or Town: Peshtigo
Well ZIP Code: 54157
Subdivision Name:
Lot #:

Reason for Removal from Service: Temporary Borehole
WI Unique Well # of Replacement Well: ___ ___ ___ ___ ___

## 3. Filled & Sealed Well / Drillhole / Borehole Information

[ ] Monitoring Well
[ ] Water Well
[X] Borehole / Drillhole

Original Construction Date (mm/dd/yyyy): 06/26/2018
If a Well Construction Report is available, please attach.

Construction Type:
[ ] Drilled [ ] Driven (Sandpoint) [ ] Dug
[X] Other (specify): Geoprobe, direct push

Formation Type:
[X] Unconsolidated Formation [ ] Bedrock

Total Well Depth From Ground Surface (ft.): 40 ft
Casing Diameter (in.):
Lower Drillhole Diameter (in.): 2 in
Casing Depth (ft.):

Was well annular space grouted? [ ] Yes [X] No [ ] Unknown
If yes, to what depth (feet)?
Depth to Water (feet)

## 2. Facility / Owner Information

Facility Name: Tyco FTC
Facility ID (FID or PWS): 438005590
License/Permit/Monitoring #:
Original Well Owner: Tyco
Present Well Owner: Tyco
Mailing Address of Present Owner: 2700 Industrial Parkway South
City of Present Owner: Marinette
State: WI
ZIP Code: 54143

## 4. Pump, Liner, Screen, Casing & Sealing Material

| | Yes | No | N/A |
|---|---|---|---|
| Pump and piping removed? | [ ] | [ ] | [X] |
| Liner(s) removed? | [ ] | [ ] | [X] |
| Liner(s) perforated? | [ ] | [ ] | [X] |
| Screen removed? | [ ] | [ ] | [X] |
| Casing left in place? | [ ] | [ ] | [X] |
| Was casing cut off below surface? | [ ] | [ ] | [X] |
| Did sealing material rise to surface? | [ ] | [ ] | [X] |
| Did material settle after 24 hours? | [ ] | [ ] | [X] |
| If yes, was hole retopped? | [ ] | [ ] | [X] |
| If bentonite chips were used, were they hydrated with water from a known safe source? | [ ] | [ ] | [X] |

Required Method of Placing Sealing Material
[X] Conductor Pipe-Gravity [ ] Conductor Pipe-Pumped
[ ] Screened & Poured (Bentonite Chips) [ ] Other (Explain): _____

Sealing Materials
[ ] Neat Cement Grout [ ] Concrete
[ ] Sand-Cement (Concrete) Grout [ ] Bentonite Chips

*For Monitoring Wells and Monitoring Well Boreholes Only:*
[X] Bentonite Chips [ ] Bentonite - Cement Grout
[ ] Granular Bentonite [ ] Bentonite - Sand Slurry

## 5. Material Used to Fill Well / Drillhole

| Material | From (ft.) | To (ft.) | No. Yards, Sacks Sealant or Volume (circle one) | Mix Ratio or Mud Weight |
|---|---|---|---|---|
| Bentonite | Surface | 40 | | |
| | | | | |
| | | | | |

## 6. Comments

VAP-36

## 7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing: Braun Intertec/Range Drilling, Arcadis (Amy Parish)
License #:
Date of Filling & Sealing or Verification (mm/dd/yyyy): 6/26/2018
Street or Route: 126 N. Jefferson Street, Suite 400
Telephone Number: ( 414 ) 276-7742
City: Milwaukee
State: WI
ZIP Code: 53202
Signature of Person Doing Work: Amy Parish
Date Signed: 9/27/2018

**DNR Use Only**
Date Received:
Noted By:
Comments:

State of Wis., Dept. of Natural Resources
dnr.wi.gov

# Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)



**Notice:** Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and chs. NR 141 and 812, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between $10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

[X] **Verification Only of Fill and Seal**

**Route to DNR Bureau:**
[ ] Drinking Water [ ] Watershed/Wastewater [X] Remediation/Redevelopment
[ ] Waste Management [ ] Other: _____

## 1. Well Location Information

County: Marinette
WI Unique Well # of Removed Well: _ _ _ _ _
Hicap #:

Latitude / Longitude (see instructions): State Plane - N, E
451821.35 N, 2580243.32 E
Format Code: [ ] DD [ ] DDM
Method Code: [ ] GPS008 [ ] SCR002 [X] OTH001

¼ / ¼: ¼: Section: Township: N Range: [ ] E [ ] W
or Gov't Lot #:

Well Street Address: Heath Lane
Well City, Village or Town: Peshtigo
Well ZIP Code: 54157
Subdivision Name:
Lot #:

Reason for Removal from Service: Temporary Borehole
WI Unique Well # of Replacement Well: _ _ _ _ _

## 2. Facility / Owner Information

Facility Name: Tyco FTC
Facility ID (FID or PWS): 438005590
License/Permit/Monitoring #:
Original Well Owner: Tyco
Present Well Owner: Tyco
Mailing Address of Present Owner: 2700 Industrial Parkway South
City of Present Owner: Marinette
State: WI
ZIP Code: 54143

## 3. Filled & Sealed Well / Drillhole / Borehole Information

[ ] Monitoring Well
[ ] Water Well
[X] Borehole / Drillhole

Original Construction Date (mm/dd/yyyy): 06/25/2018
If a Well Construction Report is available, please attach.

Construction Type:
[ ] Drilled [ ] Driven (Sandpoint) [ ] Dug
[X] Other (specify): Geoprobe, direct push

Formation Type:
[X] Unconsolidated Formation [ ] Bedrock

Total Well Depth From Ground Surface (ft.): 13 ft
Casing Diameter (in.):
Lower Drillhole Diameter (in.): 2 in
Casing Depth (ft.):

Was well annular space grouted? [ ] Yes [X] No [ ] Unknown
If yes, to what depth (feet)?
Depth to Water (feet)

## 4. Pump, Liner, Screen, Casing & Sealing Material

| | Yes | No | N/A |
|---|---|---|---|
| Pump and piping removed? | [ ] | [ ] | [X] |
| Liner(s) removed? | [ ] | [ ] | [X] |
| Liner(s) perforated? | [ ] | [ ] | [X] |
| Screen removed? | [ ] | [ ] | [X] |
| Casing left in place? | [ ] | [ ] | [X] |
| Was casing cut off below surface? | [ ] | [ ] | [X] |
| Did sealing material rise to surface? | [ ] | [ ] | [X] |
| Did material settle after 24 hours? | [ ] | [ ] | [X] |
| If yes, was hole retopped? | [ ] | [ ] | [X] |
| If bentonite chips were used, were they hydrated with water from a known safe source? | [ ] | [ ] | [X] |

Required Method of Placing Sealing Material
[X] Conductor Pipe-Gravity [ ] Conductor Pipe-Pumped
[ ] Screened & Poured (Bentonite Chips) [ ] Other (Explain): _____

Sealing Materials
[ ] Neat Cement Grout [ ] Concrete
[ ] Sand-Cement (Concrete) Grout [ ] Bentonite Chips

*For Monitoring Wells and Monitoring Well Boreholes Only:*
[X] Bentonite Chips [ ] Bentonite - Cement Grout
[ ] Granular Bentonite [ ] Bentonite - Sand Slurry

## 5. Material Used to Fill Well / Drillhole

| Material | From (ft.) | To (ft.) | No. Yards, Sacks Sealant or Volume (circle one) | Mix Ratio or Mud Weight |
|---|---|---|---|---|
| Bentonite | Surface | 13 | | |
| | | | | |
| | | | | |

## 6. Comments

VAP-37

## 7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing: Braun Intertec/Range Drilling, Arcadis (Amy Parish)
License #:
Date of Filling & Sealing or Verification (mm/dd/yyyy): 6/25/2018
Street or Route: 126 N. Jefferson Street, Suite 400
Telephone Number: ( 414 ) 276-7742
City: Milwaukee
State: WI
ZIP Code: 53202
Signature of Person Doing Work: Amy Parish
Date Signed: 9/27/2018

**DNR Use Only**
Date Received:
Noted By:
Comments:

State of Wis., Dept. of Natural Resources
dnr.wi.gov

# Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)



**Notice:** Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and chs. NR 141 and 812, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between $10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

[X] **Verification Only of Fill and Seal**

**Route to DNR Bureau:**
[ ] Drinking Water [ ] Watershed/Wastewater [X] Remediation/Redevelopment
[ ] Waste Management [ ] Other: _____

## 1. Well Location Information

County: Marinette
WI Unique Well # of Removed Well: ___ ___ ___ ___ ___
Hicap #:

Latitude / Longitude (see instructions): State Plane - N, E
451821.35 N, 2580243.32 E
Format Code: [ ] DD [ ] DDM
Method Code: [ ] GPS008 [ ] SCR002 [X] OTH001

¼ / ¼: ¼:
or Gov't Lot #:
Section:
Township: N
Range: [ ] E [ ] W

Well Street Address: Heath Lane
Well City, Village or Town: Peshtigo
Well ZIP Code: 54157
Subdivision Name:
Lot #:

Reason for Removal from Service: Temporary Borehole
WI Unique Well # of Replacement Well: ___ ___ ___ ___ ___

## 2. Facility / Owner Information

Facility Name: Tyco FTC
Facility ID (FID or PWS): 438005590
License/Permit/Monitoring #:
Original Well Owner: Tyco
Present Well Owner: Tyco
Mailing Address of Present Owner: 2700 Industrial Parkway South
City of Present Owner: Marinette
State: WI
ZIP Code: 54143

## 3. Filled & Sealed Well / Drillhole / Borehole Information

[ ] Monitoring Well
[ ] Water Well
[X] Borehole / Drillhole

Original Construction Date (mm/dd/yyyy): 06/25/2018
If a Well Construction Report is available, please attach.

Construction Type:
[ ] Drilled [ ] Driven (Sandpoint) [ ] Dug
[X] Other (specify): Geoprobe, direct push

Formation Type:
[X] Unconsolidated Formation [ ] Bedrock

Total Well Depth From Ground Surface (ft.): 23 ft
Casing Diameter (in.):
Lower Drillhole Diameter (in.): 2 in
Casing Depth (ft.):

Was well annular space grouted? [ ] Yes [X] No [ ] Unknown
If yes, to what depth (feet)?
Depth to Water (feet)

## 4. Pump, Liner, Screen, Casing & Sealing Material

| | Yes | No | N/A |
|---|---|---|---|
| Pump and piping removed? | [ ] | [ ] | [X] |
| Liner(s) removed? | [ ] | [ ] | [X] |
| Liner(s) perforated? | [ ] | [ ] | [X] |
| Screen removed? | [ ] | [ ] | [X] |
| Casing left in place? | [ ] | [ ] | [X] |
| Was casing cut off below surface? | [ ] | [ ] | [X] |
| Did sealing material rise to surface? | [ ] | [ ] | [X] |
| Did material settle after 24 hours? | [ ] | [ ] | [X] |
| If yes, was hole retopped? | [ ] | [ ] | [X] |
| If bentonite chips were used, were they hydrated with water from a known safe source? | [ ] | [ ] | [X] |

Required Method of Placing Sealing Material
[X] Conductor Pipe-Gravity [ ] Conductor Pipe-Pumped
[ ] Screened & Poured (Bentonite Chips) [ ] Other (Explain): _____

Sealing Materials
[ ] Neat Cement Grout [ ] Concrete
[ ] Sand-Cement (Concrete) Grout [ ] Bentonite Chips

*For Monitoring Wells and Monitoring Well Boreholes Only:*
[X] Bentonite Chips [ ] Bentonite - Cement Grout
[ ] Granular Bentonite [ ] Bentonite - Sand Slurry

## 5. Material Used to Fill Well / Drillhole

| Material | From (ft.) | To (ft.) | No. Yards, Sacks Sealant or Volume (circle one) | Mix Ratio or Mud Weight |
|---|---|---|---|---|
| Bentonite | Surface | 23 | | |
| | | | | |
| | | | | |

## 6. Comments

VAP-37

## 7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing: Braun Intertec/Range Drilling, Arcadis (Amy Parish)
License #:
Date of Filling & Sealing or Verification (mm/dd/yyyy): 6/25/2018
Street or Route: 126 N. Jefferson Street, Suite 400
Telephone Number: ( 414 ) 276-7742
City: Milwaukee
State: WI
ZIP Code: 53202
Signature of Person Doing Work: Amy Parise
Date Signed: 9/27/2018

**DNR Use Only**
Date Received:
Noted By:
Comments:

State of Wis., Dept. of Natural Resources
dnr.wi.gov

# Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)



**Notice:** Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and chs. NR 141 and 812, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between $10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

[X] **Verification Only of Fill and Seal**

**Route to DNR Bureau:**
[ ] Drinking Water [ ] Watershed/Wastewater [X] Remediation/Redevelopment
[ ] Waste Management [ ] Other: _____

## 1. Well Location Information

County: Marinette
WI Unique Well # of Removed Well: _ _ _ _ _
Hicap #:

Latitude / Longitude (see instructions): State Plane - N, E
451821.35 N, 2580243.32 E
Format Code: [ ] DD [ ] DDM
Method Code: [ ] GPS008 [ ] SCR002 [X] OTH001

¼ / ¼: ¼: Section: Township: N Range: [ ] E [ ] W
or Gov't Lot #:

Well Street Address: Heath Lane
Well City, Village or Town: Peshtigo
Well ZIP Code: 54157
Subdivision Name:
Lot #:

Reason for Removal from Service: Temporary Borehole
WI Unique Well # of Replacement Well: _ _ _ _ _

## 2. Facility / Owner Information

Facility Name: Tyco FTC
Facility ID (FID or PWS): 438005590
License/Permit/Monitoring #:
Original Well Owner: Tyco
Present Well Owner: Tyco
Mailing Address of Present Owner: 2700 Industrial Parkway South
City of Present Owner: Marinette State: WI ZIP Code: 54143

## 3. Filled & Sealed Well / Drillhole / Borehole Information

[ ] Monitoring Well
[ ] Water Well
[X] Borehole / Drillhole

Original Construction Date (mm/dd/yyyy): 06/25/2018
If a Well Construction Report is available, please attach.

Construction Type:
[ ] Drilled [ ] Driven (Sandpoint) [ ] Dug
[X] Other (specify): Geoprobe, direct push

Formation Type:
[X] Unconsolidated Formation [ ] Bedrock

Total Well Depth From Ground Surface (ft.): 33 ft
Casing Diameter (in.):
Lower Drillhole Diameter (in.): 2 in
Casing Depth (ft.):

Was well annular space grouted? [ ] Yes [X] No [ ] Unknown
If yes, to what depth (feet)?
Depth to Water (feet)

## 4. Pump, Liner, Screen, Casing & Sealing Material

| | Yes | No | N/A |
|---|---|---|---|
| Pump and piping removed? | [ ] | [ ] | [X] |
| Liner(s) removed? | [ ] | [ ] | [X] |
| Liner(s) perforated? | [ ] | [ ] | [X] |
| Screen removed? | [ ] | [ ] | [X] |
| Casing left in place? | [ ] | [ ] | [X] |
| Was casing cut off below surface? | [ ] | [ ] | [X] |
| Did sealing material rise to surface? | [ ] | [ ] | [X] |
| Did material settle after 24 hours? | [ ] | [ ] | [X] |
| If yes, was hole retopped? | [ ] | [ ] | [X] |
| If bentonite chips were used, were they hydrated with water from a known safe source? | [ ] | [ ] | [X] |

Required Method of Placing Sealing Material
[X] Conductor Pipe-Gravity [ ] Conductor Pipe-Pumped
[ ] Screened & Poured (Bentonite Chips) [ ] Other (Explain): _____

Sealing Materials
[ ] Neat Cement Grout [ ] Concrete
[ ] Sand-Cement (Concrete) Grout [ ] Bentonite Chips

*For Monitoring Wells and Monitoring Well Boreholes Only:*
[X] Bentonite Chips [ ] Bentonite - Cement Grout
[ ] Granular Bentonite [ ] Bentonite - Sand Slurry

## 5. Material Used to Fill Well / Drillhole

| Material | From (ft.) | To (ft.) | No. Yards, Sacks Sealant or Volume (circle one) | Mix Ratio or Mud Weight |
|---|---|---|---|---|
| Bentonite | Surface | 33 | | |
| | | | | |
| | | | | |

## 6. Comments

VAP-37

## 7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing: Braun Intertec/Range Drilling, Arcadis (Amy Parish)
License #:
Date of Filling & Sealing or Verification (mm/dd/yyyy): 6/25/2018
Street or Route: 126 N. Jefferson Street, Suite 400
Telephone Number: ( 414 ) 276-7742
City: Milwaukee State: WI ZIP Code: 53202
Signature of Person Doing Work: Amy Parish
Date Signed: 9/27/2018

**DNR Use Only**
Date Received:
Noted By:
Comments:

State of Wis., Dept. of Natural Resources
dnr.wi.gov

# Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)



**Notice:** Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and chs. NR 141 and 812, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between $10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

[X] **Verification Only of Fill and Seal**

**Route to DNR Bureau:**
[ ] Drinking Water [ ] Watershed/Wastewater [X] Remediation/Redevelopment
[ ] Waste Management [ ] Other: _____

## 1. Well Location Information

County: Marinette
WI Unique Well # of Removed Well: _ _ _ _ _
Hicap #:

Latitude / Longitude (see instructions): State Plane - N, E
452044.24 N, 2578152.75 E
Format Code: [ ] DD [ ] DDM
Method Code: [ ] GPS008 [ ] SCR002 [X] OTH001

¼ / ¼: ¼: or Gov't Lot #:
Section:
Township: N
Range: [ ] E [ ] W

Well Street Address: Heath Lane
Well City, Village or Town: Peshtigo
Well ZIP Code: 54157
Subdivision Name:
Lot #:

Reason for Removal from Service: Temporary Borehole
WI Unique Well # of Replacement Well: _ _ _ _ _

## 2. Facility / Owner Information

Facility Name: Tyco FTC
Facility ID (FID or PWS): 438005590
License/Permit/Monitoring #:
Original Well Owner: Tyco
Present Well Owner: Tyco
Mailing Address of Present Owner: 2700 Industrial Parkway South
City of Present Owner: Marinette
State: WI
ZIP Code: 54143

## 3. Filled & Sealed Well / Drillhole / Borehole Information

[ ] Monitoring Well
[ ] Water Well
[X] Borehole / Drillhole

Original Construction Date (mm/dd/yyyy): 06/25/2018
If a Well Construction Report is available, please attach.

Construction Type:
[ ] Drilled [ ] Driven (Sandpoint) [ ] Dug
[X] Other (specify): Geoprobe, direct push

Formation Type:
[X] Unconsolidated Formation [ ] Bedrock

Total Well Depth From Ground Surface (ft.): 25 ft
Casing Diameter (in.):
Lower Drillhole Diameter (in.): 2 in
Casing Depth (ft.):

Was well annular space grouted? [ ] Yes [X] No [ ] Unknown
If yes, to what depth (feet)?
Depth to Water (feet)

## 4. Pump, Liner, Screen, Casing & Sealing Material

| | Yes | No | N/A |
|---|---|---|---|
| Pump and piping removed? | [ ] | [ ] | [X] |
| Liner(s) removed? | [ ] | [ ] | [X] |
| Liner(s) perforated? | [ ] | [ ] | [X] |
| Screen removed? | [ ] | [ ] | [X] |
| Casing left in place? | [ ] | [ ] | [X] |
| Was casing cut off below surface? | [ ] | [ ] | [X] |
| Did sealing material rise to surface? | [ ] | [ ] | [X] |
| Did material settle after 24 hours? | [ ] | [ ] | [X] |
| If yes, was hole retopped? | [ ] | [ ] | [X] |
| If bentonite chips were used, were they hydrated with water from a known safe source? | [ ] | [ ] | [X] |

Required Method of Placing Sealing Material
[X] Conductor Pipe-Gravity [ ] Conductor Pipe-Pumped
[ ] Screened & Poured (Bentonite Chips) [ ] Other (Explain): _____

Sealing Materials
[ ] Neat Cement Grout [ ] Concrete
[ ] Sand-Cement (Concrete) Grout [ ] Bentonite Chips

*For Monitoring Wells and Monitoring Well Boreholes Only:*
[X] Bentonite Chips [ ] Bentonite - Cement Grout
[ ] Granular Bentonite [ ] Bentonite - Sand Slurry

## 5. Material Used to Fill Well / Drillhole

| Material | From (ft.) | To (ft.) | No. Yards, Sacks Sealant or Volume (circle one) | Mix Ratio or Mud Weight |
|---|---|---|---|---|
| Bentonite | Surface | 25 | | |
| | | | | |
| | | | | |

## 6. Comments

VAP-38

## 7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing: Braun Intertec/Range Drilling, Arcadis (Amy Parish)
License #:
Date of Filling & Sealing or Verification (mm/dd/yyyy): 6/25/2018
Street or Route: 126 N. Jefferson Street, Suite 400
Telephone Number: ( 414 ) 276-7742
City: Milwaukee
State: WI
ZIP Code: 53202
Signature of Person Doing Work: Amy Parise
Date Signed: 9/27/2018

**DNR Use Only**
Date Received:
Noted By:
Comments:

State of Wis., Dept. of Natural Resources
dnr.wi.gov

# Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)



**Notice:** Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and chs. NR 141 and 812, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between $10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

[X] **Verification Only of Fill and Seal**

**Route to DNR Bureau:**
[ ] Drinking Water [ ] Watershed/Wastewater [X] Remediation/Redevelopment
[ ] Waste Management [ ] Other: _____

## 1. Well Location Information

County: Marinette
WI Unique Well # of Removed Well: _ _ _ _ _
Hicap #:

Latitude / Longitude (see instructions): State Plane - N, E
452044.24 N, 2578152.75 E
Format Code: [ ] DD [ ] DDM
Method Code: [ ] GPS008 [ ] SCR002 [X] OTH001

¼ / ¼: ¼: or Gov't Lot #:
Section:
Township: N
Range: [ ] E [ ] W

Well Street Address: Heath Lane
Well City, Village or Town: Peshtigo
Well ZIP Code: 54157
Subdivision Name:
Lot #:

Reason for Removal from Service: Temporary Borehole
WI Unique Well # of Replacement Well: _ _ _ _ _

## 2. Facility / Owner Information

Facility Name: Tyco FTC
Facility ID (FID or PWS): 438005590
License/Permit/Monitoring #:
Original Well Owner: Tyco
Present Well Owner: Tyco
Mailing Address of Present Owner: 2700 Industrial Parkway South
City of Present Owner: Marinette
State: WI
ZIP Code: 54143

## 3. Filled & Sealed Well / Drillhole / Borehole Information

[ ] Monitoring Well
[ ] Water Well
[X] Borehole / Drillhole

Original Construction Date (mm/dd/yyyy): 06/25/2018
If a Well Construction Report is available, please attach.

Construction Type:
[ ] Drilled [ ] Driven (Sandpoint) [ ] Dug
[X] Other (specify): Geoprobe, direct push

Formation Type:
[X] Unconsolidated Formation [ ] Bedrock

Total Well Depth From Ground Surface (ft.): 35 ft
Casing Diameter (in.):
Lower Drillhole Diameter (in.): 2 in
Casing Depth (ft.):

Was well annular space grouted? [ ] Yes [X] No [ ] Unknown
If yes, to what depth (feet)?
Depth to Water (feet)

## 4. Pump, Liner, Screen, Casing & Sealing Material

| | Yes | No | N/A |
|---|---|---|---|
| Pump and piping removed? | [ ] | [ ] | [X] |
| Liner(s) removed? | [ ] | [ ] | [X] |
| Liner(s) perforated? | [ ] | [ ] | [X] |
| Screen removed? | [ ] | [ ] | [X] |
| Casing left in place? | [ ] | [ ] | [X] |
| Was casing cut off below surface? | [ ] | [ ] | [X] |
| Did sealing material rise to surface? | [ ] | [ ] | [X] |
| Did material settle after 24 hours? | [ ] | [ ] | [X] |
| If yes, was hole retopped? | [ ] | [ ] | [X] |
| If bentonite chips were used, were they hydrated with water from a known safe source? | [ ] | [ ] | [X] |

Required Method of Placing Sealing Material
[X] Conductor Pipe-Gravity [ ] Conductor Pipe-Pumped
[ ] Screened & Poured (Bentonite Chips) [ ] Other (Explain): _____

Sealing Materials
[ ] Neat Cement Grout [ ] Concrete
[ ] Sand-Cement (Concrete) Grout [ ] Bentonite Chips

*For Monitoring Wells and Monitoring Well Boreholes Only:*
[X] Bentonite Chips [ ] Bentonite - Cement Grout
[ ] Granular Bentonite [ ] Bentonite - Sand Slurry

## 5. Material Used to Fill Well / Drillhole

| Material | From (ft.) | To (ft.) | No. Yards, Sacks Sealant or Volume (circle one) | Mix Ratio or Mud Weight |
|---|---|---|---|---|
| Bentonite | Surface | 35 | | |
| | | | | |
| | | | | |

## 6. Comments

VAP-38

## 7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing: Braun Intertec/Range Drilling, Arcadis (Amy Parish)
License #:
Date of Filling & Sealing or Verification (mm/dd/yyyy): 6/25/2018
Street or Route: 126 N. Jefferson Street, Suite 400
Telephone Number: ( 414 ) 276-7742
City: Milwaukee
State: WI
ZIP Code: 53202
Signature of Person Doing Work: Amy Parise
Date Signed: 9/27/2018

**DNR Use Only**
Date Received:
Noted By:
Comments:

State of Wis., Dept. of Natural Resources
dnr.wi.gov

# Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)



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[X] **Verification Only of Fill and Seal**

**Route to DNR Bureau:**
[ ] Drinking Water [ ] Watershed/Wastewater [X] Remediation/Redevelopment
[ ] Waste Management [ ] Other: _____

## 1. Well Location Information

County: Marinette
WI Unique Well # of Removed Well: _ _ _ _ _
Hicap #:

Latitude / Longitude (see instructions): State Plane - N, E
452044.24 N, 2578152.75 E
Format Code: [ ] DD [ ] DDM
Method Code: [ ] GPS008 [ ] SCR002 [X] OTH001

¼ / ¼: ¼: or Gov't Lot #:
Section:
Township: N
Range: [ ] E [ ] W

Well Street Address: Heath Lane
Well City, Village or Town: Peshtigo
Well ZIP Code: 54157
Subdivision Name:
Lot #:

Reason for Removal from Service: Temporary Borehole
WI Unique Well # of Replacement Well: _ _ _ _ _

## 2. Facility / Owner Information

Facility Name: Tyco FTC
Facility ID (FID or PWS): 438005590
License/Permit/Monitoring #:
Original Well Owner: Tyco
Present Well Owner: Tyco
Mailing Address of Present Owner: 2700 Industrial Parkway South
City of Present Owner: Marinette
State: WI
ZIP Code: 54143

## 3. Filled & Sealed Well / Drillhole / Borehole Information

[ ] Monitoring Well
[ ] Water Well
[X] Borehole / Drillhole

Original Construction Date (mm/dd/yyyy): 06/25/2018
If a Well Construction Report is available, please attach.

Construction Type:
[ ] Drilled [ ] Driven (Sandpoint) [ ] Dug
[X] Other (specify): Geoprobe, direct push

Formation Type:
[X] Unconsolidated Formation [ ] Bedrock

Total Well Depth From Ground Surface (ft.): 45 ft
Casing Diameter (in.):
Lower Drillhole Diameter (in.): 2 in
Casing Depth (ft.):

Was well annular space grouted? [ ] Yes [X] No [ ] Unknown
If yes, to what depth (feet)?
Depth to Water (feet)

## 4. Pump, Liner, Screen, Casing & Sealing Material

| | Yes | No | N/A |
|---|---|---|---|
| Pump and piping removed? | [ ] | [ ] | [X] |
| Liner(s) removed? | [ ] | [ ] | [X] |
| Liner(s) perforated? | [ ] | [ ] | [X] |
| Screen removed? | [ ] | [ ] | [X] |
| Casing left in place? | [ ] | [ ] | [X] |
| Was casing cut off below surface? | [ ] | [ ] | [X] |
| Did sealing material rise to surface? | [ ] | [ ] | [X] |
| Did material settle after 24 hours? | [ ] | [ ] | [X] |
| If yes, was hole retopped? | [ ] | [ ] | [X] |
| If bentonite chips were used, were they hydrated with water from a known safe source? | [ ] | [ ] | [X] |

Required Method of Placing Sealing Material
[X] Conductor Pipe-Gravity [ ] Conductor Pipe-Pumped
[ ] Screened & Poured (Bentonite Chips) [ ] Other (Explain): _____

Sealing Materials
[ ] Neat Cement Grout [ ] Concrete
[ ] Sand-Cement (Concrete) Grout [ ] Bentonite Chips

*For Monitoring Wells and Monitoring Well Boreholes Only:*
[X] Bentonite Chips [ ] Bentonite - Cement Grout
[ ] Granular Bentonite [ ] Bentonite - Sand Slurry

## 5. Material Used to Fill Well / Drillhole

| Material | From (ft.) | To (ft.) | No. Yards, Sacks Sealant or Volume (circle one) | Mix Ratio or Mud Weight |
|---|---|---|---|---|
| Bentonite | Surface | 45 | | |
| | | | | |
| | | | | |

## 6. Comments

VAP-38

## 7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing: Braun Intertec/Range Drilling, Arcadis (Amy Parish)
License #:
Date of Filling & Sealing or Verification (mm/dd/yyyy): 6/25/2018
Street or Route: 126 N. Jefferson Street, Suite 400
Telephone Number: ( 414 ) 276-7742
City: Milwaukee
State: WI
ZIP Code: 53202
Signature of Person Doing Work: Amy Parish
Date Signed: 9/27/2018

**DNR Use Only**
Date Received:
Noted By:
Comments:

State of Wis., Dept. of Natural Resources
dnr.wi.gov

# Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)



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[X] **Verification Only of Fill and Seal**

**Route to DNR Bureau:**
[ ] Drinking Water [ ] Watershed/Wastewater [X] Remediation/Redevelopment
[ ] Waste Management [ ] Other: _____

## 1. Well Location Information

County: Marinette
WI Unique Well # of Removed Well: _ _ _ _ _
Hicap #:

Latitude / Longitude (see instructions): State Plane - N, E
452044.24 N, 2578152.75 E
Format Code: [ ] DD [ ] DDM
Method Code: [ ] GPS008 [ ] SCR002 [X] OTH001

¼ / ¼: ¼: or Gov't Lot #: Section: Township: N Range: [ ] E [ ] W

Well Street Address: Heath Lane
Well City, Village or Town: Peshtigo
Well ZIP Code: 54157
Subdivision Name:
Lot #:

Reason for Removal from Service: Temporary Borehole
WI Unique Well # of Replacement Well: _ _ _ _ _

## 2. Facility / Owner Information

Facility Name: Tyco FTC
Facility ID (FID or PWS): 438005590
License/Permit/Monitoring #:
Original Well Owner: Tyco
Present Well Owner: Tyco
Mailing Address of Present Owner: 2700 Industrial Parkway South
City of Present Owner: Marinette
State: WI
ZIP Code: 54143

## 3. Filled & Sealed Well / Drillhole / Borehole Information

[ ] Monitoring Well
[ ] Water Well
[X] Borehole / Drillhole

Original Construction Date (mm/dd/yyyy): 06/25/2018
If a Well Construction Report is available, please attach.

Construction Type:
[ ] Drilled [ ] Driven (Sandpoint) [ ] Dug
[X] Other (specify): Geoprobe, direct push

Formation Type:
[X] Unconsolidated Formation [ ] Bedrock

Total Well Depth From Ground Surface (ft.): 55 ft
Casing Diameter (in.):
Lower Drillhole Diameter (in.): 2 in
Casing Depth (ft.):
Was well annular space grouted? [ ] Yes [X] No [ ] Unknown
If yes, to what depth (feet)?
Depth to Water (feet)

## 4. Pump, Liner, Screen, Casing & Sealing Material

| | Yes | No | N/A |
|---|---|---|---|
| Pump and piping removed? | [ ] | [ ] | [X] |
| Liner(s) removed? | [ ] | [ ] | [X] |
| Liner(s) perforated? | [ ] | [ ] | [X] |
| Screen removed? | [ ] | [ ] | [X] |
| Casing left in place? | [ ] | [ ] | [X] |
| Was casing cut off below surface? | [ ] | [ ] | [X] |
| Did sealing material rise to surface? | [ ] | [ ] | [X] |
| Did material settle after 24 hours? | [ ] | [ ] | [X] |
| If yes, was hole retopped? | [ ] | [ ] | [X] |
| If bentonite chips were used, were they hydrated with water from a known safe source? | [ ] | [ ] | [X] |

Required Method of Placing Sealing Material
[X] Conductor Pipe-Gravity [ ] Conductor Pipe-Pumped
[ ] Screened & Poured (Bentonite Chips) [ ] Other (Explain): _____

Sealing Materials
[ ] Neat Cement Grout [ ] Concrete
[ ] Sand-Cement (Concrete) Grout [ ] Bentonite Chips

*For Monitoring Wells and Monitoring Well Boreholes Only:*
[X] Bentonite Chips [ ] Bentonite - Cement Grout
[ ] Granular Bentonite [ ] Bentonite - Sand Slurry

## 5. Material Used to Fill Well / Drillhole

| Material | From (ft.) | To (ft.) | No. Yards, Sacks Sealant or Volume (circle one) | Mix Ratio or Mud Weight |
|---|---|---|---|---|
| Bentonite | Surface | 55 | | |
| | | | | |
| | | | | |

## 6. Comments

VAP-38

## 7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing: Braun Intertec/Range Drilling, Arcadis (Amy Parish)
License #:
Date of Filling & Sealing or Verification (mm/dd/yyyy): 6/25/2018
Street or Route: 126 N. Jefferson Street, Suite 400
Telephone Number: ( 414 ) 276-7742
City: Milwaukee
State: WI
ZIP Code: 53202
Signature of Person Doing Work: Amy Parise
Date Signed: 9/27/2018

**DNR Use Only**
Date Received:
Noted By:
Comments:

State of Wis., Dept. of Natural Resources
dnr.wi.gov

# Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)



**Notice:** Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and chs. NR 141 and 812, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between $10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

[X] **Verification Only of Fill and Seal**

**Route to DNR Bureau:**
[ ] Drinking Water [ ] Watershed/Wastewater [X] Remediation/Redevelopment
[ ] Waste Management [ ] Other: _____

## 1. Well Location Information

County: Marinette
WI Unique Well # of Removed Well: _ _ _ _ _
Hicap #:

Latitude / Longitude (see instructions): State Plane - N, E
464881.75 N, 2574260.31 E
Format Code: [ ] DD [ ] DDM
Method Code: [ ] GPS008 [ ] SCR002 [X] OTH001

¼ / ¼: ¼: Section: Township: N Range: [ ] E [ ] W
or Gov't Lot #:

Well Street Address: Old Peshtigo Road
Well City, Village or Town: Marinette
Well ZIP Code: 54143
Subdivision Name:
Lot #:

Reason for Removal from Service: Temporary Borehole
WI Unique Well # of Replacement Well: _ _ _ _ _

## 3. Filled & Sealed Well / Drillhole / Borehole Information

[ ] Monitoring Well
[ ] Water Well
[X] Borehole / Drillhole

Original Construction Date (mm/dd/yyyy): 07/23/2018
If a Well Construction Report is available, please attach.

Construction Type:
[ ] Drilled [ ] Driven (Sandpoint) [ ] Dug
[X] Other (specify): Geoprobe, direct push

Formation Type:
[X] Unconsolidated Formation [ ] Bedrock

Total Well Depth From Ground Surface (ft.): 10 ft
Casing Diameter (in.):
Lower Drillhole Diameter (in.): 2 in
Casing Depth (ft.):

Was well annular space grouted? [ ] Yes [X] No [ ] Unknown
If yes, to what depth (feet)?
Depth to Water (feet)

## 2. Facility / Owner Information

Facility Name: Tyco FTC
Facility ID (FID or PWS): 438005590
License/Permit/Monitoring #:
Original Well Owner: Tyco
Present Well Owner: Tyco
Mailing Address of Present Owner: 2700 Industrial Parkway South
City of Present Owner: Marinette
State: WI
ZIP Code: 54143

## 4. Pump, Liner, Screen, Casing & Sealing Material

| | Yes | No | N/A |
|---|---|---|---|
| Pump and piping removed? | [ ] | [ ] | [X] |
| Liner(s) removed? | [ ] | [ ] | [X] |
| Liner(s) perforated? | [ ] | [ ] | [X] |
| Screen removed? | [ ] | [ ] | [X] |
| Casing left in place? | [ ] | [ ] | [X] |
| Was casing cut off below surface? | [ ] | [ ] | [X] |
| Did sealing material rise to surface? | [ ] | [ ] | [X] |
| Did material settle after 24 hours? | [ ] | [ ] | [X] |
| If yes, was hole retopped? | [ ] | [ ] | [X] |
| If bentonite chips were used, were they hydrated with water from a known safe source? | [ ] | [ ] | [X] |

Required Method of Placing Sealing Material
[X] Conductor Pipe-Gravity [ ] Conductor Pipe-Pumped
[ ] Screened & Poured (Bentonite Chips) [ ] Other (Explain): _____

Sealing Materials
[ ] Neat Cement Grout [ ] Concrete
[ ] Sand-Cement (Concrete) Grout [ ] Bentonite Chips

*For Monitoring Wells and Monitoring Well Boreholes Only:*
[X] Bentonite Chips [ ] Bentonite - Cement Grout
[ ] Granular Bentonite [ ] Bentonite - Sand Slurry

## 5. Material Used to Fill Well / Drillhole

| Material | From (ft.) | To (ft.) | No. Yards, Sacks Sealant or Volume (circle one) | Mix Ratio or Mud Weight |
|---|---|---|---|---|
| Bentonite | Surface | 10 | | |
| | | | | |
| | | | | |

## 6. Comments

VAP-39

## 7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing: Braun Intertec/Range Drilling, Arcadis (Amy Parish)
License #:
Date of Filling & Sealing or Verification (mm/dd/yyyy): 7/23/2018
Street or Route: 126 N. Jefferson Street, Suite 400
Telephone Number: ( 414 ) 276-7742
City: Milwaukee
State: WI
ZIP Code: 53202
Signature of Person Doing Work: Amy Parish
Date Signed: 9/27/2018

**DNR Use Only**
Date Received:
Noted By:
Comments:

State of Wis., Dept. of Natural Resources
dnr.wi.gov

# Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)



**Notice:** Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and chs. NR 141 and 812, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between $10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

[X] **Verification Only of Fill and Seal**

**Route to DNR Bureau:**
[ ] Drinking Water [ ] Watershed/Wastewater [X] Remediation/Redevelopment
[ ] Waste Management [ ] Other: _____

## 1. Well Location Information

County: Marinette
WI Unique Well # of Removed Well: _ _ _ _ _
Hicap #:

Latitude / Longitude (see instructions): State Plane - N, E
464881.75 N, 2574260.31 E
Format Code: [ ] DD [ ] DDM
Method Code: [ ] GPS008 [ ] SCR002 [X] OTH001

¼ / ¼: ¼: Section: Township: N Range: [ ] E [ ] W
or Gov't Lot #:

Well Street Address: Old Peshtigo Road
Well City, Village or Town: Marinette
Well ZIP Code: 54143
Subdivision Name:
Lot #:

Reason for Removal from Service: Temporary Borehole
WI Unique Well # of Replacement Well: _ _ _ _ _

## 2. Facility / Owner Information

Facility Name: Tyco FTC
Facility ID (FID or PWS): 438005590
License/Permit/Monitoring #:
Original Well Owner: Tyco
Present Well Owner: Tyco
Mailing Address of Present Owner: 2700 Industrial Parkway South
City of Present Owner: Marinette State: WI ZIP Code: 54143

## 3. Filled & Sealed Well / Drillhole / Borehole Information

[ ] Monitoring Well
[ ] Water Well
[X] Borehole / Drillhole

Original Construction Date (mm/dd/yyyy): 07/23/2018
If a Well Construction Report is available, please attach.

Construction Type:
[ ] Drilled [ ] Driven (Sandpoint) [ ] Dug
[X] Other (specify): Geoprobe, direct push

Formation Type:
[X] Unconsolidated Formation [ ] Bedrock

Total Well Depth From Ground Surface (ft.): 20 ft
Casing Diameter (in.):
Lower Drillhole Diameter (in.): 2 in
Casing Depth (ft.):

Was well annular space grouted? [ ] Yes [X] No [ ] Unknown
If yes, to what depth (feet)?
Depth to Water (feet)

## 4. Pump, Liner, Screen, Casing & Sealing Material

| | Yes | No | N/A |
|---|---|---|---|
| Pump and piping removed? | [ ] | [ ] | [X] |
| Liner(s) removed? | [ ] | [ ] | [X] |
| Liner(s) perforated? | [ ] | [ ] | [X] |
| Screen removed? | [ ] | [ ] | [X] |
| Casing left in place? | [ ] | [ ] | [X] |
| Was casing cut off below surface? | [ ] | [ ] | [X] |
| Did sealing material rise to surface? | [ ] | [ ] | [X] |
| Did material settle after 24 hours? | [ ] | [ ] | [X] |
| If yes, was hole retopped? | [ ] | [ ] | [X] |
| If bentonite chips were used, were they hydrated with water from a known safe source? | [ ] | [ ] | [X] |

Required Method of Placing Sealing Material
[X] Conductor Pipe-Gravity [ ] Conductor Pipe-Pumped
[ ] Screened & Poured (Bentonite Chips) [ ] Other (Explain): _____

Sealing Materials
[ ] Neat Cement Grout [ ] Concrete
[ ] Sand-Cement (Concrete) Grout [ ] Bentonite Chips

*For Monitoring Wells and Monitoring Well Boreholes Only:*
[X] Bentonite Chips [ ] Bentonite - Cement Grout
[ ] Granular Bentonite [ ] Bentonite - Sand Slurry

## 5. Material Used to Fill Well / Drillhole

| Material | From (ft.) | To (ft.) | No. Yards, Sacks Sealant or Volume (circle one) | Mix Ratio or Mud Weight |
|---|---|---|---|---|
| Bentonite | Surface | 20 | | |
| | | | | |
| | | | | |

## 6. Comments

VAP-39

## 7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing: Braun Intertec/Range Drilling, Arcadis (Amy Parish)
License #:
Date of Filling & Sealing or Verification (mm/dd/yyyy): 7/23/2018
Street or Route: 126 N. Jefferson Street, Suite 400
Telephone Number: ( 414 ) 276-7742
City: Milwaukee State: WI ZIP Code: 53202
Signature of Person Doing Work:
Date Signed: 9/27/2018

**DNR Use Only**
Date Received:
Noted By:
Comments:

State of Wis., Dept. of Natural Resources
dnr.wi.gov

# Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)



**Notice:** Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and chs. NR 141 and 812, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between $10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

[X] **Verification Only of Fill and Seal**

**Route to DNR Bureau:**
[ ] Drinking Water [ ] Watershed/Wastewater [X] Remediation/Redevelopment
[ ] Waste Management [ ] Other: _____

## 1. Well Location Information

County: Marinette
WI Unique Well # of Removed Well: _ _ _ _ _
Hicap #:

Latitude / Longitude (see instructions): State Plane - N, E
464881.75 N, 2574260.31 E
Format Code: [ ] DD [ ] DDM
Method Code: [ ] GPS008 [ ] SCR002 [X] OTH001

¼ / ¼: ¼: Section: Township: N Range: [ ] E [ ] W
or Gov't Lot #:

Well Street Address: Old Peshtigo Road
Well City, Village or Town: Marinette
Well ZIP Code: 54143
Subdivision Name:
Lot #:

Reason for Removal from Service: Temporary Borehole
WI Unique Well # of Replacement Well: _ _ _ _ _

## 2. Facility / Owner Information

Facility Name: Tyco FTC
Facility ID (FID or PWS): 438005590
License/Permit/Monitoring #:
Original Well Owner: Tyco
Present Well Owner: Tyco
Mailing Address of Present Owner: 2700 Industrial Parkway South
City of Present Owner: Marinette
State: WI
ZIP Code: 54143

## 3. Filled & Sealed Well / Drillhole / Borehole Information

[ ] Monitoring Well
[ ] Water Well
[X] Borehole / Drillhole

Original Construction Date (mm/dd/yyyy): 07/23/2018
If a Well Construction Report is available, please attach.

Construction Type:
[ ] Drilled [ ] Driven (Sandpoint) [ ] Dug
[X] Other (specify): Geoprobe, direct push

Formation Type:
[X] Unconsolidated Formation [ ] Bedrock

Total Well Depth From Ground Surface (ft.): 26 ft
Casing Diameter (in.):
Lower Drillhole Diameter (in.): 2 in
Casing Depth (ft.):

Was well annular space grouted? [ ] Yes [X] No [ ] Unknown
If yes, to what depth (feet)?
Depth to Water (feet)

## 4. Pump, Liner, Screen, Casing & Sealing Material

| | Yes | No | N/A |
|---|---|---|---|
| Pump and piping removed? | [ ] | [ ] | [X] |
| Liner(s) removed? | [ ] | [ ] | [X] |
| Liner(s) perforated? | [ ] | [ ] | [X] |
| Screen removed? | [ ] | [ ] | [X] |
| Casing left in place? | [ ] | [ ] | [X] |
| Was casing cut off below surface? | [ ] | [ ] | [X] |
| Did sealing material rise to surface? | [ ] | [ ] | [X] |
| Did material settle after 24 hours? | [ ] | [ ] | [X] |
| If yes, was hole retopped? | [ ] | [ ] | [X] |
| If bentonite chips were used, were they hydrated with water from a known safe source? | [ ] | [ ] | [X] |

Required Method of Placing Sealing Material
[X] Conductor Pipe-Gravity [ ] Conductor Pipe-Pumped
[ ] Screened & Poured (Bentonite Chips) [ ] Other (Explain): _____

Sealing Materials
[ ] Neat Cement Grout [ ] Concrete
[ ] Sand-Cement (Concrete) Grout [ ] Bentonite Chips

*For Monitoring Wells and Monitoring Well Boreholes Only:*
[X] Bentonite Chips [ ] Bentonite - Cement Grout
[ ] Granular Bentonite [ ] Bentonite - Sand Slurry

## 5. Material Used to Fill Well / Drillhole

| Material | From (ft.) | To (ft.) | No. Yards, Sacks Sealant or Volume (circle one) | Mix Ratio or Mud Weight |
|---|---|---|---|---|
| Bentonite | Surface | 26 | | |
| | | | | |
| | | | | |

## 6. Comments

VAP-39

## 7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing: Braun Intertec/Range Drilling, Arcadis (Amy Parish)
License #:
Date of Filling & Sealing or Verification (mm/dd/yyyy): 7/23/2018
Street or Route: 126 N. Jefferson Street, Suite 400
Telephone Number: ( 414 ) 276-7742
City: Milwaukee
State: WI
ZIP Code: 53202
Signature of Person Doing Work: Amy Parish
Date Signed: 9/27/2018

**DNR Use Only**
Date Received:
Noted By:
Comments:

State of Wis., Dept. of Natural Resources
dnr.wi.gov

# Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)



**Notice:** Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and chs. NR 141 and 812, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between $10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

[X] **Verification Only of Fill and Seal**

**Route to DNR Bureau:**
[ ] Drinking Water [ ] Watershed/Wastewater [X] Remediation/Redevelopment
[ ] Waste Management [ ] Other: _____

## 1. Well Location Information

County: Marinette
WI Unique Well # of Removed Well: _ _ _ _ _
Hicap #:

Latitude / Longitude (see instructions): State Plane - N, E
451295.90 N, 2581550.34 E
Format Code: [ ] DD [ ] DDM
Method Code: [ ] GPS008 [ ] SCR002 [X] OTH001

¼ / ¼: ¼: Section: Township: N Range: [ ] E [ ] W
or Gov't Lot #:

Well Street Address: Shore Drive
Well City, Village or Town: Peshtigo
Well ZIP Code: 54157
Subdivision Name:
Lot #:

Reason for Removal from Service: Temporary Borehole
WI Unique Well # of Replacement Well: _ _ _ _ _

## 2. Facility / Owner Information

Facility Name: Tyco FTC
Facility ID (FID or PWS): 438005590
License/Permit/Monitoring #:
Original Well Owner: Tyco
Present Well Owner: Tyco
Mailing Address of Present Owner: 2700 Industrial Parkway South
City of Present Owner: Marinette State: WI ZIP Code: 54143

## 3. Filled & Sealed Well / Drillhole / Borehole Information

[ ] Monitoring Well
[ ] Water Well
[X] Borehole / Drillhole

Original Construction Date (mm/dd/yyyy): 08/21/2018
If a Well Construction Report is available, please attach.

Construction Type:
[ ] Drilled [ ] Driven (Sandpoint) [ ] Dug
[X] Other (specify): Geoprobe, direct push

Formation Type:
[X] Unconsolidated Formation [ ] Bedrock

Total Well Depth From Ground Surface (ft.): 14 ft
Casing Diameter (in.):
Lower Drillhole Diameter (in.): 2 in
Casing Depth (ft.):

Was well annular space grouted? [ ] Yes [X] No [ ] Unknown
If yes, to what depth (feet)?
Depth to Water (feet)

## 4. Pump, Liner, Screen, Casing & Sealing Material

| | Yes | No | N/A |
|---|---|---|---|
| Pump and piping removed? | [ ] | [ ] | [X] |
| Liner(s) removed? | [ ] | [ ] | [X] |
| Liner(s) perforated? | [ ] | [ ] | [X] |
| Screen removed? | [ ] | [ ] | [X] |
| Casing left in place? | [ ] | [ ] | [X] |
| Was casing cut off below surface? | [ ] | [ ] | [X] |
| Did sealing material rise to surface? | [ ] | [ ] | [X] |
| Did material settle after 24 hours? | [ ] | [ ] | [X] |
| If yes, was hole retopped? | [ ] | [ ] | [X] |
| If bentonite chips were used, were they hydrated with water from a known safe source? | [ ] | [ ] | [X] |

Required Method of Placing Sealing Material
[X] Conductor Pipe-Gravity [ ] Conductor Pipe-Pumped
[ ] Screened & Poured (Bentonite Chips) [ ] Other (Explain): _____

Sealing Materials
[ ] Neat Cement Grout [ ] Concrete
[ ] Sand-Cement (Concrete) Grout [ ] Bentonite Chips

*For Monitoring Wells and Monitoring Well Boreholes Only:*
[X] Bentonite Chips [ ] Bentonite - Cement Grout
[ ] Granular Bentonite [ ] Bentonite - Sand Slurry

## 5. Material Used to Fill Well / Drillhole

| Material | From (ft.) | To (ft.) | No. Yards, Sacks Sealant or Volume (circle one) | Mix Ratio or Mud Weight |
|---|---|---|---|---|
| Bentonite | Surface | 14 | | |
| | | | | |
| | | | | |

## 6. Comments

VAP-40

## 7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing: Dakota Drilling, Arcadis (Amy Parish)
License #:
Date of Filling & Sealing or Verification (mm/dd/yyyy): 8/21/2018
Street or Route: 126 N. Jefferson Street, Suite 400
Telephone Number: ( 414 ) 276-7742
City: Milwaukee State: WI ZIP Code: 53202
Signature of Person Doing Work: Amy Parise
Date Signed: 9/27/2018

**DNR Use Only**
Date Received:
Noted By:
Comments:

State of Wis., Dept. of Natural Resources
dnr.wi.gov

# Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)



**Notice:** Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and chs. NR 141 and 812, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between $10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

[X] **Verification Only of Fill and Seal**

**Route to DNR Bureau:**
[ ] Drinking Water [ ] Watershed/Wastewater [X] Remediation/Redevelopment
[ ] Waste Management [ ] Other: _____

## 1. Well Location Information

County: Marinette
WI Unique Well # of Removed Well: _ _ _ _ _
Hicap #:

Latitude / Longitude (see instructions): State Plane - N, E
451295.90 N, 2581550.34 E
Format Code: [ ] DD [ ] DDM
Method Code: [ ] GPS008 [ ] SCR002 [X] OTH001

¼ / ¼: ¼: Section: Township: N Range: [ ] E [ ] W
or Gov't Lot #:

Well Street Address: Shore Drive
Well City, Village or Town: Peshtigo
Well ZIP Code: 54157
Subdivision Name:
Lot #:

Reason for Removal from Service: Temporary Borehole
WI Unique Well # of Replacement Well: _ _ _ _ _

## 2. Facility / Owner Information

Facility Name: Tyco FTC
Facility ID (FID or PWS): 438005590
License/Permit/Monitoring #:
Original Well Owner: Tyco
Present Well Owner: Tyco
Mailing Address of Present Owner: 2700 Industrial Parkway South
City of Present Owner: Marinette State: WI ZIP Code: 54143

## 3. Filled & Sealed Well / Drillhole / Borehole Information

[ ] Monitoring Well
[ ] Water Well
[X] Borehole / Drillhole

Original Construction Date (mm/dd/yyyy): 08/21/2018
If a Well Construction Report is available, please attach.

Construction Type:
[ ] Drilled [ ] Driven (Sandpoint) [ ] Dug
[X] Other (specify): Geoprobe, direct push

Formation Type:
[X] Unconsolidated Formation [ ] Bedrock

Total Well Depth From Ground Surface (ft.): 20 ft
Casing Diameter (in.):
Lower Drillhole Diameter (in.): 2 in
Casing Depth (ft.):

Was well annular space grouted? [ ] Yes [X] No [ ] Unknown
If yes, to what depth (feet)?
Depth to Water (feet)

## 4. Pump, Liner, Screen, Casing & Sealing Material

| | Yes | No | N/A |
|---|---|---|---|
| Pump and piping removed? | [ ] | [ ] | [X] |
| Liner(s) removed? | [ ] | [ ] | [X] |
| Liner(s) perforated? | [ ] | [ ] | [X] |
| Screen removed? | [ ] | [ ] | [X] |
| Casing left in place? | [ ] | [ ] | [X] |
| Was casing cut off below surface? | [ ] | [ ] | [X] |
| Did sealing material rise to surface? | [ ] | [ ] | [X] |
| Did material settle after 24 hours? | [ ] | [ ] | [X] |
| If yes, was hole retopped? | [ ] | [ ] | [X] |
| If bentonite chips were used, were they hydrated with water from a known safe source? | [ ] | [ ] | [X] |

Required Method of Placing Sealing Material
[X] Conductor Pipe-Gravity [ ] Conductor Pipe-Pumped
[ ] Screened & Poured (Bentonite Chips) [ ] Other (Explain): _____

Sealing Materials
[ ] Neat Cement Grout [ ] Concrete
[ ] Sand-Cement (Concrete) Grout [ ] Bentonite Chips

*For Monitoring Wells and Monitoring Well Boreholes Only:*
[X] Bentonite Chips [ ] Bentonite - Cement Grout
[ ] Granular Bentonite [ ] Bentonite - Sand Slurry

## 5. Material Used to Fill Well / Drillhole

| Material | From (ft.) | To (ft.) | No. Yards, Sacks Sealant or Volume (circle one) | Mix Ratio or Mud Weight |
|---|---|---|---|---|
| Bentonite | Surface | 20 | | |
| | | | | |
| | | | | |

## 6. Comments

VAP-40

## 7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing: Dakota Drilling, Arcadis (Amy Parish)
License #:
Date of Filling & Sealing or Verification (mm/dd/yyyy): 8/21/2018
Street or Route: 126 N. Jefferson Street, Suite 400
Telephone Number: ( 414 ) 276-7742
City: Milwaukee State: WI ZIP Code: 53202
Signature of Person Doing Work: Amy Parise
Date Signed: 9/27/2018

**DNR Use Only**
Date Received:
Noted By:
Comments:

State of Wis., Dept. of Natural Resources
dnr.wi.gov

# Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)



**Notice:** Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and chs. NR 141 and 812, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between $10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

[X] **Verification Only of Fill and Seal**

**Route to DNR Bureau:**
[ ] Drinking Water [ ] Watershed/Wastewater [X] Remediation/Redevelopment
[ ] Waste Management [ ] Other: _____

## 1. Well Location Information

County: Marinette
WI Unique Well # of Removed Well: _ _ _ _ _
Hicap #:

Latitude / Longitude (see instructions): State Plane - N, E
451295.90 N, 2581550.34 E
Format Code: [ ] DD [ ] DDM
Method Code: [ ] GPS008 [ ] SCR002 [X] OTH001

¼ / ¼: ¼: Section: Township: N Range: [ ] E [ ] W
or Gov't Lot #:

Well Street Address: Shore Drive
Well City, Village or Town: Peshtigo
Well ZIP Code: 54157
Subdivision Name:
Lot #:

Reason for Removal from Service: Temporary Borehole
WI Unique Well # of Replacement Well: _ _ _ _ _

## 2. Facility / Owner Information

Facility Name: Tyco FTC
Facility ID (FID or PWS): 438005590
License/Permit/Monitoring #:
Original Well Owner: Tyco
Present Well Owner: Tyco
Mailing Address of Present Owner: 2700 Industrial Parkway South
City of Present Owner: Marinette State: WI ZIP Code: 54143

## 3. Filled & Sealed Well / Drillhole / Borehole Information

[ ] Monitoring Well
[ ] Water Well
[X] Borehole / Drillhole

Original Construction Date (mm/dd/yyyy): 08/22/2018
If a Well Construction Report is available, please attach.

Construction Type:
[ ] Drilled [ ] Driven (Sandpoint) [ ] Dug
[X] Other (specify): Geoprobe, direct push

Formation Type:
[X] Unconsolidated Formation [ ] Bedrock

Total Well Depth From Ground Surface (ft.): 30 ft
Casing Diameter (in.):
Lower Drillhole Diameter (in.): 2 in
Casing Depth (ft.):

Was well annular space grouted? [ ] Yes [X] No [ ] Unknown
If yes, to what depth (feet)?
Depth to Water (feet)

## 4. Pump, Liner, Screen, Casing & Sealing Material

| | Yes | No | N/A |
|---|---|---|---|
| Pump and piping removed? | [ ] | [ ] | [X] |
| Liner(s) removed? | [ ] | [ ] | [X] |
| Liner(s) perforated? | [ ] | [ ] | [X] |
| Screen removed? | [ ] | [ ] | [X] |
| Casing left in place? | [ ] | [ ] | [X] |
| Was casing cut off below surface? | [ ] | [ ] | [X] |
| Did sealing material rise to surface? | [ ] | [ ] | [X] |
| Did material settle after 24 hours? | [ ] | [ ] | [X] |
| If yes, was hole retopped? | [ ] | [ ] | [X] |
| If bentonite chips were used, were they hydrated with water from a known safe source? | [ ] | [ ] | [X] |

Required Method of Placing Sealing Material
[X] Conductor Pipe-Gravity [ ] Conductor Pipe-Pumped
[ ] Screened & Poured (Bentonite Chips) [ ] Other (Explain): _____

Sealing Materials
[ ] Neat Cement Grout [ ] Concrete
[ ] Sand-Cement (Concrete) Grout [ ] Bentonite Chips

*For Monitoring Wells and Monitoring Well Boreholes Only:*
[X] Bentonite Chips [ ] Bentonite - Cement Grout
[ ] Granular Bentonite [ ] Bentonite - Sand Slurry

## 5. Material Used to Fill Well / Drillhole

| Material | From (ft.) | To (ft.) | No. Yards, Sacks Sealant or Volume (circle one) | Mix Ratio or Mud Weight |
|---|---|---|---|---|
| Bentonite | Surface | 30 | | |
| | | | | |
| | | | | |

## 6. Comments

VAP-40

## 7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing: Dakota Drilling, Arcadis (Amy Parish)
License #:
Date of Filling & Sealing or Verification (mm/dd/yyyy): 8/22/2018
Street or Route: 126 N. Jefferson Street, Suite 400
Telephone Number: (414 )276-7742
City: Milwaukee State: WI ZIP Code: 53202
Signature of Person Doing Work: Amy Parish
Date Signed: 9/27/2018

**DNR Use Only**
Date Received:
Noted By:
Comments:

State of Wis., Dept. of Natural Resources
dnr.wi.gov

# Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)



**Notice:** Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and chs. NR 141 and 812, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between $10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

[X] **Verification Only of Fill and Seal**

**Route to DNR Bureau:**
[ ] Drinking Water [ ] Watershed/Wastewater [X] Remediation/Redevelopment
[ ] Waste Management [ ] Other: _____

## 1. Well Location Information

County: Marinette
WI Unique Well # of Removed Well: _ _ _ _ _
Hicap #:

Latitude / Longitude (see instructions): State Plane - N, E
451295.90 N, 2581550.34 E
Format Code: [ ] DD [ ] DDM
Method Code: [ ] GPS008 [ ] SCR002 [X] OTH001

¼ / ¼: ¼: Section: Township: N Range: [ ] E [ ] W
or Gov't Lot #:

Well Street Address: Shore Drive
Well City, Village or Town: Peshtigo
Well ZIP Code: 54157
Subdivision Name:
Lot #:

Reason for Removal from Service: Temporary Borehole
WI Unique Well # of Replacement Well: _ _ _ _ _

## 2. Facility / Owner Information

Facility Name: Tyco FTC
Facility ID (FID or PWS): 438005590
License/Permit/Monitoring #:
Original Well Owner: Tyco
Present Well Owner: Tyco
Mailing Address of Present Owner: 2700 Industrial Parkway South
City of Present Owner: Marinette
State: WI
ZIP Code: 54143

## 3. Filled & Sealed Well / Drillhole / Borehole Information

[ ] Monitoring Well
[ ] Water Well
[X] Borehole / Drillhole

Original Construction Date (mm/dd/yyyy): 08/22/2018
If a Well Construction Report is available, please attach.

Construction Type:
[ ] Drilled [ ] Driven (Sandpoint) [ ] Dug
[X] Other (specify): Geoprobe, direct push

Formation Type:
[X] Unconsolidated Formation [ ] Bedrock

Total Well Depth From Ground Surface (ft.): 40 ft
Casing Diameter (in.):
Lower Drillhole Diameter (in.): 2 in
Casing Depth (ft.):

Was well annular space grouted? [ ] Yes [X] No [ ] Unknown
If yes, to what depth (feet)?
Depth to Water (feet)

## 4. Pump, Liner, Screen, Casing & Sealing Material

| | Yes | No | N/A |
|---|---|---|---|
| Pump and piping removed? | [ ] | [ ] | [X] |
| Liner(s) removed? | [ ] | [ ] | [X] |
| Liner(s) perforated? | [ ] | [ ] | [X] |
| Screen removed? | [ ] | [ ] | [X] |
| Casing left in place? | [ ] | [ ] | [X] |
| Was casing cut off below surface? | [ ] | [ ] | [X] |
| Did sealing material rise to surface? | [ ] | [ ] | [X] |
| Did material settle after 24 hours? | [ ] | [ ] | [X] |
| If yes, was hole retopped? | [ ] | [ ] | [X] |
| If bentonite chips were used, were they hydrated with water from a known safe source? | [ ] | [ ] | [X] |

Required Method of Placing Sealing Material
[X] Conductor Pipe-Gravity [ ] Conductor Pipe-Pumped
[ ] Screened & Poured (Bentonite Chips) [ ] Other (Explain): _____

Sealing Materials
[ ] Neat Cement Grout [ ] Concrete
[ ] Sand-Cement (Concrete) Grout [ ] Bentonite Chips

*For Monitoring Wells and Monitoring Well Boreholes Only:*
[X] Bentonite Chips [ ] Bentonite - Cement Grout
[ ] Granular Bentonite [ ] Bentonite - Sand Slurry

## 5. Material Used to Fill Well / Drillhole

| Material | From (ft.) | To (ft.) | No. Yards, Sacks Sealant or Volume (circle one) | Mix Ratio or Mud Weight |
|---|---|---|---|---|
| Bentonite | Surface | 40 | | |
| | | | | |
| | | | | |

## 6. Comments

VAP-40

## 7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing: Dakota Drilling, Arcadis (Amy Parish)
License #:
Date of Filling & Sealing or Verification (mm/dd/yyyy): 8/22/2018
Street or Route: 126 N. Jefferson Street, Suite 400
Telephone Number: ( 414 ) 276-7742
City: Milwaukee
State: WI
ZIP Code: 53202
Signature of Person Doing Work: Amy Parish
Date Signed: 9/27/2018

**DNR Use Only**
Date Received:
Noted By:
Comments:

State of Wis., Dept. of Natural Resources
dnr.wi.gov

# Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)



**Notice:** Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and chs. NR 141 and 812, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between $10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

[X] **Verification Only of Fill and Seal**

**Route to DNR Bureau:**
[ ] Drinking Water [ ] Watershed/Wastewater [X] Remediation/Redevelopment
[ ] Waste Management [ ] Other: _____

## 1. Well Location Information

County: Marinette
WI Unique Well # of Removed Well: _ _ _ _ _
Hicap #:

Latitude / Longitude (see instructions): State Plane - N, E
451335.06 N, 2582116.28 E
Format Code: [ ] DD [ ] DDM
Method Code: [ ] GPS008 [ ] SCR002 [X] OTH001

¼ / ¼: ¼: or Gov't Lot #:
Section:
Township: N
Range: [ ] E [ ] W

Well Street Address: Shore Drive
Well City, Village or Town: Peshtigo
Well ZIP Code: 54157
Subdivision Name:
Lot #:

Reason for Removal from Service: Temporary Borehole
WI Unique Well # of Replacement Well: _ _ _ _ _

## 2. Facility / Owner Information

Facility Name: Tyco FTC
Facility ID (FID or PWS): 438005590
License/Permit/Monitoring #:
Original Well Owner: Tyco
Present Well Owner: Tyco
Mailing Address of Present Owner: 2700 Industrial Parkway South
City of Present Owner: Marinette
State: WI
ZIP Code: 54143

## 3. Filled & Sealed Well / Drillhole / Borehole Information

[ ] Monitoring Well
[ ] Water Well
[X] Borehole / Drillhole

Original Construction Date (mm/dd/yyyy): 08/22/2018
If a Well Construction Report is available, please attach.

Construction Type:
[ ] Drilled [ ] Driven (Sandpoint) [ ] Dug
[X] Other (specify): Geoprobe, direct push

Formation Type:
[X] Unconsolidated Formation [ ] Bedrock

Total Well Depth From Ground Surface (ft.): 10 ft
Casing Diameter (in.):
Lower Drillhole Diameter (in.): 2 in
Casing Depth (ft.):

Was well annular space grouted? [ ] Yes [X] No [ ] Unknown
If yes, to what depth (feet)?
Depth to Water (feet)

## 4. Pump, Liner, Screen, Casing & Sealing Material

| | Yes | No | N/A |
|---|---|---|---|
| Pump and piping removed? | [ ] | [ ] | [X] |
| Liner(s) removed? | [ ] | [ ] | [X] |
| Liner(s) perforated? | [ ] | [ ] | [X] |
| Screen removed? | [ ] | [ ] | [X] |
| Casing left in place? | [ ] | [ ] | [X] |
| Was casing cut off below surface? | [ ] | [ ] | [X] |
| Did sealing material rise to surface? | [ ] | [ ] | [X] |
| Did material settle after 24 hours? | [ ] | [ ] | [X] |
| If yes, was hole retopped? | [ ] | [ ] | [X] |
| If bentonite chips were used, were they hydrated with water from a known safe source? | [ ] | [ ] | [X] |

Required Method of Placing Sealing Material
[X] Conductor Pipe-Gravity [ ] Conductor Pipe-Pumped
[ ] Screened & Poured (Bentonite Chips) [ ] Other (Explain): _____

Sealing Materials
[ ] Neat Cement Grout [ ] Concrete
[ ] Sand-Cement (Concrete) Grout [ ] Bentonite Chips

*For Monitoring Wells and Monitoring Well Boreholes Only:*
[X] Bentonite Chips [ ] Bentonite - Cement Grout
[ ] Granular Bentonite [ ] Bentonite - Sand Slurry

## 5. Material Used to Fill Well / Drillhole

| Material | From (ft.) | To (ft.) | No. Yards, Sacks Sealant or Volume (circle one) | Mix Ratio or Mud Weight |
|---|---|---|---|---|
| Bentonite | Surface | 10 | | |
| | | | | |
| | | | | |

## 6. Comments

VAP-41

## 7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing: Dakota Drilling, Arcadis (Amy Parish)
License #:
Date of Filling & Sealing or Verification (mm/dd/yyyy): 08/22/2018
Street or Route: 126 N. Jefferson Street, Suite 400
Telephone Number: ( 414 ) 276-7742
City: Milwaukee
State: WI
ZIP Code: 53202
Signature of Person Doing Work: Amy Parise
Date Signed: 9/27/2018

**DNR Use Only**
Date Received:
Noted By:
Comments:

State of Wis., Dept. of Natural Resources
dnr.wi.gov

# Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)



**Notice:** Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and chs. NR 141 and 812, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between $10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

[X] **Verification Only of Fill and Seal**

**Route to DNR Bureau:**
[ ] Drinking Water [ ] Watershed/Wastewater [X] Remediation/Redevelopment
[ ] Waste Management [ ] Other: _____

## 1. Well Location Information

County: Marinette
WI Unique Well # of Removed Well: ___ ___ ___ ___ ___
Hicap #:

Latitude / Longitude (see instructions): State Plane - N, E
451335.06 N, 2582116.28 E
Format Code: [ ] DD [ ] DDM
Method Code: [ ] GPS008 [ ] SCR002 [X] OTH001

¼ / ¼: ¼: Section: Township: N Range: [ ] E [ ] W
or Gov't Lot #:

Well Street Address: Shore Drive
Well City, Village or Town: Peshtigo
Well ZIP Code: 54157
Subdivision Name:
Lot #:

Reason for Removal from Service: Temporary Borehole
WI Unique Well # of Replacement Well: ___ ___ ___ ___ ___

## 2. Facility / Owner Information

Facility Name: Tyco FTC
Facility ID (FID or PWS): 438005590
License/Permit/Monitoring #:
Original Well Owner: Tyco
Present Well Owner: Tyco
Mailing Address of Present Owner: 2700 Industrial Parkway South
City of Present Owner: Marinette
State: WI
ZIP Code: 54143

## 3. Filled & Sealed Well / Drillhole / Borehole Information

[ ] Monitoring Well
[ ] Water Well
[X] Borehole / Drillhole

Original Construction Date (mm/dd/yyyy): 08/22/2018
If a Well Construction Report is available, please attach.

Construction Type:
[ ] Drilled [ ] Driven (Sandpoint) [ ] Dug
[X] Other (specify): Geoprobe, direct push

Formation Type:
[X] Unconsolidated Formation [ ] Bedrock

Total Well Depth From Ground Surface (ft.): 20 ft
Casing Diameter (in.):
Lower Drillhole Diameter (in.): 2 in
Casing Depth (ft.):

Was well annular space grouted? [ ] Yes [X] No [ ] Unknown
If yes, to what depth (feet)?
Depth to Water (feet)

## 4. Pump, Liner, Screen, Casing & Sealing Material

| | Yes | No | N/A |
|---|---|---|---|
| Pump and piping removed? | [ ] | [ ] | [X] |
| Liner(s) removed? | [ ] | [ ] | [X] |
| Liner(s) perforated? | [ ] | [ ] | [X] |
| Screen removed? | [ ] | [ ] | [X] |
| Casing left in place? | [ ] | [ ] | [X] |
| Was casing cut off below surface? | [ ] | [ ] | [X] |
| Did sealing material rise to surface? | [ ] | [ ] | [X] |
| Did material settle after 24 hours? | [ ] | [ ] | [X] |
| If yes, was hole retopped? | [ ] | [ ] | [X] |
| If bentonite chips were used, were they hydrated with water from a known safe source? | [ ] | [ ] | [X] |

Required Method of Placing Sealing Material
[X] Conductor Pipe-Gravity [ ] Conductor Pipe-Pumped
[ ] Screened & Poured (Bentonite Chips) [ ] Other (Explain): _____

Sealing Materials
[ ] Neat Cement Grout [ ] Concrete
[ ] Sand-Cement (Concrete) Grout [ ] Bentonite Chips

*For Monitoring Wells and Monitoring Well Boreholes Only:*
[X] Bentonite Chips [ ] Bentonite - Cement Grout
[ ] Granular Bentonite [ ] Bentonite - Sand Slurry

## 5. Material Used to Fill Well / Drillhole

| Material | From (ft.) | To (ft.) | No. Yards, Sacks Sealant or Volume (circle one) | Mix Ratio or Mud Weight |
|---|---|---|---|---|
| Bentonite | Surface | 20 | | |
| | | | | |
| | | | | |

## 6. Comments

VAP-41

## 7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing: Dakota Drilling, Arcadis (Amy Parish)
License #:
Date of Filling & Sealing or Verification (mm/dd/yyyy): 8/22/2018
Street or Route: 126 N. Jefferson Street, Suite 400
Telephone Number: ( 414 ) 276-7742
City: Milwaukee
State: WI
ZIP Code: 53202
Signature of Person Doing Work: Amy Parish
Date Signed: 9/27/2018

**DNR Use Only**
Date Received:
Noted By:
Comments:

State of Wis., Dept. of Natural Resources
dnr.wi.gov

# Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)



**Notice:** Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and chs. NR 141 and 812, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between $10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

[X] **Verification Only of Fill and Seal**

**Route to DNR Bureau:**
[ ] Drinking Water [ ] Watershed/Wastewater [X] Remediation/Redevelopment
[ ] Waste Management [ ] Other: _____

## 1. Well Location Information

County: Marinette
WI Unique Well # of Removed Well: _ _ _ _ _
Hicap #:

Latitude / Longitude (see instructions): State Plane - N, E
451335.06 N, 2582116.28 E
Format Code: [ ] DD [ ] DDM
Method Code: [ ] GPS008 [ ] SCR002 [X] OTH001

¼ / ¼: ¼: Section: Township: N Range: [ ] E [ ] W
or Gov't Lot #:

Well Street Address: Shore Drive
Well City, Village or Town: Peshtigo
Well ZIP Code: 54157
Subdivision Name:
Lot #:

Reason for Removal from Service: Temporary Borehole
WI Unique Well # of Replacement Well: _ _ _ _ _

## 2. Facility / Owner Information

Facility Name: Tyco FTC
Facility ID (FID or PWS): 438005590
License/Permit/Monitoring #:
Original Well Owner: Tyco
Present Well Owner: Tyco
Mailing Address of Present Owner: 2700 Industrial Parkway South
City of Present Owner: Marinette
State: WI
ZIP Code: 54143

## 3. Filled & Sealed Well / Drillhole / Borehole Information

[ ] Monitoring Well
[ ] Water Well
[X] Borehole / Drillhole

Original Construction Date (mm/dd/yyyy): 08/22/2018
If a Well Construction Report is available, please attach.

Construction Type:
[ ] Drilled [ ] Driven (Sandpoint) [ ] Dug
[X] Other (specify): Geoprobe, direct push

Formation Type:
[X] Unconsolidated Formation [ ] Bedrock

Total Well Depth From Ground Surface (ft.): 30 ft
Casing Diameter (in.):
Lower Drillhole Diameter (in.): 2 in
Casing Depth (ft.):

Was well annular space grouted? [ ] Yes [X] No [ ] Unknown
If yes, to what depth (feet)?
Depth to Water (feet)

## 4. Pump, Liner, Screen, Casing & Sealing Material

| | Yes | No | N/A |
|---|---|---|---|
| Pump and piping removed? | [ ] | [ ] | [X] |
| Liner(s) removed? | [ ] | [ ] | [X] |
| Liner(s) perforated? | [ ] | [ ] | [X] |
| Screen removed? | [ ] | [ ] | [X] |
| Casing left in place? | [ ] | [ ] | [X] |
| Was casing cut off below surface? | [ ] | [ ] | [X] |
| Did sealing material rise to surface? | [ ] | [ ] | [X] |
| Did material settle after 24 hours? | [ ] | [ ] | [X] |
| If yes, was hole retopped? | [ ] | [ ] | [X] |
| If bentonite chips were used, were they hydrated with water from a known safe source? | [ ] | [ ] | [X] |

Required Method of Placing Sealing Material
[X] Conductor Pipe-Gravity [ ] Conductor Pipe-Pumped
[ ] Screened & Poured (Bentonite Chips) [ ] Other (Explain): _____

Sealing Materials
[ ] Neat Cement Grout [ ] Concrete
[ ] Sand-Cement (Concrete) Grout [ ] Bentonite Chips

*For Monitoring Wells and Monitoring Well Boreholes Only:*
[X] Bentonite Chips [ ] Bentonite - Cement Grout
[ ] Granular Bentonite [ ] Bentonite - Sand Slurry

## 5. Material Used to Fill Well / Drillhole

| Material | From (ft.) | To (ft.) | No. Yards, Sacks Sealant or Volume (circle one) | Mix Ratio or Mud Weight |
|---|---|---|---|---|
| Bentonite | Surface | 30 | | |
| | | | | |
| | | | | |

## 6. Comments

VAP-41

## 7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing: Dakota Drilling, Arcadis (Amy Parish)
License #:
Date of Filling & Sealing or Verification (mm/dd/yyyy): 8/22/2018
Street or Route: 126 N. Jefferson Street, Suite 400
Telephone Number: ( 414 ) 276-7742
City: Milwaukee
State: WI
ZIP Code: 53202
Signature of Person Doing Work: Amy Parise
Date Signed: 9/27/2018

**DNR Use Only**
Date Received:
Noted By:
Comments:

State of Wis., Dept. of Natural Resources
dnr.wi.gov

# Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)



**Notice:** Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and chs. NR 141 and 812, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between $10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

[X] **Verification Only of Fill and Seal**

**Route to DNR Bureau:**
[ ] Drinking Water [ ] Watershed/Wastewater [X] Remediation/Redevelopment
[ ] Waste Management [ ] Other: _____

## 1. Well Location Information

County: Marinette
WI Unique Well # of Removed Well: _ _ _ _ _
Hicap #:

Latitude / Longitude (see instructions): State Plane - N, E
451335.06 N, 2582116.28 E
Format Code: [ ] DD [ ] DDM
Method Code: [ ] GPS008 [ ] SCR002 [X] OTH001

¼ / ¼: ¼: Section: Township: N Range: [ ] E [ ] W
or Gov't Lot #:

Well Street Address: Shore Drive
Well City, Village or Town: Peshtigo
Well ZIP Code: 54157
Subdivision Name:
Lot #:

Reason for Removal from Service: Temporary Borehole
WI Unique Well # of Replacement Well: _ _ _ _ _

## 2. Facility / Owner Information

Facility Name: Tyco FTC
Facility ID (FID or PWS): 438005590
License/Permit/Monitoring #:
Original Well Owner: Tyco
Present Well Owner: Tyco
Mailing Address of Present Owner: 2700 Industrial Parkway South
City of Present Owner: Marinette
State: WI
ZIP Code: 54143

## 3. Filled & Sealed Well / Drillhole / Borehole Information

[ ] Monitoring Well
[ ] Water Well
[X] Borehole / Drillhole

Original Construction Date (mm/dd/yyyy): 08/22/2018
If a Well Construction Report is available, please attach.

Construction Type:
[ ] Drilled [ ] Driven (Sandpoint) [ ] Dug
[X] Other (specify): Geoprobe, direct push

Formation Type:
[X] Unconsolidated Formation [ ] Bedrock

Total Well Depth From Ground Surface (ft.): 40 ft
Casing Diameter (in.):
Lower Drillhole Diameter (in.): 2 in
Casing Depth (ft.):

Was well annular space grouted? [ ] Yes [X] No [ ] Unknown
If yes, to what depth (feet)?
Depth to Water (feet)

## 4. Pump, Liner, Screen, Casing & Sealing Material

| | Yes | No | N/A |
|---|---|---|---|
| Pump and piping removed? | [ ] | [ ] | [X] |
| Liner(s) removed? | [ ] | [ ] | [X] |
| Liner(s) perforated? | [ ] | [ ] | [X] |
| Screen removed? | [ ] | [ ] | [X] |
| Casing left in place? | [ ] | [ ] | [X] |
| Was casing cut off below surface? | [ ] | [ ] | [X] |
| Did sealing material rise to surface? | [ ] | [ ] | [X] |
| Did material settle after 24 hours? | [ ] | [ ] | [X] |
| If yes, was hole retopped? | [ ] | [ ] | [X] |
| If bentonite chips were used, were they hydrated with water from a known safe source? | [ ] | [ ] | [X] |

Required Method of Placing Sealing Material
[X] Conductor Pipe-Gravity [ ] Conductor Pipe-Pumped
[ ] Screened & Poured (Bentonite Chips) [ ] Other (Explain): _____

Sealing Materials
[ ] Neat Cement Grout [ ] Concrete
[ ] Sand-Cement (Concrete) Grout [ ] Bentonite Chips

*For Monitoring Wells and Monitoring Well Boreholes Only:*
[X] Bentonite Chips [ ] Bentonite - Cement Grout
[ ] Granular Bentonite [ ] Bentonite - Sand Slurry

## 5. Material Used to Fill Well / Drillhole

| Material | From (ft.) | To (ft.) | No. Yards, Sacks Sealant or Volume (circle one) | Mix Ratio or Mud Weight |
|---|---|---|---|---|
| Bentonite | Surface | 40 | | |
| | | | | |
| | | | | |

## 6. Comments

VAP-41

## 7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing: Dakota Drilling, Arcadis (Amy Parish)
License #:
Date of Filling & Sealing or Verification (mm/dd/yyyy): 8/22/2018
Street or Route: 126 N. Jefferson Street, Suite 400
Telephone Number: ( 414 )276-7742
City: Milwaukee
State: WI
ZIP Code: 53202
Signature of Person Doing Work: Amy Parish
Date Signed: 9/27/2018

**DNR Use Only**
Date Received:
Noted By:
Comments:

State of Wis., Dept. of Natural Resources
dnr.wi.gov

# Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)



**Notice:** Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and chs. NR 141 and 812, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between $10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

[X] **Verification Only of Fill and Seal**

**Route to DNR Bureau:**
[ ] Drinking Water [ ] Watershed/Wastewater [X] Remediation/Redevelopment
[ ] Waste Management [ ] Other: _____

## 1. Well Location Information

County: Marinette
WI Unique Well # of Removed Well: ___ ___ ___ ___ ___
Hicap #:

Latitude / Longitude (see instructions): State Plane - N, E
451878.86 N, 2581374.60 E
Format Code: [ ] DD [ ] DDM
Method Code: [ ] GPS008 [ ] SCR002 [X] OTH001

¼ / ¼: ¼:
or Gov't Lot #:
Section:
Township: N
Range: [ ] E [ ] W

Well Street Address: Heath Lane
Well City, Village or Town: Peshtigo
Well ZIP Code: 54157
Subdivision Name:
Lot #:

Reason for Removal from Service: Temporary Borehole
WI Unique Well # of Replacement Well: ___ ___ ___ ___ ___

## 2. Facility / Owner Information

Facility Name: Tyco FTC
Facility ID (FID or PWS): 438005590
License/Permit/Monitoring #:
Original Well Owner: Tyco
Present Well Owner: Tyco
Mailing Address of Present Owner: 2700 Industrial Parkway South
City of Present Owner: Marinette
State: WI
ZIP Code: 54143

## 3. Filled & Sealed Well / Drillhole / Borehole Information

[ ] Monitoring Well
[ ] Water Well
[X] Borehole / Drillhole

Original Construction Date (mm/dd/yyyy): 08/22/2018
If a Well Construction Report is available, please attach.

Construction Type:
[ ] Drilled [ ] Driven (Sandpoint) [ ] Dug
[X] Other (specify): Geoprobe, direct push

Formation Type:
[X] Unconsolidated Formation [ ] Bedrock

Total Well Depth From Ground Surface (ft.): 10 ft
Casing Diameter (in.):
Lower Drillhole Diameter (in.): 2 in
Casing Depth (ft.):

Was well annular space grouted? [ ] Yes [X] No [ ] Unknown
If yes, to what depth (feet)?
Depth to Water (feet)

## 4. Pump, Liner, Screen, Casing & Sealing Material

| | Yes | No | N/A |
|---|---|---|---|
| Pump and piping removed? | [ ] | [ ] | [X] |
| Liner(s) removed? | [ ] | [ ] | [X] |
| Liner(s) perforated? | [ ] | [ ] | [X] |
| Screen removed? | [ ] | [ ] | [X] |
| Casing left in place? | [ ] | [ ] | [X] |
| Was casing cut off below surface? | [ ] | [ ] | [X] |
| Did sealing material rise to surface? | [ ] | [ ] | [X] |
| Did material settle after 24 hours? | [ ] | [ ] | [X] |
| If yes, was hole retopped? | [ ] | [ ] | [X] |
| If bentonite chips were used, were they hydrated with water from a known safe source? | [ ] | [ ] | [X] |

Required Method of Placing Sealing Material
[X] Conductor Pipe-Gravity [ ] Conductor Pipe-Pumped
[ ] Screened & Poured (Bentonite Chips) [ ] Other (Explain): _____

Sealing Materials
[ ] Neat Cement Grout [ ] Concrete
[ ] Sand-Cement (Concrete) Grout [ ] Bentonite Chips

*For Monitoring Wells and Monitoring Well Boreholes Only:*
[X] Bentonite Chips [ ] Bentonite - Cement Grout
[ ] Granular Bentonite [ ] Bentonite - Sand Slurry

## 5. Material Used to Fill Well / Drillhole

| Material | From (ft.) | To (ft.) | No. Yards, Sacks Sealant or Volume (circle one) | Mix Ratio or Mud Weight |
|---|---|---|---|---|
| Bentonite | Surface | 10 | | |
| | | | | |
| | | | | |

## 6. Comments

VAP-42

## 7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing: Dakota Drilling, Arcadis (Amy Parish)
License #:
Date of Filling & Sealing or Verification (mm/dd/yyyy): 8/22/2018
Street or Route: 126 N. Jefferson Street, Suite 400
Telephone Number: ( 414 ) 276-7742
City: Milwaukee
State: WI
ZIP Code: 53202
Signature of Person Doing Work:
Date Signed: 9/27/2018

**DNR Use Only**
Date Received:
Noted By:
Comments:

State of Wis., Dept. of Natural Resources
dnr.wi.gov

# Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)



**Notice:** Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and chs. NR 141 and 812, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between $10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

[X] **Verification Only of Fill and Seal**

**Route to DNR Bureau:**
[ ] Drinking Water [ ] Watershed/Wastewater [X] Remediation/Redevelopment
[ ] Waste Management [ ] Other: _____

## 1. Well Location Information

County: Marinette
WI Unique Well # of Removed Well: ___ ___ ___ ___ ___
Hicap #:

Latitude / Longitude (see instructions): State Plane - N, E
451878.86 N, 2581374.60 E
Format Code: [ ] DD [ ] DDM
Method Code: [ ] GPS008 [ ] SCR002 [X] OTH001

¼ / ¼: ¼: Section: Township: N Range: [ ] E [ ] W
or Gov't Lot #:

Well Street Address: Heath Lane
Well City, Village or Town: Peshtigo
Well ZIP Code: 54157
Subdivision Name:
Lot #:

Reason for Removal from Service: Temporary Borehole
WI Unique Well # of Replacement Well: ___ ___ ___ ___ ___

## 3. Filled & Sealed Well / Drillhole / Borehole Information

[ ] Monitoring Well
[ ] Water Well
[X] Borehole / Drillhole

Original Construction Date (mm/dd/yyyy): 08/22/2018
If a Well Construction Report is available, please attach.

Construction Type:
[ ] Drilled [ ] Driven (Sandpoint) [ ] Dug
[X] Other (specify): Geoprobe, direct push

Formation Type:
[X] Unconsolidated Formation [ ] Bedrock

Total Well Depth From Ground Surface (ft.): 20 ft
Casing Diameter (in.):
Lower Drillhole Diameter (in.): 2 in
Casing Depth (ft.):

Was well annular space grouted? [ ] Yes [X] No [ ] Unknown
If yes, to what depth (feet)?
Depth to Water (feet)

## 2. Facility / Owner Information

Facility Name: Tyco FTC
Facility ID (FID or PWS): 438005590
License/Permit/Monitoring #:
Original Well Owner: Tyco
Present Well Owner: Tyco
Mailing Address of Present Owner: 2700 Industrial Parkway South
City of Present Owner: Marinette
State: WI
ZIP Code: 54143

## 4. Pump, Liner, Screen, Casing & Sealing Material

| | Yes | No | N/A |
|---|---|---|---|
| Pump and piping removed? | [ ] | [ ] | [X] |
| Liner(s) removed? | [ ] | [ ] | [X] |
| Liner(s) perforated? | [ ] | [ ] | [X] |
| Screen removed? | [ ] | [ ] | [X] |
| Casing left in place? | [ ] | [ ] | [X] |
| Was casing cut off below surface? | [ ] | [ ] | [X] |
| Did sealing material rise to surface? | [ ] | [ ] | [X] |
| Did material settle after 24 hours? | [ ] | [ ] | [X] |
| If yes, was hole retopped? | [ ] | [ ] | [X] |
| If bentonite chips were used, were they hydrated with water from a known safe source? | [ ] | [ ] | [X] |

Required Method of Placing Sealing Material
[X] Conductor Pipe-Gravity [ ] Conductor Pipe-Pumped
[ ] Screened & Poured (Bentonite Chips) [ ] Other (Explain): _____

Sealing Materials
[ ] Neat Cement Grout [ ] Concrete
[ ] Sand-Cement (Concrete) Grout [ ] Bentonite Chips

*For Monitoring Wells and Monitoring Well Boreholes Only:*
[X] Bentonite Chips [ ] Bentonite - Cement Grout
[ ] Granular Bentonite [ ] Bentonite - Sand Slurry

## 5. Material Used to Fill Well / Drillhole

| Material | From (ft.) | To (ft.) | No. Yards, Sacks Sealant or Volume (circle one) | Mix Ratio or Mud Weight |
|---|---|---|---|---|
| Bentonite | Surface | 20 | | |
| | | | | |
| | | | | |

## 6. Comments

VAP-42

## 7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing: Dakota Drilling, Arcadis (Amy Parish)
License #:
Date of Filling & Sealing or Verification (mm/dd/yyyy): 8/22/2018
Street or Route: 126 N. Jefferson Street, Suite 400
Telephone Number: ( 414 ) 276-7742
City: Milwaukee
State: WI
ZIP Code: 53202
Signature of Person Doing Work: Amy Parish
Date Signed: 9/27/2018

**DNR Use Only**
Date Received:
Noted By:
Comments:

State of Wis., Dept. of Natural Resources
dnr.wi.gov

# Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)



**Notice:** Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and chs. NR 141 and 812, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between $10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

[X] **Verification Only of Fill and Seal**

**Route to DNR Bureau:**
[ ] Drinking Water [ ] Watershed/Wastewater [X] Remediation/Redevelopment
[ ] Waste Management [ ] Other: _____

## 1. Well Location Information

County: Marinette
WI Unique Well # of Removed Well: ___ ___ ___ ___ ___
Hicap #:

Latitude / Longitude (see instructions): State Plane - N, E
451878.86 N, 2581374.60 E
Format Code: [ ] DD [ ] DDM
Method Code: [ ] GPS008 [ ] SCR002 [X] OTH001

¼ / ¼: ¼: Section: Township: N Range: [ ] E [ ] W
or Gov't Lot #:

Well Street Address: Heath Lane
Well City, Village or Town: Peshtigo
Well ZIP Code: 54157
Subdivision Name:
Lot #:

Reason for Removal from Service: Temporary Borehole
WI Unique Well # of Replacement Well: ___ ___ ___ ___ ___

## 2. Facility / Owner Information

Facility Name: Tyco FTC
Facility ID (FID or PWS): 438005590
License/Permit/Monitoring #:
Original Well Owner: Tyco
Present Well Owner: Tyco
Mailing Address of Present Owner: 2700 Industrial Parkway South
City of Present Owner: Marinette State: WI ZIP Code: 54143

## 3. Filled & Sealed Well / Drillhole / Borehole Information

[ ] Monitoring Well
[ ] Water Well
[X] Borehole / Drillhole

Original Construction Date (mm/dd/yyyy): 08/22/2018
If a Well Construction Report is available, please attach.

Construction Type:
[ ] Drilled [ ] Driven (Sandpoint) [ ] Dug
[X] Other (specify): Geoprobe, direct push

Formation Type:
[X] Unconsolidated Formation [ ] Bedrock

Total Well Depth From Ground Surface (ft.): 29 ft
Casing Diameter (in.):
Lower Drillhole Diameter (in.): 2 in
Casing Depth (ft.):

Was well annular space grouted? [ ] Yes [X] No [ ] Unknown
If yes, to what depth (feet)?
Depth to Water (feet)

## 4. Pump, Liner, Screen, Casing & Sealing Material

| | Yes | No | N/A |
|---|---|---|---|
| Pump and piping removed? | [ ] | [ ] | [X] |
| Liner(s) removed? | [ ] | [ ] | [X] |
| Liner(s) perforated? | [ ] | [ ] | [X] |
| Screen removed? | [ ] | [ ] | [X] |
| Casing left in place? | [ ] | [ ] | [X] |
| Was casing cut off below surface? | [ ] | [ ] | [X] |
| Did sealing material rise to surface? | [ ] | [ ] | [X] |
| Did material settle after 24 hours? | [ ] | [ ] | [X] |
| If yes, was hole retopped? | [ ] | [ ] | [X] |
| If bentonite chips were used, were they hydrated with water from a known safe source? | [ ] | [ ] | [X] |

Required Method of Placing Sealing Material
[X] Conductor Pipe-Gravity [ ] Conductor Pipe-Pumped
[ ] Screened & Poured (Bentonite Chips) [ ] Other (Explain): _____

Sealing Materials
[ ] Neat Cement Grout [ ] Concrete
[ ] Sand-Cement (Concrete) Grout [ ] Bentonite Chips

*For Monitoring Wells and Monitoring Well Boreholes Only:*
[X] Bentonite Chips [ ] Bentonite - Cement Grout
[ ] Granular Bentonite [ ] Bentonite - Sand Slurry

## 5. Material Used to Fill Well / Drillhole

| Material | From (ft.) | To (ft.) | No. Yards, Sacks Sealant or Volume (circle one) | Mix Ratio or Mud Weight |
|---|---|---|---|---|
| Bentonite | Surface | 29 | | |
| | | | | |
| | | | | |

## 6. Comments

VAP-42

## 7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing: Dakota Drilling, Arcadis (Amy Parish)
License #:
Date of Filling & Sealing or Verification (mm/dd/yyyy): 8/22/2018
Street or Route: 126 N. Jefferson Street, Suite 400
Telephone Number: ( 414 ) 276-7742
City: Milwaukee State: WI ZIP Code: 53202
Signature of Person Doing Work: Amy Parish
Date Signed: 9/27/2018

**DNR Use Only**
Date Received:
Noted By:
Comments:

State of Wis., Dept. of Natural Resources
dnr.wi.gov

# Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)



**Notice:** Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and chs. NR 141 and 812, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between $10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

[X] **Verification Only of Fill and Seal**

**Route to DNR Bureau:**
[ ] Drinking Water [ ] Watershed/Wastewater [X] Remediation/Redevelopment
[ ] Waste Management [ ] Other: _____

## 1. Well Location Information

County: Marinette
WI Unique Well # of Removed Well: ___ ___ ___ ___ ___
Hicap #:

Latitude / Longitude (see instructions): State Plane - N, E
451878.86 N, 2581374.60 E
Format Code: [ ] DD [ ] DDM
Method Code: [ ] GPS008 [ ] SCR002 [X] OTH001

¼ / ¼: ¼: Section: Township: N Range: [ ] E [ ] W
or Gov't Lot #:

Well Street Address: Heath Lane
Well City, Village or Town: Peshtigo
Well ZIP Code: 54157
Subdivision Name:
Lot #:

Reason for Removal from Service: Temporary Borehole
WI Unique Well # of Replacement Well: ___ ___ ___ ___ ___

## 3. Filled & Sealed Well / Drillhole / Borehole Information

[ ] Monitoring Well
[ ] Water Well
[X] Borehole / Drillhole

Original Construction Date (mm/dd/yyyy): 08/23/2018
If a Well Construction Report is available, please attach.

Construction Type:
[ ] Drilled [ ] Driven (Sandpoint) [ ] Dug
[X] Other (specify): Geoprobe, direct push

Formation Type:
[X] Unconsolidated Formation [ ] Bedrock

Total Well Depth From Ground Surface (ft.): 30 ft
Casing Diameter (in.):
Lower Drillhole Diameter (in.): 2 in
Casing Depth (ft.):

Was well annular space grouted? [ ] Yes [X] No [ ] Unknown
If yes, to what depth (feet)?
Depth to Water (feet)

## 2. Facility / Owner Information

Facility Name: Tyco FTC
Facility ID (FID or PWS): 438005590
License/Permit/Monitoring #:
Original Well Owner: Tyco
Present Well Owner: Tyco
Mailing Address of Present Owner: 2700 Industrial Parkway South
City of Present Owner: Marinette
State: WI
ZIP Code: 54143

## 4. Pump, Liner, Screen, Casing & Sealing Material

| | Yes | No | N/A |
|---|---|---|---|
| Pump and piping removed? | [ ] | [ ] | [X] |
| Liner(s) removed? | [ ] | [ ] | [X] |
| Liner(s) perforated? | [ ] | [ ] | [X] |
| Screen removed? | [ ] | [ ] | [X] |
| Casing left in place? | [ ] | [ ] | [X] |
| Was casing cut off below surface? | [ ] | [ ] | [X] |
| Did sealing material rise to surface? | [ ] | [ ] | [X] |
| Did material settle after 24 hours? | [ ] | [ ] | [X] |
| If yes, was hole retopped? | [ ] | [ ] | [X] |
| If bentonite chips were used, were they hydrated with water from a known safe source? | [ ] | [ ] | [X] |

Required Method of Placing Sealing Material
[X] Conductor Pipe-Gravity [ ] Conductor Pipe-Pumped
[ ] Screened & Poured (Bentonite Chips) [ ] Other (Explain): _____

Sealing Materials
[ ] Neat Cement Grout [ ] Concrete
[ ] Sand-Cement (Concrete) Grout [ ] Bentonite Chips

*For Monitoring Wells and Monitoring Well Boreholes Only:*
[X] Bentonite Chips [ ] Bentonite - Cement Grout
[ ] Granular Bentonite [ ] Bentonite - Sand Slurry

## 5. Material Used to Fill Well / Drillhole

| Material | From (ft.) | To (ft.) | No. Yards, Sacks Sealant or Volume (circle one) | Mix Ratio or Mud Weight |
|---|---|---|---|---|
| Bentonite | Surface | 30 | | |
| | | | | |
| | | | | |

## 6. Comments

VAP-42

## 7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing: Dakota Drilling, Arcadis (Amy Parish)
License #:
Date of Filling & Sealing or Verification (mm/dd/yyyy): 8/23/2018
Street or Route: 126 N. Jefferson Street, Suite 400
Telephone Number: ( 414 ) 276-7742
City: Milwaukee
State: WI
ZIP Code: 53202
Signature of Person Doing Work:
Date Signed: 9/27/2018

**DNR Use Only**
Date Received:
Noted By:
Comments:

State of Wis., Dept. of Natural Resources
dnr.wi.gov

# Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)



**Notice:** Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and chs. NR 141 and 812, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between $10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

[X] **Verification Only of Fill and Seal**

**Route to DNR Bureau:**
[ ] Drinking Water [ ] Watershed/Wastewater [X] Remediation/Redevelopment
[ ] Waste Management [ ] Other: _____

## 1. Well Location Information

County: Marinette
WI Unique Well # of Removed Well: ___ ___ ___ ___ ___
Hicap #:

Latitude / Longitude (see instructions): State Plane - N, E
451878.86 N, 2581374.60 E
Format Code: [ ] DD [ ] DDM
Method Code: [ ] GPS008 [ ] SCR002 [X] OTH001

¼ / ¼: ¼: Section: Township: N Range: [ ] E [ ] W
or Gov't Lot #:

Well Street Address: Heath Lane
Well City, Village or Town: Peshtigo
Well ZIP Code: 54157
Subdivision Name:
Lot #:

Reason for Removal from Service: Temporary Borehole
WI Unique Well # of Replacement Well: ___ ___ ___ ___ ___

## 2. Facility / Owner Information

Facility Name: Tyco FTC
Facility ID (FID or PWS): 438005590
License/Permit/Monitoring #:
Original Well Owner: Tyco
Present Well Owner: Tyco
Mailing Address of Present Owner: 2700 Industrial Parkway South
City of Present Owner: Marinette
State: WI
ZIP Code: 54143

## 3. Filled & Sealed Well / Drillhole / Borehole Information

[ ] Monitoring Well
[ ] Water Well
[X] Borehole / Drillhole

Original Construction Date (mm/dd/yyyy): 08/23/2018
If a Well Construction Report is available, please attach.

Construction Type:
[ ] Drilled [ ] Driven (Sandpoint) [ ] Dug
[X] Other (specify): Geoprobe, direct push

Formation Type:
[X] Unconsolidated Formation [ ] Bedrock

Total Well Depth From Ground Surface (ft.): 40 ft
Casing Diameter (in.):
Lower Drillhole Diameter (in.): 2 in
Casing Depth (ft.):

Was well annular space grouted? [ ] Yes [X] No [ ] Unknown
If yes, to what depth (feet)?
Depth to Water (feet)

## 4. Pump, Liner, Screen, Casing & Sealing Material

| | Yes | No | N/A |
|---|---|---|---|
| Pump and piping removed? | [ ] | [ ] | [X] |
| Liner(s) removed? | [ ] | [ ] | [X] |
| Liner(s) perforated? | [ ] | [ ] | [X] |
| Screen removed? | [ ] | [ ] | [X] |
| Casing left in place? | [ ] | [ ] | [X] |
| Was casing cut off below surface? | [ ] | [ ] | [X] |
| Did sealing material rise to surface? | [ ] | [ ] | [X] |
| Did material settle after 24 hours? | [ ] | [ ] | [X] |
| If yes, was hole retopped? | [ ] | [ ] | [X] |
| If bentonite chips were used, were they hydrated with water from a known safe source? | [ ] | [ ] | [X] |

Required Method of Placing Sealing Material
[X] Conductor Pipe-Gravity [ ] Conductor Pipe-Pumped
[ ] Screened & Poured (Bentonite Chips) [ ] Other (Explain): _____

Sealing Materials
[ ] Neat Cement Grout [ ] Concrete
[ ] Sand-Cement (Concrete) Grout [ ] Bentonite Chips

*For Monitoring Wells and Monitoring Well Boreholes Only:*
[X] Bentonite Chips [ ] Bentonite - Cement Grout
[ ] Granular Bentonite [ ] Bentonite - Sand Slurry

## 5. Material Used to Fill Well / Drillhole

| Material | From (ft.) | To (ft.) | No. Yards, Sacks Sealant or Volume (circle one) | Mix Ratio or Mud Weight |
|---|---|---|---|---|
| Bentonite | Surface | 40 | | |
| | | | | |
| | | | | |

## 6. Comments

VAP-42

## 7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing: Dakota Drilling, Arcadis (Amy Parish)
License #:
Date of Filling & Sealing or Verification (mm/dd/yyyy): 8/23/2018
Street or Route: 126 N. Jefferson Street, Suite 400
Telephone Number: ( 414 ) 276-7742
City: Milwaukee
State: WI
ZIP Code: 53202
Signature of Person Doing Work: Amy Parise
Date Signed: 9/27/2018

**DNR Use Only**
Date Received:
Noted By:
Comments:

State of Wis., Dept. of Natural Resources
dnr.wi.gov

# Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)



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[X] **Verification Only of Fill and Seal**

**Route to DNR Bureau:**
[ ] Drinking Water [ ] Watershed/Wastewater [X] Remediation/Redevelopment
[ ] Waste Management [ ] Other: _____

## 1. Well Location Information

County: Marinette
WI Unique Well # of Removed Well: _ _ _ _ _
Hicap #:

Latitude / Longitude (see instructions): State Plane - N, E
452746.43 N, 2582337.79 E
Format Code: [ ] DD [ ] DDM
Method Code: [ ] GPS008 [ ] SCR002 [X] OTH001

¼ / ¼: ¼: Section: Township: N Range: [ ] E [ ] W
or Gov't Lot #:

Well Street Address: Shore Drive

Well City, Village or Town: Pestigo
Well ZIP Code: 54157

Subdivision Name:
Lot #:

Reason for Removal from Service: Temporary Borehole
WI Unique Well # of Replacement Well: _ _ _ _ _

## 2. Facility / Owner Information

Facility Name: Tyco FTC
Facility ID (FID or PWS): 438005590
License/Permit/Monitoring #:
Original Well Owner: Tyco
Present Well Owner: Tyco
Mailing Address of Present Owner: 2700 Industrial Parkway South
City of Present Owner: Marinette State: WI ZIP Code: 54143

## 3. Filled & Sealed Well / Drillhole / Borehole Information

[ ] Monitoring Well
[ ] Water Well
[X] Borehole / Drillhole

Original Construction Date (mm/dd/yyyy): 08/29/2018
If a Well Construction Report is available, please attach.

Construction Type:
[ ] Drilled [ ] Driven (Sandpoint) [ ] Dug
[X] Other (specify): Geoprobe, direct push

Formation Type:
[X] Unconsolidated Formation [ ] Bedrock

Total Well Depth From Ground Surface (ft.): 15 ft
Casing Diameter (in.):
Lower Drillhole Diameter (in.): 2 in
Casing Depth (ft.):

Was well annular space grouted? [ ] Yes [X] No [ ] Unknown
If yes, to what depth (feet)?
Depth to Water (feet)

## 4. Pump, Liner, Screen, Casing & Sealing Material

| | Yes | No | N/A |
|---|---|---|---|
| Pump and piping removed? | [ ] | [ ] | [X] |
| Liner(s) removed? | [ ] | [ ] | [X] |
| Liner(s) perforated? | [ ] | [ ] | [X] |
| Screen removed? | [ ] | [ ] | [X] |
| Casing left in place? | [ ] | [ ] | [X] |
| Was casing cut off below surface? | [ ] | [ ] | [X] |
| Did sealing material rise to surface? | [ ] | [ ] | [X] |
| Did material settle after 24 hours? | [ ] | [ ] | [X] |
| If yes, was hole retopped? | [ ] | [ ] | [X] |
| If bentonite chips were used, were they hydrated with water from a known safe source? | [ ] | [ ] | [X] |

Required Method of Placing Sealing Material
[X] Conductor Pipe-Gravity [ ] Conductor Pipe-Pumped
[ ] Screened & Poured (Bentonite Chips) [ ] Other (Explain): _____

Sealing Materials
[ ] Neat Cement Grout [ ] Concrete
[ ] Sand-Cement (Concrete) Grout [ ] Bentonite Chips

*For Monitoring Wells and Monitoring Well Boreholes Only:*
[X] Bentonite Chips [ ] Bentonite - Cement Grout
[ ] Granular Bentonite [ ] Bentonite - Sand Slurry

## 5. Material Used to Fill Well / Drillhole

| Material | From (ft.) | To (ft.) | No. Yards, Sacks Sealant or Volume (circle one) | Mix Ratio or Mud Weight |
|---|---|---|---|---|
| Bentonite | Surface | 15 | | |
| | | | | |
| | | | | |

## 6. Comments

VAP-43

## 7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing: Dakota Drilling, Arcadis (Amy Parish)
License #:
Date of Filling & Sealing or Verification (mm/dd/yyyy): 8/29/2018

Street or Route: 126 N. Jefferson Street, Suite 400
Telephone Number: ( 414 ) 276-7742

City: Milwaukee State: WI ZIP Code: 53202
Signature of Person Doing Work: Amy Parish
Date Signed: 9/27/2018

**DNR Use Only**
Date Received:
Noted By:
Comments:

State of Wis., Dept. of Natural Resources
dnr.wi.gov

# Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)



**Notice:** Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and chs. NR 141 and 812, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between $10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

[X] **Verification Only of Fill and Seal**

**Route to DNR Bureau:**
[ ] Drinking Water [ ] Watershed/Wastewater [X] Remediation/Redevelopment
[ ] Waste Management [ ] Other: _____

## 1. Well Location Information

County: Marinette
WI Unique Well # of Removed Well: ___ ___ ___ ___ ___
Hicap #:

Latitude / Longitude (see instructions): State Plane - N, E
452746.43 N, 2582337.79 E
Format Code: [ ] DD [ ] DDM
Method Code: [ ] GPS008 [ ] SCR002 [X] OTH001

¼ / ¼: ¼ or Gov't Lot #: Section: Township: N Range: [ ] E [ ] W

Well Street Address: Shore Drive
Well City, Village or Town: Pestigo
Well ZIP Code: 54157
Subdivision Name:
Lot #:

Reason for Removal from Service: Temporary Borehole
WI Unique Well # of Replacement Well: ___ ___ ___ ___ ___

## 2. Facility / Owner Information

Facility Name: Tyco FTC
Facility ID (FID or PWS): 438005590
License/Permit/Monitoring #:
Original Well Owner: Tyco
Present Well Owner: Tyco
Mailing Address of Present Owner: 2700 Industrial Parkway South
City of Present Owner: Marinette State: WI ZIP Code: 54143

## 3. Filled & Sealed Well / Drillhole / Borehole Information

[ ] Monitoring Well
[ ] Water Well
[X] Borehole / Drillhole

Original Construction Date (mm/dd/yyyy): 08/29/2018
If a Well Construction Report is available, please attach.

Construction Type:
[ ] Drilled [ ] Driven (Sandpoint) [ ] Dug
[X] Other (specify): Geoprobe, direct push

Formation Type:
[X] Unconsolidated Formation [ ] Bedrock

Total Well Depth From Ground Surface (ft.): 20 ft
Casing Diameter (in.):
Lower Drillhole Diameter (in.): 2 in
Casing Depth (ft.):

Was well annular space grouted? [ ] Yes [X] No [ ] Unknown
If yes, to what depth (feet)?
Depth to Water (feet)

## 4. Pump, Liner, Screen, Casing & Sealing Material

| | Yes | No | N/A |
|---|---|---|---|
| Pump and piping removed? | [ ] | [ ] | [X] |
| Liner(s) removed? | [ ] | [ ] | [X] |
| Liner(s) perforated? | [ ] | [ ] | [X] |
| Screen removed? | [ ] | [ ] | [X] |
| Casing left in place? | [ ] | [ ] | [X] |
| Was casing cut off below surface? | [ ] | [ ] | [X] |
| Did sealing material rise to surface? | [ ] | [ ] | [X] |
| Did material settle after 24 hours? | [ ] | [ ] | [X] |
| If yes, was hole retopped? | [ ] | [ ] | [X] |
| If bentonite chips were used, were they hydrated with water from a known safe source? | [ ] | [ ] | [X] |

Required Method of Placing Sealing Material
[X] Conductor Pipe-Gravity [ ] Conductor Pipe-Pumped
[ ] Screened & Poured (Bentonite Chips) [ ] Other (Explain): _____

Sealing Materials
[ ] Neat Cement Grout [ ] Concrete
[ ] Sand-Cement (Concrete) Grout [ ] Bentonite Chips

*For Monitoring Wells and Monitoring Well Boreholes Only:*
[X] Bentonite Chips [ ] Bentonite - Cement Grout
[ ] Granular Bentonite [ ] Bentonite - Sand Slurry

## 5. Material Used to Fill Well / Drillhole

| Material | From (ft.) | To (ft.) | No. Yards, Sacks Sealant or Volume (circle one) | Mix Ratio or Mud Weight |
|---|---|---|---|---|
| Bentonite | Surface | 20 | | |
| | | | | |
| | | | | |

## 6. Comments

VAP-43

## 7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing: Dakota Drilling, Arcadis (Amy Parish)
License #:
Date of Filling & Sealing or Verification (mm/dd/yyyy): 8/29/2018
Street or Route: 126 N. Jefferson Street, Suite 400
Telephone Number: ( 414 ) 276-7742
City: Milwaukee State: WI ZIP Code: 53202
Signature of Person Doing Work: Amy Parish
Date Signed: 9/27/2018

**DNR Use Only**
Date Received:
Noted By:
Comments:

State of Wis., Dept. of Natural Resources
dnr.wi.gov

# Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)



**Notice:** Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and chs. NR 141 and 812, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between $10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

[X] **Verification Only of Fill and Seal**

**Route to DNR Bureau:**
[ ] Drinking Water [ ] Watershed/Wastewater [X] Remediation/Redevelopment
[ ] Waste Management [ ] Other: _____

## 1. Well Location Information

County: Marinette
WI Unique Well # of Removed Well: _ _ _ _ _
Hicap #:

Latitude / Longitude (see instructions): State Plane - N, E
452746.43 N, 2582337.79 E
Format Code: [ ] DD [ ] DDM
Method Code: [ ] GPS008 [ ] SCR002 [X] OTH001

¼ / ¼: ¼: Section: Township: N Range: [ ] E [ ] W
or Gov't Lot #:

Well Street Address: Shore Drive

Well City, Village or Town: Pestigo
Well ZIP Code: 54157

Subdivision Name:
Lot #:

Reason for Removal from Service: Temporary Borehole
WI Unique Well # of Replacement Well: _ _ _ _ _

## 2. Facility / Owner Information

Facility Name: Tyco FTC
Facility ID (FID or PWS): 438005590
License/Permit/Monitoring #:
Original Well Owner: Tyco
Present Well Owner: Tyco
Mailing Address of Present Owner: 2700 Industrial Parkway South
City of Present Owner: Marinette State: WI ZIP Code: 54143

## 3. Filled & Sealed Well / Drillhole / Borehole Information

[ ] Monitoring Well
[ ] Water Well
[X] Borehole / Drillhole

Original Construction Date (mm/dd/yyyy): 08/29/2018
If a Well Construction Report is available, please attach.

Construction Type:
[ ] Drilled [ ] Driven (Sandpoint) [ ] Dug
[X] Other (specify): Geoprobe, direct push

Formation Type:
[X] Unconsolidated Formation [ ] Bedrock

Total Well Depth From Ground Surface (ft.): 30 ft
Casing Diameter (in.):
Lower Drillhole Diameter (in.): 2 in
Casing Depth (ft.):

Was well annular space grouted? [ ] Yes [X] No [ ] Unknown
If yes, to what depth (feet)?
Depth to Water (feet)

## 4. Pump, Liner, Screen, Casing & Sealing Material

| | Yes | No | N/A |
|---|---|---|---|
| Pump and piping removed? | [ ] | [ ] | [X] |
| Liner(s) removed? | [ ] | [ ] | [X] |
| Liner(s) perforated? | [ ] | [ ] | [X] |
| Screen removed? | [ ] | [ ] | [X] |
| Casing left in place? | [ ] | [ ] | [X] |
| Was casing cut off below surface? | [ ] | [ ] | [X] |
| Did sealing material rise to surface? | [ ] | [ ] | [X] |
| Did material settle after 24 hours? | [ ] | [ ] | [X] |
| If yes, was hole retopped? | [ ] | [ ] | [X] |
| If bentonite chips were used, were they hydrated with water from a known safe source? | [ ] | [ ] | [X] |

Required Method of Placing Sealing Material
[X] Conductor Pipe-Gravity [ ] Conductor Pipe-Pumped
[ ] Screened & Poured (Bentonite Chips) [ ] Other (Explain): _____

Sealing Materials
[ ] Neat Cement Grout [ ] Concrete
[ ] Sand-Cement (Concrete) Grout [ ] Bentonite Chips

*For Monitoring Wells and Monitoring Well Boreholes Only:*
[X] Bentonite Chips [ ] Bentonite - Cement Grout
[ ] Granular Bentonite [ ] Bentonite - Sand Slurry

## 5. Material Used to Fill Well / Drillhole

| Material | From (ft.) | To (ft.) | No. Yards, Sacks Sealant or Volume (circle one) | Mix Ratio or Mud Weight |
|---|---|---|---|---|
| Bentonite | Surface | 30 | | |
| | | | | |
| | | | | |

## 6. Comments

VAP-43

## 7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing: Dakota Drilling, Arcadis (Amy Parish)
License #:
Date of Filling & Sealing or Verification (mm/dd/yyyy): 8/29/2018
Street or Route: 126 N. Jefferson Street, Suite 400
Telephone Number: ( 414 ) 276-7742
City: Milwaukee State: WI ZIP Code: 53202
Signature of Person Doing Work: Amy Parise
Date Signed: 9/27/2018

**DNR Use Only**
Date Received:
Noted By:
Comments:

State of Wis., Dept. of Natural Resources
dnr.wi.gov

# Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)



**Notice:** Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and chs. NR 141 and 812, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between $10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

[X] **Verification Only of Fill and Seal**

**Route to DNR Bureau:**
[ ] Drinking Water [ ] Watershed/Wastewater [X] Remediation/Redevelopment
[ ] Waste Management [ ] Other: _____

## 1. Well Location Information

County: Marinette
WI Unique Well # of Removed Well: _ _ _ _ _
Hicap #:

Latitude / Longitude (see instructions): State Plane - N, E
452746.43 N, 2582337.79 E
Format Code: [ ] DD [ ] DDM
Method Code: [ ] GPS008 [ ] SCR002 [X] OTH001

¼ / ¼: ¼: Section: Township: N Range: [ ] E [ ] W
or Gov't Lot #:

Well Street Address: Shore Drive

Well City, Village or Town: Pestigo
Well ZIP Code: 54157

Subdivision Name:
Lot #:

Reason for Removal from Service: Temporary Borehole
WI Unique Well # of Replacement Well: _ _ _ _ _

## 2. Facility / Owner Information

Facility Name: Tyco FTC
Facility ID (FID or PWS): 438005590
License/Permit/Monitoring #:
Original Well Owner: Tyco
Present Well Owner: Tyco
Mailing Address of Present Owner: 2700 Industrial Parkway South
City of Present Owner: Marinette
State: WI
ZIP Code: 54143

## 3. Filled & Sealed Well / Drillhole / Borehole Information

[ ] Monitoring Well
[ ] Water Well
[X] Borehole / Drillhole

Original Construction Date (mm/dd/yyyy): 08/29/2018
If a Well Construction Report is available, please attach.

Construction Type:
[ ] Drilled [ ] Driven (Sandpoint) [ ] Dug
[X] Other (specify): Geoprobe, direct push

Formation Type:
[X] Unconsolidated Formation [ ] Bedrock

Total Well Depth From Ground Surface (ft.): 40 ft
Casing Diameter (in.):
Lower Drillhole Diameter (in.): 2 in
Casing Depth (ft.):

Was well annular space grouted? [ ] Yes [X] No [ ] Unknown
If yes, to what depth (feet)?
Depth to Water (feet)

## 4. Pump, Liner, Screen, Casing & Sealing Material

| | Yes | No | N/A |
|---|---|---|---|
| Pump and piping removed? | [ ] | [ ] | [X] |
| Liner(s) removed? | [ ] | [ ] | [X] |
| Liner(s) perforated? | [ ] | [ ] | [X] |
| Screen removed? | [ ] | [ ] | [X] |
| Casing left in place? | [ ] | [ ] | [X] |
| Was casing cut off below surface? | [ ] | [ ] | [X] |
| Did sealing material rise to surface? | [ ] | [ ] | [X] |
| Did material settle after 24 hours? | [ ] | [ ] | [X] |
| If yes, was hole retopped? | [ ] | [ ] | [X] |
| If bentonite chips were used, were they hydrated with water from a known safe source? | [ ] | [ ] | [X] |

Required Method of Placing Sealing Material
[X] Conductor Pipe-Gravity [ ] Conductor Pipe-Pumped
[ ] Screened & Poured (Bentonite Chips) [ ] Other (Explain): _____

Sealing Materials
[ ] Neat Cement Grout [ ] Concrete
[ ] Sand-Cement (Concrete) Grout [ ] Bentonite Chips

*For Monitoring Wells and Monitoring Well Boreholes Only:*
[X] Bentonite Chips [ ] Bentonite - Cement Grout
[ ] Granular Bentonite [ ] Bentonite - Sand Slurry

## 5. Material Used to Fill Well / Drillhole

| Material | From (ft.) | To (ft.) | No. Yards, Sacks Sealant or Volume (circle one) | Mix Ratio or Mud Weight |
|---|---|---|---|---|
| Bentonite | Surface | 40 | | |
| | | | | |
| | | | | |

## 6. Comments

VAP-43

## 7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing: Dakota Drilling, Arcadis (Amy Parish)
License #:
Date of Filling & Sealing or Verification (mm/dd/yyyy): 8/29/2018
Street or Route: 126 N. Jefferson Street, Suite 400
Telephone Number: ( 414 ) 276-7742
City: Milwaukee
State: WI
ZIP Code: 53202
Signature of Person Doing Work: Amy Parise
Date Signed: 9/27/2018

**DNR Use Only**
Date Received:
Noted By:
Comments:

State of Wis., Dept. of Natural Resources
dnr.wi.gov

# Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)



**Notice:** Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and chs. NR 141 and 812, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between $10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

[X] **Verification Only of Fill and Seal**

**Route to DNR Bureau:**
[ ] Drinking Water [ ] Watershed/Wastewater [X] Remediation/Redevelopment
[ ] Waste Management [ ] Other: _____

## 1. Well Location Information

County: Marinette
WI Unique Well # of Removed Well: _ _ _ _ _
Hicap #:

Latitude / Longitude (see instructions): State Plane - N, E
455451.01 N, 2581031.38 E
Format Code: [ ] DD [ ] DDM
Method Code: [ ] GPS008 [ ] SCR002 [X] OTH001

¼ / ¼: ¼: Section: Township: N Range: [ ] E [ ] W
or Gov't Lot #:

Well Street Address: Green Gable Road
Well City, Village or Town: Peshtigo
Well ZIP Code: 54157
Subdivision Name:
Lot #:

Reason for Removal from Service: Temporary Borehole
WI Unique Well # of Replacement Well: _ _ _ _ _

## 2. Facility / Owner Information

Facility Name: Tyco FTC
Facility ID (FID or PWS): 438005590
License/Permit/Monitoring #:
Original Well Owner: Tyco
Present Well Owner: Tyco
Mailing Address of Present Owner: 2700 Industrial Parkway South
City of Present Owner: Marinette State: WI ZIP Code: 54143

## 3. Filled & Sealed Well / Drillhole / Borehole Information

[ ] Monitoring Well
[ ] Water Well
[X] Borehole / Drillhole

Original Construction Date (mm/dd/yyyy): 08/21/2018
If a Well Construction Report is available, please attach.

Construction Type:
[ ] Drilled [ ] Driven (Sandpoint) [ ] Dug
[X] Other (specify): Geoprobe, direct push

Formation Type:
[X] Unconsolidated Formation [ ] Bedrock

Total Well Depth From Ground Surface (ft.): 10 ft
Casing Diameter (in.):
Lower Drillhole Diameter (in.): 2 in
Casing Depth (ft.):

Was well annular space grouted? [ ] Yes [X] No [ ] Unknown
If yes, to what depth (feet)?
Depth to Water (feet)

## 4. Pump, Liner, Screen, Casing & Sealing Material

| | Yes | No | N/A |
|---|---|---|---|
| Pump and piping removed? | [ ] | [ ] | [X] |
| Liner(s) removed? | [ ] | [ ] | [X] |
| Liner(s) perforated? | [ ] | [ ] | [X] |
| Screen removed? | [ ] | [ ] | [X] |
| Casing left in place? | [ ] | [ ] | [X] |
| Was casing cut off below surface? | [ ] | [ ] | [X] |
| Did sealing material rise to surface? | [ ] | [ ] | [X] |
| Did material settle after 24 hours? | [ ] | [ ] | [X] |
| If yes, was hole retopped? | [ ] | [ ] | [X] |
| If bentonite chips were used, were they hydrated with water from a known safe source? | [ ] | [ ] | [X] |

Required Method of Placing Sealing Material
[X] Conductor Pipe-Gravity [ ] Conductor Pipe-Pumped
[ ] Screened & Poured (Bentonite Chips) [ ] Other (Explain): _____

Sealing Materials
[ ] Neat Cement Grout [ ] Concrete
[ ] Sand-Cement (Concrete) Grout [ ] Bentonite Chips

*For Monitoring Wells and Monitoring Well Boreholes Only:*
[X] Bentonite Chips [ ] Bentonite - Cement Grout
[ ] Granular Bentonite [ ] Bentonite - Sand Slurry

## 5. Material Used to Fill Well / Drillhole

| Material | From (ft.) | To (ft.) | No. Yards, Sacks Sealant or Volume (circle one) | Mix Ratio or Mud Weight |
|---|---|---|---|---|
| Bentonite | Surface | 10 | | |
| | | | | |
| | | | | |

## 6. Comments

VAP-44

## 7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing: Dakota Drilling, Arcadis (Amy Parish)
License #:
Date of Filling & Sealing or Verification (mm/dd/yyyy): 8/21/2018
Street or Route: 126 N. Jefferson Street, Suite 400
Telephone Number: ( 414 ) 276-7742
City: Milwaukee State: WI ZIP Code: 53202
Signature of Person Doing Work: Amy Parise
Date Signed: 9/27/2018

**DNR Use Only**
Date Received:
Noted By:
Comments:

State of Wis., Dept. of Natural Resources
dnr.wi.gov

# Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)



**Notice:** Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and chs. NR 141 and 812, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between $10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

[X] **Verification Only of Fill and Seal**

**Route to DNR Bureau:**
[ ] Drinking Water [ ] Watershed/Wastewater [X] Remediation/Redevelopment
[ ] Waste Management [ ] Other: _____

## 1. Well Location Information

County: Marinette
WI Unique Well # of Removed Well: _ _ _ _ _
Hicap #:

Latitude / Longitude (see instructions): State Plane - N, E
455451.01 N, 2581031.38 E
Format Code: [ ] DD [ ] DDM
Method Code: [ ] GPS008 [ ] SCR002 [X] OTH001

¼ / ¼: ¼: or Gov't Lot #:
Section:
Township: N
Range: [ ] E [ ] W

Well Street Address: Green Gable Road
Well City, Village or Town: Peshtigo
Well ZIP Code: 54157
Subdivision Name:
Lot #:

Reason for Removal from Service: Temporary Borehole
WI Unique Well # of Replacement Well: _ _ _ _ _

## 2. Facility / Owner Information

Facility Name: Tyco FTC
Facility ID (FID or PWS): 438005590
License/Permit/Monitoring #:
Original Well Owner: Tyco
Present Well Owner: Tyco
Mailing Address of Present Owner: 2700 Industrial Parkway South
City of Present Owner: Marinette
State: WI
ZIP Code: 54143

## 3. Filled & Sealed Well / Drillhole / Borehole Information

[ ] Monitoring Well
[ ] Water Well
[X] Borehole / Drillhole

Original Construction Date (mm/dd/yyyy): 08/21/2018
If a Well Construction Report is available, please attach.

Construction Type:
[ ] Drilled [ ] Driven (Sandpoint) [ ] Dug
[X] Other (specify): Geoprobe, direct push

Formation Type:
[X] Unconsolidated Formation [ ] Bedrock

Total Well Depth From Ground Surface (ft.): 20 ft
Casing Diameter (in.):
Lower Drillhole Diameter (in.): 2 in
Casing Depth (ft.):

Was well annular space grouted? [ ] Yes [X] No [ ] Unknown
If yes, to what depth (feet)?
Depth to Water (feet)

## 4. Pump, Liner, Screen, Casing & Sealing Material

| | Yes | No | N/A |
|---|---|---|---|
| Pump and piping removed? | [ ] | [ ] | [X] |
| Liner(s) removed? | [ ] | [ ] | [X] |
| Liner(s) perforated? | [ ] | [ ] | [X] |
| Screen removed? | [ ] | [ ] | [X] |
| Casing left in place? | [ ] | [ ] | [X] |
| Was casing cut off below surface? | [ ] | [ ] | [X] |
| Did sealing material rise to surface? | [ ] | [ ] | [X] |
| Did material settle after 24 hours? | [ ] | [ ] | [X] |
| If yes, was hole retopped? | [ ] | [ ] | [X] |
| If bentonite chips were used, were they hydrated with water from a known safe source? | [ ] | [ ] | [X] |

Required Method of Placing Sealing Material
[X] Conductor Pipe-Gravity [ ] Conductor Pipe-Pumped
[ ] Screened & Poured (Bentonite Chips) [ ] Other (Explain): _____

Sealing Materials
[ ] Neat Cement Grout [ ] Concrete
[ ] Sand-Cement (Concrete) Grout [ ] Bentonite Chips

*For Monitoring Wells and Monitoring Well Boreholes Only:*
[X] Bentonite Chips [ ] Bentonite - Cement Grout
[ ] Granular Bentonite [ ] Bentonite - Sand Slurry

## 5. Material Used to Fill Well / Drillhole

| Material | From (ft.) | To (ft.) | No. Yards, Sacks Sealant or Volume (circle one) | Mix Ratio or Mud Weight |
|---|---|---|---|---|
| Bentonite | Surface | 20 | | |
| | | | | |
| | | | | |

## 6. Comments

VAP-44

## 7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing: Dakota Drilling, Arcadis (Amy Parish)
License #:
Date of Filling & Sealing or Verification (mm/dd/yyyy): 8/21/2018
Street or Route: 126 N. Jefferson Street, Suite 400
Telephone Number: ( 414 ) 276-7742
City: Milwaukee
State: WI
ZIP Code: 53202
Signature of Person Doing Work: Amy Parise
Date Signed: 9/27/2018

**DNR Use Only**
Date Received:
Noted By:
Comments:

State of Wis., Dept. of Natural Resources
dnr.wi.gov

# Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)



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[X] **Verification Only of Fill and Seal**

**Route to DNR Bureau:**
[ ] Drinking Water [ ] Watershed/Wastewater [X] Remediation/Redevelopment
[ ] Waste Management [ ] Other: _____

## 1. Well Location Information

County: Marinette
WI Unique Well # of Removed Well: _ _ _ _ _
Hicap #:

Latitude / Longitude (see instructions): State Plane - N, E
455451.01 N, 2581031.38 E
Format Code: [ ] DD [ ] DDM
Method Code: [ ] GPS008 [ ] SCR002 [X] OTH001

¼ / ¼: ¼: Section: Township: N Range: [ ] E [ ] W
or Gov't Lot #:

Well Street Address: Green Gable Road
Well City, Village or Town: Peshtigo
Well ZIP Code: 54157
Subdivision Name:
Lot #:

Reason for Removal from Service: Temporary Borehole
WI Unique Well # of Replacement Well: _ _ _ _ _

## 2. Facility / Owner Information

Facility Name: Tyco FTC
Facility ID (FID or PWS): 438005590
License/Permit/Monitoring #:
Original Well Owner: Tyco
Present Well Owner: Tyco
Mailing Address of Present Owner: 2700 Industrial Parkway South
City of Present Owner: Marinette State: WI ZIP Code: 54143

## 3. Filled & Sealed Well / Drillhole / Borehole Information

[ ] Monitoring Well
[ ] Water Well
[X] Borehole / Drillhole

Original Construction Date (mm/dd/yyyy): 08/21/2018
If a Well Construction Report is available, please attach.

Construction Type:
[ ] Drilled [ ] Driven (Sandpoint) [ ] Dug
[X] Other (specify): Geoprobe, direct push

Formation Type:
[X] Unconsolidated Formation [ ] Bedrock

Total Well Depth From Ground Surface (ft.): 30 ft
Casing Diameter (in.):
Lower Drillhole Diameter (in.): 2 in
Casing Depth (ft.):

Was well annular space grouted? [ ] Yes [X] No [ ] Unknown
If yes, to what depth (feet)?
Depth to Water (feet)

## 4. Pump, Liner, Screen, Casing & Sealing Material

| | Yes | No | N/A |
|---|---|---|---|
| Pump and piping removed? | [ ] | [ ] | [X] |
| Liner(s) removed? | [ ] | [ ] | [X] |
| Liner(s) perforated? | [ ] | [ ] | [X] |
| Screen removed? | [ ] | [ ] | [X] |
| Casing left in place? | [ ] | [ ] | [X] |
| Was casing cut off below surface? | [ ] | [ ] | [X] |
| Did sealing material rise to surface? | [ ] | [ ] | [X] |
| Did material settle after 24 hours? | [ ] | [ ] | [X] |
| If yes, was hole retopped? | [ ] | [ ] | [X] |
| If bentonite chips were used, were they hydrated with water from a known safe source? | [ ] | [ ] | [X] |

Required Method of Placing Sealing Material
[X] Conductor Pipe-Gravity [ ] Conductor Pipe-Pumped
[ ] Screened & Poured (Bentonite Chips) [ ] Other (Explain): _____

Sealing Materials
[ ] Neat Cement Grout [ ] Concrete
[ ] Sand-Cement (Concrete) Grout [ ] Bentonite Chips

*For Monitoring Wells and Monitoring Well Boreholes Only:*
[X] Bentonite Chips [ ] Bentonite - Cement Grout
[ ] Granular Bentonite [ ] Bentonite - Sand Slurry

## 5. Material Used to Fill Well / Drillhole

| Material | From (ft.) | To (ft.) | No. Yards, Sacks Sealant or Volume (circle one) | Mix Ratio or Mud Weight |
|---|---|---|---|---|
| Bentonite | Surface | 30 | | |
| | | | | |
| | | | | |

## 6. Comments

VAP-44

## 7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing: Dakota Drilling, Arcadis (Amy Parish)
License #:
Date of Filling & Sealing or Verification (mm/dd/yyyy): 8/21/2018
Street or Route: 126 N. Jefferson Street, Suite 400
Telephone Number: ( 414 ) 276-7742
City: Milwaukee State: WI ZIP Code: 53202
Signature of Person Doing Work: Amy Parise
Date Signed: 9/27/2018

**DNR Use Only**
Date Received:
Noted By:
Comments:

State of Wis., Dept. of Natural Resources
dnr.wi.gov

# Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)



**Notice:** Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and chs. NR 141 and 812, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between $10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

[X] **Verification Only of Fill and Seal**

**Route to DNR Bureau:**
[ ] Drinking Water [ ] Watershed/Wastewater [X] Remediation/Redevelopment
[ ] Waste Management [ ] Other: _____

## 1. Well Location Information

County: Marinette
WI Unique Well # of Removed Well: ___ ___ ___ ___ ___
Hicap #:

Latitude / Longitude (see instructions): State Plane - N, E
455451.01 N, 2581031.38 E
Format Code: [ ] DD [ ] DDM
Method Code: [ ] GPS008 [ ] SCR002 [X] OTH001

¼ / ¼: ¼:
or Gov't Lot #:
Section:
Township: N
Range: [ ] E [ ] W

Well Street Address: Green Gable Road
Well City, Village or Town: Peshtigo
Well ZIP Code: 54157
Subdivision Name:
Lot #:

Reason for Removal from Service: Temporary Borehole
WI Unique Well # of Replacement Well: ___ ___ ___ ___ ___

## 2. Facility / Owner Information

Facility Name: Tyco FTC
Facility ID (FID or PWS): 438005590
License/Permit/Monitoring #:
Original Well Owner: Tyco
Present Well Owner: Tyco
Mailing Address of Present Owner: 2700 Industrial Parkway South
City of Present Owner: Marinette
State: WI
ZIP Code: 54143

## 3. Filled & Sealed Well / Drillhole / Borehole Information

[ ] Monitoring Well
[ ] Water Well
[X] Borehole / Drillhole

Original Construction Date (mm/dd/yyyy): 08/21/2018
If a Well Construction Report is available, please attach.

Construction Type:
[ ] Drilled [ ] Driven (Sandpoint) [ ] Dug
[X] Other (specify): Geoprobe, direct push

Formation Type:
[X] Unconsolidated Formation [ ] Bedrock

Total Well Depth From Ground Surface (ft.): 40 ft
Casing Diameter (in.):
Lower Drillhole Diameter (in.): 2 in
Casing Depth (ft.):

Was well annular space grouted? [ ] Yes [X] No [ ] Unknown
If yes, to what depth (feet)?
Depth to Water (feet)

## 4. Pump, Liner, Screen, Casing & Sealing Material

| | Yes | No | N/A |
|---|---|---|---|
| Pump and piping removed? | [ ] | [ ] | [X] |
| Liner(s) removed? | [ ] | [ ] | [X] |
| Liner(s) perforated? | [ ] | [ ] | [X] |
| Screen removed? | [ ] | [ ] | [X] |
| Casing left in place? | [ ] | [ ] | [X] |
| Was casing cut off below surface? | [ ] | [ ] | [X] |
| Did sealing material rise to surface? | [ ] | [ ] | [X] |
| Did material settle after 24 hours? | [ ] | [ ] | [X] |
| If yes, was hole retopped? | [ ] | [ ] | [X] |
| If bentonite chips were used, were they hydrated with water from a known safe source? | [ ] | [ ] | [X] |

Required Method of Placing Sealing Material
[X] Conductor Pipe-Gravity [ ] Conductor Pipe-Pumped
[ ] Screened & Poured (Bentonite Chips) [ ] Other (Explain): _____

Sealing Materials
[ ] Neat Cement Grout [ ] Concrete
[ ] Sand-Cement (Concrete) Grout [ ] Bentonite Chips

*For Monitoring Wells and Monitoring Well Boreholes Only:*
[X] Bentonite Chips [ ] Bentonite - Cement Grout
[ ] Granular Bentonite [ ] Bentonite - Sand Slurry

## 5. Material Used to Fill Well / Drillhole

| Material | From (ft.) | To (ft.) | No. Yards, Sacks Sealant or Volume (circle one) | Mix Ratio or Mud Weight |
|---|---|---|---|---|
| Bentonite | Surface | 40 | | |
| | | | | |
| | | | | |

## 6. Comments

VAP-44

## 7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing: Dakota Drilling, Arcadis (Amy Parish)
License #:
Date of Filling & Sealing or Verification (mm/dd/yyyy): 8/21/2018
Street or Route: 126 N. Jefferson Street, Suite 400
Telephone Number: ( 414 ) 276-7742
City: Milwaukee
State: WI
ZIP Code: 53202
Signature of Person Doing Work: Amy Parise
Date Signed: 9/27/2018

**DNR Use Only**
Date Received:
Noted By:
Comments:

State of Wis., Dept. of Natural Resources
dnr.wi.gov

# Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)



**Notice:** Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and chs. NR 141 and 812, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between $10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

[X] **Verification Only of Fill and Seal**

**Route to DNR Bureau:**
[ ] Drinking Water [ ] Watershed/Wastewater [X] Remediation/Redevelopment
[ ] Waste Management [ ] Other: _____

## 1. Well Location Information

County: Marinette
WI Unique Well # of Removed Well: _ _ _ _ _
Hicap #:

Latitude / Longitude (see instructions): State Plane - N, E
454843.93 N, 2581975.00 E
Format Code: [ ] DD [ ] DDM
Method Code: [ ] GPS008 [ ] SCR002 [X] OTH001

¼ / ¼: ¼: Section: Township: N Range: [ ] E [ ] W
or Gov't Lot #:

Well Street Address: Rader Road
Well City, Village or Town: Peshtigo
Well ZIP Code: 54157
Subdivision Name:
Lot #:

Reason for Removal from Service: Temporary Borehole
WI Unique Well # of Replacement Well: _ _ _ _ _

## 3. Filled & Sealed Well / Drillhole / Borehole Information

[ ] Monitoring Well
[ ] Water Well
[X] Borehole / Drillhole

Original Construction Date (mm/dd/yyyy): 08/21/2018
If a Well Construction Report is available, please attach.

Construction Type:
[ ] Drilled [ ] Driven (Sandpoint) [ ] Dug
[X] Other (specify): Geoprobe, direct push

Formation Type:
[X] Unconsolidated Formation [ ] Bedrock

Total Well Depth From Ground Surface (ft.): 10 ft
Casing Diameter (in.):
Lower Drillhole Diameter (in.): 2 in
Casing Depth (ft.):

Was well annular space grouted? [ ] Yes [X] No [ ] Unknown
If yes, to what depth (feet)?
Depth to Water (feet)

## 2. Facility / Owner Information

Facility Name: Tyco FTC
Facility ID (FID or PWS): 438005590
License/Permit/Monitoring #:
Original Well Owner: Tyco
Present Well Owner: Tyco
Mailing Address of Present Owner: 2700 Industrial Parkway South
City of Present Owner: Marinette
State: WI
ZIP Code: 54143

## 4. Pump, Liner, Screen, Casing & Sealing Material

| | Yes | No | N/A |
|---|---|---|---|
| Pump and piping removed? | [ ] | [ ] | [X] |
| Liner(s) removed? | [ ] | [ ] | [X] |
| Liner(s) perforated? | [ ] | [ ] | [X] |
| Screen removed? | [ ] | [ ] | [X] |
| Casing left in place? | [ ] | [ ] | [X] |
| Was casing cut off below surface? | [ ] | [ ] | [X] |
| Did sealing material rise to surface? | [ ] | [ ] | [X] |
| Did material settle after 24 hours? | [ ] | [ ] | [X] |
| If yes, was hole retopped? | [ ] | [ ] | [X] |
| If bentonite chips were used, were they hydrated with water from a known safe source? | [ ] | [ ] | [X] |

Required Method of Placing Sealing Material
[X] Conductor Pipe-Gravity [ ] Conductor Pipe-Pumped
[ ] Screened & Poured (Bentonite Chips) [ ] Other (Explain): _____

Sealing Materials
[ ] Neat Cement Grout [ ] Concrete
[ ] Sand-Cement (Concrete) Grout [ ] Bentonite Chips

*For Monitoring Wells and Monitoring Well Boreholes Only:*
[X] Bentonite Chips [ ] Bentonite - Cement Grout
[ ] Granular Bentonite [ ] Bentonite - Sand Slurry

## 5. Material Used to Fill Well / Drillhole

| Material | From (ft.) | To (ft.) | No. Yards, Sacks Sealant or Volume (circle one) | Mix Ratio or Mud Weight |
|---|---|---|---|---|
| Bentonite | Surface | 10 | | |
| | | | | |
| | | | | |

## 6. Comments

VAP-45

## 7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing: Dakota Drilling, Arcadis (Amy Parish)
License #:
Date of Filling & Sealing or Verification (mm/dd/yyyy): 8/21/2018
Street or Route: 126 N. Jefferson Street, Suite 400
Telephone Number: ( 414 ) 276-7742
City: Milwaukee
State: WI
ZIP Code: 53202
Signature of Person Doing Work:
Date Signed: 9/27/2018

**DNR Use Only**
Date Received:
Noted By:
Comments:

State of Wis., Dept. of Natural Resources
dnr.wi.gov

# Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)



**Notice:** Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and chs. NR 141 and 812, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between $10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

[X] **Verification Only of Fill and Seal**

**Route to DNR Bureau:**
[ ] Drinking Water [ ] Watershed/Wastewater [X] Remediation/Redevelopment
[ ] Waste Management [ ] Other: _____

## 1. Well Location Information

County: Marinette
WI Unique Well # of Removed Well: _ _ _ _ _
Hicap #:

Latitude / Longitude (see instructions): State Plane - N, E
454843.93 N, 2581975.00 E
Format Code: [ ] DD [ ] DDM
Method Code: [ ] GPS008 [ ] SCR002 [X] OTH001

¼ / ¼: ¼: Section: Township: N Range: [ ] E [ ] W
or Gov't Lot #:

Well Street Address: Rader Road
Well City, Village or Town: Peshtigo
Well ZIP Code: 54157
Subdivision Name:
Lot #:

Reason for Removal from Service: Temporary Borehole
WI Unique Well # of Replacement Well: _ _ _ _ _

## 2. Facility / Owner Information

Facility Name: Tyco FTC
Facility ID (FID or PWS): 438005590
License/Permit/Monitoring #:
Original Well Owner: Tyco
Present Well Owner: Tyco
Mailing Address of Present Owner: 2700 Industrial Parkway South
City of Present Owner: Marinette State: WI ZIP Code: 54143

## 3. Filled & Sealed Well / Drillhole / Borehole Information

[ ] Monitoring Well
[ ] Water Well
[X] Borehole / Drillhole

Original Construction Date (mm/dd/yyyy): 08/21/2018
If a Well Construction Report is available, please attach.

Construction Type:
[ ] Drilled [ ] Driven (Sandpoint) [ ] Dug
[X] Other (specify): Geoprobe, direct push

Formation Type:
[X] Unconsolidated Formation [ ] Bedrock

Total Well Depth From Ground Surface (ft.): 20 ft
Casing Diameter (in.):
Lower Drillhole Diameter (in.): 2 in
Casing Depth (ft.):

Was well annular space grouted? [ ] Yes [X] No [ ] Unknown
If yes, to what depth (feet)?
Depth to Water (feet)

## 4. Pump, Liner, Screen, Casing & Sealing Material

| | Yes | No | N/A |
|---|---|---|---|
| Pump and piping removed? | [ ] | [ ] | [X] |
| Liner(s) removed? | [ ] | [ ] | [X] |
| Liner(s) perforated? | [ ] | [ ] | [X] |
| Screen removed? | [ ] | [ ] | [X] |
| Casing left in place? | [ ] | [ ] | [X] |
| Was casing cut off below surface? | [ ] | [ ] | [X] |
| Did sealing material rise to surface? | [ ] | [ ] | [X] |
| Did material settle after 24 hours? | [ ] | [ ] | [X] |
| If yes, was hole retopped? | [ ] | [ ] | [X] |
| If bentonite chips were used, were they hydrated with water from a known safe source? | [ ] | [ ] | [X] |

Required Method of Placing Sealing Material
[X] Conductor Pipe-Gravity [ ] Conductor Pipe-Pumped
[ ] Screened & Poured (Bentonite Chips) [ ] Other (Explain): _____

Sealing Materials
[ ] Neat Cement Grout [ ] Concrete
[ ] Sand-Cement (Concrete) Grout [ ] Bentonite Chips

*For Monitoring Wells and Monitoring Well Boreholes Only:*
[X] Bentonite Chips [ ] Bentonite - Cement Grout
[ ] Granular Bentonite [ ] Bentonite - Sand Slurry

## 5. Material Used to Fill Well / Drillhole

| Material | From (ft.) | To (ft.) | No. Yards, Sacks Sealant or Volume (circle one) | Mix Ratio or Mud Weight |
|---|---|---|---|---|
| Bentonite | Surface | 20 | | |
| | | | | |
| | | | | |

## 6. Comments

VAP-45

## 7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing: Dakota Drilling, Arcadis (Amy Parish)
License #:
Date of Filling & Sealing or Verification (mm/dd/yyyy): 8/21/2018
Street or Route: 126 N. Jefferson Street, Suite 400
Telephone Number: ( 414 ) 276-7742
City: Milwaukee State: WI ZIP Code: 53202
Signature of Person Doing Work: Amy Parise
Date Signed: 9/27/2018

**DNR Use Only**
Date Received:
Noted By:
Comments:

State of Wis., Dept. of Natural Resources
dnr.wi.gov

# Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)



**Notice:** Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and chs. NR 141 and 812, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between $10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

[X] **Verification Only of Fill and Seal**

**Route to DNR Bureau:**
[ ] Drinking Water [ ] Watershed/Wastewater [X] Remediation/Redevelopment
[ ] Waste Management [ ] Other: _____

## 1. Well Location Information

County: Marinette
WI Unique Well # of Removed Well: _ _ _ _ _
Hicap #:

Latitude / Longitude (see instructions): State Plane - N, E
454843.93 N, 2581975.00 E
Format Code: [ ] DD [ ] DDM
Method Code: [ ] GPS008 [ ] SCR002 [X] OTH001

¼ / ¼: ¼: Section: Township: N Range: [ ] E [ ] W
or Gov't Lot #:

Well Street Address: Rader Road
Well City, Village or Town: Peshtigo
Well ZIP Code: 54157
Subdivision Name:
Lot #:

Reason for Removal from Service: Temporary Borehole
WI Unique Well # of Replacement Well: _ _ _ _ _

## 2. Facility / Owner Information

Facility Name: Tyco FTC
Facility ID (FID or PWS): 438005590
License/Permit/Monitoring #:
Original Well Owner: Tyco
Present Well Owner: Tyco
Mailing Address of Present Owner: 2700 Industrial Parkway South
City of Present Owner: Marinette State: WI ZIP Code: 54143

## 3. Filled & Sealed Well / Drillhole / Borehole Information

[ ] Monitoring Well
[ ] Water Well
[X] Borehole / Drillhole

Original Construction Date (mm/dd/yyyy): 08/21/2018
If a Well Construction Report is available, please attach.

Construction Type:
[ ] Drilled [ ] Driven (Sandpoint) [ ] Dug
[X] Other (specify): Geoprobe, direct push

Formation Type:
[X] Unconsolidated Formation [ ] Bedrock

Total Well Depth From Ground Surface (ft.): 30 ft
Casing Diameter (in.):
Lower Drillhole Diameter (in.): 2 in
Casing Depth (ft.):

Was well annular space grouted? [ ] Yes [X] No [ ] Unknown
If yes, to what depth (feet)?
Depth to Water (feet)

## 4. Pump, Liner, Screen, Casing & Sealing Material

| | Yes | No | N/A |
|---|---|---|---|
| Pump and piping removed? | [ ] | [ ] | [X] |
| Liner(s) removed? | [ ] | [ ] | [X] |
| Liner(s) perforated? | [ ] | [ ] | [X] |
| Screen removed? | [ ] | [ ] | [X] |
| Casing left in place? | [ ] | [ ] | [X] |
| Was casing cut off below surface? | [ ] | [ ] | [X] |
| Did sealing material rise to surface? | [ ] | [ ] | [X] |
| Did material settle after 24 hours? | [ ] | [ ] | [X] |
| If yes, was hole retopped? | [ ] | [ ] | [X] |
| If bentonite chips were used, were they hydrated with water from a known safe source? | [ ] | [ ] | [X] |

Required Method of Placing Sealing Material
[X] Conductor Pipe-Gravity [ ] Conductor Pipe-Pumped
[ ] Screened & Poured (Bentonite Chips) [ ] Other (Explain): _____

Sealing Materials
[ ] Neat Cement Grout [ ] Concrete
[ ] Sand-Cement (Concrete) Grout [ ] Bentonite Chips

*For Monitoring Wells and Monitoring Well Boreholes Only:*
[X] Bentonite Chips [ ] Bentonite - Cement Grout
[ ] Granular Bentonite [ ] Bentonite - Sand Slurry

## 5. Material Used to Fill Well / Drillhole

| Material | From (ft.) | To (ft.) | No. Yards, Sacks Sealant or Volume (circle one) | Mix Ratio or Mud Weight |
|---|---|---|---|---|
| Bentonite | Surface | 30 | | |
| | | | | |
| | | | | |

## 6. Comments

VAP-45

## 7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing: Dakota Drilling, Arcadis (Amy Parish)
License #:
Date of Filling & Sealing or Verification (mm/dd/yyyy): 8/21/2018
Street or Route: 126 N. Jefferson Street, Suite 400
Telephone Number: ( 414 ) 276-7742
City: Milwaukee State: WI ZIP Code: 53202
Signature of Person Doing Work: Amy Parise
Date Signed: 9/27/2018

**DNR Use Only**
Date Received:
Noted By:
Comments:

State of Wis., Dept. of Natural Resources
dnr.wi.gov

# Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)



**Notice:** Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and chs. NR 141 and 812, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between $10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

[X] **Verification Only of Fill and Seal**

**Route to DNR Bureau:**
[ ] Drinking Water [ ] Watershed/Wastewater [X] Remediation/Redevelopment
[ ] Waste Management [ ] Other: _____

## 1. Well Location Information

County: Marinette
WI Unique Well # of Removed Well: _ _ _ _ _
Hicap #:

Latitude / Longitude (see instructions): State Plane - N, E
454843.93 N, 2581975.00 E
Format Code: [ ] DD [ ] DDM
Method Code: [ ] GPS008 [ ] SCR002 [X] OTH001

¼ / ¼: ¼: Section: Township: N Range: [ ] E [ ] W
or Gov't Lot #:

Well Street Address: Rader Road
Well City, Village or Town: Peshtigo
Well ZIP Code: 54157
Subdivision Name:
Lot #:

Reason for Removal from Service: Temporary Borehole
WI Unique Well # of Replacement Well: _ _ _ _ _

## 2. Facility / Owner Information

Facility Name: Tyco FTC
Facility ID (FID or PWS): 438005590
License/Permit/Monitoring #:
Original Well Owner: Tyco
Present Well Owner: Tyco
Mailing Address of Present Owner: 2700 Industrial Parkway South
City of Present Owner: Marinette State: WI ZIP Code: 54143

## 3. Filled & Sealed Well / Drillhole / Borehole Information

[ ] Monitoring Well
[ ] Water Well
[X] Borehole / Drillhole

Original Construction Date (mm/dd/yyyy): 08/21/2018
If a Well Construction Report is available, please attach.

Construction Type:
[ ] Drilled [ ] Driven (Sandpoint) [ ] Dug
[X] Other (specify): Geoprobe, direct push

Formation Type:
[X] Unconsolidated Formation [ ] Bedrock

Total Well Depth From Ground Surface (ft.): 40 ft
Casing Diameter (in.):
Lower Drillhole Diameter (in.): 2 in
Casing Depth (ft.):

Was well annular space grouted? [ ] Yes [X] No [ ] Unknown
If yes, to what depth (feet)?
Depth to Water (feet)

## 4. Pump, Liner, Screen, Casing & Sealing Material

| | Yes | No | N/A |
|---|---|---|---|
| Pump and piping removed? | [ ] | [ ] | [X] |
| Liner(s) removed? | [ ] | [ ] | [X] |
| Liner(s) perforated? | [ ] | [ ] | [X] |
| Screen removed? | [ ] | [ ] | [X] |
| Casing left in place? | [ ] | [ ] | [X] |
| Was casing cut off below surface? | [ ] | [ ] | [X] |
| Did sealing material rise to surface? | [ ] | [ ] | [X] |
| Did material settle after 24 hours? | [ ] | [ ] | [X] |
| If yes, was hole retopped? | [ ] | [ ] | [X] |
| If bentonite chips were used, were they hydrated with water from a known safe source? | [ ] | [ ] | [X] |

Required Method of Placing Sealing Material
[X] Conductor Pipe-Gravity [ ] Conductor Pipe-Pumped
[ ] Screened & Poured (Bentonite Chips) [ ] Other (Explain): _____

Sealing Materials
[ ] Neat Cement Grout [ ] Concrete
[ ] Sand-Cement (Concrete) Grout [ ] Bentonite Chips

*For Monitoring Wells and Monitoring Well Boreholes Only:*
[X] Bentonite Chips [ ] Bentonite - Cement Grout
[ ] Granular Bentonite [ ] Bentonite - Sand Slurry

## 5. Material Used to Fill Well / Drillhole

| Material | From (ft.) | To (ft.) | No. Yards, Sacks Sealant or Volume (circle one) | Mix Ratio or Mud Weight |
|---|---|---|---|---|
| Bentonite | Surface | 40 | | |
| | | | | |
| | | | | |

## 6. Comments

VAP-45

## 7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing: Dakota Drilling, Arcadis (Amy Parish)
License #:
Date of Filling & Sealing or Verification (mm/dd/yyyy): 8/21/2018
Street or Route: 126 N. Jefferson Street, Suite 400
Telephone Number: ( 414 ) 276-7742
City: Milwaukee State: WI ZIP Code: 53202
Signature of Person Doing Work: Amy Parise
Date Signed: 9/27/2018

**DNR Use Only**
Date Received:
Noted By:
Comments:

State of Wis., Dept. of Natural Resources
dnr.wi.gov

# Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)



**Notice:** Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and chs. NR 141 and 812, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between $10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

[X] **Verification Only of Fill and Seal**

**Route to DNR Bureau:**
[ ] Drinking Water [ ] Watershed/Wastewater [X] Remediation/Redevelopment
[ ] Waste Management [ ] Other: _____

## 1. Well Location Information

County: Marinette
WI Unique Well # of Removed Well: _ _ _ _ _
Hicap #:

Latitude / Longitude (see instructions): State Plane - N, E
453417.23 N, 2582557.75 E
Format Code: [ ] DD [ ] DDM
Method Code: [ ] GPS008 [ ] SCR002 [X] OTH001

¼ / ¼: ¼: Section: Township: N Range: [ ] E [ ] W
or Gov't Lot #:

Well Street Address: Shore Drive

Well City, Village or Town: Pestigo
Well ZIP Code: 54157

Subdivision Name:
Lot #:

Reason for Removal from Service: Temporary Borehole
WI Unique Well # of Replacement Well: _ _ _ _ _

## 2. Facility / Owner Information

Facility Name: Tyco FTC
Facility ID (FID or PWS): 438005590
License/Permit/Monitoring #:
Original Well Owner: Tyco
Present Well Owner: Tyco
Mailing Address of Present Owner: 2700 Industrial Parkway South
City of Present Owner: Marinette State: WI ZIP Code: 54143

## 3. Filled & Sealed Well / Drillhole / Borehole Information

[ ] Monitoring Well
[ ] Water Well
[X] Borehole / Drillhole

Original Construction Date (mm/dd/yyyy): 08/28/2018
If a Well Construction Report is available, please attach.

Construction Type:
[ ] Drilled [ ] Driven (Sandpoint) [ ] Dug
[X] Other (specify): Geoprobe, direct push

Formation Type:
[X] Unconsolidated Formation [ ] Bedrock

Total Well Depth From Ground Surface (ft.): 15 ft
Casing Diameter (in.):
Lower Drillhole Diameter (in.): 2 in
Casing Depth (ft.):

Was well annular space grouted? [ ] Yes [X] No [ ] Unknown
If yes, to what depth (feet)?
Depth to Water (feet)

## 4. Pump, Liner, Screen, Casing & Sealing Material

| | Yes | No | N/A |
|---|---|---|---|
| Pump and piping removed? | [ ] | [ ] | [X] |
| Liner(s) removed? | [ ] | [ ] | [X] |
| Liner(s) perforated? | [ ] | [ ] | [X] |
| Screen removed? | [ ] | [ ] | [X] |
| Casing left in place? | [ ] | [ ] | [X] |
| Was casing cut off below surface? | [ ] | [ ] | [X] |
| Did sealing material rise to surface? | [ ] | [ ] | [X] |
| Did material settle after 24 hours? | [ ] | [ ] | [X] |
| If yes, was hole retopped? | [ ] | [ ] | [X] |
| If bentonite chips were used, were they hydrated with water from a known safe source? | [ ] | [ ] | [X] |

Required Method of Placing Sealing Material
[X] Conductor Pipe-Gravity [ ] Conductor Pipe-Pumped
[ ] Screened & Poured (Bentonite Chips) [ ] Other (Explain): _____

Sealing Materials
[ ] Neat Cement Grout [ ] Concrete
[ ] Sand-Cement (Concrete) Grout [ ] Bentonite Chips

*For Monitoring Wells and Monitoring Well Boreholes Only:*
[X] Bentonite Chips [ ] Bentonite - Cement Grout
[ ] Granular Bentonite [ ] Bentonite - Sand Slurry

## 5. Material Used to Fill Well / Drillhole

| Material | From (ft.) | To (ft.) | No. Yards, Sacks Sealant or Volume (circle one) | Mix Ratio or Mud Weight |
|---|---|---|---|---|
| Bentonite | Surface | 15 | | |
| | | | | |
| | | | | |

## 6. Comments

VAP-46

## 7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing: Dakota Drilling, Arcadis (Amy Parish)
License #:
Date of Filling & Sealing or Verification (mm/dd/yyyy): 08/28/2018

Street or Route: 126 N. Jefferson Street, Suite 400
Telephone Number: ( 414 ) 276-7742

City: Milwaukee State: WI ZIP Code: 53202
Signature of Person Doing Work: Amy Parish
Date Signed: 9/27/2018

**DNR Use Only**
Date Received:
Noted By:
Comments:

State of Wis., Dept. of Natural Resources
dnr.wi.gov

# Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)



**Notice:** Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and chs. NR 141 and 812, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between $10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

[X] **Verification Only of Fill and Seal**

**Route to DNR Bureau:**
[ ] Drinking Water [ ] Watershed/Wastewater [X] Remediation/Redevelopment
[ ] Waste Management [ ] Other: _____

## 1. Well Location Information

County: Marinette
WI Unique Well # of Removed Well: _ _ _ _ _
Hicap #:

Latitude / Longitude (see instructions): State Plane - N, E
453417.23 N, 2582557.75 E
Format Code: [ ] DD [ ] DDM
Method Code: [ ] GPS008 [ ] SCR002 [X] OTH001

¼ / ¼: ¼: Section: Township: N Range: [ ] E [ ] W
or Gov't Lot #:

Well Street Address: Shore Drive

Well City, Village or Town: Pestigo
Well ZIP Code: 54157

Subdivision Name:
Lot #:

Reason for Removal from Service: Temporary Borehole
WI Unique Well # of Replacement Well: _ _ _ _ _

## 2. Facility / Owner Information

Facility Name: Tyco FTC
Facility ID (FID or PWS): 438005590
License/Permit/Monitoring #:
Original Well Owner: Tyco
Present Well Owner: Tyco
Mailing Address of Present Owner: 2700 Industrial Parkway South
City of Present Owner: Marinette
State: WI
ZIP Code: 54143

## 3. Filled & Sealed Well / Drillhole / Borehole Information

[ ] Monitoring Well
[ ] Water Well
[X] Borehole / Drillhole

Original Construction Date (mm/dd/yyyy): 08/28/2018
If a Well Construction Report is available, please attach.

Construction Type:
[ ] Drilled [ ] Driven (Sandpoint) [ ] Dug
[X] Other (specify): Geoprobe, direct push

Formation Type:
[X] Unconsolidated Formation [ ] Bedrock

Total Well Depth From Ground Surface (ft.): 20 ft
Casing Diameter (in.):
Lower Drillhole Diameter (in.): 2 in
Casing Depth (ft.):

Was well annular space grouted? [ ] Yes [X] No [ ] Unknown
If yes, to what depth (feet)?
Depth to Water (feet)

## 4. Pump, Liner, Screen, Casing & Sealing Material

| | Yes | No | N/A |
|---|---|---|---|
| Pump and piping removed? | [ ] | [ ] | [X] |
| Liner(s) removed? | [ ] | [ ] | [X] |
| Liner(s) perforated? | [ ] | [ ] | [X] |
| Screen removed? | [ ] | [ ] | [X] |
| Casing left in place? | [ ] | [ ] | [X] |
| Was casing cut off below surface? | [ ] | [ ] | [X] |
| Did sealing material rise to surface? | [ ] | [ ] | [X] |
| Did material settle after 24 hours? | [ ] | [ ] | [X] |
| If yes, was hole retopped? | [ ] | [ ] | [X] |
| If bentonite chips were used, were they hydrated with water from a known safe source? | [ ] | [ ] | [X] |

Required Method of Placing Sealing Material
[X] Conductor Pipe-Gravity [ ] Conductor Pipe-Pumped
[ ] Screened & Poured (Bentonite Chips) [ ] Other (Explain): _____

Sealing Materials
[ ] Neat Cement Grout [ ] Concrete
[ ] Sand-Cement (Concrete) Grout [ ] Bentonite Chips

*For Monitoring Wells and Monitoring Well Boreholes Only:*
[X] Bentonite Chips [ ] Bentonite - Cement Grout
[ ] Granular Bentonite [ ] Bentonite - Sand Slurry

## 5. Material Used to Fill Well / Drillhole

| Material | From (ft.) | To (ft.) | No. Yards, Sacks Sealant or Volume (circle one) | Mix Ratio or Mud Weight |
|---|---|---|---|---|
| Bentonite | Surface | 20 | | |
| | | | | |
| | | | | |

## 6. Comments

VAP-46

## 7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing: Dakota Drilling, Arcadis (Amy Parish)
License #:
Date of Filling & Sealing or Verification (mm/dd/yyyy): 08/28/2018

Street or Route: 126 N. Jefferson Street, Suite 400
Telephone Number: ( 414 ) 276-7742

City: Milwaukee
State: WI
ZIP Code: 53202
Signature of Person Doing Work: Amy Parish
Date Signed: 9/27/2018

**DNR Use Only**
Date Received:
Noted By:
Comments:

State of Wis., Dept. of Natural Resources
dnr.wi.gov

# Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)



**Notice:** Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and chs. NR 141 and 812, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between $10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

[X] **Verification Only of Fill and Seal**

**Route to DNR Bureau:**
[ ] Drinking Water [ ] Watershed/Wastewater [X] Remediation/Redevelopment
[ ] Waste Management [ ] Other: _____

## 1. Well Location Information

County: Marinette
WI Unique Well # of Removed Well: _ _ _ _ _
Hicap #:

Latitude / Longitude (see instructions): State Plane - N, E
453417.23 N, 2582557.75 E
Format Code: [ ] DD [ ] DDM
Method Code: [ ] GPS008 [ ] SCR002 [X] OTH001

¼ / ¼: ¼: Section: Township: N Range: [ ] E [ ] W
or Gov't Lot #:

Well Street Address: Shore Drive

Well City, Village or Town: Pestigo
Well ZIP Code: 54157

Subdivision Name:
Lot #:

Reason for Removal from Service: Temporary Borehole
WI Unique Well # of Replacement Well: _ _ _ _ _

## 2. Facility / Owner Information

Facility Name: Tyco FTC
Facility ID (FID or PWS): 438005590
License/Permit/Monitoring #:
Original Well Owner: Tyco
Present Well Owner: Tyco
Mailing Address of Present Owner: 2700 Industrial Parkway South
City of Present Owner: Marinette State: WI ZIP Code: 54143

## 3. Filled & Sealed Well / Drillhole / Borehole Information

[ ] Monitoring Well
[ ] Water Well
[X] Borehole / Drillhole

Original Construction Date (mm/dd/yyyy): 08/28/2018
If a Well Construction Report is available, please attach.

Construction Type:
[ ] Drilled [ ] Driven (Sandpoint) [ ] Dug
[X] Other (specify): Geoprobe, direct push

Formation Type:
[X] Unconsolidated Formation [ ] Bedrock

Total Well Depth From Ground Surface (ft.): 30 ft
Casing Diameter (in.):
Lower Drillhole Diameter (in.): 2 in
Casing Depth (ft.):

Was well annular space grouted? [ ] Yes [X] No [ ] Unknown
If yes, to what depth (feet)?
Depth to Water (feet)

## 4. Pump, Liner, Screen, Casing & Sealing Material

| | Yes | No | N/A |
|---|---|---|---|
| Pump and piping removed? | [ ] | [ ] | [X] |
| Liner(s) removed? | [ ] | [ ] | [X] |
| Liner(s) perforated? | [ ] | [ ] | [X] |
| Screen removed? | [ ] | [ ] | [X] |
| Casing left in place? | [ ] | [ ] | [X] |
| Was casing cut off below surface? | [ ] | [ ] | [X] |
| Did sealing material rise to surface? | [ ] | [ ] | [X] |
| Did material settle after 24 hours? | [ ] | [ ] | [X] |
| If yes, was hole retopped? | [ ] | [ ] | [X] |
| If bentonite chips were used, were they hydrated with water from a known safe source? | [ ] | [ ] | [X] |

Required Method of Placing Sealing Material
[X] Conductor Pipe-Gravity [ ] Conductor Pipe-Pumped
[ ] Screened & Poured (Bentonite Chips) [ ] Other (Explain): _____

Sealing Materials
[ ] Neat Cement Grout [ ] Concrete
[ ] Sand-Cement (Concrete) Grout [ ] Bentonite Chips

*For Monitoring Wells and Monitoring Well Boreholes Only:*
[X] Bentonite Chips [ ] Bentonite - Cement Grout
[ ] Granular Bentonite [ ] Bentonite - Sand Slurry

## 5. Material Used to Fill Well / Drillhole

| Material | From (ft.) | To (ft.) | No. Yards, Sacks Sealant or Volume (circle one) | Mix Ratio or Mud Weight |
|---|---|---|---|---|
| Bentonite | Surface | 30 | | |
| | | | | |
| | | | | |

## 6. Comments

VAP-46

## 7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing: Dakota Drilling, Arcadis (Amy Parish)
License #:
Date of Filling & Sealing or Verification (mm/dd/yyyy): 08/28/2018
Street or Route: 126 N. Jefferson Street, Suite 400
Telephone Number: ( 414 ) 276-7742
City: Milwaukee State: WI ZIP Code: 53202
Signature of Person Doing Work: Amy Parise
Date Signed: 9/27/2018

**DNR Use Only**
Date Received:
Noted By:
Comments:

State of Wis., Dept. of Natural Resources
dnr.wi.gov

# Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)



**Notice:** Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and chs. NR 141 and 812, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between $10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

[X] **Verification Only of Fill and Seal**

**Route to DNR Bureau:**
[ ] Drinking Water [ ] Watershed/Wastewater [X] Remediation/Redevelopment
[ ] Waste Management [ ] Other: _____

## 1. Well Location Information

County: Marinette
WI Unique Well # of Removed Well: ___ ___ ___ ___ ___
Hicap #:

Latitude / Longitude (see instructions): State Plane - N, E
453417.23 N, 2582557.75 E
Format Code: [ ] DD [ ] DDM
Method Code: [ ] GPS008 [ ] SCR002 [X] OTH001

¼ / ¼: ¼: or Gov't Lot #:
Section:
Township: N
Range: [ ] E [ ] W

Well Street Address: Shore Drive
Well City, Village or Town: Pestigo
Well ZIP Code: 54157
Subdivision Name:
Lot #:

Reason for Removal from Service: Temporary Borehole
WI Unique Well # of Replacement Well: ___ ___ ___ ___ ___

## 2. Facility / Owner Information

Facility Name: Tyco FTC
Facility ID (FID or PWS): 438005590
License/Permit/Monitoring #:
Original Well Owner: Tyco
Present Well Owner: Tyco
Mailing Address of Present Owner: 2700 Industrial Parkway South
City of Present Owner: Marinette
State: WI
ZIP Code: 54143

## 3. Filled & Sealed Well / Drillhole / Borehole Information

[ ] Monitoring Well
[ ] Water Well
[X] Borehole / Drillhole

Original Construction Date (mm/dd/yyyy): 08/28/2018
If a Well Construction Report is available, please attach.

Construction Type:
[ ] Drilled [ ] Driven (Sandpoint) [ ] Dug
[X] Other (specify): Geoprobe, direct push

Formation Type:
[X] Unconsolidated Formation [ ] Bedrock

Total Well Depth From Ground Surface (ft.): 40 ft
Casing Diameter (in.):
Lower Drillhole Diameter (in.): 2 in
Casing Depth (ft.):

Was well annular space grouted? [ ] Yes [X] No [ ] Unknown
If yes, to what depth (feet)?
Depth to Water (feet)

## 4. Pump, Liner, Screen, Casing & Sealing Material

| | Yes | No | N/A |
|---|---|---|---|
| Pump and piping removed? | [ ] | [ ] | [X] |
| Liner(s) removed? | [ ] | [ ] | [X] |
| Liner(s) perforated? | [ ] | [ ] | [X] |
| Screen removed? | [ ] | [ ] | [X] |
| Casing left in place? | [ ] | [ ] | [X] |
| Was casing cut off below surface? | [ ] | [ ] | [X] |
| Did sealing material rise to surface? | [ ] | [ ] | [X] |
| Did material settle after 24 hours? | [ ] | [ ] | [X] |
| If yes, was hole retopped? | [ ] | [ ] | [X] |
| If bentonite chips were used, were they hydrated with water from a known safe source? | [ ] | [ ] | [X] |

Required Method of Placing Sealing Material
[X] Conductor Pipe-Gravity [ ] Conductor Pipe-Pumped
[ ] Screened & Poured (Bentonite Chips) [ ] Other (Explain): _____

Sealing Materials
[ ] Neat Cement Grout [ ] Concrete
[ ] Sand-Cement (Concrete) Grout [ ] Bentonite Chips

*For Monitoring Wells and Monitoring Well Boreholes Only:*
[X] Bentonite Chips [ ] Bentonite - Cement Grout
[ ] Granular Bentonite [ ] Bentonite - Sand Slurry

## 5. Material Used to Fill Well / Drillhole

| Material | From (ft.) | To (ft.) | No. Yards, Sacks Sealant or Volume (circle one) | Mix Ratio or Mud Weight |
|---|---|---|---|---|
| Bentonite | Surface | 40 | | |
| | | | | |
| | | | | |

## 6. Comments

VAP-46

## 7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing: Dakota Drilling, Arcadis (Amy Parish)
License #:
Date of Filling & Sealing or Verification (mm/dd/yyyy): 08/28/2018
Street or Route: 126 N. Jefferson Street, Suite 400
Telephone Number: ( 414 ) 276-7742
City: Milwaukee
State: WI
ZIP Code: 53202
Signature of Person Doing Work: Amy Parise
Date Signed: 9/27/2018

**DNR Use Only**
Date Received:
Noted By:
Comments:

State of Wis., Dept. of Natural Resources
dnr.wi.gov

# Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)



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[X] **Verification Only of Fill and Seal**

**Route to DNR Bureau:**
[ ] Drinking Water [ ] Watershed/Wastewater [X] Remediation/Redevelopment
[ ] Waste Management [ ] Other: _____

## 1. Well Location Information

County: Marinette
WI Unique Well # of Removed Well: ___ ___ ___ ___ ___
Hicap #:

Latitude / Longitude (see instructions): State Plane - N, E
454748.73 N, 2580435.93 E
Format Code: [ ] DD [ ] DDM
Method Code: [ ] GPS008 [ ] SCR002 [X] OTH001

¼ / ¼: ¼:
or Gov't Lot #:
Section:
Township: N
Range: [ ] E [ ] W

Well Street Address: Rader Rd
Well City, Village or Town: Marinette
Well ZIP Code: 54143
Subdivision Name:
Lot #:

Reason for Removal from Service: Temporary Borehole
WI Unique Well # of Replacement Well: ___ ___ ___ ___ ___

## 2. Facility / Owner Information

Facility Name: Tyco FTC
Facility ID (FID or PWS): 438005590
License/Permit/Monitoring #:
Original Well Owner: Tyco
Present Well Owner: Tyco
Mailing Address of Present Owner: 2700 Industrial Parkway South
City of Present Owner: Marinette
State: WI
ZIP Code: 54143

## 3. Filled & Sealed Well / Drillhole / Borehole Information

[ ] Monitoring Well
[ ] Water Well
[X] Borehole / Drillhole

Original Construction Date (mm/dd/yyyy): 08/23/2018
If a Well Construction Report is available, please attach.

Construction Type:
[ ] Drilled [ ] Driven (Sandpoint) [ ] Dug
[X] Other (specify): Geoprobe, direct push

Formation Type:
[X] Unconsolidated Formation [ ] Bedrock

Total Well Depth From Ground Surface (ft.): 10 ft
Casing Diameter (in.):
Lower Drillhole Diameter (in.): 2 in
Casing Depth (ft.):

Was well annular space grouted? [ ] Yes [X] No [ ] Unknown
If yes, to what depth (feet)?
Depth to Water (feet)

## 4. Pump, Liner, Screen, Casing & Sealing Material

| | Yes | No | N/A |
|---|---|---|---|
| Pump and piping removed? | [ ] | [ ] | [X] |
| Liner(s) removed? | [ ] | [ ] | [X] |
| Liner(s) perforated? | [ ] | [ ] | [X] |
| Screen removed? | [ ] | [ ] | [X] |
| Casing left in place? | [ ] | [ ] | [X] |
| Was casing cut off below surface? | [ ] | [ ] | [X] |
| Did sealing material rise to surface? | [ ] | [ ] | [X] |
| Did material settle after 24 hours? | [ ] | [ ] | [X] |
| If yes, was hole retopped? | [ ] | [ ] | [X] |
| If bentonite chips were used, were they hydrated with water from a known safe source? | [ ] | [ ] | [X] |

Required Method of Placing Sealing Material
[X] Conductor Pipe-Gravity [ ] Conductor Pipe-Pumped
[ ] Screened & Poured (Bentonite Chips) [ ] Other (Explain): _____

Sealing Materials
[ ] Neat Cement Grout [ ] Concrete
[ ] Sand-Cement (Concrete) Grout [ ] Bentonite Chips

*For Monitoring Wells and Monitoring Well Boreholes Only:*
[X] Bentonite Chips [ ] Bentonite - Cement Grout
[ ] Granular Bentonite [ ] Bentonite - Sand Slurry

## 5. Material Used to Fill Well / Drillhole

| Material | From (ft.) | To (ft.) | No. Yards, Sacks Sealant or Volume (circle one) | Mix Ratio or Mud Weight |
|---|---|---|---|---|
| Bentonite | Surface | 10 | | |
| | | | | |
| | | | | |

## 6. Comments

VAP-47

## 7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing: Dakota Drilling, Arcadis (Amy Parish)
License #:
Date of Filling & Sealing or Verification (mm/dd/yyyy): 08/23/2018
Street or Route: 126 N. Jefferson Street, Suite 400
Telephone Number: ( 414 ) 276-7742
City: Milwaukee
State: WI
ZIP Code: 53202
Signature of Person Doing Work: Amy Parish
Date Signed: 9/27/2018

**DNR Use Only**
Date Received:
Noted By:
Comments:

State of Wis., Dept. of Natural Resources
dnr.wi.gov

# Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)



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[X] **Verification Only of Fill and Seal**

**Route to DNR Bureau:**
[ ] Drinking Water [ ] Watershed/Wastewater [X] Remediation/Redevelopment
[ ] Waste Management [ ] Other: _____

## 1. Well Location Information

County: Marinette
WI Unique Well # of Removed Well: _ _ _ _ _
Hicap #:

Latitude / Longitude (see instructions): State Plane - N, E
454748.73 N, 2580435.93 E
Format Code: [ ] DD [ ] DDM
Method Code: [ ] GPS008 [ ] SCR002 [X] OTH001

¼ / ¼: ¼: or Gov't Lot #:
Section:
Township: N
Range: [ ] E [ ] W

Well Street Address: Rader Rd
Well City, Village or Town: Marinette
Well ZIP Code: 54143
Subdivision Name:
Lot #:

Reason for Removal from Service: Temporary Borehole
WI Unique Well # of Replacement Well: _ _ _ _ _

## 2. Facility / Owner Information

Facility Name: Tyco FTC
Facility ID (FID or PWS): 438005590
License/Permit/Monitoring #:
Original Well Owner: Tyco
Present Well Owner: Tyco
Mailing Address of Present Owner: 2700 Industrial Parkway South
City of Present Owner: Marinette
State: WI
ZIP Code: 54143

## 3. Filled & Sealed Well / Drillhole / Borehole Information

[ ] Monitoring Well
[ ] Water Well
[X] Borehole / Drillhole

Original Construction Date (mm/dd/yyyy): 08/23/2018
If a Well Construction Report is available, please attach.

Construction Type:
[ ] Drilled [ ] Driven (Sandpoint) [ ] Dug
[X] Other (specify): Geoprobe, direct push

Formation Type:
[X] Unconsolidated Formation [ ] Bedrock

Total Well Depth From Ground Surface (ft.): 20 ft
Casing Diameter (in.):
Lower Drillhole Diameter (in.): 2 in
Casing Depth (ft.):

Was well annular space grouted? [ ] Yes [X] No [ ] Unknown
If yes, to what depth (feet)?
Depth to Water (feet)

## 4. Pump, Liner, Screen, Casing & Sealing Material

| | Yes | No | N/A |
|---|---|---|---|
| Pump and piping removed? | [ ] | [ ] | [X] |
| Liner(s) removed? | [ ] | [ ] | [X] |
| Liner(s) perforated? | [ ] | [ ] | [X] |
| Screen removed? | [ ] | [ ] | [X] |
| Casing left in place? | [ ] | [ ] | [X] |
| Was casing cut off below surface? | [ ] | [ ] | [X] |
| Did sealing material rise to surface? | [ ] | [ ] | [X] |
| Did material settle after 24 hours? | [ ] | [ ] | [X] |
| If yes, was hole retopped? | [ ] | [ ] | [X] |
| If bentonite chips were used, were they hydrated with water from a known safe source? | [ ] | [ ] | [X] |

Required Method of Placing Sealing Material
[X] Conductor Pipe-Gravity [ ] Conductor Pipe-Pumped
[ ] Screened & Poured (Bentonite Chips) [ ] Other (Explain): _____

Sealing Materials
[ ] Neat Cement Grout [ ] Concrete
[ ] Sand-Cement (Concrete) Grout [ ] Bentonite Chips

*For Monitoring Wells and Monitoring Well Boreholes Only:*
[X] Bentonite Chips [ ] Bentonite - Cement Grout
[ ] Granular Bentonite [ ] Bentonite - Sand Slurry

## 5. Material Used to Fill Well / Drillhole

| Material | From (ft.) | To (ft.) | No. Yards, Sacks Sealant or Volume (circle one) | Mix Ratio or Mud Weight |
|---|---|---|---|---|
| Bentonite | Surface | 20 | | |
| | | | | |
| | | | | |

## 6. Comments

VAP-47

## 7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing: Dakota Drilling, Arcadis (Amy Parish)
License #:
Date of Filling & Sealing or Verification (mm/dd/yyyy): 08/23/2018
Street or Route: 126 N. Jefferson Street, Suite 400
Telephone Number: ( 414 ) 276-7742
City: Milwaukee
State: WI
ZIP Code: 53202
Signature of Person Doing Work: Amy Parish
Date Signed: 9/27/2018

**DNR Use Only**
Date Received:
Noted By:
Comments:

State of Wis., Dept. of Natural Resources
dnr.wi.gov

# Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)



**Notice:** Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and chs. NR 141 and 812, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between $10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

[X] **Verification Only of Fill and Seal**

**Route to DNR Bureau:**
[ ] Drinking Water [ ] Watershed/Wastewater [X] Remediation/Redevelopment
[ ] Waste Management [ ] Other: _____

## 1. Well Location Information

County: Marinette
WI Unique Well # of Removed Well: _ _ _ _ _
Hicap #:

Latitude / Longitude (see instructions): State Plane - N, E
454748.73 N, 2580435.93 E
Format Code: [ ] DD [ ] DDM
Method Code: [ ] GPS008 [ ] SCR002 [X] OTH001

¼ / ¼: ¼: or Gov't Lot #:
Section:
Township: N
Range: [ ] E [ ] W

Well Street Address: Rader Rd
Well City, Village or Town: Marinette
Well ZIP Code: 54143
Subdivision Name:
Lot #:

Reason for Removal from Service: Temporary Borehole
WI Unique Well # of Replacement Well: _ _ _ _ _

## 2. Facility / Owner Information

Facility Name: Tyco FTC
Facility ID (FID or PWS): 438005590
License/Permit/Monitoring #:
Original Well Owner: Tyco
Present Well Owner: Tyco
Mailing Address of Present Owner: 2700 Industrial Parkway South
City of Present Owner: Marinette
State: WI
ZIP Code: 54143

## 3. Filled & Sealed Well / Drillhole / Borehole Information

[ ] Monitoring Well
[ ] Water Well
[X] Borehole / Drillhole

Original Construction Date (mm/dd/yyyy): 08/23/2018
If a Well Construction Report is available, please attach.

Construction Type:
[ ] Drilled [ ] Driven (Sandpoint) [ ] Dug
[X] Other (specify): Geoprobe, direct push

Formation Type:
[X] Unconsolidated Formation [ ] Bedrock

Total Well Depth From Ground Surface (ft.): 30 ft
Casing Diameter (in.):
Lower Drillhole Diameter (in.): 2 in
Casing Depth (ft.):

Was well annular space grouted? [ ] Yes [X] No [ ] Unknown
If yes, to what depth (feet)?
Depth to Water (feet)

## 4. Pump, Liner, Screen, Casing & Sealing Material

| | Yes | No | N/A |
|---|---|---|---|
| Pump and piping removed? | [ ] | [ ] | [X] |
| Liner(s) removed? | [ ] | [ ] | [X] |
| Liner(s) perforated? | [ ] | [ ] | [X] |
| Screen removed? | [ ] | [ ] | [X] |
| Casing left in place? | [ ] | [ ] | [X] |
| Was casing cut off below surface? | [ ] | [ ] | [X] |
| Did sealing material rise to surface? | [ ] | [ ] | [X] |
| Did material settle after 24 hours? | [ ] | [ ] | [X] |
| If yes, was hole retopped? | [ ] | [ ] | [X] |
| If bentonite chips were used, were they hydrated with water from a known safe source? | [ ] | [ ] | [X] |

Required Method of Placing Sealing Material
[X] Conductor Pipe-Gravity [ ] Conductor Pipe-Pumped
[ ] Screened & Poured (Bentonite Chips) [ ] Other (Explain): _____

Sealing Materials
[ ] Neat Cement Grout [ ] Concrete
[ ] Sand-Cement (Concrete) Grout [ ] Bentonite Chips

*For Monitoring Wells and Monitoring Well Boreholes Only:*
[X] Bentonite Chips [ ] Bentonite - Cement Grout
[ ] Granular Bentonite [ ] Bentonite - Sand Slurry

## 5. Material Used to Fill Well / Drillhole

| Material | From (ft.) | To (ft.) | No. Yards, Sacks Sealant or Volume (circle one) | Mix Ratio or Mud Weight |
|---|---|---|---|---|
| Bentonite | Surface | 30 | | |
| | | | | |
| | | | | |

## 6. Comments

VAP-47

## 7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing: Dakota Drilling, Arcadis (Amy Parish)
License #:
Date of Filling & Sealing or Verification (mm/dd/yyyy): 08/23/2018
Street or Route: 126 N. Jefferson Street, Suite 400
Telephone Number: ( 414 ) 276-7742
City: Milwaukee
State: WI
ZIP Code: 53202
Signature of Person Doing Work: Amy Parish
Date Signed: 9/27/2018

**DNR Use Only**
Date Received:
Noted By:
Comments:

State of Wis., Dept. of Natural Resources
dnr.wi.gov

# Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)



**Notice:** Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and chs. NR 141 and 812, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between $10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

[X] **Verification Only of Fill and Seal**

**Route to DNR Bureau:**
[ ] Drinking Water [ ] Watershed/Wastewater [X] Remediation/Redevelopment
[ ] Waste Management [ ] Other: _____

## 1. Well Location Information

County: Marinette
WI Unique Well # of Removed Well: ___ ___ ___ ___ ___
Hicap #:

Latitude / Longitude (see instructions): State Plane - N, E
454748.73 N, 2580435.93 E
Format Code: [ ] DD [ ] DDM
Method Code: [ ] GPS008 [ ] SCR002 [X] OTH001

¼ / ¼: ¼:
or Gov't Lot #:
Section:
Township: N
Range: [ ] E [ ] W

Well Street Address: Rader Rd
Well City, Village or Town: Marinette
Well ZIP Code: 54143
Subdivision Name:
Lot #:

Reason for Removal from Service: Temporary Borehole
WI Unique Well # of Replacement Well: ___ ___ ___ ___ ___

## 2. Facility / Owner Information

Facility Name: Tyco FTC
Facility ID (FID or PWS): 438005590
License/Permit/Monitoring #:
Original Well Owner: Tyco
Present Well Owner: Tyco
Mailing Address of Present Owner: 2700 Industrial Parkway South
City of Present Owner: Marinette
State: WI
ZIP Code: 54143

## 3. Filled & Sealed Well / Drillhole / Borehole Information

[ ] Monitoring Well
[ ] Water Well
[X] Borehole / Drillhole

Original Construction Date (mm/dd/yyyy): 08/23/2018
If a Well Construction Report is available, please attach.

Construction Type:
[ ] Drilled [ ] Driven (Sandpoint) [ ] Dug
[X] Other (specify): Geoprobe, direct push

Formation Type:
[X] Unconsolidated Formation [ ] Bedrock

Total Well Depth From Ground Surface (ft.): 30 ft
Casing Diameter (in.):
Lower Drillhole Diameter (in.): 2 in
Casing Depth (ft.):

Was well annular space grouted? [ ] Yes [X] No [ ] Unknown
If yes, to what depth (feet)?
Depth to Water (feet)

## 4. Pump, Liner, Screen, Casing & Sealing Material

| | Yes | No | N/A |
|---|---|---|---|
| Pump and piping removed? | [ ] | [ ] | [X] |
| Liner(s) removed? | [ ] | [ ] | [X] |
| Liner(s) perforated? | [ ] | [ ] | [X] |
| Screen removed? | [ ] | [ ] | [X] |
| Casing left in place? | [ ] | [ ] | [X] |
| Was casing cut off below surface? | [ ] | [ ] | [X] |
| Did sealing material rise to surface? | [ ] | [ ] | [X] |
| Did material settle after 24 hours? | [ ] | [ ] | [X] |
| If yes, was hole retopped? | [ ] | [ ] | [X] |
| If bentonite chips were used, were they hydrated with water from a known safe source? | [ ] | [ ] | [X] |

Required Method of Placing Sealing Material
[X] Conductor Pipe-Gravity [ ] Conductor Pipe-Pumped
[ ] Screened & Poured (Bentonite Chips) [ ] Other (Explain): _____

Sealing Materials
[ ] Neat Cement Grout [ ] Concrete
[ ] Sand-Cement (Concrete) Grout [ ] Bentonite Chips

*For Monitoring Wells and Monitoring Well Boreholes Only:*
[X] Bentonite Chips [ ] Bentonite - Cement Grout
[ ] Granular Bentonite [ ] Bentonite - Sand Slurry

## 5. Material Used to Fill Well / Drillhole

| Material | From (ft.) | To (ft.) | No. Yards, Sacks Sealant or Volume (circle one) | Mix Ratio or Mud Weight |
|---|---|---|---|---|
| Bentonite | Surface | 30 | | |
| | | | | |
| | | | | |

## 6. Comments

VAP-47

## 7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing: Dakota Drilling, Arcadis (Amy Parish)
License #:
Date of Filling & Sealing or Verification (mm/dd/yyyy): 08/28/2018
Street or Route: 126 N. Jefferson Street, Suite 400
Telephone Number: ( 414 ) 276-7742
City: Milwaukee
State: WI
ZIP Code: 53202
Signature of Person Doing Work: Amy Parish
Date Signed: 9/27/2018

**DNR Use Only**
Date Received:
Noted By:
Comments:

State of Wis., Dept. of Natural Resources
dnr.wi.gov

# Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)



**Notice:** Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and chs. NR 141 and 812, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between $10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

[X] **Verification Only of Fill and Seal**

**Route to DNR Bureau:**
[ ] Drinking Water [ ] Watershed/Wastewater [X] Remediation/Redevelopment
[ ] Waste Management [ ] Other: _____

## 1. Well Location Information

County: Marinette
WI Unique Well # of Removed Well: ___ ___ ___ ___ ___
Hicap #:

Latitude / Longitude (see instructions): State Plane - N, E
454748.73 N, 2580435.93 E
Format Code: [ ] DD [ ] DDM
Method Code: [ ] GPS008 [ ] SCR002 [X] OTH001

¼ / ¼: ¼:
or Gov't Lot #:
Section:
Township: N
Range: [ ] E [ ] W

Well Street Address: Rader Rd
Well City, Village or Town: Marinette
Well ZIP Code: 54143
Subdivision Name:
Lot #:

Reason for Removal from Service: Temporary Borehole
WI Unique Well # of Replacement Well: ___ ___ ___ ___ ___

## 2. Facility / Owner Information

Facility Name: Tyco FTC
Facility ID (FID or PWS): 438005590
License/Permit/Monitoring #:
Original Well Owner: Tyco
Present Well Owner: Tyco
Mailing Address of Present Owner: 2700 Industrial Parkway South
City of Present Owner: Marinette
State: WI
ZIP Code: 54143

## 3. Filled & Sealed Well / Drillhole / Borehole Information

[ ] Monitoring Well
[ ] Water Well
[X] Borehole / Drillhole

Original Construction Date (mm/dd/yyyy): 08/28/2018
If a Well Construction Report is available, please attach.

Construction Type:
[ ] Drilled [ ] Driven (Sandpoint) [ ] Dug
[X] Other (specify): Geoprobe, direct push

Formation Type:
[X] Unconsolidated Formation [ ] Bedrock

Total Well Depth From Ground Surface (ft.): 40 ft
Casing Diameter (in.):
Lower Drillhole Diameter (in.): 2 in
Casing Depth (ft.):

Was well annular space grouted? [ ] Yes [X] No [ ] Unknown
If yes, to what depth (feet)?
Depth to Water (feet)

## 4. Pump, Liner, Screen, Casing & Sealing Material

| | Yes | No | N/A |
|---|---|---|---|
| Pump and piping removed? | [ ] | [ ] | [X] |
| Liner(s) removed? | [ ] | [ ] | [X] |
| Liner(s) perforated? | [ ] | [ ] | [X] |
| Screen removed? | [ ] | [ ] | [X] |
| Casing left in place? | [ ] | [ ] | [X] |
| Was casing cut off below surface? | [ ] | [ ] | [X] |
| Did sealing material rise to surface? | [ ] | [ ] | [X] |
| Did material settle after 24 hours? | [ ] | [ ] | [X] |
| If yes, was hole retopped? | [ ] | [ ] | [X] |
| If bentonite chips were used, were they hydrated with water from a known safe source? | [ ] | [ ] | [X] |

Required Method of Placing Sealing Material
[X] Conductor Pipe-Gravity [ ] Conductor Pipe-Pumped
[ ] Screened & Poured (Bentonite Chips) [ ] Other (Explain): _____

Sealing Materials
[ ] Neat Cement Grout [ ] Concrete
[ ] Sand-Cement (Concrete) Grout [ ] Bentonite Chips

*For Monitoring Wells and Monitoring Well Boreholes Only:*
[X] Bentonite Chips [ ] Bentonite - Cement Grout
[ ] Granular Bentonite [ ] Bentonite - Sand Slurry

## 5. Material Used to Fill Well / Drillhole

| Material | From (ft.) | To (ft.) | No. Yards, Sacks Sealant or Volume (circle one) | Mix Ratio or Mud Weight |
|---|---|---|---|---|
| Bentonite | Surface | 40 | | |
| | | | | |
| | | | | |

## 6. Comments

VAP-47

## 7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing: Dakota Drilling, Arcadis (Amy Parish)
License #:
Date of Filling & Sealing or Verification (mm/dd/yyyy): 08/28/2018
Street or Route: 126 N. Jefferson Street, Suite 400
Telephone Number: ( 414 ) 276-7742
City: Milwaukee
State: WI
ZIP Code: 53202
Signature of Person Doing Work: Amy Parise
Date Signed: 9/27/2018

**DNR Use Only**
Date Received:
Noted By:
Comments:

| | | |
|---|---|---|
| **Date Start/Finish:** 8-21-2019<br>**Drilling Company:** Layne, A Granite Company<br>**Driller's Name:** Keith Fehrman<br>**Drilling Method:** Sonic | Northing: 465503.66<br>Easting: 2584182.98<br><br>Drilled Depth **(ft):** 73 ft<br>Surface Elevation **(ft):** 593.31<br><br>Descriptions **By:** Luke Reuteman | Well/Boring ID: **HPT-25**<br>Client: Johnson Controls, Inc.<br><br>Location: Marinette, Wisconsin |

| DEPTH (feet) | Recovery (feet) | USCS Code | Geologic Column | Stratigraphic Description |
|---|---|---|---|---|
| 0 | 3.5 | Asphalt | | (0.0-0.3') ASPHALT |
| 1 | | Gravel | | (0.3-1.0') GRAVEL: coarse, some fine to coarse sand, dry. |
| 2 | | Sand | | (1.0-15.5') SAND: medium; some fine sand; brown (10YR 4/3); intermittent layers of fine sand, black (10YR 2/1); brown (10YR 4/3).<br><br>Note: Wet starting at 4.0' bgs. |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| 9 | | | | |
| 10 | | | | |
| 11 | | | | |
| 12 | | | | |
| 13 | | | | |
| 14 | | | | |
| 15 | | Sand | | (15.5-16.0') SAND: fine; wet; dark grayish brown (10YR 4/2). |
| 16 | | Clay and Silt | | (16.0-16.5') CLAY and SILT: organic; moist; black (10YR 2/1). |
| 17 | | Sand | | (16.5-20.0') SAND: fine; wet; dark grayish brown (10YR 4/2). |
| 18 | | | | |
| 19 | | | | |
| 20 | | Clay and Silt | | (20.0-36.0') CLAY and SILT: trace organics; moist; trace fine sand seams with thickness >0.5"; black (10YR 2/1). |
| 21 | | | | |
| 22 | | | | |
| 23 | | | | |
| 24 | | | | |
| 25 | | | | |
| 26 | | | | |

ARCADIS Design & Consultancy for natural and built assets

**Remarks:**

' feet " inches

bgs: below ground surface

| | | |
|---|---|---|
| **Date Start/Finish:** 8-21-2019<br>**Drilling Company:** Layne, A Granite Company<br>**Driller's Name:** Keith Fehrman<br>**Drilling Method:** Sonic | Northing: 465503.66<br>Easting: 2584182.98<br><br>Drilled Depth **(ft):** 73 ft<br>Surface Elevation **(ft):** 593.31<br><br>Descriptions **By:** Luke Reuteman | Well/Boring ID: **HPT-25**<br>Client: Johnson Controls, Inc.<br><br>Location: Marinette, Wisconsin |

| DEPTH (feet) | Recovery (feet) | USCS Code | Geologic Column | Stratigraphic Description |
|---|---|---|---|---|
| 27 | 14.5 | | | |
| 28 | | | | |
| 29 | | | | |
| 30 | | | | |
| 31 | | | | |
| 32 | | | | |
| 33 | | | | |
| 34 | | | | |
| 35 | | | | |
| 36 | | Sand and Silt | | (36.0-41.0') SAND: fine, some medium; wet; very dark gray (10YR 3/1); clay with silt; organics; moist; black (10YR 2/1) 39-40' bgs. |
| 37 | | | | |
| 38 | | | | |
| 39 | | | | |
| 40 | | | | |
| 41 | | Sand | | (41.0-43.5') SAND: medium to coarse; wet; very dark gray (10YR 3/1). |
| 42 | | | | |
| 43 | | | | |
| 44 | | Sand and Silt | | (43.5-57.0') SAND: fine, some medium; wet; very dark gray (10YR 3/1); clay with silt; organics, moist; black (10YR 2/1) 43.5-45' bgs, 49.5-50.5' bgs, 53-55' bgs. |
| 45 | | | | |
| 46 | | | | |
| 47 | 16.0 | | | |
| 48 | | | | |
| 49 | | | | |
| 50 | | | | |
| 51 | | | | |
| 52 | | | | |

ARCADIS Design & Consultancy for natural and built assets

**Remarks:**

' feet " inches

bgs below ground surface

| | | |
|---|---|---|
| **Date Start/Finish:** 8-21-2019<br>**Drilling Company:** Layne, A Granite Company<br>**Driller's Name:** Keith Fehrman<br>**Drilling Method:** Sonic | Northing: 465503.66<br>Easting: 2584182.98<br><br>Drilled Depth **(ft):** 73 ft<br>Surface Elevation **(ft):** 593.31<br><br>Descriptions **By:** Luke Reuteman | Well/Boring ID: **HPT-25**<br><br>Client: Johnson Controls, Inc.<br><br>Location: Marinette, Wisconsin |

| DEPTH (feet) | Recovery (feet) | USCS Code | Geologic Column | Stratigraphic Description |
|---|---|---|---|---|
| 53 | | | | |
| 54 | | | | |
| 55 | | | | |
| 56 | | | | |
| 57 | | | | |
| 58 | | Sand and Silt | | (57.0-67.0') SAND: fine to medium; wet; dark grayish brown (10YR 4/2); clay with silt; trace organics; moist; black (10YR 2/1) 61.5-62' bgs, 65-65.5' bgs. |
| 59 | | | | |
| 60 | | | | |
| 61 | | | | |
| 62 | | | | |
| 63 | | | | |
| 64 | | | | |
| 65 | 14.0 | | | |
| 66 | | | | |
| 67 | | | | |
| 68 | | Sand | | (67.0-68.5') SAND: medium to coarse; wet; dark grayish brown (10YR 4/2); gravel, subrounded; cobbles, subrounded up to 3.5" from 68' bgs to 68.5' bgs. |
| 69 | | Silt | | (68.5-73.0') SILT: traces of fine to medium sand; gravel, subangular to subrounded; very hard, brittle; brown (7.5YR 5/3). |
| 70 | | | | |
| 71 | | | | |
| 72 | | | | |
| 73 | | | | |

ARCADIS Design & Consultancy for natural and built assets

**Remarks:**

' feet " inches

bgs below ground surface

| | | |
|---|---|---|
| **Date Start/Finish:** 8-21-2019<br>**Drilling Company:** Layne, A Granite Company<br>**Driller's Name:** Keith Fehrman<br>**Drilling Method:** Sonic | Northing: 454680.34<br>Easting: 2578633.46<br><br>Drilled Depth **(ft):** 65 ft<br>Surface Elevation **(ft):** 598.01<br><br>Descriptions **By:** Luke Reuteman | Well/Boring ID: **HPT-35**<br>Client: Johnson Controls, Inc.<br><br>Location: Marinette, Wisconsin |

| DEPTH (feet) | Recovery (feet) | USCS Code | Geologic Column | Stratigraphic Description |
|---|---|---|---|---|
| 0 | | Topsoil | | (0.0-0.5') TOPSOIL |
| 1 | | Sand | | (0.5-4.5') SAND: fine; trace medium sand; strong brown (7.5YR 4/6). |
| 2 | | | | |
| 3 | | | | Note: Moist starting at 3' bgs. |
| 4 | | | | |
| 5 | | Sand | | (4.5-14.5') SAND: fine; trace to some silt; wet; yellowish brown (10YR 5/4). |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| 9 | 14.5 | | | |
| 10 | | | | |
| 11 | | | | |
| 12 | | | | |
| 13 | | | | |
| 14 | | | | |
| 15 | | Sand | | (14.5-57.0') SAND: fine to medium,; wet; dark yellowish brown (10YR 4/4). |
| 16 | | | | |
| 17 | | | | |
| 18 | | | | |
| 19 | | | | |
| 20 | | | | |
| 21 | | | | |
| 22 | | | | |
| 23 | | | | |
| 24 | | | | |
| 25 | | | | |
| 26 | | | | |
| 27 | 17.5 | | | |
| 28 | | | | |
| 29 | | | | |
| 30 | | | | |
| 31 | | | | |
| 32 | | | | |

ARCADIS Design & Consultancy for natural and built assets

**Remarks:**

' feet " inches

bgs below ground surface

| | | |
|---|---|---|
| **Date Start/Finish:** 8-21-2019<br>**Drilling Company:** Layne, A Granite Company<br>**Driller's Name:** Keith Fehrman<br>**Drilling Method:** Sonic | Northing: 454680.34<br>Easting: 2578633.46<br><br>Drilled Depth **(ft):** 65 ft<br>Surface Elevation **(ft):** 598.01<br><br>Descriptions By: Luke Reuteman | Well/Boring ID: **HPT-35**<br>Client: Johnson Controls, Inc.<br><br>Location: Marinette, Wisconsin |

| DEPTH (feet) | Recovery (feet) | USCS Code | Geologic Column | Stratigraphic Description |
|---|---|---|---|---|
| 33 | | | | |
| 34 | | | | |
| 35 | | | | |
| 36 | | | | |
| 37 | | | | |
| 38 | | | | |
| 39 | | | | |
| 40 | | | | |
| 41 | | | | |
| 42 | | | | |
| 43 | | | | |
| 44 | | | | |
| 45 | | | | |
| 46 | | | | |
| 47 | 15.0 | | | |
| 48 | | | | |
| 49 | | | | |
| 50 | | | | |
| 51 | | | | |
| 52 | | | | |
| 53 | | | | |
| 54 | | | | |
| 55 | | | | |
| 56 | | | | |
| 57 | | Silt | | (57.0-65.0') SILT: some fine to medium sand; some gravel, subangular to subrounded, up to 2.0"; very hard; dry to moist; brown (7.5YR 4/3). |
| 58 | | | | |
| 59 | | | | |
| 60 | | | | |
| 61 | 8.0 | | | |
| 62 | | | | |
| 63 | | | | |
| 64 | | | | |
| 65 | | | | |

ARCADIS Design & Consultancy for natural and built assets

**Remarks:**

' feet " inches

bgs below ground surface

State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION
Form 4400-122 Rev. 7-98

Route to: Watershed/Wastewater [ ] Waste Management [ ]
Remediation/Redevelopment [X] Other [ ]



| Facility/Project Name | License/Permit/Monitoring Number | Boring Number |
|---|---|---|
| Tyco FTC | | HPT-25 |

| Boring Drilled By: | Date Drilling Started | Date Drilling Completed | Drilling Method |
|---|---|---|---|
| First Name: Keith Last Name: Fehrman<br>Firm: Layne, A Granite Company | 8-21-2019 | 8-21-2019 | Sonic |

| WI Unique Well No. | DNR Well ID No. | Well Name | Final Static Water Level | Surface Elevation | Borehole Diameter |
|---|---|---|---|---|---|
| | | | Feet MSL | 593.31 Feet MSL | 6 inches |

Local Grid Origin (estimated: [ ]) or Boring Location [X]
State Plane 465503.66 N 2584182.98 E Lat
1/4 of 1/4 of Section , T N, R Long

Local Grid Location
[ ] N [ ] E
Feet [ ] S Feet [ ] W

| Facility ID | County | County Code | Civil Town/City/or Village |
|---|---|---|---|
| 438005590 | Marinette | 38 | Marinette |

| Sample Number and Type | Length Att. & Recovered (ft) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Compressive Strength | Soil Properties: Moisture Content | Liquid Limit | Plasticity Index | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 3.5 | | 0.0 | (0.0-0.3)<br>ASPHALT | | | | | | | | | | |
| | | | 2.0 | (0.3-1.0)<br>GRAVEL: coarse, some fine to coarse sand, dry. | | | | | | | | | | |
| | | | 4.0 | (1.0-15.5)<br>SAND: medium; some fine sand; brown (10YR 4/3); intermittent layers of fine sand, black (10YR 2/1); brown (10YR 4/3).<br><br>Note: Wet starting at 4.0' bgs. | | | | | | | | | | |
| | | | 6.0 | | | | | | | | | | | |
| | | | 8.0 | | | | | | | | | | | |
| | | | 10.0 | | | | | | | | | | | |
| | | | 12.0 | | | | | | | | | | | |
| | | | 14.0 | (15.5-16.0)<br>SAND: fine; wet; dark grayish brown (10YR 4/2). | | | | | | | | | | |
| | | | 16.0 | (16.0-16.5)<br>CLAY and SILT: organic; moist; black (10YR 2/1). | | | | | | | | | | |
| | | | 18.0 | | | | | | | | | | | |
| | | | 20.0 | (16.5-20.0)<br>SAND: fine; wet; dark grayish brown (10YR 4/2). | | | | | | | | | | |
| | | | 22.0 | (20.0-36.0)<br>CLAY and SILT: trace organics; moist; trace fine sand seams with thickness >0.5"; black (10YR 2/1). | | | | | | | | | | |
| | | | 24.0 | | | | | | | | | | | |

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature

Firm ARCADIS
126 N. Jefferson St., Suite 400
Milwaukee, WI 53202

This form is authorized by Chapters 281, 283, 289, 291, 293, and 299, Wis. Stats. Completion of this form is mandatory. Failure to file this form may result in forfeiture of between $10 and $25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. NOTE: See instructions for more information, including where the completed form should be sent.

| Sample | | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Compressive Strength | Soil Properties | | | | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number and Type | Length Att. & Recovered (in) | | | | | | | | | Moisture Content | Liquid Limit | Placticity Index | P 200 | |
| | 14.5 | | 26.0<br>28.0<br>30.0<br>32.0<br>34.0<br>36.0 | | | | | | | | | | | |
| | 16.0 | | 38.0<br>40.0<br>42.0<br>44.0<br>46.0<br>48.0<br>50.0<br>52.0<br>54.0<br>56.0 | (36.0-41.0)<br>SAND: fine, some medium; wet; very dark gray (10YR 3/1); clay with silt; organics; moist; black (10YR 2/1) 39-40' bgs.<br>(41.0-43.5)<br>SAND: medium to coarse; wet; very dark gray (10YR 3/1).<br>(43.5-57.0)<br>SAND: fine, some medium; wet; very dark gray (10YR 3/1); clay with silt; organics, moist; black (10YR 2/1) 43.5-45' bgs, 49.5-50.5' bgs, 53-55' bgs. | | | | | | | | | | |
| | 14.0 | | 58.0<br>60.0<br>62.0<br>64.0<br>66.0<br>68.0<br>70.0<br>72.0 | (57.0-67.0)<br>SAND: fine to medium; wet; dark grayish brown (10YR 4/2); clay with silt; trace organics; moist; black (10YR 2/1) 61.5-62' bgs, 65-65.5' bgs.<br>(67.0-68.5)<br>SAND: medium to coarse; wet; dark grayish brown (10YR 4/2); gravel, subrounded; cobbles, subrounded up to 3.5" from 68' bgs to 68.5' bgs.<br>(68.5-73.0)<br>SILT: traces of fine to medium sand; gravel, subangular to subrounded; very hard, brittle; brown (7.5YR 5/3), | | | | | | | | | | |

State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION
Form 4400-122 Rev. 7-98

Route to: Watershed/Wastewater [ ] Waste Management [ ]
Remediation/Redevelopment [X] Other [ ]



| Facility/Project Name | License/Permit/Monitoring Number | Boring Number |
|---|---|---|
| Tyco FTC | | HPT-35 |

| Boring Drilled By: | Date Drilling Started | Date Drilling Completed | Drilling Method |
|---|---|---|---|
| First Name: Keith Last Name: Fehrman<br>Firm: Layne, A Granite Company | 8-21-2019 | 8-21-2019 | Sonic |

| WI Unique Well No. | DNR Well ID No. | Well Name | Final Static Water Level | Surface Elevation | Borehole Diameter |
|---|---|---|---|---|---|
| | | | Feet MSL | 598.01 Feet MSL | 6 inches |

Local Grid Origin (estimated: [ ]) or Boring Location [X]
State Plane 454680.34 N 2578633.46 E Lat
1/4 of 1/4 of Section , T N, R Long

Local Grid Location
[ ] N [ ] E
Feet [ ] S Feet [ ] W

| Facility ID | County | County Code | Civil Town/City/or Village |
|---|---|---|---|
| 438005590 | Marinette | 38 | Marinette |

| Sample Number and Type | Length Att. & Recovered (ft) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Compressive Strength | Soil Properties: Moisture Content | Liquid Limit | Plasticity Index | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 14.5 | | 0.0 | (0.0-0.5)<br>TOPSOIL | | | | | | | | | | |
| | | | 2.0 | (0.5-4.5)<br>SAND: fine; trace medium sand; strong brown (7.5YR 4/6).<br><br>Note: Moist starting at 3' bgs. | | | | | | | | | | |
| | | | 4.0 | | | | | | | | | | | |
| | | | 6.0 | (4.5-14.5)<br>SAND: fine; trace to some silt; wet; yellowish brown (10YR 5/4). | | | | | | | | | | |
| | | | 8.0 | | | | | | | | | | | |
| | | | 10.0 | | | | | | | | | | | |
| | | | 12.0 | | | | | | | | | | | |
| | | | 14.0 | | | | | | | | | | | |
| | | | 16.0 | (14.5-57.0)<br>SAND: fine to medium; wet; dark yellowish brown (10YR 4/4). | | | | | | | | | | |
| | | | 18.0 | | | | | | | | | | | |
| | | | 20.0 | | | | | | | | | | | |
| | | | 22.0 | | | | | | | | | | | |

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature

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126 N. Jefferson St., Suite 400
Milwaukee, WI 53202

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| Sample | | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Compressive Strength | Soil Properties | | | | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number and Type | Length Att. & Recovered (in) | | | | | | | | | Moisture Content | Liquid Limit | Placticity Index | P 200 | |
| | 17.5 | | 24.0<br>26.0<br>28.0<br>30.0<br>32.0<br>34.0<br>36.0 | | | | | | | | | | | |
| | 15.0 | | 38.0<br>40.0<br>42.0<br>44.0<br>46.0<br>48.0<br>50.0<br>52.0<br>54.0<br>56.0 | | | | | | | | | | | |
| | 8.0 | | 58.0<br>60.0<br>62.0<br>64.0 | (57.0-65.0)<br>SILT: some fine to medium sand; some gravel, subangular to subrounded, up to 2.0"; very hard; dry to moist; brown (7.5YR 4/3). | | | | | | | | | | |

State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION
Form 4400-122 Rev. 7-98

Route to: Watershed/Wastewater [ ] Waste Management [ ]
Remediation/Redevelopment [X] Other [ ]



| Facility/Project Name | License/Permit/Monitoring Number | Boring Number |
|---|---|---|
| Tyco FTC | | PZ-24 |

| Boring Drilled By: | Date Drilling Started | Date Drilling Completed | Drilling Method |
|---|---|---|---|
| First Name: Keith Last Name: Fehrman<br>Firm: Layne, A Granite Company | 7-23-2019 | 7-23-2019 | Sonic |

| WI Unique Well No. | DNR Well ID No. | Well Name | Final Static Water Level | Surface Elevation | Borehole Diameter |
|---|---|---|---|---|---|
| | | | Feet MSL | 605.46 Feet MSL | 6 inches |

Local Grid Origin (estimated: [ ]) or Boring Location [X]
State Plane 461565.48 N 2580738.87 E Lat
1/4 of 1/4 of Section , T N, R Long

Local Grid Location
[ ] N [ ] E
Feet [ ] S Feet [ ] W

| Facility ID | County | County Code | Civil Town/City/or Village |
|---|---|---|---|
| 438005590 | Marinette | 38 | Marinette |

| Sample Number and Type | Length Att. & Recovered (ft) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Compressive Strength | Soil Properties: Moisture Content | Liquid Limit | Placticity Index | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 3.5 | | 0.0<br>2.0<br>4.0<br>6.0 | (0.0-1.5)<br>SAND and SILT: fine sand; some gravel, granules to large pebbles, subangular to angular; trace organics; dry to moist; dark yellowish brown (10YR 3/4).<br>(1.5-7.0)<br>SAND: fine; well sorted; loose; moist; strong brown (7.5YR 5/6). | | | | | | | | | | |
| | 8.1 | | 8.0<br>10.0<br>12.0<br>14.0<br>16.0 | (7.0-17.0)<br>SAND: fine; trace fines; well sorted; loose to medium dense; wet; brown (7.5YR 4/4). | | | | | | | | | | |
| | 8.5 | | 18.0<br>20.0<br>22.0 | (17.0-25.0)<br>SAND: fine; trace pebbles, very large, subangular; well sorted; medium dense; wet; brown (7.5YR 5/4 to 7.5YR 4/4). | | | | | | | | | | |

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature

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126 N. Jefferson St., Suite 400
Milwaukee, WI 53202

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| Sample | | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Compressive Strength | Soil Properties | | | | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number and Type | Length Att. & Recovered (in) | | | | | | | | | Moisture Content | Liquid Limit | Placticity Index | P 200 | |
| | | | 24.0 | | | | | | | | | | | |
| | | | 26.0 | (25.0-31.6)<br>SAND: fine to medium; well sorted; medium dense; moist to wet; brown (7.5YR 4/4). | | | | | | | | | | |
| | | | 28.0 | | | | | | | | | | | |
| | | | 30.0 | | | | | | | | | | | |
| | 9.0 | | 32.0 | (31.6-45.7)<br>SAND: fine to coarse, coarsens with depth; moderate to well sorted; loose to medium loose; moist to wet; dark grayish brown (10YR 4/2). | | | | | | | | | | |
| | | | 34.0 | | | | | | | | | | | |
| | | | 36.0 | | | | | | | | | | | |
| | | | 38.0 | | | | | | | | | | | |
| | | | 40.0 | | | | | | | | | | | |
| | 8.7 | | 42.0 | | | | | | | | | | | |
| | | | 44.0 | | | | | | | | | | | |
| | | | 46.0 | (45.7-51.1)<br>SAND: fine to medium, fines with depth; well sorted; medium loose; over-saturated; brown (7.5YR 5/2). | | | | | | | | | | |
| | | | 48.0 | | | | | | | | | | | |
| | | | 50.0 | | | | | | | | | | | |
| | 8.1 | | 52.0 | (51.1-60.2)<br>CLAY and SILT: trace very fine sand; soft; moist to wet; brown (7.5YR 5/3).<br><br>Note: Very fine sand lens from 52.9-53.1' bgs. | | | | | | | | | | |
| | | | 54.0 | | | | | | | | | | | |
| | | | 56.0 | | | | | | | | | | | |
| | | | 58.0 | | | | | | | | | | | |
| | | | 60.0 | | | | | | | | | | | |
| | 9.0 | | 62.0 | (60.2-61.5)<br>SAND: fine to medium; little clay; little silt; trace gravel, graunules to large pebbles, subangular; loose; soft; wet; brown (7.5YR 4/4). | | | | | | | | | | |
| | | | 64.0 | (61.5-67.0)<br>CLAY: some silt; trace fine sand; trace gravel, granules to small cobbles, angular to subangular; soft to medium stiff, stiffens with depth; brown (7.5YR 4/4). | | | | | | | | | | |
| | | | 66.0 | | | | | | | | | | | |

State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION
Form 4400-122 Rev. 7-98

Route to: Watershed/Wastewater [ ] Waste Management [ ]
Remediation/Redevelopment [X] Other [ ]



| Facility/Project Name | License/Permit/Monitoring Number | Boring Number |
|---|---|---|
| Tyco FTC | | PZ-25 |

| Boring Drilled By: | Date Drilling Started | Date Drilling Completed | Drilling Method |
|---|---|---|---|
| First Name: Keith Last Name: Fehrman<br>Firm: Layne, A Granite Company | 8-1-2019 | 8-1-2019 | Sonic |

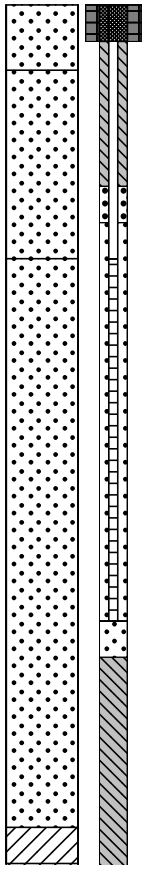
| WI Unique Well No. | DNR Well ID No. | Well Name | Final Static Water Level | Surface Elevation | Borehole Diameter |
|---|---|---|---|---|---|
| | | | Feet MSL | 598.74 Feet MSL | 6 inches |

Local Grid Origin (estimated: [ ]) or Boring Location [X]
State Plane 465263.60 N 2579969.33 E Lat
1/4 of 1/4 of Section , T N, R Long

Local Grid Location
[ ] N [ ] E
Feet [ ] S Feet [ ] W

| Facility ID | County | County Code | Civil Town/City/or Village |
|---|---|---|---|
| 438005590 | Marinette | 38 | Marinette |

| Sample Number and Type | Length Att. & Recovered (ft) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Compressive Strength | Soil Properties: Moisture Content | Liquid Limit | Plasticity Index | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 7.0 | | 0.0<br>2.0<br>4.0<br>6.0<br>8.0<br>10.0<br>12.0<br>14.0<br>16.0<br>18.0<br>20.0<br>22.0 | (0.0-1.8)<br>SAND: fine; some silt; some gravel, small to large pebbles, angular; trace organics; poorly sorted; loose to soft; wet; brown (5YR 5/3).<br>(1.8-7.0)<br>SAND: medium to coarse; interbedded with fine sand; moderately well sorted; loose to medium dense; moist to wet; very dark grayish brown (10YR 3/2).<br>(7.0-22.7)<br>SAND: medium to coarse; moderately well sorted; wet; brown (10YR 5/3).<br>(22.7-23.7) | | | | | | | | | | |



I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature

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126 N. Jefferson St., Suite 400
Milwaukee, WI 53202

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| Sample | | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Compressive Strength | Soil Properties | | | | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number and Type | Length Att. & Recovered (in) | | | | | | | | | Moisture Content | Liquid Limit | Placticity Index | P 200 | |
| | 17.0 | | 24.0<br>26.0<br>28.0<br>30.0<br>32.0<br>34.0 | (23.7-34.0)<br>CLAY: some fine sand; little gravel, granules to small cobbles; poorly sorted; hard; moist to dry; grayish brown (10YR 5/3). | | | | | | | | | | |

State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION
Form 4400-122 Rev. 7-98

Route to: Watershed/Wastewater [ ] Waste Management [ ]
Remediation/Redevelopment [X] Other [ ]



| Facility/Project Name | License/Permit/Monitoring Number | Boring Number |
|---|---|---|
| Tyco FTC | | PZ-26 |

| Boring Drilled By: | Date Drilling Started | Date Drilling Completed | Drilling Method |
|---|---|---|---|
| First Name: Keith Last Name: Fehrman<br>Firm: Layne, A Granite Company | 8-5-2019 | 8-5-2019 | Sonic |

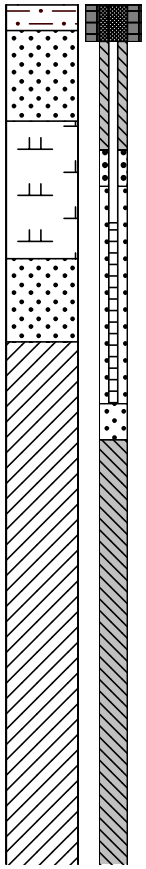
| WI Unique Well No. | DNR Well ID No. | Well Name | Final Static Water Level | Surface Elevation | Borehole Diameter |
|---|---|---|---|---|---|
| | | | Feet MSL | 598.13 Feet MSL | 6 inches |

Local Grid Origin (estimated: [ ]) or Boring Location [X]
State Plane 466609.35 N 2579203.35 E Lat
1/4 of 1/4 of Section , T N, R Long

Local Grid Location
[ ] N [ ] E
Feet [ ] S Feet [ ] W

| Facility ID | County | County Code | Civil Town/City/or Village |
|---|---|---|---|
| 438005590 | Marinette | 38 | Marinette |

| Sample Number and Type | Length Att. & Recovered (ft) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Compressive Strength | Soil Properties: Moisture Content | Liquid Limit | Plasticity Index | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 15.2 | | 0.0<br>2.0<br>4.0<br>6.0<br>8.0<br>10.0<br>12.0<br>14.0<br>16.0 | (0.0-0.7)<br>SILT: some fine sand: little gravel; medium stiff to soft; little organics; moist; very dark grayish brown (10YR 3/2).<br>(0.7-3.2)<br>SAND: fine; trace silt; well sorted; medium dense; moist; reddish brown (5YR 4/4) to black (5YR 2.5/1).<br>(3.2-7.0)<br>PEAT: some silt; highly organic; dense; soft; moist; black (10YR 2/1).<br>(7.0-9.3)<br>SAND: fine to medium; well sorted; loose; moist; brown (7.5YR 4/3).<br>(9.3-27.0)<br>CLAY: some fine sand; some gravel, medium pebbles to small cobbles; poorly sorted; soft, stiffens with depth; moist to wet.<br>Note: No Recovery 14.7-15.2' bgs. | | | | | | | | | | |
| | 10.0 | | 18.0<br>20.0<br>22.0 | Note: No recovery 27.0-28.0' bgs but driller hit bedrock at 27.0' bgs. | | | | | | | | | | |



I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature

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| Sample | | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Compressive Strength | Soil Properties | | | | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number and Type | Length Att. & Recovered (in) | | | | | | | | | Moisture Content | Liquid Limit | Placticity Index | P 200 | |
| | | | 24.0 | | | | | | | | | | | |
| | | | 26.0 | | | | | | | | | | | |
| | | | 28.0 | (27.0-28.0) DOLOSTONE. | | | | | | | | | | |

State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION
Form 4400-122 Rev. 7-98

Route to: Watershed/Wastewater [ ] Waste Management [ ]
Remediation/Redevelopment [X] Other [ ]



| Facility/Project Name | License/Permit/Monitoring Number | Boring Number |
|---|---|---|
| Tyco FTC | | PZ-27 |

| Boring Drilled By: | Date Drilling Started | Date Drilling Completed | Drilling Method |
|---|---|---|---|
| First Name: Keith Last Name: Fehrman<br>Firm: Layne, A Granite Company | 8-1-2019 | 8-1-2019 | Sonic |

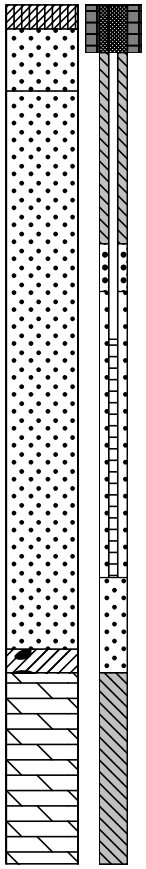
| WI Unique Well No. | DNR Well ID No. | Well Name | Final Static Water Level | Surface Elevation | Borehole Diameter |
|---|---|---|---|---|---|
| | | | Feet MSL | 592.99 Feet MSL | 6 inches |

Local Grid Origin (estimated: [ ]) or Boring Location [X]
State Plane 469460.57 N 2580178.12 E Lat
1/4 of 1/4 of Section , T N, R Long

Local Grid Location
[ ] N [ ] E
Feet [ ] S Feet [ ] W

| Facility ID | County | County Code | Civil Town/City/or Village |
|---|---|---|---|
| 438005590 | Marinette | 38 | Marinette |

| Sample Number and Type | Length Att. & Recovered (ft) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Compressive Strength | Soil Properties: Moisture Content | Liquid Limit | Placticity Index | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 4.5 | | 0.0 | (0.0-0.5) TOPSOIL: fine sand and silt; organics' dry; brown (7.5YR 4/3). | | | | | | | | | | |
| | | | 2.0 | (0.5-1.8) SAND: fine to medium; trace silt; well sorted; dry to moist; very dark grayish black (7.5YR 3/1) and black (7.5YR 3/1) with strong brown (7.5YR 5/6). | | | | | | | | | | |
| | | | 4.0 | | | | | | | | | | | |
| | | | 6.0 | (1.8-13.5) SAND: fine to medium; well sorted; moist; brown (7.5YR 5/3). | | | | | | | | | | |
| | | | 8.0 | Note: Wet at 2.9' bgs. | | | | | | | | | | |
| | | | 10.0 | | | | | | | | | | | |
| | | | 12.0 | (13.5-14.0) CLAY and GRAVEL: medium to very large pebbles, subangular; some fine sand; poorly sorted; moist to wet; dark gray (7.5YR 5/1). | | | | | | | | | | |
| | 4.0 | | 14.0 | (14.0-18.0) DOLOSTONE: gray, hard | | | | | | | | | | |
| | | | 16.0 | | | | | | | | | | | |
| | | | 18.0 | | | | | | | | | | | |



I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature

Firm ARCADIS
126 N. Jefferson St., Suite 400
Milwaukee, WI 53202

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State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION
Form 4400-122 Rev. 7-98

Route to: Watershed/Wastewater [ ] Waste Management [ ]
Remediation/Redevelopment [X] Other [ ]



| Facility/Project Name | License/Permit/Monitoring Number | Boring Number |
|---|---|---|
| Tyco FTC | | PZ-28 |

| Boring Drilled By: | Date Drilling Started | Date Drilling Completed | Drilling Method |
|---|---|---|---|
| First Name: Keith Last Name: Fehrman<br>Firm: Layne, A Granite Company | 6-25-2019 | 6-25-2019 | Sonic |

| WI Unique Well No. | DNR Well ID No. | Well Name | Final Static Water Level | Surface Elevation | Borehole Diameter |
|---|---|---|---|---|---|
| | | | Feet MSL | 594.81 Feet MSL | 6 inches |

Local Grid Origin (estimated: [ ]) or Boring Location [X]
State Plane 467123.14 N 2583168.64 E Lat
1/4 of 1/4 of Section , T N, R Long

Local Grid Location
[ ] N [ ] E
Feet [ ] S Feet [ ] W

| Facility ID | County | County Code | Civil Town/City/or Village |
|---|---|---|---|
| 438005590 | Marinette | 38 | Marinette |

| Sample Number and Type | Length Att. & Recovered (ft) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Compressive Strength | Soil Properties: Moisture Content | Liquid Limit | Placticity Index | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 3.0 | | 0.0 | (0.0-1.0)<br>TOPSOIL: silt; sand, fine to medium; some gravel; organics; dry. | | | | | | | | | | |
| | | | 2.0<br>4.0<br>6.0 | (1.0-7.0)<br>SAND: fine to medium; some gravel; dry; dark yellowish brown (10YR 4/6). | | | | | | | | | | |
| | | | 8.0 | (7.0-11.5)<br>SAND: medium; some coarse sand; trace fine sand; wet; dark yellowish brown (10YR 4/6). | | | | | | | | | | |

I hereby certify that the information on this form is true and correct to the best of my knowledge.

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| Sample | | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Compressive Strength | Soil Properties | | | | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number and Type | Length Att. & Recovered (in) | | | | | | | | | Moisture Content | Liquid Limit | Placticity Index | P 200 | |
| | | | 10.0 | | | | | | | | | | | |
| | 9.0 | | 12.0 | (11.5-14.5)<br>SAND: medium; some fine sand; trace coarse sand; wet; dark yellowish brown (10YR 4/4). | | | | | | | | | | |
| | | | 14.0 | | | | | | | | | | | |
| | | | 16.0 | (14.5-17.0)<br>SILT: some clay; trace fine sand; some organics; wet; brown (10YR 3/2). | | | | | | | | | | |
| | 8.5 | | 18.0 | (17.0-22.0)<br>SAND: medium; some fine sand; some coarse sand; wet; dark grayish brown (10YR 4/2). | | | | | | | | | | |
| | | | 20.0 | | | | | | | | | | | |
| | | | 22.0 | (22.0-24.0)<br>SILT: trace to some clay; trace fine sand; organics; brown (10YR 3/2). | | | | | | | | | | |
| | | | 24.0 | (24.0-28.0)<br>SAND: medium; some coarse sand; trace fine sand; wet; dark grayish brown (10YR 4/2). | | | | | | | | | | |
| | | | 26.0 | | | | | | | | | | | |

| Sample | | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Compressive Strength | Soil Properties | | | | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number and Type | Length Att. & Recovered (in) | | | | | | | | | Moisture Content | Liquid Limit | Placticity Index | P 200 | |
| | 10.0 | | 28.0<br>30.0<br>32.0<br>34.0<br>36.0 | (28.0-37.0)<br>SILT: trace fine sand; trace clay; organics; wet; brown (10YR 3/2); layers of medium sand, some fine sand, trace coarse sand 29-32' bgs and 33-34' bgs. | | | | | | | | | | |
| | 8.5 | | 38.0<br>40.0<br>42.0<br>44.0 | (37.0-39.0)<br>SAND: medium; some fine sand; trace coarse sand; wet; dark grayish brown (10YR 4/2).<br>(39.0-41.0)<br>SILT: brown (10YR 3/2), some fine sand, organics, wet.<br>(41.0-43.0)<br>SAND: coarse; some medium sand; wet; brown (10YR 3/2).<br>(43.0-47.0)<br>SILT: some fine sand; alternating SAND layers; medium, some coarse sand; organics; wet; dark grayish brown (10YR 4/2). | | | | | | | | | | |

| Sample | | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Compressive Strength | Soil Properties | | | | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number and Type | Length Att. & Recovered (in) | | | | | | | | | Moisture Content | Liquid Limit | Placticity Index | P 200 | |
| | | | 46.0 | | | | | | | | | | | |
| | 4.5 | | 48.0 | (47.0-50.0)<br>SAND: medium; trace coarse sand; organics; wet; dark grayish brown (10YR 4/2); SILT: with organics 49-49.5' bgs; wet; brown (10YR 3/2). | | | | | | | | | | |
| | | | 50.0 | (50.0-51.0)<br>SAND: coarse; trace fine gravel, rounded; wet; brown (10YR 3/2). | | | | | | | | | | |
| | | | | (51.0-51.5)<br>SILT: trace clay; organics; wet; brown (10YR 3/2). | | | | | | | | | | |
| | | | 52.0 | (51.5-53.0)<br>SAND: fine to coarse; some gravel; wet; brown (10YR 3/2). | | | | | | | | | | |
| | | | | (53.0-53.5)<br>GRAVEL: subrounded, up to 1.5"; trace granite cobbles up to 5"; wet. | | | | | | | | | | |
| | 1.5 | | 54.0 | (53.5-54.5)<br>SAND and GRAVEL: medium to coarse sand; gravel, subrounded, up to 2", wet. | | | | | | | | | | |
| | | | | (54.5-55.0)<br>DOLOSTONE fragments. | | | | | | | | | | |

State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION
Form 4400-122 Rev. 7-98

Route to: Watershed/Wastewater [ ] Waste Management [ ]
Remediation/Redevelopment [X] Other [ ]



| Facility/Project Name | License/Permit/Monitoring Number | Boring Number |
|---|---|---|
| Tyco FTC | | PZ-29 |

| Boring Drilled By: | Date Drilling Started | Date Drilling Completed | Drilling Method |
|---|---|---|---|
| First Name: Keith Last Name: Fehrman<br>Firm: Layne, A Granite Company | 7-31-2019 | 7-31-2019 | Sonic |

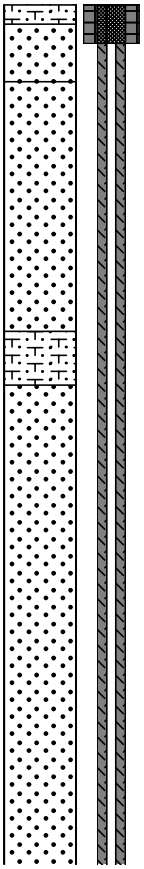
| WI Unique Well No. | DNR Well ID No. | Well Name | Final Static Water Level | Surface Elevation | Borehole Diameter |
|---|---|---|---|---|---|
| | | | Feet MSL | 594.02 Feet MSL | 6 inches |

Local Grid Origin (estimated: [ ]) or Boring Location [X]
State Plane 465386.43 N 2581734.13 E Lat
1/4 of 1/4 of Section , T N, R Long

Local Grid Location
[ ] N [ ] E
Feet [ ] S Feet [ ] W

| Facility ID | County | County Code | Civil Town/City/or Village |
|---|---|---|---|
| 438005590 | Marinette | 38 | Marinette |

| Sample Number and Type | Length Att. & Recovered (ft) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Compressive Strength | Soil Properties: Moisture Content | Liquid Limit | Plasticity Index | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 11.3 | | 0.0<br>2.0<br>4.0<br>6.0<br>8.0<br>10.0<br>12.0<br>14.0<br>16.0<br>18.0<br>20.0<br>22.0 | (0.0-0.5)<br>SILTY SAND: fine sand; little organics; moist; dark gray (7.5YR 3/1).<br>(0.5-2.0)<br>SAND: fine to medium; some gravel, small to medium pebbles, subangular; trace silt; loose; moist to wet; dark brown (7.5YR 3/3).<br>(2.0-8.5)<br>SAND: fine to medium; trace silt, decreases with depth; moderately well sorted; loose; moist to wet; strong brown (7.5YR 4/6) to very dark brown (10YR 2/2).<br>(8.5-9.9)<br>SILTY SAND: fine sand, increases with depth; soft; moist to wet; black (10YR 2/1).<br>(9.9-24.6)<br>SAND: medium; well sorted; loose; moist; very dark grayish brown (10YR 3/2). | | | | | | | | | | |



I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature

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Milwaukee, WI 53202

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| Sample | | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Compressive Strength | Soil Properties | | | | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number and Type | Length Att. & Recovered (in) | | | | | | | | | Moisture Content | Liquid Limit | Placticity Index | P 200 | |
| | 17.0 | | 24.0 | (24.6-25.5)<br>SAND: medium to fine; well sorted; medium dense; moist; very dark grayish brown (10YR 3/2). | | | | | | | | | | |
| | | | 26.0 | (25.5-28.0)<br>SAND and SILT: fine to very fine sand; trace organics; organic odor; soft to medium stiff; moist to wet; very dark brown (10YR 2/2). | | | | | | | | | | |
| | | | 28.0 | | | | | | | | | | | |
| | | | 30.0 | (28.0-30.0)<br>SAND: medium; well sorted; loose; moist; very dark grayish brown (10YR 3/2). | | | | | | | | | | |
| | | | 32.0 | | | | | | | | | | | |
| | | | 34.0 | (30.0-33.0)<br>SAND and SILT: fine sand; organics lenses; soft to medium stiff; moist; very dark brown (10YR 2/2). | | | | | | | | | | |
| | | | 36.0 | Note: Sublayer with sand 32.6-32.8' bgs. | | | | | | | | | | |
| | 11.0 | | 38.0 | (33.0-45.2)<br>SAND: medium; well sorted; loose; moist; gray (7.5YR 5/1); alternating layers of SANDY SILT; soft; moist; very dark brown (10YR 2/2). | | | | | | | | | | |
| | | | 40.0 | | | | | | | | | | | |
| | | | 42.0 | | | | | | | | | | | |
| | | | 44.0 | (45.2-46.5)<br>GRAVEL: some sand, fine to medium; trace silt; loose to 46.0 ft, hard 46.0-46.5' bgs; wet. | | | | | | | | | | |
| | | | 46.0 | (46.5-48.0)<br>DOLOSTONE: white, hard. | | | | | | | | | | |
| | | | 48.0 | | | | | | | | | | | |

State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION
Form 4400-122 Rev. 7-98

Route to: Watershed/Wastewater [ ] Waste Management [ ]
Remediation/Redevelopment [X] Other [ ]



| Facility/Project Name | License/Permit/Monitoring Number | Boring Number |
|---|---|---|
| Tyco FTC | | PZ-30 |

| Boring Drilled By: | Date Drilling Started | Date Drilling Completed | Drilling Method |
|---|---|---|---|
| First Name: Keith Last Name: Fehrman<br>Firm: Layne, A Granite Company | 6-24-2019 / 6-25-2019 | 6-24-2019 / 6-25-2019 | Sonic |

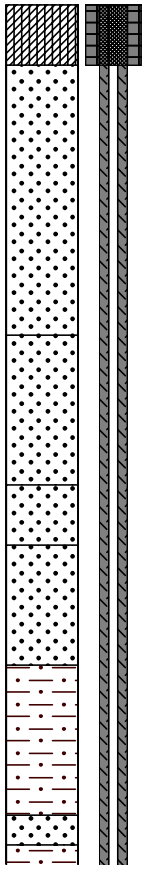
| WI Unique Well No. | DNR Well ID No. | Well Name | Final Static Water Level | Surface Elevation | Borehole Diameter |
|---|---|---|---|---|---|
| | | | Feet MSL | 594.64 Feet MSL | 6 inches |

Local Grid Origin (estimated: [ ]) or Boring Location [X]
State Plane 464121.07 N 2582528.94 E Lat
1/4 of 1/4 of Section , T N, R Long

Local Grid Location
[ ] N [ ] E
Feet [ ] S Feet [ ] W

| Facility ID | County | County Code | Civil Town/City/or Village |
|---|---|---|---|
| 438005590 | Marinette | 38 | Marinette |

| Sample Number and Type | Length Att. & Recovered (ft) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Compressive Strength | Soil Properties: Moisture Content | Liquid Limit | Plasticity Index | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 4.0 | | 0.0 | (0.0-1.0) TOPSOIL: silt and fine sand; trace gravel; organics. | | | | | | | | | | |
| | | | 2.0 | (1.0-5.5) SAND: fine to medium; some gravel; trace organics; dark yellowish brown to brown to black (10YR 4/6-10YR 4/3-10YR 2/1). Note: Wet at 2.0' bgs. | | | | | | | | | | |
| | | | 4.0 | | | | | | | | | | | |
| | | | 6.0 | (5.5-8.0) SAND: fine to medium; trace silt; wet; dark brown (10YR 3/3). | | | | | | | | | | |
| | 9.0 | | 8.0 | (8.0-9.0) SAND: medium to coarse; wet; dark brown (10YR 3/3). | | | | | | | | | | |
| | | | 10.0 | (9.0-11.0) SAND: fine to medium; trace silt; wet; dark brown (10YR 3/3). | | | | | | | | | | |
| | | | 12.0 | (11.0-13.5) SILT: some fine sand; some clay; wet; brown (10YR 3/2). | | | | | | | | | | |
| | | | 14.0 | (13.5-14.0) SAND: fine; some silt; trace medium sand; wet; dark brown (10YR 3/3). | | | | | | | | | | |



I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature

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| Sample | | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Compressive Strength | Soil Properties | | | | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number and Type | Length Att. & Recovered (in) | | | | | | | | | Moisture Content | Liquid Limit | Placticity Index | P 200 | |
| | | | 16.0 | (14.0-15.5)<br>SILT: some fine sand; some clay; wet; brown (10YR 3/2). | | | | | | | | | | |
| | | | | (15.5-24.0)<br>SAND: fine; some silt; trace medium sand; wet; dark brown (10YR 3/3). | | | | | | | | | | |
| | | | 18.0 | | | | | | | | | | | |
| | | | 20.0 | | | | | | | | | | | |
| | 5.0 | | 22.0 | | | | | | | | | | | |
| | | | 24.0 | (24.0-25.0)<br>SILT: some fine sand; some clay; wet; brown (10YR 3/3). | | | | | | | | | | |
| | | | 26.0 | (25.0-27.0)<br>SAND: fine; some silt; trace medium sand; wet; dark brown (10YR 3/3). | | | | | | | | | | |
| | | | 28.0 | (27.0-37.0)<br>SILT: some clay; some fine sand; trace organics; wet; brown (10YR 3/2).<br><br>Note: Seams of fine sand, trace medium sand 32-32.5' bgs, 34.5-35.5' bgs, 36-36.5' bgs. | | | | | | | | | | |
| | | | 30.0 | | | | | | | | | | | |
| | 6.5 | | 32.0 | | | | | | | | | | | |
| | | | 34.0 | | | | | | | | | | | |
| | | | 36.0 | | | | | | | | | | | |
| | | | 38.0 | (37.0-45.5)<br>SILT: some clay; some fine sand; some to many organics; wet; black (10YR 2/1).<br><br>Note: Seams of fine sand, trace medium sand 40.5-41.5' bgs, 43-45' bgs. | | | | | | | | | | |
| | | | 40.0 | | | | | | | | | | | |
| | 9.0 | | 42.0 | | | | | | | | | | | |

| Sample | | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Compressive Strength | Soil Properties | | | | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number and Type | Length Att. & Recovered (in) | | | | | | | | | Moisture Content | Liquid Limit | Placticity Index | P 200 | |
| | | | 44.0 | | | | | | | | | | | |
| | | | 46.0 | (45.5-53.0)<br>SILT: low plasticity; wet; brown (10YR 5/3). | | | | | | | | | | |
| | 7.0 | | 48.0 | | | | | | | | | | | |
| | | | 50.0 | | | | | | | | | | | |
| | | | 52.0 | | | | | | | | | | | |
| | | | 54.0 | (53.0-55.0)<br>SILT and CLAY: soft; brown (10YR 5/3). | | | | | | | | | | |
| | | | 56.0 | (55.0-58.0)<br>SAND: fine; some silt; some medium to coarse sand; some gravel 0.5-3", subrounded; wet. | | | | | | | | | | |
| | 5.0 | | 58.0 | (58.0-62.0)<br>SILT and SAND: fine to coarse sand; gravel 0.5-4", subangular to subrounded; some cobbles; very hard; brittle; dry. | | | | | | | | | | |
| | | | 60.0 | | | | | | | | | | | |
| | | | 62.0 | | | | | | | | | | | |

State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION
Form 4400-122 Rev. 7-98

Route to: Watershed/Wastewater [ ] Waste Management [ ]
Remediation/Redevelopment [X] Other [ ]



| Facility/Project Name | License/Permit/Monitoring Number | Boring Number |
|---|---|---|
| Tyco FTC | | PZ-31 |

| Boring Drilled By: | Date Drilling Started | Date Drilling Completed | Drilling Method |
|---|---|---|---|
| First Name: Keith Last Name: Fehrman<br>Firm: Layne, A Granite Company | 7-24-2019 | 7-24-2019 | Sonic |

| WI Unique Well No. | DNR Well ID No. | Well Name | Final Static Water Level | Surface Elevation | Borehole Diameter |
|---|---|---|---|---|---|
| | | | Feet MSL | 595.79 Feet MSL | 6 inches |

Local Grid Origin (estimated: [ ]) or Boring Location [X]
State Plane 462491.38 N 2582374.61 E Lat
1/4 of 1/4 of Section , T N, R Long

Local Grid Location
[ ] N [ ] E
Feet [ ] S Feet [ ] W

| Facility ID | County | County Code | Civil Town/City/or Village |
|---|---|---|---|
| 438005590 | Marinette | 38 | Marinette |

| Sample Number and Type | Length Att. & Recovered (ft) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Compressive Strength | Soil Properties: Moisture Content | Liquid Limit | Placticity Index | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2.3 | | 0.0<br>2.0<br>4.0<br>6.0 | (0.0-7.0)<br>SAND: fine; trace fines; trace gravel, small to medium pebbles, subangular; loose; strong brown (7.5YR 5/8).<br><br>Note: Dry from 0.0-0.8' bgs, moist at 0.8' bgs. | | | | | | | | | | |
| | 8.5 | | 8.0<br>10.0<br>12.0<br>14.0<br>16.0 | (7.0-17.0)<br>SAND: fine; well sorted; loose to medium dense; wet; dark brown (7.5 YR 3/4). | | | | | | | | | | |
| | 8.0 | | 18.0<br>20.0<br>22.0 | (17.0-32.2)<br>SAND: fine to medium; medium dense to 19.0' bgs, loose 19.0-32.2' bgs; moist to wet; dark grayish brown (10YR 4/2). | | | | | | | | | | |

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature

Firm ARCADIS
126 N. Jefferson St., Suite 400
Milwaukee, WI 53202

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| Sample | | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Compressive Strength | Soil Properties | | | | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number and Type | Length Att. & Recovered (in) | | | | | | | | | Moisture Content | Liquid Limit | Placticity Index | P 200 | |
| | | | 24.0 | | | | | | | | | | | |
| | | | 26.0 | | | | | | | | | | | |
| | | | 28.0 | | | | | | | | | | | |
| | | | 30.0 | | | | | | | | | | | |
| | 6.5 | | 32.0 | (32.2-37.0)<br>SAND: very fine to fine; medium dense to dense; moist; brown (7.5YR 5/2); brown clay lens at 33.0' bgs. | | | | | | | | | | |
| | | | 34.0 | | | | | | | | | | | |
| | | | 36.0 | | | | | | | | | | | |
| | 9.5 | | 38.0 | (37.0-43.5)<br>SAND: fine to medium; trace gravel, large pebbles, angular; loose to medium loose; wet; brown (7.5YR 4/3). | | | | | | | | | | |
| | | | 40.0 | | | | | | | | | | | |
| | | | 42.0 | | | | | | | | | | | |
| | | | 44.0 | (43.5-47.5)<br>SAND: very fine to fine; some large pockets of stiff silt and clay; dense; wet; brown (7.5YR 4/3). | | | | | | | | | | |
| | | | 46.0 | | | | | | | | | | | |
| | 8.3 | | 48.0 | (47.5-50.8)<br>SANDY SILT: some gravel; wet; gray (7.5YR 5/1) and brown (7.5YR 5/1). | | | | | | | | | | |
| | | | 50.0 | (50.8-52.6)<br>SAND: fine; well sorted; loose to medium dense; wet; brown (7.5YR 4/4). | | | | | | | | | | |
| | | | 52.0 | | | | | | | | | | | |
| | | | 54.0 | (52.6-63.8)<br>SAND: very fine to fine; well sorted; dense; wet; brown (7.5YR 5/2).<br><br>Note: Alternating layers of CLAY; stiff from 57.0-63.8' bgs; reddish brown (5YR 4/4) to brown (7.5YR 4/4). | | | | | | | | | | |
| | | | 56.0 | | | | | | | | | | | |
| | | | 58.0 | | | | | | | | | | | |
| | | | 60.0 | | | | | | | | | | | |
| | 9.2 | | 62.0 | | | | | | | | | | | |
| | | | 64.0 | (63.8-67.0)<br>TILL: gravel and clay; little fine sand; very stiff to hard; brown (7.5YR 5/2). | | | | | | | | | | |
| | | | 66.0 | | | | | | | | | | | |

State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION
Form 4400-122 Rev. 7-98

Route to: Watershed/Wastewater [ ] Waste Management [ ]
Remediation/Redevelopment [X] Other [ ]



| Facility/Project Name | License/Permit/Monitoring Number | Boring Number |
|---|---|---|
| Tyco FTC | | PZ-33 |

| Boring Drilled By: | Date Drilling Started | Date Drilling Completed | Drilling Method |
|---|---|---|---|
| First Name: Keith Last Name: Fehrman<br>Firm: Layne, A Granite Company | 6-19-2019 / 6-21-2019 | 6-19-2019 / 6-21-2019 | Sonic |

| WI Unique Well No. | DNR Well ID No. | Well Name | Final Static Water Level | Surface Elevation | Borehole Diameter |
|---|---|---|---|---|---|
| | | | Feet MSL | 594.79 Feet MSL | 6 inches |

Local Grid Origin (estimated: [ ]) or Boring Location [X]
State Plane 460123.07 N 2582892.64 E Lat
1/4 of 1/4 of Section , T N, R Long

Local Grid Location
[ ] N [ ] E
Feet [ ] S Feet [ ] W

| Facility ID | County | County Code | Civil Town/City/or Village |
|---|---|---|---|
| 438005590 | Marinette | 38 | Marinette |

| Sample Number and Type | Length Att. & Recovered (ft) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Compressive Strength | Soil Properties: Moisture Content | Liquid Limit | Plasticity Index | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 6.5 | | 0.0 | (0.0-1.0)<br>TOPSOIL: silt and fine sand; organics; rootlets; dry. | | | | | | | | | | |
| | | | 2.0 | (1.0-17.0)<br>SAND with SILT: fine sand; some medium sand; dark brown (7.5YR 3/4).<br><br>Note: Wet starting at 2.0' bgs. | | | | | | | | | | |
| | | | 4.0 | | | | | | | | | | | |
| | | | 6.0 | | | | | | | | | | | |
| | 10.0 | | 8.0 | | | | | | | | | | | |
| | | | 10.0 | | | | | | | | | | | |
| | | | 12.0 | | | | | | | | | | | |
| | | | 14.0 | | | | | | | | | | | |
| | | | 16.0 | | | | | | | | | | | |
| | 10.0 | | 18.0 | (17.0-27.0)<br>SAND with SILT: fine sand; some medium sand; trace clay; wet; dark brown (7.5YR 3/4). | | | | | | | | | | |
| | | | 20.0 | | | | | | | | | | | |
| | | | 22.0 | | | | | | | | | | | |

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature

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Milwaukee, WI 53202

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| Sample | | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Compressive Strength | Soil Properties | | | | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number and Type | Length Att. & Recovered (in) | | | | | | | | | Moisture Content | Liquid Limit | Placticity Index | P 200 | |
| | | | 24.0 | | | | | | | | | | | |
| | | | 26.0 | | | | | | | | | | | |
| | 10.0 | | 28.0 | (27.0-33.0) SAND: fine to medium; some silt; trace gravel; wet; brown (7.5YR 4/3). | | | | | | | | | | |
| | | | 30.0 | | | | | | | | | | | |
| | | | 32.0 | | | | | | | | | | | |
| | | | 34.0 | (33.0-38.5) SAND with SILT: fine; trace silt layers 1" thick; wet; brown (7.5YR 5/2). | | | | | | | | | | |
| | | | 36.0 | | | | | | | | | | | |
| | | | 38.0 | | | | | | | | | | | |
| | 10.0 | | 40.0 | (38.5-52.0) SAND: fine; some medium sand; some silt; trace gravel, fine; wet; brown (7.5YR 5/2). | | | | | | | | | | |
| | | | 42.0 | | | | | | | | | | | |
| | | | 44.0 | | | | | | | | | | | |
| | | | 46.0 | | | | | | | | | | | |
| | | | 48.0 | | | | | | | | | | | |
| | | | 50.0 | | | | | | | | | | | |
| | 9.5 | | 52.0 | (52.0-53.0) SAND with SILT: fine; wet; brown (7.5YR 5/2). | | | | | | | | | | |
| | | | 54.0 | (53.0-57.0) SILT: trace to some fine sand; slightly hard; wet; brown (7.5YR 5/2). | | | | | | | | | | |
| | | | 56.0 | | | | | | | | | | | |
| | 8.0 | | 58.0 | (57.0-68.0) SAND and GRAVEL: fine to medium; gravel, rounded to subrounded; some cobbles up to 3", subrounded; wet; brown (7.5YR 5/2). | | | | | | | | | | |
| | | | 60.0 | | | | | | | | | | | |
| | | | 62.0 | | | | | | | | | | | |
| | | | 64.0 | | | | | | | | | | | |
| | | | 66.0 | | | | | | | | | | | |
| | 2.5 | | 68.0 | (68.0-71.0) SAND and SILT: fine; wet; brown (7.5YR 5/2), trace red-brown (5YR 4/3) layering. | | | | | | | | | | |
| | | | 70.0 | | | | | | | | | | | |

| Sample | | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Compressive Strength | Soil Properties | | | | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number and Type | Length Att. & Recovered (in) | | | | | | | | | Moisture Content | Liquid Limit | Placticity Index | P 200 | |
| | 6.0 | | 72.0<br>74.0<br>76.0 | (71.0-76.0)<br>SAND and SILT: fine; trace gravel, fine; wet; brown (7.5YR 5/2).<br><br>(76.0-77.0)<br>SILT: very hard; dry; brown (7.5YR 5/2) and reddish brown (5YR 4/3) layering. | | | | | | | | | | |

State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION
Form 4400-122 Rev. 7-98

Route to: Watershed/Wastewater [ ] Waste Management [ ]
Remediation/Redevelopment [X] Other [ ]



| Facility/Project Name | License/Permit/Monitoring Number | Boring Number |
|---|---|---|
| Tyco FTC | | PZ-34 |

| Boring Drilled By: | Date Drilling Started | Date Drilling Completed | Drilling Method |
|---|---|---|---|
| First Name: Keith Last Name: Fehrman<br>Firm: Layne, A Granite Company | 7-17-2019 / 7-18-2019 | 7-17-2019 / 7-18-2019 | Sonic |

| WI Unique Well No. | DNR Well ID No. | Well Name | Final Static Water Level | Surface Elevation | Borehole Diameter |
|---|---|---|---|---|---|
| | | | Feet MSL | 591.29 Feet MSL | 6 inches |

| Local Grid Origin (estimated: [ ]) or Boring Location [X] | Local Grid Location |
|---|---|
| State Plane 457164.33 N 2583555.10 E Lat | [ ] N [ ] E |
| 1/4 of 1/4 of Section , T N, R Long | Feet [ ] S Feet [ ] W |

| Facility ID | County | County Code | Civil Town/City/or Village |
|---|---|---|---|
| 438005590 | Marinette | 38 | Marinette |

| Sample Number and Type | Length Att. & Recovered (ft) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Compressive Strength | Soil Properties: Moisture Content | Liquid Limit | Plasticity Index | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 3.0 | | 0.0<br>2.0<br>4.0<br>6.0 | (0.0-0.5)<br>TOPSOIL<br>(0.5-7.0)<br>SAND: fine; moderately moist; strong brown (10YR 6/4) to light yellowish brown (7.5YR 5/8). | | | | | | | | | | |
| | 7.0 | | 8.0<br>10.0<br>12.0<br>14.0<br>16.0 | (7.0-38.5)<br>SAND: fine; wet; brown (7.5YR 5/2). | | | | | | | | | | |
| | 9.0 | | 18.0<br>20.0<br>22.0<br>24.0 | | | | | | | | | | | |

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature

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Milwaukee, WI 53202

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| Sample | | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Compressive Strength | Soil Properties | | | | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number and Type | Length Att. & Recovered (in) | | | | | | | | | Moisture Content | Liquid Limit | Placticity Index | P 200 | |
| | | | 26.0 | | | | | | | | | | | |
| | | | 28.0 | | | | | | | | | | | |
| | | | 30.0 | | | | | | | | | | | |
| | 9.0 | | 32.0 | | | | | | | | | | | |
| | | | 34.0 | | | | | | | | | | | |
| | | | 36.0 | | | | | | | | | | | |
| | | | 38.0 | | | | | | | | | | | |
| | | | 40.0 | (38.5-46.0) SILT: some fine sand; trace to some clay; wet; brown (10YR 5/3). | | | | | | | | | | |
| | 10.0 | | 42.0 | | | | | | | | | | | |
| | | | 44.0 | | | | | | | | | | | |
| | | | 46.0 | (46.0-48.0) CLAY: some silt; highly plastic; wet; brown (10YR 5/3). | | | | | | | | | | |
| | | | 48.0 | (48.0-60.0) SILT: trace to some fine sand; trace to some clay; wet; brown (10YR 5/3). | | | | | | | | | | |
| | | | 50.0 | | | | | | | | | | | |
| | 10.0 | | 52.0 | | | | | | | | | | | |
| | | | 54.0 | | | | | | | | | | | |
| | | | 56.0 | | | | | | | | | | | |
| | | | 58.0 | | | | | | | | | | | |
| | | | 60.0 | | | | | | | | | | | |
| | | | 62.0 | (60.0-63.0) CLAY: trace silt; highly plastic; soft; wet; brown (10YR 5/3). | | | | | | | | | | |
| | 8.0 | | 64.0 | (63.0-65.0) SAND: fine; trace medium sand; wet; brown (10YR 5/3). | | | | | | | | | | |
| | | | 66.0 | (65.0-67.0) SAND and GRAVEL: fine to coarse sand; gravel, subrounded; some silt; trace cobbles; moderately hard; wet. | | | | | | | | | | |
| | | | 68.0 | | | | | | | | | | | |
| | | | 70.0 | (67.0-86.0) SAND: fine to coarse; some silt with gravel, subrounded; trace cobbles; moderately hard; wet; brown (7.5YR 5/3). | | | | | | | | | | |
| | 7.5 | | 72.0 | | | | | | | | | | | |
| | | | 74.0 | | | | | | | | | | | |

| Sample | | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Compressive Strength | Soil Properties | | | | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number and Type | Length Att. & Recovered (in) | | | | | | | | | Moisture Content | Liquid Limit | Placticity Index | P 200 | |
| | | | 76.0 | | | | | | | | | | | |
| | | | 78.0 | | | | | | | | | | | |
| | | | 80.0 | | | | | | | | | | | |
| | 10.0 | | 82.0 | | | | | | | | | | | |
| | | | 84.0 | | | | | | | | | | | |
| | | | 86.0 | (86.0-90.5)<br>SILT: some clay; moderately hard; brittle; dry; brown (7.5YR 4/3). | | | | | | | | | | |
| | | | 88.0 | | | | | | | | | | | |
| | | | 90.0 | | | | | | | | | | | |
| | 10.0 | | 92.0 | (90.5-93.5)<br>SILT: some fine to coarse sand; gravel and cobbles; very hard; dry. | | | | | | | | | | |
| | | | 94.0 | (93.5-97.0)<br>SILT and CLAY: alternating layers of silt and clay; moderately hard; dry; brown (7.5YR 5/3) to reddish brown (5YR 4/4). | | | | | | | | | | |
| | | | 96.0 | | | | | | | | | | | |

State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION
Form 4400-122 Rev. 7-98

Route to: Watershed/Wastewater [ ] Waste Management [ ]
Remediation/Redevelopment [X] Other [ ]



| Facility/Project Name | License/Permit/Monitoring Number | Boring Number |
|---|---|---|
| Tyco FTC | | PZ-35 |

| Boring Drilled By: | Date Drilling Started | Date Drilling Completed | Drilling Method |
|---|---|---|---|
| First Name: Keith Last Name: Fehrman<br>Firm: Layne, A Granite Company | 7-29-2019 | 7-29-2019 | Sonic |

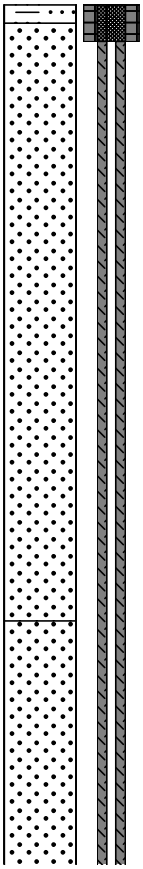
| WI Unique Well No. | DNR Well ID No. | Well Name | Final Static Water Level | Surface Elevation | Borehole Diameter |
|---|---|---|---|---|---|
| | | | Feet MSL | 608.22 Feet MSL | 6 inches |

Local Grid Origin (estimated: [ ]) or Boring Location [X]
State Plane 459506.11 N 2577175.67 E Lat
1/4 of 1/4 of Section , T N, R Long

Local Grid Location
[ ] N [ ] E
Feet [ ] S Feet [ ] W

| Facility ID | County | County Code | Civil Town/City/or Village |
|---|---|---|---|
| 438005590 | Marinette | 38 | Marinette |

| Sample Number and Type | Length Att. & Recovered (ft) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Compressive Strength | Soil Properties: Moisture Content | Liquid Limit | Placticity Index | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 6.7 | | 0.0<br>2.0<br>4.0<br>6.0<br>8.0<br>10.0<br>12.0<br>14.0<br>16.0 | (0.0-0.5)<br>SANDY SILT: fine sand; soft; wet; very dark brown (7.5YR 2.5/2).<br>(0.5-17.0)<br>SAND: fine to medium; well sorted; medium dense; wet; brown (7.5YR 4/4) and yellowish brown (10YR 4/4) from 2.8-7.2' bgs.<br><br>Note: Increases density at 10.0' bgs. | | | | | | | | | | |
| | | | 18.0<br>20.0<br>22.0 | (17.0-24.7)<br>SAND: fine to medium; well sorted; loose to medium dense; wet; brown (7.5YR 5/2). | | | | | | | | | | |



I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature

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Milwaukee, WI 53202

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| Sample | | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Compressive Strength | Soil Properties | | | | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number and Type | Length Att. & Recovered (in) | | | | | | | | | Moisture Content | Liquid Limit | Placticity Index | P 200 | |
| | 16.9 | | 24.0<br>26.0<br>28.0<br>30.0<br>32.0<br>34.0<br>36.0 | (24.7-27.0)<br>SAND: very fine to fine; well sorted; medium dense to dense; moist; brown (7.5YR 5/2).<br>(27.0-37.0)<br>SAND: fine to medium; trace gravel, medium to large pebbles, subangular; well sorted; medium dense to loose; moist; brown (7.5YR 5/2). | | | | | | | | | | |
| | 16.4 | | 38.0<br>40.0<br>42.0<br>44.0<br>46.0<br>48.0<br>50.0<br>52.0<br>54.0<br>56.0<br>58.0 | (37.0-42.0)<br>CLAY and SAND: fine to medium sand; some gravel; medium to very large pebbles, subangular to subrounded; very stiff to hard; moist; brown (7.5YR 4/3).<br>(42.0-48.2)<br>SAND: medium; trace gravel; small to medium pebbles, subangular; well sorted; loose; moist; brown (7.5YR 5/2).<br>(48.2-57.0)<br>SAND: very fine to fine; well sorted; dense; moist; brown (7.5YR 4/3).<br><br>Note: Loose, wet 52.0-52.4' bgs.<br>(57.0-59.0)<br>CLAY and SAND: alternating layers of clay and sand; very fine to fine sand; medium stiff; wet; brown (7.5YR 5/2) and reddish brown (5YR 5/2). | | | | | | | | | | |
| | 8.0 | | 60.0<br>62.0<br>64.0 | (59.0-64.5)<br>CLAY: medium stiff to stiff, moist; reddish brown (5YR 5/2) to brown (7.5YR 5/2).<br><br>Note: Some fine sand; some gravel; medium to large pebbles, subangular to subrounded; poorly sorted; medium stiff to soft; moist at 61.0' bgs.<br>(64.5-65.0)<br>CLAY: some fine sand; some gravel; very stiff to hard; dry; reddish brown (5YR 5/2) to brown (7.5YR 5/2). | | | | | | | | | | |

State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION
Form 4400-122 Rev. 7-98

Route to: Watershed/Wastewater [ ] Waste Management [ ]
Remediation/Redevelopment [X] Other [ ]



| Facility/Project Name | License/Permit/Monitoring Number | Boring Number |
|---|---|---|
| Tyco FTC | | PZ-36 |

| Boring Drilled By: | Date Drilling Started | Date Drilling Completed | Drilling Method |
|---|---|---|---|
| First Name: Keith Last Name: Fehrman<br>Firm: Layne, A Granite Company | 8-6-2019 | 8-6-2019 | Sonic |

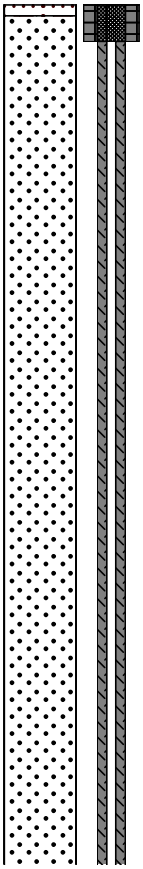
| WI Unique Well No. | DNR Well ID No. | Well Name | Final Static Water Level | Surface Elevation | Borehole Diameter |
|---|---|---|---|---|---|
| | | | Feet MSL | 590.34 Feet MSL | 6 inches |

Local Grid Origin (estimated: [ ]) or Boring Location [X]
State Plane 453113.91 N 2582376.18 E Lat
1/4 of 1/4 of Section , T N, R Long

Local Grid Location
[ ] N [ ] E
Feet [ ] S Feet [ ] W

| Facility ID | County | County Code | Civil Town/City/or Village |
|---|---|---|---|
| 438005590 | Marinette | 38 | Marinette |

| Sample Number and Type | Length Att. & Recovered (ft) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Compressive Strength | Soil Properties: Moisture Content | Liquid Limit | Plasticity Index | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 0.0 | (0.0-0.3)<br>SAND and SILT: fine sand; little organics; soft; moist; very dark gray (7.5YR 3/1). | | | | | | | | | | |
| | | | 2.0 | | | | | | | | | | | |
| | | | 4.0 | (0.3-28.7)<br>SAND: fine to medium; well sorted; loose; strong brown (7.5YR 5/6) until 5.7' bgs then brown (7.5YR 5/2).<br><br>Note: moist until 6.0' bgs then wet. | | | | | | | | | | |
| | | | 6.0 | | | | | | | | | | | |
| | | | 8.0 | | | | | | | | | | | |
| | | | 10.0 | | | | | | | | | | | |
| | | | 12.0 | | | | | | | | | | | |
| | | | 14.0 | | | | | | | | | | | |
| | | | 16.0 | | | | | | | | | | | |
| | | | 18.0 | | | | | | | | | | | |
| | | | 20.0 | | | | | | | | | | | |
| | | | 22.0 | | | | | | | | | | | |



I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature

Firm ARCADIS
126 N. Jefferson St., Suite 400
Milwaukee, WI 53202

This form is authorized by Chapters 281, 283, 289, 291, 293, and 299, Wis. Stats. Completion of this form is mandatory. Failure to file this form may result in forfeiture of between $10 and $25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. NOTE: See instructions for more information, including where the completed form should be sent.

| Sample | | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Compressive Strength | Soil Properties | | | | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number and Type | Length Att. & Recovered (in) | | | | | | | | | Moisture Content | Liquid Limit | Placticity Index | P 200 | |
| | | | 24.0 | | | | | | | | | | | |
| | | | 26.0 | | | | | | | | | | | |
| | | | 28.0 | | | | | | | | | | | |
| | | | 30.0 | (28.7-38.6)<br>SAND: very fine; little fines; well sorted; very dense; moist; brown (7.5YR 5/2). | | | | | | | | | | |
| | | | 32.0 | | | | | | | | | | | |
| | | | 34.0 | | | | | | | | | | | |
| | | | 36.0 | | | | | | | | | | | |
| | | | 38.0 | | | | | | | | | | | |
| | | | 40.0 | (38.6-47.8)<br>SILT and CLAY: low plasticity; interbedded with very fine sand; soft, wet; brown (10YR 5/3). | | | | | | | | | | |
| | | | 42.0 | | | | | | | | | | | |
| | | | 44.0 | | | | | | | | | | | |
| | | | 46.0 | | | | | | | | | | | |
| | | | 48.0 | (47.8-58.9)<br>SAND: some fines; trace gravel, large pebbles to small cobbles; poorly sorted; some pockets of silt and clay down to 49.3' bgs, soft, wet. | | | | | | | | | | |
| | | | 50.0 | | | | | | | | | | | |
| | | | 52.0 | Note: becomes medium dense to dense, moist at 52.5 ft. | | | | | | | | | | |
| | | | 54.0 | | | | | | | | | | | |
| | | | 56.0 | | | | | | | | | | | |
| | | | 58.0 | | | | | | | | | | | |
| | | | 60.0 | (58.9-67.7)<br>SAND: fine to medium; well sorted; loose; moist to wet; brown (7.5YR 4/3). | | | | | | | | | | |
| | | | 62.0 | | | | | | | | | | | |
| | | | 64.0 | | | | | | | | | | | |
| | | | 66.0 | | | | | | | | | | | |
| | | | 68.0 | (67.7-88.5)<br>SAND: medium to coarse; trace gravel, medium to large pebbles; moderately well sorted to well sorted; loose; moist to wet. | | | | | | | | | | |
| | | | 70.0 | | | | | | | | | | | |

| Sample | | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Compressive Strength | Soil Properties | | | | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number and Type | Length Att. & Recovered (in) | | | | | | | | | Moisture Content | Liquid Limit | Placticity Index | P 200 | |
| | | | 72.0 | | | | | | | | | | | |
| | | | 74.0 | | | | | | | | | | | |
| | | | 76.0 | | | | | | | | | | | |
| | | | 78.0 | | | | | | | | | | | |
| | | | 80.0 | | | | | | | | | | | |
| | | | 82.0 | | | | | | | | | | | |
| | | | 84.0 | | | | | | | | | | | |
| | | | 86.0 | | | | | | | | | | | |
| | | | 88.0 | | | | | | | | | | | |
| | | | 90.0 | (88.5-95.2)<br>SAND: very fine to fine; well sorted; medium dense to dense; brown (7.5YR 5/3).<br><br>Note: Wet until 93.0' bgs. | | | | | | | | | | |
| | | | 92.0 | | | | | | | | | | | |
| | | | 94.0 | | | | | | | | | | | |
| | | | 96.0 | (95.2-98.0)<br>SAND: fine to medium; moderately well sorted; medium dense; moist; brown (7.5YR 5/3). | | | | | | | | | | |
| | | | 98.0 | (98.0-113.0)<br>CLAY: trace gravel beginning at 110 ft, medium to large pebbles; interbedded with dense fine sand; medium stiff to stiff; reddish brown (5YR 4/3 to 5YR 4/4). | | | | | | | | | | |
| | | | 100.0 | | | | | | | | | | | |
| | | | 102.0 | | | | | | | | | | | |
| | | | 104.0 | | | | | | | | | | | |
| | | | 106.0 | | | | | | | | | | | |
| | | | 108.0 | | | | | | | | | | | |
| | | | 110.0 | | | | | | | | | | | |
| | | | 112.0 | (113.0-114.5)<br>CLAY and SAND: fine sand; some gravel; interbedded with stiff reddish brown clay; soft; gray (7.5YR 6/1). | | | | | | | | | | |
| | | | 114.0 | | | | | | | | | | | |
| | | | | (114.5-115.0)<br>DOLOSTONE: large dolostone fragments. | | | | | | | | | | |

State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION
Form 4400-122 Rev. 7-98

Route to: Watershed/Wastewater [ ] Waste Management [ ]
Remediation/Redevelopment [X] Other [ ]



| Facility/Project Name | License/Permit/Monitoring Number | Boring Number |
|---|---|---|
| Tyco FTC | | PZ-37 |

| Boring Drilled By: | Date Drilling Started | Date Drilling Completed | Drilling Method |
|---|---|---|---|
| First Name: Keith Last Name: Fehrman<br>Firm: Layne, A Granite Company | 7-9-2019 / 7-9-2019 | 7-9-2019 / 7-9-2019 | Sonic |

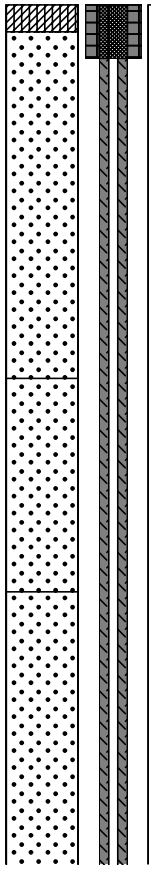
| WI Unique Well No. | DNR Well ID No. | Well Name | Final Static Water Level | Surface Elevation | Borehole Diameter |
|---|---|---|---|---|---|
| | | | Feet MSL | 589.28 Feet MSL | 6 inches |

Local Grid Origin (estimated: [ ]) or Boring Location [X]
State Plane 451322.68 N 2581895.23 E Lat
1/4 of 1/4 of Section , T N, R Long

Local Grid Location
[ ] N [ ] E
Feet [ ] S Feet [ ] W

| Facility ID | County | County Code | Civil Town/City/or Village |
|---|---|---|---|
| 438005590 | Marinette | 38 | Marinette |

| Sample Number and Type | Length Att. & Recovered (ft) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Compressive Strength | Soil Properties: Moisture Content | Liquid Limit | Plasticity Index | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 3.0 | | 0.0 | (0.0-0.5)<br>TOPSOIL: silt; fine sand; organics; dry. | | | | | | | | | | |
| | | | 2.0 | (0.5-7.0)<br>SAND: fine; trace silt; strong brown (7.5YR 5/6); trace brown (7.5YR 4/4).<br><br>Note: Wet starting at 3.0' bgs. | | | | | | | | | | |
| | | | 4.0 | | | | | | | | | | | |
| | | | 6.0 | | | | | | | | | | | |
| | 8.5 | | 8.0 | (7.0-11.0)<br>SAND: fine; trace medium sand; wet; strong brown (7.5YR 5/6). | | | | | | | | | | |
| | | | 10.0 | | | | | | | | | | | |
| | | | 12.0 | (11.0-17.0)<br>SAND: fine; some silt; wet; brown (7.5YR 4/3). | | | | | | | | | | |
| | | | 14.0 | | | | | | | | | | | |
| | | | 16.0 | | | | | | | | | | | |



I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature

Firm ARCADIS
126 N. Jefferson St., Suite 400
Milwaukee, WI 53202

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| Sample | | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Compressive Strength | Soil Properties | | | | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number and Type | Length Att. & Recovered (in) | | | | | | | | | Moisture Content | Liquid Limit | Placticity Index | P 200 | |
| | 9.5 | | 18.0<br>20.0<br>22.0<br>24.0<br>26.0 | (17.0-29.5)<br>SAND: fine; some medium sand; some silt; wet; brown (7.5YR 4/3). | | | | | | | | | | |
| | 10.0 | | 28.0<br>30.0<br>32.0 | (29.5-33.0)<br>SAND: fine; some silt; trace fine gravel, subrounded; wet; brown (7.5YR 5/2). | | | | | | | | | | |
| | | | 34.0<br>36.0<br>38.0<br>40.0 | (33.0-40.0)<br>SILT: some fine sand; hard; brittle; brown (7.5YR 5/2). | | | | | | | | | | |
| | 6.5 | | 42.0<br>44.0<br>46.0<br>48.0 | (40.0-41.5)<br>SILT and CLAY: brown (7.5YR 5/2), some fine to medium sand, wet.<br>(41.5-53.0)<br>SILT: trace to some fine sand; slightly hard; wet; brown (7.5YR 5/2). | | | | | | | | | | |

| Sample | | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Compressive Strength | Soil Properties | | | | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number and Type | Length Att. & Recovered (in) | | | | | | | | | Moisture Content | Liquid Limit | Placticity Index | P 200 | |
| | 8.5 | | 50.0<br>52.0 | | | | | | | | | | | |
| | | | 54.0 | (53.0-56.0)<br>SILT: slightly plastic. | | | | | | | | | | |
| | | | 56.0 | (56.0-56.5)<br>CLAY with SILT: some fine to coarse sand; trace fine gravel; highly plastic; very soft; wet; brown (7.5YR 5/2). | | | | | | | | | | |
| | 9.5 | | 58.0<br>60.0<br>62.0<br>64.0<br>66.0 | (56.5-57.0)<br>SAND: medium to coarse; some fine sand; trace silt and clay; trace gravel, subrounded; wet; brown (7.5YR 5/2).<br>(57.0-64.0)<br>SAND: coarse; some medium sand; some subrounded gravel up to 2.0", wet; brown (7.5YR 5/2).<br>(64.0-64.5)<br>SAND: fine to medium; some silt; some coarse sand; some gravel up to 1.0", subrounded; wet; brown (7.5YR 5/2).<br>(64.5-67.0)<br>SAND: medium to coarse; some gravel up to 1.0", subrounded; trace cobbles, subrounded; wet; brown (7.5YR 5/2). | | | | | | | | | | |
| | 6.5 | | 68.0<br>70.0<br>72.0<br>74.0<br>76.0 | (67.0-70.5)<br>SAND: medium; some fine sand; some coarse sand; trace fine gravel, subrounded; wet; brown (7.5YR 5/2).<br>(70.5-72.0)<br>SAND: coarse; trace medium sand; trace gravel, fine; wet; brown (7.5YR 4/3).<br>(72.0-77.0)<br>SAND: medium to coarse; some gravel up to 2.0", subrounded; wet; brown (7.5YR 5/2). | | | | | | | | | | |
| | | | 78.0<br>80.0 | (77.0-82.0)<br>SAND: coarse; some medium sand; some gravel up to 1.0", subangular to subrounded; trace cobbles up to 3.0"; wet; brown (7.5YR 5/2). | | | | | | | | | | |

| Sample | | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Compressive Strength | Soil Properties | | | | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number and Type | Length Att. & Recovered (in) | | | | | | | | | Moisture Content | Liquid Limit | Placticity Index | P 200 | |
| | 8.0 | | 82.0 | (82.0-87.0)<br>SILT: trace fine sand; trace clay; trace gravel, fine; wet; brown (7.5YR 4/3). | | | | | | | | | | |
| | | | 84.0 | | | | | | | | | | | |
| | | | 86.0 | | | | | | | | | | | |
| | 6.5 | | 88.0 | (87.0-96.5)<br>SILT: some fine sand; some clay; loose; wet; brown (7.5YR 4/3). | | | | | | | | | | |
| | | | 90.0 | | | | | | | | | | | |
| | | | 92.0 | | | | | | | | | | | |
| | | | 94.0 | | | | | | | | | | | |
| | | | 96.0 | (96.5-97.0)<br>SILT: trace fine sand; moderately hard; brown (7.5YR 4/3). | | | | | | | | | | |
| | 10.0 | | 98.0 | (97.0-98.0)<br>SAND: fine; trace silt; trace clay; wet; brown (7.5YR 4/3). | | | | | | | | | | |
| | | | 100.0 | (98.0-103.5)<br>SILT: some fine sand; trace to some fine clay layers; wet; brown (7.5YR 4/2). | | | | | | | | | | |
| | | | 102.0 | | | | | | | | | | | |
| | | | 104.0 | (103.5-107.0)<br>SILT: very hard; brittle; dry; brown (7.5YR 4/2); some fine reddish brown (5YR 4/3) clay laminations. | | | | | | | | | | |
| | | | 106.0 | | | | | | | | | | | |

State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION
Form 4400-122 Rev. 7-98

Route to: Watershed/Wastewater [ ] Waste Management [ ]
Remediation/Redevelopment [X] Other [ ]



| Facility/Project Name | License/Permit/Monitoring Number | Boring Number |
|---|---|---|
| Tyco FTC | | PZ-38 |

| Boring Drilled By: | Date Drilling Started | Date Drilling Completed | Drilling Method |
|---|---|---|---|
| First Name: Keith Last Name: Fehrman<br>Firm: Layne, A Granite Company | 7-11-2019 | 7-11-2019 | Sonic |

| WI Unique Well No. | DNR Well ID No. | Well Name | Final Static Water Level | Surface Elevation | Borehole Diameter |
|---|---|---|---|---|---|
| | | | Feet MSL | 592.29 Feet MSL | 6 inches |

Local Grid Origin (estimated: [ ]) or Boring Location [X]
State Plane 450587.77 N 2580683.74 E Lat
1/4 of 1/4 of Section , T N, R Long

Local Grid Location
[ ] N [ ] E
Feet [ ] S Feet [ ] W

| Facility ID | County | County Code | Civil Town/City/or Village |
|---|---|---|---|
| 438005590 | Marinette | 38 | Marinette |

| Sample Number and Type | Length Att. & Recovered (ft) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Compressive Strength | Soil Properties: Moisture Content | Liquid Limit | Placticity Index | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2.0 | | 0.0<br>2.0<br>4.0<br>6.0 | (0.0-1.0)<br>TOPSOIL: silt and fine to coarse sand; gravel; organics.<br>(1.0-7.0)<br>SAND: fine; dry; brownish yellow (10YR 6/6). | | | | | | | | | | |
| | 7.0 | | 8.0<br>10.0<br>12.0<br>14.0<br>16.0 | (7.0-16.0)<br>SAND: fine; trace to some silt; wet; yellowish brown (10YR 5/6). | | | | | | | | | | |
| | 9.0 | | 18.0<br>20.0<br>22.0 | (16.0-28.0)<br>SAND: fine; wet; yellowish brown (10YR 5/4). | | | | | | | | | | |

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature

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126 N. Jefferson St., Suite 400
Milwaukee, WI 53202

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| Sample | | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Compressive Strength | Soil Properties | | | | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number and Type | Length Att. & Recovered (in) | | | | | | | | | Moisture Content | Liquid Limit | Placticity Index | P 200 | |
| | | | 24.0 | | | | | | | | | | | |
| | | | 26.0 | | | | | | | | | | | |
| | | | 28.0 | (28.0-36.0) SILT: trace clay; some fine sand starting at 35.0' bgs, wet; brown (10YR 5/3). | | | | | | | | | | |
| | 10.0 | | 30.0 | | | | | | | | | | | |
| | | | 32.0 | | | | | | | | | | | |
| | | | 34.0 | | | | | | | | | | | |
| | | | 36.0 | (36.0-37.0) CLAY: highly plastic; soft; wet; brown (10YR 5/3). | | | | | | | | | | |
| | | | 38.0 | (37.0-41.5) SILT: trace fine sand; some gravel up to 1.5", subangular to subrounded; dry; brown (7.5YR 4/4). | | | | | | | | | | |
| | | | 40.0 | | | | | | | | | | | |
| | 5.0 | | 42.0 | (41.5-53.5) SAND: fine to medium; trace cobbles; wet; brown (7.5YR 4/3). | | | | | | | | | | |
| | | | 44.0 | | | | | | | | | | | |
| | | | 46.0 | | | | | | | | | | | |
| | | | 48.0 | | | | | | | | | | | |
| | | | 50.0 | | | | | | | | | | | |
| | 8.5 | | 52.0 | (53.5-54.5) SAND: medium to coarse; trace gravel, fine, subrounded; wet; brown (7.5YR 4/3). | | | | | | | | | | |
| | | | 54.0 | (54.5-57.0) SAND: fine to medium; wet; brown (7.5YR 4/3). | | | | | | | | | | |
| | | | 56.0 | | | | | | | | | | | |
| | | | 58.0 | (57.0-67.0) SAND: fine to medium; trace gravel, fine, subrounded; wet; brown (7.5YR 4/3). | | | | | | | | | | |
| | | | 60.0 | Note: Medium sand begins decreasing at 65' bgs. | | | | | | | | | | |
| | 5.0 | | 62.0 | | | | | | | | | | | |
| | | | 64.0 | | | | | | | | | | | |
| | | | 66.0 | | | | | | | | | | | |

| Sample: Number and Type | Sample: Length Att. & Recovered (in) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Compressive Strength | Soil Properties: Moisture Content | Soil Properties: Liquid Limit | Soil Properties: Placticity Index | Soil Properties: P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 10.0 | | 68.0<br>70.0<br>72.0 | (67.0-72.5)<br>SAND: fine to medium; decreasing fine sand and increasing coarse sand with depth; some gravel, up to 1.5", subrounded; wet; brown (7.5YR 4/3). | | | | | | | | | | |
| | | | 74.0<br>76.0 | (72.5-77.0)<br>SAND and GRAVEL: coarse sand and gravel, subrounded; some cobbles 2-4"; wet. | | | | | | | | | | |
| | 6.0 | | 78.0<br>80.0<br>82.0<br>84.0<br>86.0 | (77.0-80.0)<br>SILT: trace fine sand; wet; brown (7.5YR 4/3).<br>(80.0-82.0)<br>SAND and GRAVEL: coarse sand and gravel, subrounded; some medium sand; trace to some cobbles 2-4", subrounded; wet; brown (7.5YR 4/3).<br>(82.0-83.0)<br>SAND: fine to medium; wet; brown (7.5YR 4/4). | | | | | | | | | | |
| | 10.0 | | 88.0<br>90.0<br>92.0<br>94.0<br>96.0 | (83.0-88.5)<br>SAND and GRAVEL: coarse sand and gravel, subrounded; some medium sand; trace to some cobbles 2-4", subrounded; wet; brown (7.5YR 4/3).<br>(88.5-97.0)<br>SILT: trace clay lenses >1" thick; wet; brown (7.5 YR 4/4). | | | | | | | | | | |
| | 10.0 | | 98.0<br>100.0<br>102.0 | (97.0-103.0)<br>CLAY: some silt; moderately plastic; moist; brown (7.5YR 4/3) to reddish brown (5YR 4/4). | | | | | | | | | | |
| | | | 104.0<br>106.0 | (103.0-107.0)<br>SILT: gravel up to 3", subangular to subrounded; hard; dry; brown (7.5YR 4/2). | | | | | | | | | | |

State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION
Form 4400-122 Rev. 7-98

Route to: Watershed/Wastewater [ ] Waste Management [ ]
Remediation/Redevelopment [X] Other [ ]



| Facility/Project Name | License/Permit/Monitoring Number | Boring Number |
|---|---|---|
| Tyco FTC | | PZ-41 |

| Boring Drilled By: | Date Drilling Started | Date Drilling Completed | Drilling Method |
|---|---|---|---|
| First Name: Keith Last Name: Fehrman<br>Firm: Layne, A Granite Company | 7-15-2019 / 7-16-2019 | 7-15-2019 / 7-16-2019 | Sonic |

| WI Unique Well No. | DNR Well ID No. | Well Name | Final Static Water Level | Surface Elevation | Borehole Diameter |
|---|---|---|---|---|---|
| | | | Feet MSL | 595.33 Feet MSL | 6 inches |

Local Grid Origin (estimated: [ ]) or Boring Location [X]
State Plane 452088.94 N 2578718.61 E Lat
1/4 of 1/4 of Section , T N, R Long

Local Grid Location
[ ] N [ ] E
Feet [ ] S Feet [ ] W

| Facility ID | County | County Code | Civil Town/City/or Village |
|---|---|---|---|
| 438005590 | Marinette | 38 | Marinette |

| Sample Number and Type | Length Att. & Recovered (ft) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Compressive Strength | Soil Properties: Moisture Content | Liquid Limit | Placticity Index | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2.5 | | 0.0<br>2.0<br>4.0<br>6.0 | (0.0-1.0)<br>TOPSOIL.<br>(1.0-7.0)<br>SAND: fine; dry; strong brown (7.5YR 5/6). | | | | | | | | | | |
| | 8.0 | | 8.0<br>10.0<br>12.0<br>14.0<br>16.0 | (7.0-27.0)<br>SAND: fine; trace silt; wet; brown (7.5YR 4/4). | | | | | | | | | | |
| | 10.0 | | 18.0<br>20.0<br>22.0 | | | | | | | | | | | |

I hereby certify that the information on this form is true and correct to the best of my knowledge.

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| Sample | | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Compressive Strength | Soil Properties | | | | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number and Type | Length Att. & Recovered (in) | | | | | | | | | Moisture Content | Liquid Limit | Placticity Index | P 200 | |
| | | | 24.0 | | | | | | | | | | | |
| | | | 26.0 | | | | | | | | | | | |
| | 9.0 | | 28.0 | (27.0-37.0)<br>SAND: fine; trace silt; wet; brown (7.5YR 4/3). | | | | | | | | | | |
| | | | 30.0 | | | | | | | | | | | |
| | | | 32.0 | | | | | | | | | | | |
| | | | 34.0 | | | | | | | | | | | |
| | | | 36.0 | | | | | | | | | | | |
| | 9.0 | | 38.0 | (37.0-46.0)<br>SILT: some clay; moderately plastic; wet; brown (7.5YR 4/3). | | | | | | | | | | |
| | | | 40.0 | | | | | | | | | | | |
| | | | 42.0 | | | | | | | | | | | |
| | | | 44.0 | | | | | | | | | | | |
| | | | 46.0 | (46.0-47.0)<br>SAND: fine; wet; brown (7.5YR 4/3). | | | | | | | | | | |
| | 10.0 | | 48.0 | (47.0-56.5)<br>CLAY: plastic; trace to some silt; soft; brown (7.5YR 4/3). | | | | | | | | | | |
| | | | 50.0 | | | | | | | | | | | |
| | | | 52.0 | | | | | | | | | | | |
| | | | 54.0 | | | | | | | | | | | |
| | | | 56.0 | (56.5-57.0)<br>SILT: some clay; wet; brown (107.5YR 4/3). | | | | | | | | | | |
| | 9.0 | | 58.0 | (57.0-63.0)<br>CLAY: plastic; some silt; soft; wet; brown (7.5YR 4/3). | | | | | | | | | | |
| | | | 60.0 | | | | | | | | | | | |
| | | | 62.0 | (63.0-65.0)<br>SAND: fine to coarse, with silt and clay; some gravel, fine; wet; brown (7.5YR 4/3). | | | | | | | | | | |
| | | | 64.0 | | | | | | | | | | | |
| | | | 66.0 | (65.0-67.0)<br>SAND: fine to medium; some gravel, subrounded; wet; brown (7.5YR 4/3). | | | | | | | | | | |
| | | | 68.0 | (67.0-74.0)<br>SAND: medium; some coarse sand; wet; brown (7.5YR 4/3). | | | | | | | | | | |
| | | | 70.0 | | | | | | | | | | | |

| Sample | | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Compressive Strength | Soil Properties | | | | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number and Type | Length Att. & Recovered (in) | | | | | | | | | Moisture Content | Liquid Limit | Placticity Index | P 200 | |
| | 5.0 | | 72.0 | | | | | | | | | | | |
| | | | 74.0 | (74.0-77.0) SAND and GRAVEL: medium to coarse sand with gravel; wet; brown (7.5YR 4/3). | | | | | | | | | | |
| | | | 76.0 | | | | | | | | | | | |
| | 4.0 | | 78.0 | (77.0-92.0) SAND: medium; some coarse sand; trace to some gravel, subrounded; wet; brown (7.5YR 4/3). | | | | | | | | | | |
| | | | 80.0 | | | | | | | | | | | |
| | | | 82.0 | | | | | | | | | | | |
| | | | 84.0 | | | | | | | | | | | |
| | | | 86.0 | | | | | | | | | | | |
| | 10.0 | | 88.0 | | | | | | | | | | | |
| | | | 90.0 | | | | | | | | | | | |
| | | | 92.0 | (92.0-97.0) SILT: some clay; some gravel and cobbles, subangular to subrounded; hard; dry. | | | | | | | | | | |
| | | | 94.0 | | | | | | | | | | | |
| | | | 96.0 | | | | | | | | | | | |

State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION
Form 4400-122 Rev. 7-98

Route to: Watershed/Wastewater [ ] Waste Management [ ]
Remediation/Redevelopment [X] Other [ ]



| Facility/Project Name | License/Permit/Monitoring Number | Boring Number |
|---|---|---|
| Tyco FTC | | PZ-42 |

| Boring Drilled By: | Date Drilling Started | Date Drilling Completed | Drilling Method |
|---|---|---|---|
| First Name: Keith Last Name: Fehrman<br>Firm: Layne, A Granite Company | 7-16-2019 / 7-17-2019 | 7-16-2019 / 7-17-2019 | Sonic |

| WI Unique Well No. | DNR Well ID No. | Well Name | Final Static Water Level | Surface Elevation | Borehole Diameter |
|---|---|---|---|---|---|
| | | | Feet MSL | 592.348 Feet MSL | 6 inches |

| Local Grid Origin (estimated: [ ]) or Boring Location [X] | Local Grid Location |
|---|---|
| State Plane 451825.12 N 2580454.091 E Lat | [ ] N [ ] E |
| 1/4 of 1/4 of Section , T N, R Long | Feet [ ] S Feet [ ] W |

| Facility ID | County | County Code | Civil Town/City/or Village |
|---|---|---|---|
| 438005590 | Marinette | 38 | Marinette |

| Sample Number and Type | Length Att. & Recovered (ft) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Compressive Strength | Soil Properties: Moisture Content | Liquid Limit | Plasticity Index | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 6.0 | | 0.0<br>2.0<br>4.0<br>6.0 | (0.0-0.5)<br>TOPSOIL.<br>(0.5-7.0)<br>SAND: fine; brown (7.5YR 4/6).<br>Note: Wet starting at 5.0' bgs. | | | | | | | | | | |
| | 10.0 | | 8.0<br>10.0<br>12.0<br>14.0<br>16.0 | (7.0-17.0)<br>SAND: fine; wet; brown (7.5YR 4/3). | | | | | | | | | | |
| | 10.0 | | 18.0<br>20.0<br>22.0 | (17.0-28.5)<br>SAND: fine; trace to some silt; wet; brown (7.5YR 4/3). | | | | | | | | | | |

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature

Firm ARCADIS
126 N. Jefferson St., Suite 400
Milwaukee, WI 53202

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| Sample | | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Compressive Strength | Soil Properties | | | | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number and Type | Length Att. & Recovered (in) | | | | | | | | | Moisture Content | Liquid Limit | Placticity Index | P 200 | |
| | | | 24.0 | | | | | | | | | | | |
| | | | 26.0 | | | | | | | | | | | |
| | | | 28.0 | | | | | | | | | | | |
| | 10.0 | | 30.0 | (28.5-36.5)<br>SILT: trace fine sand; brown (7.5YR 4/3).<br><br>Note: Wet until 34.5' bgs, then dry and crumbly. | | | | | | | | | | |
| | | | 32.0 | | | | | | | | | | | |
| | | | 34.0 | | | | | | | | | | | |
| | | | 36.0 | (36.5-37.0)<br>SILT: some clay; wet; brown (7.5YR 4/3). | | | | | | | | | | |
| | 10.0 | | 38.0 | (37.0-47.0)<br>SILT: trace to some fine sand; brown (7.5YR 4/3).<br><br>Note: Wet until 40' bgs, dry and brittle 40-47' bgs. | | | | | | | | | | |
| | | | 40.0 | | | | | | | | | | | |
| | | | 42.0 | | | | | | | | | | | |
| | | | 44.0 | | | | | | | | | | | |
| | | | 46.0 | (47.0-48.0)<br>SILT: trace fine sand; wet; brown (7.5YR 4/3). | | | | | | | | | | |
| | 8.5 | | 48.0 | (48.0-51.0)<br>SILT with CLAY: some fine to coarse sand; some gravel; some cobbles; soft; wet; brown (7.5YR 4/3). | | | | | | | | | | |
| | | | 50.0 | | | | | | | | | | | |
| | | | 52.0 | (51.0-57.0)<br>SAND: medium; trace coarse sand; some gravel, subrounded; wet; brown (7.5YR 4/3). | | | | | | | | | | |
| | | | 54.0 | | | | | | | | | | | |
| | | | 56.0 | | | | | | | | | | | |
| | 7.5 | | 58.0 | (57.0-63.0)<br>SAND: medium; some fine sand; trace coarse sand; wet; brown (7.5YR 4/4). | | | | | | | | | | |
| | | | 60.0 | | | | | | | | | | | |
| | | | 62.0 | | | | | | | | | | | |
| | | | 64.0 | (63.0-67.0)<br>SAND: medium; some coarse sand; trace gravel, fine; wet; brown (7.5YR 4/4). | | | | | | | | | | |
| | | | 66.0 | | | | | | | | | | | |
| | | | 68.0 | (67.0-73.5)<br>SAND: fine to medium; wet; brown (7.5YR 4/4). | | | | | | | | | | |
| | | | 70.0 | | | | | | | | | | | |

| Sample | | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Compressive Strength | Soil Properties | | | | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number and Type | Length Att. & Recovered (in) | | | | | | | | | Moisture Content | Liquid Limit | Placticity Index | P 200 | |
| | 10.0 | | 72.0 | | | | | | | | | | | |
| | | | 74.0 | (73.5-76.5) SAND: coarse; some medium sand; some gravel, subrounded; wet; brown (7.5YR 4/4). | | | | | | | | | | |
| | | | 76.0 | (76.5-77.0) SILT: some clay layers up to 0.5" thick; wet; brown (7.5YR 4/4). | | | | | | | | | | |
| | | | 78.0 | | | | | | | | | | | |
| | | | 80.0 | (77.0-81.0) SILT: some fine sand; wet; brown (7.5YR 4/3). | | | | | | | | | | |
| | 10.0 | | 82.0 | (81.0-85.5) SAND: fine; some silt; wet; brown (7.5YR 4/3). | | | | | | | | | | |
| | | | 84.0 | | | | | | | | | | | |
| | | | 86.0 | (85.5-92.0) SILT: trace fine sand; wet; brown (7.5YR 4/3). | | | | | | | | | | |
| | | | 88.0 | | | | | | | | | | | |
| | | | 90.0 | | | | | | | | | | | |
| | 10.0 | | 92.0 | (92.0-94.0) SILT: trace fine sand; trace to some clay; wet; brown (7.5YR 4/3). | | | | | | | | | | |
| | | | 94.0 | (94.0-98.5) CLAY: moderately plastic; some silt; reddish brown (5YR 4/3). Note: Hard 95.5-97.0' bgs. | | | | | | | | | | |
| | | | 96.0 | | | | | | | | | | | |
| | | | 98.0 | | | | | | | | | | | |
| | | | 100.0 | (98.5-102.5) SAND and SILT: fine sand; wet; brown (7.5YR 4/3). | | | | | | | | | | |
| | 10.0 | | 102.0 | (102.5-104.0) SAND and SILT: fine to coarse sand; some clay; gravel, subangular to subrounded; trace cobbles up to 3"; wet; brown (7.5YR 4/3). | | | | | | | | | | |
| | | | 104.0 | | | | | | | | | | | |
| | | | 106.0 | (104.0-107.0) SILT: with gravel and cobbles; hard; brittle; dry. | | | | | | | | | | |

State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION
Form 4400-122 Rev. 7-98

Route to: Watershed/Wastewater [ ] Waste Management [ ]
Remediation/Redevelopment [X] Other [ ]



| Facility/Project Name | License/Permit/Monitoring Number | Boring Number |
|---|---|---|
| Tyco FTC | | PZ-43 |

| Boring Drilled By: | Date Drilling Started | Date Drilling Completed | Drilling Method |
|---|---|---|---|
| First Name: Keith Last Name: Fehrman<br>Firm: Layne, A Granite Company | 8-7-2019 / 8-8-2019 | 8-7-2019 / 8-8-2019 | Sonic |

| WI Unique Well No. | DNR Well ID No. | Well Name | Final Static Water Level | Surface Elevation | Borehole Diameter |
|---|---|---|---|---|---|
| | | | Feet MSL | 592.45 Feet MSL | 6 inches |

Local Grid Origin (estimated: [ ]) or Boring Location [X]
State Plane 452648.12 N 2580928.64 E Lat
1/4 of 1/4 of Section , T N, R Long

Local Grid Location
[ ] N [ ] E
Feet [ ] S Feet [ ] W

| Facility ID | County | County Code | Civil Town/City/or Village |
|---|---|---|---|
| 438005590 | Marinette | 38 | Marinette |

| Sample Number and Type | Length Att. & Recovered (ft) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Compressive Strength | Soil Properties: Moisture Content | Liquid Limit | Placticity Index | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 11 | | 0.0<br>2.0<br>4.0<br>6.0<br>8.0<br>10.0<br>12.0<br>14.0<br>16.0<br>18.0<br>20.0<br>22.0 | (0.0-5.7)<br>SAND: fine; trace fines; well sorted; loose; wet; dark yellowish brown (10YR 4/4) from 0.0-1.5' bgs, brown (7.5YR 4/4) from 1.5-5.7' bgs.<br><br>(5.7-26.4)<br>SAND: fine to medium; well sorted; loose to medium dense; wet; gray (7.5YR 5/1) and yellowish brown (10YR 5/6) from 6.7-8.5' bgs. | | | | | | | | | | |

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature

Firm ARCADIS
126 N. Jefferson St., Suite 400
Milwaukee, WI 53202

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| Sample | | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Compressive Strength | Soil Properties | | | | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number and Type | Length Att. & Recovered (in) | | | | | | | | | Moisture Content | Liquid Limit | Placticity Index | P 200 | |
| | 18.5 | | 24.0<br>26.0<br>28.0 | (26.4-29.1)<br>SAND: fine; well sorted; medium dense to dense; wet to moist; gray (7.5YR 5/1). | | | | | | | | | | |
| | | | 30.0<br>32.0<br>34.0<br>36.0 | (29.1-44.5)<br>SAND: very fine; little fines; well sorted; dense; moist. | | | | | | | | | | |
| | 7.5 | | 38.0<br>40.0<br>42.0<br>44.0 | | | | | | | | | | | |
| | | | 46.0<br>48.0 | (44.5-50.0)<br>No recovery. | | | | | | | | | | |
| | 7 | | 50.0<br>52.0<br>54.0<br>56.0 | (50.0-52.7)<br>CLAY: some fine sand; little gravel, medium to large pebbles; poorly sorted; soft from 50.0-51.0' bgs then hard; wet; brown (7.5YR 5/2 to 5/3).<br>(52.7-65.6)<br>SAND: fine to medium; well sorted; loose; moist to wet; brown (7.5YR 5/4). | | | | | | | | | | |
| | 15.5 | | 58.0<br>60.0<br>62.0<br>64.0<br>66.0<br>68.0<br>70.0 | (65.6-70.5)<br>SAND: medium to coarse; well sorted; loose; moist to wet; brown (7.5YR 5/4). | | | | | | | | | | |

| Sample | | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Compressive Strength | Soil Properties | | | | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number and Type | Length Att. & Recovered (in) | | | | | | | | | Moisture Content | Liquid Limit | Placticity Index | P 200 | |
| | | | 72.0<br>74.0<br>76.0<br>78.0<br>80.0 | (70.5-80.5)<br>SAND: fine to medium; little gravel; well sorted; loose; moist to wet; brown (7.5YR 5/4). | | | | | | | | | | |
| | 19.3 | | 82.0<br>84.0<br>86.0<br>88.0<br>90.0<br>92.0<br>94.0<br>96.0 | (80.5-89.0)<br>SAND: very fine to fine; well sorted; dense; moist; reddish brown (7.5YR 4/3).<br>(89.0-89.6)<br>SAND: fine to medium; wet to oversaturated; reddish brown (7.5YR 4/3).<br>(89.6-97.0)<br>SAND: very fine to fine; well sorted; dense; moist; reddish brown (7.5YR 4/3); interbedded with thin layers of clay starting at 93.9' bgs; reddish brown (7.5YR 4/4). | | | | | | | | | | |
| | 11 | | 98.0<br>100.0<br>102.0<br>104.0<br>106.0<br>108.0<br>110.0 | (97.0-103.0)<br>CLAY AND SAND: interbedded stiff reddish brown clay and very fine sand.<br>(103.0-106.5)<br>SAND: medium to coarse; fine to medium until 104.0' bgs; well sorted; loose to medium dense; wet; brown (7.5YR 5/2).<br>(106.5-110.0)<br>SAND: some gravel, large to very large pebbles; some fines; poorly sorted; dense to weakly cemented; wet to moist. Dolostone at bottom. | | | | | | | | | | |

State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION
Form 4400-122 Rev. 7-98

Route to: Watershed/Wastewater [ ] Waste Management [ ]
Remediation/Redevelopment [X] Other [ ]



| Facility/Project Name | License/Permit/Monitoring Number | Boring Number |
|---|---|---|
| Tyco FTC | | PZ-44 |

| Boring Drilled By: | Date Drilling Started | Date Drilling Completed | Drilling Method |
|---|---|---|---|
| First Name: Keith Last Name: Fehrman<br>Firm: Layne, A Granite Company | 7-22-2019 | 7-22-2019 | Sonic |

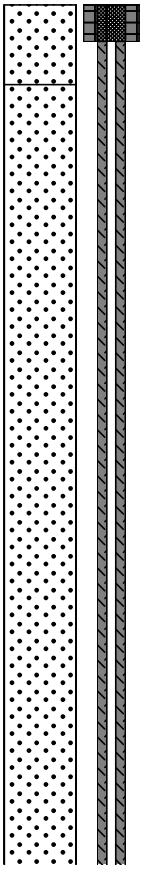
| WI Unique Well No. | DNR Well ID No. | Well Name | Final Static Water Level | Surface Elevation | Borehole Diameter |
|---|---|---|---|---|---|
| | | | Feet MSL | 595.06 Feet MSL | 6 inches |

Local Grid Origin (estimated: [ ]) or Boring Location [X]
State Plane 454734.81 N 2580183.71 E Lat
1/4 of 1/4 of Section , T N, R Long

Local Grid Location
[ ] N [ ] E
Feet [ ] S Feet [ ] W

| Facility ID | County | County Code | Civil Town/City/or Village |
|---|---|---|---|
| 438005590 | Marinette | 38 | Marinette |

| Sample Number and Type | Length Att. & Recovered (ft) | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Compressive Strength | Soil Properties: Moisture Content | Liquid Limit | Plasticity Index | P 200 | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 3.2 | | 0.0<br>2.0<br>4.0<br>6.0 | (0.0-2.2)<br>SAND: fine to medium; trace silt; little gravel, small to large pebbles, subrounded; trace organics; well sorted; loose; moist; brown (7.5YR 4/4).<br>Note: Gray-black streaking from 1.4-2.2' bgs. | | | | | | | | | | |
| | 9 | | 8.0<br>10.0<br>12.0<br>14.0<br>16.0 | (2.2-30.3)<br>SAND: fine to medium; trace silt; little gravel, small to large pebbles, subrounded; well sorted; loose to medium dense; moist; dark grayish brown (10YR 4/2) until 3.2' bgs then brown (7.5YR 4/4).<br><br>Note: Very fine sand lens at 15.3' bgs. | | | | | | | | | | |
| | 10 | | 18.0<br>20.0<br>22.0 | | | | | | | | | | | |



I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature

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126 N. Jefferson St., Suite 400
Milwaukee, WI 53202

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| Sample | | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Compressive Strength | Soil Properties | | | | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number and Type | Length Att. & Recovered (in) | | | | | | | | | Moisture Content | Liquid Limit | Placticity Index | P 200 | |
| | | | 24.0 | | | | | | | | | | | |
| | | | 26.0 | | | | | | | | | | | |
| | | | 28.0 | | | | | | | | | | | |
| | | | 30.0 | | | | | | | | | | | |
| | 10 | | 32.0 | (30.3-34.1)<br>SAND: very fine; well sorted; dense; wet; brown (7.5YR 4/4). | | | | | | | | | | |
| | | | 34.0 | (34.1-45.2)<br>SAND: medium; well sorted; medium dense; moist to wet; dark grayish brown (10YR 4/2). | | | | | | | | | | |
| | | | 36.0 | | | | | | | | | | | |
| | 8.6 | | 38.0 | | | | | | | | | | | |
| | | | 40.0 | | | | | | | | | | | |
| | | | 42.0 | | | | | | | | | | | |
| | | | 44.0 | | | | | | | | | | | |
| | | | 46.0 | (45.2-49.8)<br>SAND: very fine: trace silt; trace clay; dense; moist to wet; grayish brown (10YR 5/2). | | | | | | | | | | |
| | 8.4 | | 48.0 | | | | | | | | | | | |
| | | | 50.0 | (49.8-61.0)<br>SAND: fine; pockets of very fine sand; medium dense to dense; wet; dark grayish brown (10YR 4/2). | | | | | | | | | | |
| | | | 52.0 | | | | | | | | | | | |
| | | | 54.0 | | | | | | | | | | | |
| | | | 56.0 | | | | | | | | | | | |
| | | | 58.0 | | | | | | | | | | | |
| | | | 60.0 | | | | | | | | | | | |
| | 9 | | 62.0 | (61.0-73.1)<br>SAND: fine to medium, little gravel, large pebbles, subangular to subrounded; little fines; loose to soft, wet; brown (10YR 4/2 to 7.5YR 4/4).<br><br>Note: Oversaturated 65.2-66.0' bgs. | | | | | | | | | | |
| | | | 64.0 | | | | | | | | | | | |
| | | | 66.0 | | | | | | | | | | | |
| | | | 68.0 | | | | | | | | | | | |
| | | | 70.0 | | | | | | | | | | | |

| Sample | | Blow Counts | Depth in Feet | Soil/Rock Description And Geologic Origin For Each Major Unit | USCS | Graphic Log | Well Diagram | PID/FID | Compressive Strength | Soil Properties | | | | RQD/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number and Type | Length Att. & Recovered (in) | | | | | | | | | Moisture Content | Liquid Limit | Placticity Index | P 200 | |
| | 8.5 | | 72.0 | | | | | | | | | | | |
| | | | 74.0 | (73.1-77.4)<br>SAND: very fine; trace gravel, small to medium pebbles; trace fines; medium dense to dense; brown (10YR 4/4). | | | | | | | | | | |
| | | | 76.0 | | | | | | | | | | | |
| | 10 | | 78.0 | (77.4-85.2)<br>SAND: fine to medium; pockets of very fine sand; little gravel, small to very large pebbles, subangular; little clay; wet; brown (10YR 4/4) to grayish brown (10YR 5/2). | | | | | | | | | | |
| | | | 80.0 | | | | | | | | | | | |
| | | | 82.0 | | | | | | | | | | | |
| | | | 84.0 | | | | | | | | | | | |
| | | | 86.0 | (85.2-88.0)<br>CLAY: some gravel; little fine sand; poorly sorted; very stiff; moist; reddish brown (5YR 5/3). | | | | | | | | | | |
| | 3 | | 88.0 | (88.0-90.0)<br>DOLOSTONE, white, hard | | | | | | | | | | |
| | | | 90.0 | | | | | | | | | | | |

ARCADIS Design & Consultancy for natural and built assets

# SOIL BORING LOG

Boring No.: SS-130

Sheet : 1 of 1

| | | | | | |
|---|---|---|---|---|---|
| Project Name: | Marinette, WI | Date Started: | 7/17/2019 | Logger: | Amy Parish |
| Project Number: | WI001605.0009.00003 | Date Completed: | 7/17/2019 | Editor: | |
| Project Location: | Marinette, WI | Weather Conditions: | Sunny, 80's | | |

| Depth (feet) | Blow Counts | Sample ID & Time | Recovery (in.) | PID (ppm) | USCS Class. | Description | Construction Details |
|---|---|---|---|---|---|---|---|
| 1 | - | | 12 | - | - | 0-0.5: Dark brown, rootlets and organic material, SILT/SAND mix, medium grained, loose, moist.<br>0.5-1.2: Brown, SAND, medium grained, well sorted, loose, moist.<br>1.2-1.6: SAA, wet. | |
| 2 | - | SS-130 (0.5-1.5) @1540 | 12 | - | - | 1.6-3.9: Light brown, SAA. | Collected PFAS, PFAS SPLP, & |
| 3 | - | | 12 | - | - | | |
| 4 | - | | 9 | - | - | | |
| 5 | - | | 0 | - | - | | |
| 6 | | | | | | End of boring at 5' bgs. Shelby tube collected from 0-2.5' bgs from adjecent boring.<br>Rec= 2.1'/2.5'<br>Time= 1535<br>ID= SS-130A (0.5-1.5) | |
| 7 | | | | | | | |
| 8 | | | | | | | |
| 9 | | | | | | | |
| 10 | | | | | | | |

| | | | |
|---|---|---|---|
| Drilling Co.: | Braun Intertec, Dakota Drilling | Sampling Method: | Macrocore, grab |
| Driller: | Guy Paquette & Bob Giddings | Sampling Interval: | 5 feet |
| Drilling Method: | Direct Push | Water Level Start: | |
| Drilling Fluid: | NA | Water Level Finish: | |
| Remarks: | 1. Additional macrocores collected for additional sample volumes from adjacent borings.<br>2. GW for PFAS SPLP collected from MW-100-32. | Converted to Well: | |
| | | Surface Elev: | |
| | | North Coor: | |
| | | East Coor: | |

# SOIL BORING LOG

Boring No.: SS-131

Sheet : 1 of 1

| | | | | | |
|---|---|---|---|---|---|
| Project Name: | Marinette, WI | Date Started: | 7/17/2019 | Logger: | Amy Parish |
| Project Number: | WI001605.0009.00003 | Date Completed: | 7/17/2019 | Editor: | |
| Project Location: | Marinette, WI | | | Weather Conditions: | Sunny, 80's |

| Depth (feet) | Blow Counts | Sample ID & Time | Recovery (in.) | PID (ppm) | USCS Class. | Description | Construction Details |
|---|---|---|---|---|---|---|---|
| 1 | - | | 12 | - | - | 0-0.5: Dark brown, rootlets and organic material, SILT/SAND mix, medium grained, loose, moist. 0.5-2: Brown, SAND, medium grained, well sorted, loose, moist. | |
| 2 | - | SS-131 (0.5-2) @1515 | 12 | - | - | 2-4: SAA, wet. | Collected PFAS |
| 3 | - | | 12 | - | - | | |
| 4 | - | | 12 | - | - | | |
| 5 | - | | 0 | - | - | | |
| 6 | | | | | | End of boring at 5' bgs. | |
| 7 | | | | | | | |
| 8 | | | | | | | |
| 9 | | | | | | | |
| 10 | | | | | | | |

| | | | |
|---|---|---|---|
| Drilling Co.: | Braun Intertec, Dakota Drilling | Sampling Method: | Macrocore, grab |
| Driller: | Guy Paquette & Bob Giddings | Sampling Interval: | 5 feet |
| Drilling Method: | Direct Push | Water Level Start: | |
| Drilling Fluid: | NA | Water Level Finish: | |
| Remarks: | | Converted to Well: | |
| | | Surface Elev: | |
| | | North Coor: | |
| | | East Coor: | |

# SOIL BORING LOG

ARCADIS Design & Consultancy for natural and built assets

Boring No.: SS-132

Sheet: 1 of 1

Project Name: Tyco FTC
Project Number: WI001605.0009
Project Location: Marinette, WI

Date Started: 7/16/2019
Date Completed: 7/16/2019
Logger: Matthew Bell
Editor:
Weather Conditions: Sunny, 70s

| Depth (feet) | Blow Counts | Sample ID & Time | Recovery (in.) | PID (ppm) | USCS Class. | Description | Construction Details |
|---|---|---|---|---|---|---|---|
| 1 | | SS-132 (0.75-1.0) | 12 | | | 0-.25: Black f SAND, trace silt, trace organics (rootlets), moist. 0.25-0.75: Brown f SAND, m. dense, moist. Black, little silt from 0.7-0.75' | |
| 2 | | 2 DUP @ 1:35 | 12 | | | 0.75-1.0: Brown f SAND, trace silt, loose, moist. 1.0-1.25: Black SILT, trace Clay, medium stiff, dry. | Collected PFAS/PFAS SPLP + DUP + TOC |
| 3 | | | 12 | | | 1.25-3.7: Brown f-m SAND, well sorted, medium dense, wet | |
| 4 | | | 8 | | | | |
| 5 | | | — | | | | |
| 6 | | | | | | End of Boring @ 5' bgs. Shelby tube collected from 0-2.5' bgs from adjacent boring | |
| 7 | | | | | | Rec = 2.3'/2.5' Time = 935 10: SS-132A (0.75-1.0) | |
| 8 | | | | | | | |
| 9 | | | | | | | |
| 10 | | | | | | | |

Drilling Co.: Braun Intertec
Driller: Ben Paquette / Bob Giddings
Drilling Method: Direct Push
Drilling Fluid: NA
Remarks: LABL macrocores collected for add. sample volume from adjacent borings. 2 GW for PFAS SPLP collected from MW-100-32.

Sampling Method: Macrocore
Sampling Interval: 5 feet
Water Level Start:
Water Level Finish:
Converted to Well: ☐ Yes ☐ No
Surface Elev:
North Coor:
East Coor:

ARCADIS Design & Consultancy for natural and built assets

# SOIL BORING LOG

Boring No.: SS-133

Sheet : 1 of 1

| | | | | | |
|---|---|---|---|---|---|
| Project Name: | Marinette, WI | Date Started: | 7/30/2019 | Logger: | Amy Parish |
| Project Number: | WI001605.0009.00003 | Date Completed: | 7/30/2019 | Editor: | |
| Project Location: | Marinette, WI | Weather Conditions: | Sunny, 70's | | |

| Depth (feet) | Blow Counts | Sample ID & Time | Recovery (in.) | PID (ppm) | USCS Class. | Description | Construction Details |
|---|---|---|---|---|---|---|---|
| 1 | - | | 12 | - | - | 0-0.8: Dark brown, organic material, rootlets visible, SIL/SAND mix, loose moist.<br>0.8-1.4: Light brown, SAND, subrounded gravel, medium grained, well sorted, loose, moist. | |
| 2 | - | SS-133 (0.8-1.4) @0830 | 12 | - | - | 1.4-5: SAA, dark brown, wet | Collected PFAS & MS/MSD |
| 3 | - | | 12 | - | - | | |
| 4 | - | | 12 | - | - | | |
| 5 | - | | 12 | - | - | | |
| 6 | | | | | | | |
| 7 | | | | | | | |
| 8 | | | | | | | |
| 9 | | | | | | | |
| 10 | | | | | | | |

| | | | |
|---|---|---|---|
| Drilling Co.: | Braun Intertec, Dakota Drilling | Sampling Method: | Macrocore, grab |
| Driller: | Guy Paquette & Bob Giddings | Sampling Interval: | 5 feet |
| Drilling Method: | Direct Push | Water Level Start: | |
| Drilling Fluid: | NA | Water Level Finish: | |
| Remarks: | | Converted to Well: | |
| | | Surface Elev: | |
| | | North Coor: | |
| | | East Coor: | |

ARCADIS Design & Consultancy for natural and built assets

# SOIL BORING LOG

Boring No.: SS-134

Sheet : 1 of 1

| | | | | | |
|---|---|---|---|---|---|
| Project Name: | Marinette, WI | Date Started: | 7/17/2019 | Logger: | Amy Parish |
| Project Number: | WI001605.0009.00003 | Date Completed: | 7/17/2019 | Editor: | |
| Project Location: | Marinette, WI | Weather Conditions: | Overcast, 80's | | |

| Depth (feet) | Blow Counts | Sample ID & Time | Recovery (in.) | PID (ppm) | USCS Class. | Description | Construction Details |
|---|---|---|---|---|---|---|---|
| 1 | - | | 12 | - | - | 0-0.8: Dark brown to black, rootlets with organic material, SILT/SAND mix, medium grained, loose, moist.<br>0.8-3.6: Brown, SAND, medium grained, well sorted, loose, moist. Increasing density with depth. | |
| 2 | - | SS-134 (0.8-1.7) @1745 | 12 | - | - | | Collected PFAS, PFAS SPLP, & |
| 3 | - | | 12 | - | - | | |
| 4 | - | | 6 | - | - | | |
| 5 | - | | 0 | - | - | | |
| 6 | | | | | | End of boring at 5' bgs. Shelby tube collected from 0-2.5' bgs from adjecent boring.<br>Rec= 2.1'/2.5'<br>Time= 1710<br>ID= SS-134A (0.8-1.7) | |
| 7 | | | | | | | |
| 8 | | | | | | | |
| 9 | | | | | | | |
| 10 | | | | | | | |

| | | | |
|---|---|---|---|
| Drilling Co.: | Braun Intertec, Dakota Drilling | Sampling Method: | Macrocore, grab |
| Driller: | Guy Paquette & Bob Giddings | Sampling Interval: | 5 feet |
| Drilling Method: | Direct Push | Water Level Start: | |
| Drilling Fluid: | NA | Water Level Finish: | |
| Remarks: | 1. Additional macrocores collected for additional sample volumes from adjacent borings.<br>2. GW for PFAS SPLP collected from MW-100-32. | Converted to Well: | |
| | | Surface Elev: | |
| | | North Coor: | |
| | | East Coor: | |

ARCADIS Design & Consultancy for natural and built assets

# SOIL BORING LOG

Boring No.: SS-135

Sheet : 1 of 1

| | | | | | |
|---|---|---|---|---|---|
| Project Name: | Marinette, WI | Date Started: | 7/17/2019 | Logger: | Amy Parish |
| Project Number: | WI001605.0009.00003 | Date Completed: | 7/17/2019 | Editor: | |
| Project Location: | Marinette, WI | | | Weather Conditions: | Sunny, 80's |

| Depth (feet) | Blow Counts | Sample ID & Time | Recovery (in.) | PID (ppm) | USCS Class. | Description | Construction Details |
|---|---|---|---|---|---|---|---|
| 1 | - | | 12 | - | - | 0-0.7: Fill material, <50% subangular gravel, SILT/SAND mix, medium grained, poorly sorted, loose, dry.<br>0.7-1.4: Light brown, SAND, medium grained, well sorted, loose, moist. | |
| 2 | - | SS-135 (0.7-1.6) @1600 | 12 | - | - | 1.4-1.6: SAA, gray, chemical odor.<br>1.6-3.8: SAA, brown, wet. | Collected PFAS, PFAS SPLP, & |
| 3 | - | | 12 | - | - | | |
| 4 | - | | 8 | - | - | | |
| 5 | - | | 0 | - | - | | |
| 6 | | | | | | End of boring at 5' bgs. Shelby tube collected from 0-2.5' bgs from adjecent boring.<br>Rec= 1.5'/2.5'<br>Time= 1600<br>ID= SS-135A (0.7-1.6) | |
| 7 | | | | | | | |
| 8 | | | | | | | |
| 9 | | | | | | | |
| 10 | | | | | | | |

| | | | |
|---|---|---|---|
| Drilling Co.: | Braun Intertec, Dakota Drilling | Sampling Method: | Macrocore, grab |
| Driller: | Guy Paquette & Bob Giddings | Sampling Interval: | 5 feet |
| Drilling Method: | Direct Push | Water Level Start: | |
| Drilling Fluid: | NA | Water Level Finish: | |
| Remarks: | 1. Additional macrocores collected for additional sample volumes from adjacent borings.<br>2. GW for PFAS SPLP collected from MW-100-32. | Converted to Well: | |
| | | Surface Elev: | |
| | | North Coor: | |
| | | East Coor: | |

ARCADIS Design & Consultancy for natural and built assets

# SOIL BORING LOG

Boring No.: SS-136

Sheet : 1 of 1

| | | | | | |
|---|---|---|---|---|---|
| Project Name: | Marinette, WI | Date Started: | 7/17/2019 | Logger: | Amy Parish |
| Project Number: | WI001605.0009.00003 | Date Completed: | 7/17/2019 | Editor: | |
| Project Location: | Marinette, WI | Weather Conditions: | Overcast, 80's | | |

| Depth (feet) | Blow Counts | Sample ID & Time | Recovery (in.) | PID (ppm) | USCS Class. | Description | Construction Details |
|---|---|---|---|---|---|---|---|
| 1 | - | | 12 | - | - | 0-0.65: Fill material, brown and gray, <75% subangular gravel, SILT/SAND mix, medium grained, poorly sorted, loose, moist.<br>0.65-2: Brown, SAND, medium grained, well sorted, loose, moist. | |
| 2 | - | SS-136 (0.6-2) @1630 | 12 | - | - | 2-2.4: Dark brown to black, SILT/CLAY mix, slightly plastic, medium grained, slight odor (chemical), moist.<br>2.4-3.6: same as 0.65-2, light brown, wet | Collected PFAS, PFAS SPLP, & |
| 3 | - | | 12 | - | - | | |
| 4 | - | | 6 | - | - | | |
| 5 | - | | 0 | - | - | | |
| 6 | | | | | | End of boring at 5' bgs. Shelby tube collected from 0-2.5' bgs from adjecent boring.<br>Rec= 2.3'/2.5'<br>Time= 1635<br>ID= SS-136A (0.6-2) | |
| 7 | | | | | | | |
| 8 | | | | | | | |
| 9 | | | | | | | |
| 10 | | | | | | | |

| | | | |
|---|---|---|---|
| Drilling Co.: | Braun Intertec, Dakota Drilling | Sampling Method: | Macrocore, grab |
| Driller: | Guy Paquette & Bob Giddings | Sampling Interval: | 5 feet |
| Drilling Method: | Direct Push | Water Level Start: | |
| Drilling Fluid: | NA | Water Level Finish: | |
| Remarks: | 1. Additional macrocores collected for additional sample volumes from adjacent borings.<br>2. GW for PFAS SPLP collected from MW-100-32. | Converted to Well: | |
| | | Surface Elev: | |
| | | North Coor: | |
| | | East Coor: | |

ARCADIS Design & Consultancy for natural and built assets

# SOIL BORING LOG

Boring No.: SS-137

Sheet 1 of 1

Project Name: Tyco FTC
Project Number: WI001605.0009
Project Location: Marinette, WI

Date Started: 7/16/2019
Date Completed: 7/16/2019
Logger: Matthew Bell
Editor:
Weather Conditions: Sunny, 80's

| Depth (feet) | Blow Counts | Sample ID & Time | Recovery (in.) | PID (ppm) | USCS Class. | Description | Construction Details |
|---|---|---|---|---|---|---|---|
| 1 | X | | 12 | X | X | 0-6" dark brown-black, roots & organic material, SILT, CLAY, SAND mix. Clay slightly plastic, med. grain sand. loose, moist | |
| 2 | X | 6"-1'2" SS-137(0.5-1.2) @ 1125 | 12 | X | X | 6"-1'2" light brown-brown, SAND, <5% subangular gravel, med. grained, loose, moist. (Collected PFAS/PFAS SPLP & TOC) | |
| 3 | X | | 12 | X | X | 1'2"-3'2" SAA, no gravel | |
| 4 | X | | 2 | X | X | 3'2"-5' no recovery | |
| 5 | X | | — | X | X | | |
| 6 | | | | | | End of boring @ 5' bgs<br>Shelby tube collected 0-2.5' bgs from adjacent boring. Rec = 2 1/2.5' | |
| 7 | | | | | | Time = 1130<br>Small cut at base of shelby tube.<br>ID: SS-137A (~~0-2.5~~) (0.5-1.2) | |
| 8 | | | | | | | |
| 9 | | | | | | | |
| 10 | | | | | | | |

Drilling Co.: Braun Intertec
Driller: Guy Paquette / Bob Goldings
Drilling Method: Direct Push
Drilling Fluid: NA
Remarks: 1 Add macrocores collected from adj. boring for add. volume.
2 6W for PFAS SPLP collected from MW-101-32.

Sampling Method: Macrocore
Sampling Interval: 5 feet
Water Level Start:
Water Level Finish:
Converted to Well: ☐ Yes ☐ No
Surface Elev:
North Coor:
East Coor:

ARCADIS Design & Consultancy for natural and built assets

# SOIL BORING LOG

Boring No.: SS-138

Sheet: 1 of 4

Project Name: Tyco FTC
Project Number: WI001605.0009
Project Location: Marinette, WI

Date Started: 7/16/2019
Date Completed: 7/16/2019
Logger: Matthew Bell
Editor:
Weather Conditions: Sunny, 70's

| Depth (feet) | Blow Counts | Sample ID & Time | Recovery (in) | PID (ppm) | USCS Class. | Description | Construction Details |
|---|---|---|---|---|---|---|---|
| 1 | – | SS-138 (0-1.5) 1030 MS/MSD | 12 | | 0-0.5' 0.5'-1.5' | 0-6: Gray to black FSAND, some SILT, little organics (rootlets), loose, dry. 6-18: Brown F-m SAND trace Silt, well sorted loose, moist. Note: collected PFAS/PFAS QCLT, TOC & MS/MSD | |
| 2 | – | | 12 | | 1.5-5' | 18-48: Brown m SAND, well sorted, moderate, wet. | |
| 3 | – | | 12 | | | | |
| 4 | – | | 12 | | | | |
| 5 | | | | | | | |
| 6 | | | | | | End of Boring @ 5' bgs. Shelby tube collected from 0-2.5' bgs from adjacent boring. Rec = 1.3'/2.5' | |
| 7 | | | | | | Time = 1035 Note: 4 attempts taken to collect, due to poor recovery in first 3. | |
| 8 | | | | | | ID: SS-138A ~~(0-2.5)~~ (0.5-1.5) (less than 50%) | |
| 9 | | | | | | | |
| 10 | | | | | | | |

Drilling Co.: Braun Intertec
Driller: Guy Paquette / Rob Gilliard
Drilling Method: Direct Push
Drilling Fluid: NA
Remarks: Additional macrocores collected from adjacent borings for additional volume. 6W for PFAS SPLP collected from MW-100-32.

Sampling Method: Macrocore
Sampling Interval: 5 feet
Water Level Start:
Water Level Finish:
Converted to Well: ☐ Yes ☐ No
Surface Elev:
North Coor:
East Coor:

ARCADIS Design & Consultancy for natural and built assets

# SOIL BORING LOG

Boring No.: SS-139

Sheet : 1 of 1

| | | | | | |
|---|---|---|---|---|---|
| Project Name: | Marinette, WI | Date Started: | 7/16/2019 | Logger: | Amy Parish |
| Project Number: | WI001605.0009.00003 | Date Completed: | 7/16/2019 | Editor: | |
| Project Location: | Marinette, WI | | | Weather Conditions: | Sunny, 80's |

| Depth (feet) | Blow Counts | Sample ID & Time | Recovery (in.) | PID (ppm) | USCS Class. | Description | Construction Details |
|---|---|---|---|---|---|---|---|
| 1 | - | | 12 | - | - | 0-0.5: Brown, <50% subangular gravel, SILT/SAND mix, medium grained, rootlets and organic material, loose, wet.<br>0.5-0.9: Brownish gray, SAND, medium grained, loose, wet. | |
| 2 | - | SS-139 (0.5-1.2) @1210 | 12 | - | - | 0.9-1.3: Dark brown, SAA, strong chemical odor<br>1.3-3: Brown, SAA, no odor | Collected PFAS, PFAS SPLP, & |
| 3 | - | | 12 | - | - | | |
| 4 | - | | 0 | - | - | | |
| 5 | - | | 0 | - | - | | |
| 6 | | | | | | End of boring at 5' bgs. Shelby tube collected from 0-2.5' bgs from adjecent boring.<br>Rec= 1.5'/2.5'<br>Time= 1215<br>ID= SS-139A (0.5-1.2)<br>Note: Dent at base of shelby tube | |
| 7 | | | | | | | |
| 8 | | | | | | | |
| 9 | | | | | | | |
| 10 | | | | | | | |

| | | | |
|---|---|---|---|
| Drilling Co.: | Braun Intertec, Dakota Drilling | Sampling Method: | Macrocore, grab |
| Driller: | Guy Paquette & Bob Giddings | Sampling Interval: | 5 feet |
| Drilling Method: | Direct Push | Water Level Start: | |
| Drilling Fluid: | NA | Water Level Finish: | |
| Remarks: | 1. Additional macrocores collected for additional sample volumes from adjacent borings.<br>2. GW for PFAS SPLP collected from MW-100-32. | Converted to Well: | |
| | | Surface Elev: | |
| | | North Coor: | |
| | | East Coor: | |

State of Wis., Dept. of Natural Resources
dnr.wi.gov

# Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)



**Notice:** Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and chs. NR 141 and 812, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between $10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

☑ **Verification Only of Fill and Seal**

**Route to DNR Bureau:**
☐ Drinking Water ☐ Watershed/Wastewater ☑ Remediation/Redevelopment
☐ Waste Management ☐ Other: _____

## 1. Well Location Information

County: Marinette
WI Unique Well # of Removed Well: ___ ___ ___ ___ ___
Hicap #:

Latitude / Longitude (see instructions): State Plane N, E
452312.67N 2580668.36E
Format Code: ☐ DD ☐ DDM
Method Code: ☐ GPS008 ☐ SCR002 ☑ OTH001

¼ / ¼: ¼:
or Gov't Lot #:
Section:
Township: N
Range: ☐ E ☐ W

Well Street Address:

Well City, Village or Town: Peshtigo
Well ZIP Code: 54143
Subdivision Name:
Lot #:

Reason for Removal from Service: Temporary Borehole
WI Unique Well # of Replacement Well: ___ ___ ___ ___ ___

## 2. Facility / Owner Information

Facility Name: Tyco FTC
Facility ID (FID or PWS): 438005590
License/Permit/Monitoring #:

Original Well Owner: Johnson Controls
Present Well Owner: Johnson Controls
Mailing Address of Present Owner: 2700 Industrial Parkway South
City of Present Owner: Marinette
State: WI
ZIP Code: 54143

## 3. Filled & Sealed Well / Drillhole / Borehole Information

☐ Monitoring Well
☐ Water Well
☑ Borehole / Drillhole

Original Construction Date (mm/dd/yyyy): 08/13/2019
If a Well Construction Report is available, please attach.

Construction Type:
☑ Drilled ☐ Driven (Sandpoint) ☐ Dug
☐ Other (specify): _____

Formation Type:
☑ Unconsolidated Formation ☐ Bedrock

Total Well Depth From Ground Surface (ft.): 107.0
Casing Diameter (in.):
Lower Drillhole Diameter (in.): 6 inches
Casing Depth (ft.):

Was well annular space grouted? ☑ Yes ☐ No ☐ Unknown

If yes, to what depth (feet)? 107.0
Depth to Water (feet): 4.50 feet

## 4. Pump, Liner, Screen, Casing & Sealing Material

| | Yes | No | N/A |
|---|---|---|---|
| Pump and piping removed? | ☐ | ☐ | ☑ |
| Liner(s) removed? | ☐ | ☐ | ☑ |
| Liner(s) perforated? | ☐ | ☐ | ☑ |
| Screen removed? | ☐ | ☐ | ☑ |
| Casing left in place? | ☐ | ☐ | ☑ |
| Was casing cut off below surface? | ☐ | ☐ | ☑ |
| Did sealing material rise to surface? | ☑ | ☐ | ☐ |
| Did material settle after 24 hours? | ☐ | ☑ | ☐ |
| If yes, was hole retopped? | ☐ | ☐ | ☑ |
| If bentonite chips were used, were they hydrated with water from a known safe source? | ☐ | ☐ | ☑ |

Required Method of Placing Sealing Material
☐ Conductor Pipe-Gravity ☑ Conductor Pipe-Pumped
☐ Screened & Poured (Bentonite Chips) ☐ Other (Explain): _____

Sealing Materials
☐ Neat Cement Grout ☐ Concrete
☐ Sand-Cement (Concrete) Grout ☐ Bentonite Chips

*For Monitoring Wells and Monitoring Well Boreholes Only:*
☐ Bentonite Chips ☑ Bentonite - Cement Grout
☐ Granular Bentonite ☐ Bentonite - Sand Slurry

## 5. Material Used to Fill Well / Drillhole

| Material | From (ft.) | To (ft.) | No. Yards, Sacks Sealant or Volume (circle one) | Mix Ratio or Mud Weight |
|---|---|---|---|---|
| Bentonite-cement grout | Surface | 107.0 | | |
| | | | | |
| | | | | |

## 6. Comments

VAP-52

## 7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing: Layne, A Granite Company, Arcadis
License #:
Date of Filling & Sealing or Verification (mm/dd/yyyy): 08/15/2019

Street or Route: 126 N. Jefferson Street, Suite 400
Telephone Number: (414) 276-7742

City: Milwaukee
State: WI
ZIP Code: 53202
Signature of Person Doing Work:
Date Signed: 12/26/2019

**DNR Use Only**
Date Received:
Noted By:
Comments:

State of Wis., Dept. of Natural Resources
dnr.wi.gov

# Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)



**Notice:** Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and chs. NR 141 and 812, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between $10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

☑ **Verification Only of Fill and Seal**

**Route to DNR Bureau:**
☐ Drinking Water ☐ Watershed/Wastewater ☑ Remediation/Redevelopment
☐ Waste Management ☐ Other: _____

## 1. Well Location Information

County: Marinette
WI Unique Well # of Removed Well: ___ ___ ___ ___ ___
Hicap #:

Latitude / Longitude (see instructions): State Plane N, E
452856.51N 2581580.69E N W
Format Code: ☐ DD ☐ DDM
Method Code: ☐ GPS008 ☐ SCR002 ☑ OTH001

¼ / ¼: ¼:
or Gov't Lot #:
Section:
Township: N
Range: ☐ E ☐ W

Well Street Address:

Well City, Village or Town: Peshtigo
Well ZIP Code: 54143
Subdivision Name:
Lot #:

Reason for Removal from Service: Temporary Borehole
WI Unique Well # of Replacement Well: ___ ___ ___ ___ ___

## 2. Facility / Owner Information

Facility Name: Tyco FTC
Facility ID (FID or PWS): 438005590
License/Permit/Monitoring #:

Original Well Owner: Johnson Controls
Present Well Owner: Johnson Controls
Mailing Address of Present Owner: 2700 Industrial Parkway South
City of Present Owner: Marinette
State: WI
ZIP Code: 54143

## 3. Filled & Sealed Well / Drillhole / Borehole Information

☐ Monitoring Well
☐ Water Well
☑ Borehole / Drillhole

Original Construction Date (mm/dd/yyyy): 08/16/2019
If a Well Construction Report is available, please attach.

Construction Type:
☑ Drilled ☐ Driven (Sandpoint) ☐ Dug
☐ Other (specify): _____

Formation Type:
☑ Unconsolidated Formation ☐ Bedrock

Total Well Depth From Ground Surface (ft.): 102.0
Casing Diameter (in.):
Lower Drillhole Diameter (in.): 6 inches
Casing Depth (ft.):

Was well annular space grouted? ☑ Yes ☐ No ☐ Unknown

If yes, to what depth (feet)? 102.0
Depth to Water (feet): 4.50 feet

## 4. Pump, Liner, Screen, Casing & Sealing Material

| | Yes | No | N/A |
|---|---|---|---|
| Pump and piping removed? | ☐ | ☐ | ☑ |
| Liner(s) removed? | ☐ | ☐ | ☑ |
| Liner(s) perforated? | ☐ | ☐ | ☑ |
| Screen removed? | ☐ | ☐ | ☑ |
| Casing left in place? | ☐ | ☐ | ☑ |
| Was casing cut off below surface? | ☐ | ☐ | ☑ |
| Did sealing material rise to surface? | ☑ | ☐ | ☐ |
| Did material settle after 24 hours? | ☐ | ☑ | ☐ |
| If yes, was hole retopped? | ☐ | ☐ | ☑ |
| If bentonite chips were used, were they hydrated with water from a known safe source? | ☐ | ☐ | ☑ |

Required Method of Placing Sealing Material
☐ Conductor Pipe-Gravity ☑ Conductor Pipe-Pumped
☐ Screened & Poured (Bentonite Chips) ☐ Other (Explain): _____

Sealing Materials
☐ Neat Cement Grout ☐ Concrete
☐ Sand-Cement (Concrete) Grout ☐ Bentonite Chips

*For Monitoring Wells and Monitoring Well Boreholes Only:*
☐ Bentonite Chips ☑ Bentonite - Cement Grout
☐ Granular Bentonite ☐ Bentonite - Sand Slurry

## 5. Material Used to Fill Well / Drillhole

| Material | From (ft.) | To (ft.) | No. Yards, Sacks Sealant or Volume (circle one) | Mix Ratio or Mud Weight |
|---|---|---|---|---|
| Bentonite-cement grout | Surface | 102.0 | | |
| | | | | |
| | | | | |

## 6. Comments

VAP-53

## 7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing: Layne, A Granite Company, Arcadis
License #:
Date of Filling & Sealing or Verification (mm/dd/yyyy): 08/20/2019
Street or Route: 126 N. Jefferson Street, Suite 400
Telephone Number: (414) 276-7742
City: Milwaukee
State: WI
ZIP Code: 53202
Signature of Person Doing Work:
Date Signed: 12/26/2019

**DNR Use Only**
Date Received:
Noted By:
Comments:

State of Wis., Dept. of Natural Resources
dnr.wi.gov

# Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)



**Notice:** Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and chs. NR 141 and 812, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between $10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

☑ **Verification Only of Fill and Seal**

**Route to DNR Bureau:**
☐ Drinking Water ☐ Watershed/Wastewater ☑ Remediation/Redevelopment
☐ Waste Management ☐ Other: _____

## 1. Well Location Information

County: Marinette
WI Unique Well # of Removed Well: ___ ___ ___ ___ ___
Hicap #:

Latitude / Longitude (see instructions): State Plane N, E
467536.82N 2518301.18E
Format Code: ☐ DD ☐ DDM
Method Code: ☐ GPS008 ☐ SCR002 ☑ OTH001

¼ / ¼: ¼:
or Gov't Lot #:
Section:
Township: N
Range: ☐ E ☐ W

Well Street Address: State Street
Well City, Village or Town: Marinette
Well ZIP Code: 54143
Subdivision Name:
Lot #:

Reason for Removal from Service: Temporary Borehole
WI Unique Well # of Replacement Well: ___ ___ ___ ___ ___

## 2. Facility / Owner Information

Facility Name: Tyco FTC
Facility ID (FID or PWS): 438005590
License/Permit/Monitoring #:
Original Well Owner: Johnson Controls
Present Well Owner: Johnson Controls
Mailing Address of Present Owner: 2700 Industrial Parkway South
City of Present Owner: Marinette
State: WI
ZIP Code: 54143

## 3. Filled & Sealed Well / Drillhole / Borehole Information

☐ Monitoring Well
☐ Water Well
☑ Borehole / Drillhole

Original Construction Date (mm/dd/yyyy): 07/16/2019
If a Well Construction Report is available, please attach.

Construction Type:
☐ Drilled ☐ Driven (Sandpoint) ☐ Dug
☑ Other (specify): Geoprobe, direct push

Formation Type:
☑ Unconsolidated Formation ☐ Bedrock

Total Well Depth From Ground Surface (ft.): 36.60
Casing Diameter (in.):
Lower Drillhole Diameter (in.): 4 inches
Casing Depth (ft.):

Was well annular space grouted? ☐ Yes ☑ No ☐ Unknown
If yes, to what depth (feet)?
Depth to Water (feet): 6.20 feet

## 4. Pump, Liner, Screen, Casing & Sealing Material

| | Yes | No | N/A |
|---|---|---|---|
| Pump and piping removed? | ☐ | ☐ | ☑ |
| Liner(s) removed? | ☐ | ☐ | ☑ |
| Liner(s) perforated? | ☐ | ☐ | ☑ |
| Screen removed? | ☐ | ☐ | ☑ |
| Casing left in place? | ☐ | ☐ | ☑ |
| Was casing cut off below surface? | ☐ | ☐ | ☑ |
| Did sealing material rise to surface? | ☑ | ☐ | ☐ |
| Did material settle after 24 hours? | ☐ | ☑ | ☐ |
| If yes, was hole retopped? | ☐ | ☐ | ☑ |
| If bentonite chips were used, were they hydrated with water from a known safe source? | ☐ | ☐ | ☑ |

Required Method of Placing Sealing Material
☑ Conductor Pipe-Gravity ☐ Conductor Pipe-Pumped
☐ Screened & Poured (Bentonite Chips) ☐ Other (Explain): _____

Sealing Materials
☐ Neat Cement Grout ☐ Concrete
☐ Sand-Cement (Concrete) Grout ☑ Bentonite Chips

*For Monitoring Wells and Monitoring Well Boreholes Only:*
☑ Bentonite Chips ☐ Bentonite - Cement Grout
☐ Granular Bentonite ☐ Bentonite - Sand Slurry

## 5. Material Used to Fill Well / Drillhole

| Material | From (ft.) | To (ft.) | No. Yards, Sacks Sealant or Volume (circle one) | Mix Ratio or Mud Weight |
|---|---|---|---|---|
| Bentonite | Surface | 36.60 | | |
| | | | | |
| | | | | |

## 6. Comments

HPT-22

## 7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing: Dakota Technologies, Arcadis
License #:
Date of Filling & Sealing or Verification (mm/dd/yyyy): 07/16/2019
Street or Route: 126 N. Jefferson Street, Suite 400
Telephone Number: (414) 276-7742
City: Milwaukee
State: WI
ZIP Code: 53202
Signature of Person Doing Work: Amy Parise
Date Signed: 10/24/2019

**DNR Use Only**
Date Received:
Noted By:
Comments:

State of Wis., Dept. of Natural Resources
dnr.wi.gov

# Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)



**Notice:** Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and chs. NR 141 and 812, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between $10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

☑ **Verification Only of Fill and Seal**

**Route to DNR Bureau:**
☐ Drinking Water ☐ Watershed/Wastewater ☑ Remediation/Redevelopment
☐ Waste Management ☐ Other: _____

## 1. Well Location Information

County: Marinette
WI Unique Well # of Removed Well: ___ ___ ___ ___ ___
Hicap #:

Latitude / Longitude (see instructions): State Plane N, E
468078.71N 2581197.10E
Format Code: ☐ DD ☐ DDM
Method Code: ☐ GPS008 ☐ SCR002 ☑ OTH001

¼ / ¼: ¼:
or Gov't Lot #:
Section:
Township: N
Range: ☐ E ☐ W

Well Street Address: Carney Blvd
Well City, Village or Town: Marinette
Well ZIP Code: 54143
Subdivision Name:
Lot #:

Reason for Removal from Service: Temporary Borehole
WI Unique Well # of Replacement Well: ___ ___ ___ ___ ___

## 2. Facility / Owner Information

Facility Name: Tyco FTC
Facility ID (FID or PWS): 438005590
License/Permit/Monitoring #:
Original Well Owner: Johnson Controls
Present Well Owner: Johnson Controls
Mailing Address of Present Owner: 2700 Industrial Parkway South
City of Present Owner: Marinette
State: WI
ZIP Code: 54143

## 3. Filled & Sealed Well / Drillhole / Borehole Information

☐ Monitoring Well
☐ Water Well
☑ Borehole / Drillhole

Original Construction Date (mm/dd/yyyy): 07/16/2019
If a Well Construction Report is available, please attach.

Construction Type:
☐ Drilled ☐ Driven (Sandpoint) ☐ Dug
☑ Other (specify): Geoprobe, direct push

Formation Type:
☑ Unconsolidated Formation ☐ Bedrock

Total Well Depth From Ground Surface (ft.): 27.10
Casing Diameter (in.):
Lower Drillhole Diameter (in.): 4 inches
Casing Depth (ft.):

Was well annular space grouted? ☐ Yes ☑ No ☐ Unknown
If yes, to what depth (feet)?
Depth to Water (feet): 6.60 feet

## 4. Pump, Liner, Screen, Casing & Sealing Material

| | Yes | No | N/A |
|---|---|---|---|
| Pump and piping removed? | ☐ | ☐ | ☑ |
| Liner(s) removed? | ☐ | ☐ | ☑ |
| Liner(s) perforated? | ☐ | ☐ | ☑ |
| Screen removed? | ☐ | ☐ | ☑ |
| Casing left in place? | ☐ | ☐ | ☑ |
| Was casing cut off below surface? | ☐ | ☐ | ☑ |
| Did sealing material rise to surface? | ☑ | ☐ | ☐ |
| Did material settle after 24 hours? | ☐ | ☑ | ☐ |
| If yes, was hole retopped? | ☐ | ☐ | ☑ |
| If bentonite chips were used, were they hydrated with water from a known safe source? | ☐ | ☐ | ☑ |

Required Method of Placing Sealing Material
☑ Conductor Pipe-Gravity ☐ Conductor Pipe-Pumped
☐ Screened & Poured (Bentonite Chips) ☐ Other (Explain): _____

Sealing Materials
☐ Neat Cement Grout ☐ Concrete
☐ Sand-Cement (Concrete) Grout ☑ Bentonite Chips

*For Monitoring Wells and Monitoring Well Boreholes Only:*
☑ Bentonite Chips ☐ Bentonite - Cement Grout
☐ Granular Bentonite ☐ Bentonite - Sand Slurry

## 5. Material Used to Fill Well / Drillhole

| | From (ft.) | To (ft.) | No. Yards, Sacks Sealant or Volume (circle one) | Mix Ratio or Mud Weight |
|---|---|---|---|---|
| Bentonite | Surface | 27.10 | | |
| | | | | |
| | | | | |

## 6. Comments

HPT-23

## 7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing: Dakota Technologies, Arcadis
License #:
Date of Filling & Sealing or Verification (mm/dd/yyyy): 07/16/2019
Street or Route: 126 N. Jefferson Street, Suite 400
Telephone Number: (414) 276-7742
City: Milwaukee
State: WI
ZIP Code: 53202
Signature of Person Doing Work: Amy Parise
Date Signed: 10/24/2019

**DNR Use Only**
Date Received:
Noted By:
Comments:

State of Wis., Dept. of Natural Resources
dnr.wi.gov

# Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)



**Notice:** Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and chs. NR 141 and 812, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between $10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

☑ **Verification Only of Fill and Seal**

**Route to DNR Bureau:**
☐ Drinking Water ☐ Watershed/Wastewater ☑ Remediation/Redevelopment
☐ Waste Management ☐ Other: _____

## 1. Well Location Information

County: Marinette
WI Unique Well # of Removed Well: ___ ___ ___ ___ ___
Hicap #:

Latitude / Longitude (see instructions): State Plane N, E
467125.90N 2583157.79E
Format Code: ☐ DD ☐ DDM
Method Code: ☐ GPS008 ☐ SCR002 ☑ OTH001

¼ / ¼: ¼:
or Gov't Lot #:
Section:
Township: N
Range: ☐ E ☐ W

Well Street Address: Garfield Avenue
Well City, Village or Town: Marinette
Well ZIP Code: 54143
Subdivision Name:
Lot #:

Reason for Removal from Service: Temporary Borehole
WI Unique Well # of Replacement Well: ___ ___ ___ ___ ___

## 2. Facility / Owner Information

Facility Name: Tyco FTC
Facility ID (FID or PWS): 438005590
License/Permit/Monitoring #:
Original Well Owner: Johnson Controls
Present Well Owner: Johnson Controls
Mailing Address of Present Owner: 2700 Industrial Parkway South
City of Present Owner: Marinette
State: WI
ZIP Code: 54143

## 3. Filled & Sealed Well / Drillhole / Borehole Information

☐ Monitoring Well
☐ Water Well
☑ Borehole / Drillhole

Original Construction Date (mm/dd/yyyy): 07/17/2019
If a Well Construction Report is available, please attach.

Construction Type:
☐ Drilled ☐ Driven (Sandpoint) ☐ Dug
☑ Other (specify): Geoprobe, direct push

Formation Type:
☑ Unconsolidated Formation ☐ Bedrock

Total Well Depth From Ground Surface (ft.): 54.30
Casing Diameter (in.):
Lower Drillhole Diameter (in.): 4 inches
Casing Depth (ft.):

Was well annular space grouted? ☐ Yes ☑ No ☐ Unknown
If yes, to what depth (feet)?
Depth to Water (feet): 5.50 feet

## 4. Pump, Liner, Screen, Casing & Sealing Material

| | Yes | No | N/A |
|---|---|---|---|
| Pump and piping removed? | ☐ | ☐ | ☑ |
| Liner(s) removed? | ☐ | ☐ | ☑ |
| Liner(s) perforated? | ☐ | ☐ | ☑ |
| Screen removed? | ☐ | ☐ | ☑ |
| Casing left in place? | ☐ | ☐ | ☑ |
| Was casing cut off below surface? | ☐ | ☐ | ☑ |
| Did sealing material rise to surface? | ☑ | ☐ | ☐ |
| Did material settle after 24 hours? | ☐ | ☑ | ☐ |
| If yes, was hole retopped? | ☐ | ☐ | ☑ |
| If bentonite chips were used, were they hydrated with water from a known safe source? | ☐ | ☐ | ☑ |

Required Method of Placing Sealing Material
☑ Conductor Pipe-Gravity ☐ Conductor Pipe-Pumped
☐ Screened & Poured (Bentonite Chips) ☐ Other (Explain): _____

Sealing Materials
☐ Neat Cement Grout ☐ Concrete
☐ Sand-Cement (Concrete) Grout ☑ Bentonite Chips

*For Monitoring Wells and Monitoring Well Boreholes Only:*
☑ Bentonite Chips ☐ Bentonite - Cement Grout
☐ Granular Bentonite ☐ Bentonite - Sand Slurry

## 5. Material Used to Fill Well / Drillhole

| | From (ft.) | To (ft.) | No. Yards, Sacks Sealant or Volume (circle one) | Mix Ratio or Mud Weight |
|---|---|---|---|---|
| Bentonite | Surface | 54.30 | | |
| | | | | |
| | | | | |

## 6. Comments

HPT-24

## 7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing: Dakota Technologies, Arcadis
License #:
Date of Filling & Sealing or Verification (mm/dd/yyyy): 07/17/2019
Street or Route: 126 N. Jefferson Street, Suite 400
Telephone Number: (414) 276-7742
City: Milwaukee
State: WI
ZIP Code: 53202
Signature of Person Doing Work: Amy Parise
Date Signed: 10/24/2019

**DNR Use Only**
Date Received:
Noted By:
Comments:

State of Wis., Dept. of Natural Resources
dnr.wi.gov

# Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)



**Notice:** Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and chs. NR 141 and 812, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between $10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

☑ **Verification Only of Fill and Seal**

**Route to DNR Bureau:**
☐ Drinking Water ☐ Watershed/Wastewater ☑ Remediation/Redevelopment
☐ Waste Management ☐ Other: _____

## 1. Well Location Information

County: Marinette
WI Unique Well # of Removed Well: ___ ___ ___ ___ ___
Hicap #:

Latitude / Longitude (see instructions): State Plane N, E
465503.66N 2584182.98E
Format Code: ☐ DD ☐ DDM
Method Code: ☐ GPS008 ☐ SCR002 ☑ OTH001

¼ / ¼: ¼ or Gov't Lot #:
Section:
Township: N
Range: ☐ E ☐ W

Well Street Address: 9th Street
Well City, Village or Town: Marinette
Well ZIP Code: 54143
Subdivision Name:
Lot #:

Reason for Removal from Service: Temporary Borehole
WI Unique Well # of Replacement Well: ___ ___ ___ ___ ___

## 2. Facility / Owner Information

Facility Name: Tyco FTC
Facility ID (FID or PWS): 438005590
License/Permit/Monitoring #:
Original Well Owner: Johnson Controls
Present Well Owner: Johnson Controls
Mailing Address of Present Owner: 2700 Industrial Parkway South
City of Present Owner: Marinette
State: WI
ZIP Code: 54143

## 3. Filled & Sealed Well / Drillhole / Borehole Information

☐ Monitoring Well
☐ Water Well
☑ Borehole / Drillhole

Original Construction Date (mm/dd/yyyy): 07/30/2019
If a Well Construction Report is available, please attach.

Construction Type:
☐ Drilled ☐ Driven (Sandpoint) ☐ Dug
☑ Other (specify): Geoprobe, direct push

Formation Type:
☑ Unconsolidated Formation ☐ Bedrock

Total Well Depth From Ground Surface (ft.): 66.15
Casing Diameter (in.):
Lower Drillhole Diameter (in.): 4 inches
Casing Depth (ft.):

Was well annular space grouted? ☐ Yes ☑ No ☐ Unknown
If yes, to what depth (feet)?
Depth to Water (feet): 5.30 feet

## 4. Pump, Liner, Screen, Casing & Sealing Material

| | Yes | No | N/A |
|---|---|---|---|
| Pump and piping removed? | ☐ | ☐ | ☑ |
| Liner(s) removed? | ☐ | ☐ | ☑ |
| Liner(s) perforated? | ☐ | ☐ | ☑ |
| Screen removed? | ☐ | ☐ | ☑ |
| Casing left in place? | ☐ | ☐ | ☑ |
| Was casing cut off below surface? | ☐ | ☐ | ☑ |
| Did sealing material rise to surface? | ☑ | ☐ | ☐ |
| Did material settle after 24 hours? | ☐ | ☑ | ☐ |
| If yes, was hole retopped? | ☐ | ☐ | ☑ |
| If bentonite chips were used, were they hydrated with water from a known safe source? | ☐ | ☐ | ☑ |

Required Method of Placing Sealing Material
☑ Conductor Pipe-Gravity ☐ Conductor Pipe-Pumped
☐ Screened & Poured (Bentonite Chips) ☐ Other (Explain): _____

Sealing Materials
☐ Neat Cement Grout ☐ Concrete
☐ Sand-Cement (Concrete) Grout ☑ Bentonite Chips

*For Monitoring Wells and Monitoring Well Boreholes Only:*
☑ Bentonite Chips ☐ Bentonite - Cement Grout
☐ Granular Bentonite ☐ Bentonite - Sand Slurry

## 5. Material Used to Fill Well / Drillhole

| Material | From (ft.) | To (ft.) | No. Yards, Sacks Sealant or Volume (circle one) | Mix Ratio or Mud Weight |
|---|---|---|---|---|
| Bentonite | Surface | 66.15 | | |
| | | | | |
| | | | | |

## 6. Comments

HPT-25

## 7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing: Dakota Technologies, Arcadis
License #:
Date of Filling & Sealing or Verification (mm/dd/yyyy): 07/30/2019
Street or Route: 126 N. Jefferson Street, Suite 400
Telephone Number: (414) 276-7742
City: Milwaukee
State: WI
ZIP Code: 53202
Signature of Person Doing Work: Amy Parise
Date Signed: 10/24/2019

**DNR Use Only**
Date Received:
Noted By:
Comments:

State of Wis., Dept. of Natural Resources
dnr.wi.gov

# Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)



**Notice:** Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and chs. NR 141 and 812, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between $10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

☑ **Verification Only of Fill and Seal**

**Route to DNR Bureau:**
☐ Drinking Water ☐ Watershed/Wastewater ☑ Remediation/Redevelopment
☐ Waste Management ☐ Other: _____

## 1. Well Location Information

County: Marinette
WI Unique Well # of Removed Well: ___ ___ ___ ___ ___
Hicap #:

Latitude / Longitude (see instructions): State Plane N, E
465374.39N 2581816.78E
Format Code: ☐ DD ☐ DDM
Method Code: ☐ GPS008 ☐ SCR002 ☑ OTH001

¼ / ¼: ¼:
or Gov't Lot #:
Section:
Township: N
Range: ☐ E ☐ W

Well Street Address: Cleveland Avenue
Well City, Village or Town: Marinette
Well ZIP Code: 54143
Subdivision Name:
Lot #:

Reason for Removal from Service: Temporary Borehole
WI Unique Well # of Replacement Well: ___ ___ ___ ___ ___

## 2. Facility / Owner Information

Facility Name: Tyco FTC
Facility ID (FID or PWS): 438005590
License/Permit/Monitoring #:
Original Well Owner: Johnson Controls
Present Well Owner: Johnson Controls
Mailing Address of Present Owner: 2700 Industrial Parkway South
City of Present Owner: Marinette
State: WI
ZIP Code: 54143

## 3. Filled & Sealed Well / Drillhole / Borehole Information

☐ Monitoring Well
☐ Water Well
☑ Borehole / Drillhole

Original Construction Date (mm/dd/yyyy): 07/17/2019
If a Well Construction Report is available, please attach.

Construction Type:
☐ Drilled ☐ Driven (Sandpoint) ☐ Dug
☑ Other (specify): Geoprobe, direct push

Formation Type:
☑ Unconsolidated Formation ☐ Bedrock

Total Well Depth From Ground Surface (ft.): 52.15
Casing Diameter (in.):
Lower Drillhole Diameter (in.): 4 inches
Casing Depth (ft.):

Was well annular space grouted? ☐ Yes ☑ No ☐ Unknown
If yes, to what depth (feet)?
Depth to Water (feet): 4.60 feet

## 4. Pump, Liner, Screen, Casing & Sealing Material

| | Yes | No | N/A |
|---|---|---|---|
| Pump and piping removed? | ☐ | ☐ | ☑ |
| Liner(s) removed? | ☐ | ☐ | ☑ |
| Liner(s) perforated? | ☐ | ☐ | ☑ |
| Screen removed? | ☐ | ☐ | ☑ |
| Casing left in place? | ☐ | ☐ | ☑ |
| Was casing cut off below surface? | ☐ | ☐ | ☑ |
| Did sealing material rise to surface? | ☑ | ☐ | ☐ |
| Did material settle after 24 hours? | ☐ | ☑ | ☐ |
| If yes, was hole retopped? | ☐ | ☐ | ☑ |
| If bentonite chips were used, were they hydrated with water from a known safe source? | ☐ | ☐ | ☑ |

Required Method of Placing Sealing Material
☑ Conductor Pipe-Gravity ☐ Conductor Pipe-Pumped
☐ Screened & Poured (Bentonite Chips) ☐ Other (Explain): _____

Sealing Materials
☐ Neat Cement Grout ☐ Concrete
☐ Sand-Cement (Concrete) Grout ☑ Bentonite Chips

*For Monitoring Wells and Monitoring Well Boreholes Only:*
☑ Bentonite Chips ☐ Bentonite - Cement Grout
☐ Granular Bentonite ☐ Bentonite - Sand Slurry

## 5. Material Used to Fill Well / Drillhole

| Material | From (ft.) | To (ft.) | No. Yards, Sacks Sealant or Volume (circle one) | Mix Ratio or Mud Weight |
|---|---|---|---|---|
| Bentonite | Surface | 52.15 | | |
| | | | | |
| | | | | |

## 6. Comments

HPT-26

## 7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing: Dakota Technologies, Arcadis
License #:
Date of Filling & Sealing or Verification (mm/dd/yyyy): 07/17/2019
Street or Route: 126 N. Jefferson Street, Suite 400
Telephone Number: (414) 276-7742
City: Milwaukee
State: WI
ZIP Code: 53202
Signature of Person Doing Work: Amy Parise
Date Signed: 10/24/2019

**DNR Use Only**
Date Received:
Noted By:
Comments:

State of Wis., Dept. of Natural Resources
dnr.wi.gov

# Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)



**Notice:** Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and chs. NR 141 and 812, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between $10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

☑ **Verification Only of Fill and Seal**

**Route to DNR Bureau:**
☐ Drinking Water ☐ Watershed/Wastewater ☑ Remediation/Redevelopment
☐ Waste Management ☐ Other: _____

## 1. Well Location Information

County: Marinette
WI Unique Well # of Removed Well: ___ ___ ___ ___ ___
Hicap #:

Latitude / Longitude (see instructions): State Plane N, E
465266.26N 2579985.25E
Format Code: ☐ DD ☐ DDM
Method Code: ☐ GPS008 ☐ SCR002 ☑ OTH001

¼ / ¼: ¼:
or Gov't Lot #:
Section:
Township: N
Range: ☐ E ☐ W

Well Street Address: Cleveland Avenue
Well City, Village or Town: Marinette
Well ZIP Code: 54143
Subdivision Name:
Lot #:

Reason for Removal from Service: Temporary Borehole
WI Unique Well # of Replacement Well: ___ ___ ___ ___ ___

## 2. Facility / Owner Information

Facility Name: Tyco FTC
Facility ID (FID or PWS): 438005590
License/Permit/Monitoring #:
Original Well Owner: Johnson Controls
Present Well Owner: Johnson Controls
Mailing Address of Present Owner: 2700 Industrial Parkway South
City of Present Owner: Marinette
State: WI
ZIP Code: 54143

## 3. Filled & Sealed Well / Drillhole / Borehole Information

☐ Monitoring Well
☐ Water Well
☑ Borehole / Drillhole

Original Construction Date (mm/dd/yyyy): 07/17/2019
If a Well Construction Report is available, please attach.

Construction Type:
☐ Drilled ☐ Driven (Sandpoint) ☐ Dug
☑ Other (specify): Geoprobe, direct push

Formation Type:
☑ Unconsolidated Formation ☐ Bedrock

Total Well Depth From Ground Surface (ft.): 29.25
Casing Diameter (in.):
Lower Drillhole Diameter (in.): 4 inches
Casing Depth (ft.):

Was well annular space grouted? ☐ Yes ☑ No ☐ Unknown
If yes, to what depth (feet)?
Depth to Water (feet)

## 4. Pump, Liner, Screen, Casing & Sealing Material

| | Yes | No | N/A |
|---|---|---|---|
| Pump and piping removed? | ☐ | ☐ | ☑ |
| Liner(s) removed? | ☐ | ☐ | ☑ |
| Liner(s) perforated? | ☐ | ☐ | ☑ |
| Screen removed? | ☐ | ☐ | ☑ |
| Casing left in place? | ☐ | ☐ | ☑ |
| Was casing cut off below surface? | ☐ | ☐ | ☑ |
| Did sealing material rise to surface? | ☑ | ☐ | ☐ |
| Did material settle after 24 hours? | ☐ | ☑ | ☐ |
| If yes, was hole retopped? | ☐ | ☐ | ☑ |
| If bentonite chips were used, were they hydrated with water from a known safe source? | ☐ | ☐ | ☑ |

Required Method of Placing Sealing Material
☑ Conductor Pipe-Gravity ☐ Conductor Pipe-Pumped
☐ Screened & Poured (Bentonite Chips) ☐ Other (Explain): _____

Sealing Materials
☐ Neat Cement Grout ☐ Concrete
☐ Sand-Cement (Concrete) Grout ☑ Bentonite Chips

*For Monitoring Wells and Monitoring Well Boreholes Only:*
☑ Bentonite Chips ☐ Bentonite - Cement Grout
☐ Granular Bentonite ☐ Bentonite - Sand Slurry

## 5. Material Used to Fill Well / Drillhole

| Material | From (ft.) | To (ft.) | No. Yards, Sacks Sealant or Volume (circle one) | Mix Ratio or Mud Weight |
|---|---|---|---|---|
| Bentonite | Surface | 29.25 | | |
| | | | | |
| | | | | |

## 6. Comments

HPT-27

## 7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing: Dakota Technologies, Arcadis
License #:
Date of Filling & Sealing or Verification (mm/dd/yyyy): 07/17/2019
Street or Route: 126 N. Jefferson Street, Suite 400
Telephone Number: (414) 276-7742
City: Milwaukee
State: WI
ZIP Code: 53202
Signature of Person Doing Work: Amy Parise
Date Signed: 10/24/2019

**DNR Use Only**
Date Received:
Noted By:
Comments:

State of Wis., Dept. of Natural Resources
dnr.wi.gov

# Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)



**Notice:** Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and chs. NR 141 and 812, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between $10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

☑ **Verification Only of Fill and Seal**

**Route to DNR Bureau:**
☐ Drinking Water ☐ Watershed/Wastewater ☑ Remediation/Redevelopment
☐ Waste Management ☐ Other: _____

## 1. Well Location Information

County: Marinette
WI Unique Well # of Removed Well: ___ ___ ___ ___ ___
Hicap #:

Latitude / Longitude (see instructions): State Plane N, E
465117.67N 2577260.64E
Format Code: ☐ DD ☐ DDM
Method Code: ☐ GPS008 ☐ SCR002 ☑ OTH001

¼ / ¼: ¼:
or Gov't Lot #:
Section:
Township: N
Range: ☐ E ☐ W

Well Street Address: Cleveland Avenue
Well City, Village or Town: Marinette
Well ZIP Code: 54143
Subdivision Name:
Lot #:

Reason for Removal from Service: Temporary Borehole
WI Unique Well # of Replacement Well: ___ ___ ___ ___ ___

## 2. Facility / Owner Information

Facility Name: Tyco FTC
Facility ID (FID or PWS): 438005590
License/Permit/Monitoring #:

Original Well Owner: Johnson Controls
Present Well Owner: Johnson Controls
Mailing Address of Present Owner: 2700 Industrial Parkway South
City of Present Owner: Marinette
State: WI
ZIP Code: 54143

## 3. Filled & Sealed Well / Drillhole / Borehole Information

☐ Monitoring Well
☐ Water Well
☑ Borehole / Drillhole

Original Construction Date (mm/dd/yyyy): 07/17/2019
If a Well Construction Report is available, please attach.

Construction Type:
☐ Drilled ☐ Driven (Sandpoint) ☐ Dug
☑ Other (specify): Geoprobe, direct push

Formation Type:
☑ Unconsolidated Formation ☐ Bedrock

Total Well Depth From Ground Surface (ft.): 25.95
Casing Diameter (in.):
Lower Drillhole Diameter (in.): 4 inches
Casing Depth (ft.):

Was well annular space grouted? ☐ Yes ☑ No ☐ Unknown
If yes, to what depth (feet)?
Depth to Water (feet): 2.90

## 4. Pump, Liner, Screen, Casing & Sealing Material

| | Yes | No | N/A |
|---|---|---|---|
| Pump and piping removed? | ☐ | ☐ | ☑ |
| Liner(s) removed? | ☐ | ☐ | ☑ |
| Liner(s) perforated? | ☐ | ☐ | ☑ |
| Screen removed? | ☐ | ☐ | ☑ |
| Casing left in place? | ☐ | ☐ | ☑ |
| Was casing cut off below surface? | ☐ | ☐ | ☑ |
| Did sealing material rise to surface? | ☑ | ☐ | ☐ |
| Did material settle after 24 hours? | ☐ | ☑ | ☐ |
| If yes, was hole retopped? | ☐ | ☐ | ☑ |
| If bentonite chips were used, were they hydrated with water from a known safe source? | ☐ | ☐ | ☑ |

Required Method of Placing Sealing Material
☑ Conductor Pipe-Gravity ☐ Conductor Pipe-Pumped
☐ Screened & Poured (Bentonite Chips) ☐ Other (Explain): _____

Sealing Materials
☐ Neat Cement Grout ☐ Concrete
☐ Sand-Cement (Concrete) Grout ☑ Bentonite Chips

*For Monitoring Wells and Monitoring Well Boreholes Only:*
☑ Bentonite Chips ☐ Bentonite - Cement Grout
☐ Granular Bentonite ☐ Bentonite - Sand Slurry

## 5. Material Used to Fill Well / Drillhole

| | From (ft.) | To (ft.) | No. Yards, Sacks Sealant or Volume (circle one) | Mix Ratio or Mud Weight |
|---|---|---|---|---|
| Bentonite | Surface | 25.95 | | |
| | | | | |
| | | | | |

## 6. Comments

HPT-28

## 7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing: Dakota Technologies, Arcadis
License #:
Date of Filling & Sealing or Verification (mm/dd/yyyy): 07/17/2019
Street or Route: 126 N. Jefferson Street, Suite 400
Telephone Number: (414) 276-7742
City: Milwaukee
State: WI
ZIP Code: 53202
Signature of Person Doing Work: Amy Parise
Date Signed: 10/24/2019

**DNR Use Only**
Date Received:
Noted By:
Comments:

State of Wis., Dept. of Natural Resources
dnr.wi.gov

# Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)



**Notice:** Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and chs. NR 141 and 812, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between $10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

☑ **Verification Only of Fill and Seal**

**Route to DNR Bureau:**
☐ Drinking Water ☐ Watershed/Wastewater ☑ Remediation/Redevelopment
☐ Waste Management ☐ Other: _____

## 1. Well Location Information

County: Marinette
WI Unique Well # of Removed Well: ___ ___ ___ ___ ___
Hicap #:

Latitude / Longitude (see instructions): State Plane N, E
462490.51N 2582369.49E
Format Code: ☐ DD ☐ DDM
Method Code: ☐ GPS008 ☐ SCR002 ☑ OTH001

¼ / ¼: ¼ or Gov't Lot #:
Section:
Township: N
Range: ☐ E ☐ W

Well Street Address: Todd Street
Well City, Village or Town: Marinette
Well ZIP Code: 54143
Subdivision Name:
Lot #:

Reason for Removal from Service: Temporary Borehole
WI Unique Well # of Replacement Well: ___ ___ ___ ___ ___

## 2. Facility / Owner Information

Facility Name: Tyco FTC
Facility ID (FID or PWS): 438005590
License/Permit/Monitoring #:
Original Well Owner: Johnson Controls
Present Well Owner: Johnson Controls
Mailing Address of Present Owner: 2700 Industrial Parkway South
City of Present Owner: Marinette
State: WI
ZIP Code: 54143

## 3. Filled & Sealed Well / Drillhole / Borehole Information

☐ Monitoring Well
☐ Water Well
☑ Borehole / Drillhole

Original Construction Date (mm/dd/yyyy): 07/18/2019
If a Well Construction Report is available, please attach.

Construction Type:
☐ Drilled ☐ Driven (Sandpoint) ☐ Dug
☑ Other (specify): Geoprobe, direct push

Formation Type:
☑ Unconsolidated Formation ☐ Bedrock

Total Well Depth From Ground Surface (ft.): 41.10
Casing Diameter (in.):
Lower Drillhole Diameter (in.): 4 inches
Casing Depth (ft.):

Was well annular space grouted? ☐ Yes ☑ No ☐ Unknown
If yes, to what depth (feet)?
Depth to Water (feet): 3.30

## 4. Pump, Liner, Screen, Casing & Sealing Material

| | Yes | No | N/A |
|---|---|---|---|
| Pump and piping removed? | ☐ | ☐ | ☑ |
| Liner(s) removed? | ☐ | ☐ | ☑ |
| Liner(s) perforated? | ☐ | ☐ | ☑ |
| Screen removed? | ☐ | ☐ | ☑ |
| Casing left in place? | ☐ | ☐ | ☑ |
| Was casing cut off below surface? | ☐ | ☐ | ☑ |
| Did sealing material rise to surface? | ☑ | ☐ | ☐ |
| Did material settle after 24 hours? | ☐ | ☑ | ☐ |
| If yes, was hole retopped? | ☐ | ☐ | ☑ |
| If bentonite chips were used, were they hydrated with water from a known safe source? | ☐ | ☐ | ☑ |

Required Method of Placing Sealing Material
☑ Conductor Pipe-Gravity ☐ Conductor Pipe-Pumped
☐ Screened & Poured (Bentonite Chips) ☐ Other (Explain): _____

Sealing Materials
☐ Neat Cement Grout ☐ Concrete
☐ Sand-Cement (Concrete) Grout ☑ Bentonite Chips

*For Monitoring Wells and Monitoring Well Boreholes Only:*
☑ Bentonite Chips ☐ Bentonite - Cement Grout
☐ Granular Bentonite ☐ Bentonite - Sand Slurry

## 5. Material Used to Fill Well / Drillhole

| Material | From (ft.) | To (ft.) | No. Yards, Sacks Sealant or Volume (circle one) | Mix Ratio or Mud Weight |
|---|---|---|---|---|
| Bentonite | Surface | 41.10 | | |
| | | | | |
| | | | | |

## 6. Comments

HPT-29

## 7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing: Dakota Technologies, Arcadis
License #:
Date of Filling & Sealing or Verification (mm/dd/yyyy): 07/18/2019
Street or Route: 126 N. Jefferson Street, Suite 400
Telephone Number: (414) 276-7742
City: Milwaukee
State: WI
ZIP Code: 53202
Signature of Person Doing Work: Amy Parise
Date Signed: 10/24/2019

**DNR Use Only**
Date Received:
Noted By:
Comments:

State of Wis., Dept. of Natural Resources
dnr.wi.gov

# Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)



**Notice:** Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and chs. NR 141 and 812, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between $10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

☑ **Verification Only of Fill and Seal**

**Route to DNR Bureau:**
☐ Drinking Water ☐ Watershed/Wastewater ☑ Remediation/Redevelopment
☐ Waste Management ☐ Other: _____

## 1. Well Location Information

County: Marinette
WI Unique Well # of Removed Well: ___ ___ ___ ___ ___
Hicap #:

Latitude / Longitude (see instructions): State Plane N, E
461913.56N 2583989.70E
Format Code: ☐ DD ☐ DDM
Method Code: ☐ GPS008 ☐ SCR002 ☑ OTH001

¼ / ¼: ¼:
or Gov't Lot #:
Section:
Township: N
Range: ☐ E ☐ W

Well Street Address: Pine Beach Road
Well City, Village or Town: Marinette
Well ZIP Code: 54143
Subdivision Name:
Lot #:

Reason for Removal from Service: Temporary Borehole
WI Unique Well # of Replacement Well: ___ ___ ___ ___ ___

## 2. Facility / Owner Information

Facility Name: Tyco FTC
Facility ID (FID or PWS): 438005590
License/Permit/Monitoring #:
Original Well Owner: Johnson Controls
Present Well Owner: Johnson Controls
Mailing Address of Present Owner: 2700 Industrial Parkway South
City of Present Owner: Marinette
State: WI
ZIP Code: 54143

## 3. Filled & Sealed Well / Drillhole / Borehole Information

☐ Monitoring Well
☐ Water Well
☑ Borehole / Drillhole

Original Construction Date (mm/dd/yyyy): 07/30/2019
If a Well Construction Report is available, please attach.

Construction Type:
☐ Drilled ☐ Driven (Sandpoint) ☐ Dug
☑ Other (specify): Geoprobe, direct push

Formation Type:
☑ Unconsolidated Formation ☐ Bedrock

Total Well Depth From Ground Surface (ft.): 29.60
Casing Diameter (in.):
Lower Drillhole Diameter (in.): 4 inches
Casing Depth (ft.): 2.50

Was well annular space grouted? ☐ Yes ☑ No ☐ Unknown
If yes, to what depth (feet)?:
Depth to Water (feet): 2.50

## 4. Pump, Liner, Screen, Casing & Sealing Material

| | Yes | No | N/A |
|---|---|---|---|
| Pump and piping removed? | ☐ | ☐ | ☑ |
| Liner(s) removed? | ☐ | ☐ | ☑ |
| Liner(s) perforated? | ☐ | ☐ | ☑ |
| Screen removed? | ☐ | ☐ | ☑ |
| Casing left in place? | ☐ | ☐ | ☑ |
| Was casing cut off below surface? | ☐ | ☐ | ☑ |
| Did sealing material rise to surface? | ☑ | ☐ | ☐ |
| Did material settle after 24 hours? | ☐ | ☑ | ☐ |
| If yes, was hole retopped? | ☐ | ☐ | ☑ |
| If bentonite chips were used, were they hydrated with water from a known safe source? | ☐ | ☐ | ☑ |

Required Method of Placing Sealing Material
☑ Conductor Pipe-Gravity ☐ Conductor Pipe-Pumped
☐ Screened & Poured (Bentonite Chips) ☐ Other (Explain): _____

Sealing Materials
☐ Neat Cement Grout ☐ Concrete
☐ Sand-Cement (Concrete) Grout ☑ Bentonite Chips

*For Monitoring Wells and Monitoring Well Boreholes Only:*
☑ Bentonite Chips ☐ Bentonite - Cement Grout
☐ Granular Bentonite ☐ Bentonite - Sand Slurry

## 5. Material Used to Fill Well / Drillhole

| | From (ft.) | To (ft.) | No. Yards, Sacks Sealant or Volume (circle one) | Mix Ratio or Mud Weight |
|---|---|---|---|---|
| Bentonite | Surface | 29.60 | | |
| | | | | |
| | | | | |

## 6. Comments

HPT-30

## 7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing: Dakota Technologies, Arcadis
License #:
Date of Filling & Sealing or Verification (mm/dd/yyyy): 07/30/2019
Street or Route: 126 N. Jefferson Street, Suite 400
Telephone Number: (414) 276-7742
City: Milwaukee
State: WI
ZIP Code: 53202
Signature of Person Doing Work: Amy Parise
Date Signed: 10/24/2019

**DNR Use Only**
Date Received:
Noted By:
Comments:

State of Wis., Dept. of Natural Resources
dnr.wi.gov

# Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)



**Notice:** Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and chs. NR 141 and 812, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between $10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

☑ **Verification Only of Fill and Seal**

**Route to DNR Bureau:**
☐ Drinking Water ☐ Watershed/Wastewater ☑ Remediation/Redevelopment
☐ Waste Management ☐ Other: _____

## 1. Well Location Information

County: Marinette
WI Unique Well # of Removed Well: ___ ___ ___ ___ ___
Hicap #:

Latitude / Longitude (see instructions): State Plane N, E
460132.07N 2582884.92E
Format Code: ☐ DD ☐ DDM
Method Code: ☐ GPS008 ☐ SCR002 ☑ OTH001

¼ / ¼: ¼ or Gov't Lot #:
Section:
Township: N
Range: ☐ E ☐ W

Well Street Address: University Drive
Well City, Village or Town: Marinette
Well ZIP Code: 54143
Subdivision Name:
Lot #:

Reason for Removal from Service: Temporary Borehole
WI Unique Well # of Replacement Well: ___ ___ ___ ___ ___

## 2. Facility / Owner Information

Facility Name: Tyco FTC
Facility ID (FID or PWS): 438005590
License/Permit/Monitoring #:
Original Well Owner: Johnson Controls
Present Well Owner: Johnson Controls
Mailing Address of Present Owner: 2700 Industrial Parkway South
City of Present Owner: Marinette
State: WI
ZIP Code: 54143

## 3. Filled & Sealed Well / Drillhole / Borehole Information

☐ Monitoring Well
☐ Water Well
☑ Borehole / Drillhole

Original Construction Date (mm/dd/yyyy): 07/18/2019
If a Well Construction Report is available, please attach.

Construction Type:
☐ Drilled ☐ Driven (Sandpoint) ☐ Dug
☑ Other (specify): Geoprobe, direct push

Formation Type:
☑ Unconsolidated Formation ☐ Bedrock

Total Well Depth From Ground Surface (ft.): 52.15
Casing Diameter (in.):
Lower Drillhole Diameter (in.): 4 inches
Casing Depth (ft.): 2.50

Was well annular space grouted? ☐ Yes ☑ No ☐ Unknown
If yes, to what depth (feet)?
Depth to Water (feet): 0.90

## 4. Pump, Liner, Screen, Casing & Sealing Material

| | Yes | No | N/A |
|---|---|---|---|
| Pump and piping removed? | ☐ | ☐ | ☑ |
| Liner(s) removed? | ☐ | ☐ | ☑ |
| Liner(s) perforated? | ☐ | ☐ | ☑ |
| Screen removed? | ☐ | ☐ | ☑ |
| Casing left in place? | ☐ | ☐ | ☑ |
| Was casing cut off below surface? | ☐ | ☐ | ☑ |
| Did sealing material rise to surface? | ☑ | ☐ | ☐ |
| Did material settle after 24 hours? | ☐ | ☑ | ☐ |
| If yes, was hole retopped? | ☐ | ☐ | ☑ |
| If bentonite chips were used, were they hydrated with water from a known safe source? | ☐ | ☐ | ☑ |

Required Method of Placing Sealing Material
☑ Conductor Pipe-Gravity ☐ Conductor Pipe-Pumped
☐ Screened & Poured (Bentonite Chips) ☐ Other (Explain): _____

Sealing Materials
☐ Neat Cement Grout ☐ Concrete
☐ Sand-Cement (Concrete) Grout ☑ Bentonite Chips

*For Monitoring Wells and Monitoring Well Boreholes Only:*
☑ Bentonite Chips ☐ Bentonite - Cement Grout
☐ Granular Bentonite ☐ Bentonite - Sand Slurry

## 5. Material Used to Fill Well / Drillhole

| | From (ft.) | To (ft.) | No. Yards, Sacks Sealant or Volume (circle one) | Mix Ratio or Mud Weight |
|---|---|---|---|---|
| Bentonite | Surface | 52.15 | | |
| | | | | |
| | | | | |

## 6. Comments

HPT-31

## 7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing: Dakota Technologies, Arcadis
License #:
Date of Filling & Sealing or Verification (mm/dd/yyyy): 07/18/2019
Street or Route: 126 N. Jefferson Street, Suite 400
Telephone Number: (414) 276-7742
City: Milwaukee
State: WI
ZIP Code: 53202
Signature of Person Doing Work: Amy Parise
Date Signed: 10/24/2019

**DNR Use Only**
Date Received:
Noted By:
Comments:

State of Wis., Dept. of Natural Resources
dnr.wi.gov

# Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)



**Notice:** Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and chs. NR 141 and 812, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between $10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

☑ **Verification Only of Fill and Seal**

**Route to DNR Bureau:**
☐ Drinking Water ☐ Watershed/Wastewater ☑ Remediation/Redevelopment
☐ Waste Management ☐ Other: _____

## 1. Well Location Information

County: Marinette
WI Unique Well # of Removed Well: ___ ___ ___ ___ ___
Hicap #:

Latitude / Longitude (see instructions): State Plane N, E
457308.86N 2583553.60E
Format Code: ☐ DD ☐ DDM
Method Code: ☐ GPS008 ☐ SCR002 ☑ OTH001

¼ / ¼: ¼:
or Gov't Lot #:
Section:
Township: N
Range: ☐ E ☐ W

Well Street Address: Shore Drive
Well City, Village or Town: Marinette
Well ZIP Code: 54143
Subdivision Name:
Lot #:

Reason for Removal from Service: Temporary Borehole
WI Unique Well # of Replacement Well: ___ ___ ___ ___ ___

## 2. Facility / Owner Information

Facility Name: Tyco FTC
Facility ID (FID or PWS): 438005590
License/Permit/Monitoring #:
Original Well Owner: Johnson Controls
Present Well Owner: Johnson Controls
Mailing Address of Present Owner: 2700 Industrial Parkway South
City of Present Owner: Marinette
State: WI
ZIP Code: 54143

## 3. Filled & Sealed Well / Drillhole / Borehole Information

☐ Monitoring Well
☐ Water Well
☑ Borehole / Drillhole

Original Construction Date (mm/dd/yyyy): 07/19/2019
If a Well Construction Report is available, please attach.

Construction Type:
☐ Drilled ☐ Driven (Sandpoint) ☐ Dug
☑ Other (specify): Geoprobe, direct push

Formation Type:
☑ Unconsolidated Formation ☐ Bedrock

Total Well Depth From Ground Surface (ft.): 27.50
Casing Diameter (in.):
Lower Drillhole Diameter (in.): 4 inches
Casing Depth (ft.): 6.20 feet

Was well annular space grouted? ☐ Yes ☑ No ☐ Unknown
If yes, to what depth (feet)?
Depth to Water (feet): 6.20 feet

## 4. Pump, Liner, Screen, Casing & Sealing Material

| | Yes | No | N/A |
|---|---|---|---|
| Pump and piping removed? | ☐ | ☐ | ☑ |
| Liner(s) removed? | ☐ | ☐ | ☑ |
| Liner(s) perforated? | ☐ | ☐ | ☑ |
| Screen removed? | ☐ | ☐ | ☑ |
| Casing left in place? | ☐ | ☐ | ☑ |
| Was casing cut off below surface? | ☐ | ☐ | ☑ |
| Did sealing material rise to surface? | ☑ | ☐ | ☐ |
| Did material settle after 24 hours? | ☐ | ☑ | ☐ |
| If yes, was hole retopped? | ☐ | ☐ | ☑ |
| If bentonite chips were used, were they hydrated with water from a known safe source? | ☐ | ☐ | ☑ |

Required Method of Placing Sealing Material
☑ Conductor Pipe-Gravity ☐ Conductor Pipe-Pumped
☐ Screened & Poured (Bentonite Chips) ☐ Other (Explain): _____

Sealing Materials
☐ Neat Cement Grout ☐ Concrete
☐ Sand-Cement (Concrete) Grout ☑ Bentonite Chips

*For Monitoring Wells and Monitoring Well Boreholes Only:*
☑ Bentonite Chips ☐ Bentonite - Cement Grout
☐ Granular Bentonite ☐ Bentonite - Sand Slurry

## 5. Material Used to Fill Well / Drillhole

| | From (ft.) | To (ft.) | No. Yards, Sacks Sealant or Volume (circle one) | Mix Ratio or Mud Weight |
|---|---|---|---|---|
| Bentonite | Surface | 27.50 | | |
| | | | | |
| | | | | |

## 6. Comments

HPT-32

## 7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing: Dakota Technologies, Arcadis
License #:
Date of Filling & Sealing or Verification (mm/dd/yyyy): 07/19/2019
Street or Route: 126 N. Jefferson Street, Suite 400
Telephone Number: (414) 276-7742
City: Milwaukee
State: WI
ZIP Code: 53202
Signature of Person Doing Work: Amy Parise
Date Signed: 10/24/2019

**DNR Use Only**
Date Received:
Noted By:
Comments:

State of Wis., Dept. of Natural Resources
dnr.wi.gov

# Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)



**Notice:** Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and chs. NR 141 and 812, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between $10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

☑ **Verification Only of Fill and Seal**

**Route to DNR Bureau:**
☐ Drinking Water ☐ Watershed/Wastewater ☑ Remediation/Redevelopment
☐ Waste Management ☐ Other: _____

## 1. Well Location Information

County: Marinette
WI Unique Well # of Removed Well: ___ ___ ___ ___ ___
Hicap #:

Latitude / Longitude (see instructions): State Plane N, E
455696.67N 2583273.10E N W
Format Code: ☐ DD ☐ DDM
Method Code: ☐ GPS008 ☐ SCR002 ☑ OTH001

¼ / ¼: ¼ or Gov't Lot #: Section: Township: N Range: ☐ E ☐ W

Well Street Address: Shore Drive
Well City, Village or Town: Marinette
Well ZIP Code: 54143
Subdivision Name:
Lot #:

Reason for Removal from Service: Temporary Borehole
WI Unique Well # of Replacement Well: ___ ___ ___ ___ ___

## 2. Facility / Owner Information

Facility Name: Tyco FTC
Facility ID (FID or PWS): 438005590
License/Permit/Monitoring #:
Original Well Owner: Johnson Controls
Present Well Owner: Johnson Controls
Mailing Address of Present Owner: 2700 Industrial Parkway South
City of Present Owner: Marinette State: WI ZIP Code: 54143

## 3. Filled & Sealed Well / Drillhole / Borehole Information

☐ Monitoring Well
☐ Water Well
☑ Borehole / Drillhole

Original Construction Date (mm/dd/yyyy): 07/18/2019
If a Well Construction Report is available, please attach.

Construction Type:
☐ Drilled ☐ Driven (Sandpoint) ☐ Dug
☑ Other (specify): Geoprobe, direct push

Formation Type:
☑ Unconsolidated Formation ☐ Bedrock

Total Well Depth From Ground Surface (ft.): 30.95
Casing Diameter (in.):
Lower Drillhole Diameter (in.): 4 inches
Casing Depth (ft.):

Was well annular space grouted? ☐ Yes ☑ No ☐ Unknown
If yes, to what depth (feet)?
Depth to Water (feet): 0.90

## 4. Pump, Liner, Screen, Casing & Sealing Material

| | Yes | No | N/A |
|---|---|---|---|
| Pump and piping removed? | ☐ | ☐ | ☑ |
| Liner(s) removed? | ☐ | ☐ | ☑ |
| Liner(s) perforated? | ☐ | ☐ | ☑ |
| Screen removed? | ☐ | ☐ | ☑ |
| Casing left in place? | ☐ | ☐ | ☑ |
| Was casing cut off below surface? | ☐ | ☐ | ☑ |
| Did sealing material rise to surface? | ☑ | ☐ | ☐ |
| Did material settle after 24 hours? | ☐ | ☑ | ☐ |
| If yes, was hole retopped? | ☐ | ☐ | ☑ |
| If bentonite chips were used, were they hydrated with water from a known safe source? | ☐ | ☐ | ☑ |

Required Method of Placing Sealing Material
☑ Conductor Pipe-Gravity ☐ Conductor Pipe-Pumped
☐ Screened & Poured (Bentonite Chips) ☐ Other (Explain): _____

Sealing Materials
☐ Neat Cement Grout ☐ Concrete
☐ Sand-Cement (Concrete) Grout ☑ Bentonite Chips

*For Monitoring Wells and Monitoring Well Boreholes Only:*
☑ Bentonite Chips ☐ Bentonite - Cement Grout
☐ Granular Bentonite ☐ Bentonite - Sand Slurry

## 5. Material Used to Fill Well / Drillhole

| | From (ft.) | To (ft.) | No. Yards, Sacks Sealant or Volume (circle one) | Mix Ratio or Mud Weight |
|---|---|---|---|---|
| Bentonite | Surface | 30.95 | | |
| | | | | |
| | | | | |

## 6. Comments

HPT-33

## 7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing: Dakota Technologies, Arcadis
License #:
Date of Filling & Sealing or Verification (mm/dd/yyyy): 07/18/2019
Street or Route: 126 N. Jefferson Street, Suite 400
Telephone Number: (414) 276-7742
City: Milwaukee State: WI ZIP Code: 53202
Signature of Person Doing Work: Amy Parise
Date Signed: 10/24/2019

**DNR Use Only**
Date Received:
Noted By:
Comments:

State of Wis., Dept. of Natural Resources
dnr.wi.gov

# Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)



**Notice:** Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and chs. NR 141 and 812, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between $10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

☑ **Verification Only of Fill and Seal**

**Route to DNR Bureau:**
☐ Drinking Water ☐ Watershed/Wastewater ☑ Remediation/Redevelopment
☐ Waste Management ☐ Other: _____

## 1. Well Location Information

County: Marinette
WI Unique Well # of Removed Well: ___ ___ ___ ___ ___
Hicap #:

Latitude / Longitude (see instructions): State Plane N, E
N: 454735.98N
W: 2580193.83E
Format Code: ☐ DD ☐ DDM
Method Code: ☐ GPS008 ☐ SCR002 ☑ OTH001

¼ / ¼: ¼:
or Gov't Lot #:
Section:
Township: N
Range: ☐ E ☐ W

Well Street Address: Rader Road
Well City, Village or Town: Marinette
Well ZIP Code: 54143
Subdivision Name:
Lot #:

Reason for Removal from Service: Temporary Borehole
WI Unique Well # of Replacement Well: ___ ___ ___ ___ ___

## 2. Facility / Owner Information

Facility Name: Tyco FTC
Facility ID (FID or PWS): 438005590
License/Permit/Monitoring #:
Original Well Owner: Johnson Controls
Present Well Owner: Johnson Controls
Mailing Address of Present Owner: 2700 Industrial Parkway South
City of Present Owner: Marinette
State: WI
ZIP Code: 54143

## 3. Filled & Sealed Well / Drillhole / Borehole Information

☐ Monitoring Well
☐ Water Well
☑ Borehole / Drillhole

Original Construction Date (mm/dd/yyyy): 07/19/2019
If a Well Construction Report is available, please attach.

Construction Type:
☐ Drilled ☐ Driven (Sandpoint) ☐ Dug
☑ Other (specify): Geoprobe, direct push

Formation Type:
☑ Unconsolidated Formation ☐ Bedrock

Total Well Depth From Ground Surface (ft.): 45.50
Casing Diameter (in.):
Lower Drillhole Diameter (in.): 4 inches
Casing Depth (ft.):

Was well annular space grouted? ☐ Yes ☑ No ☐ Unknown
If yes, to what depth (feet)?
Depth to Water (feet): 1.60

## 4. Pump, Liner, Screen, Casing & Sealing Material

| | Yes | No | N/A |
|---|---|---|---|
| Pump and piping removed? | ☐ | ☐ | ☑ |
| Liner(s) removed? | ☐ | ☐ | ☑ |
| Liner(s) perforated? | ☐ | ☐ | ☑ |
| Screen removed? | ☐ | ☐ | ☑ |
| Casing left in place? | ☐ | ☐ | ☑ |
| Was casing cut off below surface? | ☐ | ☐ | ☑ |
| Did sealing material rise to surface? | ☑ | ☐ | ☐ |
| Did material settle after 24 hours? | ☐ | ☑ | ☐ |
| If yes, was hole retopped? | ☐ | ☐ | ☑ |
| If bentonite chips were used, were they hydrated with water from a known safe source? | ☐ | ☐ | ☑ |

Required Method of Placing Sealing Material
☑ Conductor Pipe-Gravity ☐ Conductor Pipe-Pumped
☐ Screened & Poured (Bentonite Chips) ☐ Other (Explain): _____

Sealing Materials
☐ Neat Cement Grout ☐ Concrete
☐ Sand-Cement (Concrete) Grout ☑ Bentonite Chips

*For Monitoring Wells and Monitoring Well Boreholes Only:*
☑ Bentonite Chips ☐ Bentonite - Cement Grout
☐ Granular Bentonite ☐ Bentonite - Sand Slurry

## 5. Material Used to Fill Well / Drillhole

| | From (ft.) | To (ft.) | No. Yards, Sacks Sealant or Volume (circle one) | Mix Ratio or Mud Weight |
|---|---|---|---|---|
| Bentonite | Surface | 45.50 | | |
| | | | | |
| | | | | |

## 6. Comments

HPT-34

## 7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing: Dakota Technologies, Arcadis
License #:
Date of Filling & Sealing or Verification (mm/dd/yyyy): 07/19/2019
Street or Route: 126 N. Jefferson Street, Suite 400
Telephone Number: (414) 276-7742
City: Milwaukee
State: WI
ZIP Code: 53202
Signature of Person Doing Work: Amy Parise
Date Signed: 10/24/2019

**DNR Use Only**
Date Received:
Noted By:
Comments:

State of Wis., Dept. of Natural Resources
dnr.wi.gov

# Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)



**Notice:** Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and chs. NR 141 and 812, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between $10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

☑ **Verification Only of Fill and Seal**

**Route to DNR Bureau:**
☐ Drinking Water ☐ Watershed/Wastewater ☑ Remediation/Redevelopment
☐ Waste Management ☐ Other: _____

## 1. Well Location Information

County: Marinette
WI Unique Well # of Removed Well: ___ ___ ___ ___ ___
Hicap #:

Latitude / Longitude (see instructions): State Plane N, E
454680.34N 2578633.46E
Format Code: ☐ DD ☐ DDM
Method Code: ☐ GPS008 ☐ SCR002 ☑ OTH001

¼ / ¼: ¼ or Gov't Lot #:
Section:
Township: N
Range: ☐ E ☐ W

Well Street Address: Rader Road
Well City, Village or Town: Marinette
Well ZIP Code: 54143
Subdivision Name:
Lot #:

Reason for Removal from Service: Temporary Borehole
WI Unique Well # of Replacement Well: ___ ___ ___ ___ ___

## 2. Facility / Owner Information

Facility Name: Tyco FTC
Facility ID (FID or PWS): 438005590
License/Permit/Monitoring #:
Original Well Owner: Johnson Controls
Present Well Owner: Johnson Controls
Mailing Address of Present Owner: 2700 Industrial Parkway South
City of Present Owner: Marinette
State: WI
ZIP Code: 54143

## 3. Filled & Sealed Well / Drillhole / Borehole Information

☐ Monitoring Well
☐ Water Well
☑ Borehole / Drillhole

Original Construction Date (mm/dd/yyyy): 07/30/2019
If a Well Construction Report is available, please attach.

Construction Type:
☐ Drilled ☐ Driven (Sandpoint) ☐ Dug
☑ Other (specify): Geoprobe, direct push

Formation Type:
☑ Unconsolidated Formation ☐ Bedrock

Total Well Depth From Ground Surface (ft.): 55.85
Casing Diameter (in.):
Lower Drillhole Diameter (in.): 4 inches
Casing Depth (ft.):

Was well annular space grouted? ☐ Yes ☑ No ☐ Unknown
If yes, to what depth (feet)?
Depth to Water (feet)

## 4. Pump, Liner, Screen, Casing & Sealing Material

| | Yes | No | N/A |
|---|---|---|---|
| Pump and piping removed? | ☐ | ☐ | ☑ |
| Liner(s) removed? | ☐ | ☐ | ☑ |
| Liner(s) perforated? | ☐ | ☐ | ☑ |
| Screen removed? | ☐ | ☐ | ☑ |
| Casing left in place? | ☐ | ☐ | ☑ |
| Was casing cut off below surface? | ☐ | ☐ | ☑ |
| Did sealing material rise to surface? | ☑ | ☐ | ☐ |
| Did material settle after 24 hours? | ☐ | ☑ | ☐ |
| If yes, was hole retopped? | ☐ | ☐ | ☑ |
| If bentonite chips were used, were they hydrated with water from a known safe source? | ☐ | ☐ | ☑ |

Required Method of Placing Sealing Material
☑ Conductor Pipe-Gravity ☐ Conductor Pipe-Pumped
☐ Screened & Poured (Bentonite Chips) ☐ Other (Explain): _____

Sealing Materials
☐ Neat Cement Grout ☐ Concrete
☐ Sand-Cement (Concrete) Grout ☑ Bentonite Chips

*For Monitoring Wells and Monitoring Well Boreholes Only:*
☑ Bentonite Chips ☐ Bentonite - Cement Grout
☐ Granular Bentonite ☐ Bentonite - Sand Slurry

## 5. Material Used to Fill Well / Drillhole

| Material | From (ft.) | To (ft.) | No. Yards, Sacks Sealant or Volume (circle one) | Mix Ratio or Mud Weight |
|---|---|---|---|---|
| Bentonite | Surface | 55.85 | | |
| | | | | |
| | | | | |

## 6. Comments

HPT-35

## 7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing: Dakota Technologies, Arcadis
License #:
Date of Filling & Sealing or Verification (mm/dd/yyyy): 07/30/2019
Street or Route: 126 N. Jefferson Street, Suite 400
Telephone Number: (414) 276-7742
City: Milwaukee
State: WI
ZIP Code: 53202
Signature of Person Doing Work: Amy Parise
Date Signed: 10/24/2019

**DNR Use Only**
Date Received:
Noted By:
Comments:

State of Wis., Dept. of Natural Resources
dnr.wi.gov

# Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)



**Notice:** Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and chs. NR 141 and 812, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between $10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

☑ **Verification Only of Fill and Seal**

**Route to DNR Bureau:**
☐ Drinking Water ☐ Watershed/Wastewater ☑ Remediation/Redevelopment
☐ Waste Management ☐ Other: _____

## 1. Well Location Information

County: Marinette
WI Unique Well # of Removed Well: ___ ___ ___ ___ ___
Hicap #:

Latitude / Longitude (see instructions): State Plane N, E
458261.78N 2580831.22E
Format Code: ☐ DD ☐ DDM
Method Code: ☐ GPS008 ☐ SCR002 ☑ OTH001

¼ / ¼: ¼:
or Gov't Lot #:
Section:
Township: N
Range: ☐ E ☐ W

Well Street Address: Green Gable Road
Well City, Village or Town: Marinette
Well ZIP Code: 54143
Subdivision Name:
Lot #:

Reason for Removal from Service: Temporary Borehole
WI Unique Well # of Replacement Well: ___ ___ ___ ___ ___

## 2. Facility / Owner Information

Facility Name: Tyco FTC
Facility ID (FID or PWS): 438005590
License/Permit/Monitoring #:
Original Well Owner: Johnson Controls
Present Well Owner: Johnson Controls
Mailing Address of Present Owner: 2700 Industrial Parkway South
City of Present Owner: Marinette
State: WI
ZIP Code: 54143

## 3. Filled & Sealed Well / Drillhole / Borehole Information

☐ Monitoring Well
☐ Water Well
☑ Borehole / Drillhole

Original Construction Date (mm/dd/yyyy): 07/18/2019
If a Well Construction Report is available, please attach.

Construction Type:
☐ Drilled ☐ Driven (Sandpoint) ☐ Dug
☑ Other (specify): Geoprobe, direct push

Formation Type:
☑ Unconsolidated Formation ☐ Bedrock

Total Well Depth From Ground Surface (ft.): 30.30
Casing Diameter (in.):
Lower Drillhole Diameter (in.): 4 inches
Casing Depth (ft.):

Was well annular space grouted? ☐ Yes ☑ No ☐ Unknown
If yes, to what depth (feet)?
Depth to Water (feet)

## 4. Pump, Liner, Screen, Casing & Sealing Material

| | Yes | No | N/A |
|---|---|---|---|
| Pump and piping removed? | ☐ | ☐ | ☑ |
| Liner(s) removed? | ☐ | ☐ | ☑ |
| Liner(s) perforated? | ☐ | ☐ | ☑ |
| Screen removed? | ☐ | ☐ | ☑ |
| Casing left in place? | ☐ | ☐ | ☑ |
| Was casing cut off below surface? | ☐ | ☐ | ☑ |
| Did sealing material rise to surface? | ☑ | ☐ | ☐ |
| Did material settle after 24 hours? | ☐ | ☑ | ☐ |
| If yes, was hole retopped? | ☐ | ☐ | ☑ |
| If bentonite chips were used, were they hydrated with water from a known safe source? | ☐ | ☐ | ☑ |

Required Method of Placing Sealing Material
☑ Conductor Pipe-Gravity ☐ Conductor Pipe-Pumped
☐ Screened & Poured (Bentonite Chips) ☐ Other (Explain): _____

Sealing Materials
☐ Neat Cement Grout ☐ Concrete
☐ Sand-Cement (Concrete) Grout ☑ Bentonite Chips

*For Monitoring Wells and Monitoring Well Boreholes Only:*
☑ Bentonite Chips ☐ Bentonite - Cement Grout
☐ Granular Bentonite ☐ Bentonite - Sand Slurry

## 5. Material Used to Fill Well / Drillhole

| Material | From (ft.) | To (ft.) | No. Yards, Sacks Sealant or Volume (circle one) | Mix Ratio or Mud Weight |
|---|---|---|---|---|
| Bentonite | Surface | 30.30 | | |
| | | | | |
| | | | | |

## 6. Comments

HPT-36

## 7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing: Dakota Technologies, Arcadis
License #:
Date of Filling & Sealing or Verification (mm/dd/yyyy): 07/18/2019
Street or Route: 126 N. Jefferson Street, Suite 400
Telephone Number: (414) 276-7742
City: Milwaukee
State: WI
ZIP Code: 53202
Signature of Person Doing Work: Amy Parise
Date Signed: 10/24/2019

**DNR Use Only**
Date Received:
Noted By:
Comments:

State of Wis., Dept. of Natural Resources
dnr.wi.gov

# Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)



**Notice:** Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and chs. NR 141 and 812, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between $10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

☑ **Verification Only of Fill and Seal**

**Route to DNR Bureau:**
☐ Drinking Water ☐ Watershed/Wastewater ☑ Remediation/Redevelopment
☐ Waste Management ☐ Other: _____

## 1. Well Location Information

County: Marinette
WI Unique Well # of Removed Well: ___ ___ ___ ___ ___
Hicap #:

Latitude / Longitude (see instructions): State Plane N, E
457324.67N 2577360.98E N W
Format Code: ☐ DD ☐ DDM
Method Code: ☐ GPS008 ☐ SCR002 ☑ OTH001

¼ / ¼: ¼:
or Gov't Lot #:
Section:
Township: N
Range: ☐ E ☐ W

Well Street Address: Madsen Road
Well City, Village or Town: Marinette
Well ZIP Code: 54143
Subdivision Name:
Lot #:

Reason for Removal from Service: Temporary Borehole
WI Unique Well # of Replacement Well: ___ ___ ___ ___ ___

## 2. Facility / Owner Information

Facility Name: Tyco FTC
Facility ID (FID or PWS): 438005590
License/Permit/Monitoring #:
Original Well Owner: Johnson Controls
Present Well Owner: Johnson Controls
Mailing Address of Present Owner: 2700 Industrial Parkway South
City of Present Owner: Marinette
State: WI
ZIP Code: 54143

## 3. Filled & Sealed Well / Drillhole / Borehole Information

☐ Monitoring Well
☐ Water Well
☑ Borehole / Drillhole

Original Construction Date (mm/dd/yyyy): 07/30/2019
If a Well Construction Report is available, please attach.

Construction Type:
☐ Drilled ☐ Driven (Sandpoint) ☐ Dug
☑ Other (specify): Geoprobe, direct push

Formation Type:
☑ Unconsolidated Formation ☐ Bedrock

Total Well Depth From Ground Surface (ft.): 43.65
Casing Diameter (in.):
Lower Drillhole Diameter (in.): 4 inches
Casing Depth (ft.):

Was well annular space grouted? ☐ Yes ☑ No ☐ Unknown
If yes, to what depth (feet)?
Depth to Water (feet)

## 4. Pump, Liner, Screen, Casing & Sealing Material

| | Yes | No | N/A |
|---|---|---|---|
| Pump and piping removed? | ☐ | ☐ | ☑ |
| Liner(s) removed? | ☐ | ☐ | ☑ |
| Liner(s) perforated? | ☐ | ☐ | ☑ |
| Screen removed? | ☐ | ☐ | ☑ |
| Casing left in place? | ☐ | ☐ | ☑ |
| Was casing cut off below surface? | ☐ | ☐ | ☑ |
| Did sealing material rise to surface? | ☑ | ☐ | ☐ |
| Did material settle after 24 hours? | ☐ | ☑ | ☐ |
| If yes, was hole retopped? | ☐ | ☐ | ☑ |
| If bentonite chips were used, were they hydrated with water from a known safe source? | ☐ | ☐ | ☑ |

Required Method of Placing Sealing Material
☑ Conductor Pipe-Gravity ☐ Conductor Pipe-Pumped
☐ Screened & Poured (Bentonite Chips) ☐ Other (Explain): _____

Sealing Materials
☐ Neat Cement Grout ☐ Concrete
☐ Sand-Cement (Concrete) Grout ☑ Bentonite Chips

*For Monitoring Wells and Monitoring Well Boreholes Only:*
☑ Bentonite Chips ☐ Bentonite - Cement Grout
☐ Granular Bentonite ☐ Bentonite - Sand Slurry

## 5. Material Used to Fill Well / Drillhole

| Material | From (ft.) | To (ft.) | No. Yards, Sacks Sealant or Volume (circle one) | Mix Ratio or Mud Weight |
|---|---|---|---|---|
| Bentonite | Surface | 43.65 | | |
| | | | | |
| | | | | |

## 6. Comments

HPT-37

## 7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing: Dakota Technologies, Arcadis
License #:
Date of Filling & Sealing or Verification (mm/dd/yyyy): 07/30/2019
Street or Route: 126 N. Jefferson Street, Suite 400
Telephone Number: (414) 276-7742
City: Milwaukee
State: WI
ZIP Code: 53202
Signature of Person Doing Work: Amy Parise
Date Signed: 10/24/2019

**DNR Use Only**
Date Received:
Noted By:
Comments:

State of Wis., Dept. of Natural Resources
dnr.wi.gov

# Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)



**Notice:** Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and chs. NR 141 and 812, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between $10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

☑ **Verification Only of Fill and Seal**

**Route to DNR Bureau:**
☐ Drinking Water ☐ Watershed/Wastewater ☑ Remediation/Redevelopment
☐ Waste Management ☐ Other: _____

## 1. Well Location Information

County: Marinette
WI Unique Well # of Removed Well: ___ ___ ___ ___ ___
Hicap #:

Latitude / Longitude (see instructions): State Plane N, E
459974.90N 2575790.00E
Format Code: ☐ DD ☐ DDM
Method Code: ☐ GPS008 ☐ SCR002 ☑ OTH001

¼ / ¼: ¼ or Gov't Lot #:
Section:
Township: N
Range: ☐ E ☐ W

Well Street Address: University Drive
Well City, Village or Town: Marinette
Well ZIP Code: 54143
Subdivision Name:
Lot #:

Reason for Removal from Service: Temporary Borehole
WI Unique Well # of Replacement Well: ___ ___ ___ ___ ___

## 2. Facility / Owner Information

Facility Name: Tyco FTC
Facility ID (FID or PWS): 438005590
License/Permit/Monitoring #:
Original Well Owner: Johnson Controls
Present Well Owner: Johnson Controls
Mailing Address of Present Owner: 2700 Industrial Parkway South
City of Present Owner: Marinette
State: WI
ZIP Code: 54143

## 3. Filled & Sealed Well / Drillhole / Borehole Information

☐ Monitoring Well
☐ Water Well
☑ Borehole / Drillhole

Original Construction Date (mm/dd/yyyy): 07/30/2019
If a Well Construction Report is available, please attach.

Construction Type:
☐ Drilled ☐ Driven (Sandpoint) ☐ Dug
☑ Other (specify): Geoprobe, direct push

Formation Type:
☑ Unconsolidated Formation ☐ Bedrock

Total Well Depth From Ground Surface (ft.): 19.35
Casing Diameter (in.):
Lower Drillhole Diameter (in.): 4 inches
Casing Depth (ft.):

Was well annular space grouted? ☐ Yes ☑ No ☐ Unknown
If yes, to what depth (feet)?
Depth to Water (feet): 2.30

## 4. Pump, Liner, Screen, Casing & Sealing Material

| | Yes | No | N/A |
|---|---|---|---|
| Pump and piping removed? | ☐ | ☐ | ☑ |
| Liner(s) removed? | ☐ | ☐ | ☑ |
| Liner(s) perforated? | ☐ | ☐ | ☑ |
| Screen removed? | ☐ | ☐ | ☑ |
| Casing left in place? | ☐ | ☐ | ☑ |
| Was casing cut off below surface? | ☐ | ☐ | ☑ |
| Did sealing material rise to surface? | ☑ | ☐ | ☐ |
| Did material settle after 24 hours? | ☐ | ☑ | ☐ |
| If yes, was hole retopped? | ☐ | ☐ | ☑ |
| If bentonite chips were used, were they hydrated with water from a known safe source? | ☐ | ☐ | ☑ |

Required Method of Placing Sealing Material
☑ Conductor Pipe-Gravity ☐ Conductor Pipe-Pumped
☐ Screened & Poured (Bentonite Chips) ☐ Other (Explain): _____

Sealing Materials
☐ Neat Cement Grout ☐ Concrete
☐ Sand-Cement (Concrete) Grout ☑ Bentonite Chips

*For Monitoring Wells and Monitoring Well Boreholes Only:*
☑ Bentonite Chips ☐ Bentonite - Cement Grout
☐ Granular Bentonite ☐ Bentonite - Sand Slurry

## 5. Material Used to Fill Well / Drillhole

| Material | From (ft.) | To (ft.) | No. Yards, Sacks Sealant or Volume (circle one) | Mix Ratio or Mud Weight |
|---|---|---|---|---|
| Bentonite | Surface | 19.35 | | |
| | | | | |
| | | | | |

## 6. Comments

HPT-38

## 7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing: Dakota Technologies, Arcadis
License #:
Date of Filling & Sealing or Verification (mm/dd/yyyy): 07/30/2019
Street or Route: 126 N. Jefferson Street, Suite 400
Telephone Number: (414) 276-7742
City: Milwaukee
State: WI
ZIP Code: 53202
Signature of Person Doing Work: Amy Parise
Date Signed: 10/24/2019

**DNR Use Only**
Date Received:
Noted By:
Comments:

# Wisconsin Department of Natural Resources

**Well / Drillhole / Borehole Filling & Sealing** Form 3300-005

Notice: Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295 and 299, Wis. Stats., and ch. NR 141 Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295 and 299, Wis. Stats. failure to file this form may result in a forfeiture of between $10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose.

**Date of Filling & Sealing: 06/06/2019** **Rec #: 161097**

Verification. Check only if well filling & sealing was done previously and you are just verifying that work.: No

## 1. Well Location Information

County: Marinette | WI Unique Well #: | DNR Hicap Well #:

Latitude: (DD.DDDDD°) 45.076 °N | Longitude: (DD.DDDDD°) 87.643 °W | GPS Method Code: GPS008

Gov't Lot #: | Qtr/Qtr: NE | Quarter: NE | Section #: 13 | Township #: 30 North | Range #: 23 East

Well Street Address: 2900 INDUSTRIAL PARKWAY | Subdivision Name:

Well City/Village/Town: City of MARINETTE | Well Zip Code: | Lot #: | Does a new well replace this well? No

Reason for Filling & Sealing: NOT USED. | WI Unique Well # of Replacement Well:

## 2. Facility / Owner Information

Facility Name: | FID #: | License/Permit/Monitoring #:

Original Well Owner: | Service Category:

Present Well Owner: JOHNSON CONTROLS | Mailing Address of Present Owner: 2900 INDUSTRIAL PARKWAY

City: MARINETTE | State: WI | Zip Code: 54143

## 3. Well / Drillhole / Borehole Information

Well Type: Water Well | Original Construction Date: 07/16/1964 (mm/dd/yyyy) | Construction Type: Drilled

Formation Type: Bedrock | Total Well Depth From Ground Surface (ft.): 171.00 | (specify Other):

Casing Diameter (in.): 8.00 | Lower Drillhole Diameter (in.): 8.00 | Casing Depth (ft.): 65.00

Was well annular space grouted? No | If yes, to what depth (ft.)? | Depth to Water (ft.): 8.00

## 4. Pump, Liner, Screen, Casing & Sealing Material

| | | | | | |
|---|---|---|---|---|---|
| Pump and piping removed? | Yes | Liner(s) removed? | N/A | If no, was liner perforated? | N/A |
| Screen removed? | N/A | Casing/Loop left in place? | Yes | Was casing cut off below surface? | Yes |
| Did sealing material rise to surface? | Yes | Did material settle after 24 hours? | No | If yes, was hole retopped? | N/A |

If bentonite chips were used, were they hydrated with water from a known water source? Yes

Method of Placing Sealing Material: Screened & Poured (Bentonite Chips) | (Explain Other):

Water Well Sealing Materials: Bentonite Chips | Monitoring Wells & other Drillholes:

## 5. Material Used to Fill Well / Drillhole

| Material: | From (ft.): | To (ft.): | # and Units of Sealant: | Mix Ratio or Mud Weight: |
|---|---|---|---|---|
| BENTINITE CHIPS | Surface | 171.00 | 70 SACKS | |

## 6. Comments

## 7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing: GROUND SOURCE INC | License #: 4462 | Phone: 920-336-3659

3671 MONROE RD DE PERE WI 54115-9711 | Email Address: INFO@GROUNDSOURCEWI.COM

## 8. DNR Use Only

Signed On: | Submitted By: lcieslewicz1 | Received On: | Approved On:

The Official Internet site for the Wisconsin Department of Natural Resources
101 S. Webster Street PO Box 7921 . Madison, Wisconsin 53707-7921 608 266 2621

# APPENDIX C

## Fluorescein Dye Analytical Results

Ozark UNDERGROUND LABORATORY 1572 Aley Lane • Protem, MO 65733 • (417) 785-4289 • fax (417) 785-4290 • contact@ozarkundergroundlab.co

# Certificate of Analysis

**Date of certificate:** July 11, 2018

**Client:** Arcadis
126 N. Jefferson St.
Milwaukee, WI 53202

**Project name / location:** Marinette, Wisconsin

**Project number:** WI001605.0009.00004

**Contact people:** Erin.Henry@arcadis.com
Lisa.Rutkowski@arcadis.com

**Samples collected by**: Luke Reuteman

**Date samples shipped:** July 2, 2018

**Date samples rec'd at OUL:** July 3, 2018

**Date analyzed by OUL:** July 8, 2018

**Included with certificate of analysis:**
Table of results, copy of sample collection data sheet, copy of discrepancy sheet and analysis graphs.

**Results for water samples analyzed for the presence of fluorescein dye.**

Peak wavelengths are reported in nanometers (nm); dye concentrations are reported in parts per billion (ppb).

| OUL Number | Sample ID | Date/Time Collected | Fluorescein | |
|---|---|---|---|---|
| | | | Peak (nm) | Conc (ppb) |
| D0855 | VAP-29 (25-30) Drill Water | 6/26/18 1400 | 507.6 | 6,120 |
| D0856 | VAP-29 (25-30) Sample | 6/26/18 1400 | 507.8 | 672 |
| D0857 | VAP-29 (79-82) Sample | 6/27/18 1830 | 507.8 | 509 |

**Note:** Dye concentrations are based upon standards used at the OUL. The standard concentrations are based upon the as sold weight of the dye that the OUL uses. If the client is not using OUL dyes, the client should provide the OUL with a sample of the dye to comapare to the OUL dyes.

**Footnotes:** ND = No dye detected

**Thomas J. Aley, PHG and RG**

Thomas Aley

ARCADIS
Infrastructure · Water · Environment · Buildings

ID#:

# CHAIN OF CUSTODY & LABORATORY ANALYSIS REQUEST FORM

Page 1 of 1 RC/OUL

Lab Work Order #

**Send Results to:**

Contact & Company Name: ARCADIS Lisa Rutkowski
Telephone: 414-276-7742
Address: 126 N. Jefferson, Ste 400
Fax: 414-276-7603
City / State / Zip: Milwaukee, WI, 53202
E-mail Address: Lisa.Rutkowski@Arcadis.Com
Project Name/Location (City, State): Marinette, WI
Project #: WI0018.05.0009.00004
Sampler's Printed Name: Luke Reuteman
Sampler's Signature:

| Preservative | E | | | | | | |
|---|---|---|---|---|---|---|---|
| Filtered (✓) | | | | | | | |
| # of Containers | 6 | | | | | | |
| Container Information | 6 | | | | | | |

**Keys**

**Preservation Key:**
A. $H_2SO_4$
B. HCL
C. $HNO_3$
D. NaOH
E. None
F. Other: _____
G. Other: _____
H. Other: _____

**Container Information Key:**
1. 40 ml Vial
2. 1 L Amber
3. 250 ml Plastic
4. 500 ml Plastic
5. Encore
6. 2 oz. Glass
7. 4 oz. Glass
8. 8 oz. Glass
9. Other: Plastic vial
10. Other: _____

**Matrix Key:**
SO - Soil, SE - Sediment, NL - NAPL/Oil
W - Water, SL - Sludge, SW - Sample Wipe
T - Tissue, A - Air, Other: _____

**PARAMETER ANALYSIS & METHOD**

| Sample ID | Collection Date | Collection Time | Type (✓) Comp | Type (✓) Grab | Matrix | Dye Analysis | # of charcoal rec'd at OUL | # of water rec'd at OUL | | OUL lab # | | | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| VAP-29(25-30) Drill water | 6/26/18 | 14:00 | | X | W | | 0 | 1 | | D0855 | | | Dyed Drill water 10030 |
| (*) VAP-29(25-3) Sample | 6/26/18 | 14:00 | | X | W | | 0 | 1 | | D0856 | | | Sample |
| VAP-29(79-82) Sample | 6/27/18 | 18:30 | | X | W | | 0 | 1 | | D0857 | | | Sample |

OUL project # 1735
Analyzed on 7/8/18 by KC/OUL
Analysis graphs proofed by KC/OUL

(*) see discrepancy sheet

**Special Instructions/Comments:** 1 cooler / Samples on Ice / Questions Call Lisa Rutkowski @ 414-276-7742

☐ Special QA/QC Instructions(✓):

| Laboratory Information and Receipt | | Relinquished By | Received By | Relinquished By | Laboratory Received By |
|---|---|---|---|---|---|
| Lab Name: OZARK | Cooler Custody Seal (✓) | Printed Name: Luke Reuteman | Printed Name: OUL Amber Comstock | Printed Name: | Printed Name: |
| ☒ Cooler packed with ice (✓) | ☒ Intact ☐ Not Intact | Signature: | Signature: Amber Comstock | Signature: | Signature: |
| Specify Turnaround Requirements: STANDARD | Sample Receipt: | Firm: Arcadis | Firm/Courier: FX | Firm/Courier: | Firm: |
| Shipping Tracking #: | Condition/Cooler Temp: _____ | Date/Time: 7/2/18 1500 | Date/Time: 7/3/18 1530 | Date/Time: | Date/Time: |



Distribution: WHITE – Laboratory returns with results YELLOW – Lab copy PINK – Retained by ARCADIS

# OZARK UNDERGROUND LABORATORY, INC.

**DISCREPANCIES BETWEEN CHAIN-OF-CUSTODY SHEETS AND ACTUAL SAMPLES RECEIVED** Page 1 of 1

**Company & Project Name:** Arcadis/ Marinette **Date Rec'd by OUL:** 7/3/18 **Wk #** _____

| Lab # | Sta # | Station Name | Date Pulled | Problem | Solution |
|---|---|---|---|---|---|
| D0856 | | VAP-29(25-3) | 6/26 @ 1400 | Station name on sample is "VAP-29(25-30)". Should the last number be a "3" or "30"? | Station name on sample vial is correct. Station name is VAP-29(25-30) - per Erin Henry email |

**Comments:** ~~No discrepancies~~ KC/OUL 7/8

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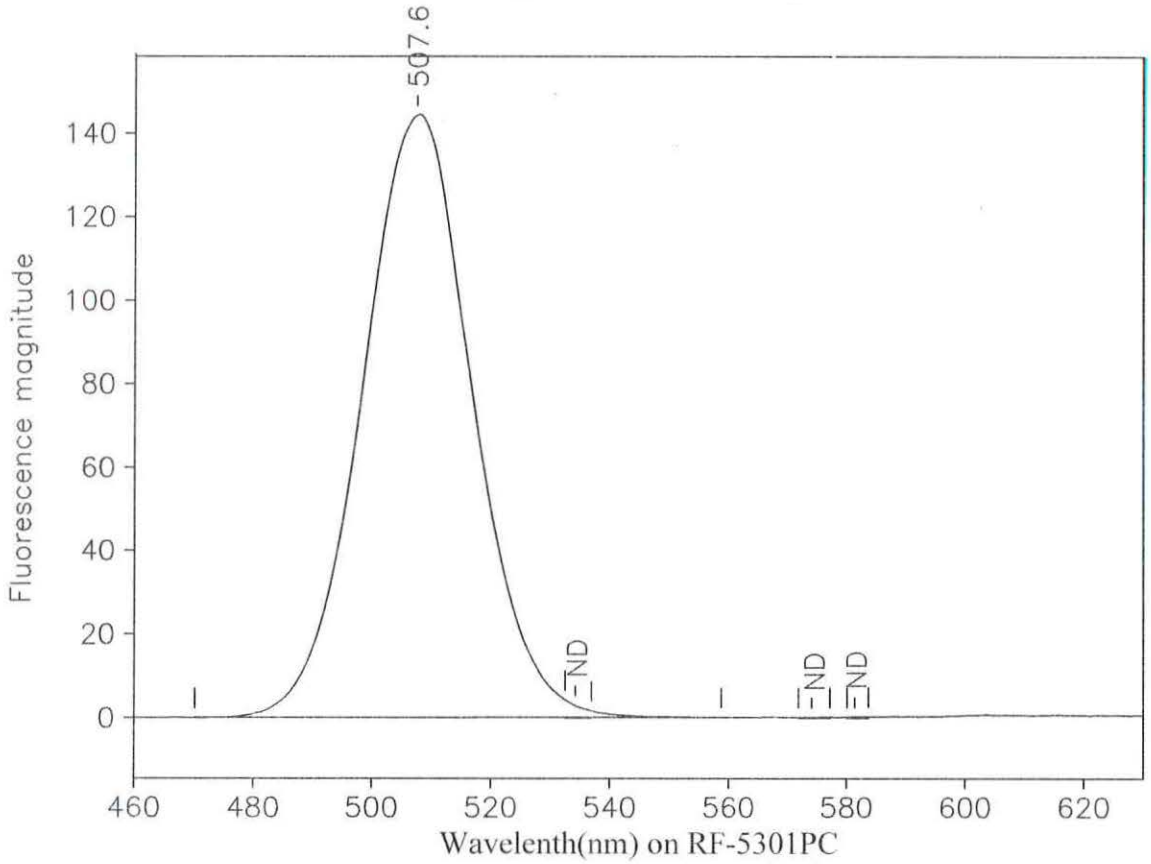
rev. 12/28/99

## Ozark Underground Laboratory




Dilution: 1 to 1,000

Station 1: VAP-29 (25-30) Drill Water
OUL Number: D0855
Matrix: Water
Date collected: 6/26/18 1400

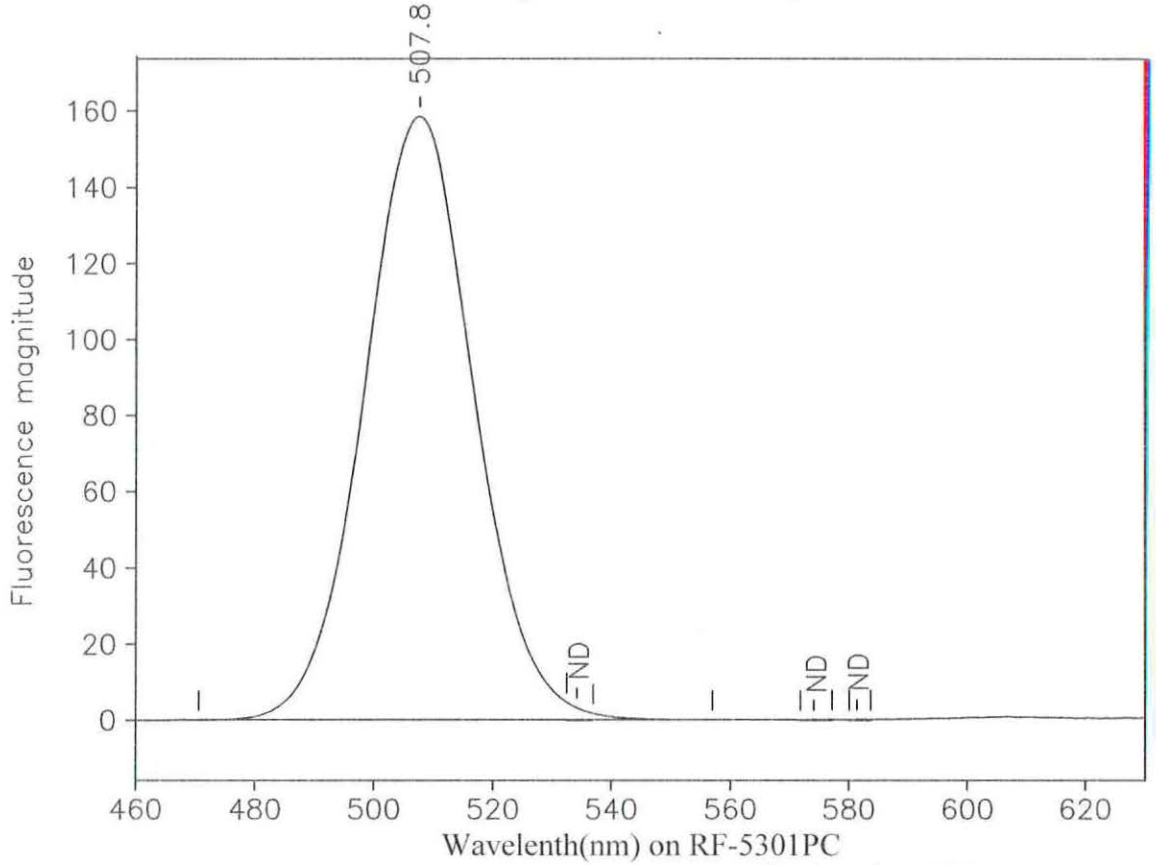
Analyzed: 7/8/18

Peaks within the normal range of tracer dyes:

| Peak nm | Left X | Right X | Height | Area | Conc. |
|---|---|---|---|---|---|
| 507.6 | 470.2 | 558.8 | 144.14 | 3,097.96 | 6,120 Fl |
| 534.2 | 532.5 | 537.0 | 0.00 | 0.00 | ND |
| 574.1 | 571.9 | 577.2 | 0.00 | 0.00 | ND |
| 581.4 | 580.1 | 583.7 | 0.00 | 0.00 | ND |

Peaks close to the normal range of tracer dyes:

Ozark Underground Laboratory




Dilution: 1 to 100

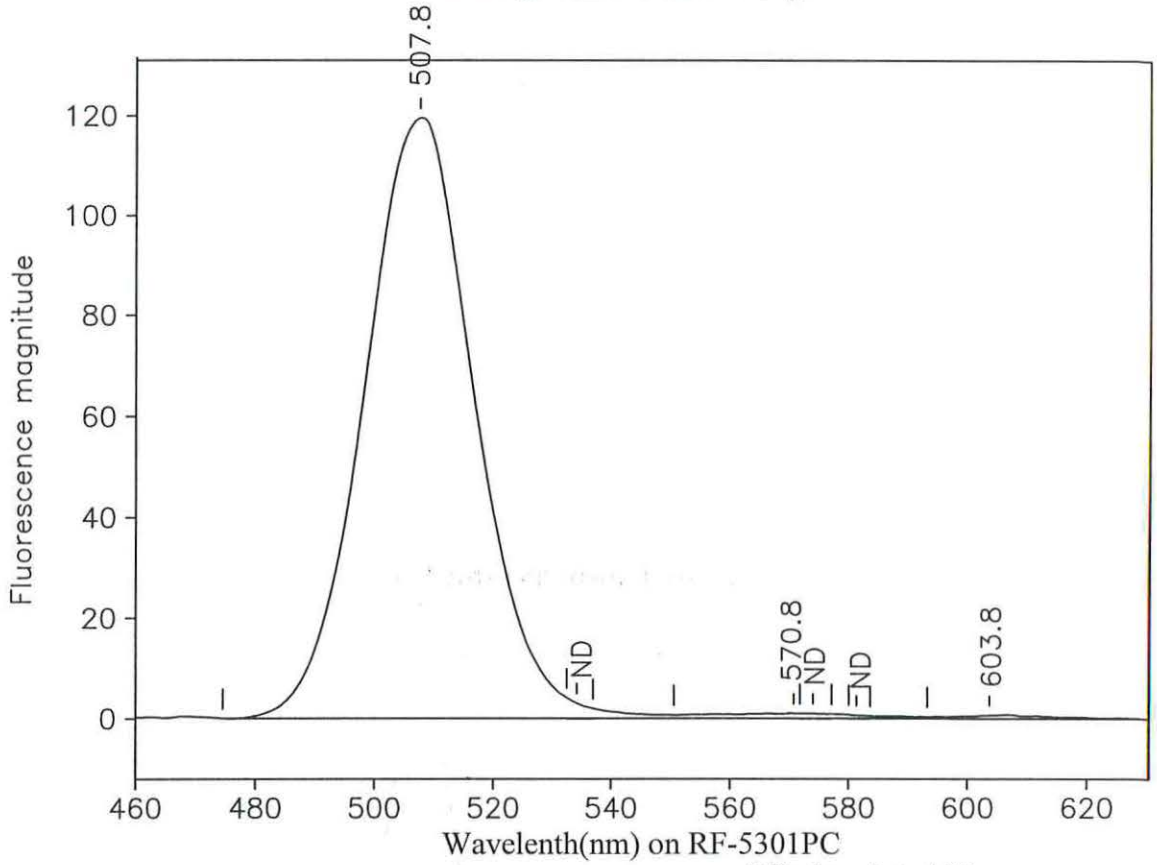
Station 1: VAP-29 (25-30) Sample
OUL Number: D0856 Analyzed: 7/8/18
Matrix: Water
Date collected: 6/26/18 1400

Peaks within the normal range of tracer dyes:

| Peak nm | Left X | Right X | Height | Area | Conc. |
|---|---|---|---|---|---|
| 507.8 | 470.6 | 557.0 | 158.51 | 3,401.33 | 672 Fl |
| 534.2 | 532.5 | 537.0 | 0.00 | 0.00 | ND |
| 574.1 | 571.9 | 577.2 | 0.00 | 0.00 | ND |
| 581.4 | 580.1 | 583.7 | 0.00 | 0.00 | ND |

Peaks close to the normal range of tracer dyes:

**Ozark Underground Laboratory**




Dilution: 1 to 100

Station 1: VAP-29 (79-82) Sample
OUL Number: D0857 Analyzed: 7/8/18
Matrix: Water
Date collected: 6/27/18 1830

Peaks within the normal range of tracer dyes:

| Peak nm | Left X | Right X | Height | Area | Conc. |
|---|---|---|---|---|---|
| 507.8 | 474.6 | 550.6 | 119.49 | 2,578.41 | 509 Fl |
| 534.2 | 532.5 | 537.0 | 0.00 | 0.00 | ND |
| 574.1 | 571.9 | 577.2 | 0.00 | 0.00 | ND |
| 581.4 | 580.1 | 583.7 | 0.00 | 0.00 | ND |
| Peaks close to the normal range of tracer dyes: | | | | | |
| 570.8 | 550.6 | 593.3 | 1.01 | 32.45 | 37.5 RWT |
| 603.8 | 593.3 | 630.0 | 0.65 | 13.69 | 0.000 |

Ozark UNDERGROUND LABORATORY 1572 Aley Lane • Protem, MO 65733 • (417) 785-4289 • fax (417) 785-4290 • contact@ozarkundergroundlab.co

# Certificate of Analysis

**Date of certificate:** August 15, 2018

**Client:** Arcadis
126 N. Jefferson St.
Milwaukee, WI 53202

**Project name / location:** Marinette, Wisconsin

**Project number:** WI001605.0009.00004

**Contact people:** Erin.Henry@arcadis.com
Lisa.Rutkowski@arcadis.com

**Samples collected by:** L. Reuteman

**Date samples shipped:** August 9, 2018

**Date samples rec'd at OUL:** August 10, 2018

**Date analyzed by OUL:** August 14, 2018

**Included with certificate of analysis:**
Table of results, copy of sample collection data sheet, copy of discrepancy sheet and analysis graphs.

**Results for water samples analyzed for the presence of fluorescein dye.**

Peak wavelengths are reported in nanometers (nm); dye concentrations are reported in parts per billion (ppb).

| OUL Number | Sample ID | Date/Time Collected | Fluorescein | |
|---|---|---|---|---|
| | | | Peak (nm) | Conc (ppb) |
| D1371 | Drill Water (080818) | 8/8/18 1240 | 511.5 ** | 2,550 |
| D1372 | VAP-30 (77-80) | 8/8/18 1240 | 507.5 | 422 |

**Note:** Dye concentrations are based upon standards used at the OUL. The standard concentrations are based upon the as sold weight of the dye that the OUL uses. If the client is not using OUL dyes, the client should provide the OUL with a sample of the dye to comapare to the OUL dyes.

**Footnotes:** ND = No dye detected

** = A fluorescence peak is present that does not meet all the criteria for this dye. However, it has been calculated as a positive dye result.

**Thomas J. Aley, PHG and RG**

Thomas Aley

ARCADIS
Infrastructure · Water · Environment · Buildings

ID#:

# CHAIN OF CUSTODY & LABORATORY ANALYSIS REQUEST FORM

Page 1 of 1

Lab Work Order #

**Send Results to:**

Contact & Company Name: Arcadis
Telephone:
Address: 126 N Jefferson St Ste 400
Fax:
City: Milwaukee State: WI Zip: 53202
E-mail Address:
Project Name/Location (City, State): Marinette, WI
Project #: WI001605.0009
Sampler's Printed Name: L. Reuteman
Sampler's Signature:

| Preservative | E | | | | | | |
|---|---|---|---|---|---|---|---|
| Filtered (✓) | | | | | | | |
| # of Containers | 1 | | | | | | |
| Container Information | 9 | | | | | | |

**Keys**

Preservation Key:
A. $H_2SO_4$
B. HCL
C. $HNO_3$
D. NaOH
E. None
F. Other: _____
G. Other: _____
H. Other: _____

Container Information Key:
1. 40 ml Vial
2. 1 L Amber
3. 250 ml Plastic
4. 500 ml Plastic
5. Encore
6. 2 oz. Glass
7. 4 oz. Glass
8. 8 oz. Glass
9. Other: X
10. Other: _____

Matrix Key:
SO - Soil, SE - Sediment, NL - NAPL/Oil, W - Water, SL - Sludge, SW - Sample Wipe, T - Tissue, A - Air, Other: _____

**PARAMETER ANALYSIS & METHOD**

| Sample ID | Collection Date | Collection Time | Type (✓) Comp | Type (✓) Grab | Matrix | Dy 2 Concentration | # of charcoal packets used by OUL | # of water vials used by OUL | OUL # | | | | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Drill Water (080818) | 8/8/18 | 1240 | | X | W | X | 0 | 1 | D1371 | | | | |
| VAP-30 (77-80) | 8/8/18 | 1240 | | X | W | X | 0 | 1 | D1372 | | | | OUL project # 1735 |
| | | | | | | | | | | | | | Analyzed 8-14-18 by MR/OUL |
| | | | | | | | | | | | | | Analysis graphs proofed by CR/OUL |

Special Instructions/Comments: 5-Day TAT, Samples on ice. Questions call Lisa Rutkowski

☐ Special QA/QC Instructions(✓):

Custody Seal Intact upon Receipt by OUL/MR

| Laboratory Information and Receipt | | Relinquished By | Received By | Relinquished By | Laboratory Received By |
|---|---|---|---|---|---|
| Lab Name: Ozark Underground Laboratory | Cooler Custody Seal (✓) | Printed Name: L. Reuteman | Printed Name: M. Ridinger/OUL | Printed Name: | Printed Name: |
| ☑ Cooler packed with ice (✓) | ☐ Intact ☐ Not Intact | Signature: | Signature: M. Ridinger/OUL | Signature: | Signature: |
| Specify Turnaround Requirements: | Sample Receipt: | Firm: Arcadis | Firm/Courier: Ozark Underground Lab | Firm/Courier: | Firm: |
| Shipping Tracking #: | Condition/Cooler Temp: _____ | Date/Time: 8/9/18 1500 | Date/Time: 8-10-18 @ 1230 | Date/Time: | Date/Time: |

20730826 CofC AR Form 01.12.2007

Distribution: WHITE – Laboratory returns with results YELLOW – Lab copy PINK – Retained by ARCADIS

OZARK UNDERGROUND LABORATORY, INC.

**DISCREPANCIES BETWEEN CHAIN-OF-CUSTODY SHEETS AND ACTUAL SAMPLES RECEIVED** Page 1 of 1

**Company & Project Name:** Aradis / WI **Date Rec'd by OUL:** 8-10-18 **Wk #** _____

| Lab # | Sta # | Station Name | Date Pulled | Problem | Solution |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |
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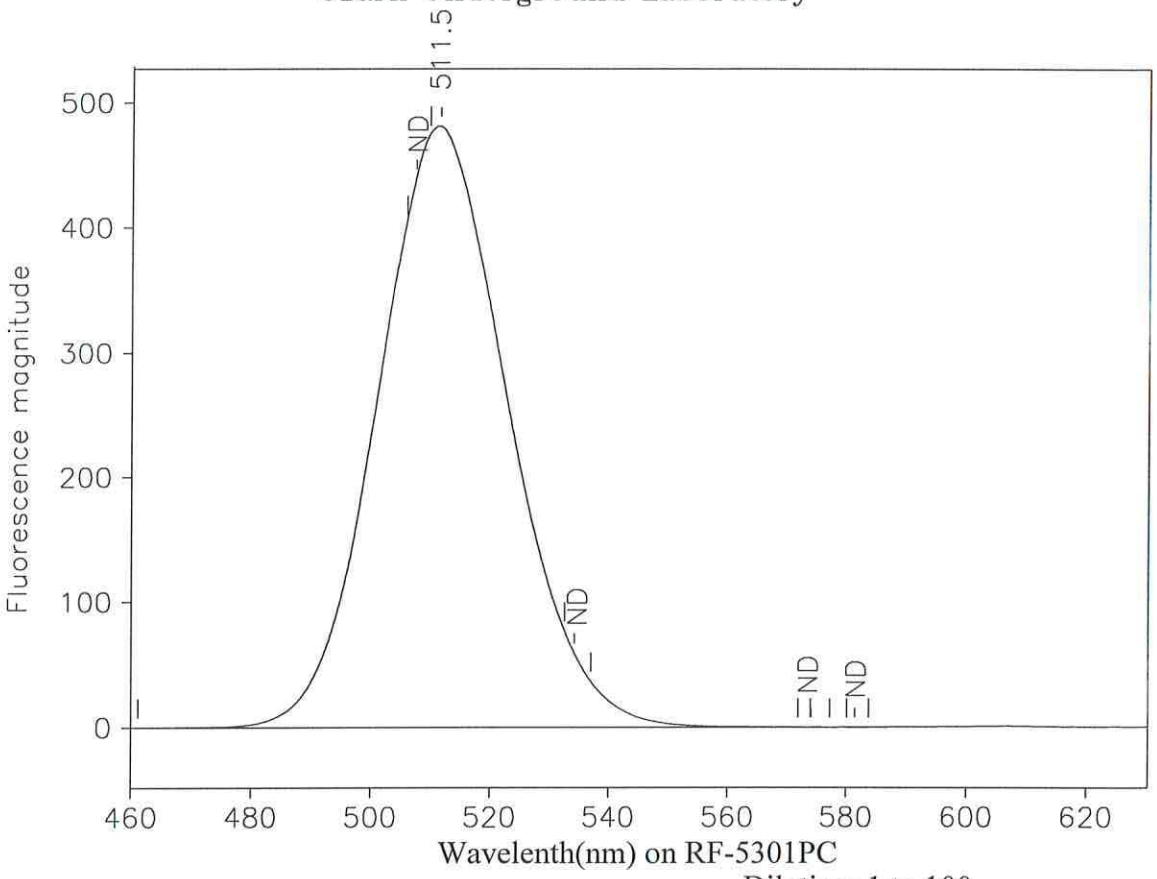
**Comments:** Cooler packed with ice cubes. Melted Samples floating in water. Lids tight on vials. Ziploc bag sample was in did not have water inside bag

f:\shared\forms\dscrpsht.doc
rev. 12/28/99

Ozark Underground Laboratory




Dilution: 1 to 100

Station 2: Drill Water (080818)
OUL Number: D1371
Matrix: Water
Date collected: 8/8/18 1240

Analyzed: 8/14/18

Peaks within the normal range of tracer dyes:

| Peak nm | Left X | Right X | Height | Area | Conc. |
|---|---|---|---|---|---|
| 507.4 | 505.9 | 509.7 | 0.00 | 0.00 | ND |
| 534.2 | 532.5 | 537.0 | 0.00 | 0.00 | ND |
| 574.1 | 571.9 | 577.2 | 0.00 | 0.00 | ND |
| 581.4 | 580.1 | 583.7 | 0.00 | 0.00 | ND |

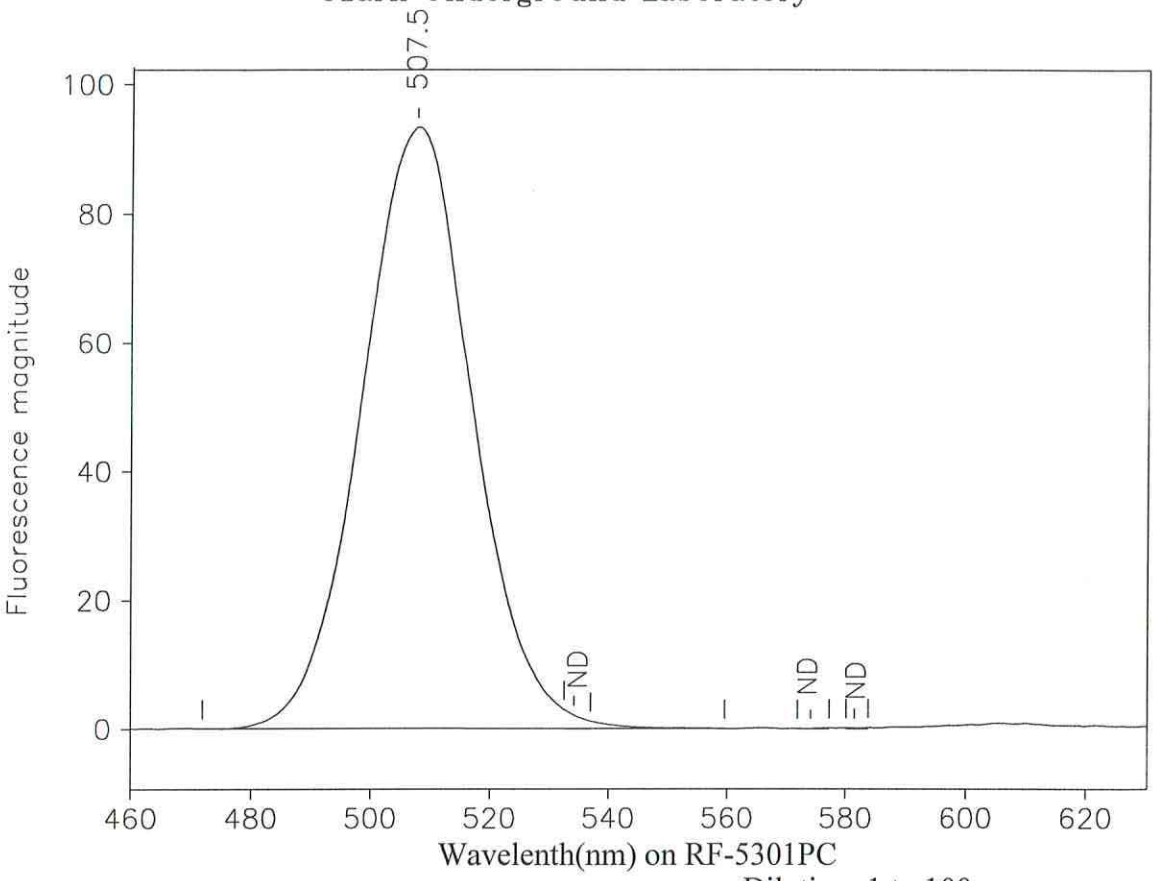
Peaks close to the normal range of tracer dyes:

| | | | | | |
|---|---|---|---|---|---|
| 511.5 | 461.2 | 574.0 | 480.98 | 12,146.00 | 2,550 Fl |

** 

TA
OUL

Ozark Underground Laboratory




Dilution: 1 to 100

Station 3: VAP-30 (77-80)
OUL Number: D1372
Matrix: Water
Date collected: 8/8/18 1240

Analyzed: 8/14/18

Peaks within the normal range of tracer dyes:

| Peak nm | Left X | Right X | Height | Area | Conc. |
|---|---|---|---|---|---|
| 507.5 | 471.9 | 559.5 | 93.25 | 2,009.36 | 422 Fl |
| 534.2 | 532.5 | 537.0 | 0.00 | 0.00 | ND |
| 574.1 | 571.9 | 577.2 | 0.00 | 0.00 | ND |
| 581.4 | 580.1 | 583.7 | 0.00 | 0.00 | ND |

Peaks close to the normal range of tracer dyes:

Ozark UNDERGROUND LABORATORY 1572 Aley Lane • Protem, MO 65733 • (417) 785-4289 • fax (417) 785-4290 • contact@ozarkundergroundlab.co

# Certificate of Analysis

**Date of certificate:** August 22, 2018

**Client:** Arcadis
126 N. Jefferson St.
Milwaukee, WI 53202

**Project name / location:** Marinette, Wisconsin

**Project number:** WI001605.0009.00004

**Contact people:** Erin.Henry@arcadis.com
Lisa.Rutkowski@arcadis.com

**Samples collected by:** Bruce Evans

**Date samples shipped:** August 20, 2018

**Date samples rec'd at OUL:** August 21, 2018

**Date analyzed by OUL:** August 22, 2018

**Included with certificate of analysis:**
Table of results, copy of Arcadis chain of custody form and analysis graphs

**Results for water samples analyzed for the presence of fluorescein dye.**

Peak wavelengths are reported in nanometers (nm); dye concentrations are reported in parts per billion (ppb).

| OUL Number | Sample ID | Date/Time Collected | Fluorescein | |
|---|---|---|---|---|
| | | | Peak (nm) | Conc (ppb) |
| D1473 | VAP-28 Drill water (081518) | 8/15/18 NT | 509.1 | 5,420 |
| D1474 | VAP-28 (72-75) Sample | 8/15/18 1710 | 510.0 ** | 119 |
| D1475 | VAP-28 Drill water (081618) | 8/16/18 NT | 507.9 | 10,000 |
| D1476 | VAP-28 (82-85) Sample | 8/16/18 1055 | 508.8 | 474 |
| D1477 | VAP-28 (99-102) Sample | 8/16/18 1630 | 508.6 | 301 |

**Note:** Dye concentrations are based upon standards used at the OUL. The standard concentrations are based upon the as sold weight of the dye that the OUL uses. If the client is not using OUL dyes, the client should provide the OUL with a sample of the dye to comapare to the OUL dyes.

**Footnotes:** NT = No time given

** = A fluorescence peak is present that does not meet all the criteria for this dye. However, it has been calculated as a positive dye result.

**Thomas J. Aley, PHG and RG**

Thomas Aley

ARCADIS
Infrastructure · Water · Environment · Buildings

ID#:

# CHAIN OF CUSTODY & LABORATORY ANALYSIS REQUEST FORM

Page 1 of 1/ou

Lab Work Order #

**Send Results to:**

Contact & Company Name: ARCADIS Lisa Rutkowski
Telephone: 414-276-7742
Address: 126 N Jefferson St 400
Fax: —
City State Zip: Milwaukee, WI, 53151
E-mail Address: —
Project Name/Location (City, State):
Project #: WI001605.0009.00004
Sampler's Printed Name: Bruce Evans
Sampler's Signature:

| Preservative | E | | | | | | |
|---|---|---|---|---|---|---|---|
| Filtered (✓) | | | | | | | |
| # of Containers | 1 | | | | | | |
| Container Information | 9 | | | | | | |

**Keys**

Preservation Key:
A. $H_2SO_4$
B. HCL
C. $HNO_3$
D. NaOH
E. None
F. Other: _____
G. Other: _____
H. Other: _____

Container Information Key:
1. 40 ml Vial
2. 1 L Amber
3. 250 ml Plastic
4. 500 ml Plastic
5. Encore
6. 2 oz. Glass
7. 4 oz. Glass
8. 8 oz. Glass
9. Other: VRLS
10. Other: _____

Matrix Key:
SO - Soil, SE - Sediment, NL - NAPL/Oil, W - Water, SL - Sludge, SW - Sample Wipe, T - Tissue, A - Air, Other: _____

**PARAMETER ANALYSIS & METHOD**

| Sample ID | Collection Date | Collection Time | Type (✓) Comp | Type (✓) Grab | Matrix | Dye % concentration | # Charcoal field OUL | # Water field OUL | | OUL # | | | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| VAP-28 DrillWater(081515) | 8/15/18 | — | | X | W | X | 0 | 1 | | D1473 | | | |
| VAP-28 (72-75) Sample | 8/15/18 | 17:10 | | X | W | X | 0 | 1 | | D1474 | | | |
| VAP-28 DrillWater(081618) | 8/16/18 | — | | X | W | X | 0 | 1 | | D1475 | | | |
| VAP-28 (82-85) Sample | 8/16/18 | 10:55 | | X | W | X | 0 | 1 | | D1476 | | | |
| VAP-28 (99-102) Sample | 8/16/18 | 16:30 | | X | W | X | 0 | 1 | | D1477 | | | |

OUL Project 1735
Analyzed 8/22/18
by ML/OUL

Special Instructions/Comments:
Custody seal intact upon arrival at OUL - KC/ou

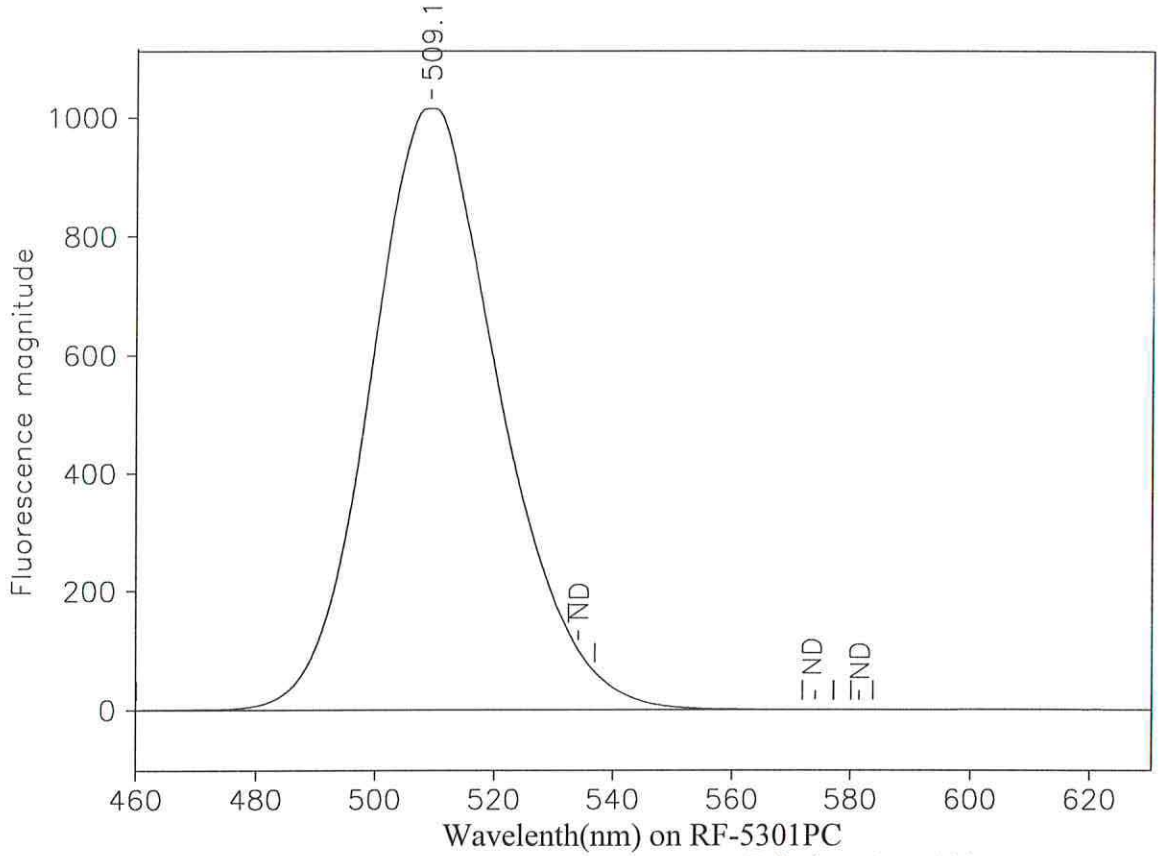
☐ Special QA/QC Instructions(✓):

| Laboratory Information and Receipt | | Relinquished By | Received By | Relinquished By | Laboratory Received By |
|---|---|---|---|---|---|
| Lab Name: OZARK | Cooler Custody Seal (✓) | Printed Name: Bruce Evans | Printed Name: | Printed Name: | Printed Name: KC |
| ☒ Cooler packed with ice (✓) | ☒ Intact ☐ Not Intact | Signature: | Signature: | Signature: | Signature: |
| Specify Turnaround Requirements: STANDARD TAT | Sample Receipt: | Firm: ARCADIS | Firm/Courier: | Firm/Courier: | Firm: OUL |
| Shipping Tracking #: | Condition/Cooler Temp: _____ | Date/Time: 8/20/18 17:00 | Date/Time: | Date/Time: | Date/Time: 8/21/2018 1200 |

20730826 CofC AR Form 01.12.2007

Distribution: WHITE – Laboratory returns with results YELLOW – Lab copy PINK – Retained by ARCADIS

Ozark Underground Laboratory




Dilution: 1 to 100

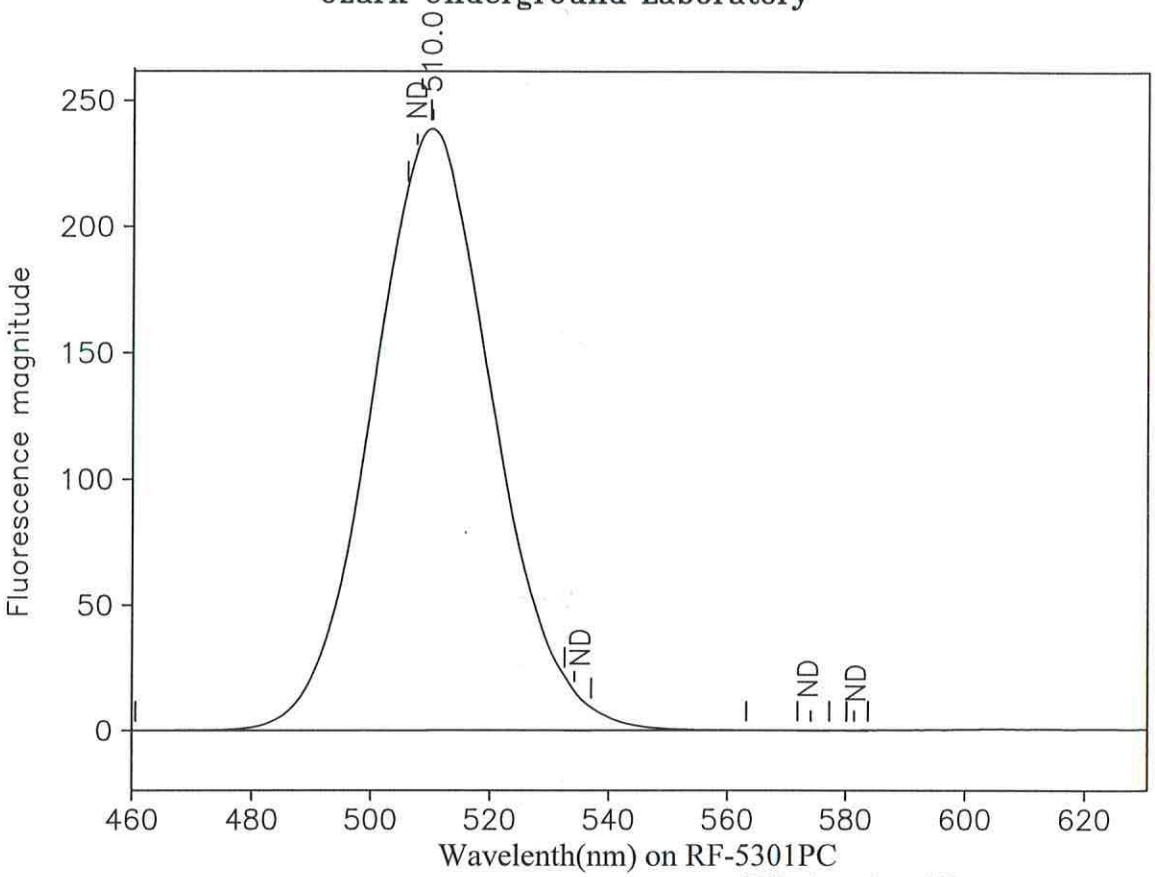
Station 4: VAP-28 Drillwater (081518)
OUL Number: D1473B
Analyzed: 8/22/18
Matrix: Water
Date collected: 8/15/18

Peaks within the normal range of tracer dyes:

| Peak nm | Left X | Right X | Height | Area | Conc. |
|---|---|---|---|---|---|
| 509.1 | 460.1 | 577.1 | 1,014.70 | 25,527.30 | 5,420 Fl |
| 534.2 | 532.5 | 537.0 | 0.00 | 0.00 | ND |
| 574.1 | 571.9 | 577.2 | 0.00 | 0.00 | ND |
| 581.4 | 580.1 | 583.7 | 0.00 | 0.00 | ND |

Peaks close to the normal range of tracer dyes:

## Ozark Underground Laboratory




Dilution: 1 to 10

Station 4: VAP-28 (72-75) Sample
OUL Number: D1474 Analyzed: 8/22/18
Matrix: Water
Date collected: 8/15/18 1710

Peaks within the normal range of tracer dyes:

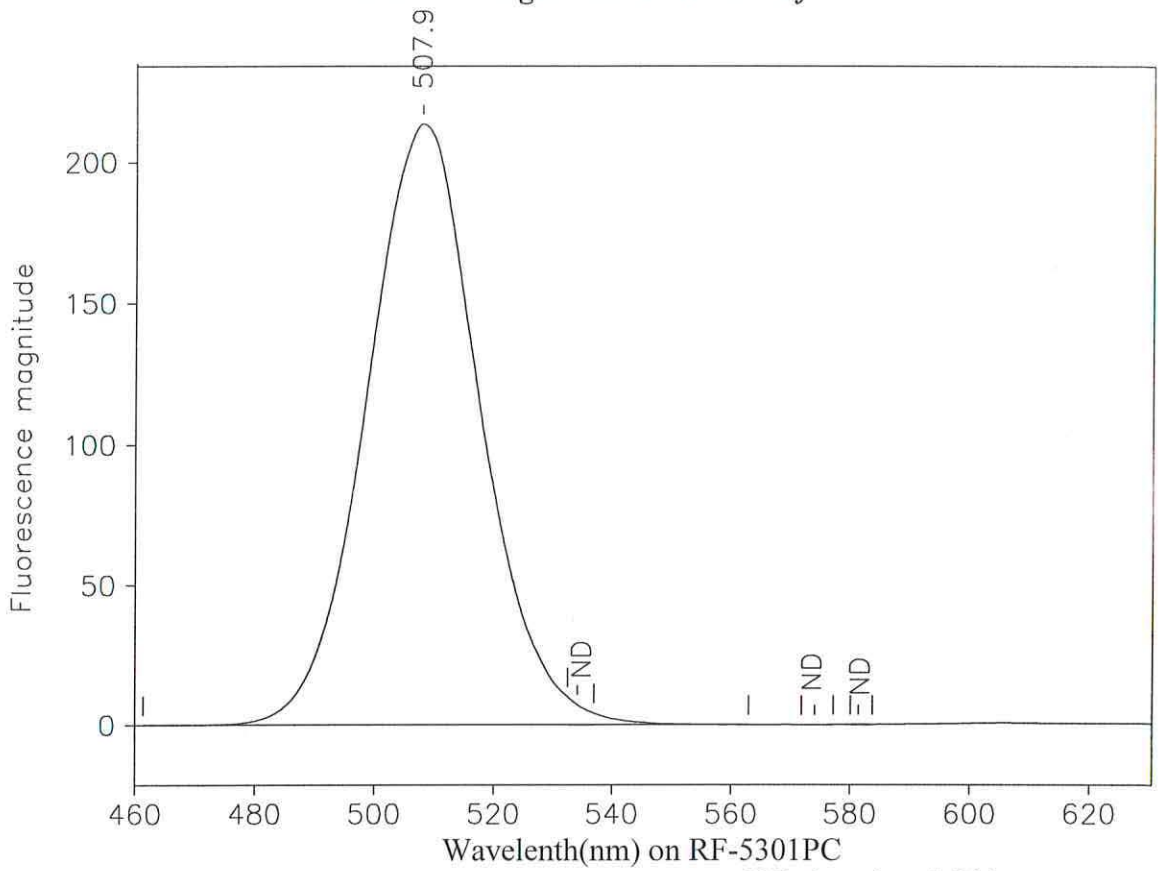
| Peak nm | Left X | Right X | Height | Area | Conc. |
|---|---|---|---|---|---|
| 507.4 | 505.9 | 509.7 | 0.00 | 0.00 | ND |
| 534.2 | 532.5 | 537.0 | 0.00 | 0.00 | ND |
| 574.1 | 571.9 | 577.2 | 0.00 | 0.00 | ND |
| 581.4 | 580.1 | 583.7 | 0.00 | 0.00 | ND |

Peaks close to the normal range of tracer dyes:

| | | | | | |
|---|---|---|---|---|---|
| 510.0 | 460.6 | 563.2 | 238.67 | 5,623.82 | 119 Fl ** |

TA/OUL

Ozark Underground Laboratory




Dilution: 1 to 1,000

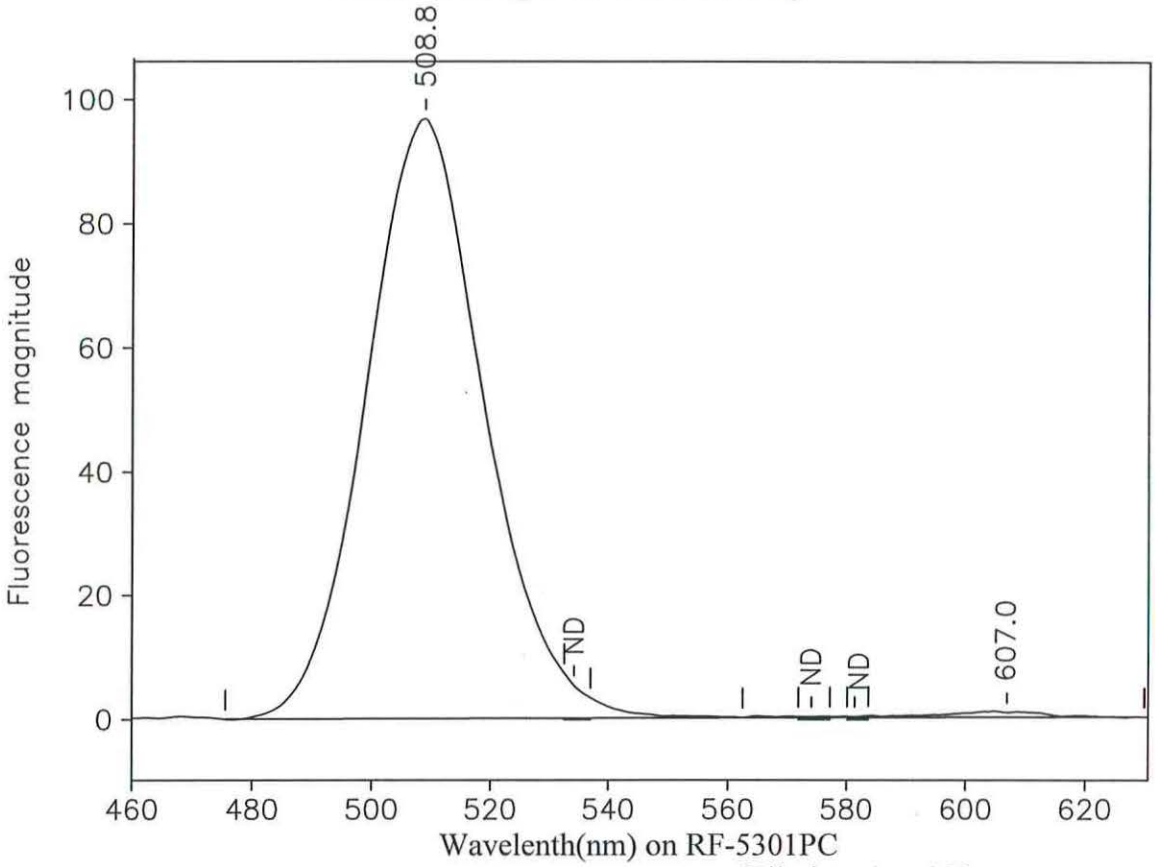
Station 4: VAP-28 Drink water (081618)
OUL Number: D1475 Analyzed: 8/22/18
Matrix: Water
Date collected: 8/16/18

Peaks within the normal range of tracer dyes:

| Peak nm | Left X | Right X | Height | Area | Conc. |
|---|---|---|---|---|---|
| 507.9 | 461.4 | 563.0 | 213.49 | 4,723.01 | 10,000 Fl |
| 534.2 | 532.5 | 537.0 | 0.00 | 0.00 | ND |
| 574.1 | 571.9 | 577.2 | 0.00 | 0.00 | ND |
| 581.4 | 580.1 | 583.7 | 0.00 | 0.00 | ND |

Peaks close to the normal range of tracer dyes:

## Ozark Underground Laboratory



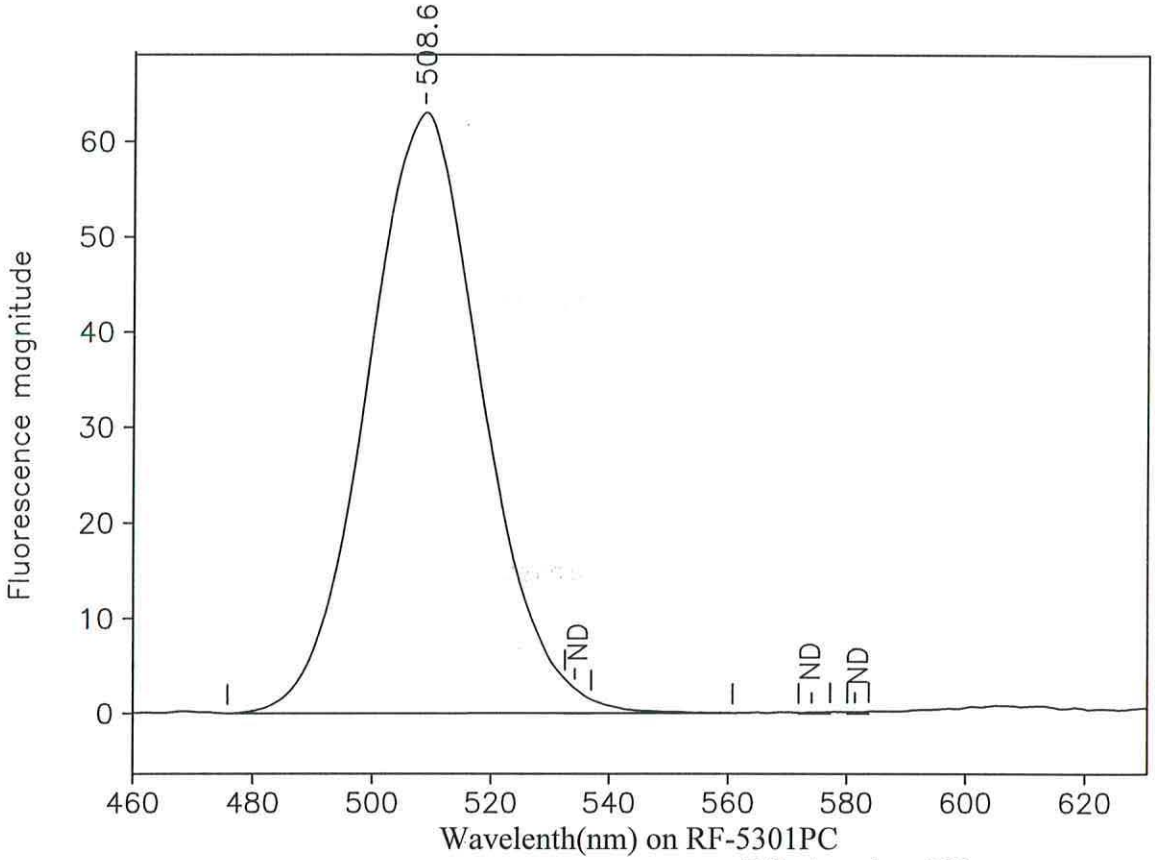

Dilution: 1 to 100

Station 4: VAP-28 (82-85) Sample
OUL Number: D1476 Analyzed: 8/22/18
Matrix: Water
Date collected: 8/16/18 1055

Peaks within the normal range of tracer dyes:

| Peak nm | Left X | Right X | Height | Area | Conc. |
|---|---|---|---|---|---|
| 508.8 | 475.6 | 562.5 | 96.78 | 2,234.93 | 474 Fl |
| 534.2 | 532.5 | 537.0 | 0.00 | 0.00 | ND |
| 574.1 | 571.9 | 577.2 | 0.00 | 0.00 | ND |
| 581.4 | 580.1 | 583.7 | 0.00 | 0.00 | ND |
| Peaks close to the normal range of tracer dyes: | | | | | |
| 607.0 | 562.5 | 629.4 | 0.78 | 23.76 | 0.000 |

## Ozark Underground Laboratory




Dilution: 1 to 100

Station 4: VAP-28 (99-102) Sample
OUL Number: D1477 Analyzed: 8/22/18
Matrix: Water
Date collected: 8/16/18 1630

Peaks within the normal range of tracer dyes:

| Peak nm | Left X | Right X | Height | Area | Conc. |
|---|---|---|---|---|---|
| 508.6 | 475.8 | 560.8 | 62.93 | 1,417.57 | 301 Fl |
| 534.2 | 532.5 | 537.0 | 0.00 | 0.00 | ND |
| 574.1 | 571.9 | 577.2 | 0.00 | 0.00 | ND |
| 581.4 | 580.1 | 583.7 | 0.00 | 0.00 | ND |

Peaks close to the normal range of tracer dyes:

# APPENDIX D

## Well Construction and Development Forms

State of Wisconsin
Department of Natural Resources

Route to: Watershed/Wastewater ☐ Waste Management ☐ Remediation/Redevelopment ☒ Other ☐ _____

# MONITORING WELL CONSTRUCTION
Form 4400-113A Rev. 7-98

| | | |
|---|---|---|
| Facility/Project Name: Tyco FTC | Local Grid Location of Well: _____ ft. ☐ N. ☐ S. _____ ft. ☐ E. ☐ W. | Well Name: MW-101-16 |
| Facility License, Permit or Monitoring No. | Local Grid Origin ☐ (estimated: ☐) or Well Location ☐ Lat. ___ ° ___ ' ___ " Long. ___ ° ___ ' ___ " or | Wis. Unique Well No.: VH123 / DNR Well ID No.: |
| Facility ID: 4 3 8 0 0 5 5 9 0 | St. Plane 459912.1 ft. N, 2580497.8 ft. E. S/C/N | Date Well Installed: 07 / 02 / 2018 (m m d d y y y y) |
| Type of Well: Well Code 12 / PZ | Section Location of Waste/Source: NE 1/4 of NE 1/4 of Sec. 13, T. 30 N, R. 23 ☒ E ☐ W | Well Installed By: Name (first, last) and Firm: Roy Buckenburger, Cascade |
| Distance from Waste/Source: Unknown ft. Enf. Stds. Apply ☒ | Location of Well Relative to Waste/Source: u ☐ Upgradient s ☐ Sidegradient d ☐ Downgradient n ☒ Not Known | Gov. Lot Number: |

A. Protective pipe, top elevation 603.40 ft. MSL

B. Well casing, top elevation 603.18 ft. MSL

C. Land surface elevation 603.40 ft. MSL

D. Surface seal, bottom _____ ft. MSL or 1 ft.

12. USCS classification of soil near screen:
GP ☐ GM ☐ GC ☐ GW ☐ SW ☐ SP ☒
SM ☐ SC ☐ ML ☐ MH ☐ CL ☐ CH ☐
Bedrock ☐

13. Sieve analysis performed? ☐ Yes ☒ No

14. Drilling method used: Rotary ☐ 50 Hollow Stem Auger ☐ 41 Other ☒ Sonic

15. Drilling fluid used: Water ☒ 02 Air ☐ 01 Drilling Mud ☐ 03 None ☐ 99

16. Drilling additives used? ☐ Yes ☒ No

Describe _____

17. Source of water (attach analysis, if required): City of Marinette hydrant

E. Bentonite seal, top _____ ft. MSL or 1 ft.

F. Fine sand, top _____ ft. MSL or 3.5 ft.

G. Filter pack, top _____ ft. MSL or 5.0 ft.

H. Screen joint, top _____ ft. MSL or 5.3 ft.

I. Well bottom _____ ft. MSL or 15.3 ft.

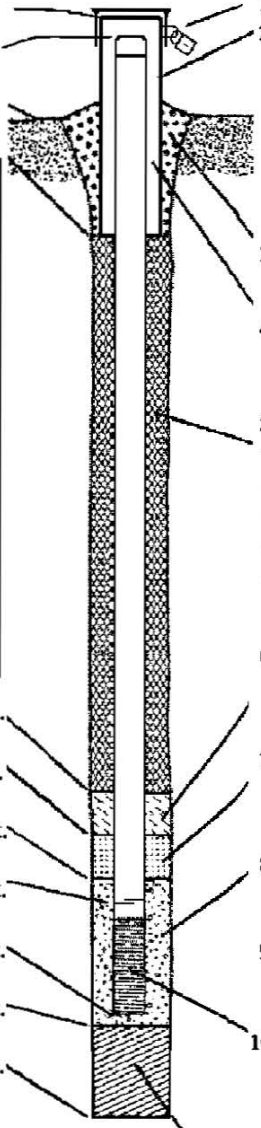
J. Filter pack, bottom _____ ft. MSL or 16.5 ft.

K. Borehole, bottom _____ ft. MSL or 16.5 ft.

L. Borehole, diameter 8 in.

M. O.D. well casing 2 in.

N. I.D. well casing _____ in.



1. Cap and lock? ☒ Yes ☐ No

2. Protective cover pipe:
a. Inside diameter: 8 in.
b. Length: 1 ft.
c. Material: Aluminum — Steel ☐ 04 Other ☒
d. Additional protection? ☐ Yes ☒ No
If yes, describe: _____

3. Surface seal: Bentonite ☐ 30 Concrete ☒ 01 Other ☐

4. Material between well casing and protective pipe: Bentonite ☐ 30 Other ☒ Sand

5. Annular space seal: a. Granular/Chipped Bentonite ☒ 33
b. _____ Lbs/gal mud weight . . . Bentonite-sand slurry ☐ 35
c. _____ Lbs/gal mud weight . . . . . Bentonite slurry ☐ 31
d. _____ % Bentonite . . . . . Bentonite-cement grout ☐ 50
e. 1.5 bags Ft³ volume added for any of the above
f. How installed: Tremie ☐ 01 Tremie pumped ☐ 02 Gravity ☒ 08

6. Bentonite seal: a. Bentonite granules ☐ 33
b. ☐ 1/4 in. ☒ 3/8 in. ☐ 1/2 in. Bentonite chips ☒ 32
c. _____ Other ☐

7. Fine sand material: Manufacturer, product name & mesh size
a. Badger #7
b. Volume added 1-50 lb bag ft³

8. Filter pack material: Manufacturer, product name & mesh size
a. #40 Red Flint
b. Volume added 4-50 lb bag ft³

9. Well casing: Flush threaded PVC schedule 40 ☒ 23 Flush threaded PVC schedule 80 ☐ 24 Other ☐

10. Screen material: Schedule 40 PVC
a. Screen type: Factory cut ☒ 11 Continuous slot ☐ 01 Other ☐
b. Manufacturer Johnson Screen
c. Slot size: 0.010 in.
d. Slotted length: 10 ft.

11. Backfill material (below filter pack): None ☐ 14 Other ☒ Filter Pack Sand

I hereby certify that the information on this form is true and correct to the best of my knowledge.

| Signature | Firm |
|---|---|
| [signature] | Arcadis, U.S., Inc. |

Please complete both Forms 4400-113A and 4400-113B and return them to the appropriate DNR office and bureau. Completion of these reports is required by chs. 160, 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291, 292, 293, 295, and 299, Wis. Stats., failure to file these forms may result in a forfeiture of between $10 and $25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on these forms is not intended to be used for any other purpose. NOTE: See the instructions for more information, including where the completed forms should be sent.

State of Wisconsin
Department of Natural Resources

# MONITORING WELL DEVELOPMENT

Form 4400-113B Rev. 7-98

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☒ Other ☐ _____

| Facility/Project Name | County Name | Well Name |
|---|---|---|
| Tyco FTC | Marinette | MW-101-16 |

| Facility License, Permit or Monitoring Number | County Code | Wis. Unique Well Number | DNR Well ID Number |
|---|---|---|---|
| 438005590 | 38 | VH123 | |

1. Can this well be purged dry? ☐ Yes ☒ No

2. Well development method
   - surged with bailer and bailed ☐ 41
   - surged with bailer and pumped ☐ 61
   - surged with block and bailed ☐ 42
   - surged with block and pumped ☐ 62
   - surged with block, bailed and pumped ☐ 70
   - compressed air ☐ 20
   - bailed only ☐ 10
   - pumped only ☒ 51
   - pumped slowly ☐ 50
   - Other _____ ☐

3. Time spent developing well 65 min.

4. Depth of well (from top of well casisng) 15.1 ft.

5. Inside diameter of well 2 in.

6. Volume of water in filter pack and well casing 4.0 gal.

7. Volume of water removed from well 225.0 gal.

8. Volume of water added (if any) Unknown gal.

9. Source of water added Marinette City Hydrant

10. Analysis performed on water added? ☐ Yes ☒ No
(If yes, attach results)

| | Before Development | After Development |
|---|---|---|
| 11. Depth to Water (from top of well casing) | a. 3.47 ft. | 3.80 ft. |
| Date | b. 07 / 31 / 2018 (m m d d y y y y) | 07 / 31 / 2018 (m m d d y y y y) |
| Time | c. 01 : 30 ☐ a.m. ☒ p.m. | 02 : 35 ☐ a.m. ☒ p.m. |
| 12. Sediment in well bottom | 0 inches | 0 inches |
| 13. Water clarity | Clear ☐ 10<br>Turbid ☒ 15<br>(Describe) Brown | Clear ☒ 20<br>Turbid ☐ 25<br>(Describe) |
| 14. Total suspended solids | ------- mg/l | ------- mg/l |
| 15. COD | ------- mg/l | ------- mg/l |

Fill in if drilling fluids were used and well is at solid waste facility:

16. Well developed by: Name (first, last) and Firm
First Name: Bruce Last Name: Evans
Firm: Arcadis U.S., Inc.

17. Additional comments on development:

Name and Address of Facility Contact /Owner/Responsible Party
First Name: _____ Last Name: _____
Facility/Firm: Tyco FTC
Street: 2700 Industrial Parkway South
City/State/Zip: Marinette/WI/54143

I hereby certify that the above information is true and correct to the best of my knowledge.
Signature: Bruce Evans
Print Name: Bruce Evans
Firm: Arcadis U.S., Inc.

NOTE: See instructions for more information including a list of county codes and well type codes.

State of Wisconsin
Department of Natural Resources

Route to: Watershed/Wastewater ☐ Waste Management ☐ Remediation/Redevelopment ☒ Other ☐ _____

# MONITORING WELL CONSTRUCTION
Form 4400-113A Rev. 7-98

| | | |
|---|---|---|
| Facility/Project Name: Tyco FTC | Local Grid Location of Well: _____ ft. ☐ N. ☐ S. _____ ft. ☐ E. ☐ W. | Well Name: MW-101-72 |
| Facility License, Permit or Monitoring No. | Local Grid Origin ☐ (estimated: ☐) or Well Location ☐ Lat. ___ ° ___ ' ___ " Long. ___ ° ___ ' ___ " or | Wis. Unique Well No.: VH122 / DNR Well ID No.: |
| Facility ID: 4 3 8 0 0 5 5 9 0 | St. Plane 459907.94 ft. N, 2580496.27 ft. E. S/C/N | Date Well Installed: 06 / 29 / 2018 (m m d d y y y y) |
| Type of Well: Well Code 12 / PZ | Section Location of Waste/Source: NE 1/4 of NE 1/4 of Sec. 13, T. 30 N, R. 23 ☒ E ☐ W | Well Installed By: Name (first, last) and Firm: Roy Buckenburger, Cascade |
| Distance from Waste/Source: Unknown ft. Enf. Stds. Apply ☒ | Location of Well Relative to Waste/Source: u ☐ Upgradient s ☐ Sidegradient d ☐ Downgradient n ☒ Not Known | Gov. Lot Number: |

A. Protective pipe, top elevation _____ ft. MSL

B. Well casing, top elevation 603.20 ft. MSL

C. Land surface elevation 603.49 ft. MSL

D. Surface seal, bottom _____ ft. MSL or 1 ft.

12. USCS classification of soil near screen:
GP ☐ GM ☐ GC ☐ GW ☐ SW ☐ SP ☒
SM ☐ SC ☐ ML ☐ MH ☐ CL ☐ CH ☐
Bedrock ☐

13. Sieve analysis performed? ☐ Yes ☒ No

14. Drilling method used: Rotary ☐ 5 0
Hollow Stem Auger ☐ 4 1
Rotasonic Other ☒

15. Drilling fluid used: Water ☒ 0 2 Air ☐ 0 1
Drilling Mud ☐ 0 3 None ☐ 9 9

16. Drilling additives used? ☐ Yes ☒ No

Describe City of Marinette hydrant

17. Source of water (attach analysis, if required):

E. Bentonite seal, top _____ ft. MSL or 47 ft.

F. Fine sand, top _____ ft. MSL or 58 ft.

G. Filter pack, top _____ ft. MSL or 60 ft.

H. Screen joint, top _____ ft. MSL or 62.4 ft.

I. Well bottom _____ ft. MSL or 72.4 ft.

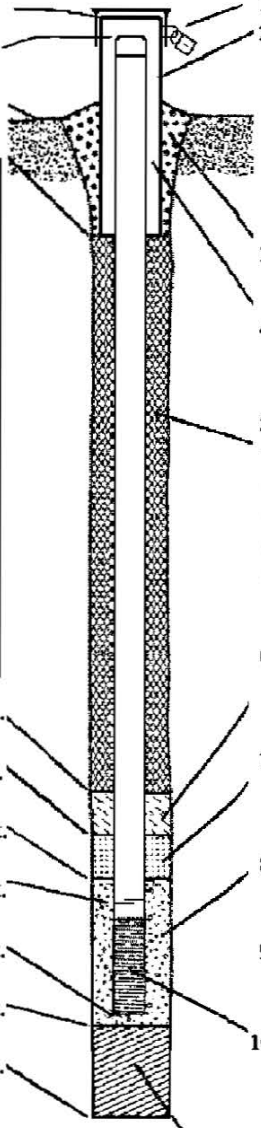
J. Filter pack, bottom _____ ft. MSL or 72.5 ft.

K. Borehole, bottom _____ ft. MSL or 72.5 ft.

L. Borehole, diameter 8 in.

M. O.D. well casing 2 in.

N. I.D. well casing _____ in.



1. Cap and lock? ☒ Yes ☐ No

2. Protective cover pipe:
a. Inside diameter: 8 in.
b. Length: 1 ft.
c. Material: Steel ☐ 0 4
Aluminum Other ☒
d. Additional protection? ☐ Yes ☒ No
If yes, describe: _____

3. Surface seal: Bentonite ☐ 3 0
Concrete ☒ 0 1
Other ☐

4. Material between well casing and protective pipe:
Bentonite ☐ 3 0
Sand Other ☒

5. Annular space seal: a. Granular/Chipped Bentonite ☐ 3 3
b. _____ Lbs/gal mud weight . . . Bentonite-sand slurry ☐ 3 5
c. _____ Lbs/gal mud weight . . . . . Bentonite slurry ☐ 3 1
d. _____ % Bentonite . . . . . Bentonite-cement grout ☒ 5 0
e. app. 60 gal. $Ft^3$ volume added for any of the above
f. How installed: Tremie ☐ 0 1
Tremie pumped ☒ 0 2
Gravity ☐ 0 8

6. Bentonite seal: a. Bentonite granules ☐ 3 3
b. ☐ 1/4 in. ☒ 3/8 in. ☐ 1/2 in. Bentonite chips ☒ 3 2
c. _____ Other ☐

7. Fine sand material: Manufacturer, product name & mesh size
a. Badger #7
b. Volume added 1/2-50 lb bag $ft^3$

8. Filter pack material: Manufacturer, product name & mesh size
a. #40 Red Flint
b. Volume added 4-50 lb bag $ft^3$

9. Well casing: Flush threaded PVC schedule 40 ☒ 2 3
Flush threaded PVC schedule 80 ☐ 2 4
Other ☐

10. Screen material: Schedule 40 PVC
a. Screen type: Factory cut ☒ 1 1
Continuous slot ☐ 0 1
Other ☐
b. Manufacturer Johnson Screen
c. Slot size: 0.010 in.
d. Slotted length: 10 ft.

11. Backfill material (below filter pack): None ☐ 1 4
Filter Pack Sand Other ☒

I hereby certify that the information on this form is true and correct to the best of my knowledge.

| | |
|---|---|
| Signature: [signature] | Firm: Arcadis, U.S., Inc. |

Please complete both Forms 4400-113A and 4400-113B and return them to the appropriate DNR office and bureau. Completion of these reports is required by chs. 160, 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291, 292, 293, 295, and 299, Wis. Stats., failure to file these forms may result in a forfeiture of between $10 and $25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on these forms is not intended to be used for any other purpose. NOTE: See the instructions for more information, including where the completed forms should be sent.

State of Wisconsin
Department of Natural Resources

# MONITORING WELL DEVELOPMENT

Form 4400-113B Rev. 7-98

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☒ Other ☐ _____

| Facility/Project Name | County Name | Well Name |
|---|---|---|
| Tyco FTC | Marinette | MW-101-72 |

| Facility License, Permit or Monitoring Number | County Code | Wis. Unique Well Number | DNR Well ID Number |
|---|---|---|---|
| 438005590 | 38 | VH122 | |

1. Can this well be purged dry? ☐ Yes ☒ No

2. Well development method

| | | |
|---|---|---|
| surged with bailer and bailed | ☐ | 41 |
| surged with bailer and pumped | ☐ | 61 |
| surged with block and bailed | ☐ | 42 |
| surged with block and pumped | ☐ | 62 |
| surged with block, bailed and pumped | ☐ | 70 |
| compressed air | ☐ | 20 |
| bailed only | ☐ | 10 |
| pumped only | ☒ | 51 |
| pumped slowly | ☐ | 50 |
| Other _____ | ☐ | |

3. Time spent developing well 65 min.

4. Depth of well (from top of well casisng) 72.1 ft.

5. Inside diameter of well 2 in.

6. Volume of water in filter pack and well casing 20.0 gal.

7. Volume of water removed from well 225.0 gal.

8. Volume of water added (if any) Unknown gal.

9. Source of water added Marinette City Hydrant

10. Analysis performed on water added? ☐ Yes ☒ No
(If yes, attach results)

| | Before Development | After Development |
|---|---|---|
| 11. Depth to Water (from top of well casing) | a. 4.00 ft. | 4.15 ft. |
| Date | b. 07 / 31 / 2018 (m m d d y y y y) | 07 / 31 / 2018 (m m d d y y y y) |
| Time | c. 01 : 30 ☐ a.m. ☒ p.m. | 02 : 35 ☐ a.m. ☒ p.m. |
| 12. Sediment in well bottom | 0 inches | 0 inches |
| 13. Water clarity | Clear ☐ 10<br>Turbid ☒ 15<br>(Describe) Brown | Clear ☒ 20<br>Turbid ☐ 25<br>(Describe) |
| 14. Total suspended solids | ------- mg/l | ------- mg/l |
| 15. COD | ------- mg/l | ------- mg/l |

Fill in if drilling fluids were used and well is at solid waste facility:

16. Well developed by: Name (first, last) and Firm
First Name: Bruce Last Name: Evans
Firm: Arcadis U.S., Inc.

17. Additional comments on development:

Name and Address of Facility Contact /Owner/Responsible Party
First Name: _____ Last Name: _____
Facility/Firm: Tyco FTC
Street: 2700 Industrial Parkway South
City/State/Zip: Marinette/WI/54143

I hereby certify that the above information is true and correct to the best of my knowledge.
Signature: Bruce Evans
Print Name: Bruce Evans
Firm: Arcadis U.S., Inc.

NOTE: See instructions for more information including a list of county codes and well type codes.

State of Wisconsin
Department of Natural Resources

Route to: Watershed/Wastewater ☐ Waste Management ☐ Remediation/Redevelopment ☒ Other ☐ _____

# MONITORING WELL CONSTRUCTION
Form 4400-113A Rev. 7-98

| | | |
|---|---|---|
| Facility/Project Name: Tyco FTC | Local Grid Location of Well: ____ ft. ☐ N. ☐ S. ____ ft. ☐ E. ☐ W. | Well Name: MW-100-32 |
| Facility License, Permit or Monitoring No. | Local Grid Origin ☐ (estimated: ☐) or Well Location ☒ Lat. ___ ° ___ ' ___ " Long. ___ ° ___ ' ___ " or | Wis. Unique Well No.: VH120 / DNR Well ID No.: ___ |
| Facility ID: 4 3 8 0 0 5 5 9 0 | St. Plane 457304.1 ft. N, 2578843.53 ft. E. S/C/N | Date Well Installed: 08 / 09 / 2018 (m m d d y y y y) |
| Type of Well: Well Code 12 / PZ | Section Location of Waste/Source: NE 1/4 of NE 1/4 of Sec. 13, T. 30 N, R. 23 ☒ E ☐ W | Well Installed By: Name (first, last) and Firm: Roy Buckenburger / Cascade |
| Distance from Waste/Source: Unknown ft. Enf. Stds. Apply ☒ | Location of Well Relative to Waste/Source: u ☐ Upgradient s ☐ Sidegradient d ☐ Downgradient n ☒ Not Known | Gov. Lot Number: |

A. Protective pipe, top elevation 602.12 ft. MSL

B. Well casing, top elevation 601.45 ft. MSL

C. Land surface elevation 602.12 ft. MSL

D. Surface seal, bottom ____ ft. MSL or 2 ft.

12. USCS classification of soil near screen:
GP ☐ GM ☐ GC ☐ GW ☐ SW ☐ SP ☒
SM ☐ SC ☐ ML ☐ MH ☐ CL ☐ CH ☐
Bedrock ☐

13. Sieve analysis performed? ☐ Yes ☒ No

14. Drilling method used: Rotary ☐ 5 0
Hollow Stem Auger ☐ 4 1
Sonic Other ☒

15. Drilling fluid used: Water ☒ 0 2 Air ☐ 0 1
Drilling Mud ☐ 0 3 None ☐ 9 9

16. Drilling additives used? ☐ Yes ☒ No

Describe City of Marinette hydrant

17. Source of water (attach analysis, if required):

E. Bentonite seal, top ____ ft. MSL or 8 ft.

F. Fine sand, top ____ ft. MSL or 18 ft.

G. Filter pack, top ____ ft. MSL or 20 ft.

H. Screen joint, top ____ ft. MSL or 23.3 ft.

I. Well bottom ____ ft. MSL or 33.3 ft.

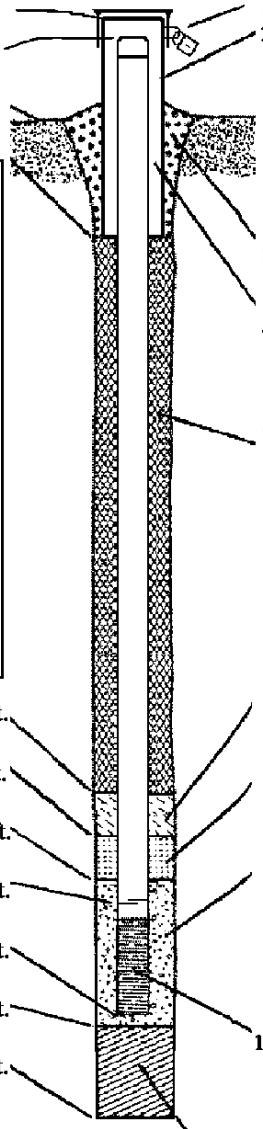
J. Filter pack, bottom ____ ft. MSL or 33.8 ft.

K. Borehole, bottom ____ ft. MSL or 33.8 ft.

L. Borehole, diameter 8 in.

M. O.D. well casing 2 in.

N. I.D. well casing ____ in.



1. Cap and lock? ☒ Yes ☐ No

2. Protective cover pipe:
a. Inside diameter: 8 in.
b. Length: 1 ft.
c. Material: Steel ☐ 0 4
Aluminum Other ☒
d. Additional protection? ☐ Yes ☒ No
If yes, describe: _____

3. Surface seal: Bentonite ☐ 3 0
Concrete ☒ 0 1
Other ☐

4. Material between well casing and protective pipe: Bentonite ☐ 3 0
Sand Other ☒

5. Annular space seal: a. Granular/Chipped Bentonite ☒ 3 3
b. ____ Lbs/gal mud weight . . . Bentonite-sand slurry ☐ 3 5
c. ____ Lbs/gal mud weight . . . . . Bentonite slurry ☐ 3 1
d. ____ % Bentonite . . . . . Bentonite-cement grout ☐ 5 0
e. 3-50 lb bags $Ft^3$ volume added for any of the above
f. How installed: Tremie ☐ 0 1
Tremie pumped ☐ 0 2
Gravity ☒ 0 8

6. Bentonite seal: a. Bentonite granules ☐ 3 3
b. ☐ 1/4 in. ☒ 3/8 in. ☐ 1/2 in. Bentonite chips ☒ 3 2
c. _____ Other ☐

7. Fine sand material: Manufacturer, product name & mesh size
a. Badger #7
b. Volume added 1-50 lb bag $ft^3$

8. Filter pack material: Manufacturer, product name & mesh size
a. #40 Red Flint
b. Volume added 5-50 lb bag $ft^3$

9. Well casing: Flush threaded PVC schedule 40 ☒ 2 3
Flush threaded PVC schedule 80 ☐ 2 4
Other ☐

10. Screen material: Schedule 40 PVC
a. Screen type: Factory cut ☒ 1 1
Continuous slot ☐ 0 1
Other ☐
b. Manufacturer Johnson Screen
c. Slot size: 0.010 in.
d. Slotted length: 10 ft.

11. Backfill material (below filter pack): None ☐ 1 4
Filter Pack Sand Other ☒

I hereby certify that the information on this form is true and correct to the best of my knowledge.

| Signature | Firm |
|---|---|
| [signature] | Arcadis U.S., Inc. |

Please complete both Forms 4400-113A and 4400-113B and return them to the appropriate DNR office and bureau. Completion of these reports is required by chs. 160, 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291, 292, 293, 295, and 299, Wis. Stats., failure to file these forms may result in a forfeiture of between $10 and $25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on these forms is not intended to be used for any other purpose. NOTE: See the instructions for more information, including where the completed forms should be sent.

State of Wisconsin
Department of Natural Resources

# MONITORING WELL DEVELOPMENT

Form 4400-113B Rev. 7-98

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☒ Other ☐ _____

| Facility/Project Name | County Name | Well Name |
|---|---|---|
| Tyco FTC | Marinette | MW-100-32 |

| Facility License, Permit or Monitoring Number | County Code | Wis. Unique Well Number | DNR Well ID Number |
|---|---|---|---|
| 438005590 | 38 | VH120 | |

1. Can this well be purged dry? ☐ Yes ☒ No

2. Well development method
   - surged with bailer and bailed ☐ 41
   - surged with bailer and pumped ☐ 61
   - surged with block and bailed ☐ 42
   - surged with block and pumped ☐ 62
   - surged with block, bailed and pumped ☐ 70
   - compressed air ☐ 20
   - bailed only ☐ 10
   - pumped only ☒ 51
   - pumped slowly ☐ 50
   - Other _____ ☐

3. Time spent developing well 45 min.

4. Depth of well (from top of well casisng) 32.7 ft.

5. Inside diameter of well 2 in.

6. Volume of water in filter pack and well casing 120 gal.

7. Volume of water removed from well Unknown gal.

8. Volume of water added (if any) ___ gal.

9. Source of water added Marinette City Hydrant

10. Analysis performed on water added? ☐ Yes ☒ No
(If yes, attach results)

| | Before Development | After Development |
|---|---|---|
| 11. Depth to Water (from top of well casing) | a. 4.70 ft. | 4.75 ft. |
| Date | b. 08 / 20 / 2018 (m m d d y y y y) | 08 / 20 / 2018 (m m d d y y y y) |
| Time | c. 01 : 40 ☐ a.m. ☒ p.m. | 02 : 25 ☐ a.m. ☒ p.m. |
| 12. Sediment in well bottom | 0.5 inches | 0 inches |
| 13. Water clarity | Clear ☒ 10<br>Turbid ☒ 15<br>(Describe) Brown | Clear ☒ 20<br>Turbid ☐ 25<br>(Describe) |

Fill in if drilling fluids were used and well is at solid waste facility:

| | | |
|---|---|---|
| 14. Total suspended solids | ------- mg/l | ------- mg/l |
| 15. COD | ------- mg/l | ------- mg/l |

16. Well developed by: Name (first, last) and Firm
First Name: Bruce Last Name: Evans
Firm: Arcadis U.S., Inc.

17. Additional comments on development:

Name and Address of Facility Contact /Owner/Responsible Party
First Name: _____ Last Name: _____
Facility/Firm: Tyco FTC
Street: 2700 Industrial Parkway South
City/State/Zip: Marinette/WI/54143

I hereby certify that the above information is true and correct to the best of my knowledge.
Signature: Bruce Evans
Print Name: Bruce Evans
Firm: Arcadis U.S., Inc.

NOTE: See instructions for more information including a list of county codes and well type codes.

State of Wisconsin
Department of Natural Resources

Route to: Watershed/Wastewater ☐ Waste Management ☐ Remediation/Redevelopment ☒ Other ☐ _____

# MONITORING WELL CONSTRUCTION
Form 4400-113A Rev. 7-98

| | | |
|---|---|---|
| Facility/Project Name: Tyco FTC | Local Grid Location of Well: _____ ft. ☐ N. ☐ S. _____ ft. ☐ E. ☐ W. | Well Name: MW-100-68 |
| Facility License, Permit or Monitoring No. | Local Grid Origin ☐ (estimated: ☐) or Well Location ☒ Lat. ___ ° ___ ' ___ " Long. ___ ° ___ ' ___ " or | Wis. Unique Well No.: VH121 / DNR Well ID No.: |
| Facility ID: 4 3 8 0 0 5 5 9 0 | St. Plane 457304.3 ft. N, 2578849.0 ft. E. S/C/N | Date Well Installed: 08 / 14 / 2018 (m m d d y y y y) |
| Type of Well: Well Code 12 / PZ | Section Location of Waste/Source: NE 1/4 of NE 1/4 of Sec. 13, T. 30 N, R. 23 ☒ E ☐ W | Well Installed By: Name (first, last) and Firm: Roy Buckenburger, Cascade |
| Distance from Waste/Source: Unknown ft. Enf. Stds. Apply ☒ | Location of Well Relative to Waste/Source: u ☐ Upgradient s ☐ Sidegradient d ☐ Downgradient n ☒ Not Known | Gov. Lot Number: |

A. Protective pipe, top elevation 602.13 ft. MSL

B. Well casing, top elevation 601.83 ft. MSL

C. Land surface elevation 602.13 ft. MSL

D. Surface seal, bottom _____ ft. MSL or 2 ft.

12. USCS classification of soil near screen:
GP ☐ GM ☐ GC ☐ GW ☐ SW ☐ SP ☒
SM ☐ SC ☐ ML ☐ MH ☐ CL ☐ CH ☐
Bedrock ☐

13. Sieve analysis performed? ☐ Yes ☒ No

14. Drilling method used: Rotary ☐ 50 Hollow Stem Auger ☐ 41 Other ☒ Sonic

15. Drilling fluid used: Water ☒ 02 Air ☐ 01 Drilling Mud ☐ 03 None ☐ 99

16. Drilling additives used? ☐ Yes ☒ No

Describe _____

17. Source of water (attach analysis, if required): City of Marinette hydrant

E. Bentonite seal, top _____ ft. MSL or 49 ft.

F. Fine sand, top _____ ft. MSL or 54 ft.

G. Filter pack, top _____ ft. MSL or 56 ft.

H. Screen joint, top _____ ft. MSL or 59.2 ft.

I. Well bottom _____ ft. MSL or 69.2 ft.

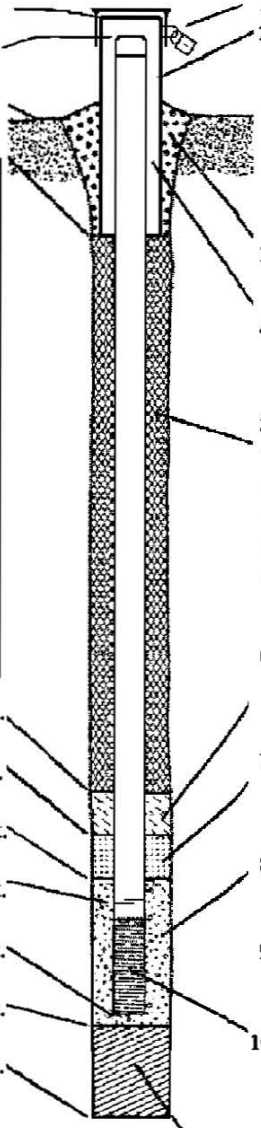
J. Filter pack, bottom _____ ft. MSL or 69.20 ft.

K. Borehole, bottom _____ ft. MSL or 69.20 ft.

L. Borehole, diameter 8 in.

M. O.D. well casing 2 in.

N. I.D. well casing _____ in.



1. Cap and lock? ☒ Yes ☐ No

2. Protective cover pipe:
a. Inside diameter: 8 in.
b. Length: 1 ft.
c. Material: Aluminum — Steel ☐ 04 Other ☒
d. Additional protection? ☐ Yes ☒ No
If yes, describe: _____

3. Surface seal: Bentonite ☐ 30 Concrete ☒ 01 Other ☐

4. Material between well casing and protective pipe: Bentonite ☐ 30 Other ☒ Sand

5. Annular space seal: a. Granular/Chipped Bentonite ☐ 33
b. _____ Lbs/gal mud weight . . . Bentonite-sand slurry ☐ 35
c. _____ Lbs/gal mud weight . . . . . Bentonite slurry ☐ 31
d. _____ % Bentonite . . . . . Bentonite-cement grout ☒ 50
e. appx 60 gal $Ft^3$ volume added for any of the above
f. How installed: Tremie ☐ 01 Tremie pumped ☐ 02 Gravity ☒ 08

6. Bentonite seal: a. Bentonite granules ☐ 33
b. ☐ 1/4 in. ☒ 3/8 in. ☐ 1/2 in. Bentonite chips ☒ 32
c. _____ Other ☐

7. Fine sand material: Manufacturer, product name & mesh size
a. Badger #7
b. Volume added 1-50 lb bag $ft^3$

8. Filter pack material: Manufacturer, product name & mesh size
a. #40 Red Flint
b. Volume added 5-50 lb bag $ft^3$

9. Well casing: Flush threaded PVC schedule 40 ☒ 23 Flush threaded PVC schedule 80 ☐ 24 Other ☐

10. Screen material: Schedule 40 PVC
a. Screen type: Factory cut ☒ 11 Continuous slot ☐ 01 Other ☐
b. Manufacturer Johnson Screen
c. Slot size: 0.010 in.
d. Slotted length: 10 ft.

11. Backfill material (below filter pack): None ☐ 14 Other ☒ Filter Pack Sand

I hereby certify that the information on this form is true and correct to the best of my knowledge.

| Signature | Firm |
|---|---|
| [signature] | Arcadis, U.S., Inc. |

Please complete both Forms 4400-113A and 4400-113B and return them to the appropriate DNR office and bureau. Completion of these reports is required by chs. 160, 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291, 292, 293, 295, and 299, Wis. Stats., failure to file these forms may result in a forfeiture of between $10 and $25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on these forms is not intended to be used for any other purpose. NOTE: See the instructions for more information, including where the completed forms should be sent.

State of Wisconsin
Department of Natural Resources

# MONITORING WELL DEVELOPMENT

Form 4400-113B Rev. 7-98

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☒ Other ☐ _____

| Facility/Project Name | County Name | Well Name |
|---|---|---|
| Tyco FTC | Marinette | MW-100-68 |

| Facility License, Permit or Monitoring Number | County Code | Wis. Unique Well Number | DNR Well ID Number |
|---|---|---|---|
| 438005590 | 38 | VH121 | |

1. Can this well be purged dry? ☐ Yes ☒ No

2. Well development method
   - surged with bailer and bailed ☐ 41
   - surged with bailer and pumped ☐ 61
   - surged with block and bailed ☐ 42
   - surged with block and pumped ☐ 62
   - surged with block, bailed and pumped ☐ 70
   - compressed air ☐ 20
   - bailed only ☐ 10
   - pumped only ☒ 51
   - pumped slowly ☐ 50
   - Other _____ ☐

3. Time spent developing well 45 min.

4. Depth of well (from top of well casisng) 68.9 ft.

5. Inside diameter of well 2 in.

6. Volume of water in filter pack and well casing 20.0 gal.

7. Volume of water removed from well 120 gal.

8. Volume of water added (if any) Unknown gal.

9. Source of water added Marinette City Hydrant

10. Analysis performed on water added? ☐ Yes ☒ No
(If yes, attach results)

| | Before Development | After Development |
|---|---|---|
| 11. Depth to Water (from top of well casing) | a. 4.85 ft. | 4.95 ft. |
| Date | b. 08 / 20 / 2018 (m m d d y y y y) | 08 / 20 / 2018 (m m d d y y y y) |
| Time | c. 01 : 40 ☐ a.m. ☒ p.m. | 02 : 25 ☐ a.m. ☒ p.m. |
| 12. Sediment in well bottom | 0.1 inches | 0 inches |
| 13. Water clarity | Clear ☐ 10 / Turbid ☒ 15 (Describe) Brown | Clear ☒ 20 / Turbid ☐ 25 (Describe) |
| 14. Total suspended solids | ------- mg/l | ------- mg/l |
| 15. COD | ------- mg/l | ------- mg/l |

Fill in if drilling fluids were used and well is at solid waste facility:

16. Well developed by: Name (first, last) and Firm
First Name: Bruce Last Name: Evans
Firm: Arcadis U.S., Inc.

17. Additional comments on development:

Name and Address of Facility Contact /Owner/Responsible Party
First Name: _____ Last Name: _____
Facility/Firm: Tyco FTC
Street: 2700 Industrial Parkway South
City/State/Zip: Marinette/WI/54143

I hereby certify that the above information is true and correct to the best of my knowledge.
Signature: Bruce Evans
Print Name: Bruce Evans
Firm: Arcadis U.S., Inc.

NOTE: See instructions for more information including a list of county codes and well type codes.

State of Wisconsin
Department of Natural Resources

Route to: Watershed/Wastewater ☐ Waste Management ☐ Remediation/Redevelopment ☒ Other ☐ _____

# MONITORING WELL CONSTRUCTION
Form 4400-113A Rev. 7-98

| | | |
|---|---|---|
| Facility/Project Name: Tyco FTC | Local Grid Location of Well: _____ ft. ☐ N. ☐ S. _____ ft. ☐ E. ☐ W. | Well Name: TW-01 |
| Facility License, Permit or Monitoring No. | Local Grid Origin ☐ (estimated: ☐) or Well Location ☐ Lat. ___ ° ___ ' ___ " Long. ___ ° ___ ' ___ " or | Wis. Unique Well No. _____ / DNR Well ID No. _____ |
| Facility ID _____ | St. Plane _____ ft. N, _____ ft. E. S/C/N | Date Well Installed: 10/30/2018 (m m d d y y y y) |
| Type of Well: Piezometer, Temp Well; Well Code ___/___ | Section Location of Waste/Source: NE 1/4 of NE 1/4 of Sec. 13, T. 30 N, R. 23 ☒ E ☐ W | Well Installed By: Name (first, last) and Firm: Mike Heizen; Braun Intertec |
| Distance from Waste/Source: unknown ft. Enf. Stds. Apply ☒ | Location of Well Relative to Waste/Source: u ☐ Upgradient s ☐ Sidegradient d ☐ Downgradient n ☒ Not Known; Gov. Lot Number _____ | |

A. Protective pipe, top elevation _____ ft. MSL

B. Well casing, top elevation _____ ft. MSL

C. Land surface elevation _____ ft. MSL

D. Surface seal, bottom _____ ft. MSL or 0 ft.

12. USCS classification of soil near screen:
GP ☐ GM ☐ GC ☐ GW ☐ SW ☐ SP ☒
SM ☐ SC ☐ ML ☐ MH ☐ CL ☐ CH ☐
Bedrock ☐

13. Sieve analysis performed? ☐ Yes ☒ No

14. Drilling method used: Rotary ☐ 50; Hollow Stem Auger ☒ 41; Other ☐ ___

15. Drilling fluid used: Water ☐ 02; Air ☐ 01; Drilling Mud ☐ 03; None ☒ 99

16. Drilling additives used? ☐ Yes ☒ No

Describe _____

17. Source of water (attach analysis, if required): _____

E. Bentonite seal, top _____ ft. MSL or 0 ft.

F. Fine sand, top _____ ft. MSL or 6 ft.

G. Filter pack, top _____ ft. MSL or 8 ft.

H. Screen joint, top _____ ft. MSL or 9.5 ft.

I. Well bottom _____ ft. MSL or 19.5 ft.

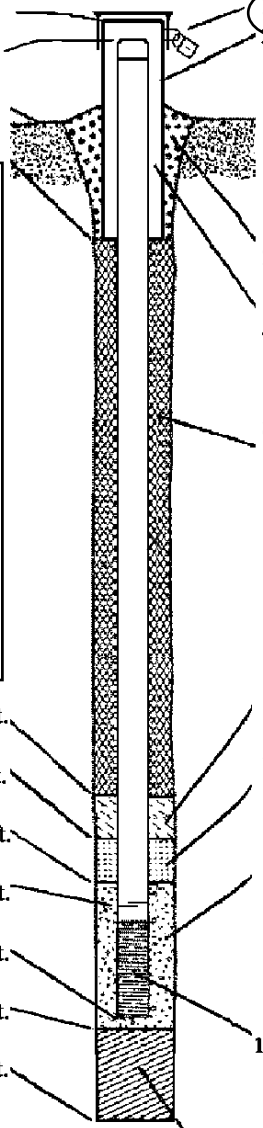
J. Filter pack, bottom _____ ft. MSL or 19.5 ft.

K. Borehole, bottom _____ ft. MSL or 19.5 ft.

L. Borehole, diameter 8 in.

M. O.D. well casing 2 in.

N. I.D. well casing ____ in.



1. Cap and lock? ☒ Yes ☐ No

2. Protective cover pipe:
a. Inside diameter: 8 in.
b. Length: 1 ft.
c. Material: Aluminum; Steel ☐ 04; Other ☒ ___
d. Additional protection? ☐ Yes ☒ No
If yes, describe: _____

3. Surface seal: Bentonite ☒ 30; Concrete ☐ 01; Other ☐ ___

4. Material between well casing and protective pipe: Bentonite ☒ 30; Other ☐ ___

5. Annular space seal: a. Granular/Chipped Bentonite ☒ 33
b. ____ Lbs/gal mud weight . . . Bentonite-sand slurry ☐ 35
c. ____ Lbs/gal mud weight . . . . . Bentonite slurry ☐ 31
d. ____ % Bentonite . . . . . Bentonite-cement grout ☐ 50
e. 2-50 lb bags $Ft^3$ volume added for any of the above
f. How installed: Tremie ☐ 01; Tremie pumped ☐ 02; Gravity ☒ 08

6. Bentonite seal: a. Bentonite granules ☐ 33
b. ☐ 1/4 in. ☒ 3/8 in. ☐ 1/2 in. Bentonite chips ☐ 32
c. _____ Other ☐ ___

7. Fine sand material: Manufacturer, product name & mesh size
a. 50 Red Flint
b. Volume added 0.5-50 lb bags $ft^3$

8. Filter pack material: Manufacturer, product name & mesh size
a. 40 Red Flint
b. Volume added 2-50 lb bags $ft^3$

9. Well casing: Flush threaded PVC schedule 40 ☒ 23; Flush threaded PVC schedule 80 ☐ 24; Other ☐ ___

10. Screen material: Schedule 40 PVC
a. Screen type: Factory cut ☒ 11; Continuous slot ☐ 01; Other ☐ ___
b. Manufacturer Johnson Screen
c. Slot size: 0.010 in.
d. Slotted length: 10 ft.

11. Backfill material (below filter pack): None ☒ 14; Other ☐ ___

I hereby certify that the information on this form is true and correct to the best of my knowledge.

| Signature | Firm |
|---|---|
| Bruce Evans | Arcadis Inc. |

Please complete both Forms 4400-113A and 4400-113B and return them to the appropriate DNR office and bureau. Completion of these reports is required by chs. 160, 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291, 292, 293, 295, and 299, Wis. Stats., failure to file these forms may result in a forfeiture of between $10 and $25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on these forms is not intended to be used for any other purpose. NOTE: See the instructions for more information, including where the completed forms should be sent.

State of Wisconsin
Department of Natural Resources

# MONITORING WELL DEVELOPMENT

Form 4400-113B Rev. 7-98

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☒ Other ☐ _____

| Facility/Project Name | County Name | Well Name |
|---|---|---|
| Tyco FTC | Marinette | TW-01 |

| Facility License, Permit or Monitoring Number | County Code | Wis. Unique Well Number | DNR Well ID Number |
|---|---|---|---|
| | __ | _____ | ___ |

1. Can this well be purged dry? ☐ Yes ☐ No

2. Well development method
   - surged with bailer and bailed ☐ 41
   - surged with bailer and pumped ☐ 61
   - surged with block and bailed ☐ 42
   - surged with block and pumped ☐ 62
   - surged with block, bailed and pumped ☐ 70
   - compressed air ☐ 20
   - bailed only ☐ 10
   - pumped only ☐ 51
   - pumped slowly ☐ 50
   - Other _____ ☐ __

3. Time spent developing well ____ min.

4. Depth of well (from top of well casisng) __19.5 ft.

5. Inside diameter of well __2.00 in.

6. Volume of water in filter pack and well casing ___.__ gal.

7. Volume of water removed from well ___.__ gal.

8. Volume of water added (if any) ___.__ gal.

9. Source of water added _____

10. Analysis performed on water added? ☐ Yes ☐ No
(If yes, attach results)

| | Before Development | After Development |
|---|---|---|
| 11. Depth to Water (from top of well casing) | a. ___.__ ft. | ___.__ ft. |
| Date | b. __/__/____ (m m d d y y y y) | __/__/____ (m m d d y y y y) |
| Time | c. __:__ ☐ a.m. ☐ p.m. | __:__ ☐ a.m. ☐ p.m. |
| 12. Sediment in well bottom | __.__ inches | __.__ inches |
| 13. Water clarity | Clear ☐ 10<br>Turbid ☐ 15<br>(Describe) | Clear ☐ 20<br>Turbid ☐ 25<br>(Describe) |

Fill in if drilling fluids were used and well is at solid waste facility:

| | | |
|---|---|---|
| 14. Total suspended solids | ____.__ mg/l | ____.__ mg/l |
| 15. COD | ____.__ mg/l | ____.__ mg/l |

16. Well developed by: Name (first, last) and Firm
First Name: Last Name:
Firm:

17. Additional comments on development:

Name and Address of Facility Contact /Owner/Responsible Party
First Name: _____ Last Name: _____

Facility/Firm: Johnson Controls

Street: 2700 Industrial Parkway

City/State/Zip: Marinette, WI 54143

I hereby certify that the above information is true and correct to the best of my knowledge.

Signature: _____

Print Name: Amy Parish

Firm: Arcadis

NOTE: See instructions for more information including a list of county codes and well type codes.

State of Wisconsin
Department of Natural Resources

Route to: Watershed/Wastewater ☐ Waste Management ☐ Remediation/Redevelopment ☒ Other ☐ _____

# MONITORING WELL CONSTRUCTION

Form 4400-113A Rev. 7-98

| | | |
|---|---|---|
| Facility/Project Name: Tyco FTC | Local Grid Location of Well: _____ ft. ☐ N. ☐ S. _____ ft. ☐ E. ☐ W. | Well Name: TW-02 |
| Facility License, Permit or Monitoring No. | Local Grid Origin ☐ (estimated: ☐) or Well Location ☐ Lat. ___° ___' ___" Long. ___° ___' ___" or | Wis. Unique Well No. _____ / DNR Well ID No. _____ |
| Facility ID _____ | St. Plane _____ ft. N, _____ ft. E. S/C/N | Date Well Installed: 10/31/2018 (m m d d y y y y) |
| Type of Well: Piezometer, Temp Well; Well Code ____/____ | Section Location of Waste/Source: ____ 1/4 of ____ 1/4 of Sec. ____, T. ____ N, R. ____ ☐ E ☐ W | Well Installed By: Name (first, last) and Firm: Mike Heizen; Braun Intertec |
| Distance from Waste/Source: unknown ft. Enf. Stds. Apply ☒ | Location of Well Relative to Waste/Source: u ☐ Upgradient s ☐ Sidegradient d ☐ Downgradient n ☒ Not Known; Gov. Lot Number _____ | |

A. Protective pipe, top elevation _____ ft. MSL

B. Well casing, top elevation _____ ft. MSL

C. Land surface elevation _____ ft. MSL

D. Surface seal, bottom _____ ft. MSL or 0 ft.

12. USCS classification of soil near screen:
GP ☐ GM ☐ GC ☐ GW ☐ SW ☐ SP ☐
SM ☐ SC ☐ ML ☐ MH ☐ CL ☐ CH ☐
Bedrock ☐

13. Sieve analysis performed? ☐ Yes ☒ No

14. Drilling method used: Rotary ☐ 50; Hollow Stem Auger ☒ 41; Other ☐ ____

15. Drilling fluid used: Water ☐ 02; Air ☐ 01; Drilling Mud ☐ 03; None ☒ 99

16. Drilling additives used? ☐ Yes ☒ No

Describe _____

17. Source of water (attach analysis, if required): _____

E. Bentonite seal, top _____ ft. MSL or 0 ft.

F. Fine sand, top _____ ft. MSL or 5.7 ft.

G. Filter pack, top _____ ft. MSL or 7.7 ft.

H. Screen joint, top _____ ft. MSL or 9.7 ft.

I. Well bottom _____ ft. MSL or 19.7 ft.

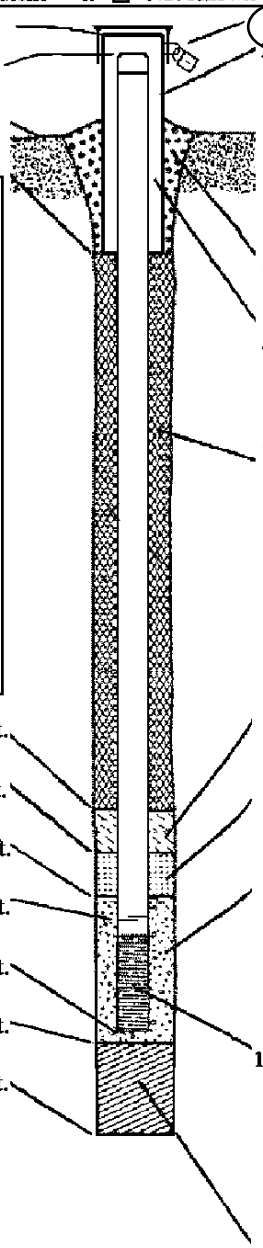
J. Filter pack, bottom _____ ft. MSL or 20 ft.

K. Borehole, bottom _____ ft. MSL or 20 ft.

L. Borehole, diameter 8 in.

M. O.D. well casing 2 in.

N. I.D. well casing ____ in.



1. Cap and lock? ☒ Yes ☐ No

2. Protective cover pipe:
a. Inside diameter: 8 in.
b. Length: 1 ft.
c. Material: Aluminum — Steel ☐ 04; Other ☒ ____
d. Additional protection? ☐ Yes ☒ No
If yes, describe: _____

3. Surface seal: Bentonite ☒ 30; Concrete ☐ 01; Other ☐ ____

4. Material between well casing and protective pipe: Bentonite ☒ 30; Other ☐ ____

5. Annular space seal: a. Granular/Chipped Bentonite ☒ 33
b. _____ Lbs/gal mud weight . . . Bentonite-sand slurry ☐ 35
c. _____ Lbs/gal mud weight . . . . . Bentonite slurry ☐ 31
d. _____ % Bentonite . . . . . Bentonite-cement grout ☐ 50
e. 2 - 50lb bags $Ft^3$ volume added for any of the above
f. How installed: Tremie ☐ 01; Tremie pumped ☐ 02; Gravity ☒ 08

6. Bentonite seal: a. Bentonite granules ☐ 33
b. ☐ 1/4 in. ☒ 3/8 in. ☐ 1/2 in. Bentonite chips ☐ 32
c. _____ Other ☐ ____

7. Fine sand material: Manufacturer, product name & mesh size
a. 50 Red Flint
b. Volume added 0.5-50 lb bag $ft^3$

8. Filter pack material: Manufacturer, product name & mesh size
a. 40 Red Flint
b. Volume added 2 - 50lb bags $ft^3$

9. Well casing: Flush threaded PVC schedule 40 ☒ 23; Flush threaded PVC schedule 80 ☐ 24; Other ☐ ____

10. Screen material: Schedule 40 PVC
a. Screen type: Factory cut ☒ 11; Continuous slot ☐ 01; Other ☐ ____
b. Manufacturer Johnson Screen
c. Slot size: 0.010 in.
d. Slotted length: 10 ft.

11. Backfill material (below filter pack): None ☒ 14; Other ☐ ____

I hereby certify that the information on this form is true and correct to the best of my knowledge.

| Signature | Firm |
|---|---|
| | Arcadis Inc. |

Please complete both Forms 4400-113A and 4400-113B and return them to the appropriate DNR office and bureau. Completion of these reports is required by chs. 160, 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291, 292, 293, 295, and 299, Wis. Stats., failure to file these forms may result in a forfeiture of between $10 and $25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on these forms is not intended to be used for any other purpose. NOTE: See the instructions for more information, including where the completed forms should be sent.

State of Wisconsin
Department of Natural Resources

# MONITORING WELL DEVELOPMENT

Form 4400-113B Rev. 7-98

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☒ Other ☐ _____

| Facility/Project Name | County Name | Well Name |
|---|---|---|
| Tyco FTC | Marinette | TW-02 |

| Facility License, Permit or Monitoring Number | County Code | Wis. Unique Well Number | DNR Well ID Number |
|---|---|---|---|
| | __ | _____ | ___ |

1. Can this well be purged dry? ☐ Yes ☐ No

2. Well development method
   - surged with bailer and bailed ☐ 41
   - surged with bailer and pumped ☐ 61
   - surged with block and bailed ☐ 42
   - surged with block and pumped ☐ 62
   - surged with block, bailed and pumped ☐ 70
   - compressed air ☐ 20
   - bailed only ☐ 10
   - pumped only ☐ 51
   - pumped slowly ☐ 50
   - Other _____ ☐ __

3. Time spent developing well ____ min.

4. Depth of well (from top of well casisng) __20.0 ft.

5. Inside diameter of well __2.00 in.

6. Volume of water in filter pack and well casing ___.__ gal.

7. Volume of water removed from well ___.__ gal.

8. Volume of water added (if any) ___.__ gal.

9. Source of water added _____

10. Analysis performed on water added? ☐ Yes ☐ No
(If yes, attach results)

| | Before Development | After Development |
|---|---|---|
| 11. Depth to Water (from top of well casing) | a. ___.__ ft. | ___.__ ft. |
| Date | b. __/__/____ (m m d d y y y y) | __/__/____ (m m d d y y y y) |
| Time | c. __:__ ☐ a.m. ☐ p.m. | __:__ ☐ a.m. ☐ p.m. |
| 12. Sediment in well bottom | __.__ inches | __.__ inches |
| 13. Water clarity | Clear ☐ 10<br>Turbid ☐ 15<br>(Describe) | Clear ☐ 20<br>Turbid ☐ 25<br>(Describe) |

Fill in if drilling fluids were used and well is at solid waste facility:

| | | |
|---|---|---|
| 14. Total suspended solids | ____.__ mg/l | ____.__ mg/l |
| 15. COD | ____.__ mg/l | ____.__ mg/l |

16. Well developed by: Name (first, last) and Firm
First Name: Last Name:
Firm:

17. Additional comments on development:

Name and Address of Facility Contact /Owner/Responsible Party
First Name: _____ Last Name: _____

Facility/Firm: Johnson Controls

Street: 2700 Industrial Parkway

City/State/Zip: Marinette, WI 54143

I hereby certify that the above information is true and correct to the best of my knowledge.

Signature: _____

Print Name: Amy Parish

Firm: Arcadis

NOTE: See instructions for more information including a list of county codes and well type codes.

State of Wisconsin
Department of Natural Resources

Route to: Watershed/Wastewater ☐ Waste Management ☐ Remediation/Redevelopment ☒ Other ☐ _____

# MONITORING WELL CONSTRUCTION
Form 4400-113A Rev. 7-98

| | | |
|---|---|---|
| Facility/Project Name: Tyco FTC | Local Grid Location of Well: _____ ft. ☐ N. ☐ S. _____ ft. ☐ E. ☐ W. | Well Name: TW-03 |
| Facility License, Permit or Monitoring No. | Local Grid Origin ☐ (estimated: ☐) or Well Location ☐ Lat. ___ ° ___ ' ___ " Long. ___ ° ___ ' ___ " or | Wis. Unique Well No. _____ / DNR Well ID No. _____ |
| Facility ID _____ | St. Plane _____ ft. N, _____ ft. E. S/C/N | Date Well Installed: 10/31/2018 (m m d d y y y y) |
| Type of Well: Piezometer, Temp Well; Well Code ____/____ | Section Location of Waste/Source: ____ 1/4 of ____ 1/4 of Sec. ____, T. ____ N, R. ____ ☐ E. ☐ W | Well Installed By: Name (first, last) and Firm: Mike Heizen; Braun Intertec |
| Distance from Waste/Source: unknown ft. Enf. Stds. Apply ☒ | Location of Well Relative to Waste/Source: u ☐ Upgradient s ☐ Sidegradient d ☐ Downgradient n ☒ Not Known; Gov. Lot Number _____ | |

A. Protective pipe, top elevation _____ ft. MSL

B. Well casing, top elevation _____ ft. MSL

C. Land surface elevation _____ ft. MSL

D. Surface seal, bottom _____ ft. MSL or 0 ft.

12. USCS classification of soil near screen:
GP ☐ GM ☐ GC ☐ GW ☐ SW ☐ SP ☐
SM ☐ SC ☐ ML ☐ MH ☐ CL ☐ CH ☐
Bedrock ☐

13. Sieve analysis performed? ☐ Yes ☒ No

14. Drilling method used: Rotary ☐ 50; Hollow Stem Auger ☒ 41; Other ☐ ____

15. Drilling fluid used: Water ☐ 02; Air ☐ 01; Drilling Mud ☐ 03; None ☒ 99

16. Drilling additives used? ☐ Yes ☒ No

Describe _____

17. Source of water (attach analysis, if required): _____

E. Bentonite seal, top _____ ft. MSL or 0 ft.

F. Fine sand, top _____ ft. MSL or 5.5 ft.

G. Filter pack, top _____ ft. MSL or 12.5 ft.

H. Screen joint, top _____ ft. MSL or 10 ft.

I. Well bottom _____ ft. MSL or 20 ft.

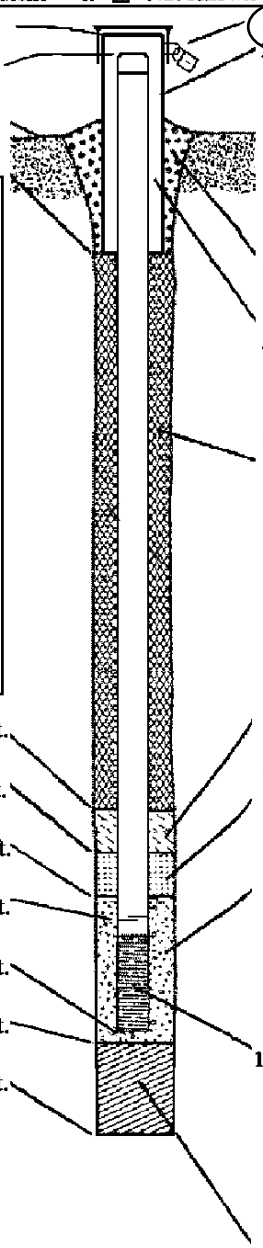
J. Filter pack, bottom _____ ft. MSL or 20 ft.

K. Borehole, bottom _____ ft. MSL or 19 ft.

L. Borehole, diameter 8 in.

M. O.D. well casing 2 in.

N. I.D. well casing ____ in.



1. Cap and lock? ☒ Yes ☐ No

2. Protective cover pipe:
a. Inside diameter: 8 in.
b. Length: 1 ft.
c. Material: Steel ☐ 04; Other ☒ ____
d. Additional protection? ☐ Yes ☒ No
If yes, describe: _____

3. Surface seal: Bentonite ☒ 30; Concrete ☐ 01; Other ☐ ____

4. Material between well casing and protective pipe: Bentonite ☒ 30; Other ☐ ____

5. Annular space seal: a. Granular/Chipped Bentonite ☒ 33
b. ____ Lbs/gal mud weight . . . Bentonite-sand slurry ☐ 35
c. ____ Lbs/gal mud weight . . . . . Bentonite slurry ☐ 31
d. ____ % Bentonite . . . . . Bentonite-cement grout ☐ 50
e. 2 - 50lb bags $Ft^3$ volume added for any of the above
f. How installed: Tremie ☐ 01; Tremie pumped ☐ 02; Gravity ☒ 08

6. Bentonite seal: a. Bentonite granules ☐ 33
b. ☐ 1/4 in. ☒ 3/8 in. ☐ 1/2 in. Bentonite chips ☐ 32
c. _____ Other ☐ ____

7. Fine sand material: Manufacturer, product name & mesh size
a. 50 Red Flint
b. Volume added 0.5 - 50lb bag $ft^3$

8. Filter pack material: Manufacturer, product name & mesh size
a. 40 Red Flint
b. Volume added 2 - 50lb bags $ft^3$

9. Well casing: Flush threaded PVC schedule 40 ☒ 23; Flush threaded PVC schedule 80 ☐ 24; Other ☐ ____

10. Screen material: Schedule 40 PVC
a. Screen type: Factory cut ☒ 11; Continuous slot ☐ 01; Other ☐ ____
b. Manufacturer Johnson Screen
c. Slot size: 0.010 in.
d. Slotted length: 10 ft.

11. Backfill material (below filter pack): None ☒ 14; Other ☐ ____

I hereby certify that the information on this form is true and correct to the best of my knowledge.

| Signature | Firm |
|---|---|
| | Arcadis Inc. |

Please complete both Forms 4400-113A and 4400-113B and return them to the appropriate DNR office and bureau. Completion of these reports is required by chs. 160, 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291, 292, 293, 295, and 299, Wis. Stats., failure to file these forms may result in a forfeiture of between $10 and $25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on these forms is not intended to be used for any other purpose. NOTE: See the instructions for more information, including where the completed forms should be sent.

State of Wisconsin
Department of Natural Resources

# MONITORING WELL DEVELOPMENT

Form 4400-113B Rev. 7-98

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☒ Other ☐ _____

| Facility/Project Name | County Name | Well Name |
|---|---|---|
| Tyco FTC | Marinette | TW-03 |

| Facility License, Permit or Monitoring Number | County Code | Wis. Unique Well Number | DNR Well ID Number |
|---|---|---|---|
| | __ | _____ | ___ |

1. Can this well be purged dry? ☐ Yes ☐ No

2. Well development method
   - surged with bailer and bailed ☐ 41
   - surged with bailer and pumped ☐ 61
   - surged with block and bailed ☐ 42
   - surged with block and pumped ☐ 62
   - surged with block, bailed and pumped ☐ 70
   - compressed air ☐ 20
   - bailed only ☐ 10
   - pumped only ☐ 51
   - pumped slowly ☐ 50
   - Other _____ ☐ __

3. Time spent developing well ____ min.

4. Depth of well (from top of well casisng) __20.0 ft.

5. Inside diameter of well __2.00 in.

6. Volume of water in filter pack and well casing ___.__ gal.

7. Volume of water removed from well ___.__ gal.

8. Volume of water added (if any) ___.__ gal.

9. Source of water added _____

10. Analysis performed on water added? ☐ Yes ☐ No
(If yes, attach results)

| | Before Development | After Development |
|---|---|---|
| 11. Depth to Water (from top of well casing) | a. ____.__ ft. | ____.__ ft. |
| Date | b. __/__/____ (m m d d y y y y) | __/__/____ (m m d d y y y y) |
| Time | c. __:__ ☐ a.m. ☐ p.m. | __:__ ☐ a.m. ☐ p.m. |
| 12. Sediment in well bottom | __.__ inches | __.__ inches |
| 13. Water clarity | Clear ☐ 10<br>Turbid ☐ 15<br>(Describe) | Clear ☐ 20<br>Turbid ☐ 25<br>(Describe) |

Fill in if drilling fluids were used and well is at solid waste facility:

| | | |
|---|---|---|
| 14. Total suspended solids | ____.__ mg/l | ____.__ mg/l |
| 15. COD | ____.__ mg/l | ____.__ mg/l |

16. Well developed by: Name (first, last) and Firm
First Name: Last Name:
Firm:

17. Additional comments on development:

Name and Address of Facility Contact /Owner/Responsible Party
First Name: _____ Last Name: _____

Facility/Firm: Johnson Controls

Street: 2700 Industrial Parkway

City/State/Zip: Marinette, WI 54143

I hereby certify that the above information is true and correct to the best of my knowledge.

Signature: _____

Print Name: Amy Parish

Firm: Arcadis

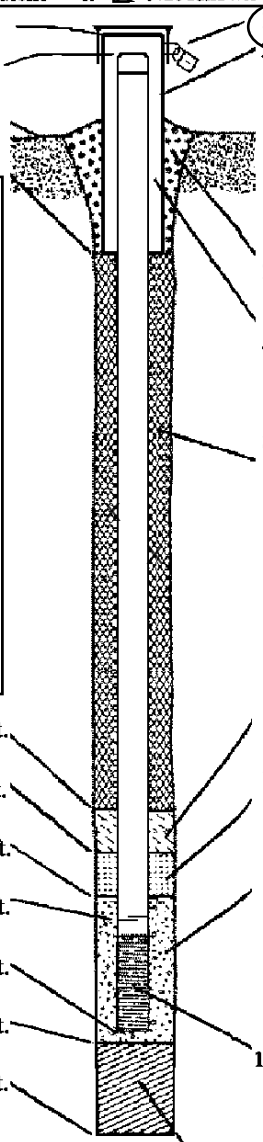
NOTE: See instructions for more information including a list of county codes and well type codes.

State of Wisconsin
Department of Natural Resources

Route to: Watershed/Wastewater ☐ Waste Management ☐ Remediation/Redevelopment ☒ Other ☐ _____

# MONITORING WELL CONSTRUCTION
Form 4400-113A Rev. 7-98

| | | |
|---|---|---|
| Facility/Project Name: Tyco FTC | Local Grid Location of Well: _____ ft. ☐ N. ☐ S. _____ ft. ☐ E. ☐ W. | Well Name: TW-04 |
| Facility License, Permit or Monitoring No. | Local Grid Origin ☐ (estimated: ☐) or Well Location ☐ Lat. ___ ° ___ ' ___ " Long. ___ ° ___ ' ___ " or | Wis. Unique Well No. _____ / DNR Well ID No. _____ |
| Facility ID _____ | St. Plane _____ ft. N, _____ ft. E. S/C/N | Date Well Installed: 11/01/2018 (m m d d y y y y) |
| Type of Well: Piezometer, Temp Well; Well Code ___/___ | Section Location of Waste/Source: ___ 1/4 of ___ 1/4 of Sec. ___, T. ___ N, R. ___ ☐ E. ☐ W. | Well Installed By: Name (first, last) and Firm: Amy Parish, Arcadis |
| Distance from Waste/Source: unknown ft. / Enf. Stds. Apply ☒ | Location of Well Relative to Waste/Source: u ☐ Upgradient s ☐ Sidegradient d ☐ Downgradient n ☒ Not Known | Gov. Lot Number _____ |



A. Protective pipe, top elevation _____ ft. MSL

B. Well casing, top elevation _____ ft. MSL

C. Land surface elevation _____ ft. MSL

D. Surface seal, bottom _____ ft. MSL or _____ ft.

12. USCS classification of soil near screen:
GP ☐ GM ☐ GC ☐ GW ☐ SW ☐ SP ☐
SM ☐ SC ☐ ML ☐ MH ☐ CL ☐ CH ☐
Bedrock ☐

13. Sieve analysis performed? ☐ Yes ☒ No

14. Drilling method used: Rotary ☐ 50; Hollow Stem Auger ☒ 41; Other ☐ ___

15. Drilling fluid used: Water ☐ 02; Air ☐ 01; Drilling Mud ☐ 03; None ☒ 99

16. Drilling additives used? ☐ Yes ☒ No

Describe _____

17. Source of water (attach analysis, if required): _____

E. Bentonite seal, top _____ ft. MSL or 0 ft.

F. Fine sand, top _____ ft. MSL or 6 ft.

G. Filter pack, top _____ ft. MSL or 8 ft.

H. Screen joint, top _____ ft. MSL or 10 ft.

I. Well bottom _____ ft. MSL or 20 ft.

J. Filter pack, bottom _____ ft. MSL or 20 ft.

K. Borehole, bottom _____ ft. MSL or 20 ft.

L. Borehole, diameter 2 in.

M. O.D. well casing 8 in.

N. I.D. well casing ____ in.

1. Cap and lock? ☒ Yes ☐ No

2. Protective cover pipe:
a. Inside diameter: 8 in.
b. Length: 1 ft.
c. Material: Aluminum — Steel ☐ 04; Other ☒ ___
d. Additional protection? ☐ Yes ☒ No
If yes, describe: _____

3. Surface seal: Bentonite ☒ 30; Concrete ☐ 01; Other ☐ ___

4. Material between well casing and protective pipe: Bentonite ☒ 30; Other ☐ ___

5. Annular space seal: a. Granular/Chipped Bentonite ☒ 33
b. ___ Lbs/gal mud weight . . . Bentonite-sand slurry ☐ 35
c. ___ Lbs/gal mud weight . . . . . Bentonite slurry ☐ 31
d. ___ % Bentonite . . . . . Bentonite-cement grout ☐ 50
e. 2 - 50lb bags $Ft^3$ volume added for any of the above
f. How installed: Tremie ☐ 01; Tremie pumped ☐ 02; Gravity ☒ 08

6. Bentonite seal: a. Bentonite granules ☐ 33
b. ☐ 1/4 in. ☒ 3/8 in. ☐ 1/2 in. Bentonite chips ☐ 32
c. _____ Other ☐ ___

7. Fine sand material: Manufacturer, product name & mesh size
a. 50 Red Flint ___
b. Volume added 0.5 - 50lb bags $ft^3$

8. Filter pack material: Manufacturer, product name & mesh size
a. 40 Red Flint ___
b. Volume added 2 - 50lb bags $ft^3$

9. Well casing: Flush threaded PVC schedule 40 ☒ 23; Flush threaded PVC schedule 80 ☐ 24; Other ☐ ___

10. Screen material: Schedule 40 PVC ___
a. Screen type: Factory cut ☒ 11; Continuous slot ☐ 01; Other ☐ ___
b. Manufacturer Johnson Screen
c. Slot size: 0.___ in.
d. Slotted length: ____ ft.

11. Backfill material (below filter pack): None ☒ 14; Other ☐ ___

I hereby certify that the information on this form is true and correct to the best of my knowledge.

| Signature | Firm |
|---|---|
| | Arcadis Inc. |

Please complete both Forms 4400-113A and 4400-113B and return them to the appropriate DNR office and bureau. Completion of these reports is required by chs. 160, 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291, 292, 293, 295, and 299, Wis. Stats., failure to file these forms may result in a forfeiture of between $10 and $25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on these forms is not intended to be used for any other purpose. NOTE: See the instructions for more information, including where the completed forms should be sent.

State of Wisconsin
Department of Natural Resources

# MONITORING WELL DEVELOPMENT

Form 4400-113B Rev. 7-98

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☒ Other ☐ _____

| Facility/Project Name | County Name | Well Name |
|---|---|---|
| Tyco FTC | Marinette | TW-04 |

| Facility License, Permit or Monitoring Number | County Code | Wis. Unique Well Number | DNR Well ID Number |
|---|---|---|---|
| | __ | _____ | ___ |

1. Can this well be purged dry? ☐ Yes ☐ No

2. Well development method
   - surged with bailer and bailed ☐ 41
   - surged with bailer and pumped ☐ 61
   - surged with block and bailed ☐ 42
   - surged with block and pumped ☐ 62
   - surged with block, bailed and pumped ☐ 70
   - compressed air ☐ 20
   - bailed only ☐ 10
   - pumped only ☐ 51
   - pumped slowly ☐ 50
   - Other _____ ☐ __

3. Time spent developing well ____ min.

4. Depth of well (from top of well casisng) __20.0 ft.

5. Inside diameter of well __2.00 in.

6. Volume of water in filter pack and well casing ___.__ gal.

7. Volume of water removed from well ___.__ gal.

8. Volume of water added (if any) ___.__ gal.

9. Source of water added _____

10. Analysis performed on water added? ☐ Yes ☐ No
(If yes, attach results)

| | Before Development | After Development |
|---|---|---|
| 11. Depth to Water (from top of well casing) | a. ___.__ ft. | ___.__ ft. |
| Date | b. __/__/____ (m m d d y y y y) | __/__/____ (m m d d y y y y) |
| Time | c. __:__ ☐ a.m. ☐ p.m. | __:__ ☐ a.m. ☐ p.m. |
| 12. Sediment in well bottom | __.__ inches | __.__ inches |
| 13. Water clarity | Clear ☐ 10<br>Turbid ☐ 15<br>(Describe) | Clear ☐ 20<br>Turbid ☐ 25<br>(Describe) |

Fill in if drilling fluids were used and well is at solid waste facility:

| | | |
|---|---|---|
| 14. Total suspended solids | ____.__ mg/l | ____.__ mg/l |
| 15. COD | ____.__ mg/l | ____.__ mg/l |

16. Well developed by: Name (first, last) and Firm
First Name: Last Name:
Firm:

17. Additional comments on development:

Name and Address of Facility Contact /Owner/Responsible Party
First Name: _____ Last Name: _____

Facility/Firm: Johnson Controls

Street: 2700 Industrial Parkway

City/State/Zip: Marinette, WI 54143

I hereby certify that the above information is true and correct to the best of my knowledge.

Signature: _____

Print Name: Amy Parish

Firm: Arcadis

NOTE: See instructions for more information including a list of county codes and well type codes.

State of Wisconsin
Department of Natural Resources

Route to: Watershed/Wastewater ☐ Waste Management ☐ Remediation/Redevelopment ☒ Other ☐ _____

# MONITORING WELL CONSTRUCTION
Form 4400-113A Rev. 7-98

| | | |
|---|---|---|
| Facility/Project Name: Tyco FTC | Local Grid Location of Well: _____ ft. ☐ N. ☐ S. _____ ft. ☐ E. ☐ W. | Well Name: TW-05 |
| Facility License, Permit or Monitoring No. | Local Grid Origin ☐ (estimated: ☐) or Well Location ☐ Lat. ___ ° ___ ' ___ " Long. ___ ° ___ ' ___ " or | Wis. Unique Well No. _____ / DNR Well ID No. _____ |
| Facility ID _____ | St. Plane _____ ft. N, _____ ft. E. S/C/N | Date Well Installed: 11/01/2018 (m m d d y y y y) |
| Type of Well: Piezometer, Temp Well; Well Code ___/___ | Section Location of Waste/Source: ___ 1/4 of ___ 1/4 of Sec. ___, T. ___ N, R. ___ ☐ E. ☐ W | Well Installed By: Name (first, last) and Firm: Mike Heizen, Braun Intertec |
| Distance from Waste/Source: unknown ft. Enf. Stds. Apply ☒ | Location of Well Relative to Waste/Source: u ☐ Upgradient s ☐ Sidegradient d ☐ Downgradient n ☒ Not Known; Gov. Lot Number _____ | |

A. Protective pipe, top elevation _____ ft. MSL

B. Well casing, top elevation _____ ft. MSL

C. Land surface elevation _____ ft. MSL

D. Surface seal, bottom _____ ft. MSL or 0 ft.

12. USCS classification of soil near screen:
GP ☐ GM ☐ GC ☐ GW ☐ SW ☐ SP ☒
SM ☐ SC ☐ ML ☐ MH ☐ CL ☐ CH ☐
Bedrock ☐

13. Sieve analysis performed? ☐ Yes ☒ No

14. Drilling method used: Rotary ☐ 50; Hollow Stem Auger ☒ 41; Other ☐ ___

15. Drilling fluid used: Water ☐ 02; Air ☐ 01; Drilling Mud ☐ 03; None ☒ 99

16. Drilling additives used? ☐ Yes ☒ No

Describe _____

17. Source of water (attach analysis, if required): _____

E. Bentonite seal, top _____ ft. MSL or 0 ft.

F. Fine sand, top _____ ft. MSL or 6 ft.

G. Filter pack, top _____ ft. MSL or 8 ft.

H. Screen joint, top _____ ft. MSL or 10 ft.

I. Well bottom _____ ft. MSL or 20 ft.

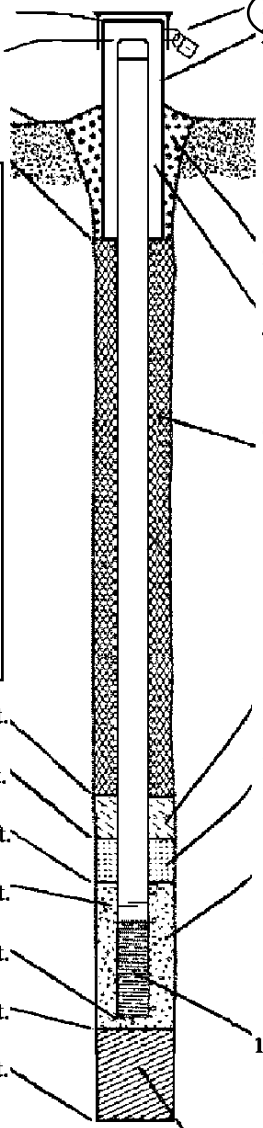
J. Filter pack, bottom _____ ft. MSL or 20 ft.

K. Borehole, bottom _____ ft. MSL or 20 ft.

L. Borehole, diameter 8 in.

M. O.D. well casing 2 in.

N. I.D. well casing ____ in.



1. Cap and lock? ☒ Yes ☐ No

2. Protective cover pipe:
a. Inside diameter: 8 in.
b. Length: 1 ft.
c. Material: Aluminum — Steel ☐ 04; Other ☒ ___
d. Additional protection? ☐ Yes ☒ No
If yes, describe: _____

3. Surface seal: Bentonite ☒ 30; Concrete ☐ 01; Other ☐ ___

4. Material between well casing and protective pipe: Bentonite ☒ 30; Other ☐ ___

5. Annular space seal: a. Granular/Chipped Bentonite ☒ 33
b. ___ Lbs/gal mud weight . . . Bentonite-sand slurry ☐ 35
c. ___ Lbs/gal mud weight . . . . . Bentonite slurry ☐ 31
d. ___ % Bentonite . . . . . Bentonite-cement grout ☐ 50
e. 2-50 lb bags $Ft^3$ volume added for any of the above
f. How installed: Tremie ☐ 01; Tremie pumped ☐ 02; Gravity ☒ 08

6. Bentonite seal: a. Bentonite granules ☐ 33
b. ☐ 1/4 in. ☒ 3/8 in. ☐ 1/2 in. Bentonite chips ☐ 32
c. _____ Other ☐ ___

7. Fine sand material: Manufacturer, product name & mesh size
a. 50 Red Flint
b. Volume added 0.5-50 lb bags $ft^3$

8. Filter pack material: Manufacturer, product name & mesh size
a. 40 Red Flint
b. Volume added 2-50 lb bags $ft^3$

9. Well casing: Flush threaded PVC schedule 40 ☒ 23; Flush threaded PVC schedule 80 ☐ 24; Other ☐ ___

10. Screen material: Schedule 40 PVC
a. Screen type: Factory cut ☒ 11; Continuous slot ☐ 01; Other ☐ ___
b. Manufacturer Johnson Screen
c. Slot size: 0.010 in.
d. Slotted length: 10 ft.

11. Backfill material (below filter pack): None ☒ 14; Other ☐ ___

I hereby certify that the information on this form is true and correct to the best of my knowledge.

| Signature | Firm |
|---|---|
| Bruce Evans | Arcadis Inc. |

Please complete both Forms 4400-113A and 4400-113B and return them to the appropriate DNR office and bureau. Completion of these reports is required by chs. 160, 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291, 292, 293, 295, and 299, Wis. Stats., failure to file these forms may result in a forfeiture of between $10 and $25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on these forms is not intended to be used for any other purpose. NOTE: See the instructions for more information, including where the completed forms should be sent.

State of Wisconsin
Department of Natural Resources

# MONITORING WELL DEVELOPMENT

Form 4400-113B Rev. 7-98

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☒ Other ☐ _____

| Facility/Project Name | County Name | Well Name |
|---|---|---|
| Tyco FTC | Marinette | TW-05 |

| Facility License, Permit or Monitoring Number | County Code | Wis. Unique Well Number | DNR Well ID Number |
|---|---|---|---|
| | __ | _____ | ___ |

1. Can this well be purged dry? ☐ Yes ☐ No

2. Well development method
   - surged with bailer and bailed ☐ 41
   - surged with bailer and pumped ☐ 61
   - surged with block and bailed ☐ 42
   - surged with block and pumped ☐ 62
   - surged with block, bailed and pumped ☐ 70
   - compressed air ☐ 20
   - bailed only ☐ 10
   - pumped only ☐ 51
   - pumped slowly ☐ 50
   - Other _____ ☐ __

3. Time spent developing well ____ min.

4. Depth of well (from top of well casisng) __20.0 ft.

5. Inside diameter of well __2.00 in.

6. Volume of water in filter pack and well casing ___.__ gal.

7. Volume of water removed from well ___.__ gal.

8. Volume of water added (if any) ___.__ gal.

9. Source of water added _____

10. Analysis performed on water added? ☐ Yes ☐ No
(If yes, attach results)

| | Before Development | After Development |
|---|---|---|
| 11. Depth to Water (from top of well casing) | a. ___.__ ft. | ___.__ ft. |
| Date | b. __/__/____ (m m d d y y y y) | __/__/____ (m m d d y y y y) |
| Time | c. __:__ ☐ a.m. ☐ p.m. | __:__ ☐ a.m. ☐ p.m. |
| 12. Sediment in well bottom | __.__ inches | __.__ inches |
| 13. Water clarity | Clear ☐ 10<br>Turbid ☐ 15<br>(Describe) | Clear ☐ 20<br>Turbid ☐ 25<br>(Describe) |

Fill in if drilling fluids were used and well is at solid waste facility:

| | | |
|---|---|---|
| 14. Total suspended solids | ____.__ mg/l | ____.__ mg/l |
| 15. COD | ____.__ mg/l | ____.__ mg/l |

16. Well developed by: Name (first, last) and Firm
First Name: Last Name:
Firm:

17. Additional comments on development:

Name and Address of Facility Contact /Owner/Responsible Party
First Name: _____ Last Name: _____

Facility/Firm: Johnson Controls

Street: 2700 Industrial Parkway

City/State/Zip: Marinette, WI 54143

I hereby certify that the above information is true and correct to the best of my knowledge.

Signature: _____

Print Name: Amy Parish

Firm: Arcadis

NOTE: See instructions for more information including a list of county codes and well type codes.

State of Wisconsin
Department of Natural Resources

Route to: Watershed/Wastewater ☐ Waste Management ☐ Remediation/Redevelopment ☒ Other ☐ _____

# MONITORING WELL CONSTRUCTION
Form 4400-113A Rev. 7-98

| | | |
|---|---|---|
| Facility/Project Name: Tyco FTC | Local Grid Location of Well: ____ ft. ☐ N. ☐ S. ____ ft. ☐ E. ☐ W. | Well Name: PZ-24-17 |
| Facility License, Permit or Monitoring No. | Local Grid Origin ☐ (estimated: ☐) or Well Location ☒ Lat. ___ ° ___ ' ___ " Long. ___ ° ___ ' ___ " or | Wis. Unique Well No. _____ / DNR Well ID No. _____ |
| Facility ID: 4 3 8 0 0 5 5 9 0 | St. Plane 461570.31 ft. N, 2580738.84 ft. E. S/(C)/N | Date Well Installed: 07 / 23 / 2019 (m m d d y y y y) |
| Type of Well: Well Code 12 / PZ | Section Location of Waste/Source: NE 1/4 of NE 1/4 of Sec. 13, T. 30 N, R. 23 ☒ E ☐ W | Well Installed By: Name (first, last) and Firm: Keith Fehrman; Layne, A Granite Company |
| Distance from Waste/Source ____ ft. Enf. Stds. Apply ☐ | Location of Well Relative to Waste/Source: u ☐ Upgradient s ☐ Sidegradient d ☐ Downgradient n ☐ Not Known | Gov. Lot Number: _____ |

A. Protective pipe, top elevation _____ ft. MSL

B. Well casing, top elevation _____ ft. MSL

C. Land surface elevation 605.27 ft. MSL

D. Surface seal, bottom _____ ft. MSL or 1 ft.

12. USCS classification of soil near screen:
GP ☐ GM ☐ GC ☐ GW ☐ SW ☐ SP ☐
SM ☐ SC ☐ ML ☐ MH ☐ CL ☐ CH ☐
Bedrock ☐

13. Sieve analysis performed? ☐ Yes ☒ No

14. Drilling method used: Rotary ☐ 50; Hollow Stem Auger ☐ 41; Other ☒ Sonic

15. Drilling fluid used: Water ☒ 02; Air ☐ 01; Drilling Mud ☐ 03; None ☐ 99

16. Drilling additives used? ☐ Yes ☒ No

Describe _____

17. Source of water (attach analysis, if required): City of Marinette hydrant

E. Bentonite seal, top _____ ft. MSL or 1.0 ft.

F. Fine sand, top _____ ft. MSL or 5.0 ft.

G. Filter pack, top _____ ft. MSL or 6.0 ft.

H. Screen joint, top _____ ft. MSL or 7.0 ft.

I. Well bottom _____ ft. MSL or 17.0 ft.

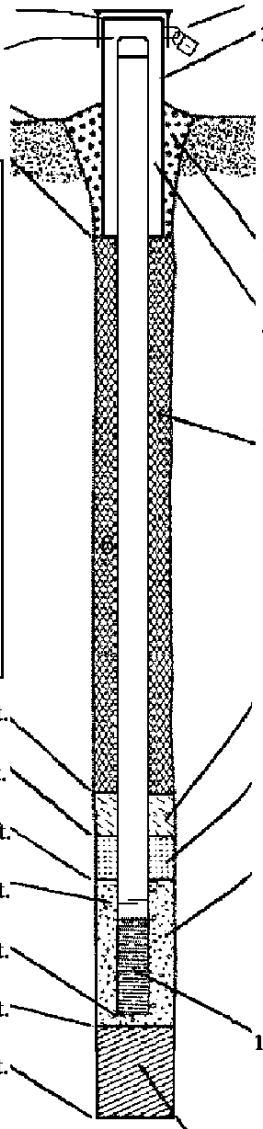
J. Filter pack, bottom _____ ft. MSL or 18.0 ft.

K. Borehole, bottom _____ ft. MSL or 18.0 ft.

L. Borehole, diameter 6 in.

M. O.D. well casing 2 in.

N. I.D. well casing ____ in.



1. Cap and lock? ☒ Yes ☐ No

2. Protective cover pipe:
a. Inside diameter: 8 in.
b. Length: 1 ft.
c. Material: Steel ☒ 04; Other ☐
d. Additional protection? ☐ Yes ☒ No
If yes, describe: _____

3. Surface seal: Bentonite ☐ 30; Concrete ☒ 01; Other ☐

4. Material between well casing and protective pipe: Bentonite ☐ 30; Other ☒ Sand

5. Annular space seal: a. Granular/Chipped Bentonite ☒ 33
b. ____ Lbs/gal mud weight . . . Bentonite-sand slurry ☐ 35
c. ____ Lbs/gal mud weight . . . . . Bentonite slurry ☐ 31
d. ____ % Bentonite . . . . . Bentonite-cement grout ☐ 50
e. 1-50lb bag Ft$^3$ volume added for any of the above
f. How installed: Tremie ☐ 01; Tremie pumped ☐ 02; Gravity ☒ 08

6. Bentonite seal: a. Bentonite granules ☐ 33
b. ☐ 1/4 in. ☒ 3/8 in. ☐ 1/2 in. Bentonite chips ☒ 32
c. _____ Other ☐

7. Fine sand material: Manufacturer, product name & mesh size
a. #15 Red Flint
b. Volume added 1/2-50 lb bag ft$^3$

8. Filter pack material: Manufacturer, product name & mesh size
a. #40 Red Flint
b. Volume added 5-50 lb bag ft$^3$

9. Well casing: Flush threaded PVC schedule 40 ☒ 23; Flush threaded PVC schedule 80 ☐ 24; Other ☐

10. Screen material: Schedule 40 PVC
a. Screen type: Factory cut ☒ 11; Continuous slot ☐ 01; Other ☐
b. Manufacturer Johnson Screen
c. Slot size: 0.010 in.
d. Slotted length: 10 ft.

11. Backfill material (below filter pack): None ☒ 14; Other ☐

I hereby certify that the information on this form is true and correct to the best of my knowledge.

| Signature | Firm |
|---|---|
| [signature] | Arcadis U.S., Inc. |

Please complete both Forms 4400-113A and 4400-113B and return them to the appropriate DNR office and bureau. Completion of these reports is required by chs. 160, 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291, 292, 293, 295, and 299, Wis. Stats., failure to file these forms may result in a forfeiture of between $10 and $25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on these forms is not intended to be used for any other purpose. NOTE: See the instructions for more information, including where the completed forms should be sent.

State of Wisconsin
Department of Natural Resources

Route to: Watershed/Wastewater ☐ Waste Management ☐ Remediation/Redevelopment ☒ Other ☐ _____

# MONITORING WELL CONSTRUCTION
Form 4400-113A Rev. 7-98

| | | |
|---|---|---|
| Facility/Project Name: Tyco FTC | Local Grid Location of Well: ____ ft. ☐ N. ☐ S. ____ ft. ☐ E. ☐ W. | Well Name: PZ-24-47 |
| Facility License, Permit or Monitoring No. | Local Grid Origin ☐ (estimated: ☐) or Well Location ☒ Lat. ___ ° ___ ' ___ " Long. ___ ° ___ ' ___ " or | Wis. Unique Well No. _____ / DNR Well ID No. _____ |
| Facility ID: 4 3 8 0 0 5 5 9 0 | St. Plane 461565.48 ft. N, 2580738.87 ft. E. S/C/N | Date Well Installed: 07 / 23 / 2019 (m m d d y y y y) |
| Type of Well: Well Code 12 / PZ | Section Location of Waste/Source: NE 1/4 of NE 1/4 of Sec. 13, T. 30 N, R. 23 ☒ E ☐ W | Well Installed By: Name (first, last) and Firm: Keith Fehrman; Layne, A Granite Company |
| Distance from Waste/Source ____ ft. Enf. Stds. Apply ☐ | Location of Well Relative to Waste/Source: u ☐ Upgradient s ☐ Sidegradient d ☐ Downgradient n ☐ Not Known | Gov. Lot Number: _____ |

A. Protective pipe, top elevation _____ ft. MSL

B. Well casing, top elevation _____ ft. MSL

C. Land surface elevation 605.46 ft. MSL

D. Surface seal, bottom _____ ft. MSL or 1 ft.

12. USCS classification of soil near screen:
GP ☐ GM ☐ GC ☐ GW ☐ SW ☐ SP ☐
SM ☐ SC ☐ ML ☐ MH ☐ CL ☐ CH ☐
Bedrock ☐

13. Sieve analysis performed? ☐ Yes ☒ No

14. Drilling method used: Rotary ☐ 50 Hollow Stem Auger ☐ 41 Other ☒ Sonic

15. Drilling fluid used: Water ☒ 02 Air ☐ 01 Drilling Mud ☐ 03 None ☐ 99

16. Drilling additives used? ☐ Yes ☒ No

Describe _____

17. Source of water (attach analysis, if required): City of Marinette hydrant

E. Bentonite seal, top _____ ft. MSL or 28.0 ft.

F. Fine sand, top _____ ft. MSL or 33.0 ft.

G. Filter pack, top _____ ft. MSL or 35.0 ft.

H. Screen joint, top _____ ft. MSL or 37.0 ft.

I. Well bottom _____ ft. MSL or 47.0 ft.

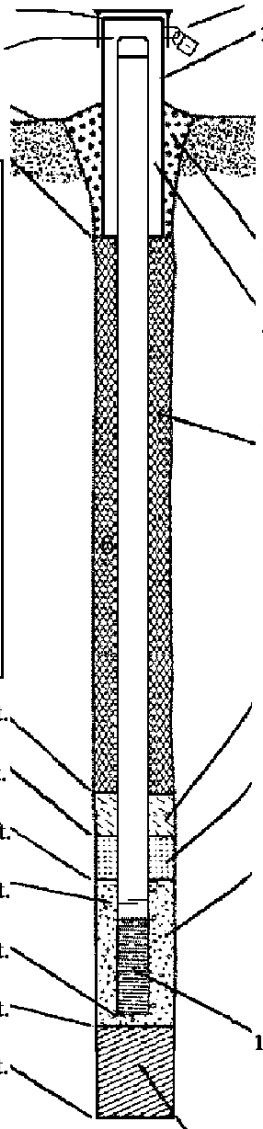
J. Filter pack, bottom _____ ft. MSL or 49.0 ft.

K. Borehole, bottom _____ ft. MSL or 67.0 ft.

L. Borehole, diameter 6 in.

M. O.D. well casing 2 in.

N. I.D. well casing ____ in.



1. Cap and lock? ☒ Yes ☐ No

2. Protective cover pipe:
a. Inside diameter: 8 in.
b. Length: 1 ft.
c. Material: Steel ☒ 04 Other ☐ _____
d. Additional protection? ☐ Yes ☒ No
If yes, describe: _____

3. Surface seal: Bentonite ☐ 30 Concrete ☒ 01 Other ☐ _____

4. Material between well casing and protective pipe: Bentonite ☐ 30 Other ☒ Sand

5. Annular space seal: a. Granular/Chipped Bentonite ☐ 33
b. ____ Lbs/gal mud weight . . . Bentonite-sand slurry ☐ 35
c. ____ Lbs/gal mud weight . . . . . Bentonite slurry ☐ 31
d. ____ % Bentonite . . . . . Bentonite-cement grout ☒ 50
e. appx. 20 gal $Ft^3$ volume added for any of the above
f. How installed: Tremie ☐ 01 Tremie pumped ☒ 02 Gravity ☐ 08

6. Bentonite seal: a. Bentonite granules ☐ 33
b. ☐ 1/4 in. ☒ 3/8 in. ☐ 1/2 in. Bentonite chips ☒ 32
c. _____ Other ☐ _____

7. Fine sand material: Manufacturer, product name & mesh size
a. #15 Red Flint
b. Volume added 1/2-50 lb bag $ft^3$

8. Filter pack material: Manufacturer, product name & mesh size
a. #40 Red Flint
b. Volume added 5-50 lb bag $ft^3$

9. Well casing: Flush threaded PVC schedule 40 ☒ 23 Flush threaded PVC schedule 80 ☐ 24 Other ☐ _____

10. Screen material: Schedule 40 PVC
a. Screen type: Factory cut ☒ 11 Continuous slot ☐ 01 Other ☐ _____
b. Manufacturer Johnson Screen
c. Slot size: 0.010 in.
d. Slotted length: 10 ft.

11. Backfill material (below filter pack): None ☐ 14 Other ☒ Chipped Bentonite

I hereby certify that the information on this form is true and correct to the best of my knowledge.

| Signature | Firm |
|---|---|
| [signature] | Arcadis U.S., Inc. |

Please complete both Forms 4400-113A and 4400-113B and return them to the appropriate DNR office and bureau. Completion of these reports is required by chs. 160, 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291, 292, 293, 295, and 299, Wis. Stats., failure to file these forms may result in a forfeiture of between $10 and $25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on these forms is not intended to be used for any other purpose. NOTE: See the instructions for more information, including where the completed forms should be sent.

State of Wisconsin
Department of Natural Resources

Route to: Watershed/Wastewater ☐ Waste Management ☐ Remediation/Redevelopment ☒ Other ☐ _____

# MONITORING WELL CONSTRUCTION
Form 4400-113A Rev. 7-98

| | | |
|---|---|---|
| Facility/Project Name: Tyco FTC | Local Grid Location of Well: ____ ft. ☐ N. ☐ S. ____ ft. ☐ E. ☐ W. | Well Name: PZ-25-17 |
| Facility License, Permit or Monitoring No. | Local Grid Origin ☐ (estimated: ☐) or Well Location ☒ Lat. ___ ° ___ ' ___ " Long. ___ ° ___ ' ___ " or | Wis. Unique Well No. _____ / DNR Well ID No. _____ |
| Facility ID: 4 3 8 0 0 5 5 9 0 | St. Plane 465263.60 ft. N, 2579969.33 ft. E. S/C/N | Date Well Installed: 08 / 01 / 2019 (m m d d y y y y) |
| Type of Well: Well Code 12 / PZ | Section Location of Waste/Source: NE 1/4 of NE 1/4 of Sec. 13, T. 30 N, R. 23 ☒ E ☐ W | Well Installed By: Name (first, last) and Firm: Keith Fehrman; Layne, A Granite Company |
| Distance from Waste/Source ____ ft. Enf. Stds. Apply ☐ | Location of Well Relative to Waste/Source: u ☐ Upgradient s ☐ Sidegradient d ☐ Downgradient n ☐ Not Known | Gov. Lot Number: _____ |

A. Protective pipe, top elevation _____ ft. MSL

B. Well casing, top elevation _____ ft. MSL

C. Land surface elevation 598.74 ft. MSL

D. Surface seal, bottom _____ ft. MSL or 1 ft.

12. USCS classification of soil near screen:
GP ☐ GM ☐ GC ☐ GW ☐ SW ☐ SP ☐
SM ☐ SC ☐ ML ☐ MH ☐ CL ☐ CH ☐
Bedrock ☐

13. Sieve analysis performed? ☐ Yes ☒ No

14. Drilling method used: Rotary ☐ 50; Hollow Stem Auger ☐ 41; Other ☒ Sonic

15. Drilling fluid used: Water ☒ 02; Air ☐ 01; Drilling Mud ☐ 03; None ☐ 99

16. Drilling additives used? ☐ Yes ☒ No

Describe _____

17. Source of water (attach analysis, if required): City of Marinette hydrant

E. Bentonite seal, top _____ ft. MSL or 1.0 ft.

F. Fine sand, top _____ ft. MSL or 5.0 ft.

G. Filter pack, top _____ ft. MSL or 6.0 ft.

H. Screen joint, top _____ ft. MSL or 7.0 ft.

I. Well bottom _____ ft. MSL or 17.0 ft.

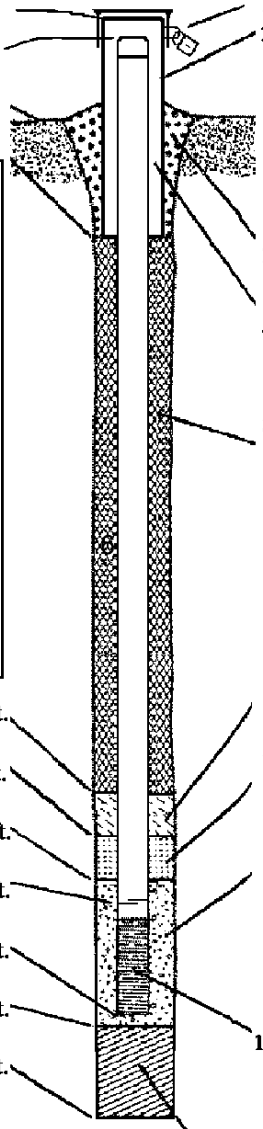
J. Filter pack, bottom _____ ft. MSL or 18.0 ft.

K. Borehole, bottom _____ ft. MSL or 34.0 ft.

L. Borehole, diameter 6 in.

M. O.D. well casing 2 in.

N. I.D. well casing _____ in.



1. Cap and lock? ☒ Yes ☐ No

2. Protective cover pipe:
a. Inside diameter: 8 in.
b. Length: 1 ft.
c. Material: Steel ☒ 04; Other ☐ _____
d. Additional protection? ☐ Yes ☒ No
If yes, describe: _____

3. Surface seal: Bentonite ☐ 30; Concrete ☒ 01; Other ☐ _____

4. Material between well casing and protective pipe: Bentonite ☐ 30; Other ☒ Sand

5. Annular space seal: a. Granular/Chipped Bentonite ☒ 33
b. ____ Lbs/gal mud weight . . . Bentonite-sand slurry ☐ 35
c. ____ Lbs/gal mud weight . . . . . Bentonite slurry ☐ 31
d. ____ % Bentonite . . . . . Bentonite-cement grout ☐ 50
e. 1-50lb bag Ft$^3$ volume added for any of the above
f. How installed: Tremie ☐ 01; Tremie pumped ☐ 02; Gravity ☒ 08

6. Bentonite seal: a. Bentonite granules ☐ 33
b. ☐ 1/4 in. ☒ 3/8 in. ☐ 1/2 in. Bentonite chips ☒ 32
c. _____ Other ☐ _____

7. Fine sand material: Manufacturer, product name & mesh size
a. #15 Red Flint
b. Volume added 1/2-50 lb bag ft$^3$

8. Filter pack material: Manufacturer, product name & mesh size
a. #40 Red Flint
b. Volume added 5-50 lb bag ft$^3$

9. Well casing: Flush threaded PVC schedule 40 ☒ 23; Flush threaded PVC schedule 80 ☐ 24; Other ☐ _____

10. Screen material: Schedule 40 PVC
a. Screen type: Factory cut ☒ 11; Continuous slot ☐ 01; Other ☐ _____
b. Manufacturer Johnson Screen
c. Slot size: 0.010 in.
d. Slotted length: 10 ft.

11. Backfill material (below filter pack): None ☐ 14; Other ☒ Chipped Bentonite

I hereby certify that the information on this form is true and correct to the best of my knowledge.

| Signature | Firm |
|---|---|
| [signature] | Arcadis U.S., Inc. |

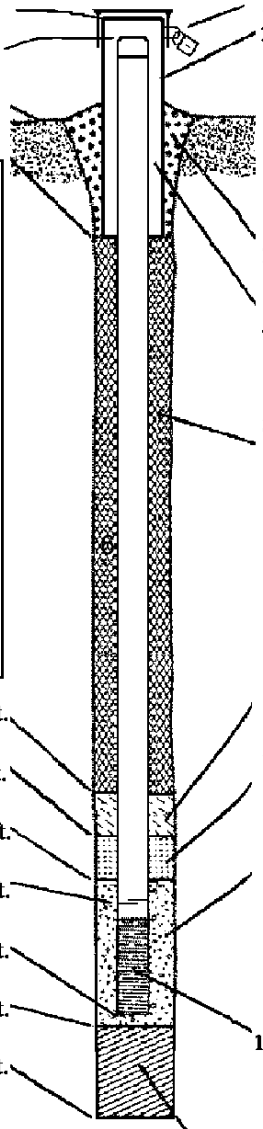
Please complete both Forms 4400-113A and 4400-113B and return them to the appropriate DNR office and bureau. Completion of these reports is required by chs. 160, 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291, 292, 293, 295, and 299, Wis. Stats., failure to file these forms may result in a forfeiture of between $10 and $25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on these forms is not intended to be used for any other purpose. NOTE: See the instructions for more information, including where the completed forms should be sent.

State of Wisconsin
Department of Natural Resources

Route to: Watershed/Wastewater ☐ Waste Management ☐ Remediation/Redevelopment ☒ Other ☐ _____

# MONITORING WELL CONSTRUCTION
Form 4400-113A Rev. 7-98

| | | |
|---|---|---|
| Facility/Project Name: Tyco FTC | Local Grid Location of Well: ____ ft. ☐ N. ☐ S. ____ ft. ☐ E. ☐ W. | Well Name: PZ-26-11 |
| Facility License, Permit or Monitoring No. | Local Grid Origin ☐ (estimated: ☐) or Well Location ☒ Lat. ___ ° ___ ' ___ " Long. ___ ° ___ ' ___ " or | Wis. Unique Well No. _____ / DNR Well ID No. _____ |
| Facility ID: 4 3 8 0 0 5 5 9 0 | St. Plane 466609.35 ft. N, 2579203.35 ft. E. S/C/N | Date Well Installed: 08 / 05 / 2019 (m m d d y y y y) |
| Type of Well: Well Code 12 / PZ | Section Location of Waste/Source: NE 1/4 of NE 1/4 of Sec. 13, T. 30 N, R. 23 ☒ E ☐ W | Well Installed By: Name (first, last) and Firm: Keith Fehrman; Layne, A Granite Company |
| Distance from Waste/Source ____ ft. Enf. Stds. Apply ☐ | Location of Well Relative to Waste/Source: u ☐ Upgradient s ☐ Sidegradient d ☐ Downgradient n ☐ Not Known | Gov. Lot Number: _____ |



A. Protective pipe, top elevation _____ ft. MSL

B. Well casing, top elevation _____ ft. MSL

C. Land surface elevation 598.13 ft. MSL

D. Surface seal, bottom _____ ft. MSL or 1 ft.

12. USCS classification of soil near screen:
GP ☐ GM ☐ GC ☐ GW ☐ SW ☐ SP ☐
SM ☐ SC ☐ ML ☐ MH ☐ CL ☐ CH ☐
Bedrock ☐

13. Sieve analysis performed? ☐ Yes ☒ No

14. Drilling method used: Rotary ☐ 50; Hollow Stem Auger ☐ 41; Other ☒ Sonic

15. Drilling fluid used: Water ☒ 02; Air ☐ 01; Drilling Mud ☐ 03; None ☐ 99

16. Drilling additives used? ☐ Yes ☒ No

Describe _____

17. Source of water (attach analysis, if required): City of Marinette hydrant

E. Bentonite seal, top _____ ft. MSL or 1.0 ft.

F. Fine sand, top _____ ft. MSL or 4.0 ft.

G. Filter pack, top _____ ft. MSL or 5.0 ft.

H. Screen joint, top _____ ft. MSL or 6.0 ft.

I. Well bottom _____ ft. MSL or 11.0 ft.

J. Filter pack, bottom _____ ft. MSL or 12.0 ft.

K. Borehole, bottom _____ ft. MSL or 28.0 ft.

L. Borehole, diameter 6 in.

M. O.D. well casing 2 in.

N. I.D. well casing _____ in.

1. Cap and lock? ☒ Yes ☐ No

2. Protective cover pipe:
a. Inside diameter: 8 in.
b. Length: 1 ft.
c. Material: Steel ☒ 04; Other ☐ ____
d. Additional protection? ☐ Yes ☒ No
If yes, describe: _____

3. Surface seal: Bentonite ☐ 30; Concrete ☒ 01; Other ☐ ____

4. Material between well casing and protective pipe: Bentonite ☐ 30; Other ☒ Sand ____

5. Annular space seal: a. Granular/Chipped Bentonite ☒ 33
b. ____ Lbs/gal mud weight . . . Bentonite-sand slurry ☐ 35
c. ____ Lbs/gal mud weight . . . . . Bentonite slurry ☐ 31
d. ____ % Bentonite . . . . . Bentonite-cement grout ☐ 50
e. 1-50lb bag Ft$^3$ volume added for any of the above
f. How installed: Tremie ☐ 01; Tremie pumped ☐ 02; Gravity ☒ 08

6. Bentonite seal: a. Bentonite granules ☐ 33
b. ☐ 1/4 in. ☒ 3/8 in. ☐ 1/2 in. Bentonite chips ☒ 32
c. _____ Other ☐ ____

7. Fine sand material: Manufacturer, product name & mesh size
a. #15 Red Flint ____
b. Volume added 1/2-50 lb bag ft$^3$

8. Filter pack material: Manufacturer, product name & mesh size
a. #40 Red Flint ____
b. Volume added 3-50 lb bag ft$^3$

9. Well casing: Flush threaded PVC schedule 40 ☒ 23; Flush threaded PVC schedule 80 ☐ 24; Other ☐ ____

10. Screen material: Schedule 40 PVC ____
a. Screen type: Factory cut ☒ 11; Continuous slot ☐ 01; Other ☐ ____
b. Manufacturer Johnson Screen
c. Slot size: 0.010 in.
d. Slotted length: 5 ft.

11. Backfill material (below filter pack): None ☐ 14; Other ☒ Chipped Bentonite ____

I hereby certify that the information on this form is true and correct to the best of my knowledge.

| Signature | Firm |
|---|---|
| [signature] | Arcadis U.S., Inc. |

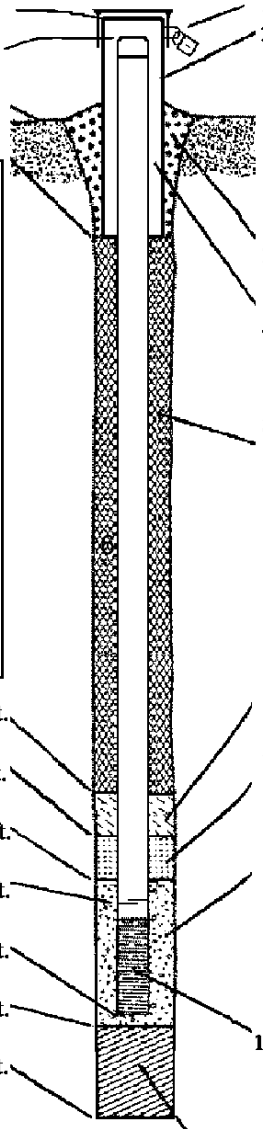
Please complete both Forms 4400-113A and 4400-113B and return them to the appropriate DNR office and bureau. Completion of these reports is required by chs. 160, 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291, 292, 293, 295, and 299, Wis. Stats., failure to file these forms may result in a forfeiture of between $10 and $25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on these forms is not intended to be used for any other purpose. NOTE: See the instructions for more information, including where the completed forms should be sent.

State of Wisconsin
Department of Natural Resources

Route to: Watershed/Wastewater ☐ Waste Management ☐ Remediation/Redevelopment ☒ Other ☐ _____

# MONITORING WELL CONSTRUCTION
Form 4400-113A Rev. 7-98

| | | |
|---|---|---|
| Facility/Project Name: Tyco FTC | Local Grid Location of Well: ____ ft. ☐ N. ☐ S. ____ ft. ☐ E. ☐ W. | Well Name: PZ-27-12 |
| Facility License, Permit or Monitoring No. | Local Grid Origin ☐ (estimated: ☐) or Well Location ☒ Lat. ___ ° ___ ' ___ " Long. ___ ° ___ ' ___ " or | Wis. Unique Well No. _____ / DNR Well ID No. _____ |
| Facility ID: 4 3 8 0 0 5 5 9 0 | St. Plane 469460.57 ft. N, 2580178.12 ft. E. S/(C)/N | Date Well Installed: 08 / 01 / 2019 (m m d d y y y y) |
| Type of Well: Well Code 12 / PZ | Section Location of Waste/Source: NE 1/4 of NE 1/4 of Sec. 13, T. 30 N, R. 23 ☒ E ☐ W | Well Installed By: Name (first, last) and Firm: Keith Fehrman; Layne, A Granite Company |
| Distance from Waste/Source ____ ft. Enf. Stds. Apply ☐ | Location of Well Relative to Waste/Source: u ☐ Upgradient s ☐ Sidegradient d ☐ Downgradient n ☐ Not Known | Gov. Lot Number: _____ |



A. Protective pipe, top elevation _____ ft. MSL

B. Well casing, top elevation _____ ft. MSL

C. Land surface elevation 592.99 ft. MSL

D. Surface seal, bottom _____ ft. MSL or 1 ft.

12. USCS classification of soil near screen:
GP ☐ GM ☐ GC ☐ GW ☐ SW ☐ SP ☐
SM ☐ SC ☐ ML ☐ MH ☐ CL ☐ CH ☐
Bedrock ☐

13. Sieve analysis performed? ☐ Yes ☒ No

14. Drilling method used: Rotary ☐ 50; Hollow Stem Auger ☐ 41; Other ☒ Sonic

15. Drilling fluid used: Water ☒ 02; Air ☐ 01; Drilling Mud ☐ 03; None ☐ 99

16. Drilling additives used? ☐ Yes ☒ No

Describe _____

17. Source of water (attach analysis, if required): City of Marinette hydrant

E. Bentonite seal, top _____ ft. MSL or 1.0 ft.

F. Fine sand, top _____ ft. MSL or 5.0 ft.

G. Filter pack, top _____ ft. MSL or 6.0 ft.

H. Screen joint, top _____ ft. MSL or 7.0 ft.

I. Well bottom _____ ft. MSL or 12.0 ft.

J. Filter pack, bottom _____ ft. MSL or 14.0 ft.

K. Borehole, bottom _____ ft. MSL or 18.0 ft.

L. Borehole, diameter 6 in.

M. O.D. well casing 2 in.

N. I.D. well casing _____ in.

1. Cap and lock? ☒ Yes ☐ No

2. Protective cover pipe:
a. Inside diameter: 8 in.
b. Length: 1 ft.
c. Material: Steel ☒ 04; Other ☐
d. Additional protection? ☐ Yes ☒ No
If yes, describe: _____

3. Surface seal: Bentonite ☐ 30; Concrete ☒ 01; Other ☐

4. Material between well casing and protective pipe: Bentonite ☐ 30; Other ☒ Sand

5. Annular space seal:
a. Granular/Chipped Bentonite ☒ 33
b. ____ Lbs/gal mud weight . . . Bentonite-sand slurry ☐ 35
c. ____ Lbs/gal mud weight . . . . . Bentonite slurry ☐ 31
d. ____ % Bentonite . . . . . Bentonite-cement grout ☐ 50
e. 1-50lb bag Ft$^3$ volume added for any of the above
f. How installed: Tremie ☐ 01; Tremie pumped ☐ 02; Gravity ☒ 08

6. Bentonite seal:
a. Bentonite granules ☐ 33
b. ☐ 1/4 in. ☒ 3/8 in. ☐ 1/2 in. Bentonite chips ☒ 32
c. _____ Other ☐

7. Fine sand material: Manufacturer, product name & mesh size
a. #15 Red Flint
b. Volume added 1/2-50 lb bag ft$^3$

8. Filter pack material: Manufacturer, product name & mesh size
a. #40 Red Flint
b. Volume added 3-50 lb bag ft$^3$

9. Well casing: Flush threaded PVC schedule 40 ☒ 23; Flush threaded PVC schedule 80 ☐ 24; Other ☐

10. Screen material: Schedule 40 PVC
a. Screen type: Factory cut ☒ 11; Continuous slot ☐ 01; Other ☐
b. Manufacturer Johnson Screen
c. Slot size: 0.010 in.
d. Slotted length: 5 ft.

11. Backfill material (below filter pack): None ☐ 14; Other ☒ Chipped Bentonite

I hereby certify that the information on this form is true and correct to the best of my knowledge.

| Signature | Firm |
|---|---|
| [signature] | Arcadis U.S., Inc. |

Please complete both Forms 4400-113A and 4400-113B and return them to the appropriate DNR office and bureau. Completion of these reports is required by chs. 160, 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291, 292, 293, 295, and 299, Wis. Stats., failure to file these forms may result in a forfeiture of between $10 and $25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on these forms is not intended to be used for any other purpose. NOTE: See the instructions for more information, including where the completed forms should be sent.

State of Wisconsin
Department of Natural Resources

Route to: Watershed/Wastewater ☐ Waste Management ☐ Remediation/Redevelopment ☒ Other ☐ _____

# MONITORING WELL CONSTRUCTION
Form 4400-113A Rev. 7-98

| | | |
|---|---|---|
| Facility/Project Name: Tyco FTC | Local Grid Location of Well: ____ ft. ☐ N. ☐ S. ____ ft. ☐ E. ☐ W. | Well Name: PZ-28-14 |
| Facility License, Permit or Monitoring No. | Local Grid Origin ☐ (estimated: ☐) or Well Location ☒ Lat. ___ ° ___ ' ___ " Long. ___ ° ___ ' ___ " or | Wis. Unique Well No. _____ / DNR Well ID No. _____ |
| Facility ID: 4 3 8 0 0 5 5 9 0 | St. Plane 467124.90 ft. N, 2583162.77 ft. E. S/(C)/N | Date Well Installed: 06 / 25 / 2019 (m m d d y y y y) |
| Type of Well: Well Code 12 / PZ | Section Location of Waste/Source: NE 1/4 of NE 1/4 of Sec. 13, T. 30 N, R. 23 ☒ E ☐ W | Well Installed By: Name (first, last) and Firm: Keith Fehrman; Layne, A Granite Company |
| Distance from Waste/Source ____ ft. Enf. Stds. Apply ☐ | Location of Well Relative to Waste/Source: u ☐ Upgradient s ☐ Sidegradient d ☐ Downgradient n ☐ Not Known | Gov. Lot Number: _____ |

A. Protective pipe, top elevation _____ ft. MSL

B. Well casing, top elevation _____ ft. MSL

C. Land surface elevation 594.76 ft. MSL

D. Surface seal, bottom _____ ft. MSL or 1 ft.

12. USCS classification of soil near screen:
GP ☐ GM ☐ GC ☐ GW ☐ SW ☐ SP ☐
SM ☐ SC ☐ ML ☐ MH ☐ CL ☐ CH ☐
Bedrock ☐

13. Sieve analysis performed? ☐ Yes ☒ No

14. Drilling method used: Rotary ☐ 50; Hollow Stem Auger ☐ 41; Other ☒ Sonic

15. Drilling fluid used: Water ☒ 02; Air ☐ 01; Drilling Mud ☐ 03; None ☐ 99

16. Drilling additives used? ☐ Yes ☒ No

Describe _____

17. Source of water (attach analysis, if required): City of Marinette hydrant

E. Bentonite seal, top _____ ft. MSL or 1.0 ft.

F. Fine sand, top _____ ft. MSL or 6.0 ft.

G. Filter pack, top _____ ft. MSL or 8.0 ft.

H. Screen joint, top _____ ft. MSL or 9.0 ft.

I. Well bottom _____ ft. MSL or 14.0 ft.

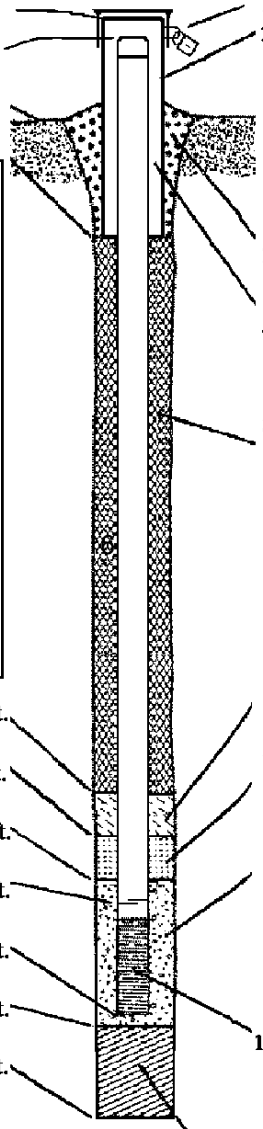
J. Filter pack, bottom _____ ft. MSL or 14.0 ft.

K. Borehole, bottom _____ ft. MSL or 14.0 ft.

L. Borehole, diameter 6 in.

M. O.D. well casing 2 in.

N. I.D. well casing _____ in.



1. Cap and lock? ☒ Yes ☐ No

2. Protective cover pipe:
a. Inside diameter: 8 in.
b. Length: 1 ft.
c. Material: Steel ☒ 04; Other ☐ _____
d. Additional protection? ☐ Yes ☒ No
If yes, describe: _____

3. Surface seal: Bentonite ☐ 30; Concrete ☒ 01; Other ☐ _____

4. Material between well casing and protective pipe: Bentonite ☐ 30; Other ☒ Sand

5. Annular space seal: a. Granular/Chipped Bentonite ☒ 33
b. ____ Lbs/gal mud weight . . . Bentonite-sand slurry ☐ 35
c. ____ Lbs/gal mud weight . . . . . Bentonite slurry ☐ 31
d. ____ % Bentonite . . . . . Bentonite-cement grout ☐ 50
e. 1-50lb bag Ft$^3$ volume added for any of the above
f. How installed: Tremie ☐ 01; Tremie pumped ☐ 02; Gravity ☒ 08

6. Bentonite seal: a. Bentonite granules ☐ 33
b. ☐ 1/4 in. ☒ 3/8 in. ☐ 1/2 in. Bentonite chips ☒ 32
c. _____ Other ☐ _____

7. Fine sand material: Manufacturer, product name & mesh size
a. #15 Red Flint
b. Volume added 1/2-50 lb bag ft$^3$

8. Filter pack material: Manufacturer, product name & mesh size
a. #40 Red Flint
b. Volume added 3-50 lb bag ft$^3$

9. Well casing: Flush threaded PVC schedule 40 ☒ 23; Flush threaded PVC schedule 80 ☐ 24; Other ☐ _____

10. Screen material: Schedule 40 PVC
a. Screen type: Factory cut ☒ 11; Continuous slot ☐ 01; Other ☐ _____
b. Manufacturer Johnson Screen
c. Slot size: 0.010 in.
d. Slotted length: 5 ft.

11. Backfill material (below filter pack): None ☒ 14; Other ☐ _____

I hereby certify that the information on this form is true and correct to the best of my knowledge.

| Signature | Firm |
|---|---|
| [signature] | Arcadis U.S., Inc. |

Please complete both Forms 4400-113A and 4400-113B and return them to the appropriate DNR office and bureau. Completion of these reports is required by chs. 160, 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291, 292, 293, 295, and 299, Wis. Stats., failure to file these forms may result in a forfeiture of between $10 and $25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on these forms is not intended to be used for any other purpose. NOTE: See the instructions for more information, including where the completed forms should be sent.

State of Wisconsin
Department of Natural Resources

Route to: Watershed/Wastewater ☐ Waste Management ☐ Remediation/Redevelopment ☒ Other ☐ _____

# MONITORING WELL CONSTRUCTION
Form 4400-113A Rev. 7-98

| | | |
|---|---|---|
| Facility/Project Name: Tyco FTC | Local Grid Location of Well: ____ ft. ☐ N. ☐ S. ____ ft. ☐ E. ☐ W. | Well Name: PZ-28-54 |
| Facility License, Permit or Monitoring No. | Local Grid Origin ☐ (estimated: ☐) or Well Location ☒ Lat. ___ ° ___ ' ___ " Long. ___ ° ___ ' ___ " or | Wis. Unique Well No. _____ / DNR Well ID No. _____ |
| Facility ID: 4 3 8 0 0 5 5 9 0 | St. Plane 467123.14 ft. N, 2583168.64 ft. E. S/(C)/N | Date Well Installed: 06 / 25 / 2019 (m m d d y y y y) |
| Type of Well: Well Code 12 / PZ | Section Location of Waste/Source: NE 1/4 of NE 1/4 of Sec. 13, T. 30 N, R. 23 ☒ E ☐ W | Well Installed By: Name (first, last) and Firm: Keith Fehrman; Layne, A Granite Company |
| Distance from Waste/Source ____ ft. Enf. Stds. Apply ☐ | Location of Well Relative to Waste/Source: u ☐ Upgradient s ☐ Sidegradient d ☐ Downgradient n ☐ Not Known | Gov. Lot Number: _____ |

A. Protective pipe, top elevation _____ ft. MSL

B. Well casing, top elevation _____ ft. MSL

C. Land surface elevation 594.81 ft. MSL

D. Surface seal, bottom _____ ft. MSL or 1 ft.

12. USCS classification of soil near screen:
GP ☐ GM ☐ GC ☐ GW ☐ SW ☐ SP ☐
SM ☐ SC ☐ ML ☐ MH ☐ CL ☐ CH ☐
Bedrock ☐

13. Sieve analysis performed? ☐ Yes ☒ No

14. Drilling method used: Rotary ☐ 50; Hollow Stem Auger ☐ 41; Other ☒ Sonic

15. Drilling fluid used: Water ☒ 02; Air ☐ 01; Drilling Mud ☐ 03; None ☐ 99

16. Drilling additives used? ☐ Yes ☒ No

Describe _____

17. Source of water (attach analysis, if required): City of Marinette hydrant

E. Bentonite seal, top _____ ft. MSL or 40.0 ft.

F. Fine sand, top _____ ft. MSL or 45.0 ft.

G. Filter pack, top _____ ft. MSL or 47.0 ft.

H. Screen joint, top _____ ft. MSL or 49.0 ft.

I. Well bottom _____ ft. MSL or 54.0 ft.

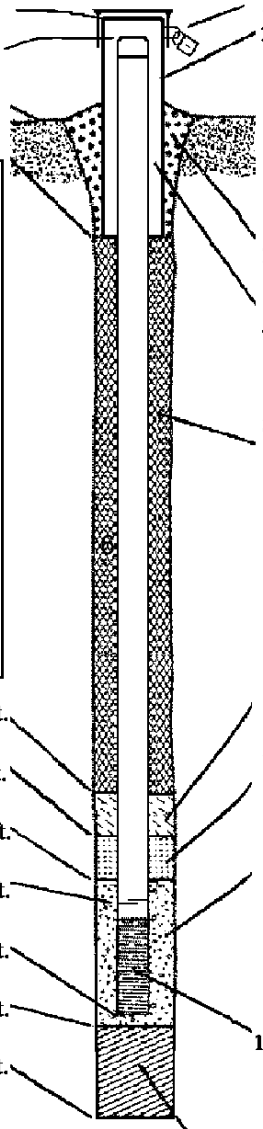
J. Filter pack, bottom _____ ft. MSL or 54.0 ft.

K. Borehole, bottom _____ ft. MSL or 54.0 ft.

L. Borehole, diameter 6 in.

M. O.D. well casing 2 in.

N. I.D. well casing _____ in.



1. Cap and lock? ☒ Yes ☐ No

2. Protective cover pipe:
a. Inside diameter: 8 in.
b. Length: 1 ft.
c. Material: Steel ☒ 04; Other ☐ _____
d. Additional protection? ☐ Yes ☒ No
If yes, describe: _____

3. Surface seal: Bentonite ☐ 30; Concrete ☒ 01; Other ☐ _____

4. Material between well casing and protective pipe: Bentonite ☐ 30; Other ☒ Sand

5. Annular space seal: a. Granular/Chipped Bentonite ☐ 33
b. ____ Lbs/gal mud weight . . . Bentonite-sand slurry ☐ 35
c. ____ Lbs/gal mud weight . . . . . Bentonite slurry ☐ 31
d. ____ % Bentonite . . . . . Bentonite-cement grout ☒ 50
e. appx. 40 gal Ft$^3$ volume added for any of the above
f. How installed: Tremie ☐ 01; Tremie pumped ☒ 02; Gravity ☐ 08

6. Bentonite seal: a. Bentonite granules ☐ 33
b. ☐ 1/4 in. ☒ 3/8 in. ☐ 1/2 in. Bentonite chips ☒ 32
c. _____ Other ☐ _____

7. Fine sand material: Manufacturer, product name & mesh size
a. #15 Red Flint
b. Volume added 1/2-50 lb bag ft$^3$

8. Filter pack material: Manufacturer, product name & mesh size
a. #40 Red Flint
b. Volume added 3-50 lb bag ft$^3$

9. Well casing: Flush threaded PVC schedule 40 ☒ 23; Flush threaded PVC schedule 80 ☐ 24; Other ☐ _____

10. Screen material: Schedule 40 PVC
a. Screen type: Factory cut ☒ 11; Continuous slot ☐ 01; Other ☐ _____
b. Manufacturer Johnson Screen
c. Slot size: 0.010 in.
d. Slotted length: 5 ft.

11. Backfill material (below filter pack): None ☐ 14; Other ☒ Chipped Bentonite

I hereby certify that the information on this form is true and correct to the best of my knowledge.

| Signature | Firm |
|---|---|
| [signature] | Arcadis U.S., Inc. |

Please complete both Forms 4400-113A and 4400-113B and return them to the appropriate DNR office and bureau. Completion of these reports is required by chs. 160, 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291, 292, 293, 295, and 299, Wis. Stats., failure to file these forms may result in a forfeiture of between $10 and $25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on these forms is not intended to be used for any other purpose. NOTE: See the instructions for more information, including where the completed forms should be sent.

State of Wisconsin
Department of Natural Resources

Route to: Watershed/Wastewater ☐ Waste Management ☐ Remediation/Redevelopment ☒ Other ☐ _____

# MONITORING WELL CONSTRUCTION
Form 4400-113A Rev. 7-98

| | | |
|---|---|---|
| Facility/Project Name: Tyco FTC | Local Grid Location of Well: ____ ft. ☐ N. ☐ S. ____ ft. ☐ E. ☐ W. | Well Name: PZ-29-17 |
| Facility License, Permit or Monitoring No. | Local Grid Origin ☐ (estimated: ☐) or Well Location ☒ Lat. ___ ° ___ ' ___ " Long. ___ ° ___ ' ___ " or | Wis. Unique Well No. _____ / DNR Well ID No. _____ |
| Facility ID: 4 3 8 0 0 5 5 9 0 | St. Plane 465386.43 ft. N, 2581734.13 ft. E. S/(C)/N | Date Well Installed: 07 / 31 / 2019 (m m d d y y y y) |
| Type of Well: Well Code 12 / PZ | Section Location of Waste/Source: NE 1/4 of NE 1/4 of Sec. 13, T. 30 N, R. 23 ☒ E ☐ W | Well Installed By: Name (first, last) and Firm: Keith Fehrman; Layne, A Granite Company |
| Distance from Waste/Source ____ ft. Enf. Stds. Apply ☐ | Location of Well Relative to Waste/Source: u ☐ Upgradient s ☐ Sidegradient d ☐ Downgradient n ☐ Not Known | Gov. Lot Number: _____ |

A. Protective pipe, top elevation _____ ft. MSL

B. Well casing, top elevation _____ ft. MSL

C. Land surface elevation 594.02 ft. MSL

D. Surface seal, bottom _____ ft. MSL or 1 ft.

12. USCS classification of soil near screen:
GP ☐ GM ☐ GC ☐ GW ☐ SW ☐ SP ☐
SM ☐ SC ☐ ML ☐ MH ☐ CL ☐ CH ☐
Bedrock ☐

13. Sieve analysis performed? ☐ Yes ☒ No

14. Drilling method used: Rotary ☐ 50; Hollow Stem Auger ☐ 41; Other ☒ Sonic

15. Drilling fluid used: Water ☒ 02; Air ☐ 01; Drilling Mud ☐ 03; None ☐ 99

16. Drilling additives used? ☐ Yes ☒ No

Describe _____

17. Source of water (attach analysis, if required): City of Marinette hydrant

E. Bentonite seal, top _____ ft. MSL or 1.0 ft.

F. Fine sand, top _____ ft. MSL or 5.0 ft.

G. Filter pack, top _____ ft. MSL or 6.0 ft.

H. Screen joint, top _____ ft. MSL or 7.0 ft.

I. Well bottom _____ ft. MSL or 17.0 ft.

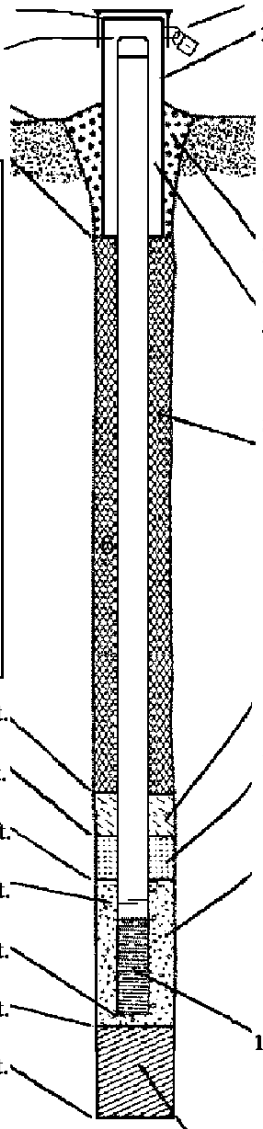
J. Filter pack, bottom _____ ft. MSL or 18.0 ft.

K. Borehole, bottom _____ ft. MSL or 18.0 ft.

L. Borehole, diameter 6 in.

M. O.D. well casing 2 in.

N. I.D. well casing ____ in.



1. Cap and lock? ☒ Yes ☐ No

2. Protective cover pipe:
a. Inside diameter: 8 in.
b. Length: 1 ft.
c. Material: Steel ☒ 04; Other ☐
d. Additional protection? ☐ Yes ☒ No
If yes, describe: _____

3. Surface seal: Bentonite ☐ 30; Concrete ☒ 01; Other ☐

4. Material between well casing and protective pipe: Bentonite ☐ 30; Other ☒ Sand

5. Annular space seal: a. Granular/Chipped Bentonite ☒ 33
b. ____ Lbs/gal mud weight . . . Bentonite-sand slurry ☐ 35
c. ____ Lbs/gal mud weight . . . . . Bentonite slurry ☐ 31
d. ____ % Bentonite . . . . . Bentonite-cement grout ☐ 50
e. 1-50lb bag Ft$^3$ volume added for any of the above
f. How installed: Tremie ☐ 01; Tremie pumped ☐ 02; Gravity ☒ 08

6. Bentonite seal: a. Bentonite granules ☐ 33
b. ☐ 1/4 in. ☒ 3/8 in. ☐ 1/2 in. Bentonite chips ☒ 32
c. _____ Other ☐

7. Fine sand material: Manufacturer, product name & mesh size
a. #15 Red Flint
b. Volume added 1/2-50 lb bag ft$^3$

8. Filter pack material: Manufacturer, product name & mesh size
a. #40 Red Flint
b. Volume added 5-50 lb bag ft$^3$

9. Well casing: Flush threaded PVC schedule 40 ☒ 23; Flush threaded PVC schedule 80 ☐ 24; Other ☐

10. Screen material: Schedule 40 PVC
a. Screen type: Factory cut ☒ 11; Continuous slot ☐ 01; Other ☐
b. Manufacturer Johnson Screen
c. Slot size: 0.010 in.
d. Slotted length: 10 ft.

11. Backfill material (below filter pack): None ☒ 14; Other ☐

I hereby certify that the information on this form is true and correct to the best of my knowledge.

| Signature | Firm |
|---|---|
| [signature] | Arcadis U.S., Inc. |

Please complete both Forms 4400-113A and 4400-113B and return them to the appropriate DNR office and bureau. Completion of these reports is required by chs. 160, 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291, 292, 293, 295, and 299, Wis. Stats., failure to file these forms may result in a forfeiture of between $10 and $25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on these forms is not intended to be used for any other purpose. NOTE: See the instructions for more information, including where the completed forms should be sent.

State of Wisconsin
Department of Natural Resources

Route to: Watershed/Wastewater ☐ Waste Management ☐ Remediation/Redevelopment ☒ Other ☐ _____

# MONITORING WELL CONSTRUCTION
Form 4400-113A Rev. 7-98

| | | |
|---|---|---|
| Facility/Project Name: Tyco FTC | Local Grid Location of Well: ____ ft. ☐ N. ☐ S. ____ ft. ☐ E. ☐ W. | Well Name: PZ-29-43 |
| Facility License, Permit or Monitoring No. | Local Grid Origin ☐ (estimated: ☐) or Well Location ☒ Lat. ___ ° ___ ' ___ " Long. ___ ° ___ ' ___ " or | Wis. Unique Well No. _____ / DNR Well ID No. _____ |
| Facility ID: 4 3 8 0 0 5 5 9 0 | St. Plane 465386.27 ft. N, 2581729.44 ft. E. S/C/N | Date Well Installed: 07 / 31 / 2019 (m m d d y y y y) |
| Type of Well: Well Code 12 / PZ | Section Location of Waste/Source: NE 1/4 of NE 1/4 of Sec. 13, T. 30 N, R. 23 ☒ E ☐ W | Well Installed By: Name (first, last) and Firm: Keith Fehrman; Layne, A Granite Company |
| Distance from Waste/Source ____ ft. Enf. Stds. Apply ☐ | Location of Well Relative to Waste/Source: u ☐ Upgradient s ☐ Sidegradient d ☐ Downgradient n ☐ Not Known | Gov. Lot Number: _____ |

A. Protective pipe, top elevation _____ ft. MSL

B. Well casing, top elevation _____ ft. MSL

C. Land surface elevation 593.94 ft. MSL

D. Surface seal, bottom _____ ft. MSL or 1 ft.

12. USCS classification of soil near screen:
GP ☐ GM ☐ GC ☐ GW ☐ SW ☐ SP ☐
SM ☐ SC ☐ ML ☐ MH ☐ CL ☐ CH ☐
Bedrock ☐

13. Sieve analysis performed? ☐ Yes ☒ No

14. Drilling method used: Rotary ☐ 50; Hollow Stem Auger ☐ 41; Other ☒ Sonic

15. Drilling fluid used: Water ☒ 02; Air ☐ 01; Drilling Mud ☐ 03; None ☐ 99

16. Drilling additives used? ☐ Yes ☒ No

Describe _____

17. Source of water (attach analysis, if required): City of Marinette hydrant

E. Bentonite seal, top _____ ft. MSL or 29.0 ft.

F. Fine sand, top _____ ft. MSL or 34.0 ft.

G. Filter pack, top _____ ft. MSL or 36.0 ft.

H. Screen joint, top _____ ft. MSL or 38.0 ft.

I. Well bottom _____ ft. MSL or 43.0 ft.

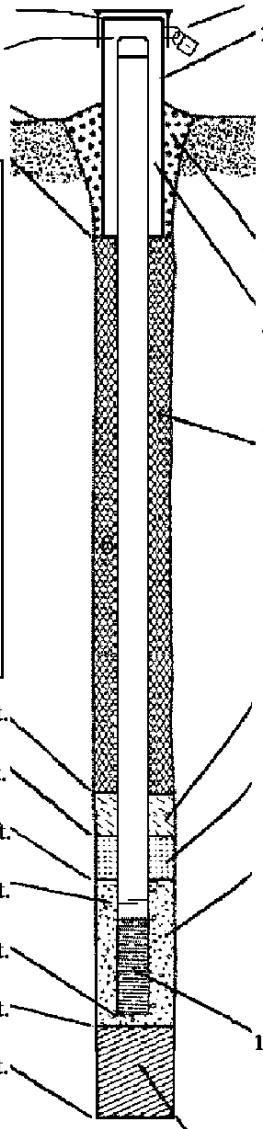
J. Filter pack, bottom _____ ft. MSL or 44.0 ft.

K. Borehole, bottom _____ ft. MSL or 48.0 ft.

L. Borehole, diameter 6 in.

M. O.D. well casing 2 in.

N. I.D. well casing _____ in.



1. Cap and lock? ☒ Yes ☐ No

2. Protective cover pipe:
a. Inside diameter: 8 in.
b. Length: 1 ft.
c. Material: Steel ☒ 04; Other ☐ _____
d. Additional protection? ☐ Yes ☒ No
If yes, describe: _____

3. Surface seal: Bentonite ☐ 30; Concrete ☒ 01; Other ☐ _____

4. Material between well casing and protective pipe: Bentonite ☐ 30; Other ☒ Sand

5. Annular space seal: a. Granular/Chipped Bentonite ☐ 33
b. ____ Lbs/gal mud weight . . . Bentonite-sand slurry ☐ 35
c. ____ Lbs/gal mud weight . . . . . Bentonite slurry ☐ 31
d. ____ % Bentonite . . . . . Bentonite-cement grout ☒ 50
e. appx. 20 gal $Ft^3$ volume added for any of the above
f. How installed: Tremie ☐ 01; Tremie pumped ☒ 02; Gravity ☐ 08

6. Bentonite seal: a. Bentonite granules ☐ 33
b. ☐ 1/4 in. ☒ 3/8 in. ☐ 1/2 in. Bentonite chips ☒ 32
c. _____ Other ☐ _____

7. Fine sand material: Manufacturer, product name & mesh size
a. #15 Red Flint
b. Volume added 1/2-50 lb bag $ft^3$

8. Filter pack material: Manufacturer, product name & mesh size
a. #40 Red Flint
b. Volume added 3-50 lb bag $ft^3$

9. Well casing: Flush threaded PVC schedule 40 ☒ 23; Flush threaded PVC schedule 80 ☐ 24; Other ☐ _____

10. Screen material: Schedule 40 PVC
a. Screen type: Factory cut ☒ 11; Continuous slot ☐ 01; Other ☐ _____
b. Manufacturer Johnson Screen
c. Slot size: 0.010 in.
d. Slotted length: 5 ft.

11. Backfill material (below filter pack): None ☐ 14; Other ☒ Chipped Bentonite

I hereby certify that the information on this form is true and correct to the best of my knowledge.

| Signature | Firm |
|---|---|
| [signature] | Arcadis U.S., Inc. |

Please complete both Forms 4400-113A and 4400-113B and return them to the appropriate DNR office and bureau. Completion of these reports is required by chs. 160, 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291, 292, 293, 295, and 299, Wis. Stats., failure to file these forms may result in a forfeiture of between $10 and $25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on these forms is not intended to be used for any other purpose. NOTE: See the instructions for more information, including where the completed forms should be sent.

State of Wisconsin
Department of Natural Resources

Route to: Watershed/Wastewater ☐ Waste Management ☐ Remediation/Redevelopment ☒ Other ☐ _____

# MONITORING WELL CONSTRUCTION
Form 4400-113A Rev. 7-98

| | | |
|---|---|---|
| Facility/Project Name: Tyco FTC | Local Grid Location of Well: ____ ft. ☐ N. ☐ S. ____ ft. ☐ E. ☐ W. | Well Name: PZ-30-12 |
| Facility License, Permit or Monitoring No. | Local Grid Origin ☐ (estimated: ☐) or Well Location ☒ Lat. ___ ° ___ ' ___ " Long. ___ ° ___ ' ___ " or | Wis. Unique Well No. _____ / DNR Well ID No. _____ |
| Facility ID: 4 3 8 0 0 5 5 9 0 | St. Plane 464125.85 ft. N, 2582520.11 ft. E. S/(C)/N | Date Well Installed: 06 / 25 / 2019 (m m d d y y y y) |
| Type of Well: Well Code 12 / PZ | Section Location of Waste/Source: NE 1/4 of NE 1/4 of Sec. 13, T. 30 N, R. 23 ☒ E ☐ W | Well Installed By: Name (first, last) and Firm: Keith Fehrman; Layne, A Granite Company |
| Distance from Waste/Source ____ ft. Enf. Stds. Apply ☐ | Location of Well Relative to Waste/Source: u ☐ Upgradient s ☐ Sidegradient d ☐ Downgradient n ☐ Not Known | Gov. Lot Number: _____ |

A. Protective pipe, top elevation _____ ft. MSL

B. Well casing, top elevation _____ ft. MSL

C. Land surface elevation 594.75 ft. MSL

D. Surface seal, bottom _____ ft. MSL or 1 ft.

12. USCS classification of soil near screen:
GP ☐ GM ☐ GC ☐ GW ☐ SW ☐ SP ☐
SM ☐ SC ☐ ML ☐ MH ☐ CL ☐ CH ☐
Bedrock ☐

13. Sieve analysis performed? ☐ Yes ☒ No

14. Drilling method used: Rotary ☐ 50; Hollow Stem Auger ☐ 41; Other ☒ Sonic

15. Drilling fluid used: Water ☒ 02; Air ☐ 01; Drilling Mud ☐ 03; None ☐ 99

16. Drilling additives used? ☐ Yes ☒ No

Describe _____

17. Source of water (attach analysis, if required): City of Marinette hydrant

E. Bentonite seal, top _____ ft. MSL or 1.0 ft.

F. Fine sand, top _____ ft. MSL or 5.0 ft.

G. Filter pack, top _____ ft. MSL or 6.0 ft.

H. Screen joint, top _____ ft. MSL or 7.0 ft.

I. Well bottom _____ ft. MSL or 12.0 ft.

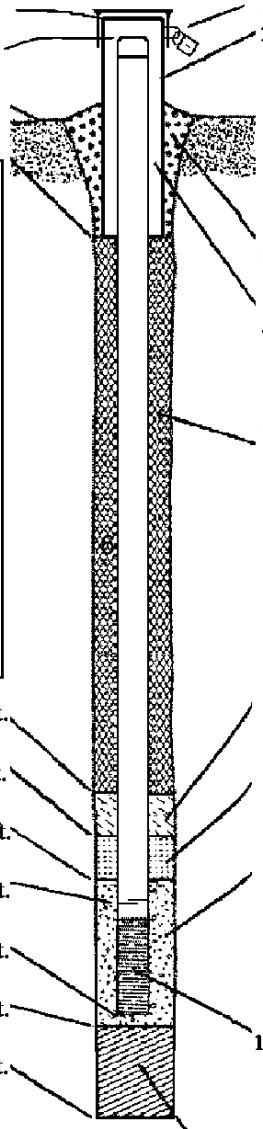
J. Filter pack, bottom _____ ft. MSL or 12.0 ft.

K. Borehole, bottom _____ ft. MSL or 12.0 ft.

L. Borehole, diameter 6 in.

M. O.D. well casing 2 in.

N. I.D. well casing ____ in.



1. Cap and lock? ☒ Yes ☐ No

2. Protective cover pipe:
a. Inside diameter: 8 in.
b. Length: 1 ft.
c. Material: Steel ☒ 04; Other ☐ _____
d. Additional protection? ☐ Yes ☒ No
If yes, describe: _____

3. Surface seal: Bentonite ☐ 30; Concrete ☒ 01; Other ☐ _____

4. Material between well casing and protective pipe: Bentonite ☐ 30; Other ☒ Sand

5. Annular space seal: a. Granular/Chipped Bentonite ☒ 33
b. ____ Lbs/gal mud weight . . . Bentonite-sand slurry ☐ 35
c. ____ Lbs/gal mud weight . . . . . Bentonite slurry ☐ 31
d. ____ % Bentonite . . . . . Bentonite-cement grout ☐ 50
e. 1-50lb bag Ft$^3$ volume added for any of the above
f. How installed: Tremie ☐ 01; Tremie pumped ☐ 02; Gravity ☒ 08

6. Bentonite seal: a. Bentonite granules ☐ 33
b. ☐ 1/4 in. ☒ 3/8 in. ☐ 1/2 in. Bentonite chips ☒ 32
c. _____ Other ☐ _____

7. Fine sand material: Manufacturer, product name & mesh size
a. #15 Red Flint
b. Volume added 1/2-50 lb bag ft$^3$

8. Filter pack material: Manufacturer, product name & mesh size
a. #40 Red Flint
b. Volume added 3-50 lb bag ft$^3$

9. Well casing: Flush threaded PVC schedule 40 ☒ 23; Flush threaded PVC schedule 80 ☐ 24; Other ☐ _____

10. Screen material: Schedule 40 PVC
a. Screen type: Factory cut ☒ 11; Continuous slot ☐ 01; Other ☐ _____
b. Manufacturer Johnson Screen
c. Slot size: 0.010 in.
d. Slotted length: 5 ft.

11. Backfill material (below filter pack): None ☒ 14; Other ☐ _____

I hereby certify that the information on this form is true and correct to the best of my knowledge.

| Signature | Firm |
|---|---|
| [signature] | Arcadis U.S., Inc. |

Please complete both Forms 4400-113A and 4400-113B and return them to the appropriate DNR office and bureau. Completion of these reports is required by chs. 160, 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291, 292, 293, 295, and 299, Wis. Stats., failure to file these forms may result in a forfeiture of between $10 and $25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on these forms is not intended to be used for any other purpose. NOTE: See the instructions for more information, including where the completed forms should be sent.

State of Wisconsin
Department of Natural Resources

Route to: Watershed/Wastewater ☐ Waste Management ☐ Remediation/Redevelopment ☒ Other ☐ _____

# MONITORING WELL CONSTRUCTION
Form 4400-113A Rev. 7-98

| | | |
|---|---|---|
| Facility/Project Name: Tyco FTC | Local Grid Location of Well: ____ ft. ☐ N. ☐ S. ____ ft. ☐ E. ☐ W. | Well Name: PZ-30-45 |
| Facility License, Permit or Monitoring No. | Local Grid Origin ☐ (estimated: ☐) or Well Location ☒ Lat. ___ ° ___ ' ___ " Long. ___ ° ___ ' ___ " or | Wis. Unique Well No. _____ / DNR Well ID No. _____ |
| Facility ID: 4 3 8 0 0 5 5 9 0 | St. Plane 464123.25 ft. N, 2582525.01 ft. E. S/(C)/N | Date Well Installed: 06 / 25 / 2019 (m m d d y y y y) |
| Type of Well: Well Code 12 / PZ | Section Location of Waste/Source: NE 1/4 of NE 1/4 of Sec. 13, T. 30 N, R. 23 ☒ E ☐ W | Well Installed By: Name (first, last) and Firm: Keith Fehrman; Layne, A Granite Company |
| Distance from Waste/Source ____ ft. Enf. Stds. Apply ☐ | Location of Well Relative to Waste/Source: u ☐ Upgradient s ☐ Sidegradient d ☐ Downgradient n ☐ Not Known | Gov. Lot Number: _____ |

A. Protective pipe, top elevation _____ ft. MSL

B. Well casing, top elevation _____ ft. MSL

C. Land surface elevation 594.72 ft. MSL

D. Surface seal, bottom _____ ft. MSL or 1 ft.

12. USCS classification of soil near screen:
GP ☐ GM ☐ GC ☐ GW ☐ SW ☐ SP ☐
SM ☐ SC ☐ ML ☐ MH ☐ CL ☐ CH ☐
Bedrock ☐

13. Sieve analysis performed? ☐ Yes ☒ No

14. Drilling method used: Rotary ☐ 50; Hollow Stem Auger ☐ 41; Other ☒ Sonic

15. Drilling fluid used: Water ☒ 02; Air ☐ 01; Drilling Mud ☐ 03; None ☐ 99

16. Drilling additives used? ☐ Yes ☒ No

Describe _____

17. Source of water (attach analysis, if required): City of Marinette hydrant

E. Bentonite seal, top _____ ft. MSL or 26.0 ft.

F. Fine sand, top _____ ft. MSL or 31.0 ft.

G. Filter pack, top _____ ft. MSL or 33.0 ft.

H. Screen joint, top _____ ft. MSL or 35.0 ft.

I. Well bottom _____ ft. MSL or 45.0 ft.

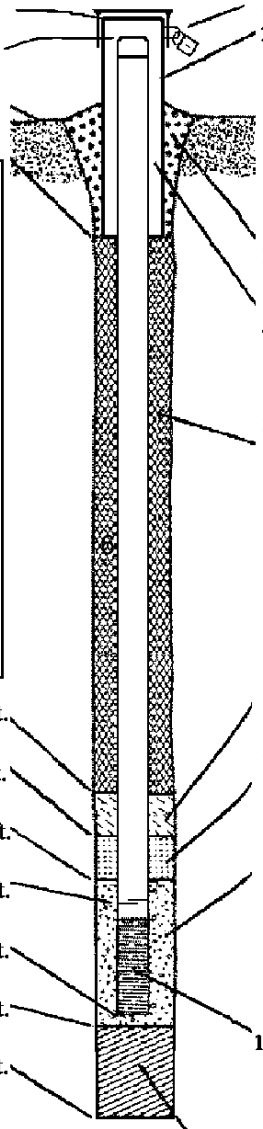
J. Filter pack, bottom _____ ft. MSL or 45.0 ft.

K. Borehole, bottom _____ ft. MSL or 45.0 ft.

L. Borehole, diameter 6 in.

M. O.D. well casing 2 in.

N. I.D. well casing _____ in.



1. Cap and lock? ☒ Yes ☐ No

2. Protective cover pipe:
a. Inside diameter: 8 in.
b. Length: 1 ft.
c. Material: Steel ☒ 04; Other ☐ _____
d. Additional protection? ☐ Yes ☒ No
If yes, describe: _____

3. Surface seal: Bentonite ☐ 30; Concrete ☒ 01; Other ☐ _____

4. Material between well casing and protective pipe: Bentonite ☐ 30; Other ☒ Sand

5. Annular space seal: a. Granular/Chipped Bentonite ☐ 33
b. ____ Lbs/gal mud weight . . . Bentonite-sand slurry ☐ 35
c. ____ Lbs/gal mud weight . . . . . Bentonite slurry ☐ 31
d. ____ % Bentonite . . . . . Bentonite-cement grout ☒ 50
e. appx. 20 gal $Ft^3$ volume added for any of the above
f. How installed: Tremie ☐ 01; Tremie pumped ☒ 02; Gravity ☐ 08

6. Bentonite seal: a. Bentonite granules ☐ 33
b. ☐ 1/4 in. ☒ 3/8 in. ☐ 1/2 in. Bentonite chips ☒ 32
c. _____ Other ☐ _____

7. Fine sand material: Manufacturer, product name & mesh size
a. #15 Red Flint
b. Volume added 1/2-50 lb bag $ft^3$

8. Filter pack material: Manufacturer, product name & mesh size
a. #40 Red Flint
b. Volume added 5-50 lb bag $ft^3$

9. Well casing: Flush threaded PVC schedule 40 ☒ 23; Flush threaded PVC schedule 80 ☐ 24; Other ☐ _____

10. Screen material: Schedule 40 PVC
a. Screen type: Factory cut ☒ 11; Continuous slot ☐ 01; Other ☐ _____
b. Manufacturer Johnson Screen
c. Slot size: 0.010 in.
d. Slotted length: 10 ft.

11. Backfill material (below filter pack): None ☒ 14; Other ☐ _____

I hereby certify that the information on this form is true and correct to the best of my knowledge.

| Signature | Firm |
|---|---|
| [signature] | Arcadis U.S., Inc. |

Please complete both Forms 4400-113A and 4400-113B and return them to the appropriate DNR office and bureau. Completion of these reports is required by chs. 160, 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291, 292, 293, 295, and 299, Wis. Stats., failure to file these forms may result in a forfeiture of between $10 and $25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on these forms is not intended to be used for any other purpose. NOTE: See the instructions for more information, including where the completed forms should be sent.

State of Wisconsin
Department of Natural Resources

Route to: Watershed/Wastewater ☐ Waste Management ☐ Remediation/Redevelopment ☒ Other ☐ _____

# MONITORING WELL CONSTRUCTION
Form 4400-113A Rev. 7-98

| | | |
|---|---|---|
| Facility/Project Name: Tyco FTC | Local Grid Location of Well: ____ ft. ☐ N. ☐ S. ____ ft. ☐ E. ☐ W. | Well Name: PZ-30-59 |
| Facility License, Permit or Monitoring No. | Local Grid Origin ☐ (estimated: ☐) or Well Location ☒ Lat. ___ ° ___ ' ___ " Long. ___ ° ___ ' ___ " or | Wis. Unique Well No. _____ / DNR Well ID No. _____ |
| Facility ID: 4 3 8 0 0 5 5 9 0 | St. Plane 464121.07 ft. N, 2582528.94 ft. E. S/C/N | Date Well Installed: 06 / 25 / 2019 (m m d d y y y y) |
| Type of Well: Well Code 12 / PZ | Section Location of Waste/Source: NE 1/4 of NE 1/4 of Sec. 13, T. 30 N, R. 23 ☒ E ☐ W | Well Installed By: Name (first, last) and Firm: Keith Fehrman; Layne, A Granite Company |
| Distance from Waste/Source ____ ft. Enf. Stds. Apply ☐ | Location of Well Relative to Waste/Source: u ☐ Upgradient s ☐ Sidegradient d ☐ Downgradient n ☐ Not Known | Gov. Lot Number: _____ |

A. Protective pipe, top elevation _____ ft. MSL

B. Well casing, top elevation _____ ft. MSL

C. Land surface elevation 594.64 ft. MSL

D. Surface seal, bottom _____ ft. MSL or 1 ft.

12. USCS classification of soil near screen:
GP ☐ GM ☐ GC ☐ GW ☐ SW ☐ SP ☐
SM ☐ SC ☐ ML ☐ MH ☐ CL ☐ CH ☐
Bedrock ☐

13. Sieve analysis performed? ☐ Yes ☒ No

14. Drilling method used: Rotary ☐ 50 Hollow Stem Auger ☐ 41 Other ☒ Sonic

15. Drilling fluid used: Water ☒ 02 Air ☐ 01 Drilling Mud ☐ 03 None ☐ 99

16. Drilling additives used? ☐ Yes ☒ No

Describe _____

17. Source of water (attach analysis, if required): City of Marinette hydrant

E. Bentonite seal, top _____ ft. MSL or 45.0 ft.

F. Fine sand, top _____ ft. MSL or 50.0 ft.

G. Filter pack, top _____ ft. MSL or 52.0 ft.

H. Screen joint, top _____ ft. MSL or 54.0 ft.

I. Well bottom _____ ft. MSL or 59.0 ft.

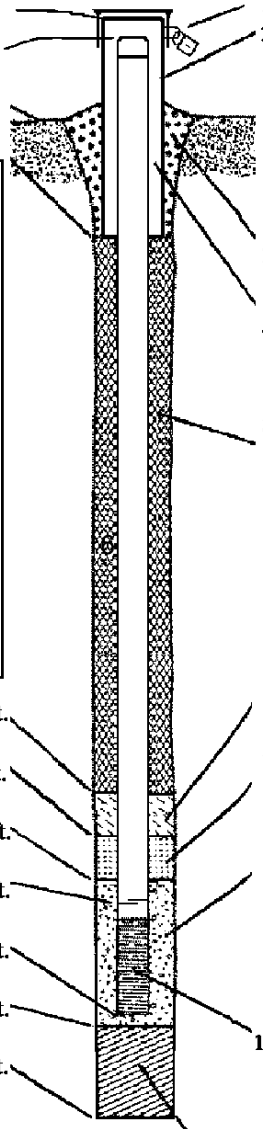
J. Filter pack, bottom _____ ft. MSL or 60.0 ft.

K. Borehole, bottom _____ ft. MSL or 62.0 ft.

L. Borehole, diameter 6 in.

M. O.D. well casing 2 in.

N. I.D. well casing ____ in.



1. Cap and lock? ☒ Yes ☐ No

2. Protective cover pipe:
a. Inside diameter: 8 in.
b. Length: 1 ft.
c. Material: Steel ☒ 04 Other ☐ _____
d. Additional protection? ☐ Yes ☒ No
If yes, describe: _____

3. Surface seal: Bentonite ☐ 30 Concrete ☒ 01 Other ☐ _____

4. Material between well casing and protective pipe: Bentonite ☐ 30 Other ☒ Sand

5. Annular space seal: a. Granular/Chipped Bentonite ☐ 33
b. ____ Lbs/gal mud weight . . . Bentonite-sand slurry ☐ 35
c. ____ Lbs/gal mud weight . . . . . Bentonite slurry ☐ 31
d. ____ % Bentonite . . . . . Bentonite-cement grout ☒ 50
e. appx. 40 gal $Ft^3$ volume added for any of the above
f. How installed: Tremie ☐ 01 Tremie pumped ☒ 02 Gravity ☐ 08

6. Bentonite seal: a. Bentonite granules ☐ 33
b. ☐ 1/4 in. ☒ 3/8 in. ☐ 1/2 in. Bentonite chips ☒ 32
c. _____ Other ☐ _____

7. Fine sand material: Manufacturer, product name & mesh size
a. #15 Red Flint
b. Volume added 1/2-50 lb bag $ft^3$

8. Filter pack material: Manufacturer, product name & mesh size
a. #40 Red Flint
b. Volume added 3-50 lb bag $ft^3$

9. Well casing: Flush threaded PVC schedule 40 ☒ 23 Flush threaded PVC schedule 80 ☐ 24 Other ☐ _____

10. Screen material: Schedule 40 PVC
a. Screen type: Factory cut ☒ 11 Continuous slot ☐ 01 Other ☐ _____
b. Manufacturer Johnson Screen
c. Slot size: 0.010 in.
d. Slotted length: 5 ft.

11. Backfill material (below filter pack): None ☐ 14 Other ☒ Chipped Bentonite

I hereby certify that the information on this form is true and correct to the best of my knowledge.

| Signature | Firm |
|---|---|
| [signature] | Arcadis U.S., Inc. |

Please complete both Forms 4400-113A and 4400-113B and return them to the appropriate DNR office and bureau. Completion of these reports is required by chs. 160, 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291, 292, 293, 295, and 299, Wis. Stats., failure to file these forms may result in a forfeiture of between $10 and $25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on these forms is not intended to be used for any other purpose. NOTE: See the instructions for more information, including where the completed forms should be sent.

State of Wisconsin
Department of Natural Resources

Route to: Watershed/Wastewater ☐ Waste Management ☐ Remediation/Redevelopment ☒ Other ☐ _____

# MONITORING WELL CONSTRUCTION
Form 4400-113A Rev. 7-98

| | | |
|---|---|---|
| Facility/Project Name: Tyco FTC | Local Grid Location of Well: ____ ft. ☐ N. ☐ S. ____ ft. ☐ E. ☐ W. | Well Name: PZ-31-17 |
| Facility License, Permit or Monitoring No. | Local Grid Origin ☐ (estimated: ☐) or Well Location ☒ Lat. ___ ° ___ ' ___ " Long. ___ ° ___ ' ___ " or | Wis. Unique Well No. _____ / DNR Well ID No. _____ |
| Facility ID: 4 3 8 0 0 5 5 9 0 | St. Plane 462494.25 ft. N, 2582369.02 ft. E. S/(C)/N | Date Well Installed: 07 / 24 / 2019 (m m d d y y y y) |
| Type of Well: Well Code 12 / PZ | Section Location of Waste/Source: NE 1/4 of NE 1/4 of Sec. 13, T. 30 N, R. 23 ☒ E ☐ W | Well Installed By: Name (first, last) and Firm: Keith Fehrman; Layne, A Granite Company |
| Distance from Waste/Source ____ ft. Enf. Stds. Apply ☐ | Location of Well Relative to Waste/Source: u ☐ Upgradient s ☐ Sidegradient d ☐ Downgradient n ☐ Not Known | Gov. Lot Number: _____ |

A. Protective pipe, top elevation _____ ft. MSL

B. Well casing, top elevation _____ ft. MSL

C. Land surface elevation 595.74 ft. MSL

D. Surface seal, bottom _____ ft. MSL or 1 ft.

12. USCS classification of soil near screen:
GP ☐ GM ☐ GC ☐ GW ☐ SW ☐ SP ☐
SM ☐ SC ☐ ML ☐ MH ☐ CL ☐ CH ☐
Bedrock ☐

13. Sieve analysis performed? ☐ Yes ☒ No

14. Drilling method used: Rotary ☐ 50; Hollow Stem Auger ☐ 41; Other ☒ Sonic

15. Drilling fluid used: Water ☒ 02; Air ☐ 01; Drilling Mud ☐ 03; None ☐ 99

16. Drilling additives used? ☐ Yes ☒ No

Describe _____

17. Source of water (attach analysis, if required): City of Marinette hydrant

E. Bentonite seal, top _____ ft. MSL or 1.0 ft.

F. Fine sand, top _____ ft. MSL or 5.0 ft.

G. Filter pack, top _____ ft. MSL or 6.0 ft.

H. Screen joint, top _____ ft. MSL or 7.0 ft.

I. Well bottom _____ ft. MSL or 17.0 ft.

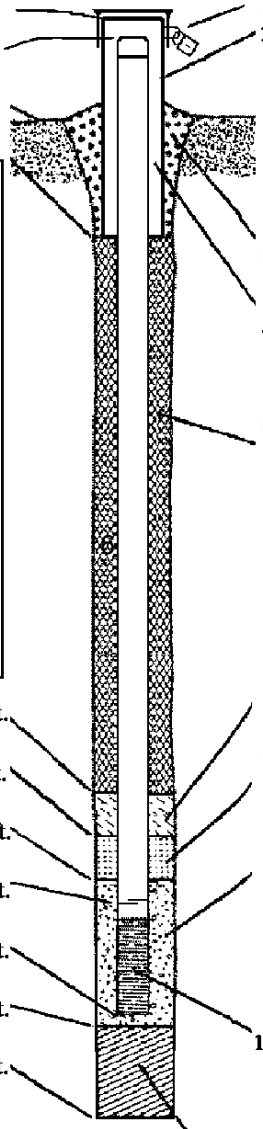
J. Filter pack, bottom _____ ft. MSL or 18.0 ft.

K. Borehole, bottom _____ ft. MSL or 18.0 ft.

L. Borehole, diameter 6 in.

M. O.D. well casing 2 in.

N. I.D. well casing _____ in.



1. Cap and lock? ☒ Yes ☐ No

2. Protective cover pipe:
a. Inside diameter: 8 in.
b. Length: 1 ft.
c. Material: Steel ☒ 04; Other ☐
d. Additional protection? ☐ Yes ☒ No
If yes, describe: _____

3. Surface seal: Bentonite ☐ 30; Concrete ☒ 01; Other ☐

4. Material between well casing and protective pipe: Bentonite ☐ 30; Other ☒ Sand

5. Annular space seal: a. Granular/Chipped Bentonite ☒ 33
b. ____ Lbs/gal mud weight . . . Bentonite-sand slurry ☐ 35
c. ____ Lbs/gal mud weight . . . . . Bentonite slurry ☐ 31
d. ____ % Bentonite . . . . . Bentonite-cement grout ☐ 50
e. 1-50lb bag Ft$^3$ volume added for any of the above
f. How installed: Tremie ☐ 01; Tremie pumped ☐ 02; Gravity ☒ 08

6. Bentonite seal: a. Bentonite granules ☐ 33
b. ☐ 1/4 in. ☒ 3/8 in. ☐ 1/2 in. Bentonite chips ☒ 32
c. _____ Other ☐

7. Fine sand material: Manufacturer, product name & mesh size
a. #15 Red Flint
b. Volume added 1/2-50 lb bag ft$^3$

8. Filter pack material: Manufacturer, product name & mesh size
a. #40 Red Flint
b. Volume added 5-50 lb bag ft$^3$

9. Well casing: Flush threaded PVC schedule 40 ☒ 23; Flush threaded PVC schedule 80 ☐ 24; Other ☐

10. Screen material: Schedule 40 PVC
a. Screen type: Factory cut ☒ 11; Continuous slot ☐ 01; Other ☐
b. Manufacturer Johnson Screen
c. Slot size: 0.010 in.
d. Slotted length: 10 ft.

11. Backfill material (below filter pack): None ☒ 14; Other ☐

I hereby certify that the information on this form is true and correct to the best of my knowledge.

| Signature | Firm |
|---|---|
| [signature] | Arcadis U.S., Inc. |

Please complete both Forms 4400-113A and 4400-113B and return them to the appropriate DNR office and bureau. Completion of these reports is required by chs. 160, 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291, 292, 293, 295, and 299, Wis. Stats., failure to file these forms may result in a forfeiture of between $10 and $25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on these forms is not intended to be used for any other purpose. NOTE: See the instructions for more information, including where the completed forms should be sent.

State of Wisconsin
Department of Natural Resources

Route to: Watershed/Wastewater ☐ Waste Management ☐ Remediation/Redevelopment ☒ Other ☐ _____

# MONITORING WELL CONSTRUCTION
Form 4400-113A Rev. 7-98

| | | |
|---|---|---|
| Facility/Project Name: Tyco FTC | Local Grid Location of Well: ____ ft. ☐ N. ☐ S. ____ ft. ☐ E. ☐ W. | Well Name: PZ-31-40 |
| Facility License, Permit or Monitoring No. | Local Grid Origin ☐ (estimated: ☐) or Well Location ☒ Lat. ___ ° ___ ' ___ " Long. ___ ° ___ ' ___ " or | Wis. Unique Well No. _____ / DNR Well ID No. _____ |
| Facility ID: 4 3 8 0 0 5 5 9 0 | St. Plane 462490.83 ft. N, 2582364.02 ft. E. S/(C)/N | Date Well Installed: 07 / 24 / 2019 (m m d d y y y y) |
| Type of Well: Well Code 12 / PZ | Section Location of Waste/Source: NE 1/4 of NE 1/4 of Sec. 13, T. 30 N, R. 23 ☒ E ☐ W | Well Installed By: Name (first, last) and Firm: Keith Fehrman; Layne, A Granite Company |
| Distance from Waste/Source ____ ft. Enf. Stds. Apply ☐ | Location of Well Relative to Waste/Source: u ☐ Upgradient s ☐ Sidegradient d ☐ Downgradient n ☐ Not Known | Gov. Lot Number: _____ |

A. Protective pipe, top elevation _____ ft. MSL

B. Well casing, top elevation _____ ft. MSL

C. Land surface elevation 595.75 ft. MSL

D. Surface seal, bottom _____ ft. MSL or 1 ft.

12. USCS classification of soil near screen:
GP ☐ GM ☐ GC ☐ GW ☐ SW ☐ SP ☐
SM ☐ SC ☐ ML ☐ MH ☐ CL ☐ CH ☐
Bedrock ☐

13. Sieve analysis performed? ☐ Yes ☒ No

14. Drilling method used: Rotary ☐ 50; Hollow Stem Auger ☐ 41; Other ☒ Sonic

15. Drilling fluid used: Water ☒ 02; Air ☐ 01; Drilling Mud ☐ 03; None ☐ 99

16. Drilling additives used? ☐ Yes ☒ No

Describe _____

17. Source of water (attach analysis, if required): City of Marinette hydrant

E. Bentonite seal, top _____ ft. MSL or 26.0 ft.

F. Fine sand, top _____ ft. MSL or 31.0 ft.

G. Filter pack, top _____ ft. MSL or 33.0 ft.

H. Screen joint, top _____ ft. MSL or 35.0 ft.

I. Well bottom _____ ft. MSL or 40.0 ft.

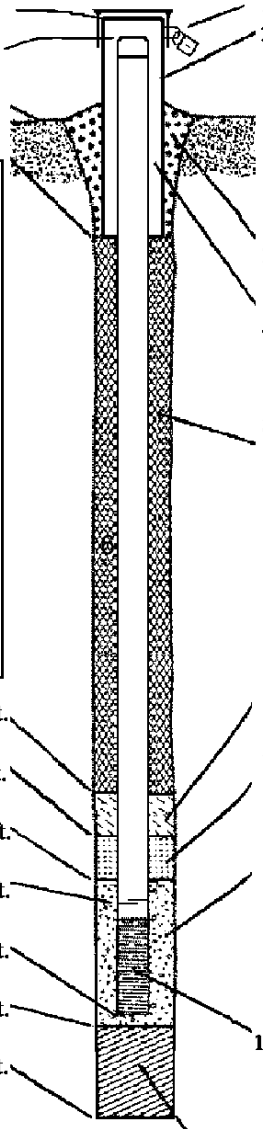
J. Filter pack, bottom _____ ft. MSL or 41.0 ft.

K. Borehole, bottom _____ ft. MSL or 41.0 ft.

L. Borehole, diameter 6 in.

M. O.D. well casing 2 in.

N. I.D. well casing _____ in.



1. Cap and lock? ☒ Yes ☐ No

2. Protective cover pipe:
a. Inside diameter: 8 in.
b. Length: 1 ft.
c. Material: Steel ☒ 04; Other ☐ _____
d. Additional protection? ☐ Yes ☒ No
If yes, describe: _____

3. Surface seal: Bentonite ☐ 30; Concrete ☒ 01; Other ☐ _____

4. Material between well casing and protective pipe: Bentonite ☐ 30; Other ☒ Sand

5. Annular space seal: a. Granular/Chipped Bentonite ☐ 33
b. ____ Lbs/gal mud weight . . . Bentonite-sand slurry ☐ 35
c. ____ Lbs/gal mud weight . . . . . Bentonite slurry ☐ 31
d. ____ % Bentonite . . . . . Bentonite-cement grout ☒ 50
e. appx. 20 gal $Ft^3$ volume added for any of the above
f. How installed: Tremie ☐ 01; Tremie pumped ☒ 02; Gravity ☐ 08

6. Bentonite seal: a. Bentonite granules ☐ 33
b. ☐ 1/4 in. ☒ 3/8 in. ☐ 1/2 in. Bentonite chips ☒ 32
c. _____ Other ☐ _____

7. Fine sand material: Manufacturer, product name & mesh size
a. #15 Red Flint
b. Volume added 1/2-50 lb bag $ft^3$

8. Filter pack material: Manufacturer, product name & mesh size
a. #40 Red Flint
b. Volume added 3-50 lb bag $ft^3$

9. Well casing: Flush threaded PVC schedule 40 ☒ 23; Flush threaded PVC schedule 80 ☐ 24; Other ☐ _____

10. Screen material: Schedule 40 PVC
a. Screen type: Factory cut ☒ 11; Continuous slot ☐ 01; Other ☐ _____
b. Manufacturer Johnson Screen
c. Slot size: 0.010 in.
d. Slotted length: 5 ft.

11. Backfill material (below filter pack): None ☒ 14; Other ☐ _____

I hereby certify that the information on this form is true and correct to the best of my knowledge.

| Signature | Firm |
|---|---|
| [signature] | Arcadis U.S., Inc. |

Please complete both Forms 4400-113A and 4400-113B and return them to the appropriate DNR office and bureau. Completion of these reports is required by chs. 160, 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291, 292, 293, 295, and 299, Wis. Stats., failure to file these forms may result in a forfeiture of between $10 and $25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on these forms is not intended to be used for any other purpose. NOTE: See the instructions for more information, including where the completed forms should be sent.

State of Wisconsin
Department of Natural Resources

Route to: Watershed/Wastewater ☐ Waste Management ☐ Remediation/Redevelopment ☒ Other ☐ _____

# MONITORING WELL CONSTRUCTION
Form 4400-113A Rev. 7-98

| | | |
|---|---|---|
| Facility/Project Name: Tyco FTC | Local Grid Location of Well: ____ ft. ☐ N. ☐ S. ____ ft. ☐ E. ☐ W. | Well Name: PZ-31-53 |
| Facility License, Permit or Monitoring No. | Local Grid Origin ☐ (estimated: ☐) or Well Location ☒ Lat. ___ ° ___ ' ___ " Long. ___ ° ___ ' ___ " or | Wis. Unique Well No. _____ / DNR Well ID No. _____ |
| Facility ID: 4 3 8 0 0 5 5 9 0 | St. Plane 462491.38 ft. N, 2582374.61 ft. E. S/(C)/N | Date Well Installed: 07 / 24 / 2019 (m m d d y y y y) |
| Type of Well: Well Code 12 / PZ | Section Location of Waste/Source: NE 1/4 of NE 1/4 of Sec. 13, T. 30 N, R. 23 ☒ E ☐ W | Well Installed By: Name (first, last) and Firm: Keith Fehrman; Layne, A Granite Company |
| Distance from Waste/Source ____ ft. Enf. Stds. Apply ☐ | Location of Well Relative to Waste/Source: u ☐ Upgradient s ☐ Sidegradient d ☐ Downgradient n ☐ Not Known | Gov. Lot Number: _____ |

A. Protective pipe, top elevation _____ ft. MSL

B. Well casing, top elevation _____ ft. MSL

C. Land surface elevation 595.79 ft. MSL

D. Surface seal, bottom _____ ft. MSL or 1 ft.

12. USCS classification of soil near screen:
GP ☐ GM ☐ GC ☐ GW ☐ SW ☐ SP ☐
SM ☐ SC ☐ ML ☐ MH ☐ CL ☐ CH ☐
Bedrock ☐

13. Sieve analysis performed? ☐ Yes ☒ No

14. Drilling method used: Rotary ☐ 50; Hollow Stem Auger ☐ 41; Other ☒ Sonic

15. Drilling fluid used: Water ☒ 02; Air ☐ 01; Drilling Mud ☐ 03; None ☐ 99

16. Drilling additives used? ☐ Yes ☒ No

Describe _____

17. Source of water (attach analysis, if required): City of Marinette hydrant

E. Bentonite seal, top _____ ft. MSL or 41.0 ft.

F. Fine sand, top _____ ft. MSL or 46.0 ft.

G. Filter pack, top _____ ft. MSL or 47.0 ft.

H. Screen joint, top _____ ft. MSL or 48.0 ft.

I. Well bottom _____ ft. MSL or 53.0 ft.

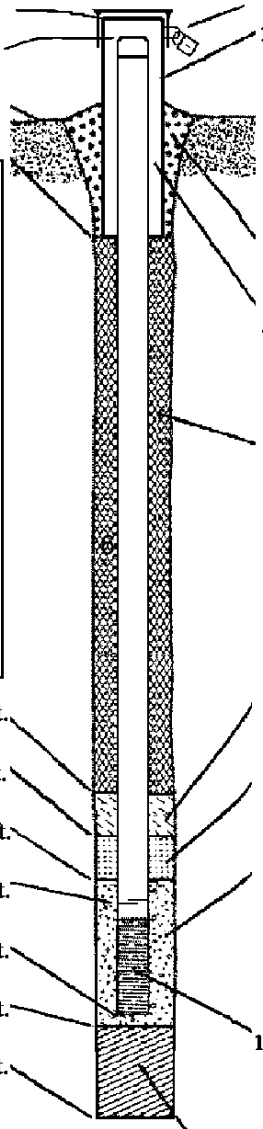
J. Filter pack, bottom _____ ft. MSL or 55.0 ft.

K. Borehole, bottom _____ ft. MSL or 67.0 ft.

L. Borehole, diameter 6 in.

M. O.D. well casing 2 in.

N. I.D. well casing _____ in.



1. Cap and lock? ☒ Yes ☐ No

2. Protective cover pipe:
a. Inside diameter: 8 in.
b. Length: 1 ft.
c. Material: Steel ☒ 04; Other ☐ _____
d. Additional protection? ☐ Yes ☒ No
If yes, describe: _____

3. Surface seal: Bentonite ☐ 30; Concrete ☒ 01; Other ☐ _____

4. Material between well casing and protective pipe: Bentonite ☐ 30; Other ☒ Sand

5. Annular space seal: a. Granular/Chipped Bentonite ☐ 33
b. ____ Lbs/gal mud weight . . . Bentonite-sand slurry ☐ 35
c. ____ Lbs/gal mud weight . . . . . Bentonite slurry ☐ 31
d. ____ % Bentonite . . . . . Bentonite-cement grout ☒ 50
e. appx. 40 gal $Ft^3$ volume added for any of the above
f. How installed: Tremie ☐ 01; Tremie pumped ☒ 02; Gravity ☐ 08

6. Bentonite seal: a. Bentonite granules ☐ 33
b. ☐ 1/4 in. ☒ 3/8 in. ☐ 1/2 in. Bentonite chips ☒ 32
c. _____ Other ☐ _____

7. Fine sand material: Manufacturer, product name & mesh size
a. #15 Red Flint
b. Volume added 1/2-50 lb bag $ft^3$

8. Filter pack material: Manufacturer, product name & mesh size
a. #40 Red Flint
b. Volume added 3-50 lb bag $ft^3$

9. Well casing: Flush threaded PVC schedule 40 ☒ 23; Flush threaded PVC schedule 80 ☐ 24; Other ☐ _____

10. Screen material: Schedule 40 PVC
a. Screen type: Factory cut ☒ 11; Continuous slot ☐ 01; Other ☐ _____
b. Manufacturer Johnson Screen
c. Slot size: 0.010 in.
d. Slotted length: 5 ft.

11. Backfill material (below filter pack): None ☐ 14; Other ☒ Chipped Bentonite

I hereby certify that the information on this form is true and correct to the best of my knowledge.

| Signature | Firm |
|---|---|
| [signature] | Arcadis U.S., Inc. |

Please complete both Forms 4400-113A and 4400-113B and return them to the appropriate DNR office and bureau. Completion of these reports is required by chs. 160, 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291, 292, 293, 295, and 299, Wis. Stats., failure to file these forms may result in a forfeiture of between $10 and $25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on these forms is not intended to be used for any other purpose. NOTE: See the instructions for more information, including where the completed forms should be sent.

State of Wisconsin
Department of Natural Resources

Route to: Watershed/Wastewater ☐ Waste Management ☐ Remediation/Redevelopment ☒ Other ☐ _____

# MONITORING WELL CONSTRUCTION
Form 4400-113A Rev. 7-98

| | | |
|---|---|---|
| Facility/Project Name: Tyco FTC | Local Grid Location of Well: ____ ft. ☐ N. ☐ S. ____ ft. ☐ E. ☐ W. | Well Name: PZ-33-12 |
| Facility License, Permit or Monitoring No. | Local Grid Origin ☐ (estimated: ☐) or Well Location ☒ Lat. ___ ° ___ ' ___ " Long. ___ ° ___ ' ___ " or | Wis. Unique Well No. _____ / DNR Well ID No. _____ |
| Facility ID: 4 3 8 0 0 5 5 9 0 | St. Plane 460123.91 ft. N, 2582902.95 ft. E. S/(C)/N | Date Well Installed: 06 / 21 / 2019 (m m d d y y y y) |
| Type of Well: Well Code 12 / PZ | Section Location of Waste/Source: NE 1/4 of NE 1/4 of Sec. 13, T. 30 N, R. 23 ☒ E ☐ W | Well Installed By: Name (first, last) and Firm: Keith Fehrman; Layne, A Granite Company |
| Distance from Waste/Source ____ ft. Enf. Stds. Apply ☐ | Location of Well Relative to Waste/Source: u ☐ Upgradient s ☐ Sidegradient d ☐ Downgradient n ☐ Not Known | Gov. Lot Number: _____ |

A. Protective pipe, top elevation _____ ft. MSL

B. Well casing, top elevation _____ ft. MSL

C. Land surface elevation 594.79 ft. MSL

D. Surface seal, bottom _____ ft. MSL or 1 ft.

12. USCS classification of soil near screen:
GP ☐ GM ☐ GC ☐ GW ☐ SW ☐ SP ☐
SM ☐ SC ☐ ML ☐ MH ☐ CL ☐ CH ☐
Bedrock ☐

13. Sieve analysis performed? ☐ Yes ☒ No

14. Drilling method used: Rotary ☐ 50; Hollow Stem Auger ☐ 41; Other ☒ Sonic

15. Drilling fluid used: Water ☒ 02; Air ☐ 01; Drilling Mud ☐ 03; None ☐ 99

16. Drilling additives used? ☐ Yes ☒ No

Describe _____

17. Source of water (attach analysis, if required): City of Marinette hydrant

E. Bentonite seal, top _____ ft. MSL or 1.0 ft.

F. Fine sand, top _____ ft. MSL or 4.0 ft.

G. Filter pack, top _____ ft. MSL or 6.0 ft.

H. Screen joint, top _____ ft. MSL or 7.0 ft.

I. Well bottom _____ ft. MSL or 12.0 ft.

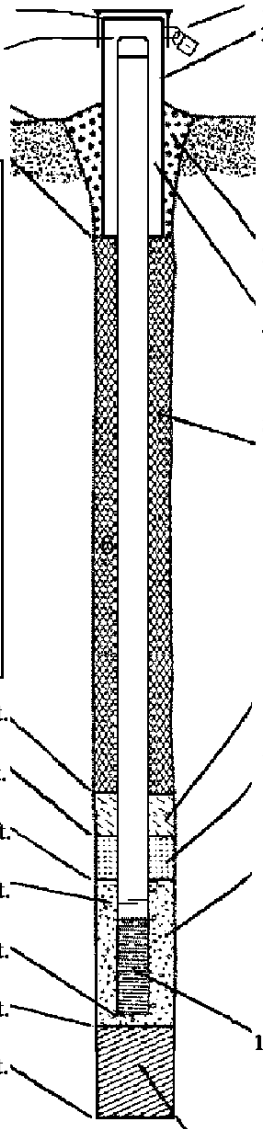
J. Filter pack, bottom _____ ft. MSL or 12.0 ft.

K. Borehole, bottom _____ ft. MSL or 12.0 ft.

L. Borehole, diameter 6 in.

M. O.D. well casing 2 in.

N. I.D. well casing _____ in.



1. Cap and lock? ☒ Yes ☐ No

2. Protective cover pipe:
a. Inside diameter: 8 in.
b. Length: 1 ft.
c. Material: Steel ☒ 04; Other ☐ _____
d. Additional protection? ☐ Yes ☒ No
If yes, describe: _____

3. Surface seal: Bentonite ☐ 30; Concrete ☒ 01; Other ☐ _____

4. Material between well casing and protective pipe: Bentonite ☐ 30; Other ☒ Sand

5. Annular space seal: a. Granular/Chipped Bentonite ☒ 33
b. ____ Lbs/gal mud weight . . . Bentonite-sand slurry ☐ 35
c. ____ Lbs/gal mud weight . . . . . Bentonite slurry ☐ 31
d. ____ % Bentonite . . . . . Bentonite-cement grout ☐ 50
e. 1-50lb bag Ft$^3$ volume added for any of the above
f. How installed: Tremie ☐ 01; Tremie pumped ☐ 02; Gravity ☒ 08

6. Bentonite seal: a. Bentonite granules ☐ 33
b. ☐ 1/4 in. ☒ 3/8 in. ☐ 1/2 in. Bentonite chips ☒ 32
c. _____ Other ☐ _____

7. Fine sand material: Manufacturer, product name & mesh size
a. #15 Red Flint
b. Volume added 1/2-50 lb bag ft$^3$

8. Filter pack material: Manufacturer, product name & mesh size
a. #40 Red Flint
b. Volume added 3-50 lb bag ft$^3$

9. Well casing: Flush threaded PVC schedule 40 ☒ 23; Flush threaded PVC schedule 80 ☐ 24; Other ☐ _____

10. Screen material: Schedule 40 PVC
a. Screen type: Factory cut ☒ 11; Continuous slot ☐ 01; Other ☐ _____
b. Manufacturer Johnson Screen
c. Slot size: 0.010 in.
d. Slotted length: 5 ft.

11. Backfill material (below filter pack): None ☒ 14; Other ☐ _____

I hereby certify that the information on this form is true and correct to the best of my knowledge.

| Signature | Firm |
|---|---|
| [signature] | Arcadis U.S., Inc. |

Please complete both Forms 4400-113A and 4400-113B and return them to the appropriate DNR office and bureau. Completion of these reports is required by chs. 160, 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291, 292, 293, 295, and 299, Wis. Stats., failure to file these forms may result in a forfeiture of between $10 and $25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on these forms is not intended to be used for any other purpose. NOTE: See the instructions for more information, including where the completed forms should be sent.

State of Wisconsin
Department of Natural Resources

Route to: Watershed/Wastewater ☐ Waste Management ☐ Remediation/Redevelopment ☒ Other ☐ _____

# MONITORING WELL CONSTRUCTION
Form 4400-113A Rev. 7-98

| | | |
|---|---|---|
| Facility/Project Name: Tyco FTC | Local Grid Location of Well: ____ ft. ☐ N. ☐ S. ____ ft. ☐ E. ☐ W. | Well Name: PZ-33-33 |
| Facility License, Permit or Monitoring No. | Local Grid Origin ☐ (estimated: ☐) or Well Location ☒ Lat. ___ ° ___ ' ___ " Long. ___ ° ___ ' ___ " or | Wis. Unique Well No. _____ / DNR Well ID No. _____ |
| Facility ID: 4 3 8 0 0 5 5 9 0 | St. Plane 460123.73 ft. N, 2582897.33 ft. E. S/(C)/N | Date Well Installed: 06 / 20 / 2019 (m m d d y y y y) |
| Type of Well: Well Code 12 / PZ | Section Location of Waste/Source: NE 1/4 of NE 1/4 of Sec. 13, T. 30 N, R. 23 ☒ E ☐ W | Well Installed By: Name (first, last) and Firm: Keith Fehrman; Layne, A Granite Company |
| Distance from Waste/Source ____ ft. Enf. Stds. Apply ☐ | Location of Well Relative to Waste/Source: u ☐ Upgradient s ☐ Sidegradient d ☐ Downgradient n ☐ Not Known | Gov. Lot Number: _____ |

A. Protective pipe, top elevation _____ ft. MSL

B. Well casing, top elevation _____ ft. MSL

C. Land surface elevation 594.77 ft. MSL

D. Surface seal, bottom _____ ft. MSL or 1 ft.

12. USCS classification of soil near screen:
GP ☐ GM ☐ GC ☐ GW ☐ SW ☐ SP ☐
SM ☐ SC ☐ ML ☐ MH ☐ CL ☐ CH ☐
Bedrock ☐

13. Sieve analysis performed? ☐ Yes ☒ No

14. Drilling method used: Rotary ☐ 50; Hollow Stem Auger ☐ 41; Other ☒ Sonic

15. Drilling fluid used: Water ☒ 02; Air ☐ 01; Drilling Mud ☐ 03; None ☐ 99

16. Drilling additives used? ☐ Yes ☒ No

Describe _____

17. Source of water (attach analysis, if required): City of Marinette hydrant

E. Bentonite seal, top _____ ft. MSL or 19.0 ft.

F. Fine sand, top _____ ft. MSL or 24.0 ft.

G. Filter pack, top _____ ft. MSL or 26.0 ft.

H. Screen joint, top _____ ft. MSL or 28.0 ft.

I. Well bottom _____ ft. MSL or 33.0 ft.

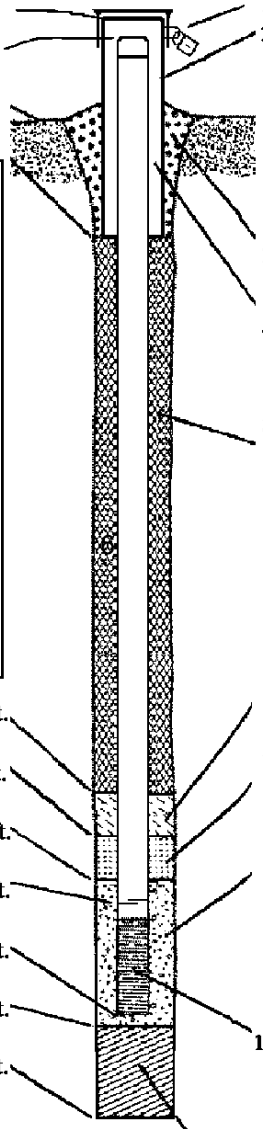
J. Filter pack, bottom _____ ft. MSL or 33.0 ft.

K. Borehole, bottom _____ ft. MSL or 33.0 ft.

L. Borehole, diameter 6 in.

M. O.D. well casing 2 in.

N. I.D. well casing _____ in.



1. Cap and lock? ☒ Yes ☐ No

2. Protective cover pipe:
a. Inside diameter: 8 in.
b. Length: 1 ft.
c. Material: Steel ☒ 04; Other ☐ _____
d. Additional protection? ☐ Yes ☒ No
If yes, describe: _____

3. Surface seal: Bentonite ☐ 30; Concrete ☒ 01; Other ☐ _____

4. Material between well casing and protective pipe: Bentonite ☐ 30; Other ☒ Sand

5. Annular space seal: a. Granular/Chipped Bentonite ☐ 33
b. ____ Lbs/gal mud weight . . . Bentonite-sand slurry ☐ 35
c. ____ Lbs/gal mud weight . . . . . Bentonite slurry ☐ 31
d. ____ % Bentonite . . . . . Bentonite-cement grout ☒ 50
e. appx. 15 gal $Ft^3$ volume added for any of the above
f. How installed: Tremie ☐ 01; Tremie pumped ☒ 02; Gravity ☐ 08

6. Bentonite seal: a. Bentonite granules ☐ 33
b. ☐ 1/4 in. ☒ 3/8 in. ☐ 1/2 in. Bentonite chips ☒ 32
c. _____ Other ☐ _____

7. Fine sand material: Manufacturer, product name & mesh size
a. #15 Red Flint
b. Volume added 1/2-50 lb bag $ft^3$

8. Filter pack material: Manufacturer, product name & mesh size
a. #40 Red Flint
b. Volume added 3-50 lb bag $ft^3$

9. Well casing: Flush threaded PVC schedule 40 ☒ 23; Flush threaded PVC schedule 80 ☐ 24; Other ☐ _____

10. Screen material: Schedule 40 PVC
a. Screen type: Factory cut ☒ 11; Continuous slot ☐ 01; Other ☐ _____
b. Manufacturer Johnson Screen
c. Slot size: 0.010 in.
d. Slotted length: 5 ft.

11. Backfill material (below filter pack): None ☒ 14; Other ☐ _____

I hereby certify that the information on this form is true and correct to the best of my knowledge.

| Signature | Firm |
|---|---|
| [signature] | Arcadis U.S., Inc. |

Please complete both Forms 4400-113A and 4400-113B and return them to the appropriate DNR office and bureau. Completion of these reports is required by chs. 160, 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291, 292, 293, 295, and 299, Wis. Stats., failure to file these forms may result in a forfeiture of between $10 and $25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on these forms is not intended to be used for any other purpose. NOTE: See the instructions for more information, including where the completed forms should be sent.

State of Wisconsin
Department of Natural Resources

Route to: Watershed/Wastewater ☐ Waste Management ☐ Remediation/Redevelopment ☒ Other ☐ _____

# MONITORING WELL CONSTRUCTION
Form 4400-113A Rev. 7-98

| | | |
|---|---|---|
| Facility/Project Name: Tyco FTC | Local Grid Location of Well: ____ ft. ☐ N. ☐ S. ____ ft. ☐ E. ☐ W. | Well Name: PZ-33-67 |
| Facility License, Permit or Monitoring No. | Local Grid Origin ☐ (estimated: ☐) or Well Location ☒ Lat. ___ ° ___ ' ___ " Long. ___ ° ___ ' ___ " or | Wis. Unique Well No. _____ / DNR Well ID No. _____ |
| Facility ID: 4 3 8 0 0 5 5 9 0 | St. Plane 460123.07 ft. N, 2582892.64 ft. E. S/(C)/N | Date Well Installed: 06 / 20 / 2019 (m m d d y y y y) |
| Type of Well: Well Code 12 / PZ | Section Location of Waste/Source: NE 1/4 of NE 1/4 of Sec. 13, T. 30 N, R. 23 ☒ E ☐ W | Well Installed By: Name (first, last) and Firm: Keith Fehrman; Layne, A Granite Company |
| Distance from Waste/Source ____ ft. Enf. Stds. Apply ☐ | Location of Well Relative to Waste/Source: u ☐ Upgradient s ☐ Sidegradient d ☐ Downgradient n ☐ Not Known | Gov. Lot Number: _____ |

A. Protective pipe, top elevation _____ ft. MSL

B. Well casing, top elevation _____ ft. MSL

C. Land surface elevation 594.79 ft. MSL

D. Surface seal, bottom _____ ft. MSL or 1 ft.

12. USCS classification of soil near screen:
GP ☐ GM ☐ GC ☐ GW ☐ SW ☐ SP ☐
SM ☐ SC ☐ ML ☐ MH ☐ CL ☐ CH ☐
Bedrock ☐

13. Sieve analysis performed? ☐ Yes ☒ No

14. Drilling method used: Rotary ☐ 50; Hollow Stem Auger ☐ 41; Other ☒ Sonic

15. Drilling fluid used: Water ☒ 02; Air ☐ 01; Drilling Mud ☐ 03; None ☐ 99

16. Drilling additives used? ☐ Yes ☒ No

Describe _____

17. Source of water (attach analysis, if required): City of Marinette hydrant

E. Bentonite seal, top _____ ft. MSL or 48.0 ft.

F. Fine sand, top _____ ft. MSL or 53.0 ft.

G. Filter pack, top _____ ft. MSL or 55.0 ft.

H. Screen joint, top _____ ft. MSL or 57.0 ft.

I. Well bottom _____ ft. MSL or 67.0 ft.

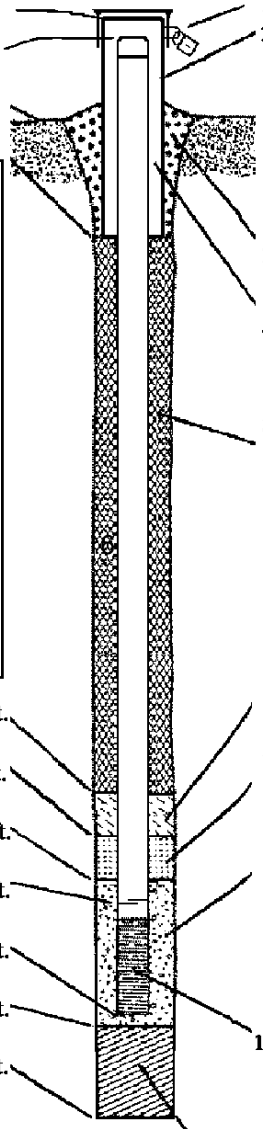
J. Filter pack, bottom _____ ft. MSL or 69.0 ft.

K. Borehole, bottom _____ ft. MSL or 77.0 ft.

L. Borehole, diameter 6 in.

M. O.D. well casing 2 in.

N. I.D. well casing _____ in.



1. Cap and lock? ☒ Yes ☐ No

2. Protective cover pipe:
a. Inside diameter: 8 in.
b. Length: 1 ft.
c. Material: Steel ☒ 04; Other ☐ _____
d. Additional protection? ☐ Yes ☒ No
If yes, describe: _____

3. Surface seal: Bentonite ☐ 30; Concrete ☒ 01; Other ☐ _____

4. Material between well casing and protective pipe: Bentonite ☐ 30; Other ☒ Sand

5. Annular space seal: a. Granular/Chipped Bentonite ☐ 33
b. ____ Lbs/gal mud weight . . . Bentonite-sand slurry ☐ 35
c. ____ Lbs/gal mud weight . . . . . Bentonite slurry ☐ 31
d. ____ % Bentonite . . . . . Bentonite-cement grout ☒ 50
e. appx. 40 gal $Ft^3$ volume added for any of the above
f. How installed: Tremie ☐ 01; Tremie pumped ☒ 02; Gravity ☐ 08

6. Bentonite seal: a. Bentonite granules ☐ 33
b. ☐ 1/4 in. ☒ 3/8 in. ☐ 1/2 in. Bentonite chips ☒ 32
c. _____ Other ☐ _____

7. Fine sand material: Manufacturer, product name & mesh size
a. #15 Red Flint
b. Volume added 1/2-50 lb bag $ft^3$

8. Filter pack material: Manufacturer, product name & mesh size
a. #40 Red Flint
b. Volume added 5-50 lb bag $ft^3$

9. Well casing: Flush threaded PVC schedule 40 ☒ 23; Flush threaded PVC schedule 80 ☐ 24; Other ☐ _____

10. Screen material: Schedule 40 PVC
a. Screen type: Factory cut ☒ 11; Continuous slot ☐ 01; Other ☐ _____
b. Manufacturer Johnson Screen
c. Slot size: 0.010 in.
d. Slotted length: 10 ft.

11. Backfill material (below filter pack): None ☐ 14; Other ☒ Chipped Bentonite

I hereby certify that the information on this form is true and correct to the best of my knowledge.

| Signature | Firm |
|---|---|
| [signature] | Arcadis U.S., Inc. |

Please complete both Forms 4400-113A and 4400-113B and return them to the appropriate DNR office and bureau. Completion of these reports is required by chs. 160, 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291, 292, 293, 295, and 299, Wis. Stats., failure to file these forms may result in a forfeiture of between $10 and $25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on these forms is not intended to be used for any other purpose. NOTE: See the instructions for more information, including where the completed forms should be sent.

State of Wisconsin
Department of Natural Resources

Route to: Watershed/Wastewater ☐ Waste Management ☐ Remediation/Redevelopment ☒ Other ☐ _____

# MONITORING WELL CONSTRUCTION
Form 4400-113A Rev. 7-98

| | | |
|---|---|---|
| Facility/Project Name: Tyco FTC | Local Grid Location of Well: ____ ft. ☐ N. ☐ S. ____ ft. ☐ E. ☐ W. | Well Name: PZ-34-17 |
| Facility License, Permit or Monitoring No. | Local Grid Origin ☐ (estimated: ☐) or Well Location ☒ Lat. ___ ° ___ ' ___ " Long. ___ ° ___ ' ___ " or | Wis. Unique Well No. _____ / DNR Well ID No. _____ |
| Facility ID: 4 3 8 0 0 5 5 9 0 | St. Plane 457159.33 ft. N, 2583554.27 ft. E. S/(C)/N | Date Well Installed: 07 / 18 / 2019 (m m d d y y y y) |
| Type of Well: Well Code 12 / PZ | Section Location of Waste/Source: NE 1/4 of NE 1/4 of Sec. 13, T. 30 N, R. 23 ☒ E ☐ W | Well Installed By: Name (first, last) and Firm: Keith Fehrman; Layne, A Granite Company |
| Distance from Waste/Source ____ ft. Enf. Stds. Apply ☐ | Location of Well Relative to Waste/Source: u ☐ Upgradient s ☐ Sidegradient d ☐ Downgradient n ☐ Not Known | Gov. Lot Number: _____ |

A. Protective pipe, top elevation _____ ft. MSL

B. Well casing, top elevation _____ ft. MSL

C. Land surface elevation 591.34 ft. MSL

D. Surface seal, bottom _____ ft. MSL or 1 ft.

12. USCS classification of soil near screen:
GP ☐ GM ☐ GC ☐ GW ☐ SW ☐ SP ☐
SM ☐ SC ☐ ML ☐ MH ☐ CL ☐ CH ☐
Bedrock ☐

13. Sieve analysis performed? ☐ Yes ☒ No

14. Drilling method used: Rotary ☐ 50; Hollow Stem Auger ☐ 41; Other ☒ Sonic

15. Drilling fluid used: Water ☒ 02; Air ☐ 01; Drilling Mud ☐ 03; None ☐ 99

16. Drilling additives used? ☐ Yes ☒ No

Describe _____

17. Source of water (attach analysis, if required): City of Marinette hydrant

E. Bentonite seal, top _____ ft. MSL or 1.0 ft.

F. Fine sand, top _____ ft. MSL or 5.0 ft.

G. Filter pack, top _____ ft. MSL or 6.0 ft.

H. Screen joint, top _____ ft. MSL or 7.0 ft.

I. Well bottom _____ ft. MSL or 17.0 ft.

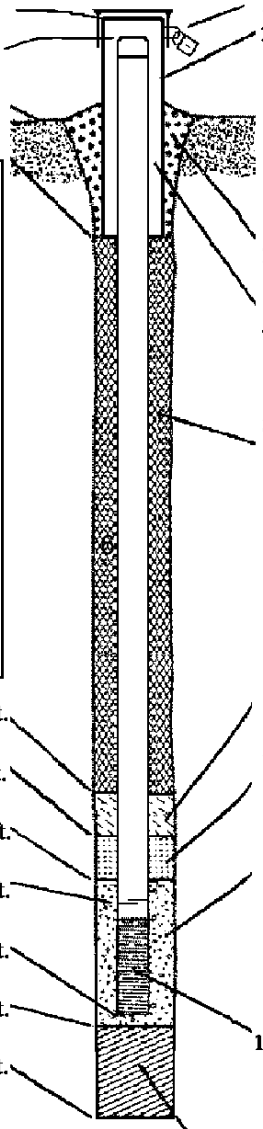
J. Filter pack, bottom _____ ft. MSL or 17.0 ft.

K. Borehole, bottom _____ ft. MSL or 17.0 ft.

L. Borehole, diameter 6 in.

M. O.D. well casing 2 in.

N. I.D. well casing _____ in.



1. Cap and lock? ☒ Yes ☐ No

2. Protective cover pipe:
a. Inside diameter: 8 in.
b. Length: 1 ft.
c. Material: Steel ☒ 04; Other ☐ _____
d. Additional protection? ☐ Yes ☒ No
If yes, describe: _____

3. Surface seal: Bentonite ☐ 30; Concrete ☒ 01; Other ☐ _____

4. Material between well casing and protective pipe: Bentonite ☐ 30; Other ☒ Sand

5. Annular space seal: a. Granular/Chipped Bentonite ☒ 33
b. ____ Lbs/gal mud weight . . . Bentonite-sand slurry ☐ 35
c. ____ Lbs/gal mud weight . . . . . Bentonite slurry ☐ 31
d. ____ % Bentonite . . . . . Bentonite-cement grout ☐ 50
e. 1-50lb bag Ft$^3$ volume added for any of the above
f. How installed: Tremie ☐ 01; Tremie pumped ☐ 02; Gravity ☒ 08

6. Bentonite seal: a. Bentonite granules ☐ 33
b. ☐ 1/4 in. ☒ 3/8 in. ☐ 1/2 in. Bentonite chips ☒ 32
c. _____ Other ☐ _____

7. Fine sand material: Manufacturer, product name & mesh size
a. #15 Red Flint
b. Volume added 1/2-50 lb bag ft$^3$

8. Filter pack material: Manufacturer, product name & mesh size
a. #40 Red Flint
b. Volume added 5-50 lb bag ft$^3$

9. Well casing: Flush threaded PVC schedule 40 ☒ 23; Flush threaded PVC schedule 80 ☐ 24; Other ☐ _____

10. Screen material: Schedule 40 PVC
a. Screen type: Factory cut ☒ 11; Continuous slot ☐ 01; Other ☐ _____
b. Manufacturer Johnson Screen
c. Slot size: 0.010 in.
d. Slotted length: 10 ft.

11. Backfill material (below filter pack): None ☒ 14; Other ☐ _____

I hereby certify that the information on this form is true and correct to the best of my knowledge.

| Signature | Firm |
|---|---|
| [signature] | Arcadis U.S., Inc. |

Please complete both Forms 4400-113A and 4400-113B and return them to the appropriate DNR office and bureau. Completion of these reports is required by chs. 160, 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291, 292, 293, 295, and 299, Wis. Stats., failure to file these forms may result in a forfeiture of between $10 and $25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on these forms is not intended to be used for any other purpose. NOTE: See the instructions for more information, including where the completed forms should be sent.

State of Wisconsin
Department of Natural Resources

Route to: Watershed/Wastewater ☐ Waste Management ☐ Remediation/Redevelopment ☒ Other ☐ _____

# MONITORING WELL CONSTRUCTION
Form 4400-113A Rev. 7-98

| | | |
|---|---|---|
| Facility/Project Name: Tyco FTC | Local Grid Location of Well: ____ ft. ☐ N. ☐ S. ____ ft. ☐ E. ☐ W. | Well Name: PZ-34-84 |
| Facility License, Permit or Monitoring No. | Local Grid Origin ☐ (estimated: ☐) or Well Location ☒ Lat. ___ ° ___ ' ___ " Long. ___ ° ___ ' ___ " or | Wis. Unique Well No. _____ / DNR Well ID No. _____ |
| Facility ID: 4 3 8 0 0 5 5 9 0 | St. Plane 457164.33 ft. N, 2583555.10 ft. E. S/(C)/N | Date Well Installed: 07 / 18 / 2019 (m m d d y y y y) |
| Type of Well: Well Code 12 / PZ | Section Location of Waste/Source: NE 1/4 of NE 1/4 of Sec. 13, T. 30 N, R. 23 ☒ E ☐ W | Well Installed By: Name (first, last) and Firm: Keith Fehrman; Layne, A Granite Company |
| Distance from Waste/Source ____ ft. Enf. Stds. Apply ☐ | Location of Well Relative to Waste/Source: u ☐ Upgradient s ☐ Sidegradient d ☐ Downgradient n ☐ Not Known | Gov. Lot Number: _____ |

A. Protective pipe, top elevation _____ ft. MSL

B. Well casing, top elevation _____ ft. MSL

C. Land surface elevation 591.29 ft. MSL

D. Surface seal, bottom _____ ft. MSL or 1 ft.

12. USCS classification of soil near screen:
GP ☐ GM ☐ GC ☐ GW ☐ SW ☐ SP ☐
SM ☐ SC ☐ ML ☐ MH ☐ CL ☐ CH ☐
Bedrock ☐

13. Sieve analysis performed? ☐ Yes ☒ No

14. Drilling method used: Rotary ☐ 50 Hollow Stem Auger ☐ 41 Other ☒ Sonic

15. Drilling fluid used: Water ☒ 02 Air ☐ 01 Drilling Mud ☐ 03 None ☐ 99

16. Drilling additives used? ☐ Yes ☒ No

Describe _____

17. Source of water (attach analysis, if required): City of Marinette hydrant

E. Bentonite seal, top _____ ft. MSL or 65.0 ft.

F. Fine sand, top _____ ft. MSL or 70.0 ft.

G. Filter pack, top _____ ft. MSL or 72.0 ft.

H. Screen joint, top _____ ft. MSL or 74.0 ft.

I. Well bottom _____ ft. MSL or 84.0 ft.

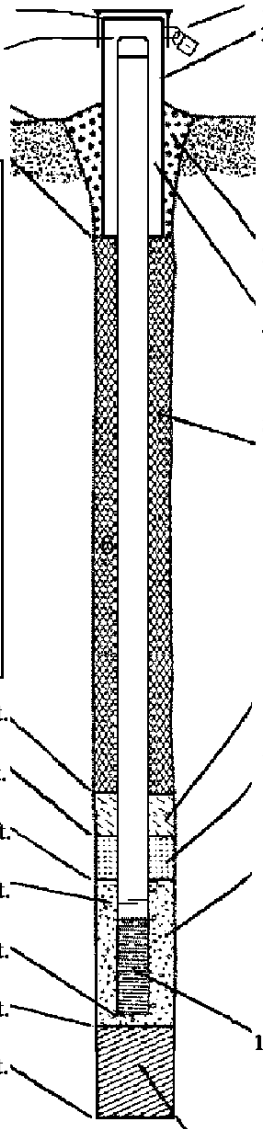
J. Filter pack, bottom _____ ft. MSL or 85.0 ft.

K. Borehole, bottom _____ ft. MSL or 97.0 ft.

L. Borehole, diameter 6 in.

M. O.D. well casing 2 in.

N. I.D. well casing _____ in.



1. Cap and lock? ☒ Yes ☐ No

2. Protective cover pipe:
a. Inside diameter: 8 in.
b. Length: 1 ft.
c. Material: Steel ☒ 04 Other ☐ _____
d. Additional protection? ☐ Yes ☒ No
If yes, describe: _____

3. Surface seal: Bentonite ☐ 30 Concrete ☒ 01 Other ☐ _____

4. Material between well casing and protective pipe: Bentonite ☐ 30 Other ☒ Sand

5. Annular space seal: a. Granular/Chipped Bentonite ☐ 33
b. ____ Lbs/gal mud weight . . . Bentonite-sand slurry ☐ 35
c. ____ Lbs/gal mud weight . . . . . Bentonite slurry ☐ 31
d. ____ % Bentonite . . . . . Bentonite-cement grout ☒ 50
e. appx. 60 gal $Ft^3$ volume added for any of the above
f. How installed: Tremie ☐ 01 Tremie pumped ☒ 02 Gravity ☐ 08

6. Bentonite seal: a. Bentonite granules ☐ 33
b. ☐ 1/4 in. ☒ 3/8 in. ☐ 1/2 in. Bentonite chips ☒ 32
c. _____ Other ☐ _____

7. Fine sand material: Manufacturer, product name & mesh size
a. #15 Red Flint
b. Volume added 1/2-50 lb bag $ft^3$

8. Filter pack material: Manufacturer, product name & mesh size
a. #40 Red Flint
b. Volume added 5-50 lb bag $ft^3$

9. Well casing: Flush threaded PVC schedule 40 ☒ 23 Flush threaded PVC schedule 80 ☐ 24 Other ☐ _____

10. Screen material: Schedule 40 PVC
a. Screen type: Factory cut ☒ 11 Continuous slot ☐ 01 Other ☐ _____
b. Manufacturer Johnson Screen
c. Slot size: 0.010 in.
d. Slotted length: 10 ft.

11. Backfill material (below filter pack): None ☐ 14 Other ☒ Chipped Bentonite

I hereby certify that the information on this form is true and correct to the best of my knowledge.

| Signature | Firm |
|---|---|
| [signature] | Arcadis U.S., Inc. |

Please complete both Forms 4400-113A and 4400-113B and return them to the appropriate DNR office and bureau. Completion of these reports is required by chs. 160, 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291, 292, 293, 295, and 299, Wis. Stats., failure to file these forms may result in a forfeiture of between $10 and $25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on these forms is not intended to be used for any other purpose. NOTE: See the instructions for more information, including where the completed forms should be sent.

State of Wisconsin
Department of Natural Resources

Route to: Watershed/Wastewater ☐ Waste Management ☐ Remediation/Redevelopment ☒ Other ☐ _____

# MONITORING WELL CONSTRUCTION
Form 4400-113A Rev. 7-98

| | | |
|---|---|---|
| Facility/Project Name: Tyco FTC | Local Grid Location of Well: ____ ft. ☐ N. ☐ S. ____ ft. ☐ E. ☐ W. | Well Name: PZ-35-17 |
| Facility License, Permit or Monitoring No. | Local Grid Origin ☐ (estimated: ☐) or Well Location ☒ Lat. ___ ° ___ ' ___ " Long. ___ ° ___ ' ___ " or | Wis. Unique Well No. _____ / DNR Well ID No. _____ |
| Facility ID: 4 3 8 0 0 5 5 9 0 | St. Plane 459497.49 ft. N, 2577182.08 ft. E. S/(C)/N | Date Well Installed: 07 / 29 / 2019 (m m d d y y y y) |
| Type of Well: Well Code 12 / PZ | Section Location of Waste/Source: NE 1/4 of NE 1/4 of Sec. 13, T. 30 N, R. 23 ☒ E ☐ W | Well Installed By: Name (first, last) and Firm: Keith Fehrman; Layne, A Granite Company |
| Distance from Waste/Source ____ ft. Enf. Stds. Apply ☐ | Location of Well Relative to Waste/Source: u ☐ Upgradient s ☐ Sidegradient d ☐ Downgradient n ☐ Not Known | Gov. Lot Number: _____ |

A. Protective pipe, top elevation _____ ft. MSL

B. Well casing, top elevation _____ ft. MSL

C. Land surface elevation 608.21 ft. MSL

D. Surface seal, bottom _____ ft. MSL or 1 ft.

12. USCS classification of soil near screen:
GP ☐ GM ☐ GC ☐ GW ☐ SW ☐ SP ☐
SM ☐ SC ☐ ML ☐ MH ☐ CL ☐ CH ☐
Bedrock ☐

13. Sieve analysis performed? ☐ Yes ☒ No

14. Drilling method used: Rotary ☐ 50; Hollow Stem Auger ☐ 41; Other ☒ Sonic

15. Drilling fluid used: Water ☒ 02; Air ☐ 01; Drilling Mud ☐ 03; None ☐ 99

16. Drilling additives used? ☐ Yes ☒ No

Describe _____

17. Source of water (attach analysis, if required): City of Marinette hydrant

E. Bentonite seal, top _____ ft. MSL or 1.0 ft.

F. Fine sand, top _____ ft. MSL or 5.0 ft.

G. Filter pack, top _____ ft. MSL or 6.0 ft.

H. Screen joint, top _____ ft. MSL or 7.0 ft.

I. Well bottom _____ ft. MSL or 17.0 ft.

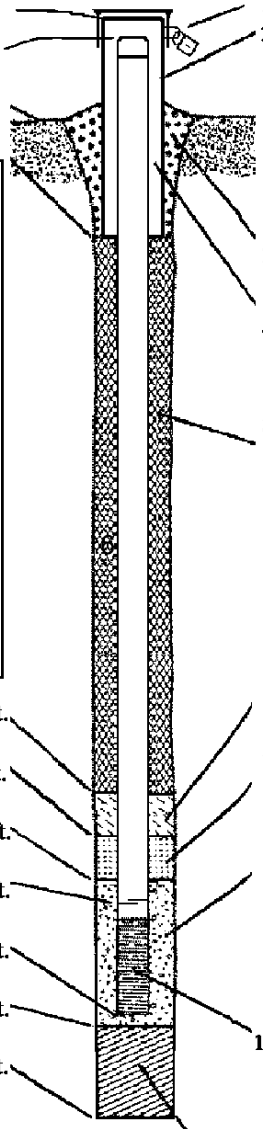
J. Filter pack, bottom _____ ft. MSL or 18.0 ft.

K. Borehole, bottom _____ ft. MSL or 18.0 ft.

L. Borehole, diameter 6 in.

M. O.D. well casing 2 in.

N. I.D. well casing ____ in.



1. Cap and lock? ☒ Yes ☐ No

2. Protective cover pipe:
a. Inside diameter: 8 in.
b. Length: 1 ft.
c. Material: Steel ☒ 04; Other ☐
d. Additional protection? ☐ Yes ☒ No
If yes, describe: _____

3. Surface seal: Bentonite ☐ 30; Concrete ☒ 01; Other ☐

4. Material between well casing and protective pipe: Bentonite ☐ 30; Other ☒ Sand

5. Annular space seal: a. Granular/Chipped Bentonite ☒ 33
b. ____ Lbs/gal mud weight . . . Bentonite-sand slurry ☐ 35
c. ____ Lbs/gal mud weight . . . . . Bentonite slurry ☐ 31
d. ____ % Bentonite . . . . . Bentonite-cement grout ☐ 50
e. 1-50lb bag Ft$^3$ volume added for any of the above
f. How installed: Tremie ☐ 01; Tremie pumped ☐ 02; Gravity ☒ 08

6. Bentonite seal: a. Bentonite granules ☐ 33
b. ☐ 1/4 in. ☒ 3/8 in. ☐ 1/2 in. Bentonite chips ☒ 32
c. _____ Other ☐

7. Fine sand material: Manufacturer, product name & mesh size
a. #15 Red Flint
b. Volume added 1/2-50 lb bag ft$^3$

8. Filter pack material: Manufacturer, product name & mesh size
a. #40 Red Flint
b. Volume added 5-50 lb bag ft$^3$

9. Well casing: Flush threaded PVC schedule 40 ☒ 23; Flush threaded PVC schedule 80 ☐ 24; Other ☐

10. Screen material: Schedule 40 PVC
a. Screen type: Factory cut ☒ 11; Continuous slot ☐ 01; Other ☐
b. Manufacturer Johnson Screen
c. Slot size: 0.010 in.
d. Slotted length: 10 ft.

11. Backfill material (below filter pack): None ☒ 14; Other ☐

I hereby certify that the information on this form is true and correct to the best of my knowledge.

| Signature | Firm |
|---|---|
| [signature] | Arcadis U.S., Inc. |

Please complete both Forms 4400-113A and 4400-113B and return them to the appropriate DNR office and bureau. Completion of these reports is required by chs. 160, 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291, 292, 293, 295, and 299, Wis. Stats., failure to file these forms may result in a forfeiture of between $10 and $25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on these forms is not intended to be used for any other purpose. NOTE: See the instructions for more information, including where the completed forms should be sent.

State of Wisconsin
Department of Natural Resources

Route to: Watershed/Wastewater ☐ Waste Management ☐ Remediation/Redevelopment ☒ Other ☐ _____

# MONITORING WELL CONSTRUCTION
Form 4400-113A Rev. 7-98

| | | |
|---|---|---|
| Facility/Project Name: Tyco FTC | Local Grid Location of Well: ____ ft. ☐ N. ☐ S. ____ ft. ☐ E. ☐ W. | Well Name: PZ-35-37 |
| Facility License, Permit or Monitoring No. | Local Grid Origin ☐ (estimated: ☐) or Well Location ☒ Lat. ___ ° ___ ' ___ " Long. ___ ° ___ ' ___ " or | Wis. Unique Well No. _____ / DNR Well ID No. _____ |
| Facility ID: 4 3 8 0 0 5 5 9 0 | St. Plane 459501.92 ft. N, 2577178.87 ft. E. S/(C)/N | Date Well Installed: 07 / 29 / 2019 (m m d d y y y y) |
| Type of Well: Well Code 12 / PZ | Section Location of Waste/Source: NE 1/4 of NE 1/4 of Sec. 13, T. 30 N, R. 23 ☒ E ☐ W | Well Installed By: Name (first, last) and Firm: Keith Fehrman; Layne, A Granite Company |
| Distance from Waste/Source ____ ft. Enf. Stds. Apply ☐ | Location of Well Relative to Waste/Source: u ☐ Upgradient s ☐ Sidegradient d ☐ Downgradient n ☐ Not Known | Gov. Lot Number: _____ |

A. Protective pipe, top elevation _____ ft. MSL

B. Well casing, top elevation _____ ft. MSL

C. Land surface elevation 608.19 ft. MSL

D. Surface seal, bottom _____ ft. MSL or 1 ft.

12. USCS classification of soil near screen:
GP ☐ GM ☐ GC ☐ GW ☐ SW ☐ SP ☐
SM ☐ SC ☐ ML ☐ MH ☐ CL ☐ CH ☐
Bedrock ☐

13. Sieve analysis performed? ☐ Yes ☒ No

14. Drilling method used: Rotary ☐ 50; Hollow Stem Auger ☐ 41; Other ☒ Sonic

15. Drilling fluid used: Water ☒ 02; Air ☐ 01; Drilling Mud ☐ 03; None ☐ 99

16. Drilling additives used? ☐ Yes ☒ No

Describe _____

17. Source of water (attach analysis, if required): City of Marinette hydrant

E. Bentonite seal, top _____ ft. MSL or 23.0 ft.

F. Fine sand, top _____ ft. MSL or 28.0 ft.

G. Filter pack, top _____ ft. MSL or 30.0 ft.

H. Screen joint, top _____ ft. MSL or 32.0 ft.

I. Well bottom _____ ft. MSL or 37.0 ft.

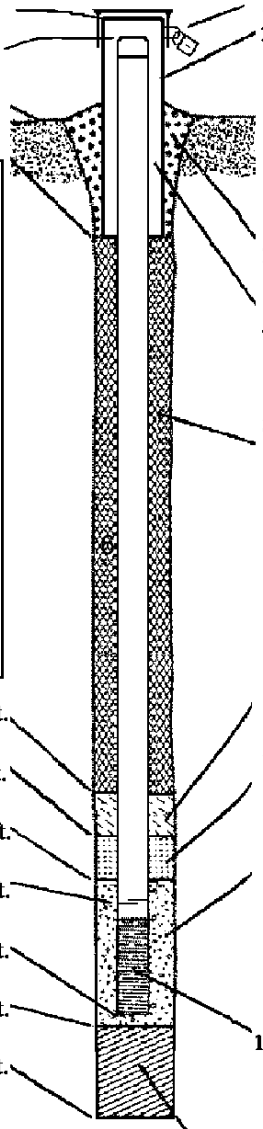
J. Filter pack, bottom _____ ft. MSL or 38.0 ft.

K. Borehole, bottom _____ ft. MSL or 38.0 ft.

L. Borehole, diameter 6 in.

M. O.D. well casing 2 in.

N. I.D. well casing _____ in.



1. Cap and lock? ☒ Yes ☐ No

2. Protective cover pipe:
a. Inside diameter: 8 in.
b. Length: 1 ft.
c. Material: Steel ☒ 04; Other ☐ _____
d. Additional protection? ☐ Yes ☒ No
If yes, describe: _____

3. Surface seal: Bentonite ☐ 30; Concrete ☒ 01; Other ☐ _____

4. Material between well casing and protective pipe: Bentonite ☐ 30; Other ☒ Sand

5. Annular space seal: a. Granular/Chipped Bentonite ☐ 33
b. ____ Lbs/gal mud weight . . . Bentonite-sand slurry ☐ 35
c. ____ Lbs/gal mud weight . . . . . Bentonite slurry ☐ 31
d. ____ % Bentonite . . . . . Bentonite-cement grout ☒ 50
e. appx. 15 gal $Ft^3$ volume added for any of the above
f. How installed: Tremie ☐ 01; Tremie pumped ☒ 02; Gravity ☐ 08

6. Bentonite seal: a. Bentonite granules ☐ 33
b. ☐ 1/4 in. ☒ 3/8 in. ☐ 1/2 in. Bentonite chips ☒ 32
c. _____ Other ☐ _____

7. Fine sand material: Manufacturer, product name & mesh size
a. #15 Red Flint
b. Volume added 1/2-50 lb bag $ft^3$

8. Filter pack material: Manufacturer, product name & mesh size
a. #40 Red Flint
b. Volume added 3-50 lb bag $ft^3$

9. Well casing: Flush threaded PVC schedule 40 ☒ 23; Flush threaded PVC schedule 80 ☐ 24; Other ☐ _____

10. Screen material: Schedule 40 PVC
a. Screen type: Factory cut ☒ 11; Continuous slot ☐ 01; Other ☐ _____
b. Manufacturer Johnson Screen
c. Slot size: 0.010 in.
d. Slotted length: 5 ft.

11. Backfill material (below filter pack): None ☒ 14; Other ☐ _____

I hereby certify that the information on this form is true and correct to the best of my knowledge.

| Signature | Firm |
|---|---|
| [signature] | Arcadis U.S., Inc. |

Please complete both Forms 4400-113A and 4400-113B and return them to the appropriate DNR office and bureau. Completion of these reports is required by chs. 160, 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291, 292, 293, 295, and 299, Wis. Stats., failure to file these forms may result in a forfeiture of between $10 and $25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on these forms is not intended to be used for any other purpose. NOTE: See the instructions for more information, including where the completed forms should be sent.

State of Wisconsin
Department of Natural Resources

Route to: Watershed/Wastewater ☐ Waste Management ☐ Remediation/Redevelopment ☒ Other ☐ _____

# MONITORING WELL CONSTRUCTION
Form 4400-113A Rev. 7-98

| | | |
|---|---|---|
| Facility/Project Name: Tyco FTC | Local Grid Location of Well: ____ ft. ☐ N. ☐ S. ____ ft. ☐ E. ☐ W. | Well Name: PZ-35-48 |
| Facility License, Permit or Monitoring No. | Local Grid Origin ☐ (estimated: ☐) or Well Location ☒ Lat. ___ ° ___ ' ___ " Long. ___ ° ___ ' ___ " or | Wis. Unique Well No. _____ / DNR Well ID No. _____ |
| Facility ID: 4 3 8 0 0 5 5 9 0 | St. Plane 459506.11 ft. N, 2577175.67 ft. E. S/(C)/N | Date Well Installed: 07 / 29 / 2019 (m m d d y y y y) |
| Type of Well: Well Code 12 / PZ | Section Location of Waste/Source: NE 1/4 of NE 1/4 of Sec. 13, T. 30 N, R. 23 ☒ E ☐ W | Well Installed By: Name (first, last) and Firm: Keith Fehrman; Layne, A Granite Company |
| Distance from Waste/Source ____ ft. Enf. Stds. Apply ☐ | Location of Well Relative to Waste/Source: u ☐ Upgradient s ☐ Sidegradient d ☐ Downgradient n ☐ Not Known | Gov. Lot Number: _____ |

A. Protective pipe, top elevation _____ ft. MSL

B. Well casing, top elevation _____ ft. MSL

C. Land surface elevation 608.22 ft. MSL

D. Surface seal, bottom _____ ft. MSL or 1 ft.

12. USCS classification of soil near screen:
GP ☐ GM ☐ GC ☐ GW ☐ SW ☐ SP ☐
SM ☐ SC ☐ ML ☐ MH ☐ CL ☐ CH ☐
Bedrock ☐

13. Sieve analysis performed? ☐ Yes ☒ No

14. Drilling method used: Rotary ☐ 50; Hollow Stem Auger ☐ 41; Other ☒ Sonic

15. Drilling fluid used: Water ☒ 02; Air ☐ 01; Drilling Mud ☐ 03; None ☐ 99

16. Drilling additives used? ☐ Yes ☒ No

Describe _____

17. Source of water (attach analysis, if required): City of Marinette hydrant

E. Bentonite seal, top _____ ft. MSL or 36.0 ft.

F. Fine sand, top _____ ft. MSL or 41.0 ft.

G. Filter pack, top _____ ft. MSL or 42.0 ft.

H. Screen joint, top _____ ft. MSL or 43.0 ft.

I. Well bottom _____ ft. MSL or 48.0 ft.

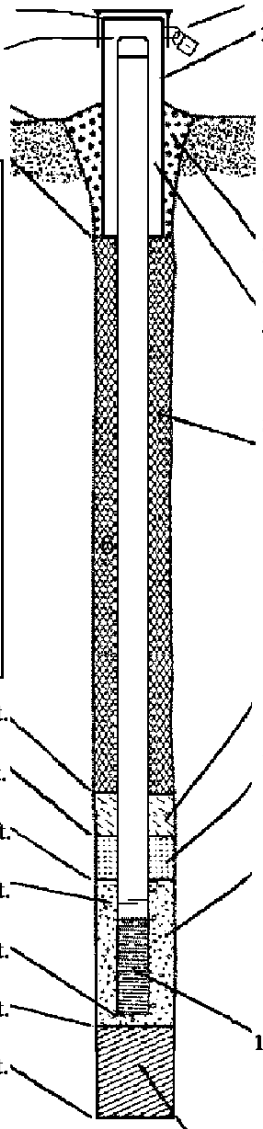
J. Filter pack, bottom _____ ft. MSL or 49.0 ft.

K. Borehole, bottom _____ ft. MSL or 65.0 ft.

L. Borehole, diameter 6 in.

M. O.D. well casing 2 in.

N. I.D. well casing _____ in.



1. Cap and lock? ☒ Yes ☐ No

2. Protective cover pipe:
a. Inside diameter: 8 in.
b. Length: 1 ft.
c. Material: Steel ☒ 04; Other ☐ _____
d. Additional protection? ☐ Yes ☒ No
If yes, describe: _____

3. Surface seal: Bentonite ☐ 30; Concrete ☒ 01; Other ☐ _____

4. Material between well casing and protective pipe: Bentonite ☐ 30; Other ☒ Sand

5. Annular space seal: a. Granular/Chipped Bentonite ☐ 33
b. ____ Lbs/gal mud weight . . . Bentonite-sand slurry ☐ 35
c. ____ Lbs/gal mud weight . . . . . Bentonite slurry ☐ 31
d. ____ % Bentonite . . . . . Bentonite-cement grout ☒ 50
e. appx. 35 gal $Ft^3$ volume added for any of the above
f. How installed: Tremie ☐ 01; Tremie pumped ☒ 02; Gravity ☐ 08

6. Bentonite seal: a. Bentonite granules ☐ 33
b. ☐ 1/4 in. ☒ 3/8 in. ☐ 1/2 in. Bentonite chips ☒ 32
c. _____ Other ☐ _____

7. Fine sand material: Manufacturer, product name & mesh size
a. #15 Red Flint
b. Volume added 1/2-50 lb bag $ft^3$

8. Filter pack material: Manufacturer, product name & mesh size
a. #40 Red Flint
b. Volume added 3-50 lb bag $ft^3$

9. Well casing: Flush threaded PVC schedule 40 ☒ 23; Flush threaded PVC schedule 80 ☐ 24; Other ☐ _____

10. Screen material: Schedule 40 PVC
a. Screen type: Factory cut ☒ 11; Continuous slot ☐ 01; Other ☐ _____
b. Manufacturer Johnson Screen
c. Slot size: 0.010 in.
d. Slotted length: 5 ft.

11. Backfill material (below filter pack): None ☐ 14; Other ☒ Chipped Bentonite

I hereby certify that the information on this form is true and correct to the best of my knowledge.

| Signature | Firm |
|---|---|
| [signature] | Arcadis U.S., Inc. |

Please complete both Forms 4400-113A and 4400-113B and return them to the appropriate DNR office and bureau. Completion of these reports is required by chs. 160, 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291, 292, 293, 295, and 299, Wis. Stats., failure to file these forms may result in a forfeiture of between $10 and $25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on these forms is not intended to be used for any other purpose. NOTE: See the instructions for more information, including where the completed forms should be sent.

State of Wisconsin
Department of Natural Resources

Route to: Watershed/Wastewater ☐ Waste Management ☐ Remediation/Redevelopment ☒ Other ☐ _____

# MONITORING WELL CONSTRUCTION
Form 4400-113A Rev. 7-98

| | | |
|---|---|---|
| Facility/Project Name: Tyco FTC | Local Grid Location of Well: ____ ft. ☐ N. ☐ S. ____ ft. ☐ E. ☐ W. | Well Name: PZ-36-19 |
| Facility License, Permit or Monitoring No. | Local Grid Origin ☐ (estimated: ☐) or Well Location ☒ Lat. ___ ° ___ ' ___ " Long. ___ ° ___ ' ___ " or | Wis. Unique Well No. _____ / DNR Well ID No. _____ |
| Facility ID: 4 3 8 0 0 5 5 9 0 | St. Plane 453114.47 ft. N, 2582364.43 ft. E. S/(C)/N | Date Well Installed: 08 / 06 / 2019 (m m d d y y y y) |
| Type of Well: Well Code 12 / PZ | Section Location of Waste/Source: NE 1/4 of NE 1/4 of Sec. 13, T. 30 N, R. 23 ☒ E ☐ W | Well Installed By: Name (first, last) and Firm: Keith Fehrman; Layne, A Granite Company |
| Distance from Waste/Source ____ ft. Enf. Stds. Apply ☐ | Location of Well Relative to Waste/Source: u ☐ Upgradient s ☐ Sidegradient d ☐ Downgradient n ☐ Not Known | Gov. Lot Number: _____ |

A. Protective pipe, top elevation _____ ft. MSL

B. Well casing, top elevation _____ ft. MSL

C. Land surface elevation 590.42 ft. MSL

D. Surface seal, bottom _____ ft. MSL or 1 ft.

12. USCS classification of soil near screen:
GP ☐ GM ☐ GC ☐ GW ☐ SW ☐ SP ☐
SM ☐ SC ☐ ML ☐ MH ☐ CL ☐ CH ☐
Bedrock ☐

13. Sieve analysis performed? ☐ Yes ☒ No

14. Drilling method used: Rotary ☐ 50; Hollow Stem Auger ☐ 41; Other ☒ Sonic

15. Drilling fluid used: Water ☒ 02; Air ☐ 01; Drilling Mud ☐ 03; None ☐ 99

16. Drilling additives used? ☐ Yes ☒ No

Describe _____

17. Source of water (attach analysis, if required): City of Marinette hydrant

E. Bentonite seal, top _____ ft. MSL or 1.0 ft.

F. Fine sand, top _____ ft. MSL or 7.0 ft.

G. Filter pack, top _____ ft. MSL or 8.0 ft.

H. Screen joint, top _____ ft. MSL or 9.0 ft.

I. Well bottom _____ ft. MSL or 19.0 ft.

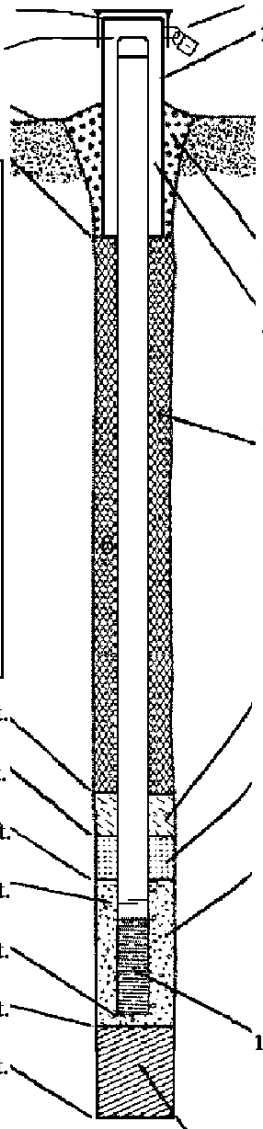
J. Filter pack, bottom _____ ft. MSL or 20.0 ft.

K. Borehole, bottom _____ ft. MSL or 20.0 ft.

L. Borehole, diameter 6 in.

M. O.D. well casing 2 in.

N. I.D. well casing ____ in.



1. Cap and lock? ☒ Yes ☐ No

2. Protective cover pipe:
a. Inside diameter: 8 in.
b. Length: 1 ft.
c. Material: Steel ☒ 04; Other ☐
d. Additional protection? ☐ Yes ☒ No
If yes, describe: _____

3. Surface seal: Bentonite ☐ 30; Concrete ☒ 01; Other ☐

4. Material between well casing and protective pipe: Bentonite ☐ 30; Other ☒ Sand

5. Annular space seal: a. Granular/Chipped Bentonite ☒ 33
b. ____ Lbs/gal mud weight . . . Bentonite-sand slurry ☐ 35
c. ____ Lbs/gal mud weight . . . . . Bentonite slurry ☐ 31
d. ____ % Bentonite . . . . . Bentonite-cement grout ☐ 50
e. 1.5-50lb bag $Ft^3$ volume added for any of the above
f. How installed: Tremie ☐ 01; Tremie pumped ☐ 02; Gravity ☒ 08

6. Bentonite seal: a. Bentonite granules ☐ 33
b. ☐ 1/4 in. ☒ 3/8 in. ☐ 1/2 in. Bentonite chips ☒ 32
c. _____ Other ☐

7. Fine sand material: Manufacturer, product name & mesh size
a. #15 Red Flint
b. Volume added 1/2-50 lb bag $ft^3$

8. Filter pack material: Manufacturer, product name & mesh size
a. #40 Red Flint
b. Volume added 5-50 lb bag $ft^3$

9. Well casing: Flush threaded PVC schedule 40 ☒ 23; Flush threaded PVC schedule 80 ☐ 24; Other ☐

10. Screen material: Schedule 40 PVC
a. Screen type: Factory cut ☒ 11; Continuous slot ☐ 01; Other ☐
b. Manufacturer Johnson Screen
c. Slot size: 0.010 in.
d. Slotted length: 10 ft.

11. Backfill material (below filter pack): None ☒ 14; Other ☐

I hereby certify that the information on this form is true and correct to the best of my knowledge.

| Signature | Firm |
|---|---|
| [signature] | Arcadis U.S., Inc. |

Please complete both Forms 4400-113A and 4400-113B and return them to the appropriate DNR office and bureau. Completion of these reports is required by chs. 160, 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291, 292, 293, 295, and 299, Wis. Stats., failure to file these forms may result in a forfeiture of between $10 and $25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on these forms is not intended to be used for any other purpose. NOTE: See the instructions for more information, including where the completed forms should be sent.

State of Wisconsin
Department of Natural Resources

Route to: Watershed/Wastewater ☐ Waste Management ☐ Remediation/Redevelopment ☒ Other ☐ _____

# MONITORING WELL CONSTRUCTION
Form 4400-113A Rev. 7-98

| | | |
|---|---|---|
| Facility/Project Name: Tyco FTC | Local Grid Location of Well: ____ ft. ☐ N. ☐ S. ____ ft. ☐ E. ☐ W. | Well Name: PZ-36-38 |
| Facility License, Permit or Monitoring No. | Local Grid Origin ☐ (estimated: ☐) or Well Location ☒ Lat. ___ ° ___ ' ___ " Long. ___ ° ___ ' ___ " or | Wis. Unique Well No. _____ / DNR Well ID No. _____ |
| Facility ID: 4 3 8 0 0 5 5 9 0 | St. Plane 453114.08 ft. N, 2582371.03 ft. E. S/(C)/N | Date Well Installed: 08 / 06 / 2019 (m m d d y y y y) |
| Type of Well: Well Code 12 / PZ | Section Location of Waste/Source: NE 1/4 of NE 1/4 of Sec. 13, T. 30 N, R. 23 ☒ E ☐ W | Well Installed By: Name (first, last) and Firm: Keith Fehrman; Layne, A Granite Company |
| Distance from Waste/Source ____ ft. Enf. Stds. Apply ☐ | Location of Well Relative to Waste/Source: u ☐ Upgradient s ☐ Sidegradient d ☐ Downgradient n ☐ Not Known | Gov. Lot Number: _____ |

A. Protective pipe, top elevation _____ ft. MSL

B. Well casing, top elevation _____ ft. MSL

C. Land surface elevation 590.45 ft. MSL

D. Surface seal, bottom _____ ft. MSL or 1 ft.

12. USCS classification of soil near screen:
GP ☐ GM ☐ GC ☐ GW ☐ SW ☐ SP ☐
SM ☐ SC ☐ ML ☐ MH ☐ CL ☐ CH ☐
Bedrock ☐

13. Sieve analysis performed? ☐ Yes ☒ No

14. Drilling method used: Rotary ☐ 50; Hollow Stem Auger ☐ 41; Other ☒ ___
Sonic

15. Drilling fluid used: Water ☒ 02; Air ☐ 01; Drilling Mud ☐ 03; None ☐ 99

16. Drilling additives used? ☐ Yes ☒ No

Describe _____

17. Source of water (attach analysis, if required):
City of Marinette hydrant

E. Bentonite seal, top _____ ft. MSL or 27.0 ft.

F. Fine sand, top _____ ft. MSL or 29.0 ft.

G. Filter pack, top _____ ft. MSL or 31.0 ft.

H. Screen joint, top _____ ft. MSL or 33.0 ft.

I. Well bottom _____ ft. MSL or 38.0 ft.

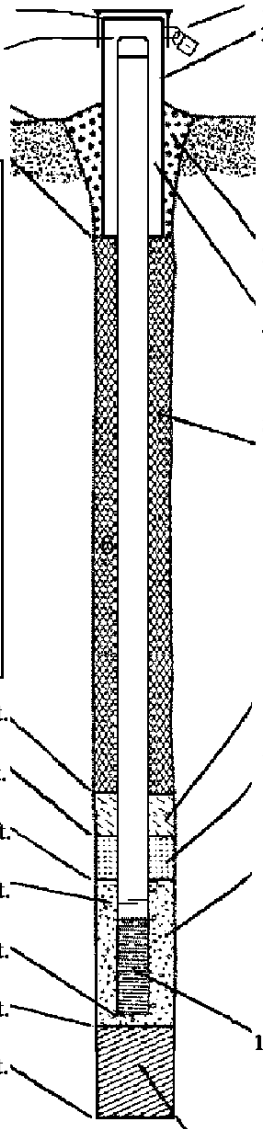
J. Filter pack, bottom _____ ft. MSL or 39.0 ft.

K. Borehole, bottom _____ ft. MSL or 39.0 ft.

L. Borehole, diameter 6 in.

M. O.D. well casing 2 in.

N. I.D. well casing ____ in.



1. Cap and lock? ☒ Yes ☐ No

2. Protective cover pipe:
a. Inside diameter: 8 in.
b. Length: 1 ft.
c. Material: Steel ☒ 04; Other ☐ ___
d. Additional protection? ☐ Yes ☒ No
If yes, describe: _____

3. Surface seal: Bentonite ☐ 30; Concrete ☒ 01; Other ☐ ___

4. Material between well casing and protective pipe: Bentonite ☐ 30; Other ☒ ___
Sand

5. Annular space seal: a. Granular/Chipped Bentonite ☐ 33
b. ____ Lbs/gal mud weight . . . Bentonite-sand slurry ☐ 35
c. ____ Lbs/gal mud weight . . . . . Bentonite slurry ☐ 31
d. ____ % Bentonite . . . . . Bentonite-cement grout ☒ 50
e. appx. 20 gal $Ft^3$ volume added for any of the above
f. How installed: Tremie ☐ 01; Tremie pumped ☒ 02; Gravity ☐ 08

6. Bentonite seal: a. Bentonite granules ☐ 33
b. ☐ 1/4 in. ☒ 3/8 in. ☐ 1/2 in. Bentonite chips ☒ 32
c. _____ Other ☐ ___

7. Fine sand material: Manufacturer, product name & mesh size
a. #15 Red Flint ___
b. Volume added 1/2-50 lb bag $ft^3$

8. Filter pack material: Manufacturer, product name & mesh size
a. #40 Red Flint ___
b. Volume added 3-50 lb bag $ft^3$

9. Well casing: Flush threaded PVC schedule 40 ☒ 23; Flush threaded PVC schedule 80 ☐ 24; Other ☐ ___

10. Screen material: Schedule 40 PVC ___
a. Screen type: Factory cut ☒ 11; Continuous slot ☐ 01; Other ☐ ___
b. Manufacturer Johnson Screen
c. Slot size: 0.010 in.
d. Slotted length: 5 ft.

11. Backfill material (below filter pack): None ☒ 14; Other ☐ ___

I hereby certify that the information on this form is true and correct to the best of my knowledge.

| Signature | Firm |
|---|---|
| [signature] | Arcadis U.S., Inc. |

Please complete both Forms 4400-113A and 4400-113B and return them to the appropriate DNR office and bureau. Completion of these reports is required by chs. 160, 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291, 292, 293, 295, and 299, Wis. Stats., failure to file these forms may result in a forfeiture of between $10 and $25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on these forms is not intended to be used for any other purpose. NOTE: See the instructions for more information, including where the completed forms should be sent.

State of Wisconsin
Department of Natural Resources

Route to: Watershed/Wastewater ☐ Waste Management ☐ Remediation/Redevelopment ☒ Other ☐ _____

# MONITORING WELL CONSTRUCTION
Form 4400-113A Rev. 7-98

| | | |
|---|---|---|
| Facility/Project Name: Tyco FTC | Local Grid Location of Well: ____ ft. ☐ N. ☐ S. ____ ft. ☐ E. ☐ W. | Well Name: PZ-36-85 |
| Facility License, Permit or Monitoring No. | Local Grid Origin ☐ (estimated: ☐) or Well Location ☒ Lat. ___ ° ___ ' ___ " Long. ___ ° ___ ' ___ " or | Wis. Unique Well No. _____ / DNR Well ID No. _____ |
| Facility ID: 4 3 8 0 0 5 5 9 0 | St. Plane 453113.91 ft. N, 2582376.18 ft. E. S/(C)/N | Date Well Installed: 08 / 06 / 2019 (m m d d y y y y) |
| Type of Well: Well Code 12 / PZ | Section Location of Waste/Source: NE 1/4 of NE 1/4 of Sec. 13, T. 30 N, R. 23 ☒ E ☐ W | Well Installed By: Name (first, last) and Firm: Keith Fehrman; Layne, A Granite Company |
| Distance from Waste/Source ____ ft. Enf. Stds. Apply ☐ | Location of Well Relative to Waste/Source: u ☐ Upgradient s ☐ Sidegradient d ☐ Downgradient n ☐ Not Known | Gov. Lot Number: _____ |

A. Protective pipe, top elevation _____ ft. MSL

B. Well casing, top elevation _____ ft. MSL

C. Land surface elevation 590.34 ft. MSL

D. Surface seal, bottom _____ ft. MSL or 1 ft.

12. USCS classification of soil near screen:
GP ☐ GM ☐ GC ☐ GW ☐ SW ☐ SP ☐
SM ☐ SC ☐ ML ☐ MH ☐ CL ☐ CH ☐
Bedrock ☐

13. Sieve analysis performed? ☐ Yes ☒ No

14. Drilling method used: Rotary ☐ 50; Hollow Stem Auger ☐ 41; Other ☒ Sonic

15. Drilling fluid used: Water ☒ 02; Air ☐ 01; Drilling Mud ☐ 03; None ☐ 99

16. Drilling additives used? ☐ Yes ☒ No

Describe _____

17. Source of water (attach analysis, if required): City of Marinette hydrant

E. Bentonite seal, top _____ ft. MSL or 71.0 ft.

F. Fine sand, top _____ ft. MSL or 76.0 ft.

G. Filter pack, top _____ ft. MSL or 78.0 ft.

H. Screen joint, top _____ ft. MSL or 80.0 ft.

I. Well bottom _____ ft. MSL or 85.0 ft.

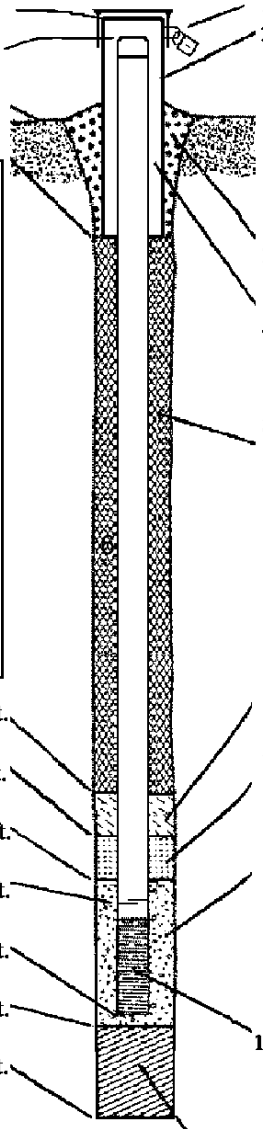
J. Filter pack, bottom _____ ft. MSL or 87.0 ft.

K. Borehole, bottom _____ ft. MSL or 115.0 ft.

L. Borehole, diameter 6 in.

M. O.D. well casing 2 in.

N. I.D. well casing _____ in.



1. Cap and lock? ☒ Yes ☐ No

2. Protective cover pipe:
a. Inside diameter: 8 in.
b. Length: 1 ft.
c. Material: Steel ☒ 04; Other ☐ _____
d. Additional protection? ☐ Yes ☒ No
If yes, describe: _____

3. Surface seal: Bentonite ☐ 30; Concrete ☒ 01; Other ☐ _____

4. Material between well casing and protective pipe: Bentonite ☐ 30; Other ☒ Sand

5. Annular space seal: a. Granular/Chipped Bentonite ☐ 33
b. ____ Lbs/gal mud weight . . . Bentonite-sand slurry ☐ 35
c. ____ Lbs/gal mud weight . . . . . Bentonite slurry ☐ 31
d. ____ % Bentonite . . . . . Bentonite-cement grout ☒ 50
e. appx. 65 gal $Ft^3$ volume added for any of the above
f. How installed: Tremie ☐ 01; Tremie pumped ☒ 02; Gravity ☐ 08

6. Bentonite seal: a. Bentonite granules ☐ 33
b. ☐ 1/4 in. ☒ 3/8 in. ☐ 1/2 in. Bentonite chips ☒ 32
c. _____ Other ☐ _____

7. Fine sand material: Manufacturer, product name & mesh size
a. #15 Red Flint
b. Volume added 1/2-50 lb bag $ft^3$

8. Filter pack material: Manufacturer, product name & mesh size
a. #40 Red Flint
b. Volume added 3-50 lb bag $ft^3$

9. Well casing: Flush threaded PVC schedule 40 ☒ 23; Flush threaded PVC schedule 80 ☐ 24; Other ☐ _____

10. Screen material: Schedule 40 PVC
a. Screen type: Factory cut ☒ 11; Continuous slot ☐ 01; Other ☐ _____
b. Manufacturer Johnson Screen
c. Slot size: 0.010 in.
d. Slotted length: 5 ft.

11. Backfill material (below filter pack): None ☐ 14; Other ☒ Chipped Bentonite

I hereby certify that the information on this form is true and correct to the best of my knowledge.

| Signature | Firm |
|---|---|
| [signature] | Arcadis U.S., Inc. |

Please complete both Forms 4400-113A and 4400-113B and return them to the appropriate DNR office and bureau. Completion of these reports is required by chs. 160, 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291, 292, 293, 295, and 299, Wis. Stats., failure to file these forms may result in a forfeiture of between $10 and $25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on these forms is not intended to be used for any other purpose. NOTE: See the instructions for more information, including where the completed forms should be sent.

State of Wisconsin
Department of Natural Resources

Route to: Watershed/Wastewater ☐ Waste Management ☐ Remediation/Redevelopment ☒ Other ☐ _____

# MONITORING WELL CONSTRUCTION
Form 4400-113A Rev. 7-98

| | | |
|---|---|---|
| Facility/Project Name: Tyco FTC | Local Grid Location of Well: ____ ft. ☐ N. ☐ S. ____ ft. ☐ E. ☐ W. | Well Name: PZ-37-12 |
| Facility License, Permit or Monitoring No. | Local Grid Origin ☐ (estimated: ☐) or Well Location ☒ Lat. ___ ° ___ ' ___ " Long. ___ ° ___ ' ___ " or | Wis. Unique Well No. _____ / DNR Well ID No. _____ |
| Facility ID: 4 3 8 0 0 5 5 9 0 | St. Plane 451323.28 ft. N, 2581905.20 ft. E. S/(C)/N | Date Well Installed: 07 / 09 / 2019 (m m d d y y y y) |
| Type of Well: Well Code 12 / PZ | Section Location of Waste/Source: NE 1/4 of NE 1/4 of Sec. 13, T. 30 N, R. 23 ☒ E ☐ W | Well Installed By: Name (first, last) and Firm: Keith Fehrman; Layne, A Granite Company |
| Distance from Waste/Source ____ ft. Enf. Stds. Apply ☐ | Location of Well Relative to Waste/Source: u ☐ Upgradient s ☐ Sidegradient d ☐ Downgradient n ☐ Not Known | Gov. Lot Number: _____ |

A. Protective pipe, top elevation _____ ft. MSL

B. Well casing, top elevation _____ ft. MSL

C. Land surface elevation 589.21 ft. MSL

D. Surface seal, bottom _____ ft. MSL or 1 ft.

12. USCS classification of soil near screen:
GP ☐ GM ☐ GC ☐ GW ☐ SW ☐ SP ☐
SM ☐ SC ☐ ML ☐ MH ☐ CL ☐ CH ☐
Bedrock ☐

13. Sieve analysis performed? ☐ Yes ☒ No

14. Drilling method used: Rotary ☐ 50; Hollow Stem Auger ☐ 41; Other ☒ Sonic

15. Drilling fluid used: Water ☒ 02; Air ☐ 01; Drilling Mud ☐ 03; None ☐ 99

16. Drilling additives used? ☐ Yes ☒ No

Describe _____

17. Source of water (attach analysis, if required): City of Marinette hydrant

E. Bentonite seal, top _____ ft. MSL or 1.0 ft.

F. Fine sand, top _____ ft. MSL or 5.0 ft.

G. Filter pack, top _____ ft. MSL or 6.0 ft.

H. Screen joint, top _____ ft. MSL or 7.0 ft.

I. Well bottom _____ ft. MSL or 12.0 ft.

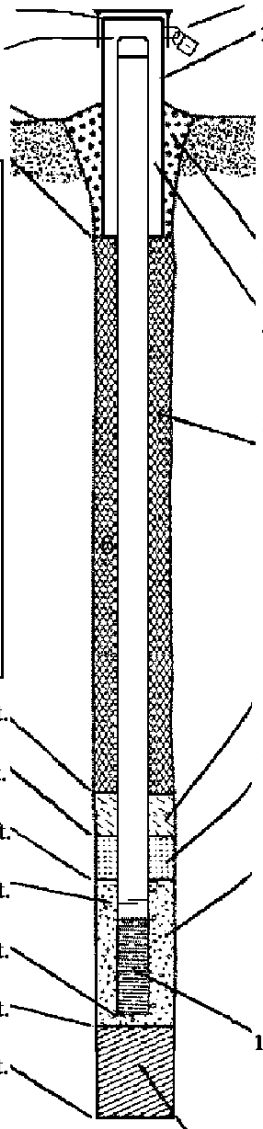
J. Filter pack, bottom _____ ft. MSL or 12.0 ft.

K. Borehole, bottom _____ ft. MSL or 12.0 ft.

L. Borehole, diameter 6 in.

M. O.D. well casing 2 in.

N. I.D. well casing _____ in.



1. Cap and lock? ☒ Yes ☐ No

2. Protective cover pipe:
a. Inside diameter: 8 in.
b. Length: 1 ft.
c. Material: Steel ☒ 04; Other ☐ ____
d. Additional protection? ☐ Yes ☒ No
If yes, describe: _____

3. Surface seal: Bentonite ☐ 30; Concrete ☒ 01; Other ☐ ____

4. Material between well casing and protective pipe: Bentonite ☐ 30; Other ☒ Sand ____

5. Annular space seal: a. Granular/Chipped Bentonite ☒ 33
b. ____ Lbs/gal mud weight . . . Bentonite-sand slurry ☐ 35
c. ____ Lbs/gal mud weight . . . . . Bentonite slurry ☐ 31
d. ____ % Bentonite . . . . . Bentonite-cement grout ☐ 50
e. 1-50lb bag Ft$^3$ volume added for any of the above
f. How installed: Tremie ☐ 01; Tremie pumped ☐ 02; Gravity ☒ 08

6. Bentonite seal: a. Bentonite granules ☐ 33
b. ☐ 1/4 in. ☒ 3/8 in. ☐ 1/2 in. Bentonite chips ☒ 32
c. _____ Other ☐ ____

7. Fine sand material: Manufacturer, product name & mesh size
a. #15 Red Flint ____
b. Volume added 1/2-50 lb bag ft$^3$

8. Filter pack material: Manufacturer, product name & mesh size
a. #40 Red Flint ____
b. Volume added 3-50 lb bag ft$^3$

9. Well casing: Flush threaded PVC schedule 40 ☒ 23; Flush threaded PVC schedule 80 ☐ 24; Other ☐ ____

10. Screen material: Schedule 40 PVC ____
a. Screen type: Factory cut ☒ 11; Continuous slot ☐ 01; Other ☐ ____
b. Manufacturer Johnson Screen
c. Slot size: 0.010 in.
d. Slotted length: 5 ft.

11. Backfill material (below filter pack): None ☒ 14; Other ☐ ____

I hereby certify that the information on this form is true and correct to the best of my knowledge.

| Signature | Firm |
|---|---|
| [signature] | Arcadis U.S., Inc. |

Please complete both Forms 4400-113A and 4400-113B and return them to the appropriate DNR office and bureau. Completion of these reports is required by chs. 160, 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291, 292, 293, 295, and 299, Wis. Stats., failure to file these forms may result in a forfeiture of between $10 and $25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on these forms is not intended to be used for any other purpose. NOTE: See the instructions for more information, including where the completed forms should be sent.

State of Wisconsin
Department of Natural Resources

Route to: Watershed/Wastewater ☐ Waste Management ☐ Remediation/Redevelopment ☒ Other ☐ _____

# MONITORING WELL CONSTRUCTION
Form 4400-113A Rev. 7-98

| | | |
|---|---|---|
| Facility/Project Name: Tyco FTC | Local Grid Location of Well: ____ ft. ☐ N. ☐ S. ____ ft. ☐ E. ☐ W. | Well Name: PZ-37-29 |
| Facility License, Permit or Monitoring No. | Local Grid Origin ☐ (estimated: ☐) or Well Location ☒ Lat. ___ ° ___ ' ___ " Long. ___ ° ___ ' ___ " or | Wis. Unique Well No. _____ / DNR Well ID No. _____ |
| Facility ID: 4 3 8 0 0 5 5 9 0 | St. Plane 451323.03 ft. N, 2581899.98 ft. E. S/C/N | Date Well Installed: 07 / 09 / 2019 (m m d d y y y y) |
| Type of Well: Well Code 12 / PZ | Section Location of Waste/Source: NE 1/4 of NE 1/4 of Sec. 13, T. 30 N, R. 23 ☒ E ☐ W | Well Installed By: Name (first, last) and Firm: Keith Fehrman; Layne, A Granite Company |
| Distance from Waste/Source ____ ft. Enf. Stds. Apply ☐ | Location of Well Relative to Waste/Source: u ☐ Upgradient s ☐ Sidegradient d ☐ Downgradient n ☐ Not Known | Gov. Lot Number: _____ |

A. Protective pipe, top elevation _____ ft. MSL

B. Well casing, top elevation _____ ft. MSL

C. Land surface elevation 589.35 ft. MSL

D. Surface seal, bottom _____ ft. MSL or 1 ft.

12. USCS classification of soil near screen:
GP ☐ GM ☐ GC ☐ GW ☐ SW ☐ SP ☐
SM ☐ SC ☐ ML ☐ MH ☐ CL ☐ CH ☐
Bedrock ☐

13. Sieve analysis performed? ☐ Yes ☒ No

14. Drilling method used: Rotary ☐ 50; Hollow Stem Auger ☐ 41; Other ☒ Sonic

15. Drilling fluid used: Water ☒ 02; Air ☐ 01; Drilling Mud ☐ 03; None ☐ 99

16. Drilling additives used? ☐ Yes ☒ No

Describe _____

17. Source of water (attach analysis, if required): City of Marinette hydrant

E. Bentonite seal, top _____ ft. MSL or 10.0 ft.

F. Fine sand, top _____ ft. MSL or 15.0 ft.

G. Filter pack, top _____ ft. MSL or 17.0 ft.

H. Screen joint, top _____ ft. MSL or 19.0 ft.

I. Well bottom _____ ft. MSL or 29.0 ft.

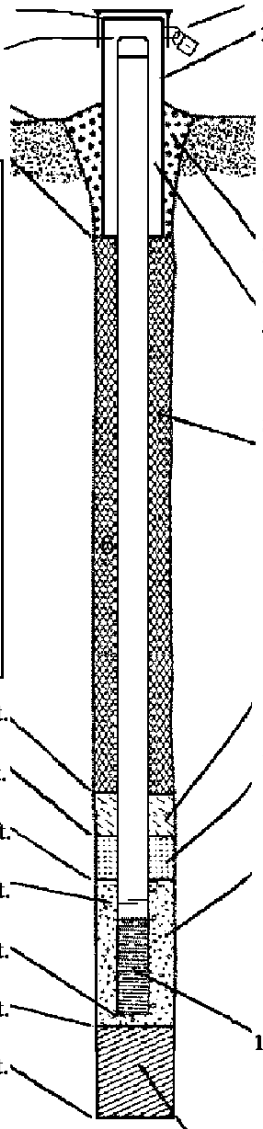
J. Filter pack, bottom _____ ft. MSL or 29.0 ft.

K. Borehole, bottom _____ ft. MSL or 29.0 ft.

L. Borehole, diameter 6 in.

M. O.D. well casing 2 in.

N. I.D. well casing _____ in.



1. Cap and lock? ☒ Yes ☐ No

2. Protective cover pipe:
a. Inside diameter: 8 in.
b. Length: 1 ft.
c. Material: Steel ☒ 04; Other ☐ _____
d. Additional protection? ☐ Yes ☒ No
If yes, describe: _____

3. Surface seal: Bentonite ☐ 30; Concrete ☒ 01; Other ☐ _____

4. Material between well casing and protective pipe: Bentonite ☐ 30; Other ☒ Sand

5. Annular space seal: a. Granular/Chipped Bentonite ☐ 33
b. ____ Lbs/gal mud weight . . . Bentonite-sand slurry ☐ 35
c. ____ Lbs/gal mud weight . . . . . Bentonite slurry ☐ 31
d. ____ % Bentonite . . . . . Bentonite-cement grout ☒ 50
e. appx. 10 gal $Ft^3$ volume added for any of the above
f. How installed: Tremie ☐ 01; Tremie pumped ☒ 02; Gravity ☐ 08

6. Bentonite seal: a. Bentonite granules ☐ 33
b. ☐ 1/4 in. ☒ 3/8 in. ☐ 1/2 in. Bentonite chips ☒ 32
c. _____ Other ☐ _____

7. Fine sand material: Manufacturer, product name & mesh size
a. #15 Red Flint
b. Volume added 1/2-50 lb bag $ft^3$

8. Filter pack material: Manufacturer, product name & mesh size
a. #40 Red Flint
b. Volume added 5-50 lb bag $ft^3$

9. Well casing: Flush threaded PVC schedule 40 ☒ 23; Flush threaded PVC schedule 80 ☐ 24; Other ☐ _____

10. Screen material: Schedule 40 PVC
a. Screen type: Factory cut ☒ 11; Continuous slot ☐ 01; Other ☐ _____
b. Manufacturer Johnson Screen
c. Slot size: 0.010 in.
d. Slotted length: 10 ft.

11. Backfill material (below filter pack): None ☒ 14; Other ☐ _____

I hereby certify that the information on this form is true and correct to the best of my knowledge.

| Signature | Firm |
|---|---|
| [signature] | Arcadis U.S., Inc. |

Please complete both Forms 4400-113A and 4400-113B and return them to the appropriate DNR office and bureau. Completion of these reports is required by chs. 160, 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291, 292, 293, 295, and 299, Wis. Stats., failure to file these forms may result in a forfeiture of between $10 and $25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on these forms is not intended to be used for any other purpose. NOTE: See the instructions for more information, including where the completed forms should be sent.

State of Wisconsin
Department of Natural Resources

Route to: Watershed/Wastewater ☐ Waste Management ☐ Remediation/Redevelopment ☒ Other ☐ _____

# MONITORING WELL CONSTRUCTION
Form 4400-113A Rev. 7-98

| | | |
|---|---|---|
| Facility/Project Name: Tyco FTC | Local Grid Location of Well: ____ ft. ☐ N. ☐ S. ____ ft. ☐ E. ☐ W. | Well Name: PZ-37-75 |
| Facility License, Permit or Monitoring No. | Local Grid Origin ☐ (estimated: ☐) or Well Location ☒ Lat. ___ ° ___ ' ___ " Long. ___ ° ___ ' ___ " or | Wis. Unique Well No. _____ / DNR Well ID No. _____ |
| Facility ID: 4 3 8 0 0 5 5 9 0 | St. Plane 451322.68 ft. N, 2581895.23 ft. E. S/(C)/N | Date Well Installed: 07 / 09 / 2019 (m m d d y y y y) |
| Type of Well: Well Code 12 / PZ | Section Location of Waste/Source: NE 1/4 of NE 1/4 of Sec. 13, T. 30 N, R. 23 ☒ E ☐ W | Well Installed By: Name (first, last) and Firm: Keith Fehrman; Layne, A Granite Company |
| Distance from Waste/Source ____ ft. Enf. Stds. Apply ☐ | Location of Well Relative to Waste/Source: u ☐ Upgradient s ☐ Sidegradient d ☐ Downgradient n ☐ Not Known | Gov. Lot Number: _____ |

A. Protective pipe, top elevation _____ ft. MSL

B. Well casing, top elevation _____ ft. MSL

C. Land surface elevation 589.28 ft. MSL

D. Surface seal, bottom _____ ft. MSL or 1 ft.

12. USCS classification of soil near screen:
GP ☐ GM ☐ GC ☐ GW ☐ SW ☐ SP ☐
SM ☐ SC ☐ ML ☐ MH ☐ CL ☐ CH ☐
Bedrock ☐

13. Sieve analysis performed? ☐ Yes ☒ No

14. Drilling method used: Rotary ☐ 50; Hollow Stem Auger ☐ 41; Other ☒ Sonic

15. Drilling fluid used: Water ☒ 02; Air ☐ 01; Drilling Mud ☐ 03; None ☐ 99

16. Drilling additives used? ☐ Yes ☒ No

Describe _____

17. Source of water (attach analysis, if required): City of Marinette hydrant

E. Bentonite seal, top _____ ft. MSL or 56.0 ft.

F. Fine sand, top _____ ft. MSL or 61.0 ft.

G. Filter pack, top _____ ft. MSL or 63.0 ft.

H. Screen joint, top _____ ft. MSL or 65.0 ft.

I. Well bottom _____ ft. MSL or 75.0 ft.

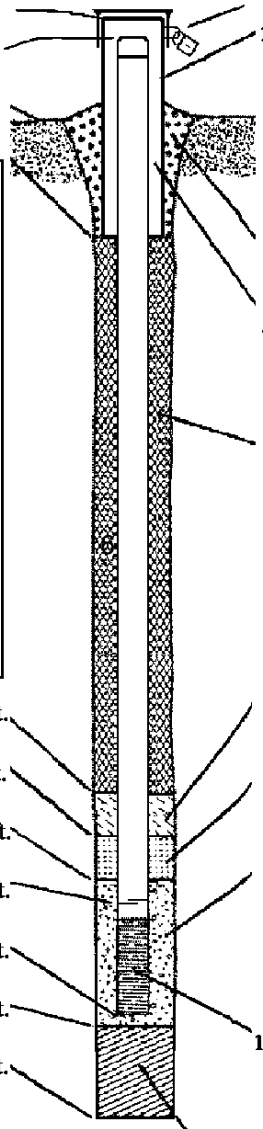
J. Filter pack, bottom _____ ft. MSL or 76.0 ft.

K. Borehole, bottom _____ ft. MSL or 107.0 ft.

L. Borehole, diameter 6 in.

M. O.D. well casing 2 in.

N. I.D. well casing _____ in.



1. Cap and lock? ☒ Yes ☐ No

2. Protective cover pipe:
a. Inside diameter: 8 in.
b. Length: 1 ft.
c. Material: Steel ☒ 04; Other ☐ _____
d. Additional protection? ☐ Yes ☒ No
If yes, describe: _____

3. Surface seal: Bentonite ☐ 30; Concrete ☒ 01; Other ☐ _____

4. Material between well casing and protective pipe: Bentonite ☐ 30; Other ☒ Sand

5. Annular space seal: a. Granular/Chipped Bentonite ☐ 33
b. ____ Lbs/gal mud weight . . . Bentonite-sand slurry ☐ 35
c. ____ Lbs/gal mud weight . . . . . Bentonite slurry ☐ 31
d. ____ % Bentonite . . . . . Bentonite-cement grout ☒ 50
e. appx. 50 gal $Ft^3$ volume added for any of the above
f. How installed: Tremie ☐ 01; Tremie pumped ☒ 02; Gravity ☐ 08

6. Bentonite seal: a. Bentonite granules ☐ 33
b. ☐ 1/4 in. ☒ 3/8 in. ☐ 1/2 in. Bentonite chips ☒ 32
c. _____ Other ☐ _____

7. Fine sand material: Manufacturer, product name & mesh size
a. #15 Red Flint
b. Volume added 1/2-50 lb bag $ft^3$

8. Filter pack material: Manufacturer, product name & mesh size
a. #40 Red Flint
b. Volume added 5-50 lb bag $ft^3$

9. Well casing: Flush threaded PVC schedule 40 ☒ 23; Flush threaded PVC schedule 80 ☐ 24; Other ☐ _____

10. Screen material: Schedule 40 PVC
a. Screen type: Factory cut ☒ 11; Continuous slot ☐ 01; Other ☐ _____
b. Manufacturer Johnson Screen
c. Slot size: 0.010 in.
d. Slotted length: 10 ft.

11. Backfill material (below filter pack): None ☐ 14; Other ☒ Chipped Bentonite

I hereby certify that the information on this form is true and correct to the best of my knowledge.

| Signature | Firm |
|---|---|
| [signature] | Arcadis U.S., Inc. |

Please complete both Forms 4400-113A and 4400-113B and return them to the appropriate DNR office and bureau. Completion of these reports is required by chs. 160, 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291, 292, 293, 295, and 299, Wis. Stats., failure to file these forms may result in a forfeiture of between $10 and $25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on these forms is not intended to be used for any other purpose. NOTE: See the instructions for more information, including where the completed forms should be sent.

State of Wisconsin
Department of Natural Resources

Route to: Watershed/Wastewater ☐ Waste Management ☐ Remediation/Redevelopment ☒ Other ☐ _____

# MONITORING WELL CONSTRUCTION
Form 4400-113A Rev. 7-98

| | | |
|---|---|---|
| Facility/Project Name: Tyco FTC | Local Grid Location of Well: ____ ft. ☐ N. ☐ S. ____ ft. ☐ E. ☐ W. | Well Name: PZ-38-17 |
| Facility License, Permit or Monitoring No. | Local Grid Origin ☐ (estimated: ☐) or Well Location ☒ Lat. ___ ° ___ ' ___ " Long. ___ ° ___ ' ___ " or | Wis. Unique Well No. _____ / DNR Well ID No. _____ |
| Facility ID: 4 3 8 0 0 5 5 9 0 | St. Plane 450592.22 ft. N, 2580685.13 ft. E. S/(C)/N | Date Well Installed: 07 / 11 / 2019 (m m d d y y y y) |
| Type of Well: Well Code 12 / PZ | Section Location of Waste/Source: NE 1/4 of NE 1/4 of Sec. 13, T. 30 N, R. 23 ☒ E ☐ W | Well Installed By: Name (first, last) and Firm: Keith Fehrman; Layne, A Granite Company |
| Distance from Waste/Source ____ ft. Enf. Stds. Apply ☐ | Location of Well Relative to Waste/Source: u ☐ Upgradient s ☐ Sidegradient d ☐ Downgradient n ☐ Not Known | Gov. Lot Number: _____ |

A. Protective pipe, top elevation _____ ft. MSL

B. Well casing, top elevation _____ ft. MSL

C. Land surface elevation 592.24 ft. MSL

D. Surface seal, bottom _____ ft. MSL or 1 ft.

12. USCS classification of soil near screen:
GP ☐ GM ☐ GC ☐ GW ☐ SW ☐ SP ☐
SM ☐ SC ☐ ML ☐ MH ☐ CL ☐ CH ☐
Bedrock ☐

13. Sieve analysis performed? ☐ Yes ☒ No

14. Drilling method used: Rotary ☐ 50; Hollow Stem Auger ☐ 41; Other ☒ Sonic

15. Drilling fluid used: Water ☒ 02; Air ☐ 01; Drilling Mud ☐ 03; None ☐ 99

16. Drilling additives used? ☐ Yes ☒ No

Describe _____

17. Source of water (attach analysis, if required): City of Marinette hydrant

E. Bentonite seal, top _____ ft. MSL or 1.0 ft.

F. Fine sand, top _____ ft. MSL or 5.0 ft.

G. Filter pack, top _____ ft. MSL or 6.0 ft.

H. Screen joint, top _____ ft. MSL or 7.0 ft.

I. Well bottom _____ ft. MSL or 17.0 ft.

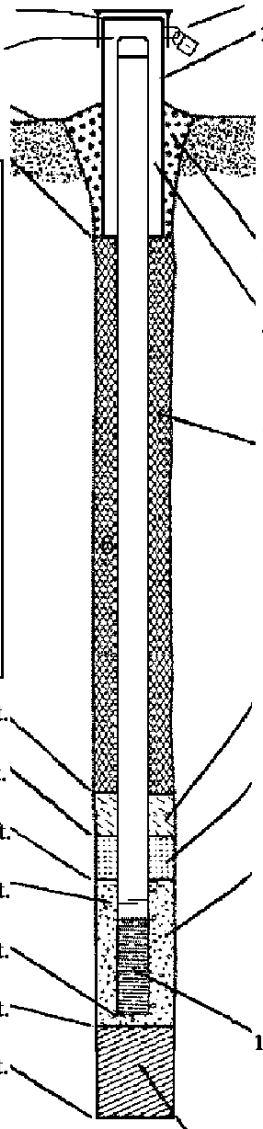
J. Filter pack, bottom _____ ft. MSL or 17.0 ft.

K. Borehole, bottom _____ ft. MSL or 17.0 ft.

L. Borehole, diameter 6 in.

M. O.D. well casing 2 in.

N. I.D. well casing _____ in.



1. Cap and lock? ☒ Yes ☐ No

2. Protective cover pipe:
a. Inside diameter: 8 in.
b. Length: 1 ft.
c. Material: Steel ☒ 04; Other ☐ _____
d. Additional protection? ☐ Yes ☒ No
If yes, describe: _____

3. Surface seal: Bentonite ☐ 30; Concrete ☒ 01; Other ☐ _____

4. Material between well casing and protective pipe: Bentonite ☐ 30; Other ☒ Sand

5. Annular space seal: a. Granular/Chipped Bentonite ☒ 33
b. ____ Lbs/gal mud weight . . . Bentonite-sand slurry ☐ 35
c. ____ Lbs/gal mud weight . . . . . Bentonite slurry ☐ 31
d. ____ % Bentonite . . . . . Bentonite-cement grout ☐ 50
e. 1-50lb bag Ft$^3$ volume added for any of the above
f. How installed: Tremie ☐ 01; Tremie pumped ☐ 02; Gravity ☒ 08

6. Bentonite seal: a. Bentonite granules ☐ 33
b. ☐ 1/4 in. ☒ 3/8 in. ☐ 1/2 in. Bentonite chips ☒ 32
c. _____ Other ☐ _____

7. Fine sand material: Manufacturer, product name & mesh size
a. #15 Red Flint
b. Volume added 1/2-50 lb bag ft$^3$

8. Filter pack material: Manufacturer, product name & mesh size
a. #40 Red Flint
b. Volume added 5-50 lb bag ft$^3$

9. Well casing: Flush threaded PVC schedule 40 ☒ 23; Flush threaded PVC schedule 80 ☐ 24; Other ☐ _____

10. Screen material: Schedule 40 PVC
a. Screen type: Factory cut ☒ 11; Continuous slot ☐ 01; Other ☐ _____
b. Manufacturer Johnson Screen
c. Slot size: 0.010 in.
d. Slotted length: 10 ft.

11. Backfill material (below filter pack): None ☒ 14; Other ☐ _____

I hereby certify that the information on this form is true and correct to the best of my knowledge.

| Signature | Firm |
|---|---|
| [signature] | Arcadis U.S., Inc. |

Please complete both Forms 4400-113A and 4400-113B and return them to the appropriate DNR office and bureau. Completion of these reports is required by chs. 160, 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291, 292, 293, 295, and 299, Wis. Stats., failure to file these forms may result in a forfeiture of between $10 and $25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on these forms is not intended to be used for any other purpose. NOTE: See the instructions for more information, including where the completed forms should be sent.

State of Wisconsin
Department of Natural Resources

Route to: Watershed/Wastewater ☐ Waste Management ☐ Remediation/Redevelopment ☒ Other ☐ _____

# MONITORING WELL CONSTRUCTION
Form 4400-113A Rev. 7-98

| | | |
|---|---|---|
| Facility/Project Name: Tyco FTC | Local Grid Location of Well: ____ ft. ☐ N. ☐ S. ____ ft. ☐ E. ☐ W. | Well Name: PZ-38-75 |
| Facility License, Permit or Monitoring No. | Local Grid Origin ☐ (estimated: ☐) or Well Location ☒ Lat. ___ ° ___ ' ___ " Long. ___ ° ___ ' ___ " or | Wis. Unique Well No. _____ / DNR Well ID No. _____ |
| Facility ID: 4 3 8 0 0 5 5 9 0 | St. Plane 450587.77 ft. N, 2580683.74 ft. E. S/(C)/N | Date Well Installed: 07 / 11 / 2019 (m m d d y y y y) |
| Type of Well: Well Code 12 / PZ | Section Location of Waste/Source: NE 1/4 of NE 1/4 of Sec. 13, T. 30 N, R. 23 ☒ E ☐ W | Well Installed By: Name (first, last) and Firm: Keith Fehrman; Layne, A Granite Company |
| Distance from Waste/Source ____ ft. Enf. Stds. Apply ☐ | Location of Well Relative to Waste/Source: u ☐ Upgradient s ☐ Sidegradient d ☐ Downgradient n ☐ Not Known | Gov. Lot Number: _____ |

A. Protective pipe, top elevation _____ ft. MSL

B. Well casing, top elevation _____ ft. MSL

C. Land surface elevation 592.29 ft. MSL

D. Surface seal, bottom _____ ft. MSL or 1 ft.

12. USCS classification of soil near screen:
GP ☐ GM ☐ GC ☐ GW ☐ SW ☐ SP ☐
SM ☐ SC ☐ ML ☐ MH ☐ CL ☐ CH ☐
Bedrock ☐

13. Sieve analysis performed? ☐ Yes ☒ No

14. Drilling method used: Rotary ☐ 50; Hollow Stem Auger ☐ 41; Other ☒ Sonic

15. Drilling fluid used: Water ☒ 02; Air ☐ 01; Drilling Mud ☐ 03; None ☐ 99

16. Drilling additives used? ☐ Yes ☒ No

Describe _____

17. Source of water (attach analysis, if required): City of Marinette hydrant

E. Bentonite seal, top _____ ft. MSL or 56.0 ft.

F. Fine sand, top _____ ft. MSL or 61.0 ft.

G. Filter pack, top _____ ft. MSL or 63.0 ft.

H. Screen joint, top _____ ft. MSL or 65.0 ft.

I. Well bottom _____ ft. MSL or 75.0 ft.

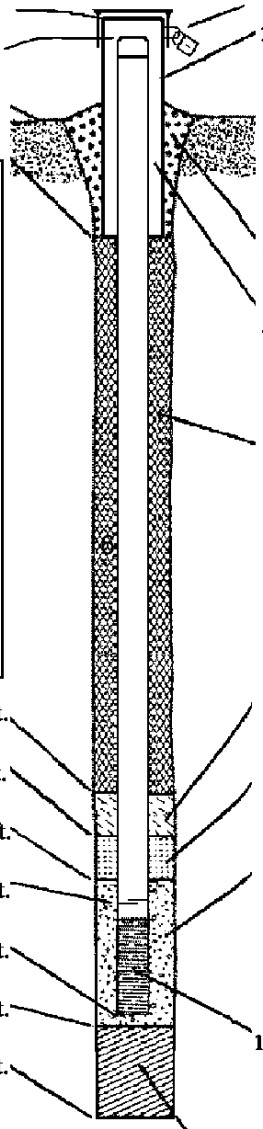
J. Filter pack, bottom _____ ft. MSL or 76.0 ft.

K. Borehole, bottom _____ ft. MSL or 107.0 ft.

L. Borehole, diameter 6 in.

M. O.D. well casing 2 in.

N. I.D. well casing _____ in.



1. Cap and lock? ☒ Yes ☐ No

2. Protective cover pipe:
a. Inside diameter: 8 in.
b. Length: 1 ft.
c. Material: Steel ☒ 04; Other ☐ _____
d. Additional protection? ☐ Yes ☒ No
If yes, describe: _____

3. Surface seal: Bentonite ☐ 30; Concrete ☒ 01; Other ☐ _____

4. Material between well casing and protective pipe: Bentonite ☐ 30; Other ☒ Sand

5. Annular space seal: a. Granular/Chipped Bentonite ☐ 33
b. ____ Lbs/gal mud weight . . . Bentonite-sand slurry ☐ 35
c. ____ Lbs/gal mud weight . . . . . Bentonite slurry ☐ 31
d. ____ % Bentonite . . . . . Bentonite-cement grout ☒ 50
e. appx. 50 gal $Ft^3$ volume added for any of the above
f. How installed: Tremie ☐ 01; Tremie pumped ☒ 02; Gravity ☐ 08

6. Bentonite seal: a. Bentonite granules ☐ 33
b. ☐ 1/4 in. ☒ 3/8 in. ☐ 1/2 in. Bentonite chips ☒ 32
c. _____ Other ☐ _____

7. Fine sand material: Manufacturer, product name & mesh size
a. #15 Red Flint
b. Volume added 1/2-50 lb bag $ft^3$

8. Filter pack material: Manufacturer, product name & mesh size
a. #40 Red Flint
b. Volume added 5-50 lb bag $ft^3$

9. Well casing: Flush threaded PVC schedule 40 ☒ 23; Flush threaded PVC schedule 80 ☐ 24; Other ☐ _____

10. Screen material: Schedule 40 PVC
a. Screen type: Factory cut ☒ 11; Continuous slot ☐ 01; Other ☐ _____
b. Manufacturer Johnson Screen
c. Slot size: 0.010 in.
d. Slotted length: 10 ft.

11. Backfill material (below filter pack): None ☐ 14; Other ☒ Chipped Bentonite

I hereby certify that the information on this form is true and correct to the best of my knowledge.

| Signature | Firm |
|---|---|
| [signature] | Arcadis U.S., Inc. |

Please complete both Forms 4400-113A and 4400-113B and return them to the appropriate DNR office and bureau. Completion of these reports is required by chs. 160, 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291, 292, 293, 295, and 299, Wis. Stats., failure to file these forms may result in a forfeiture of between $10 and $25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on these forms is not intended to be used for any other purpose. NOTE: See the instructions for more information, including where the completed forms should be sent.

State of Wisconsin
Department of Natural Resources

Route to: Watershed/Wastewater ☐ Waste Management ☐ Remediation/Redevelopment ☒ Other ☐ _____

# MONITORING WELL CONSTRUCTION
Form 4400-113A Rev. 7-98

| | | |
|---|---|---|
| Facility/Project Name: Tyco FTC | Local Grid Location of Well: ____ ft. ☐ N. ☐ S. ____ ft. ☐ E. ☐ W. | Well Name: PZ-41-17 |
| Facility License, Permit or Monitoring No. | Local Grid Origin ☐ (estimated: ☐) or Well Location ☒ Lat. ___ ° ___ ' ___ " Long. ___ ° ___ ' ___ " or | Wis. Unique Well No. _____ / DNR Well ID No. _____ |
| Facility ID: 4 3 8 0 0 5 5 9 0 | St. Plane 452089.21 ft. N, 2578723.26 ft. E. S/(C)/N | Date Well Installed: 07 / 16 / 2019 (m m d d y y y y) |
| Type of Well: Well Code 12 / PZ | Section Location of Waste/Source: NE 1/4 of NE 1/4 of Sec. 13, T. 30 N, R. 23 ☒ E ☐ W | Well Installed By: Name (first, last) and Firm: Keith Fehrman; Layne, A Granite Company |
| Distance from Waste/Source ____ ft. Enf. Stds. Apply ☐ | Location of Well Relative to Waste/Source: u ☐ Upgradient s ☐ Sidegradient d ☐ Downgradient n ☐ Not Known | Gov. Lot Number: _____ |

A. Protective pipe, top elevation _____ ft. MSL

B. Well casing, top elevation _____ ft. MSL

C. Land surface elevation 595.39 ft. MSL

D. Surface seal, bottom _____ ft. MSL or 1 ft.

12. USCS classification of soil near screen:
GP ☐ GM ☐ GC ☐ GW ☐ SW ☐ SP ☐
SM ☐ SC ☐ ML ☐ MH ☐ CL ☐ CH ☐
Bedrock ☐

13. Sieve analysis performed? ☐ Yes ☒ No

14. Drilling method used: Rotary ☐ 50; Hollow Stem Auger ☐ 41; Other ☒ Sonic

15. Drilling fluid used: Water ☒ 02; Air ☐ 01; Drilling Mud ☐ 03; None ☐ 99

16. Drilling additives used? ☐ Yes ☒ No

Describe _____

17. Source of water (attach analysis, if required): City of Marinette hydrant

E. Bentonite seal, top _____ ft. MSL or 1.0 ft.

F. Fine sand, top _____ ft. MSL or 5.0 ft.

G. Filter pack, top _____ ft. MSL or 6.0 ft.

H. Screen joint, top _____ ft. MSL or 7.0 ft.

I. Well bottom _____ ft. MSL or 17.0 ft.

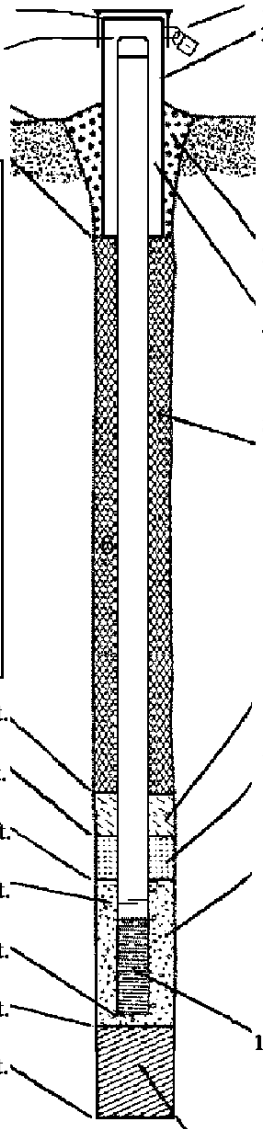
J. Filter pack, bottom _____ ft. MSL or 17.0 ft.

K. Borehole, bottom _____ ft. MSL or 17.0 ft.

L. Borehole, diameter 6 in.

M. O.D. well casing 2 in.

N. I.D. well casing _____ in.



1. Cap and lock? ☒ Yes ☐ No

2. Protective cover pipe:
a. Inside diameter: 8 in.
b. Length: 1 ft.
c. Material: Steel ☒ 04; Other ☐ ____
d. Additional protection? ☐ Yes ☒ No
If yes, describe: _____

3. Surface seal: Bentonite ☐ 30; Concrete ☒ 01; Other ☐ ____

4. Material between well casing and protective pipe: Bentonite ☐ 30; Other ☒ Sand ____

5. Annular space seal: a. Granular/Chipped Bentonite ☒ 33
b. ____ Lbs/gal mud weight . . . Bentonite-sand slurry ☐ 35
c. ____ Lbs/gal mud weight . . . . . Bentonite slurry ☐ 31
d. ____ % Bentonite . . . . . Bentonite-cement grout ☐ 50
e. 1-50lb bag Ft$^3$ volume added for any of the above
f. How installed: Tremie ☐ 01; Tremie pumped ☐ 02; Gravity ☒ 08

6. Bentonite seal: a. Bentonite granules ☐ 33
b. ☐ 1/4 in. ☒ 3/8 in. ☐ 1/2 in. Bentonite chips ☒ 32
c. _____ Other ☐ ____

7. Fine sand material: Manufacturer, product name & mesh size
a. #15 Red Flint ____
b. Volume added 1/2-50 lb bag ft$^3$

8. Filter pack material: Manufacturer, product name & mesh size
a. #40 Red Flint ____
b. Volume added 5-50 lb bag ft$^3$

9. Well casing: Flush threaded PVC schedule 40 ☒ 23; Flush threaded PVC schedule 80 ☐ 24; Other ☐ ____

10. Screen material: Schedule 40 PVC ____
a. Screen type: Factory cut ☒ 11; Continuous slot ☐ 01; Other ☐ ____
b. Manufacturer Johnson Screen
c. Slot size: 0.010 in.
d. Slotted length: 10 ft.

11. Backfill material (below filter pack): None ☒ 14; Other ☐ ____

I hereby certify that the information on this form is true and correct to the best of my knowledge.

| Signature | Firm |
|---|---|
| [signature] | Arcadis U.S., Inc. |

Please complete both Forms 4400-113A and 4400-113B and return them to the appropriate DNR office and bureau. Completion of these reports is required by chs. 160, 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291, 292, 293, 295, and 299, Wis. Stats., failure to file these forms may result in a forfeiture of between $10 and $25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on these forms is not intended to be used for any other purpose. NOTE: See the instructions for more information, including where the completed forms should be sent.

State of Wisconsin
Department of Natural Resources

Route to: Watershed/Wastewater ☐ Waste Management ☐ Remediation/Redevelopment ☒ Other ☐ _____

# MONITORING WELL CONSTRUCTION
Form 4400-113A Rev. 7-98

| | | |
|---|---|---|
| Facility/Project Name: Tyco FTC | Local Grid Location of Well: ____ ft. ☐ N. ☐ S. ____ ft. ☐ E. ☐ W. | Well Name: PZ-41-84 |
| Facility License, Permit or Monitoring No. | Local Grid Origin ☐ (estimated: ☐) or Well Location ☒ Lat. ___ ° ___ ' ___ " Long. ___ ° ___ ' ___ " or | Wis. Unique Well No. _____ / DNR Well ID No. _____ |
| Facility ID: 4 3 8 0 0 5 5 9 0 | St. Plane 452088.94 ft. N, 2578718.61 ft. E. S/(C)/N | Date Well Installed: 07 / 16 / 2019 (m m d d y y y y) |
| Type of Well: Well Code 12 / PZ | Section Location of Waste/Source: NE 1/4 of NE 1/4 of Sec. 13, T. 30 N, R. 23 ☒ E ☐ W | Well Installed By: Name (first, last) and Firm: Keith Fehrman; Layne, A Granite Company |
| Distance from Waste/Source ____ ft. Enf. Stds. Apply ☐ | Location of Well Relative to Waste/Source: u ☐ Upgradient s ☐ Sidegradient d ☐ Downgradient n ☐ Not Known | Gov. Lot Number: _____ |

A. Protective pipe, top elevation _____ ft. MSL

B. Well casing, top elevation _____ ft. MSL

C. Land surface elevation 595.33 ft. MSL

D. Surface seal, bottom _____ ft. MSL or 1 ft.

12. USCS classification of soil near screen:
GP ☐ GM ☐ GC ☐ GW ☐ SW ☐ SP ☐
SM ☐ SC ☐ ML ☐ MH ☐ CL ☐ CH ☐
Bedrock ☐

13. Sieve analysis performed? ☐ Yes ☒ No

14. Drilling method used: Rotary ☐ 50; Hollow Stem Auger ☐ 41; Other ☒ Sonic

15. Drilling fluid used: Water ☒ 02; Air ☐ 01; Drilling Mud ☐ 03; None ☐ 99

16. Drilling additives used? ☐ Yes ☒ No

Describe _____

17. Source of water (attach analysis, if required): City of Marinette hydrant

E. Bentonite seal, top _____ ft. MSL or 65.0 ft.

F. Fine sand, top _____ ft. MSL or 70.0 ft.

G. Filter pack, top _____ ft. MSL or 72.0 ft.

H. Screen joint, top _____ ft. MSL or 74.0 ft.

I. Well bottom _____ ft. MSL or 84.0 ft.

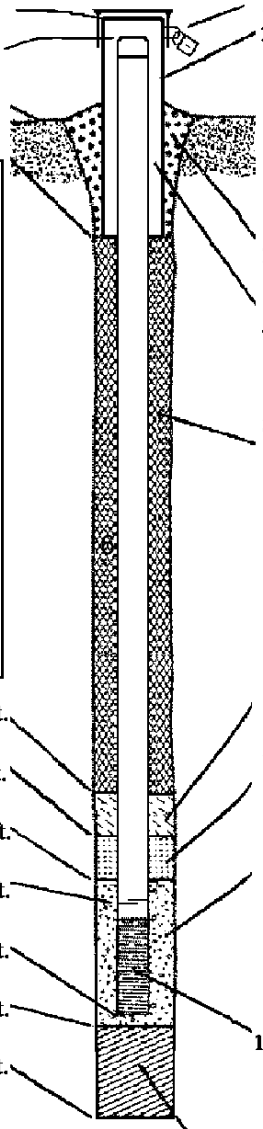
J. Filter pack, bottom _____ ft. MSL or 85.0 ft.

K. Borehole, bottom _____ ft. MSL or 97.0 ft.

L. Borehole, diameter 6 in.

M. O.D. well casing 2 in.

N. I.D. well casing _____ in.



1. Cap and lock? ☒ Yes ☐ No

2. Protective cover pipe:
a. Inside diameter: 8 in.
b. Length: 1 ft.
c. Material: Steel ☒ 04; Other ☐ _____
d. Additional protection? ☐ Yes ☒ No
If yes, describe: _____

3. Surface seal: Bentonite ☐ 30; Concrete ☒ 01; Other ☐ _____

4. Material between well casing and protective pipe: Bentonite ☐ 30; Other ☒ Sand

5. Annular space seal: a. Granular/Chipped Bentonite ☐ 33
b. ____ Lbs/gal mud weight . . . Bentonite-sand slurry ☐ 35
c. ____ Lbs/gal mud weight . . . . . Bentonite slurry ☐ 31
d. ____ % Bentonite . . . . . Bentonite-cement grout ☒ 50
e. appx. 60 gal $Ft^3$ volume added for any of the above
f. How installed: Tremie ☐ 01; Tremie pumped ☒ 02; Gravity ☐ 08

6. Bentonite seal: a. Bentonite granules ☐ 33
b. ☐ 1/4 in. ☒ 3/8 in. ☐ 1/2 in. Bentonite chips ☒ 32
c. _____ Other ☐ _____

7. Fine sand material: Manufacturer, product name & mesh size
a. #15 Red Flint
b. Volume added 1/2-50 lb bag $ft^3$

8. Filter pack material: Manufacturer, product name & mesh size
a. #40 Red Flint
b. Volume added 5-50 lb bag $ft^3$

9. Well casing: Flush threaded PVC schedule 40 ☒ 23; Flush threaded PVC schedule 80 ☐ 24; Other ☐ _____

10. Screen material: Schedule 40 PVC
a. Screen type: Factory cut ☒ 11; Continuous slot ☐ 01; Other ☐ _____
b. Manufacturer Johnson Screen
c. Slot size: 0.010 in.
d. Slotted length: 10 ft.

11. Backfill material (below filter pack): None ☐ 14; Other ☒ Chipped Bentonite

I hereby certify that the information on this form is true and correct to the best of my knowledge.

| Signature | Firm |
|---|---|
| [signature] | Arcadis U.S., Inc. |

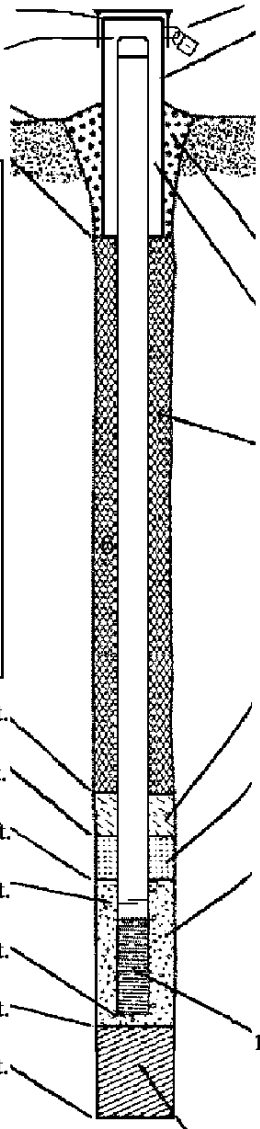
Please complete both Forms 4400-113A and 4400-113B and return them to the appropriate DNR office and bureau. Completion of these reports is required by chs. 160, 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291, 292, 293, 295, and 299, Wis. Stats., failure to file these forms may result in a forfeiture of between $10 and $25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on these forms is not intended to be used for any other purpose. NOTE: See the instructions for more information, including where the completed forms should be sent.

State of Wisconsin
Department of Natural Resources

Route to: Watershed/Wastewater ☐ Waste Management ☐ Remediation/Redevelopment ☒ Other ☐ _____

# MONITORING WELL CONSTRUCTION
Form 4400-113A Rev. 7-98

| | | |
|---|---|---|
| Facility/Project Name: Tyco FTC | Local Grid Location of Well: ____ ft. ☐ N. ☐ S. ____ ft. ☐ E. ☐ W. | Well Name: PZ-42-17 |
| Facility License, Permit or Monitoring No. | Local Grid Origin ☐ (estimated: ☐) or Well Location ☒ Lat. ___ ° ___ ' ___ " Long. ___ ° ___ ' ___ " or | Wis. Unique Well No. _____ / DNR Well ID No. _____ |
| Facility ID: 4 3 8 0 0 5 5 9 0 | St. Plane 451824.95 ft. N, 2580449.33 ft. E. S/(C)/N | Date Well Installed: 07 / 17 / 2019 (m m d d y y y y) |
| Type of Well: Well Code 12 / PZ | Section Location of Waste/Source: NE 1/4 of NE 1/4 of Sec. 13, T. 30 N, R. 23 ☒ E ☐ W | Well Installed By: Name (first, last) and Firm: Keith Fehrman; Layne, A Granite Company |
| Distance from Waste/Source ____ ft. Enf. Stds. Apply ☐ | Location of Well Relative to Waste/Source: u ☐ Upgradient s ☐ Sidegradient d ☐ Downgradient n ☐ Not Known | Gov. Lot Number: _____ |



A. Protective pipe, top elevation _____ ft. MSL

B. Well casing, top elevation _____ ft. MSL

C. Land surface elevation 592.64 ft. MSL

D. Surface seal, bottom _____ ft. MSL or 1 ft.

12. USCS classification of soil near screen:
GP ☐ GM ☐ GC ☐ GW ☐ SW ☐ SP ☐
SM ☐ SC ☐ ML ☐ MH ☐ CL ☐ CH ☐
Bedrock ☐

13. Sieve analysis performed? ☐ Yes ☒ No

14. Drilling method used: Rotary ☐ 50; Hollow Stem Auger ☐ 41; Other ☒ Sonic

15. Drilling fluid used: Water ☒ 02; Air ☐ 01; Drilling Mud ☐ 03; None ☐ 99

16. Drilling additives used? ☐ Yes ☒ No

Describe _____

17. Source of water (attach analysis, if required): City of Marinette hydrant

E. Bentonite seal, top _____ ft. MSL or 1.0 ft.

F. Fine sand, top _____ ft. MSL or 5.0 ft.

G. Filter pack, top _____ ft. MSL or 6.0 ft.

H. Screen joint, top _____ ft. MSL or 7.0 ft.

I. Well bottom _____ ft. MSL or 17.0 ft.

J. Filter pack, bottom _____ ft. MSL or 17.0 ft.

K. Borehole, bottom _____ ft. MSL or 17.0 ft.

L. Borehole, diameter 6 in.

M. O.D. well casing 2 in.

N. I.D. well casing _____ in.

1. Cap and lock? ☒ Yes ☐ No

2. Protective cover pipe:
a. Inside diameter: 8 in.
b. Length: 1 ft.
c. Material: Steel ☒ 04; Other ☐ _____
d. Additional protection? ☐ Yes ☒ No
If yes, describe: _____

3. Surface seal: Bentonite ☐ 30; Concrete ☒ 01; Other ☐ _____

4. Material between well casing and protective pipe: Bentonite ☐ 30; Other ☒ Sand

5. Annular space seal: a. Granular/Chipped Bentonite ☒ 33
b. ____ Lbs/gal mud weight . . . Bentonite-sand slurry ☐ 35
c. ____ Lbs/gal mud weight . . . . . Bentonite slurry ☐ 31
d. ____ % Bentonite . . . . . Bentonite-cement grout ☐ 50
e. 1-50lb bag Ft$^3$ volume added for any of the above
f. How installed: Tremie ☐ 01; Tremie pumped ☐ 02; Gravity ☒ 08

6. Bentonite seal: a. Bentonite granules ☐ 33
b. ☐ 1/4 in. ☒ 3/8 in. ☐ 1/2 in. Bentonite chips ☒ 32
c. _____ Other ☐ _____

7. Fine sand material: Manufacturer, product name & mesh size
a. #15 Red Flint
b. Volume added 1/2-50 lb bag ft$^3$

8. Filter pack material: Manufacturer, product name & mesh size
a. #40 Red Flint
b. Volume added 5-50 lb bag ft$^3$

9. Well casing: Flush threaded PVC schedule 40 ☒ 23; Flush threaded PVC schedule 80 ☐ 24; Other ☐ _____

10. Screen material: Schedule 40 PVC
a. Screen type: Factory cut ☒ 11; Continuous slot ☐ 01; Other ☐ _____
b. Manufacturer Johnson Screen
c. Slot size: 0.010 in.
d. Slotted length: 10 ft.

11. Backfill material (below filter pack): None ☒ 14; Other ☐ _____

I hereby certify that the information on this form is true and correct to the best of my knowledge.

| Signature | Firm |
|---|---|
| [signature] | Arcadis U.S., Inc. |

Please complete both Forms 4400-113A and 4400-113B and return them to the appropriate DNR office and bureau. Completion of these reports is required by chs. 160, 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291, 292, 293, 295, and 299, Wis. Stats., failure to file these forms may result in a forfeiture of between $10 and $25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on these forms is not intended to be used for any other purpose. NOTE: See the instructions for more information, including where the completed forms should be sent.

State of Wisconsin
Department of Natural Resources

Route to: Watershed/Wastewater ☐ Waste Management ☐ Remediation/Redevelopment ☒ Other ☐ _____

# MONITORING WELL CONSTRUCTION
Form 4400-113A Rev. 7-98

| | | |
|---|---|---|
| Facility/Project Name: Tyco FTC | Local Grid Location of Well: ____ ft. ☐ N. ☐ S. ____ ft. ☐ E. ☐ W. | Well Name: PZ-42-76 |
| Facility License, Permit or Monitoring No. | Local Grid Origin ☐ (estimated: ☐) or Well Location ☒ Lat. ___ ° ___ ' ___ " Long. ___ ° ___ ' ___ " or | Wis. Unique Well No. _____ / DNR Well ID No. _____ |
| Facility ID: 4 3 8 0 0 5 5 9 0 | St. Plane 451825.12 ft. N, 2580454.09 ft. E. S/C/N | Date Well Installed: 07 / 17 / 2019 (m m d d y y y y) |
| Type of Well: Well Code 12 / PZ | Section Location of Waste/Source: NE 1/4 of NE 1/4 of Sec. 13, T. 30 N, R. 23 ☒ E ☐ W | Well Installed By: Name (first, last) and Firm: Keith Fehrman; Layne, A Granite Company |
| Distance from Waste/Source ____ ft. Enf. Stds. Apply ☐ | Location of Well Relative to Waste/Source: u ☐ Upgradient s ☐ Sidegradient d ☐ Downgradient n ☐ Not Known | Gov. Lot Number: _____ |

A. Protective pipe, top elevation _____ ft. MSL

B. Well casing, top elevation _____ ft. MSL

C. Land surface elevation 592.35 ft. MSL

D. Surface seal, bottom _____ ft. MSL or 1 ft.

12. USCS classification of soil near screen:
GP ☐ GM ☐ GC ☐ GW ☐ SW ☐ SP ☐
SM ☐ SC ☐ ML ☐ MH ☐ CL ☐ CH ☐
Bedrock ☐

13. Sieve analysis performed? ☐ Yes ☒ No

14. Drilling method used: Rotary ☐ 50; Hollow Stem Auger ☐ 41; Other ☒ Sonic

15. Drilling fluid used: Water ☒ 02; Air ☐ 01; Drilling Mud ☐ 03; None ☐ 99

16. Drilling additives used? ☐ Yes ☒ No

Describe _____

17. Source of water (attach analysis, if required): City of Marinette hydrant

E. Bentonite seal, top _____ ft. MSL or 57.0 ft.

F. Fine sand, top _____ ft. MSL or 62.0 ft.

G. Filter pack, top _____ ft. MSL or 64.0 ft.

H. Screen joint, top _____ ft. MSL or 66.0 ft.

I. Well bottom _____ ft. MSL or 76.0 ft.

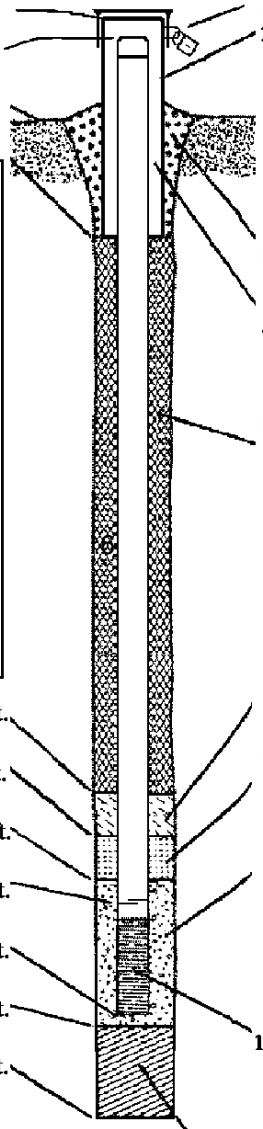
J. Filter pack, bottom _____ ft. MSL or 77.0 ft.

K. Borehole, bottom _____ ft. MSL or 107.0 ft.

L. Borehole, diameter 6 in.

M. O.D. well casing 2 in.

N. I.D. well casing _____ in.



1. Cap and lock? ☒ Yes ☐ No

2. Protective cover pipe:
a. Inside diameter: 8 in.
b. Length: 1 ft.
c. Material: Steel ☒ 04; Other ☐ _____
d. Additional protection? ☐ Yes ☒ No
If yes, describe: _____

3. Surface seal: Bentonite ☐ 30; Concrete ☒ 01; Other ☐ _____

4. Material between well casing and protective pipe: Bentonite ☐ 30; Other ☒ Sand

5. Annular space seal: a. Granular/Chipped Bentonite ☐ 33
b. ____ Lbs/gal mud weight . . . Bentonite-sand slurry ☐ 35
c. ____ Lbs/gal mud weight . . . . . Bentonite slurry ☐ 31
d. ____ % Bentonite . . . . . Bentonite-cement grout ☒ 50
e. appx. 50 gal Ft$^3$ volume added for any of the above
f. How installed: Tremie ☐ 01; Tremie pumped ☒ 02; Gravity ☐ 08

6. Bentonite seal: a. Bentonite granules ☐ 33
b. ☐ 1/4 in. ☒ 3/8 in. ☐ 1/2 in. Bentonite chips ☒ 32
c. _____ Other ☐ _____

7. Fine sand material: Manufacturer, product name & mesh size
a. #15 Red Flint
b. Volume added 1/2-50 lb bag ft$^3$

8. Filter pack material: Manufacturer, product name & mesh size
a. #40 Red Flint
b. Volume added 5-50 lb bag ft$^3$

9. Well casing: Flush threaded PVC schedule 40 ☒ 23; Flush threaded PVC schedule 80 ☐ 24; Other ☐ _____

10. Screen material: Schedule 40 PVC
a. Screen type: Factory cut ☒ 11; Continuous slot ☐ 01; Other ☐ _____
b. Manufacturer Johnson Screen
c. Slot size: 0.010 in.
d. Slotted length: 10 ft.

11. Backfill material (below filter pack): None ☐ 14; Other ☒ Chipped Bentonite

I hereby certify that the information on this form is true and correct to the best of my knowledge.

| Signature | Firm |
|---|---|
| [signature] | Arcadis U.S., Inc. |

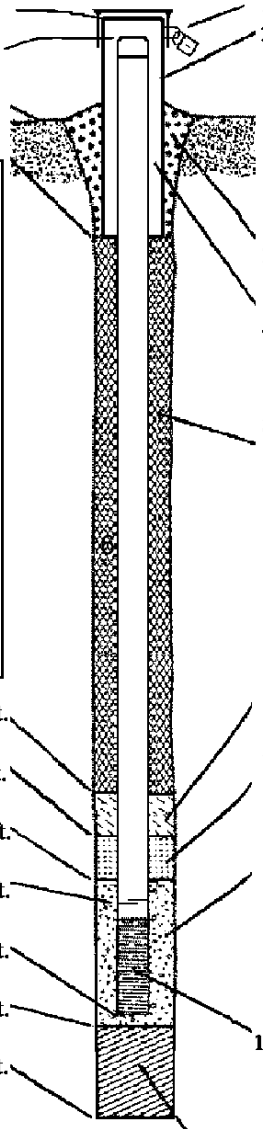
Please complete both Forms 4400-113A and 4400-113B and return them to the appropriate DNR office and bureau. Completion of these reports is required by chs. 160, 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291, 292, 293, 295, and 299, Wis. Stats., failure to file these forms may result in a forfeiture of between $10 and $25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on these forms is not intended to be used for any other purpose. NOTE: See the instructions for more information, including where the completed forms should be sent.

State of Wisconsin
Department of Natural Resources

Route to: Watershed/Wastewater ☐ Waste Management ☐ Remediation/Redevelopment ☒ Other ☐ _____

# MONITORING WELL CONSTRUCTION
Form 4400-113A Rev. 7-98

| | | |
|---|---|---|
| Facility/Project Name: Tyco FTC | Local Grid Location of Well: ____ ft. ☐ N. ☐ S. ____ ft. ☐ E. ☐ W. | Well Name: PZ-43-19 |
| Facility License, Permit or Monitoring No. | Local Grid Origin ☐ (estimated: ☐) or Well Location ☒ Lat. ___ ° ___ ' ___ " Long. ___ ° ___ ' ___ " or | Wis. Unique Well No. _____ / DNR Well ID No. _____ |
| Facility ID: 4 3 8 0 0 5 5 9 0 | St. Plane 452660.29 ft. N, 2580933.27 ft. E. S/C/N | Date Well Installed: 08 / 08 / 2019 (m m d d y y y y) |
| Type of Well: Well Code 12 / PZ | Section Location of Waste/Source: NE 1/4 of NE 1/4 of Sec. 13, T. 30 N, R. 23 ☒ E ☐ W | Well Installed By: Name (first, last) and Firm: Keith Fehrman; Layne, A Granite Company |
| Distance from Waste/Source ____ ft. Enf. Stds. Apply ☐ | Location of Well Relative to Waste/Source: u ☐ Upgradient s ☐ Sidegradient d ☐ Downgradient n ☐ Not Known | Gov. Lot Number: _____ |



A. Protective pipe, top elevation _____ ft. MSL

B. Well casing, top elevation _____ ft. MSL

C. Land surface elevation 592.76 ft. MSL

D. Surface seal, bottom _____ ft. MSL or 1 ft.

12. USCS classification of soil near screen:
GP ☐ GM ☐ GC ☐ GW ☐ SW ☐ SP ☐
SM ☐ SC ☐ ML ☐ MH ☐ CL ☐ CH ☐
Bedrock ☐

13. Sieve analysis performed? ☐ Yes ☒ No

14. Drilling method used: Rotary ☐ 50; Hollow Stem Auger ☐ 41; Other ☒ Sonic

15. Drilling fluid used: Water ☒ 02; Air ☐ 01; Drilling Mud ☐ 03; None ☐ 99

16. Drilling additives used? ☐ Yes ☒ No

Describe _____

17. Source of water (attach analysis, if required): City of Marinette hydrant

E. Bentonite seal, top _____ ft. MSL or 1.0 ft.

F. Fine sand, top _____ ft. MSL or 7.0 ft.

G. Filter pack, top _____ ft. MSL or 8.0 ft.

H. Screen joint, top _____ ft. MSL or 9.0 ft.

I. Well bottom _____ ft. MSL or 19.0 ft.

J. Filter pack, bottom _____ ft. MSL or 20.0 ft.

K. Borehole, bottom _____ ft. MSL or 20.0 ft.

L. Borehole, diameter 6 in.

M. O.D. well casing 2 in.

N. I.D. well casing _____ in.

1. Cap and lock? ☒ Yes ☐ No

2. Protective cover pipe:
a. Inside diameter: 8 in.
b. Length: 1 ft.
c. Material: Steel ☒ 04; Other ☐ ____
d. Additional protection? ☐ Yes ☒ No
If yes, describe: _____

3. Surface seal: Bentonite ☐ 30; Concrete ☒ 01; Other ☐ ____

4. Material between well casing and protective pipe: Bentonite ☐ 30; Other ☒ Sand ____

5. Annular space seal: a. Granular/Chipped Bentonite ☒ 33
b. ____ Lbs/gal mud weight . . . Bentonite-sand slurry ☐ 35
c. ____ Lbs/gal mud weight . . . . . Bentonite slurry ☐ 31
d. ____ % Bentonite . . . . . Bentonite-cement grout ☐ 50
e. 2-50lb bag Ft$^3$ volume added for any of the above
f. How installed: Tremie ☐ 01; Tremie pumped ☐ 02; Gravity ☒ 08

6. Bentonite seal: a. Bentonite granules ☐ 33
b. ☐ 1/4 in. ☒ 3/8 in. ☐ 1/2 in. Bentonite chips ☒ 32
c. _____ Other ☐ ____

7. Fine sand material: Manufacturer, product name & mesh size
a. #15 Red Flint ____
b. Volume added 1/2-50 lb bag ft$^3$

8. Filter pack material: Manufacturer, product name & mesh size
a. #40 Red Flint ____
b. Volume added 5-50 lb bag ft$^3$

9. Well casing: Flush threaded PVC schedule 40 ☒ 23; Flush threaded PVC schedule 80 ☐ 24; Other ☐ ____

10. Screen material: Schedule 40 PVC ____
a. Screen type: Factory cut ☒ 11; Continuous slot ☐ 01; Other ☐ ____
b. Manufacturer Johnson Screen
c. Slot size: 0.010 in.
d. Slotted length: 10 ft.

11. Backfill material (below filter pack): None ☒ 14; Other ☐ ____

I hereby certify that the information on this form is true and correct to the best of my knowledge.

| Signature | Firm |
|---|---|
| [signature] | Arcadis U.S., Inc. |

Please complete both Forms 4400-113A and 4400-113B and return them to the appropriate DNR office and bureau. Completion of these reports is required by chs. 160, 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291, 292, 293, 295, and 299, Wis. Stats., failure to file these forms may result in a forfeiture of between $10 and $25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on these forms is not intended to be used for any other purpose. NOTE: See the instructions for more information, including where the completed forms should be sent.

State of Wisconsin
Department of Natural Resources

Route to: Watershed/Wastewater ☐ Waste Management ☐ Remediation/Redevelopment ☒ Other ☐ _____

# MONITORING WELL CONSTRUCTION
Form 4400-113A Rev. 7-98

| | | |
|---|---|---|
| Facility/Project Name: Tyco FTC | Local Grid Location of Well: ____ ft. ☐ N. ☐ S. ____ ft. ☐ E. ☐ W. | Well Name: PZ-43-80 |
| Facility License, Permit or Monitoring No. | Local Grid Origin ☐ (estimated: ☐) or Well Location ☒ Lat. ___ ° ___ ' ___ " Long. ___ ° ___ ' ___ " or | Wis. Unique Well No. _____ / DNR Well ID No. _____ |
| Facility ID: 4 3 8 0 0 5 5 9 0 | St. Plane 452648.12 ft. N, 2580928.64 ft. E. S/(C)/N | Date Well Installed: 08 / 08 / 2019 (m m d d y y y y) |
| Type of Well: Well Code 12 / PZ | Section Location of Waste/Source: NE 1/4 of NE 1/4 of Sec. 13, T. 30 N, R. 23 ☒ E ☐ W | Well Installed By: Name (first, last) and Firm: Keith Fehrman; Layne, A Granite Company |
| Distance from Waste/Source ____ ft. Enf. Stds. Apply ☐ | Location of Well Relative to Waste/Source: u ☐ Upgradient s ☐ Sidegradient d ☐ Downgradient n ☐ Not Known | Gov. Lot Number: _____ |

A. Protective pipe, top elevation _____ ft. MSL

B. Well casing, top elevation _____ ft. MSL

C. Land surface elevation 592.45 ft. MSL

D. Surface seal, bottom _____ ft. MSL or 1 ft.

12. USCS classification of soil near screen:
GP ☐ GM ☐ GC ☐ GW ☐ SW ☐ SP ☐
SM ☐ SC ☐ ML ☐ MH ☐ CL ☐ CH ☐
Bedrock ☐

13. Sieve analysis performed? ☐ Yes ☒ No

14. Drilling method used: Rotary ☐ 50; Hollow Stem Auger ☐ 41; Other ☒ Sonic

15. Drilling fluid used: Water ☒ 02; Air ☐ 01; Drilling Mud ☐ 03; None ☐ 99

16. Drilling additives used? ☐ Yes ☒ No

Describe _____

17. Source of water (attach analysis, if required): City of Marinette hydrant

E. Bentonite seal, top _____ ft. MSL or 66.0 ft.

F. Fine sand, top _____ ft. MSL or 71.0 ft.

G. Filter pack, top _____ ft. MSL or 73.0 ft.

H. Screen joint, top _____ ft. MSL or 75.0 ft.

I. Well bottom _____ ft. MSL or 80.0 ft.

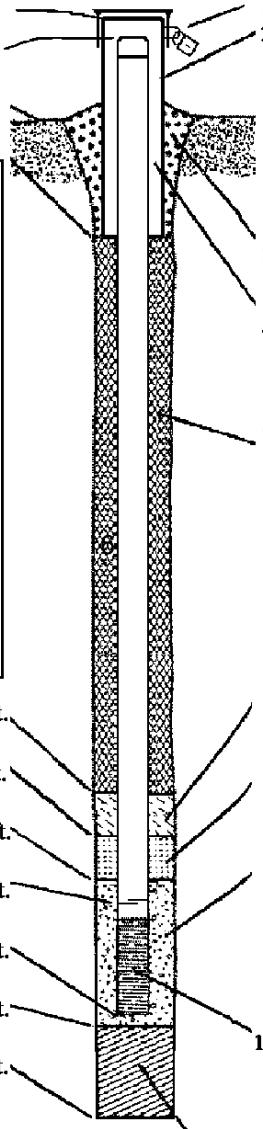
J. Filter pack, bottom _____ ft. MSL or 82.0 ft.

K. Borehole, bottom _____ ft. MSL or 110.0 ft.

L. Borehole, diameter 6 in.

M. O.D. well casing 2 in.

N. I.D. well casing _____ in.



1. Cap and lock? ☒ Yes ☐ No

2. Protective cover pipe:
a. Inside diameter: 8 in.
b. Length: 1 ft.
c. Material: Steel ☒ 04; Other ☐ _____
d. Additional protection? ☐ Yes ☒ No
If yes, describe: _____

3. Surface seal: Bentonite ☐ 30; Concrete ☒ 01; Other ☐ _____

4. Material between well casing and protective pipe: Bentonite ☐ 30; Other ☒ Sand

5. Annular space seal: a. Granular/Chipped Bentonite ☐ 33
b. ____ Lbs/gal mud weight . . . Bentonite-sand slurry ☐ 35
c. ____ Lbs/gal mud weight . . . . . Bentonite slurry ☐ 31
d. ____ % Bentonite . . . . . Bentonite-cement grout ☒ 50
e. appx. 60 gal Ft$^3$ volume added for any of the above
f. How installed: Tremie ☐ 01; Tremie pumped ☒ 02; Gravity ☐ 08

6. Bentonite seal: a. Bentonite granules ☐ 33
b. ☐ 1/4 in. ☒ 3/8 in. ☐ 1/2 in. Bentonite chips ☒ 32
c. _____ Other ☐ _____

7. Fine sand material: Manufacturer, product name & mesh size
a. #15 Red Flint
b. Volume added 1/2-50 lb bag ft$^3$

8. Filter pack material: Manufacturer, product name & mesh size
a. #40 Red Flint
b. Volume added 3-50 lb bag ft$^3$

9. Well casing: Flush threaded PVC schedule 40 ☒ 23; Flush threaded PVC schedule 80 ☐ 24; Other ☐ _____

10. Screen material: Schedule 40 PVC
a. Screen type: Factory cut ☒ 11; Continuous slot ☐ 01; Other ☐ _____
b. Manufacturer Johnson Screen
c. Slot size: 0.010 in.
d. Slotted length: 5 ft.

11. Backfill material (below filter pack): None ☐ 14; Other ☒ Chipped Bentonite

I hereby certify that the information on this form is true and correct to the best of my knowledge.

| Signature | Firm |
|---|---|
| [signature] | Arcadis U.S., Inc. |

Please complete both Forms 4400-113A and 4400-113B and return them to the appropriate DNR office and bureau. Completion of these reports is required by chs. 160, 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291, 292, 293, 295, and 299, Wis. Stats., failure to file these forms may result in a forfeiture of between $10 and $25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on these forms is not intended to be used for any other purpose. NOTE: See the instructions for more information, including where the completed forms should be sent.

State of Wisconsin
Department of Natural Resources

Route to: Watershed/Wastewater ☐ Waste Management ☐ Remediation/Redevelopment ☒ Other ☐ _____

# MONITORING WELL CONSTRUCTION
Form 4400-113A Rev. 7-98

| | | |
|---|---|---|
| Facility/Project Name: Tyco FTC | Local Grid Location of Well: ____ ft. ☐ N. ☐ S. ____ ft. ☐ E. ☐ W. | Well Name: PZ-44-73 |
| Facility License, Permit or Monitoring No. | Local Grid Origin ☐ (estimated: ☐) or Well Location ☒ Lat. ___ ° ___ ' ___ " Long. ___ ° ___ ' ___ " or | Wis. Unique Well No. _____ / DNR Well ID No. _____ |
| Facility ID: 4 3 8 0 0 5 5 9 0 | St. Plane 454734.81 ft. N, 2580183.71 ft. E. S/(C)/N | Date Well Installed: 07 / 22 / 2019 (m m d d y y y y) |
| Type of Well: Well Code 12 / PZ | Section Location of Waste/Source: NE 1/4 of NE 1/4 of Sec. 13, T. 30 N, R. 23 ☒ E ☐ W | Well Installed By: Name (first, last) and Firm: Keith Fehrman; Layne, A Granite Company |
| Distance from Waste/Source ____ ft. Enf. Stds. Apply ☐ | Location of Well Relative to Waste/Source: u ☐ Upgradient s ☐ Sidegradient d ☐ Downgradient n ☐ Not Known | Gov. Lot Number: _____ |

A. Protective pipe, top elevation _____ ft. MSL

B. Well casing, top elevation _____ ft. MSL

C. Land surface elevation 595.06 ft. MSL

D. Surface seal, bottom _____ ft. MSL or 1 ft.

12. USCS classification of soil near screen:
GP ☐ GM ☐ GC ☐ GW ☐ SW ☐ SP ☐
SM ☐ SC ☐ ML ☐ MH ☐ CL ☐ CH ☐
Bedrock ☐

13. Sieve analysis performed? ☐ Yes ☒ No

14. Drilling method used: Rotary ☐ 50; Hollow Stem Auger ☐ 41; Other ☒ Sonic

15. Drilling fluid used: Water ☒ 02; Air ☐ 01; Drilling Mud ☐ 03; None ☐ 99

16. Drilling additives used? ☐ Yes ☒ No

Describe _____

17. Source of water (attach analysis, if required): City of Marinette hydrant

E. Bentonite seal, top _____ ft. MSL or 54.0 ft.

F. Fine sand, top _____ ft. MSL or 59.0 ft.

G. Filter pack, top _____ ft. MSL or 61.0 ft.

H. Screen joint, top _____ ft. MSL or 63.0 ft.

I. Well bottom _____ ft. MSL or 73.0 ft.

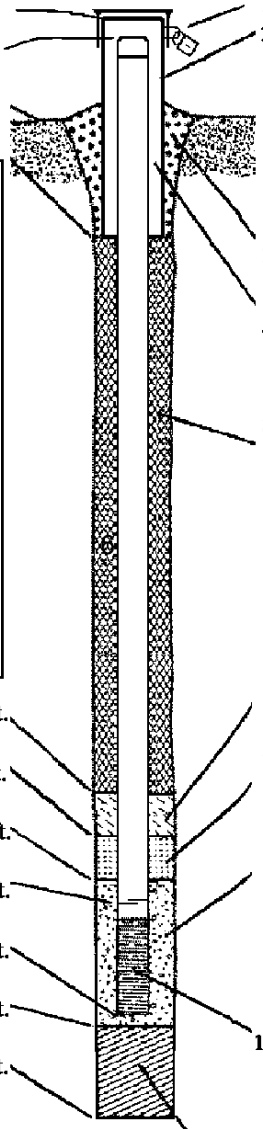
J. Filter pack, bottom _____ ft. MSL or 75.0 ft.

K. Borehole, bottom _____ ft. MSL or 90.0 ft.

L. Borehole, diameter 6 in.

M. O.D. well casing 2 in.

N. I.D. well casing _____ in.



1. Cap and lock? ☒ Yes ☐ No

2. Protective cover pipe:
a. Inside diameter: 8 in.
b. Length: 1 ft.
c. Material: Steel ☒ 04; Other ☐ _____
d. Additional protection? ☐ Yes ☒ No
If yes, describe: _____

3. Surface seal: Bentonite ☐ 30; Concrete ☒ 01; Other ☐ _____

4. Material between well casing and protective pipe: Bentonite ☐ 30; Other ☒ Sand

5. Annular space seal:
a. Granular/Chipped Bentonite ☐ 33
b. ____ Lbs/gal mud weight . . . Bentonite-sand slurry ☐ 35
c. ____ Lbs/gal mud weight . . . . . Bentonite slurry ☐ 31
d. ____ % Bentonite . . . . . Bentonite-cement grout ☒ 50
e. appx. 50 gal $Ft^3$ volume added for any of the above
f. How installed: Tremie ☐ 01; Tremie pumped ☒ 02; Gravity ☐ 08

6. Bentonite seal:
a. Bentonite granules ☐ 33
b. ☐ 1/4 in. ☒ 3/8 in. ☐ 1/2 in. Bentonite chips ☒ 32
c. _____ Other ☐ _____

7. Fine sand material: Manufacturer, product name & mesh size
a. #15 Red Flint
b. Volume added 1/2-50 lb bag $ft^3$

8. Filter pack material: Manufacturer, product name & mesh size
a. #40 Red Flint
b. Volume added 5-50 lb bag $ft^3$

9. Well casing: Flush threaded PVC schedule 40 ☒ 23; Flush threaded PVC schedule 80 ☐ 24; Other ☐ _____

10. Screen material: Schedule 40 PVC
a. Screen type: Factory cut ☒ 11; Continuous slot ☐ 01; Other ☐ _____
b. Manufacturer Johnson Screen
c. Slot size: 0.010 in.
d. Slotted length: 10 ft.

11. Backfill material (below filter pack): None ☐ 14; Other ☒ Chipped Bentonite

I hereby certify that the information on this form is true and correct to the best of my knowledge.

| Signature | Firm |
|---|---|
| [signature] | Arcadis U.S., Inc. |

Please complete both Forms 4400-113A and 4400-113B and return them to the appropriate DNR office and bureau. Completion of these reports is required by chs. 160, 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291, 292, 293, 295, and 299, Wis. Stats., failure to file these forms may result in a forfeiture of between $10 and $25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on these forms is not intended to be used for any other purpose. NOTE: See the instructions for more information, including where the completed forms should be sent.

State of Wisconsin
Department of Natural Resources

# MONITORING WELL DEVELOPMENT

Form 4400-113B Rev. 7-98

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☐ Other ☐ _____

| Facility/Project Name | County Name | Well Name |
|---|---|---|
| JCI/Tyco FTC (PFAS) | Marinette | PZ-24-17' |

| Facility License, Permit or Monitoring Number | County Code | Wis. Unique Well Number | DNR Well ID Number |
|---|---|---|---|
| BRRTS: 02-38-580694 | 38 | _____ | ___ |

1. Can this well be purged dry? ☐ Yes ☒ No

2. Well development method
   - surged with bailer and bailed ☐ 41
   - surged with bailer and pumped ☐ 61
   - surged with block and bailed ☐ 42
   - surged with block and pumped ☒ 62
   - surged with block, bailed and pumped ☐ 70
   - compressed air ☐ 20
   - bailed only ☐ 10
   - pumped only ☐ 51
   - pumped slowly ☐ 50
   - Other _____ ☐ __

3. Time spent developing well __48 min.

4. Depth of well (from top of well casisng) __16.6 ft.

5. Inside diameter of well __2.0 in.

6. Volume of water in filter pack and well casing __2.0 gal.

7. Volume of water removed from well __72.0 gal.

8. Volume of water added (if any) ____.__ gal.

9. Source of water added N/A

10. Analysis performed on water added? (If yes, attach results) ☐ Yes ☒ No

| | Before Development | After Development |
|---|---|---|
| 11. Depth to Water (from top of well casing) | a. __4.69 ft. | __4.72 ft. |
| Date | b. 08/12/2019 (mm dd yyyy) | 08/12/2019 (mm dd yyyy) |
| Time | c. 10:17 ☒ a.m. ☐ p.m. | 11:05 ☒ a.m. ☐ p.m. |
| 12. Sediment in well bottom | __0.0 inches | __0.0 inches |
| 13. Water clarity | Clear ☐ 10; Turbid ☒ 15 | Clear ☒ 20; Turbid ☐ 25 |
| (Describe) | Brown | Clear / Foggy clear |

Fill in if drilling fluids were used and well is at solid waste facility:

| | | |
|---|---|---|
| 14. Total suspended solids | ____.__ mg/l | ____.__ mg/l |
| 15. COD | ____.__ mg/l | ____.__ mg/l |

16. Well developed by: Name (first, last) and Firm
First Name: Jared Last Name: LaRue
Firm: Braun Intertec

17. Additional comments on development:

Name and Address of Facility Contact /Owner/Responsible Party
First Name: _____ Last Name: _____
Facility/Firm: Johnson Controls, Inc.
Street: 5757 N Green Bay Ave.
City/State/Zip: Milwaukee, WI 53201

I hereby certify that the above information is true and correct to the best of my knowledge.
Signature: [signature]
Print Name: Jared LaRue
Firm: Braun Intertec

NOTE: See instructions for more information including a list of county codes and well type codes.

State of Wisconsin
Department of Natural Resources

# MONITORING WELL DEVELOPMENT

Form 4400-113B Rev. 7-98

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☐ Other ☐ _____

| Facility/Project Name | County Name | Well Name |
|---|---|---|
| JCI/Tyco FTC (PFAS) | Marinette | PZ-24-47' |

| Facility License, Permit or Monitoring Number | County Code | Wis. Unique Well Number | DNR Well ID Number |
|---|---|---|---|
| BRRTS: 02-38-580694 | 38 | _____ | ___ |

1. Can this well be purged dry? ☐ Yes ☒ No

2. Well development method

| | | |
|---|---|---|
| surged with bailer and bailed | ☐ | 41 |
| surged with bailer and pumped | ☐ | 61 |
| surged with block and bailed | ☐ | 42 |
| surged with block and pumped | ☒ | 62 |
| surged with block, bailed and pumped | ☐ | 70 |
| compressed air | ☐ | 20 |
| bailed only | ☐ | 10 |
| pumped only | ☐ | 51 |
| pumped slowly | ☐ | 50 |
| Other _____ | ☐ | |

3. Time spent developing well __57 min.

4. Depth of well (from top of well casisng) __47.1 ft.

5. Inside diameter of well __2.05 in.

6. Volume of water in filter pack and well casing __7.4 gal.

7. Volume of water removed from well 109.0 gal.

8. Volume of water added (if any) ____.__ gal.

9. Source of water added N/A

10. Analysis performed on water added? ☐ Yes ☒ No
(If yes, attach results)

| | Before Development | After Development |
|---|---|---|
| 11. Depth to Water (from top of well casing) | a. __4.80 ft. | __4.81 ft. |
| Date | b. 08/12/2019 (m m d d y y y y) | 08/12/2019 (m m d d y y y y) |
| Time | c. 11:26 ☒ a.m. ☐ p.m. | 12:23 ☐ a.m. ☒ p.m. |
| 12. Sediment in well bottom | __0.0 inches | __0.0 inches |
| 13. Water clarity | Clear ☐ 10 Turbid ☒ 15 (Describe) Brown | Clear ☒ 20 Turbid ☐ 25 (Describe) Clear |

Fill in if drilling fluids were used and well is at solid waste facility:

| | | |
|---|---|---|
| 14. Total suspended solids | ____.__ mg/l | ____.__ mg/l |
| 15. COD | ____.__ mg/l | ____.__ mg/l |

16. Well developed by: Name (first, last) and Firm
First Name: Jared Last Name: LaRue
Firm: Braun Intertec

17. Additional comments on development:

Name and Address of Facility Contact /Owner/Responsible Party
First Name: _____ Last Name: _____
Facility/Firm: Johnson Controls, Inc.
Street: 5757 N Green Bay Ave.
City/State/Zip: Milwaukee, WI 53201

I hereby certify that the above information is true and correct to the best of my knowledge.
Signature: [signature]
Print Name: Jared LaRue
Firm: Braun Intertec

NOTE: See instructions for more information including a list of county codes and well type codes.

State of Wisconsin
Department of Natural Resources

# MONITORING WELL DEVELOPMENT

Form 4400-113B Rev. 7-98

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☐ Other ☐ _____

| Facility/Project Name | County Name | Well Name |
|---|---|---|
| JCI/Tyco FTC (PFAS) | Marinette | PZ-25-17' |

| Facility License, Permit or Monitoring Number | County Code | Wis. Unique Well Number | DNR Well ID Number |
|---|---|---|---|
| BRRTS: 02-38-580694 | 38 | _____ | ___ |

1. Can this well be purged dry? ☐ Yes ☒ No

2. Well development method
   - surged with bailer and bailed ☐ 41
   - surged with bailer and pumped ☐ 61
   - surged with block and bailed ☐ 42
   - surged with block and pumped ☒ 62
   - surged with block, bailed and pumped ☐ 70
   - compressed air ☐ 20
   - bailed only ☐ 10
   - pumped only ☐ 51
   - pumped slowly ☐ 50
   - Other _____ ☐

3. Time spent developing well 32 min.

4. Depth of well (from top of well casisng) 16.8 ft.

5. Inside diameter of well 2.00 in.

6. Volume of water in filter pack and well casing 1.8 gal.

7. Volume of water removed from well 52.0 gal.

8. Volume of water added (if any) ___ gal.

9. Source of water added N/A

10. Analysis performed on water added? ☐ Yes ☒ No
(If yes, attach results)

| | Before Development | After Development |
|---|---|---|
| 11. Depth to Water (from top of well casing) | a. 6.33 ft. | 6.45 ft. |
| Date | b. 08/12/2019 (m m d d y y y y) | 08/12/2019 (m m d d y y y y) |
| Time | c. 12:57 ☐ a.m. ☒ p.m. | 13:29 ☐ a.m. ☒ p.m. |
| 12. Sediment in well bottom | 0.0 inches | 0.0 inches |
| 13. Water clarity | Clear ☐ 10 Turbid ☒ 15 (Describe) Brown | Clear ☒ 20 Turbid ☐ 25 (Describe) Clear |

Fill in if drilling fluids were used and well is at solid waste facility:

| | | |
|---|---|---|
| 14. Total suspended solids | ____.__ mg/l | ____.__ mg/l |
| 15. COD | ____.__ mg/l | ____.__ mg/l |

16. Well developed by: Name (first, last) and Firm
First Name: Jared Last Name: LaRue
Firm: Braun Intertec

17. Additional comments on development:

Name and Address of Facility Contact /Owner/Responsible Party
First Name: _____ Last Name: _____
Facility/Firm: Johnson Controls, Inc.
Street: 5757 N Green Bay Ave.
City/State/Zip: Milwaukee, WI 53201

I hereby certify that the above information is true and correct to the best of my knowledge.
Signature: [signature]
Print Name: Jared LaRue
Firm: Braun Intertec

NOTE: See instructions for more information including a list of county codes and well type codes.

State of Wisconsin
Department of Natural Resources

# MONITORING WELL DEVELOPMENT

Form 4400-113B Rev. 7-98

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☐ Other ☐ _____

| Facility/Project Name | County Name | Well Name |
|---|---|---|
| JCI/Tyco FTC (PFAS) | Marinette | PZ-26-11' |

| Facility License, Permit or Monitoring Number | County Code | Wis. Unique Well Number | DNR Well ID Number |
|---|---|---|---|
| BRRTS: 02-38-580694 | 38 | _____ | ___ |

1. Can this well be purged dry? ☐ Yes ☒ No

2. Well development method
   - surged with bailer and bailed ☐ 41
   - surged with bailer and pumped ☐ 61
   - surged with block and bailed ☐ 42
   - surged with block and pumped ☒ 62
   - surged with block, bailed and pumped ☐ 70
   - compressed air ☐ 20
   - bailed only ☐ 10
   - pumped only ☐ 51
   - pumped slowly ☐ 50
   - Other _____ ☐ ___

3. Time spent developing well 43 min.

4. Depth of well (from top of well casisng) 11.1 ft.

5. Inside diameter of well 2.00 in.

6. Volume of water in filter pack and well casing 1.1 gal.

7. Volume of water removed from well 43.0 gal.

8. Volume of water added (if any) ____.__ gal.

9. Source of water added N/A

10. Analysis performed on water added? (If yes, attach results) ☐ Yes ☒ No

| | Before Development | After Development |
|---|---|---|
| 11. Depth to Water (from top of well casing) | a. 4.47 ft. | 5.86 ft. |
| Date | b. 08/12/2019 (mm dd yyyy) | 08/12/2019 (mm dd yyyy) |
| Time | c. 13:57 ☐ a.m. ☒ p.m. | 14:40 ☐ a.m. ☒ p.m. |
| 12. Sediment in well bottom | 0.0 inches | 0.0 inches |
| 13. Water clarity | Clear ☐ 10 Turbid ☒ 15 (Describe) Brown | Clear ☒ 20 Turbid ☐ 25 (Describe) Clear |

Fill in if drilling fluids were used and well is at solid waste facility:

| | | |
|---|---|---|
| 14. Total suspended solids | ____.__ mg/l | ____.__ mg/l |
| 15. COD | ____.__ mg/l | ____.__ mg/l |

16. Well developed by: Name (first, last) and Firm
First Name: Jared Last Name: LaRue
Firm: Braun Intertec

17. Additional comments on development:

Name and Address of Facility Contact /Owner/Responsible Party
First Name: _____ Last Name: _____
Facility/Firm: Johnson Controls, Inc.
Street: 5757 N Green Bay Ave.
City/State/Zip: Milwaukee, WI 53201

I hereby certify that the above information is true and correct to the best of my knowledge.
Signature: [signature]
Print Name: Jared LaRue
Firm: Braun Intertec

NOTE: See instructions for more information including a list of county codes and well type codes.

State of Wisconsin
Department of Natural Resources

# MONITORING WELL DEVELOPMENT

Form 4400-113B Rev. 7-98

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☐ Other ☐ _____

| Facility/Project Name | County Name | Well Name |
|---|---|---|
| JCI/Tyco FTC (PFAS) | Marinette | PZ-27-12' |

| Facility License, Permit or Monitoring Number | County Code | Wis. Unique Well Number | DNR Well ID Number |
|---|---|---|---|
| BRRTS: 02-38-580694 | 38 | _____ | ___ |

1. Can this well be purged dry? ☐ Yes ☒ No

2. Well development method
   - surged with bailer and bailed ☐ 41
   - surged with bailer and pumped ☐ 61
   - surged with block and bailed ☐ 42
   - surged with block and pumped ☒ 62
   - surged with block, bailed and pumped ☐ 70
   - compressed air ☐ 20
   - bailed only ☐ 10
   - pumped only ☐ 51
   - pumped slowly ☐ 50
   - Other _____ ☐ ___

3. Time spent developing well __50 min.

4. Depth of well (from top of well casisng) __12.1 ft.

5. Inside diameter of well __2.00 in.

6. Volume of water in filter pack and well casing __1.2 gal.

7. Volume of water removed from well __50.0 gal.

8. Volume of water added (if any) ____.__ gal.

9. Source of water added N/A

10. Analysis performed on water added? ☐ Yes ☒ No
(If yes, attach results)

| | Before Development | After Development |
|---|---|---|
| 11. Depth to Water (from top of well casing) | a. __5.15 ft. | __5.17 ft. |
| Date | b. 08/12/2019 (mm dd yyyy) | 08/12/2019 (mm dd yyyy) |
| Time | c. 15:20 ☐ a.m. ☒ p.m. | 16:10 ☐ a.m. ☒ p.m. |
| 12. Sediment in well bottom | __0.0 inches | __0.0 inches |
| 13. Water clarity | Clear ☐ 10 Turbid ☒ 15 | Clear ☒ 20 Turbid ☐ 25 |
| (Describe) | Brown | Clear |

Fill in if drilling fluids were used and well is at solid waste facility:

| | | |
|---|---|---|
| 14. Total suspended solids | ____.__ mg/l | ____.__ mg/l |
| 15. COD | ____.__ mg/l | ____.__ mg/l |

16. Well developed by: Name (first, last) and Firm
First Name: Jared Last Name: LaRue
Firm: Braun Intertec

17. Additional comments on development:

Name and Address of Facility Contact /Owner/Responsible Party
First Name: _____ Last Name: _____
Facility/Firm: Johnson Controls, Inc.
Street: 5757 N Green Bay Ave.
City/State/Zip: Milwaukee, WI 53201

I hereby certify that the above information is true and correct to the best of my knowledge.
Signature: [signature]
Print Name: Jared LaRue
Firm: Braun Intertec

NOTE: See instructions for more information including a list of county codes and well type codes.

State of Wisconsin
Department of Natural Resources

# MONITORING WELL DEVELOPMENT

Form 4400-113B Rev. 7-98

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☐ Other ☐ _____

| Facility/Project Name | County Name | Well Name |
|---|---|---|
| JCI/Tyco FTC (PFAS) | Marinette | PZ-28-14' |

| Facility License, Permit or Monitoring Number | County Code | Wis. Unique Well Number | DNR Well ID Number |
|---|---|---|---|
| BRRTS: 02-38-580694 | 38 | _____ | ___ |

1. Can this well be purged dry? ☐ Yes ☒ No

2. Well development method

| | | |
|---|---|---|
| surged with bailer and bailed | ☐ | 41 |
| surged with bailer and pumped | ☐ | 61 |
| surged with block and bailed | ☐ | 42 |
| surged with block and pumped | ☒ | 62 |
| surged with block, bailed and pumped | ☐ | 70 |
| compressed air | ☐ | 20 |
| bailed only | ☐ | 10 |
| pumped only | ☐ | 51 |
| pumped slowly | ☐ | 50 |
| Other _____ | ☐ | |

3. Time spent developing well __35 min.

4. Depth of well (from top of well casisng) __14.6 ft.

5. Inside diameter of well __2.00 in.

6. Volume of water in filter pack and well casing __1.6 gal.

7. Volume of water removed from well __51.0 gal.

8. Volume of water added (if any) ____.__ gal.

9. Source of water added N/A

10. Analysis performed on water added? ☐ Yes ☒ No
(If yes, attach results)

| | Before Development | After Development |
|---|---|---|
| 11. Depth to Water (from top of well casing) | a. __5.37 ft. | __5.38 ft. |
| Date | b. 08/13/2019 (m m d d y y y y) | 08/13/2019 (m m d d y y y y) |
| Time | c. 09:10 ☒ a.m. ☐ p.m. | 09:45 ☒ a.m. ☐ p.m. |
| 12. Sediment in well bottom | __0.0 inches | __0.0 inches |
| 13. Water clarity | Clear ☐ 10 Turbid ☒ 15 (Describe) Brown | Clear ☒ 20 Turbid ☐ 25 (Describe) Clear |

Fill in if drilling fluids were used and well is at solid waste facility:

| | | |
|---|---|---|
| 14. Total suspended solids | ____.__ mg/l | ____.__ mg/l |
| 15. COD | ____.__ mg/l | ____.__ mg/l |

16. Well developed by: Name (first, last) and Firm
First Name: Jared Last Name: LaRue
Firm: Braun Intertec

17. Additional comments on development:

Name and Address of Facility Contact /Owner/Responsible Party
First Name: _____ Last Name: _____
Facility/Firm: Johnson Controls, Inc.
Street: 5757 N Green Bay Ave.
City/State/Zip: Milwaukee, WI 53201

I hereby certify that the above information is true and correct to the best of my knowledge.
Signature: [signature]
Print Name: Jared LaRue
Firm: Braun Intertec

NOTE: See instructions for more information including a list of county codes and well type codes.

State of Wisconsin
Department of Natural Resources

# MONITORING WELL DEVELOPMENT

Form 4400-113B Rev. 7-98

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☐ Other ☐ _____

| Facility/Project Name | County Name | Well Name |
|---|---|---|
| JCI/Tyco FTC (PFAS) | Marinette | PZ-28-54' |

| Facility License, Permit or Monitoring Number | County Code | Wis. Unique Well Number | DNR Well ID Number |
|---|---|---|---|
| BRRTS: 02-38-580694 | 38 | _____ | ___ |

1. Can this well be purged dry? ☐ Yes ☒ No

2. Well development method
   - surged with bailer and bailed ☐ 41
   - surged with bailer and pumped ☐ 61
   - surged with block and bailed ☐ 42
   - surged with block and pumped ☒ 62
   - surged with block, bailed and pumped ☐ 70
   - compressed air ☐ 20
   - bailed only ☐ 10
   - pumped only ☐ 51
   - pumped slowly ☐ 50
   - Other _____ ☐ __

3. Time spent developing well __44 min.

4. Depth of well (from top of well casisng) __53.8 ft.

5. Inside diameter of well __2.00 in.

6. Volume of water in filter pack and well casing __8.4 gal.

7. Volume of water removed from well __83.0 gal.

8. Volume of water added (if any) ____.__ gal.

9. Source of water added N/A

10. Analysis performed on water added? ☐ Yes ☒ No
(If yes, attach results)

| | Before Development | After Development |
|---|---|---|
| 11. Depth to Water (from top of well casing) | a. __6.17 ft. | __6.24 ft. |
| Date | b. 08/13/2019 (m m d d y y y y) | 08/13/2019 (m m d d y y y y) |
| Time | c. 09:56 ☒ a.m. ☐ p.m. | 10:40 ☒ a.m. ☐ p.m. |
| 12. Sediment in well bottom | __0.0 inches | __0.0 inches |
| 13. Water clarity | Clear ☐ 10 Turbid ☒ 15 (Describe) Brown | Clear ☒ 20 Turbid ☐ 25 (Describe) Clear |

Fill in if drilling fluids were used and well is at solid waste facility:

| | | |
|---|---|---|
| 14. Total suspended solids | ____.__ mg/l | ____.__ mg/l |
| 15. COD | ____.__ mg/l | ____.__ mg/l |

16. Well developed by: Name (first, last) and Firm
First Name: Jared Last Name: LaRue
Firm: Braun Intertec

17. Additional comments on development:

Name and Address of Facility Contact /Owner/Responsible Party
First Name: _____ Last Name: _____
Facility/Firm: Johnson Controls, Inc.
Street: 5757 N Green Bay Ave.
City/State/Zip: Milwaukee, WI 53201

I hereby certify that the above information is true and correct to the best of my knowledge.
Signature: [signature]
Print Name: Jared LaRue
Firm: Braun Intertec

NOTE: See instructions for more information including a list of county codes and well type codes.

State of Wisconsin
Department of Natural Resources

# MONITORING WELL DEVELOPMENT

Form 4400-113B Rev. 7-98

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☐ Other ☐ _____

| Facility/Project Name | County Name | Well Name |
|---|---|---|
| JCI/Tyco FTC (PFAS) | Marinette | PZ-29-17' |

| Facility License, Permit or Monitoring Number | County Code | Wis. Unique Well Number | DNR Well ID Number |
|---|---|---|---|
| BRRTS: 02-38-580694 | 38 | _____ | ___ |

1. Can this well be purged dry? ☐ Yes ☒ No

2. Well development method
   - surged with bailer and bailed ☐ 41
   - surged with bailer and pumped ☐ 61
   - surged with block and bailed ☐ 42
   - surged with block and pumped ☒ 62
   - surged with block, bailed and pumped ☐ 70
   - compressed air ☐ 20
   - bailed only ☐ 10
   - pumped only ☐ 51
   - pumped slowly ☐ 50
   - Other _____ ☐ __

3. Time spent developing well __42 min.

4. Depth of well (from top of well casisng) __17.2 ft.

5. Inside diameter of well __2.00 in.

6. Volume of water in filter pack and well casing __2.4 gal.

7. Volume of water removed from well __69.0 gal.

8. Volume of water added (if any) ____.__ gal.

9. Source of water added N/A

10. Analysis performed on water added? ☐ Yes ☒ No
(If yes, attach results)

| | Before Development | After Development |
|---|---|---|
| 11. Depth to Water (from top of well casing) | a. __3.47 ft. | __3.55 ft. |
| Date | b. 08/13/2019 (m m d d y y y y) | 08/13/2019 (m m d d y y y y) |
| Time | c. 12:08 ☐ a.m. ☒ p.m. | 12:50 ☐ a.m. ☒ p.m. |
| 12. Sediment in well bottom | __0.0 inches | __0.0 inches |
| 13. Water clarity | Clear ☐ 10 Turbid ☒ 15 (Describe) Brown | Clear ☒ 20 Turbid ☐ 25 (Describe) Clear |
| 14. Total suspended solids | ____.__ mg/l | ____.__ mg/l |
| 15. COD | ____.__ mg/l | ____.__ mg/l |

Fill in if drilling fluids were used and well is at solid waste facility:

16. Well developed by: Name (first, last) and Firm
First Name: Jared Last Name: LaRue
Firm: Braun Intertec

17. Additional comments on development:

Name and Address of Facility Contact /Owner/Responsible Party
First Name: _____ Last Name: _____
Facility/Firm: Johnson Controls, Inc.
Street: 5757 N Green Bay Ave.
City/State/Zip: Milwaukee, WI 53201

I hereby certify that the above information is true and correct to the best of my knowledge.
Signature: [signature]
Print Name: Jared LaRue
Firm: Braun Intertec

NOTE: See instructions for more information including a list of county codes and well type codes.

State of Wisconsin
Department of Natural Resources

# MONITORING WELL DEVELOPMENT

Form 4400-113B Rev. 7-98

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☐ Other ☐ _____

| Facility/Project Name | County Name | Well Name |
|---|---|---|
| JCI/Tyco FTC (PFAS) | Marinette | PZ-29-48' |

| Facility License, Permit or Monitoring Number | County Code | Wis. Unique Well Number | DNR Well ID Number |
|---|---|---|---|
| BRRTS: 02-38-580694 | 38 | _____ | ___ |

1. Can this well be purged dry? ☐ Yes ☒ No

2. Well development method
   - surged with bailer and bailed ☐ 41
   - surged with bailer and pumped ☐ 61
   - surged with block and bailed ☐ 42
   - surged with block and pumped ☒ 62
   - surged with block, bailed and pumped ☐ 70
   - compressed air ☐ 20
   - bailed only ☐ 10
   - pumped only ☐ 51
   - pumped slowly ☐ 50
   - Other _____ ☐ __

3. Time spent developing well __41 min.

4. Depth of well (from top of well casisng) __42.7 ft.

5. Inside diameter of well __2.00 in.

6. Volume of water in filter pack and well casing __6.8 gal.

7. Volume of water removed from well __71.0 gal.

8. Volume of water added (if any) ____.__ gal.

9. Source of water added N/A

10. Analysis performed on water added? ☐ Yes ☒ No
(If yes, attach results)

| | Before Development | After Development |
|---|---|---|
| 11. Depth to Water (from top of well casing) | a. __4.07 ft. | __4.13 ft. |
| Date | b. 08/13/2019 (m m d d y y y y) | 08/13/2019 (m m d d y y y y) |
| Time | c. 12:59 ☐ a.m. ☒ p.m. | 13:40 ☐ a.m. ☒ p.m. |
| 12. Sediment in well bottom | __0.0 inches | __0.0 inches |
| 13. Water clarity | Clear ☐ 10 Turbid ☒ 15 (Describe) Brown | Clear ☒ 20 Turbid ☐ 25 (Describe) Clear |

Fill in if drilling fluids were used and well is at solid waste facility:

| | | |
|---|---|---|
| 14. Total suspended solids | ____.__ mg/l | ____.__ mg/l |
| 15. COD | ____.__ mg/l | ____.__ mg/l |

16. Well developed by: Name (first, last) and Firm
First Name: Jared Last Name: LaRue
Firm: Braun Intertec

17. Additional comments on development:

Name and Address of Facility Contact /Owner/Responsible Party
First Name: _____ Last Name: _____
Facility/Firm: Johnson Controls, Inc.
Street: 5757 N Green Bay Ave.
City/State/Zip: Milwaukee, WI 53201

I hereby certify that the above information is true and correct to the best of my knowledge.
Signature: [signature]
Print Name: Jared LaRue
Firm: Braun Intertec

NOTE: See instructions for more information including a list of county codes and well type codes.

State of Wisconsin
Department of Natural Resources

# MONITORING WELL DEVELOPMENT

Form 4400-113B Rev. 7-98

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☐ Other ☐ _____

| Facility/Project Name | County Name | Well Name |
|---|---|---|
| JCI/Tyco FTC (PFAS) | Marinette | PZ-30-12' |

| Facility License, Permit or Monitoring Number | County Code | Wis. Unique Well Number | DNR Well ID Number |
|---|---|---|---|
| BRRTS: 02-38-580694 | 38 | _____ | ___ |

1. Can this well be purged dry? ☐ Yes ☒ No

2. Well development method

| | | |
|---|---|---|
| surged with bailer and bailed | ☐ | 41 |
| surged with bailer and pumped | ☐ | 61 |
| surged with block and bailed | ☐ | 42 |
| surged with block and pumped | ☒ | 62 |
| surged with block, bailed and pumped | ☐ | 70 |
| compressed air | ☐ | 20 |
| bailed only | ☐ | 10 |
| pumped only | ☐ | 51 |
| pumped slowly | ☐ | 50 |
| Other _____ | ☐ | |

3. Time spent developing well __30 min.

4. Depth of well (from top of well casisng) __12.2 ft.

5. Inside diameter of well __2.00 in.

6. Volume of water in filter pack and well casing __14 gal.

7. Volume of water removed from well __38.0 gal.

8. Volume of water added (if any) ____.__ gal.

9. Source of water added N/A

10. Analysis performed on water added? ☐ Yes ☒ No
(If yes, attach results)

| | Before Development | After Development |
|---|---|---|
| 11. Depth to Water (from top of well casing) | a. __4.09 ft. | __4.12 ft. |
| Date | b. 08/13/2019 (mm dd yyyy) | 08/13/2019 (mm dd yyyy) |
| Time | c. 14:25 ☐ a.m. ☒ p.m. | 14:55 ☐ a.m. ☒ p.m. |
| 12. Sediment in well bottom | __0.0 inches | __0.0 inches |
| 13. Water clarity | Clear ☐ 10 Turbid ☒ 15 (Describe) Brown | Clear ☒ 20 Turbid ☐ 25 (Describe) Clear |

Fill in if drilling fluids were used and well is at solid waste facility:

| | | |
|---|---|---|
| 14. Total suspended solids | ____.__ mg/l | ____.__ mg/l |
| 15. COD | ____.__ mg/l | ____.__ mg/l |

16. Well developed by: Name (first, last) and Firm
First Name: Jared Last Name: LaRue
Firm: Braun Intertec

17. Additional comments on development:

Name and Address of Facility Contact /Owner/Responsible Party
First Name: _____ Last Name: _____
Facility/Firm: Johnson Controls, Inc.
Street: 5757 N Green Bay Ave.
City/State/Zip: Milwaukee, WI 53201

I hereby certify that the above information is true and correct to the best of my knowledge.
Signature: [signature]
Print Name: Jared LaRue
Firm: Braun Intertec

NOTE: See instructions for more information including a list of county codes and well type codes.

State of Wisconsin
Department of Natural Resources

# MONITORING WELL DEVELOPMENT

Form 4400-113B Rev. 7-98

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☐ Other ☐ _____

| Facility/Project Name | County Name | Well Name |
|---|---|---|
| JCI/Tyco FTC (PFAS) | Marinette | PZ-30-45' |

| Facility License, Permit or Monitoring Number | County Code | Wis. Unique Well Number | DNR Well ID Number |
|---|---|---|---|
| BRRTS: 02-38-580694 | 38 | _____ | ___ |

1. Can this well be purged dry? ☐ Yes ☒ No

2. Well development method

| | | |
|---|---|---|
| surged with bailer and bailed | ☐ | 41 |
| surged with bailer and pumped | ☐ | 61 |
| surged with block and bailed | ☐ | 42 |
| surged with block and pumped | ☒ | 62 |
| surged with block, bailed and pumped | ☐ | 70 |
| compressed air | ☐ | 20 |
| bailed only | ☐ | 10 |
| pumped only | ☐ | 51 |
| pumped slowly | ☐ | 50 |
| Other _____ | ☐ | |

3. Time spent developing well __45 min.

4. Depth of well (from top of well casisng) _43.9 ft.

5. Inside diameter of well _2.00 in.

6. Volume of water in filter pack and well casing __69 gal.

7. Volume of water removed from well _83.0 gal.

8. Volume of water added (if any) ____.__ gal.

9. Source of water added N/A

10. Analysis performed on water added? ☐ Yes ☒ No
(If yes, attach results)

| | Before Development | After Development |
|---|---|---|
| 11. Depth to Water (from top of well casing) | a. __4.41 ft. | __5.81 ft. |
| Date | b. 08/13/2019 (mm dd yyyy) | 08/13/2019 (mm dd yyyy) |
| Time | c. 15:05 ☐ a.m. ☒ p.m. | 15:50 ☐ a.m. ☒ p.m. |
| 12. Sediment in well bottom | _0.0 inches | _0.0 inches |
| 13. Water clarity | Clear ☐ 10 Turbid ☒ 15 (Describe) Brown | Clear ☒ 20 Turbid ☐ 25 (Describe) Clear |

Fill in if drilling fluids were used and well is at solid waste facility:

| | | |
|---|---|---|
| 14. Total suspended solids | ____.__ mg/l | ____.__ mg/l |
| 15. COD | ____.__ mg/l | ____.__ mg/l |

16. Well developed by: Name (first, last) and Firm
First Name: Jared Last Name: LaRue
Firm: Braun Intertec

17. Additional comments on development:

Name and Address of Facility Contact /Owner/Responsible Party
First Name: _____ Last Name: _____
Facility/Firm: Johnson Controls, Inc.
Street: 5757 N Green Bay Ave.
City/State/Zip: Milwaukee, WI 53201

I hereby certify that the above information is true and correct to the best of my knowledge.
Signature: [signature]
Print Name: Jared LaRue
Firm: Braun Intertec

NOTE: See instructions for more information including a list of county codes and well type codes.

State of Wisconsin
Department of Natural Resources

# MONITORING WELL DEVELOPMENT

Form 4400-113B Rev. 7-98

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☐ Other ☐ _____

| Facility/Project Name | County Name | Well Name |
|---|---|---|
| JCI/Tyco FTC (PFAS) | Marinette | PZ-30-59 |

| Facility License, Permit or Monitoring Number | County Code | Wis. Unique Well Number | DNR Well ID Number |
|---|---|---|---|
| BRRTS: 02-38-580694 | 38 | _____ | ___ |

1. Can this well be purged dry? ☒ Yes ☐ No

2. Well development method

| | |
|---|---|
| surged with bailer and bailed | ☐ 41 |
| surged with bailer and pumped | ☐ 61 |
| surged with block and bailed | ☐ 42 |
| surged with block and pumped | ☒ 62 |
| surged with block, bailed and pumped | ☐ 70 |
| compressed air | ☒ 20 |
| bailed only | ☐ 10 |
| pumped only | ☐ 51 |
| pumped slowly | ☐ 50 |
| Other _____ | ☐ |

3. Time spent developing well 55 min.

4. Depth of well (from top of well casisng) 59.0 ft.

5. Inside diameter of well 2.00 in.

6. Volume of water in filter pack and well casing 9.5 gal.

7. Volume of water removed from well 20.0 gal.

8. Volume of water added (if any) ___.__ gal.

9. Source of water added N/A

10. Analysis performed on water added? ☐ Yes ☒ No
(If yes, attach results)

| | Before Development | After Development |
|---|---|---|
| 11. Depth to Water (from top of well casing) | a. 5.03 ft. | 54.25 ft. |
| Date | b. 08/28/2019 (mm dd yyyy) | 08/28/2019 (mm dd yyyy) |
| Time | c. 15:35 ☐ a.m. ☒ p.m. | 16:30 ☐ a.m. ☒ p.m. |
| 12. Sediment in well bottom | 0.0 inches | 0.0 inches |
| 13. Water clarity | Clear ☐ 10 Turbid ☒ 15 (Describe) Brown | Clear ☒ 20 Turbid ☐ 25 (Describe) Foggy Clear |

Fill in if drilling fluids were used and well is at solid waste facility:

| | | |
|---|---|---|
| 14. Total suspended solids | ____.__ mg/l | ____.__ mg/l |
| 15. COD | ____.__ mg/l | ____.__ mg/l |

16. Well developed by: Name (first, last) and Firm
First Name: Jared Last Name: LaRue
Firm: Braun Intertec

17. Additional comments on development:
- Development first attempted on 08-14-2019, Unsuccessful due to ~3-4' of Sediment in Well.
- Well flushed out with compressed air on 08-22-2019, Sediment removed from inside well.

Name and Address of Facility Contact/Owner/Responsible Party
First Name: _____ Last Name: _____
Facility/Firm: Johnson Controls, Inc.
Street: 5757 N Green Bay Ave.
City/State/Zip: Milwaukee, WI 53201

I hereby certify that the above information is true and correct to the best of my knowledge.
Signature: [signature]
Print Name: Jared LaRue
Firm: Braun Intertec

NOTE: See instructions for more information including a list of county codes and well type codes.

State of Wisconsin
Department of Natural Resources

# MONITORING WELL DEVELOPMENT

Form 4400-113B Rev. 7-98

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☐ Other ☐ _____

| Facility/Project Name | County Name | Well Name |
|---|---|---|
| JCI/Tyco FTC (PFAS) | Marinette | PZ-31-17' |

| Facility License, Permit or Monitoring Number | County Code | Wis. Unique Well Number | DNR Well ID Number |
|---|---|---|---|
| BRRTS: 02-38-580694 | 38 | _____ | ___ |

1. Can this well be purged dry? ☐ Yes ☒ No

2. Well development method
   - surged with bailer and bailed ☐ 41
   - surged with bailer and pumped ☐ 61
   - surged with block and bailed ☐ 42
   - surged with block and pumped ☒ 62
   - surged with block, bailed and pumped ☐ 70
   - compressed air ☐ 20
   - bailed only ☐ 10
   - pumped only ☐ 51
   - pumped slowly ☐ 50
   - Other _____ ☐ ___

3. Time spent developing well 43 min.

4. Depth of well (from top of well casisng) 17.3 ft.

5. Inside diameter of well 2.00 in.

6. Volume of water in filter pack and well casing 2.3 gal.

7. Volume of water removed from well 55.0 gal.

8. Volume of water added (if any) ____ gal.

9. Source of water added N/A

10. Analysis performed on water added? ☐ Yes ☒ No
(If yes, attach results)

| | Before Development | After Development |
|---|---|---|
| 11. Depth to Water (from top of well casing) | a. 4.35 ft. | 4.65 ft. |
| Date | b. 08/14/2019 (m m d d y y y y) | 08/14/2019 (m m d d y y y y) |
| Time | c. 10:50 ☒ a.m. ☐ p.m. | 11:33 ☒ a.m. ☐ p.m. |
| 12. Sediment in well bottom | 0.0 inches | 0.0 inches |
| 13. Water clarity | Clear ☐ 10 Turbid ☒ 15 (Describe) Brown | Clear ☒ 20 Turbid ☐ 25 (Describe) Clear |

Fill in if drilling fluids were used and well is at solid waste facility:

| | | |
|---|---|---|
| 14. Total suspended solids | ____.__ mg/l | ____.__ mg/l |
| 15. COD | ____.__ mg/l | ____.__ mg/l |

16. Well developed by: Name (first, last) and Firm
First Name: Jared Last Name: LaRue
Firm: Braun Intertec

17. Additional comments on development:

Name and Address of Facility Contact /Owner/Responsible Party
First Name: _____ Last Name: _____
Facility/Firm: Johnson Controls, Inc.
Street: 5757 N Green Bay Ave.
City/State/Zip: Milwaukee, WI 53201

I hereby certify that the above information is true and correct to the best of my knowledge.
Signature: [signature]
Print Name: Jared LaRue
Firm: Braun Intertec

NOTE: See instructions for more information including a list of county codes and well type codes.

State of Wisconsin
Department of Natural Resources

# MONITORING WELL DEVELOPMENT

Form 4400-113B Rev. 7-98

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☐ Other ☐ _____

| Facility/Project Name | County Name | Well Name |
|---|---|---|
| JCI/Tyco FTC (PFAS) | Marinette | PZ-31-40' |

| Facility License, Permit or Monitoring Number | County Code | Wis. Unique Well Number | DNR Well ID Number |
|---|---|---|---|
| BRRTS: 02-38-580694 | 38 | _____ | ___ |

1. Can this well be purged dry? ☐ Yes ☒ No

2. Well development method
   - surged with bailer and bailed ☐ 41
   - surged with bailer and pumped ☐ 61
   - surged with block and bailed ☐ 42
   - surged with block and pumped ☒ 62
   - surged with block, bailed and pumped ☐ 70
   - compressed air ☐ 20
   - bailed only ☐ 10
   - pumped only ☐ 51
   - pumped slowly ☐ 50
   - Other _____ ☐

3. Time spent developing well 35 min.

4. Depth of well (from top of well casisng) 40.6 ft.

5. Inside diameter of well 2.00 in.

6. Volume of water in filter pack and well casing 6.4 gal.

7. Volume of water removed from well 63.0 gal.

8. Volume of water added (if any) ____ gal.

9. Source of water added N/A

10. Analysis performed on water added? ☐ Yes ☒ No
(If yes, attach results)

| | Before Development | After Development |
|---|---|---|
| 11. Depth to Water (from top of well casing) | a. 4.50 ft. | 5.20 ft. |
| Date | b. 08/14/2019 (mm dd yyyy) | 08/14/2019 (mm dd yyyy) |
| Time | c. 11:40 ☒ a.m. ☐ p.m. | 12:15 ☐ a.m. ☒ p.m. |
| 12. Sediment in well bottom | 0.0 inches | 0.0 inches |
| 13. Water clarity | Clear ☐ 10 / Turbid ☒ 15 (Describe) Brown | Clear ☒ 20 / Turbid ☐ 25 (Describe) Clear |

Fill in if drilling fluids were used and well is at solid waste facility:

| | | |
|---|---|---|
| 14. Total suspended solids | ____.__ mg/l | ____.__ mg/l |
| 15. COD | ____.__ mg/l | ____.__ mg/l |

16. Well developed by: Name (first, last) and Firm
First Name: Jared Last Name: LaRue
Firm: Braun Intertec

17. Additional comments on development:

Name and Address of Facility Contact /Owner/Responsible Party
First Name: _____ Last Name: _____
Facility/Firm: Johnson Controls, Inc.
Street: 5757 N Green Bay Ave.
City/State/Zip: Milwaukee, WI 53201

I hereby certify that the above information is true and correct to the best of my knowledge.
Signature: [signature]
Print Name: Jared LaRue
Firm: Braun Intertec

NOTE: See instructions for more information including a list of county codes and well type codes.

State of Wisconsin
Department of Natural Resources

# MONITORING WELL DEVELOPMENT

Form 4400-113B Rev. 7-98

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☐ Other ☐ _____

| Facility/Project Name | County Name | Well Name |
|---|---|---|
| JCI/Tyco FTC (PFAS) | Marinette | PZ-31-53' |

| Facility License, Permit or Monitoring Number | County Code | Wis. Unique Well Number | DNR Well ID Number |
|---|---|---|---|
| BRRTS: 02-38-580694 | 38 | _____ | ___ |

1. Can this well be purged dry? ☒ Yes ☐ No

2. Well development method

| | | |
|---|---|---|
| surged with bailer and bailed | ☐ | 41 |
| surged with bailer and pumped | ☐ | 61 |
| surged with block and bailed | ☐ | 42 |
| surged with block and pumped | ☒ | 62 |
| surged with block, bailed and pumped | ☐ | 70 |
| compressed air | ☒ | 20 |
| bailed only | ☐ | 10 |
| pumped only | ☐ | 51 |
| pumped slowly | ☐ | 50 |
| Other _____ | ☐ | __ |

3. Time spent developing well 50 min.

4. Depth of well (from top of well casisng) 52.5 ft.

5. Inside diameter of well 2.00 in.

6. Volume of water in filter pack and well casing 8.4 gal.

7. Volume of water removed from well 20.0 gal.

8. Volume of water added (if any) ___.___ gal.

9. Source of water added N/A

10. Analysis performed on water added? ☐ Yes ☒ No
(If yes, attach results)

| | Before Development | After Development |
|---|---|---|
| 11. Depth to Water (from top of well casing) | a. 4.52 ft. | 50.87 ft. |
| Date | b. 08/28/2019 (m m d d y y y y) | 08/28/2019 (m m d d y y y y) |
| Time | c. 14:30 ☐ a.m. ☒ p.m. | 15:20 ☐ a.m. ☒ p.m. |
| 12. Sediment in well bottom | 0.0 inches | 0.0 inches |
| 13. Water clarity | Clear ☐ 10 Turbid ☒ 15 (Describe) Brown | Clear ☒ 20 Turbid ☐ 25 (Describe) Foggy Clear |

Fill in if drilling fluids were used and well is at solid waste facility:

| | | |
|---|---|---|
| 14. Total suspended solids | ____.__ mg/l | ____.__ mg/l |
| 15. COD | ____.__ mg/l | ____.__ mg/l |

16. Well developed by: Name (first, last) and Firm
First Name: Jared Last Name: LaRue
Firm: Braun Intertec

17. Additional comments on development:
- Development first attempted on 08-14-2019, Unsuccessful due to ~3-4' of Sediment in well.
- Well flushed out with compressed air on 08-22-2019, Sediment removed from inside well.

Name and Address of Facility Contact/Owner/Responsible Party
First Name: _____ Last Name: _____
Facility/Firm: Johnson Controls, Inc.
Street: 5757 N Green Bay Ave.
City/State/Zip: Milwaukee, WI 53201

I hereby certify that the above information is true and correct to the best of my knowledge.
Signature: [signature]
Print Name: Jared LaRue
Firm: Braun Intertec

NOTE: See instructions for more information including a list of county codes and well type codes.

State of Wisconsin
Department of Natural Resources

# MONITORING WELL DEVELOPMENT

Form 4400-113B Rev. 7-98

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☐ Other ☐ _____

| Facility/Project Name | County Name | Well Name |
|---|---|---|
| JCI/Tyco FTC (PFAS) | Marinette | PZ-32-18' |

| Facility License, Permit or Monitoring Number | County Code | Wis. Unique Well Number | DNR Well ID Number |
|---|---|---|---|
| BRRTS: 02-38-580694 | 38 | _____ | ___ |

1. Can this well be purged dry? ☐ Yes ☒ No

2. Well development method
   - surged with bailer and bailed ☐ 41
   - surged with bailer and pumped ☐ 61
   - surged with block and bailed ☐ 42
   - surged with block and pumped ☒ 62
   - surged with block, bailed and pumped ☐ 70
   - compressed air ☐ 20
   - bailed only ☐ 10
   - pumped only ☐ 51
   - pumped slowly ☐ 50
   - Other _____ ☐ __

3. Time spent developing well __41 min.

4. Depth of well (from top of well casisng) __18.2 ft.

5. Inside diameter of well __2.0 in.

6. Volume of water in filter pack and well casing __28 gal.

7. Volume of water removed from well __54.0 gal.

8. Volume of water added (if any) ____.__ gal.

9. Source of water added N/A

10. Analysis performed on water added? ☐ Yes ☒ No
(If yes, attach results)

| | Before Development | After Development |
|---|---|---|
| 11. Depth to Water (from top of well casing) | a. __2.40 ft. | __2.55 ft. |
| Date | b. 08/14/2019 (m m d d y y y y) | 08/14/2019 (m m d d y y y y) |
| Time | c. 13:19 ☐ a.m. ☒ p.m. | 14:00 ☐ a.m. ☒ p.m. |
| 12. Sediment in well bottom | __0.0 inches | __0.0 inches |
| 13. Water clarity | Clear ☐ 10 Turbid ☒ 15 (Describe) Brown | Clear ☒ 20 Turbid ☐ 25 (Describe) Clear |

Fill in if drilling fluids were used and well is at solid waste facility:

| | | |
|---|---|---|
| 14. Total suspended solids | ____.__ mg/l | ____.__ mg/l |
| 15. COD | ____.__ mg/l | ____.__ mg/l |

16. Well developed by: Name (first, last) and Firm
First Name: Jared Last Name: LaRue
Firm: Braun Intertec

17. Additional comments on development:

Name and Address of Facility Contact /Owner/Responsible Party
First Name: _____ Last Name: _____
Facility/Firm: Johnson Controls, Inc.
Street: 5757 N Green Bay Ave.
City/State/Zip: Milwaukee, WI 53201

I hereby certify that the above information is true and correct to the best of my knowledge.
Signature: [signature]
Print Name: Jared LaRue
Firm: Braun Intertec

NOTE: See instructions for more information including a list of county codes and well type codes.

State of Wisconsin
Department of Natural Resources

# MONITORING WELL DEVELOPMENT

Form 4400-113B Rev. 7-98

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☐ Other ☐ _____

| Facility/Project Name | County Name | Well Name |
|---|---|---|
| JCI/Tyco FTC (PFAS) | Marinette | PZ-32-72' |

| Facility License, Permit or Monitoring Number | County Code | Wis. Unique Well Number | DNR Well ID Number |
|---|---|---|---|
| BRRTS: 02-38-580694 | 38 | _____ | ___ |

1. Can this well be purged dry? ☐ Yes ☒ No

2. Well development method
   - surged with bailer and bailed ☐ 41
   - surged with bailer and pumped ☐ 61
   - surged with block and bailed ☐ 42
   - surged with block and pumped ☒ 62
   - surged with block, bailed and pumped ☐ 70
   - compressed air ☐ 20
   - bailed only ☐ 10
   - pumped only ☐ 51
   - pumped slowly ☐ 50
   - Other _____ ☐

3. Time spent developing well 90 min.

4. Depth of well (from top of well casisng) 71.4 ft.

5. Inside diameter of well 2.00 in.

6. Volume of water in filter pack and well casing 11.9 gal.

7. Volume of water removed from well 113.0 gal.

8. Volume of water added (if any) ____.__ gal.

9. Source of water added N/A

10. Analysis performed on water added? ☐ Yes ☒ No
(If yes, attach results)

| | Before Development | After Development |
|---|---|---|
| 11. Depth to Water (from top of well casing) | a. 2.28 ft. | 38.50 ft. |
| Date | b. 08/14/2019 (m m d d y y y y) | 08/14/2019 (m m d d y y y y) |
| Time | c. 14:16 ☐ a.m. ☒ p.m. | 15:46 ☐ a.m. ☒ p.m. |
| 12. Sediment in well bottom | 11.6 inches | 0.0 inches |
| 13. Water clarity | Clear ☐ 10 Turbid ☒ 15 (Describe) Brown | Clear ☒ 20 Turbid ☐ 25 (Describe) Clear/foggy/Clear |

Fill in if drilling fluids were used and well is at solid waste facility:

| | | |
|---|---|---|
| 14. Total suspended solids | ____.__ mg/l | ____.__ mg/l |
| 15. COD | ____.__ mg/l | ____.__ mg/l |

16. Well developed by: Name (first, last) and Firm
First Name: Jared Last Name: LaRue
Firm: Braun Intertec

17. Additional comments on development:

Name and Address of Facility Contact /Owner/Responsible Party
First Name: _____ Last Name: _____
Facility/Firm: Johnson Controls, Inc.
Street: 5757 N Green Bay Ave.
City/State/Zip: Milwaukee, WI 53201

I hereby certify that the above information is true and correct to the best of my knowledge.
Signature: [signature]
Print Name: Jared LaRue
Firm: Braun Intertec

NOTE: See instructions for more information including a list of county codes and well type codes.

State of Wisconsin
Department of Natural Resources

# MONITORING WELL DEVELOPMENT

Form 4400-113B Rev. 7-98

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☐ Other ☐ _____

| Facility/Project Name | County Name | Well Name |
|---|---|---|
| JCI/Tyco FTC (PFAS) | Marinette | PZ-33-12' |

| Facility License, Permit or Monitoring Number | County Code | Wis. Unique Well Number | DNR Well ID Number |
|---|---|---|---|
| BRRTS: 02-38-580694 | 38 | _____ | ___ |

1. Can this well be purged dry? ☐ Yes ☒ No

2. Well development method
   - surged with bailer and bailed ☐ 41
   - surged with bailer and pumped ☐ 61
   - surged with block and bailed ☐ 42
   - surged with block and pumped ☒ 62
   - surged with block, bailed and pumped ☐ 70
   - compressed air ☐ 20
   - bailed only ☐ 10
   - pumped only ☐ 51
   - pumped slowly ☐ 50
   - Other _____ ☐

3. Time spent developing well 37 min.

4. Depth of well (from top of well casisng) 10.8 ft.

5. Inside diameter of well 2.00 in.

6. Volume of water in filter pack and well casing 1.5 gal.

7. Volume of water removed from well 44.5 gal.

8. Volume of water added (if any) ___.__ gal.

9. Source of water added N/A

10. Analysis performed on water added? ☐ Yes ☒ No
(If yes, attach results)

| | Before Development | After Development |
|---|---|---|
| 11. Depth to Water (from top of well casing) | a. 2.42 ft. | 2.80 ft. |
| Date | b. 08/14/2019 (mm dd yyyy) | 08/14/2019 (mm dd yyyy) |
| Time | c. 16:32 ☐ a.m. ☒ p.m. | 17:09 ☐ a.m. ☒ p.m. |
| 12. Sediment in well bottom | 0.0 inches | 0.0 inches |
| 13. Water clarity | Clear ☐ 10 / Turbid ☒ 15 | Clear ☒ 20 / Turbid ☐ 25 |
| (Describe) | Brown | Clear |

Fill in if drilling fluids were used and well is at solid waste facility:

| | | |
|---|---|---|
| 14. Total suspended solids | ____.__ mg/l | ____.__ mg/l |
| 15. COD | ____.__ mg/l | ____.__ mg/l |

16. Well developed by: Name (first, last) and Firm
First Name: Jared Last Name: LaRue
Firm: Braun Intertec

17. Additional comments on development:

Name and Address of Facility Contact /Owner/Responsible Party
First Name: _____ Last Name: _____
Facility/Firm: Johnson Controls, Inc.
Street: 5757 N Green Bay Ave.
City/State/Zip: Milwaukee, WI 53201

I hereby certify that the above information is true and correct to the best of my knowledge.
Signature: [signature]
Print Name: Jared LaRue
Firm: Braun Intertec

NOTE: See instructions for more information including a list of county codes and well type codes.

State of Wisconsin
Department of Natural Resources

# MONITORING WELL DEVELOPMENT

Form 4400-113B Rev. 7-98

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☐ Other ☐ _____

| Facility/Project Name | County Name | Well Name |
|---|---|---|
| JCI/Tyco FTC (PFAS) | Marinette | PZ-33-33' |

| Facility License, Permit or Monitoring Number | County Code | Wis. Unique Well Number | DNR Well ID Number |
|---|---|---|---|
| BRRTS: 02-38-580694 | 38 | _____ | ___ |

1. Can this well be purged dry? ☐ Yes ☒ No

2. Well development method
   - surged with bailer and bailed ☐ 41
   - surged with bailer and pumped ☐ 61
   - surged with block and bailed ☐ 42
   - surged with block and pumped ☒ 62
   - surged with block, bailed and pumped ☐ 70
   - compressed air ☐ 20
   - bailed only ☐ 10
   - pumped only ☐ 51
   - pumped slowly ☐ 50
   - Other _____ ☐ __

3. Time spent developing well __26 min.

4. Depth of well (from top of well casisng) __33.0 ft.

5. Inside diameter of well __2.00 in.

6. Volume of water in filter pack and well casing __54 gal.

7. Volume of water removed from well __39.0 gal.

8. Volume of water added (if any) ____.__ gal.

9. Source of water added N/A

10. Analysis performed on water added? ☐ Yes ☒ No
(If yes, attach results)

| | Before Development | After Development |
|---|---|---|
| 11. Depth to Water (from top of well casing) | a. __2.37 ft. | __2.40 ft. |
| Date | b. 08/14/2019 (mm dd yyyy) | 08/14/2019 (mm dd yyyy) |
| Time | c. 17:19 ☐ a.m. ☒ p.m. | 17:45 ☐ a.m. ☒ p.m. |
| 12. Sediment in well bottom | __0.0 inches | __0.0 inches |
| 13. Water clarity | Clear ☐ 10 Turbid ☒ 15 (Describe) Gray | Clear ☒ 20 Turbid ☐ 25 (Describe) Clear |

Fill in if drilling fluids were used and well is at solid waste facility:

| | | |
|---|---|---|
| 14. Total suspended solids | ____.__ mg/l | ____.__ mg/l |
| 15. COD | ____.__ mg/l | ____.__ mg/l |

16. Well developed by: Name (first, last) and Firm
First Name: Jared Last Name: LaRue
Firm: Braun Intertec

17. Additional comments on development:

Name and Address of Facility Contact /Owner/Responsible Party
First Name: _____ Last Name: _____
Facility/Firm: Johnson Controls, Inc.
Street: 5757 N Green Bay Ave.
City/State/Zip: Milwaukee, WI 53201

I hereby certify that the above information is true and correct to the best of my knowledge.
Signature: [signature]
Print Name: Jared LaRue
Firm: Braun Intertec

NOTE: See instructions for more information including a list of county codes and well type codes.

State of Wisconsin
Department of Natural Resources

# MONITORING WELL DEVELOPMENT

Form 4400-113B Rev. 7-98

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☐ Other ☐ _____

| Facility/Project Name | County Name | Well Name |
|---|---|---|
| JCI/Tyco FTC (PFAS) | Marinette | PZ-33-67' |

| Facility License, Permit or Monitoring Number | County Code | Wis. Unique Well Number | DNR Well ID Number |
|---|---|---|---|
| BRRTS: 02-38-580694 | 38 | _____ | ___ |

1. Can this well be purged dry? ☒ Yes ☐ No

2. Well development method
   - surged with bailer and bailed ☐ 41
   - surged with bailer and pumped ☐ 61
   - surged with block and bailed ☐ 42
   - surged with block and pumped ☒ 62
   - surged with block, bailed and pumped ☐ 70
   - compressed air ☐ 20
   - bailed only ☐ 10
   - pumped only ☐ 51
   - pumped slowly ☐ 50
   - Other _____ ☐

3. Time spent developing well 75 min.

4. Depth of well (from top of well casisng) 66.6 ft.

5. Inside diameter of well 2.0 in.

6. Volume of water in filter pack and well casing 11.3 gal.

7. Volume of water removed from well 93.0 gal.

8. Volume of water added (if any) ____ gal.

9. Source of water added N/A

10. Analysis performed on water added? (If yes, attach results) ☐ Yes ☒ No

| | Before Development | After Development |
|---|---|---|
| 11. Depth to Water (from top of well casing) | a. 2.62 ft. | 60.90 ft. |
| Date | b. 08/14/2019 (mm dd yyyy) | 08/14/2019 (mm dd yyyy) |
| Time | c. 18:00 ☐ a.m. ☒ p.m. | 19:15 ☐ a.m. ☒ p.m. |
| 12. Sediment in well bottom | 0.0 inches | 0.0 inches |
| 13. Water clarity | Clear ☐ 10 / Turbid ☒ 15 | Clear ☒ 20 / Turbid ☐ 25 |
| (Describe) | Light Brown/Gray | Clear/Foggy Clear |

Fill in if drilling fluids were used and well is at solid waste facility:

| | | |
|---|---|---|
| 14. Total suspended solids | ____.__ mg/l | ____.__ mg/l |
| 15. COD | ____.__ mg/l | ____.__ mg/l |

16. Well developed by: Name (first, last) and Firm
First Name: Jared Last Name: LaRue
Firm: Braun Intertec

17. Additional comments on development:

Name and Address of Facility Contact /Owner/Responsible Party
First Name: _____ Last Name: _____
Facility/Firm: Johnson Controls, Inc.
Street: 5757 N Green Bay Ave.
City/State/Zip: Milwaukee, WI 53201

I hereby certify that the above information is true and correct to the best of my knowledge.
Signature: [signature]
Print Name: Jared LaRue
Firm: Braun Intertec

NOTE: See instructions for more information including a list of county codes and well type codes.

State of Wisconsin
Department of Natural Resources

# MONITORING WELL DEVELOPMENT

Form 4400-113B Rev. 7-98

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☐ Other ☐ _____

| Facility/Project Name | County Name | Well Name |
|---|---|---|
| JCI/Tyco FTC (PFAS) | Marinette | PZ-34-17' |

| Facility License, Permit or Monitoring Number | County Code | Wis. Unique Well Number | DNR Well ID Number |
|---|---|---|---|
| BRRTS: 02-38-580694 | 38 | _____ | ___ |

1. Can this well be purged dry? ☐ Yes ☒ No

2. Well development method
   - surged with bailer and bailed ☐ 41
   - surged with bailer and pumped ☐ 61
   - surged with block and bailed ☐ 42
   - surged with block and pumped ☒ 62
   - surged with block, bailed and pumped ☐ 70
   - compressed air ☐ 20
   - bailed only ☐ 10
   - pumped only ☐ 51
   - pumped slowly ☐ 50
   - Other _____ ☐

3. Time spent developing well 35 min.

4. Depth of well (from top of well casisng) 18.0 ft.

5. Inside diameter of well 2.0 in.

6. Volume of water in filter pack and well casing 2.0 gal.

7. Volume of water removed from well 35.0 gal.

8. Volume of water added (if any) ___ gal.

9. Source of water added N/A

10. Analysis performed on water added? ☐ Yes ☒ No
(If yes, attach results)

| | Before Development | After Development |
|---|---|---|
| 11. Depth to Water (from top of well casing) | a. 6.42 ft. | 7.00 ft. |
| Date | b. 08/15/2019 (mm dd yyyy) | 08/15/2019 (mm dd yyyy) |
| Time | c. 09:05 ☒ a.m. ☐ p.m. | 09:40 ☒ a.m. ☐ p.m. |
| 12. Sediment in well bottom | 0.0 inches | 0.0 inches |
| 13. Water clarity | Clear ☐ 10 / Turbid ☒ 15 | Clear ☒ 20 / Turbid ☐ 25 |
| (Describe) | Light Brown | Clear |

Fill in if drilling fluids were used and well is at solid waste facility:

| | | |
|---|---|---|
| 14. Total suspended solids | ____.__ mg/l | ____.__ mg/l |
| 15. COD | ____.__ mg/l | ____.__ mg/l |

16. Well developed by: Name (first, last) and Firm
First Name: Jared Last Name: LaRue
Firm: Braun Intertec

17. Additional comments on development:

Name and Address of Facility Contact /Owner/Responsible Party
First Name: _____ Last Name: _____
Facility/Firm: Johnson Controls, Inc.
Street: 5757 N Green Bay Ave.
City/State/Zip: Milwaukee, WI 53201

I hereby certify that the above information is true and correct to the best of my knowledge.
Signature: [signature]
Print Name: Jared LaRue
Firm: Braun Intertec

NOTE: See instructions for more information including a list of county codes and well type codes.

State of Wisconsin
Department of Natural Resources

# MONITORING WELL DEVELOPMENT

Form 4400-113B Rev. 7-98

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☐ Other ☐ _____

| Facility/Project Name | County Name | Well Name |
|---|---|---|
| JCI/Tyco FTC (PFAS) | Marinette | PZ-34-84' |

| Facility License, Permit or Monitoring Number | County Code | Wis. Unique Well Number | DNR Well ID Number |
|---|---|---|---|
| BRRTS: 02-38-580694 | 38 | _____ | ___ |

1. Can this well be purged dry? ☐ Yes ☒ No

2. Well development method
   - surged with bailer and bailed ☐ 41
   - surged with bailer and pumped ☐ 61
   - surged with block and bailed ☐ 42
   - surged with block and pumped ☒ 62
   - surged with block, bailed and pumped ☐ 70
   - compressed air ☐ 20
   - bailed only ☐ 10
   - pumped only ☐ 51
   - pumped slowly ☐ 50
   - Other _____ ☐

3. Time spent developing well 90 min.

4. Depth of well (from top of well casisng) 84.7 ft.

5. Inside diameter of well 2.0 in.

6. Volume of water in filter pack and well casing 14.5 gal.

7. Volume of water removed from well 135.0 gal.

8. Volume of water added (if any) ____ gal.

9. Source of water added N/A

10. Analysis performed on water added? ☐ Yes ☒ No
(If yes, attach results)

| | Before Development | After Development |
|---|---|---|
| 11. Depth to Water (from top of well casing) | a. 84.70 ft. | 84.70 ft. |
| Date | b. 08/15/2019 (m m d d y y y y) | 08/15/2019 (m m d d y y y y) |
| Time | c. 07:25 ☒ a.m. ☐ p.m. | 08:55 ☒ a.m. ☐ p.m. |
| 12. Sediment in well bottom | 0.0 inches | 0.0 inches |
| 13. Water clarity | Clear ☐ 10 / Turbid ☒ 15 | Clear ☒ 20 / Turbid ☐ 25 |
| (Describe) | light Brown | Clear |

Fill in if drilling fluids were used and well is at solid waste facility:

| | | |
|---|---|---|
| 14. Total suspended solids | ____.__ mg/l | ____.__ mg/l |
| 15. COD | ____.__ mg/l | ____.__ mg/l |

16. Well developed by: Name (first, last) and Firm
First Name: Jared Last Name: LaRue
Firm: Braun Intertec

17. Additional comments on development:

Name and Address of Facility Contact /Owner/Responsible Party
First Name: _____ Last Name: _____
Facility/Firm: Johnson Controls, Inc.
Street: 5757 N Green Bay Ave.
City/State/Zip: Milwaukee, WI 53201

I hereby certify that the above information is true and correct to the best of my knowledge.
Signature: [signature]
Print Name: Jared LaRue
Firm: Braun Intertec

NOTE: See instructions for more information including a list of county codes and well type codes.

State of Wisconsin
Department of Natural Resources

# MONITORING WELL DEVELOPMENT

Form 4400-113B Rev. 7-98

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☐ Other ☐ _____

| Facility/Project Name | County Name | Well Name |
|---|---|---|
| JCI/Tyco FTC (PFAS) | Marinette | PZ-35-17' |

| Facility License, Permit or Monitoring Number | County Code | Wis. Unique Well Number | DNR Well ID Number |
|---|---|---|---|
| BRRTS: 02-38-580694 | 38 | _____ | ___ |

1. Can this well be purged dry? ☐ Yes ☒ No

2. Well development method

| | | |
|---|---|---|
| surged with bailer and bailed | ☐ | 41 |
| surged with bailer and pumped | ☐ | 61 |
| surged with block and bailed | ☐ | 42 |
| surged with block and pumped | ☒ | 62 |
| surged with block, bailed and pumped | ☐ | 70 |
| compressed air | ☐ | 20 |
| bailed only | ☐ | 10 |
| pumped only | ☐ | 51 |
| pumped slowly | ☐ | 50 |
| Other _____ | ☐ | |

3. Time spent developing well 35 min.

4. Depth of well (from top of well casisng) 16.8 ft.

5. Inside diameter of well 2.05 in.

6. Volume of water in filter pack and well casing 2.5 gal.

7. Volume of water removed from well 31.0 gal.

8. Volume of water added (if any) ____.__ gal.

9. Source of water added N/A

10. Analysis performed on water added? ☐ Yes ☒ No
(If yes, attach results)

| | Before Development | After Development |
|---|---|---|
| 11. Depth to Water (from top of well casing) | a. 2.39 ft. | 2.64 ft. |
| Date | b. 10/23/2019 (m m d d y y y y) | 10/23/2019 (m m d d y y y y) |
| Time | c. 11:45 ☒ a.m. ☐ p.m. | 12:20 ☐ a.m. ☒ p.m. |
| 12. Sediment in well bottom | 0.0 inches | 0.0 inches |
| 13. Water clarity | Clear ☐ 10 Turbid ☒ 15 (Describe) Light Brown | Clear ☒ 20 Turbid ☐ 25 (Describe) Clear/foggy Clear |

Fill in if drilling fluids were used and well is at solid waste facility:

| | | |
|---|---|---|
| 14. Total suspended solids | ____.__ mg/l | ____.__ mg/l |
| 15. COD | ____.__ mg/l | ____.__ mg/l |

16. Well developed by: Name (first, last) and Firm
First Name: Jared Last Name: LaRue
Firm: Braun Intertec

17. Additional comments on development:

Name and Address of Facility Contact /Owner/Responsible Party
First Name: _____ Last Name: _____
Facility/Firm: Johnson Controls, Inc.
Street: 5757 N Green Bay Ave.
City/State/Zip: Milwaukee, WI 53201

I hereby certify that the above information is true and correct to the best of my knowledge.
Signature: [signature]
Print Name: Jared LaRue
Firm: Braun Intertec

NOTE: See instructions for more information including a list of county codes and well type codes.

State of Wisconsin
Department of Natural Resources

# MONITORING WELL DEVELOPMENT

Form 4400-113B Rev. 7-98

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☐ Other ☐ _____

| Facility/Project Name | County Name | Well Name |
|---|---|---|
| JCI/Tyco FTC (PFAS) | Marinette | PZ-35-37' |

| Facility License, Permit or Monitoring Number | County Code | Wis. Unique Well Number | DNR Well ID Number |
|---|---|---|---|
| BRRTS: 02-38-580694 | 38 | _____ | ___ |

1. Can this well be purged dry? ☐ Yes ☒ No

2. Well development method
   - surged with bailer and bailed ☐ 41
   - surged with bailer and pumped ☐ 61
   - surged with block and bailed ☐ 42
   - surged with block and pumped ☒ 62
   - surged with block, bailed and pumped ☐ 70
   - compressed air ☐ 20
   - bailed only ☐ 10
   - pumped only ☐ 51
   - pumped slowly ☐ 50
   - Other _____ ☐ ___

3. Time spent developing well 40 min.

4. Depth of well (from top of well casisng) 36.4 ft.

5. Inside diameter of well 2.00 in.

6. Volume of water in filter pack and well casing 5.9 gal.

7. Volume of water removed from well 60.0 gal.

8. Volume of water added (if any) ____.__ gal.

9. Source of water added N/A

10. Analysis performed on water added? ☐ Yes ☒ No
(If yes, attach results)

| | Before Development | After Development |
|---|---|---|
| 11. Depth to Water (from top of well casing) | a. 2.63 ft. | 2.75 ft. |
| Date | b. 10/23/2019 (mm dd yyyy) | 10/23/2019 (mm dd yyyy) |
| Time | c. 12:30 ☐ a.m. ☒ p.m. | 13:10 ☐ a.m. ☒ p.m. |
| 12. Sediment in well bottom | 0.0 inches | 0.0 inches |
| 13. Water clarity | Clear ☐ 10 Turbid ☒ 15 (Describe) Light Brown | Clear ☒ 20 Turbid ☐ 25 (Describe) Clear/Foggy Clear |

Fill in if drilling fluids were used and well is at solid waste facility:

| | | |
|---|---|---|
| 14. Total suspended solids | ____.__ mg/l | ____.__ mg/l |
| 15. COD | ____.__ mg/l | ____.__ mg/l |

16. Well developed by: Name (first, last) and Firm
First Name: Jared Last Name: LaRue
Firm: Braun Intertec

17. Additional comments on development:

Name and Address of Facility Contact /Owner/Responsible Party
First Name: _____ Last Name: _____
Facility/Firm: Johnson Controls, Inc.
Street: 5757 N Green Bay Ave.
City/State/Zip: Milwaukee, WI 53201

I hereby certify that the above information is true and correct to the best of my knowledge.
Signature: [signature]
Print Name: Jared LaRue
Firm: Braun Intertec

NOTE: See instructions for more information including a list of county codes and well type codes.

State of Wisconsin
Department of Natural Resources

# MONITORING WELL DEVELOPMENT

Form 4400-113B Rev. 7-98

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☐ Other ☐ _____

| Facility/Project Name | County Name | Well Name |
|---|---|---|
| JCI/Tyco FTC (PFAS) | Marinette | PZ-35-48' |

| Facility License, Permit or Monitoring Number | County Code | Wis. Unique Well Number | DNR Well ID Number |
|---|---|---|---|
| BRRTS: 02-38-580694 | 38 | _____ | ___ |

1. Can this well be purged dry? ☐ Yes ☒ No

2. Well development method
   - surged with bailer and bailed ☐ 41
   - surged with bailer and pumped ☐ 61
   - surged with block and bailed ☐ 42
   - surged with block and pumped ☒ 62
   - surged with block, bailed and pumped ☐ 70
   - compressed air ☐ 20
   - bailed only ☐ 10
   - pumped only ☐ 51
   - pumped slowly ☐ 50
   - Other _____ ☐ __

3. Time spent developing well 45 min.

4. Depth of well (from top of well casisng) 47.2 ft.

5. Inside diameter of well 2.00 in.

6. Volume of water in filter pack and well casing 7.9 gal.

7. Volume of water removed from well 75.0 gal.

8. Volume of water added (if any) ___.___ gal.

9. Source of water added N/A

10. Analysis performed on water added? ☐ Yes ☒ No
(If yes, attach results)

| | Before Development | After Development |
|---|---|---|
| 11. Depth to Water (from top of well casing) | a. 2.73 ft. | 2.90 ft. |
| Date | b. 10/23/2019 (m m d d y y y y) | 10/23/2019 (m m d d y y y y) |
| Time | c. 13:20 ☐ a.m. ☒ p.m. | 14:05 ☐ a.m. ☒ p.m. |
| 12. Sediment in well bottom | 0.0 inches | 0.0 inches |
| 13. Water clarity | Clear ☐ 10 / Turbid ☒ 15 | Clear ☒ 20 / Turbid ☐ 25 |
| (Describe) | Light Brown | Clear/Foggy Clear |
| 14. Total suspended solids | ____.___ mg/l | ____.___ mg/l |
| 15. COD | ____.___ mg/l | ____.___ mg/l |

Fill in if drilling fluids were used and well is at solid waste facility:

16. Well developed by: Name (first, last) and Firm
First Name: Jared Last Name: LaRue
Firm: Braun Intertec

17. Additional comments on development:

Name and Address of Facility Contact /Owner/Responsible Party
First Name: _____ Last Name: _____
Facility/Firm: Johnson Controls, Inc.
Street: 5757 N Green Bay Ave.
City/State/Zip: Milwaukee, WI 53201

I hereby certify that the above information is true and correct to the best of my knowledge.
Signature: [signature]
Print Name: Jared LaRue
Firm: Braun Intertec

NOTE: See instructions for more information including a list of county codes and well type codes.

State of Wisconsin
Department of Natural Resources

# MONITORING WELL DEVELOPMENT

Form 4400-113B Rev. 7-98

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☐ Other ☐ _____

| Facility/Project Name | County Name | Well Name |
|---|---|---|
| JCI/Tyco FTC (PFAS) | Marinette | PZ-36-19' |

| Facility License, Permit or Monitoring Number | County Code | Wis. Unique Well Number | DNR Well ID Number |
|---|---|---|---|
| BRRTS: 02-38-580694 | 38 | _____ | ___ |

1. Can this well be purged dry? ☐ Yes ☒ No

2. Well development method
   - surged with bailer and bailed ☐ 41
   - surged with bailer and pumped ☐ 61
   - surged with block and bailed ☐ 42
   - surged with block and pumped ☒ 62
   - surged with block, bailed and pumped ☐ 70
   - compressed air ☐ 20
   - bailed only ☐ 10
   - pumped only ☐ 51
   - pumped slowly ☐ 50
   - Other _____ ☐ __

3. Time spent developing well 30 min.

4. Depth of well (from top of well casisng) 19.2 ft.

5. Inside diameter of well 2.0 in.

6. Volume of water in filter pack and well casing 5.5 gal.

7. Volume of water removed from well 30.0 gal.

8. Volume of water added (if any) ____ gal.

9. Source of water added N/A

10. Analysis performed on water added? ☐ Yes ☒ No
(If yes, attach results)

| | Before Development | After Development |
|---|---|---|
| 11. Depth to Water (from top of well casing) | a. 6.72 ft. | 7.25 ft. |
| Date | b. 08/15/2019 (mm dd yyyy) | 08/15/2019 (mm dd yyyy) |
| Time | c. 11:55 ☒ a.m. ☐ p.m. | 12:25 ☐ a.m. ☒ p.m. |
| 12. Sediment in well bottom | 0.0 inches | 0.0 inches |
| 13. Water clarity | Clear ☐ 10 Turbid ☒ 15 (Describe) light Brown/White | Clear ☒ 20 Turbid ☐ 25 (Describe) Clear |

Fill in if drilling fluids were used and well is at solid waste facility:

| | | |
|---|---|---|
| 14. Total suspended solids | ____.__ mg/l | ____.__ mg/l |
| 15. COD | ____.__ mg/l | ____.__ mg/l |

16. Well developed by: Name (first, last) and Firm
First Name: Jared Last Name: LaRue
Firm: Braun Intertec

17. Additional comments on development:

Name and Address of Facility Contact /Owner/Responsible Party
First Name: _____ Last Name: _____
Facility/Firm: Johnson Controls, Inc.
Street: 5757 N Green Bay Ave.
City/State/Zip: Milwaukee, WI 53201

I hereby certify that the above information is true and correct to the best of my knowledge.
Signature: [signature]
Print Name: Jared LaRue
Firm: Braun Intertec

NOTE: See instructions for more information including a list of county codes and well type codes.

State of Wisconsin
Department of Natural Resources

# MONITORING WELL DEVELOPMENT

Form 4400-113B Rev. 7-98

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☐ Other ☐ _____

| Facility/Project Name | County Name | Well Name |
|---|---|---|
| JCI/Tyco FTC (PFAS) | Marinette | PZ-36-38' |

| Facility License, Permit or Monitoring Number | County Code | Wis. Unique Well Number | DNR Well ID Number |
|---|---|---|---|
| BRRTS: 02-38-580694 | 38 | _____ | ___ |

1. Can this well be purged dry? ☒ Yes ☐ No

2. Well development method

| | | |
|---|---|---|
| surged with bailer and bailed | ☐ | 41 |
| surged with bailer and pumped | ☐ | 61 |
| surged with block and bailed | ☐ | 42 |
| surged with block and pumped | ☒ | 62 |
| surged with block, bailed and pumped | ☐ | 70 |
| compressed air | ☒ | 20 |
| bailed only | ☐ | 10 |
| pumped only | ☐ | 51 |
| pumped slowly | ☐ | 50 |
| Other _____ | ☐ | __ |

3. Time spent developing well 40 min.

4. Depth of well (from top of well casisng) 38.4 ft.

5. Inside diameter of well 2.05 in.

6. Volume of water in filter pack and well casing 58 gal.

7. Volume of water removed from well 140 gal.

8. Volume of water added (if any) ____.__ gal.

9. Source of water added N/A

10. Analysis performed on water added? ☐ Yes ☒ No
(If yes, attach results)

| | Before Development | After Development |
|---|---|---|
| 11. Depth to Water (from top of well casing) | a. 5.38 ft. | 34.75 ft. |
| Date | b. 08/28/2019 (m m d d y y y y) | 08/28/2019 (m m d d y y y y) |
| Time | c. 11:40 ☒ a.m. ☐ p.m. | 12:20 ☐ a.m. ☒ p.m. |
| 12. Sediment in well bottom | 0.0 inches | 0.0 inches |
| 13. Water clarity | Clear ☐ 10 Turbid ☒ 15 (Describe) Brown | Clear ☒ 20 Turbid ☐ 25 (Describe) Foggy Clear |

Fill in if drilling fluids were used and well is at solid waste facility:

| | | |
|---|---|---|
| 14. Total suspended solids | ____.__ mg/l | ____.__ mg/l |
| 15. COD | ____.__ mg/l | ____.__ mg/l |

16. Well developed by: Name (first, last) and Firm
First Name: Jared Last Name: LaRue
Firm: Braun Intertec

17. Additional comments on development:
- Development first attempted on 08-15-19, Unsuccessful due to ~3-4' of sediment in well
- Well flushed out with compressed air on 08-22-19, Sediment removed from inside well.

Name and Address of Facility Contact /Owner/Responsible Party
First Name: _____ Last Name: _____
Facility/Firm: Johnson Controls, Inc.
Street: 5757 N Green Bay Ave.
City/State/Zip: Milwaukee, WI 53201

I hereby certify that the above information is true and correct to the best of my knowledge.
Signature: [signature]
Print Name: Jared LaRue
Firm: Braun Intertec

NOTE: See instructions for more information including a list of county codes and well type codes.

State of Wisconsin
Department of Natural Resources

# MONITORING WELL DEVELOPMENT

Form 4400-113B Rev. 7-98

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☐ Other ☐ _____

| Facility/Project Name | County Name | Well Name |
|---|---|---|
| JCI/Tyco FTC (PFAS) | Marinette | PZ-36-85' |

| Facility License, Permit or Monitoring Number | County Code | Wis. Unique Well Number | DNR Well ID Number |
|---|---|---|---|
| BRRTS: 02-38-580694 | 38 | _____ | ___ |

1. Can this well be purged dry? ☐ Yes ☒ No

2. Well development method
   - surged with bailer and bailed ☐ 41
   - surged with bailer and pumped ☐ 61
   - surged with block and bailed ☐ 42
   - surged with block and pumped ☒ 62
   - surged with block, bailed and pumped ☐ 70
   - compressed air ☐ 20
   - bailed only ☐ 10
   - pumped only ☐ 51
   - pumped slowly ☐ 50
   - Other _____ ☐

3. Time spent developing well 80 min.

4. Depth of well (from top of well casisng) 84.7 ft.

5. Inside diameter of well 2.00 in.

6. Volume of water in filter pack and well casing 14.6 gal.

7. Volume of water removed from well 135.0 gal.

8. Volume of water added (if any) ____.__ gal.

9. Source of water added N/A

10. Analysis performed on water added? ☐ Yes ☒ No
(If yes, attach results)

| | Before Development | After Development |
|---|---|---|
| 11. Depth to Water (from top of well casing) | a. 1.95 ft. | 2.35 ft. |
| Date | b. 08/15/2019 (mm dd yyyy) | 08/15/2019 (mm dd yyyy) |
| Time | c. 13:30 ☐ a.m. ☒ p.m. | 14:50 ☐ a.m. ☒ p.m. |
| 12. Sediment in well bottom | 0.0 inches | 0.0 inches |
| 13. Water clarity | Clear ☐ 10 Turbid ☒ 15 (Describe) Light Brown | Clear ☒ 20 Turbid ☐ 25 (Describe) Clear/Foggy Clear |

Fill in if drilling fluids were used and well is at solid waste facility:

| | | |
|---|---|---|
| 14. Total suspended solids | ____.__ mg/l | ____.__ mg/l |
| 15. COD | ____.__ mg/l | ____.__ mg/l |

16. Well developed by: Name (first, last) and Firm
First Name: Jared Last Name: LaRue
Firm: Braun Intertec

17. Additional comments on development:

Name and Address of Facility Contact/Owner/Responsible Party
First Name: _____ Last Name: _____
Facility/Firm: Johnson Controls, Inc.
Street: 5757 N Green Bay Ave.
City/State/Zip: Milwaukee, WI 53201

I hereby certify that the above information is true and correct to the best of my knowledge.
Signature: [signature]
Print Name: Jared LaRue
Firm: Braun Intertec

NOTE: See instructions for more information including a list of county codes and well type codes.

State of Wisconsin
Department of Natural Resources

# MONITORING WELL DEVELOPMENT

Form 4400-113B Rev. 7-98

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☐ Other ☐ _____

| Facility/Project Name | County Name | Well Name |
|---|---|---|
| JCI/Tyco FTC (PFAS) | Marinette | PZ-37-12' |

| Facility License, Permit or Monitoring Number | County Code | Wis. Unique Well Number | DNR Well ID Number |
|---|---|---|---|
| BRRTS: 02-38-580694 | 38 | _____ | ___ |

1. Can this well be purged dry? ☒ Yes ☐ No

2. Well development method

| | | |
|---|---|---|
| surged with bailer and bailed | ☐ | 41 |
| surged with bailer and pumped | ☐ | 61 |
| surged with block and bailed | ☐ | 42 |
| surged with block and pumped | ☒ | 62 |
| surged with block, bailed and pumped | ☐ | 70 |
| compressed air | ☐ | 20 |
| bailed only | ☐ | 10 |
| pumped only | ☐ | 51 |
| pumped slowly | ☐ | 50 |
| Other _____ | ☐ | __ |

3. Time spent developing well 20 min.

4. Depth of well (from top of well casisng) 11.5 ft.

5. Inside diameter of well 2.00 in.

6. Volume of water in filter pack and well casing 1.1 gal.

7. Volume of water removed from well 20.0 gal.

8. Volume of water added (if any) ____.__ gal.

9. Source of water added N/A

10. Analysis performed on water added? ☐ Yes ☒ No
(If yes, attach results)

| | Before Development | After Development |
|---|---|---|
| 11. Depth to Water (from top of well casing) | a. 5.30 ft. | 5.60 ft. |
| Date | b. 08/15/2019 (mm dd yyyy) | 08/15/2019 (mm dd yyyy) |
| Time | c. 18:55 ☐ a.m. ☒ p.m. | 19:15 ☐ a.m. ☒ p.m. |
| 12. Sediment in well bottom | 0.0 inches | 0.0 inches |
| 13. Water clarity | Clear ☐ 10 Turbid ☒ 15 (Describe) Light Brown | Clear ☒ 20 Turbid ☐ 25 (Describe) Clear/Yellow hue |

Fill in if drilling fluids were used and well is at solid waste facility:

| | | |
|---|---|---|
| 14. Total suspended solids | ____.__ mg/l | ____.__ mg/l |
| 15. COD | ____.__ mg/l | ____.__ mg/l |

16. Well developed by: Name (first, last) and Firm
First Name: Jared Last Name: LaRue
Firm: Braun Intertec

17. Additional comments on development:

Name and Address of Facility Contact /Owner/Responsible Party
First Name: _____ Last Name: _____
Facility/Firm: Johnson Controls, Inc.
Street: 5757 N Green Bay Ave.
City/State/Zip: Milwaukee, WI 53201

I hereby certify that the above information is true and correct to the best of my knowledge.
Signature: [signature]
Print Name: Jared LaRue
Firm: Braun Intertec

NOTE: See instructions for more information including a list of county codes and well type codes.

State of Wisconsin
Department of Natural Resources

# MONITORING WELL DEVELOPMENT

Form 4400-113B Rev. 7-98

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☐ Other ☐ _____

| Facility/Project Name | County Name | Well Name |
|---|---|---|
| JCI/Tyco FTC (PFAS) | Marinette | PZ-37-29' |

| Facility License, Permit or Monitoring Number | County Code | Wis. Unique Well Number | DNR Well ID Number |
|---|---|---|---|
| BRRTS: 02-38-580694 | 38 | _____ | ___ |

1. Can this well be purged dry? ☐ Yes ☒ No

2. Well development method

| | | |
|---|---|---|
| surged with bailer and bailed | ☐ | 41 |
| surged with bailer and pumped | ☐ | 61 |
| surged with block and bailed | ☐ | 42 |
| surged with block and pumped | ☒ | 62 |
| surged with block, bailed and pumped | ☐ | 70 |
| compressed air | ☐ | 20 |
| bailed only | ☐ | 10 |
| pumped only | ☐ | 51 |
| pumped slowly | ☐ | 50 |
| Other _____ | ☐ | |

3. Time spent developing well 30 min.

4. Depth of well (from top of well casisng) 29.8 ft.

5. Inside diameter of well 2.00 in.

6. Volume of water in filter pack and well casing 4.3 gal.

7. Volume of water removed from well 30.0 gal.

8. Volume of water added (if any) ____.__ gal.

9. Source of water added N/A

10. Analysis performed on water added? ☐ Yes ☒ No
(If yes, attach results)

| | Before Development | After Development |
|---|---|---|
| 11. Depth to Water (from top of well casing) | a. 5.38 ft. | 5.40 ft. |
| Date | b. 08/15/2019 (mm dd yyyy) | 08/15/2019 (mm dd yyyy) |
| Time | c. 18:20 ☐ a.m. ☒ p.m. | 18:50 ☐ a.m. ☒ p.m. |
| 12. Sediment in well bottom | 0.0 inches | 0.0 inches |
| 13. Water clarity | Clear ☐ 10 Turbid ☒ 15 (Describe) light Brown | Clear ☒ 20 Turbid ☐ 25 (Describe) Clear/foggy Clear |

Fill in if drilling fluids were used and well is at solid waste facility:

| | | |
|---|---|---|
| 14. Total suspended solids | ____.__ mg/l | ____.__ mg/l |
| 15. COD | ____.__ mg/l | ____.__ mg/l |

16. Well developed by: Name (first, last) and Firm
First Name: Jared Last Name: LaRue
Firm: Braun Intertec

17. Additional comments on development:

Name and Address of Facility Contact /Owner/Responsible Party
First Name: _____ Last Name: _____
Facility/Firm: Johnson Controls, Inc.
Street: 5757 N Green Bay Ave.
City/State/Zip: Milwaukee, WI 53201

I hereby certify that the above information is true and correct to the best of my knowledge.
Signature: [signature]
Print Name: Jared LaRue
Firm: Braun Intertec

NOTE: See instructions for more information including a list of county codes and well type codes.

State of Wisconsin
Department of Natural Resources

# MONITORING WELL DEVELOPMENT

Form 4400-113B Rev. 7-98

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☐ Other ☐ _____

| Facility/Project Name | County Name | Well Name |
|---|---|---|
| JCI/Tyco FTC (PFAS) | Marinette | PZ-37-75' |

| Facility License, Permit or Monitoring Number | County Code | Wis. Unique Well Number | DNR Well ID Number |
|---|---|---|---|
| BRRTS: 02-38-580694 | 38 | _____ | ___ |

1. Can this well be purged dry? ☐ Yes ☒ No

2. Well development method
   - surged with bailer and bailed ☐ 41
   - surged with bailer and pumped ☐ 61
   - surged with block and bailed ☐ 42
   - surged with block and pumped ☒ 62
   - surged with block, bailed and pumped ☐ 70
   - compressed air ☐ 20
   - bailed only ☐ 10
   - pumped only ☐ 51
   - pumped slowly ☐ 50
   - Other _____ ☐ __

3. Time spent developing well 80 min.

4. Depth of well (from top of well casisng) 74.0 ft.

5. Inside diameter of well 2.00 in.

6. Volume of water in filter pack and well casing 13.0 gal.

7. Volume of water removed from well 115.0 gal.

8. Volume of water added (if any) ____.__ gal.

9. Source of water added N/A

10. Analysis performed on water added? ☐ Yes ☒ No
(If yes, attach results)

| | Before Development | After Development |
|---|---|---|
| 11. Depth to Water (from top of well casing) | a. 0.30 ft. | 10.10 ft. |
| Date | b. 08/15/2019 (mm dd yyyy) | 08/15/2019 (mm dd yyyy) |
| Time | c. 16:50 ☐ a.m. ☒ p.m. | 18:10 ☐ a.m. ☒ p.m. |
| 12. Sediment in well bottom | 0.0 inches | 0.0 inches |
| 13. Water clarity | Clear ☐ 10 / Turbid ☒ 15 | Clear ☒ 20 / Turbid ☐ 25 |
| | (Describe) light Brown | (Describe) Clear/Foggy Clear |

Fill in if drilling fluids were used and well is at solid waste facility:

| | | |
|---|---|---|
| 14. Total suspended solids | ____.__ mg/l | ____.__ mg/l |
| 15. COD | ____.__ mg/l | ____.__ mg/l |

16. Well developed by: Name (first, last) and Firm
First Name: Jared Last Name: LaRue
Firm: Braun Intertec

17. Additional comments on development:

Name and Address of Facility Contact /Owner/Responsible Party
First Name: _____ Last Name: _____
Facility/Firm: Johnson Controls, Inc.
Street: 5757 N Green Bay Ave.
City/State/Zip: Milwaukee, WI 53201

I hereby certify that the above information is true and correct to the best of my knowledge.
Signature: [signature]
Print Name: Jared LaRue
Firm: Braun Intertec

NOTE: See instructions for more information including a list of county codes and well type codes.

State of Wisconsin
Department of Natural Resources

# MONITORING WELL DEVELOPMENT

Form 4400-113B Rev. 7-98

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☐ Other ☐ _____

| Facility/Project Name | County Name | Well Name |
|---|---|---|
| JCI/Tyco FTC (PFAS) | Marinette | PZ-38-17' |

| Facility License, Permit or Monitoring Number | County Code | Wis. Unique Well Number | DNR Well ID Number |
|---|---|---|---|
| BRRTS: 02-38-580694 | 38 | _____ | ___ |

1. Can this well be purged dry? ☐ Yes ☒ No

2. Well development method
   - surged with bailer and bailed ☐ 41
   - surged with bailer and pumped ☐ 61
   - surged with block and bailed ☐ 42
   - surged with block and pumped ☒ 62
   - surged with block, bailed and pumped ☐ 70
   - compressed air ☐ 20
   - bailed only ☐ 10
   - pumped only ☐ 51
   - pumped slowly ☐ 50
   - Other _____ ☐ __

3. Time spent developing well 40 min.

4. Depth of well (from top of well casisng) 16.6 ft.

5. Inside diameter of well 2.00 in.

6. Volume of water in filter pack and well casing 1.9 gal.

7. Volume of water removed from well 22.0 gal.

8. Volume of water added (if any) ____.__ gal.

9. Source of water added N/A

10. Analysis performed on water added? ☐ Yes ☒ No
(If yes, attach results)

| | Before Development | After Development |
|---|---|---|
| 11. Depth to Water (from top of well casing) | a. 6.05 ft. | 6.18 ft. |
| Date | b. 08/15/2019 (mm dd yyyy) | 08/15/2019 (mm dd yyyy) |
| Time | c. 19:40 ☐ a.m. ☒ p.m. | 20:20 ☐ a.m. ☒ p.m. |
| 12. Sediment in well bottom | 0.0 inches | 0.0 inches |
| 13. Water clarity | Clear ☐ 10 Turbid ☒ 15 (Describe) Brown | Clear ☒ 20 Turbid ☐ 25 (Describe) Clear |

Fill in if drilling fluids were used and well is at solid waste facility:

| | | |
|---|---|---|
| 14. Total suspended solids | ____.__ mg/l | ____.__ mg/l |
| 15. COD | ____.__ mg/l | ____.__ mg/l |

16. Well developed by: Name (first, last) and Firm
First Name: Jared Last Name: LaRue
Firm: Braun Intertec

17. Additional comments on development:

Name and Address of Facility Contact /Owner/Responsible Party
First Name: _____ Last Name: _____
Facility/Firm: Johnson Controls, Inc.
Street: 5757 N Green Bay Ave.
City/State/Zip: Milwaukee, WI 53201

I hereby certify that the above information is true and correct to the best of my knowledge.
Signature: [signature]
Print Name: Jared LaRue
Firm: Braun Intertec

NOTE: See instructions for more information including a list of county codes and well type codes.

State of Wisconsin
Department of Natural Resources

# MONITORING WELL DEVELOPMENT

Form 4400-113B Rev. 7-98

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☐ Other ☐ _____

| Facility/Project Name | County Name | Well Name |
|---|---|---|
| JCI/Tyco FTC (PFAS) | Marinette | PZ-38-75' |

| Facility License, Permit or Monitoring Number | County Code | Wis. Unique Well Number | DNR Well ID Number |
|---|---|---|---|
| BRRTS: 02-38-580694 | 38 | _____ | ___ |

1. Can this well be purged dry? ☐ Yes ☒ No

2. Well development method
   - surged with bailer and bailed ☐ 41
   - surged with bailer and pumped ☐ 61
   - surged with block and bailed ☐ 42
   - surged with block and pumped ☒ 62
   - surged with block, bailed and pumped ☐ 70
   - compressed air ☐ 20
   - bailed only ☐ 10
   - pumped only ☐ 51
   - pumped slowly ☐ 50
   - Other _____ ☐ ___

3. Time spent developing well 70 min.

4. Depth of well (from top of well casisng) 75.5 ft.

5. Inside diameter of well 2.00 in.

6. Volume of water in filter pack and well casing 125 gal.

7. Volume of water removed from well 105.0 gal.

8. Volume of water added (if any) ____.__ gal.

9. Source of water added N/A

10. Analysis performed on water added? ☐ Yes ☒ No
(If yes, attach results)

| | Before Development | After Development |
|---|---|---|
| 11. Depth to Water (from top of well casing) | a. 4.60 ft. | 4.65 ft. |
| Date | b. 08/15/2019 (mm dd yyyy) | 08/15/2019 (mm dd yyyy) |
| Time | c. 19:34 ☐ a.m. ☒ p.m. | 20:45 ☐ a.m. ☒ p.m. |
| 12. Sediment in well bottom | 0.0 inches | 0.0 inches |
| 13. Water clarity | Clear ☐ 10 Turbid ☒ 15 (Describe) Brown | Clear ☒ 20 Turbid ☐ 25 (Describe) Clear |

Fill in if drilling fluids were used and well is at solid waste facility:

| | | |
|---|---|---|
| 14. Total suspended solids | ____.__ mg/l | ____.__ mg/l |
| 15. COD | ____.__ mg/l | ____.__ mg/l |

16. Well developed by: Name (first, last) and Firm
First Name: Jared Last Name: LaRue
Firm: Braun Intertec

17. Additional comments on development:

Name and Address of Facility Contact /Owner/Responsible Party
First Name: _____ Last Name: _____
Facility/Firm: Johnson Controls, Inc.
Street: 5757 N Green Bay Ave.
City/State/Zip: Milwaukee, WI 53201

I hereby certify that the above information is true and correct to the best of my knowledge.
Signature: [signature]
Print Name: Jared LaRue
Firm: Braun Intertec

NOTE: See instructions for more information including a list of county codes and well type codes.

State of Wisconsin
Department of Natural Resources

# MONITORING WELL DEVELOPMENT

Form 4400-113B Rev. 7-98

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☐ Other ☐ _____

| Facility/Project Name | County Name | Well Name |
|---|---|---|
| JCI/Tyco FTC (PFAS) | Marinette | PZ-41-17' |

| Facility License, Permit or Monitoring Number | County Code | Wis. Unique Well Number | DNR Well ID Number |
|---|---|---|---|
| BRRTS: 02-38-580694 | 38 | _____ | ___ |

1. Can this well be purged dry? ☐ Yes ☒ No

2. Well development method
   - surged with bailer and bailed ☐ 41
   - surged with bailer and pumped ☐ 61
   - surged with block and bailed ☐ 42
   - surged with block and pumped ☒ 62
   - surged with block, bailed and pumped ☐ 70
   - compressed air ☐ 20
   - bailed only ☐ 10
   - pumped only ☐ 51
   - pumped slowly ☐ 50
   - Other _____ ☐

3. Time spent developing well 30 min.

4. Depth of well (from top of well casisng) 17.4 ft.

5. Inside diameter of well 2.00 in.

6. Volume of water in filter pack and well casing 2.2 gal.

7. Volume of water removed from well 26.0 gal.

8. Volume of water added (if any) ____.__ gal.

9. Source of water added N/A

10. Analysis performed on water added? ☐ Yes ☒ No
(If yes, attach results)

| | Before Development | After Development |
|---|---|---|
| 11. Depth to Water (from top of well casing) | a. 4.73 ft. | 4.75 ft. |
| Date | b. 08/16/2019 (mm dd yyyy) | 08/16/2019 (mm dd yyyy) |
| Time | c. 07:10 ☒ a.m. ☐ p.m. | 07:40 ☒ a.m. ☐ p.m. |
| 12. Sediment in well bottom | 0.0 inches | 0.0 inches |
| 13. Water clarity | Clear ☐ 10 / Turbid ☒ 15 | Clear ☒ 20 / Turbid ☐ 25 |
| (Describe) | light Brown | Clear |

Fill in if drilling fluids were used and well is at solid waste facility:

14. Total suspended solids ____.__ mg/l ____.__ mg/l

15. COD ____.__ mg/l ____.__ mg/l

16. Well developed by: Name (first, last) and Firm
First Name: Jared Last Name: LaRue
Firm: Braun Intertec

17. Additional comments on development:

Name and Address of Facility Contact/Owner/Responsible Party
First Name: _____ Last Name: _____
Facility/Firm: Johnson Controls, Inc.
Street: 5757 N Green Bay Ave.
City/State/Zip: Milwaukee, WI 53201

I hereby certify that the above information is true and correct to the best of my knowledge.
Signature: [signature]
Print Name: Jared LaRue
Firm: Braun Intertec

NOTE: See instructions for more information including a list of county codes and well type codes.

State of Wisconsin
Department of Natural Resources

# MONITORING WELL DEVELOPMENT

Form 4400-113B Rev. 7-98

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☐ Other ☐ _____

| Facility/Project Name | County Name | Well Name |
|---|---|---|
| JCI/Tyco FTC (PFAS) | Marinette | PZ-41-84' |

| Facility License, Permit or Monitoring Number | County Code | Wis. Unique Well Number | DNR Well ID Number |
|---|---|---|---|
| BRRTS: 02-38-580694 | 38 | _____ | ___ |

1. Can this well be purged dry? ☐ Yes ☒ No

2. Well development method
   - surged with bailer and bailed ☐ 41
   - surged with bailer and pumped ☐ 61
   - surged with block and bailed ☐ 42
   - surged with block and pumped ☒ 62
   - surged with block, bailed and pumped ☐ 70
   - compressed air ☐ 20
   - bailed only ☐ 10
   - pumped only ☐ 51
   - pumped slowly ☐ 50
   - Other _____ ☐ __

3. Time spent developing well __82 min.

4. Depth of well (from top of well casisng) __83.5 ft.

5. Inside diameter of well __2.00 in.

6. Volume of water in filter pack and well casing __13.9 gal.

7. Volume of water removed from well 123.0 gal.

8. Volume of water added (if any) ____.__ gal.

9. Source of water added N/A

10. Analysis performed on water added? ☐ Yes ☒ No
(If yes, attach results)

| | Before Development | After Development |
|---|---|---|
| 11. Depth to Water (from top of well casing) | a. __4.78 ft. | __5.20 ft. |
| Date | b. 08/16/2019 (mm dd yyyy) | 08/16/2019 (mm dd yyyy) |
| Time | c. 07:28 ☒ a.m. ☐ p.m. | 08:50 ☒ a.m. ☐ p.m. |
| 12. Sediment in well bottom | __0.0 inches | __0.0 inches |
| 13. Water clarity | Clear ☐ 10 Turbid ☒ 15 (Describe) Brown | Clear ☒ 20 Turbid ☐ 25 (Describe) Clear/foggy Clear |

Fill in if drilling fluids were used and well is at solid waste facility:

| | | |
|---|---|---|
| 14. Total suspended solids | ____.__ mg/l | ____.__ mg/l |
| 15. COD | ____.__ mg/l | ____.__ mg/l |

16. Well developed by: Name (first, last) and Firm
First Name: Jared Last Name: LaRue
Firm: Braun Intertec

17. Additional comments on development:

Name and Address of Facility Contact/Owner/Responsible Party
First Name: _____ Last Name: _____
Facility/Firm: Johnson Controls, Inc.
Street: 5757 N Green Bay Ave.
City/State/Zip: Milwaukee, WI 53201

I hereby certify that the above information is true and correct to the best of my knowledge.
Signature: [signature]
Print Name: Jared LaRue
Firm: Braun Intertec

NOTE: See instructions for more information including a list of county codes and well type codes.

State of Wisconsin
Department of Natural Resources

# MONITORING WELL DEVELOPMENT

Form 4400-113B Rev. 7-98

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☐ Other ☐ _____

| Facility/Project Name | County Name | Well Name |
|---|---|---|
| JCI/Tyco FTC (PFAS) | Marinette | PZ-42-17' |

| Facility License, Permit or Monitoring Number | County Code | Wis. Unique Well Number | DNR Well ID Number |
|---|---|---|---|
| BRRTS: 02-38-580694 | 38 | _____ | ___ |

1. Can this well be purged dry? ☐ Yes ☒ No

2. Well development method

| | | |
|---|---|---|
| surged with bailer and bailed | ☐ | 41 |
| surged with bailer and pumped | ☐ | 61 |
| surged with block and bailed | ☐ | 42 |
| surged with block and pumped | ☒ | 62 |
| surged with block, bailed and pumped | ☐ | 70 |
| compressed air | ☐ | 20 |
| bailed only | ☐ | 10 |
| pumped only | ☐ | 51 |
| pumped slowly | ☐ | 50 |
| Other _____ | ☐ | |

3. Time spent developing well 30 min.

4. Depth of well (from top of well casisng) 17.2 ft.

5. Inside diameter of well 2.00 in.

6. Volume of water in filter pack and well casing 2.4 gal.

7. Volume of water removed from well 20.0 gal.

8. Volume of water added (if any) ____.__ gal.

9. Source of water added N/A

10. Analysis performed on water added? ☐ Yes ☒ No
(If yes, attach results)

| | Before Development | After Development |
|---|---|---|
| 11. Depth to Water (from top of well casing) | a. 3.27 ft. | 3.30 ft. |
| Date | b. 08/16/2019 (m m d d y y y y) | 08/16/2019 (m m d d y y y y) |
| Time | c. 11:20 ☒ a.m. ☐ p.m. | 11:50 ☒ a.m. ☐ p.m. |
| 12. Sediment in well bottom | 0.0 inches | 0.0 inches |
| 13. Water clarity | Clear ☐ 10 Turbid ☒ 15 (Describe) Brown | Clear ☒ 20 Turbid ☐ 25 (Describe) Clear |

Fill in if drilling fluids were used and well is at solid waste facility:

| | | |
|---|---|---|
| 14. Total suspended solids | ____.__ mg/l | ____.__ mg/l |
| 15. COD | ____.__ mg/l | ____.__ mg/l |

16. Well developed by: Name (first, last) and Firm
First Name: Jared Last Name: LaRue
Firm: Braun Intertec

17. Additional comments on development:

Name and Address of Facility Contact /Owner/Responsible Party
First Name: _____ Last Name: _____
Facility/Firm: Johnson Controls, Inc.
Street: 5757 N Green Bay Ave.
City/State/Zip: Milwaukee, WI 53201

I hereby certify that the above information is true and correct to the best of my knowledge.
Signature: [signature]
Print Name: Jared LaRue
Firm: Braun Intertec

NOTE: See instructions for more information including a list of county codes and well type codes.

State of Wisconsin
Department of Natural Resources

# MONITORING WELL DEVELOPMENT

Form 4400-113B Rev. 7-98

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☐ Other ☐ _____

| Facility/Project Name | County Name | Well Name |
|---|---|---|
| JCI/Tyco FTC (PFAS) | Marinette | PZ-42-76' |

| Facility License, Permit or Monitoring Number | County Code | Wis. Unique Well Number | DNR Well ID Number |
|---|---|---|---|
| BRRTS: 02-38-580694 | 38 | _____ | ___ |

1. Can this well be purged dry? ☐ Yes ☒ No

2. Well development method

| | | |
|---|---|---|
| surged with bailer and bailed | ☐ | 41 |
| surged with bailer and pumped | ☐ | 61 |
| surged with block and bailed | ☐ | 42 |
| surged with block and pumped | ☒ | 62 |
| surged with block, bailed and pumped | ☐ | 70 |
| compressed air | ☐ | 20 |
| bailed only | ☐ | 10 |
| pumped only | ☐ | 51 |
| pumped slowly | ☐ | 50 |
| Other _____ | ☐ | __ |

3. Time spent developing well 80 min.

4. Depth of well (from top of well casisng) 76.5 ft.

5. Inside diameter of well 2.00 in.

6. Volume of water in filter pack and well casing 12.8 gal.

7. Volume of water removed from well 100.0 gal.

8. Volume of water added (if any) ____.__ gal.

9. Source of water added N/A

10. Analysis performed on water added? ☐ Yes ☒ No
(If yes, attach results)

| | Before Development | After Development |
|---|---|---|
| 11. Depth to Water (from top of well casing) | a. 0.87 ft. | 4.50 ft. |
| Date | b. 08/16/2019 (m m d d y y y y) | 08/16/2019 (m m d d y y y y) |
| Time | c. 09:40 ☒ a.m. ☐ p.m. | 11:00 ☒ a.m. ☐ p.m. |
| 12. Sediment in well bottom | 38.4 inches | 0.0 inches |
| 13. Water clarity | Clear ☐ 10 Turbid ☒ 15 (Describe) Brown | Clear ☒ 20 Turbid ☐ 25 (Describe) Clear/Foggy Clear |

Fill in if drilling fluids were used and well is at solid waste facility:

| | | |
|---|---|---|
| 14. Total suspended solids | ____.__ mg/l | ____.__ mg/l |
| 15. COD | ____.__ mg/l | ____.__ mg/l |

16. Well developed by: Name (first, last) and Firm
First Name: Jared Last Name: LaRue
Firm: Braun Intertec

17. Additional comments on development:

Name and Address of Facility Contact /Owner/Responsible Party
First Name: _____ Last Name: _____
Facility/Firm: Johnson Controls, Inc.
Street: 5757 N Green Bay Ave.
City/State/Zip: Milwaukee, WI 53201

I hereby certify that the above information is true and correct to the best of my knowledge.
Signature: [signature]
Print Name: Jared LaRue
Firm: Braun Intertec

NOTE: See instructions for more information including a list of county codes and well type codes.

State of Wisconsin
Department of Natural Resources

# MONITORING WELL DEVELOPMENT

Form 4400-113B Rev. 7-98

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☐ Other ☐ _____

| Facility/Project Name | County Name | Well Name |
|---|---|---|
| JCI/Tyco FTC (PFAS) | Marinette | PZ-43-19' |

| Facility License, Permit or Monitoring Number | County Code | Wis. Unique Well Number | DNR Well ID Number |
|---|---|---|---|
| BRRTS: 02-38-580694 | 38 | _____ | ___ |

1. Can this well be purged dry? ☐ Yes ☒ No

2. Well development method
   - surged with bailer and bailed ☐ 41
   - surged with bailer and pumped ☐ 61
   - surged with block and bailed ☐ 42
   - surged with block and pumped ☒ 62
   - surged with block, bailed and pumped ☐ 70
   - compressed air ☐ 20
   - bailed only ☐ 10
   - pumped only ☐ 51
   - pumped slowly ☐ 50
   - Other _____ ☐ ___

3. Time spent developing well __25 min.

4. Depth of well (from top of well casisng) __18.9 ft.

5. Inside diameter of well __2.00 in.

6. Volume of water in filter pack and well casing __2.8 gal.

7. Volume of water removed from well __40.__ gal.

8. Volume of water added (if any) ____.__ gal.

9. Source of water added N/A

10. Analysis performed on water added? ☐ Yes ☒ No
(If yes, attach results)

| | Before Development | After Development |
|---|---|---|
| 11. Depth to Water (from top of well casing) | a. __3.10 ft. | __3.15 ft. |
| Date | b. 08/28/2019 (m m d d y y y y) | 08/28/2019 (m m d d y y y y) |
| Time | c. 11:05 ☒ a.m. ☐ p.m. | 11:30 ☒ a.m. ☐ p.m. |
| 12. Sediment in well bottom | __0.0 inches | __0.0 inches |
| 13. Water clarity | Clear ☐ 10 / Turbid ☒ 15 | Clear ☒ 20 / Turbid ☐ 25 |
| (Describe) | Light Brown | Clear / Foggy Clear |

Fill in if drilling fluids were used and well is at solid waste facility:

| | | |
|---|---|---|
| 14. Total suspended solids | ____.__ mg/l | ____.__ mg/l |
| 15. COD | ____.__ mg/l | ____.__ mg/l |

16. Well developed by: Name (first, last) and Firm
First Name: Jared Last Name: LaRue
Firm: Braun Intertec

17. Additional comments on development:

Name and Address of Facility Contact /Owner/Responsible Party
First Name: _____ Last Name: _____
Facility/Firm: Johnson Controls, Inc.
Street: 5757 N Green Bay Ave.
City/State/Zip: Milwaukee, WI 53201

I hereby certify that the above information is true and correct to the best of my knowledge.
Signature: [signature]
Print Name: Jared LaRue
Firm: Braun Intertec

NOTE: See instructions for more information including a list of county codes and well type codes.

State of Wisconsin
Department of Natural Resources

# MONITORING WELL DEVELOPMENT

Form 4400-113B Rev. 7-98

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☐ Other ☐ _____

| Facility/Project Name | County Name | Well Name |
|---|---|---|
| JCI/Tyco FTC (PFAS) | Marinette | PZ-43-80' |

| Facility License, Permit or Monitoring Number | County Code | Wis. Unique Well Number | DNR Well ID Number |
|---|---|---|---|
| BRRTS: 02-38-580694 | 38 | _____ | ___ |

1. Can this well be purged dry? ☐ Yes ☒ No

2. Well development method

| | | |
|---|---|---|
| surged with bailer and bailed | ☐ | 41 |
| surged with bailer and pumped | ☐ | 61 |
| surged with block and bailed | ☐ | 42 |
| surged with block and pumped | ☒ | 62 |
| surged with block, bailed and pumped | ☐ | 70 |
| compressed air | ☐ | 20 |
| bailed only | ☐ | 10 |
| pumped only | ☐ | 51 |
| pumped slowly | ☐ | 50 |
| Other _____ | ☐ | ___ |

3. Time spent developing well 50 min.

4. Depth of well (from top of well casisng) 79.7 ft.

5. Inside diameter of well 2.00 in.

6. Volume of water in filter pack and well casing 13.4 gal.

7. Volume of water removed from well 105.0 gal.

8. Volume of water added (if any) ____.__ gal.

9. Source of water added N/A

10. Analysis performed on water added? ☐ Yes ☒ No
(If yes, attach results)

| | Before Development | After Development |
|---|---|---|
| 11. Depth to Water (from top of well casing) | a. 3.75 ft. | 3.80 ft. |
| Date | b. 08/28/2019 (mm dd yyyy) | 08/28/2019 (mm dd yyyy) |
| Time | c. 10:10 ☒ a.m. ☐ p.m. | 11:00 ☒ a.m. ☐ p.m. |
| 12. Sediment in well bottom | 0.0 inches | 0.0 inches |
| 13. Water clarity | Clear ☐ 10 Turbid ☒ 15 (Describe) Light Brown | Clear ☒ 20 Turbid ☐ 25 (Describe) Clear/foggy Clear |

Fill in if drilling fluids were used and well is at solid waste facility:

| | | |
|---|---|---|
| 14. Total suspended solids | ____.__ mg/l | ____.__ mg/l |
| 15. COD | ____.__ mg/l | ____.__ mg/l |

16. Well developed by: Name (first, last) and Firm
First Name: Jared Last Name: LaRue
Firm: Braun Intertec

17. Additional comments on development:

Name and Address of Facility Contact /Owner/Responsible Party
First Name: _____ Last Name: _____
Facility/Firm: Johnson Controls, Inc.
Street: 5757 N Green Bay Ave.
City/State/Zip: Milwaukee, WI 53201

I hereby certify that the above information is true and correct to the best of my knowledge.
Signature: [signature]
Print Name: Jared LaRue
Firm: Braun Intertec

NOTE: See instructions for more information including a list of county codes and well type codes.

State of Wisconsin
Department of Natural Resources

# MONITORING WELL DEVELOPMENT

Form 4400-113B Rev. 7-98

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☐ Other ☐ _____

| Facility/Project Name | County Name | Well Name |
|---|---|---|
| JCI/Tyco FTC (PFAS) | Marinette | PZ-44-73' |

| Facility License, Permit or Monitoring Number | County Code | Wis. Unique Well Number | DNR Well ID Number |
|---|---|---|---|
| BRRTS: 02-38-580694 | 38 | _____ | ___ |

1. Can this well be purged dry? ☐ Yes ☒ No

2. Well development method
   - surged with bailer and bailed ☐ 41
   - surged with bailer and pumped ☐ 61
   - surged with block and bailed ☐ 42
   - surged with block and pumped ☒ 62
   - surged with block, bailed and pumped ☐ 70
   - compressed air ☐ 20
   - bailed only ☐ 10
   - pumped only ☐ 51
   - pumped slowly ☐ 50
   - Other _____ ☐

3. Time spent developing well 65 min.

4. Depth of well (from top of well casisng) 73.3 ft.

5. Inside diameter of well 2.00 in.

6. Volume of water in filter pack and well casing 12.2 gal.

7. Volume of water removed from well 110.0 gal.

8. Volume of water added (if any) ____.__ gal.

9. Source of water added N/A

10. Analysis performed on water added? ☐ Yes ☒ No
(If yes, attach results)

| | Before Development | After Development |
|---|---|---|
| 11. Depth to Water (from top of well casing) | a. 3.85 ft. | 43.81 ft. |
| Date | b. 08/28/2019 (mm dd yyyy) | 08/28/2019 (mm dd yyyy) |
| Time | c. 12:55 ☐ a.m. ☒ p.m. | 14:00 ☐ a.m. ☒ p.m. |
| 12. Sediment in well bottom | 0.0 inches | 0.0 inches |
| 13. Water clarity | Clear ☐ 10 / Turbid ☒ 15 | Clear ☒ 20 / Turbid ☐ 25 |
| (Describe) | light Brown | Clear/Foggy Clear |

Fill in if drilling fluids were used and well is at solid waste facility:

| | | |
|---|---|---|
| 14. Total suspended solids | ____.__ mg/l | ____.__ mg/l |
| 15. COD | ____.__ mg/l | ____.__ mg/l |

16. Well developed by: Name (first, last) and Firm
First Name: Jared Last Name: LaRue
Firm: Braun Intertec

17. Additional comments on development:

Name and Address of Facility Contact /Owner/Responsible Party
First Name: _____ Last Name: _____
Facility/Firm: Johnson Controls, Inc.
Street: 5757 N Green Bay Ave.
City/State/Zip: Milwaukee, WI 53201

I hereby certify that the above information is true and correct to the best of my knowledge.
Signature: [signature]
Print Name: Jared LaRue
Firm: Braun Intertec

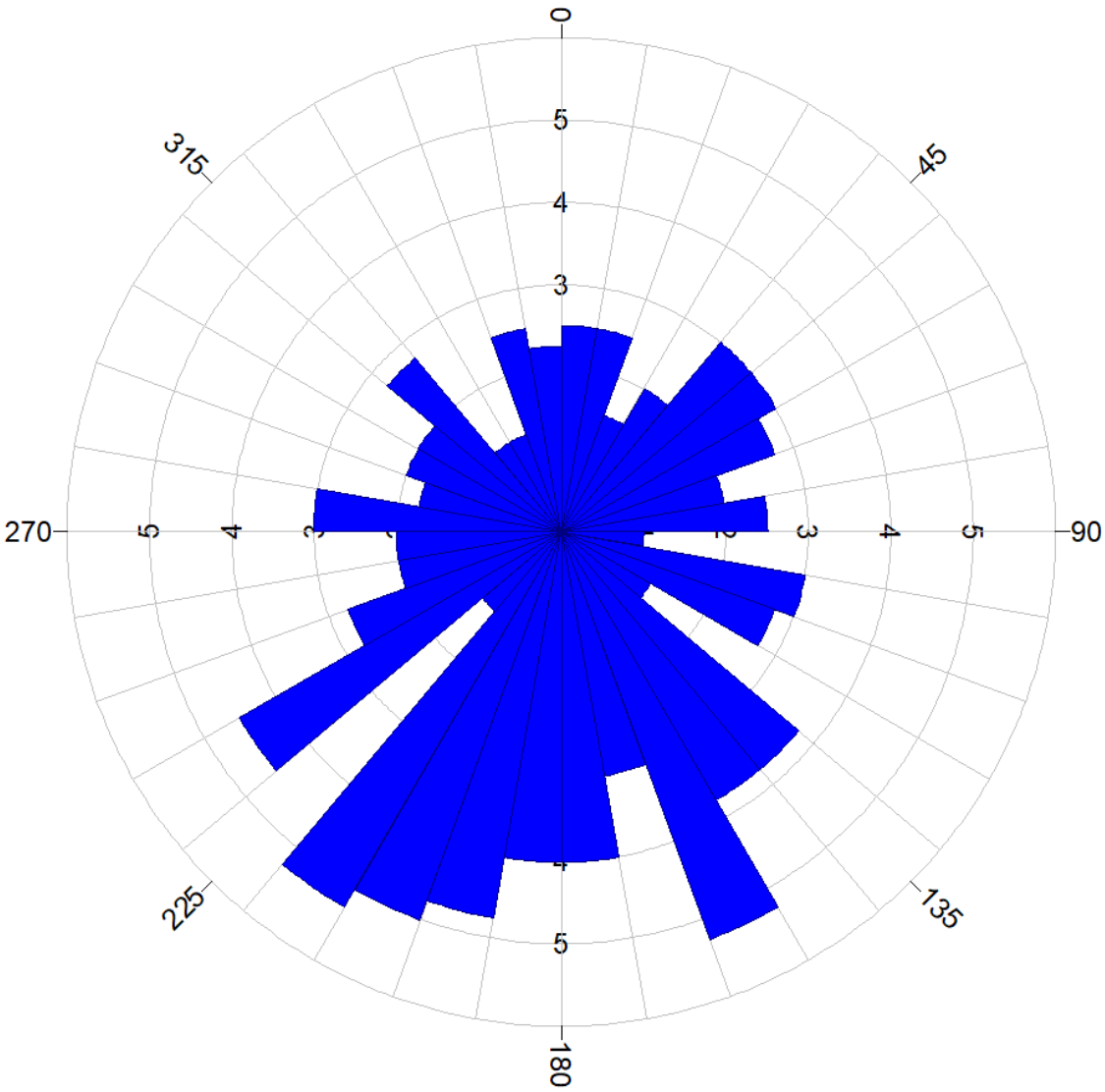
NOTE: See instructions for more information including a list of county codes and well type codes.

# APPENDIX E

## Geophysical Logging Reports

**Rose Diagram of Televiewer Features**
**ARCADIS**
**Project: Tyco (Ansul FTC)**
**Well: MW-100B**
**15 August 2018**

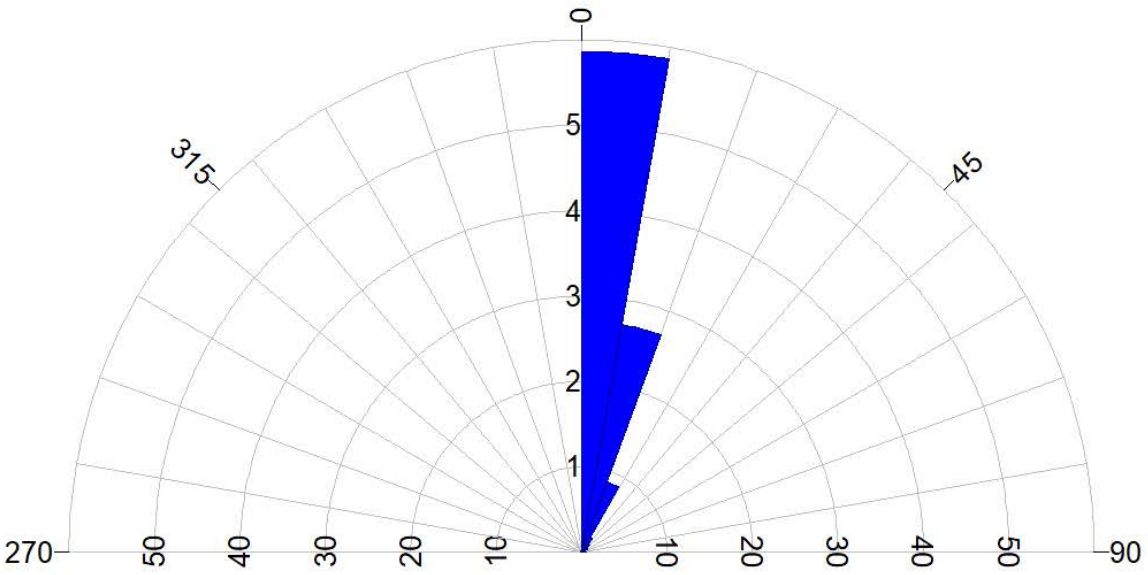
**Dip Direction**




All directions are with respect to Magnetic North.

**Rose Diagram of Televiewer Features**
**ARCADIS**
**Project: Tyco (Ansul FTC)**
**Well: MW-100B**
**15 August 2018**

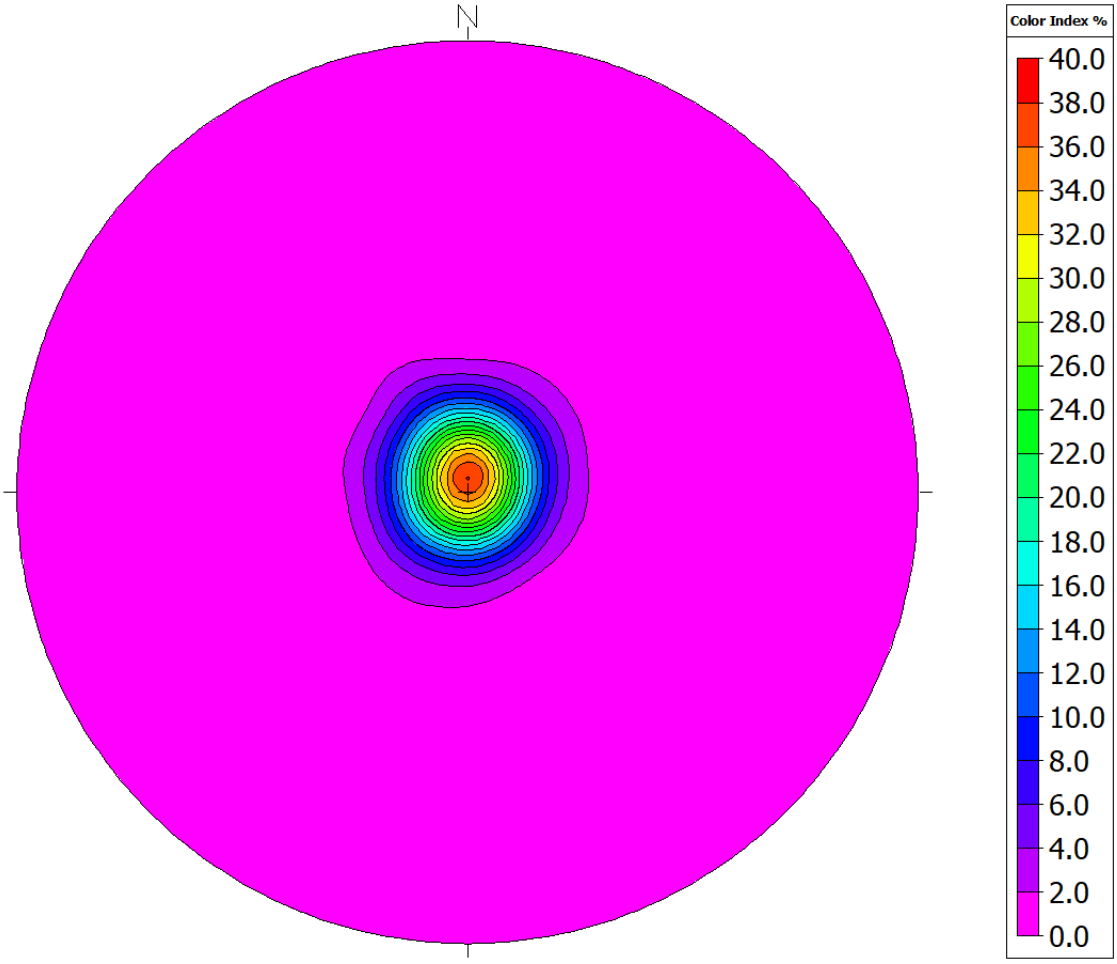
**Dip Angles**




All directions are with respect to Magnetic North.

**Stereonet Diagram of Televiewer Features**
**ARCADIS**
**Project: Tyco (Ansul FTC)**
**Well: MW-100B**
**15 August 2018**

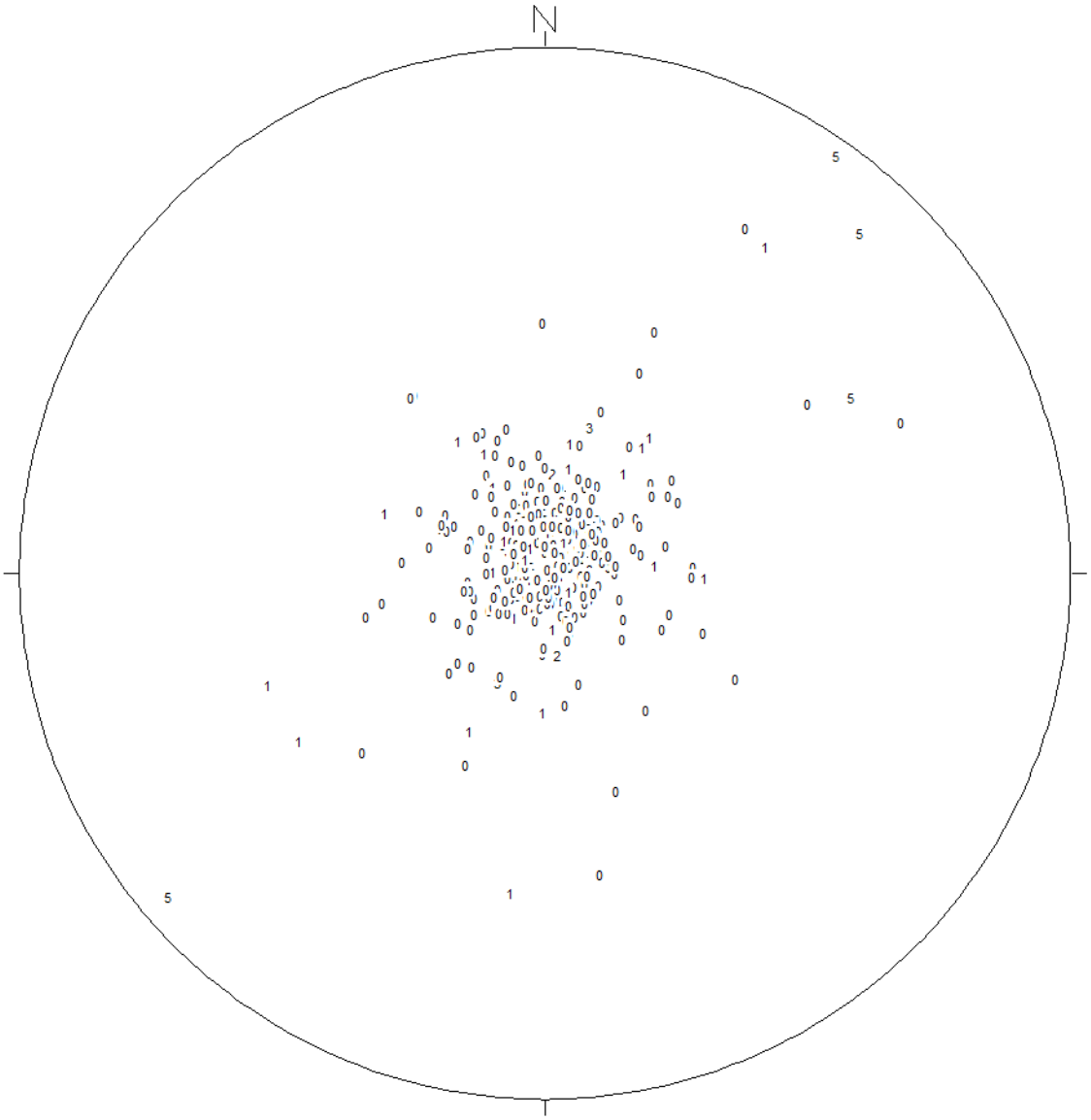
**Schmidt Projection with Contours**




All directions are with respect to Magnetic North.

**Stereonet Diagram of Televiewer Features**
**ARCADIS**
**Project: Tyco (Ansul FTC)**
**Well: MW-100B**
**15 August 2018**

**Schmidt Projections with Feature Ranks**




All directions are with respect to Magnetic North.

**Table MW-100B: 1. Orientation Summary Table**
**Image Features**
**Arcadis**
**Project: Tyco (Ansul FTC)**
**Well: MW-100B**
**15 August 2018**

| Feature No. | Depth (meters) | Depth (feet) | Dip Direction (degrees) | Dip Angle (degrees) | Feature Rank (0 to 5) |
|---|---|---|---|---|---|
| 1 | 27.38 | 89.8 | 215 | 84 | 5 |
| 2 | 27.44 | 90.0 | 241 | 55 | 5 |
| 3 | 27.50 | 90.2 | 223 | 75 | 5 |
| 4 | 28.12 | 92.3 | 305 | 14 | 0 |
| 5 | 28.23 | 92.6 | 49 | 86 | 5 |
| 6 | 28.31 | 92.9 | 185 | 4 | 0 |
| 7 | 28.56 | 93.7 | 231 | 20 | 0 |
| 8 | 28.82 | 94.6 | 107 | 10 | 0 |
| 9 | 28.84 | 94.6 | 69 | 5 | 0 |
| 10 | 29.27 | 96.0 | 198 | 25 | 0 |
| 11 | 29.33 | 96.2 | 183 | 8 | 0 |
| 12 | 30.60 | 100.4 | 238 | 48 | 0 |
| 13 | 32.06 | 105.2 | 81 | 3 | 0 |
| 14 | 32.14 | 105.4 | 255 | 5 | 0 |
| 15 | 32.31 | 106.0 | 107 | 7 | 0 |
| 16 | 32.46 | 106.5 | 162 | 22 | 0 |
| 17 | 32.57 | 106.9 | 136 | 13 | 0 |
| 18 | 32.68 | 107.2 | 156 | 6 | 0 |
| 19 | 32.78 | 107.5 | 240 | 21 | 0 |
| 20 | 32.82 | 107.7 | 275 | 24 | 1 |
| 21 | 32.86 | 107.8 | 158 | 5 | 3 |
| 22 | 33.01 | 108.3 | 110 | 6 | 0 |
| 23 | 33.04 | 108.4 | 138 | 5 | 0 |
| 24 | 33.10 | 108.6 | 200 | 9 | 0 |
| 25 | 33.17 | 108.8 | 206 | 7 | 0 |
| 26 | 33.41 | 109.6 | 134 | 12 | 0 |
| 27 | 33.77 | 110.8 | 271 | 16 | 1 |
| 28 | 34.54 | 113.3 | 280 | 4 | 0 |
| 29 | 34.91 | 114.5 | 11 | 4 | 0 |
| 30 | 34.96 | 114.7 | 117 | 12 | 0 |
| 31 | 35.10 | 115.2 | 207 | 3 | 0 |
| 32 | 35.45 | 116.3 | 32 | 7 | 0 |
| 33 | 35.59 | 116.8 | 143 | 24 | 1 |
| 34 | 35.63 | 116.9 | 67 | 49 | 1 |
| 35 | 35.66 | 117.0 | 204 | 40 | 0 |
| 36 | 35.68 | 117.1 | 41 | 6 | 0 |
| 37 | 35.88 | 117.7 | 343 | 6 | 0 |
| 38 | 36.06 | 118.3 | 270 | 3 | 0 |
| 39 | 36.09 | 118.4 | 153 | 19 | 0 |
| 40 | 36.23 | 118.9 | 244 | 22 | 0 |
| 41 | 36.23 | 118.9 | 108 | 18 | 0 |
| 42 | 36.38 | 119.4 | 342 | 4 | 0 |
| 43 | 36.48 | 119.7 | 232 | 10 | 0 |
| 44 | 36.52 | 119.8 | 157 | 2 | 0 |
| 45 | 36.60 | 120.1 | 238 | 9 | 0 |

All directions are with respect to Magnetic North.

**Table MW-100B: 1. Orientation Summary Table**
**Image Features**
**Arcadis**
**Project: Tyco (Ansul FTC)**
**Well: MW-100B**
**15 August 2018**

| Feature No. | Depth (meters) | Depth (feet) | Dip Direction (degrees) | Dip Angle (degrees) | Feature Rank (0 to 5) |
|---|---|---|---|---|---|
| 46 | 36.64 | 120.2 | 278 | 10 | 0 |
| 47 | 37.01 | 121.4 | 308 | 4 | 0 |
| 48 | 37.42 | 122.8 | 43 | 6 | 0 |
| 49 | 37.95 | 124.5 | 108 | 6 | 0 |
| 50 | 37.99 | 124.7 | 319 | 6 | 0 |
| 51 | 38.39 | 126.0 | 88 | 7 | 0 |
| 52 | 38.63 | 126.7 | 53 | 12 | 0 |
| 53 | 38.98 | 127.9 | 30 | 8 | 0 |
| 54 | 39.06 | 128.2 | 193 | 11 | 0 |
| 55 | 39.52 | 129.7 | 248 | 61 | 0 |
| 56 | 39.76 | 130.5 | 315 | 4 | 0 |
| 57 | 39.81 | 130.6 | 76 | 6 | 0 |
| 58 | 39.91 | 130.9 | 234 | 4 | 0 |
| 59 | 40.15 | 131.7 | 46 | 7 | 0 |
| 60 | 40.19 | 131.9 | 356 | 5 | 0 |
| 61 | 40.20 | 131.9 | 112 | 16 | 0 |
| 62 | 40.44 | 132.7 | 88 | 5 | 0 |
| 63 | 40.49 | 132.8 | 250 | 4 | 0 |
| 64 | 41.86 | 137.3 | 178 | 8 | 0 |
| 65 | 41.92 | 137.5 | 186 | 6 | 0 |
| 66 | 42.03 | 137.9 | 7 | 53 | 1 |
| 67 | 42.08 | 138.1 | 196 | 22 | 3 |
| 68 | 42.08 | 138.1 | 24 | 20 | 3 |
| 69 | 42.19 | 138.4 | 214 | 62 | 1 |
| 70 | 42.20 | 138.5 | 131 | 4 | 0 |
| 71 | 42.27 | 138.7 | 280 | 5 | 0 |
| 72 | 42.49 | 139.4 | 152 | 7 | 0 |
| 73 | 42.53 | 139.5 | 266 | 6 | 0 |
| 74 | 42.68 | 140.0 | 266 | 6 | 0 |
| 75 | 42.75 | 140.2 | 235 | 9 | 1 |
| 76 | 42.84 | 140.5 | 66 | 4 | 0 |
| 77 | 42.87 | 140.7 | 45 | 42 | 0 |
| 78 | 42.90 | 140.8 | 272 | 9 | 0 |
| 79 | 43.02 | 141.1 | 71 | 6 | 0 |
| 80 | 43.21 | 141.8 | 66 | 20 | 0 |
| 81 | 43.24 | 141.9 | 205 | 33 | 0 |
| 82 | 43.28 | 142.0 | 19 | 8 | 0 |
| 83 | 43.31 | 142.1 | 234 | 13 | 0 |
| 84 | 43.44 | 142.5 | 344 | 37 | 0 |
| 85 | 43.45 | 142.5 | 184 | 12 | 0 |
| 86 | 43.50 | 142.7 | 84 | 6 | 1 |
| 87 | 43.55 | 142.9 | 157 | 6 | 0 |
| 88 | 43.60 | 143.0 | 197 | 11 | 0 |
| 89 | 43.64 | 143.2 | 60 | 3 | 0 |
| 90 | 43.67 | 143.3 | 39 | 6 | 0 |

All directions are with respect to Magnetic North.

**Table MW-100B: 1. Orientation Summary Table**
**Image Features**
**Arcadis**
**Project: Tyco (Ansul FTC)**
**Well: MW-100B**
**15 August 2018**

| Feature No. | Depth (meters) | Depth (feet) | Dip Direction (degrees) | Dip Angle (degrees) | Feature Rank (0 to 5) |
|---|---|---|---|---|---|
| 91 | 43.71 | 143.4 | 180 | 8 | 0 |
| 92 | 43.75 | 143.5 | 186 | 7 | 0 |
| 93 | 43.79 | 143.7 | 18 | 6 | 0 |
| 94 | 43.82 | 143.8 | 211 | 14 | 0 |
| 95 | 43.88 | 144.0 | 78 | 13 | 0 |
| 96 | 43.90 | 144.0 | 58 | 17 | 0 |
| 97 | 43.95 | 144.2 | 312 | 8 | 0 |
| 98 | 44.01 | 144.4 | 157 | 8 | 1 |
| 99 | 44.16 | 144.9 | 144 | 17 | 0 |
| 100 | 44.22 | 145.1 | 50 | 8 | 0 |
| 101 | 44.25 | 145.2 | 149 | 20 | 1 |
| 102 | 44.34 | 145.5 | 49 | 9 | 0 |
| 103 | 44.38 | 145.6 | 300 | 4 | 0 |
| 104 | 44.41 | 145.7 | 51 | 16 | 0 |
| 105 | 44.42 | 145.7 | 242 | 15 | 0 |
| 106 | 44.60 | 146.3 | 13 | 3 | 1 |
| 107 | 44.65 | 146.5 | 148 | 8 | 0 |
| 108 | 44.75 | 146.8 | 356 | 14 | 2 |
| 109 | 44.75 | 146.8 | 237 | 8 | 2 |
| 110 | 44.77 | 146.9 | 181 | 14 | 2 |
| 111 | 44.79 | 147.0 | 332 | 3 | 0 |
| 112 | 44.84 | 147.1 | 299 | 5 | 0 |
| 113 | 44.86 | 147.2 | 154 | 7 | 1 |
| 114 | 44.90 | 147.3 | 130 | 7 | 1 |
| 115 | 44.93 | 147.4 | 118 | 10 | 0 |
| 116 | 45.03 | 147.7 | 144 | 7 | 0 |
| 117 | 45.15 | 148.1 | 159 | 6 | 0 |
| 118 | 45.19 | 148.3 | 192 | 10 | 0 |
| 119 | 45.31 | 148.7 | 212 | 12 | 0 |
| 120 | 45.36 | 148.8 | 171 | 3 | 0 |
| 121 | 45.40 | 148.9 | 35 | 3 | 0 |
| 122 | 45.42 | 149.0 | 38 | 6 | 0 |
| 123 | 45.49 | 149.3 | 187 | 2 | 0 |
| 124 | 45.52 | 149.3 | 148 | 10 | 0 |
| 125 | 45.55 | 149.4 | 354 | 5 | 0 |
| 126 | 45.58 | 149.5 | 141 | 8 | 0 |
| 127 | 45.63 | 149.7 | 87 | 7 | 0 |
| 128 | 45.80 | 150.3 | 192 | 10 | 0 |
| 129 | 45.96 | 150.8 | 294 | 8 | 0 |
| 130 | 46.05 | 151.1 | 264 | 14 | 0 |
| 131 | 46.12 | 151.3 | 153 | 9 | 0 |
| 132 | 46.13 | 151.4 | 55 | 49 | 1 |
| 133 | 46.15 | 151.4 | 187 | 12 | 0 |
| 134 | 46.18 | 151.5 | 271 | 10 | 0 |
| 135 | 46.31 | 151.9 | 337 | 7 | 0 |

All directions are with respect to Magnetic North.

**Table MW-100B: 1. Orientation Summary Table**
**Image Features**
**Arcadis**
**Project: Tyco (Ansul FTC)**
**Well: MW-100B**
**15 August 2018**

| Feature No. | Depth (meters) | Depth (feet) | Dip Direction (degrees) | Dip Angle (degrees) | Feature Rank (0 to 5) |
|---|---|---|---|---|---|
| 136 | 46.37 | 152.1 | 141 | 34 | 0 |
| 137 | 46.39 | 152.2 | 354 | 22 | 0 |
| 138 | 46.46 | 152.4 | 28 | 1 | 0 |
| 139 | 46.50 | 152.6 | 16 | 5 | 0 |
| 140 | 46.56 | 152.7 | 321 | 5 | 1 |
| 141 | 46.63 | 153.0 | 115 | 18 | 0 |
| 142 | 46.63 | 153.0 | 259 | 13 | 0 |
| 143 | 46.71 | 153.2 | 204 | 6 | 0 |
| 144 | 46.76 | 153.4 | 77 | 27 | 0 |
| 145 | 46.77 | 153.4 | 130 | 6 | 0 |
| 146 | 46.89 | 153.9 | 43 | 23 | 0 |
| 147 | 46.91 | 153.9 | 58 | 5 | 0 |
| 148 | 46.98 | 154.1 | 64 | 9 | 0 |
| 149 | 47.00 | 154.2 | 64 | 4 | 0 |
| 150 | 47.24 | 155.0 | 166 | 7 | 0 |
| 151 | 47.30 | 155.2 | 54 | 11 | 0 |
| 152 | 47.33 | 155.3 | 204 | 13 | 0 |
| 153 | 47.39 | 155.5 | 192 | 6 | 0 |
| 154 | 47.43 | 155.6 | 162 | 12 | 0 |
| 155 | 47.47 | 155.7 | 16 | 9 | 0 |
| 156 | 47.54 | 156.0 | 311 | 6 | 0 |
| 157 | 47.58 | 156.1 | 335 | 9 | 0 |
| 158 | 47.70 | 156.5 | 180 | 7 | 1 |
| 159 | 47.80 | 156.8 | 132 | 8 | 0 |
| 160 | 47.93 | 157.2 | 226 | 10 | 0 |
| 161 | 47.99 | 157.5 | 228 | 9 | 0 |
| 162 | 48.06 | 157.7 | 57 | 14 | 0 |
| 163 | 48.12 | 157.9 | 317 | 8 | 0 |
| 164 | 48.14 | 157.9 | 159 | 17 | 0 |
| 165 | 48.20 | 158.2 | 235 | 6 | 0 |
| 166 | 48.27 | 158.4 | 168 | 10 | 0 |
| 167 | 48.31 | 158.5 | 156 | 10 | 0 |
| 168 | 48.34 | 158.6 | 165 | 16 | 0 |
| 169 | 48.48 | 159.0 | 133 | 16 | 0 |
| 170 | 48.55 | 159.3 | 108 | 17 | 0 |
| 171 | 48.57 | 159.3 | 271 | 22 | 0 |
| 172 | 48.65 | 159.6 | 194 | 19 | 0 |
| 173 | 48.66 | 159.6 | 300 | 20 | 0 |
| 174 | 48.66 | 159.7 | 38 | 20 | 0 |
| 175 | 48.78 | 160.0 | 257 | 7 | 0 |
| 176 | 48.80 | 160.1 | 173 | 9 | 0 |
| 177 | 48.85 | 160.3 | 235 | 23 | 0 |
| 178 | 48.90 | 160.4 | 317 | 8 | 0 |
| 179 | 48.91 | 160.5 | 256 | 1 | 0 |
| 180 | 49.00 | 160.8 | 217 | 5 | 0 |

All directions are with respect to Magnetic North.

**Table MW-100B: 1. Orientation Summary Table**
**Image Features**
**Arcadis**
**Project: Tyco (Ansul FTC)**
**Well: MW-100B**
**15 August 2018**

| Feature No. | Depth (meters) | Depth (feet) | Dip Direction (degrees) | Dip Angle (degrees) | Feature Rank (0 to 5) |
|---|---|---|---|---|---|
| 181 | 49.04 | 160.9 | 150 | 10 | 0 |
| 182 | 49.11 | 161.1 | 178 | 10 | 0 |
| 183 | 49.18 | 161.3 | 332 | 3 | 0 |
| 184 | 49.22 | 161.5 | 73 | 7 | 0 |
| 185 | 49.34 | 161.9 | 213 | 4 | 0 |
| 186 | 49.38 | 162.0 | 228 | 5 | 0 |
| 187 | 49.43 | 162.2 | 355 | 3 | 0 |
| 188 | 49.50 | 162.4 | 315 | 6 | 0 |
| 189 | 49.58 | 162.7 | 227 | 8 | 0 |
| 190 | 49.70 | 163.1 | 112 | 8 | 0 |
| 191 | 49.80 | 163.4 | 216 | 10 | 0 |
| 192 | 49.84 | 163.5 | 217 | 10 | 0 |
| 193 | 49.89 | 163.7 | 213 | 8 | 0 |
| 194 | 50.06 | 164.2 | 170 | 5 | 0 |
| 195 | 50.17 | 164.6 | 359 | 4 | 0 |
| 196 | 50.28 | 165.0 | 190 | 10 | 0 |
| 197 | 50.35 | 165.2 | 146 | 7 | 0 |
| 198 | 50.74 | 166.5 | 197 | 5 | 0 |
| 199 | 50.93 | 167.1 | 0 | 6 | 0 |
| 200 | 51.05 | 167.5 | 320 | 5 | 0 |
| 201 | 51.09 | 167.6 | 315 | 5 | 0 |
| 202 | 51.18 | 167.9 | 56 | 4 | 1 |
| 203 | 51.29 | 168.3 | 13 | 7 | 0 |
| 204 | 51.47 | 168.9 | 205 | 14 | 0 |
| 205 | 51.51 | 169.0 | 91 | 23 | 0 |
| 206 | 51.51 | 169.0 | 257 | 8 | 0 |
| 207 | 51.58 | 169.2 | 127 | 7 | 0 |
| 208 | 51.65 | 169.5 | 161 | 12 | 0 |
| 209 | 51.76 | 169.8 | 189 | 19 | 1 |
| 210 | 51.77 | 169.9 | 35 | 10 | 1 |
| 211 | 51.81 | 170.0 | 102 | 5 | 0 |
| 212 | 51.85 | 170.1 | 208 | 8 | 0 |
| 213 | 51.92 | 170.3 | 191 | 8 | 0 |
| 214 | 51.98 | 170.5 | 218 | 25 | 1 |
| 215 | 52.02 | 170.7 | 191 | 15 | 1 |
| 216 | 52.06 | 170.8 | 177 | 10 | 1 |
| 217 | 52.11 | 171.0 | 82 | 9 | 1 |
| 218 | 52.20 | 171.3 | 175 | 9 | 1 |
| 219 | 52.23 | 171.4 | 185 | 12 | 0 |
| 220 | 52.31 | 171.6 | 131 | 7 | 0 |
| 221 | 52.44 | 172.1 | 133 | 9 | 1 |
| 222 | 52.50 | 172.3 | 64 | 3 | 0 |
| 223 | 52.58 | 172.5 | 344 | 4 | 0 |
| 224 | 52.63 | 172.7 | 148 | 11 | 0 |
| 225 | 52.73 | 173.0 | 53 | 7 | 0 |

All directions are with respect to Magnetic North.

**Table MW-100B: 1. Orientation Summary Table**
**Image Features**
**Arcadis**
**Project: Tyco (Ansul FTC)**
**Well: MW-100B**
**15 August 2018**

| Feature No. | Depth (meters) | Depth (feet) | Dip Direction (degrees) | Dip Angle (degrees) | Feature Rank (0 to 5) |
|---|---|---|---|---|---|
| 226 | 52.80 | 173.2 | 67 | 4 | 0 |
| 227 | 52.88 | 173.5 | 218 | 8 | 0 |
| 228 | 52.98 | 173.8 | 327 | 5 | 1 |
| 229 | 53.04 | 174.0 | 349 | 8 | 0 |
| 230 | 53.08 | 174.2 | 273 | 2 | 0 |
| 231 | 53.13 | 174.3 | 198 | 10 | 0 |
| 232 | 53.23 | 174.6 | 251 | 6 | 0 |
| 233 | 53.27 | 174.8 | 52 | 6 | 0 |
| 234 | 53.32 | 174.9 | 198 | 14 | 0 |
| 235 | 53.44 | 175.3 | 173 | 8 | 0 |
| 236 | 53.51 | 175.6 | 186 | 8 | 0 |
| 237 | 53.56 | 175.7 | 295 | 3 | 0 |
| 238 | 53.61 | 175.9 | 6 | 6 | 0 |
| 239 | 53.65 | 176.0 | 119 | 5 | 0 |
| 240 | 53.69 | 176.2 | 5 | 14 | 0 |
| 241 | 53.74 | 176.3 | 208 | 9 | 0 |
| 242 | 53.79 | 176.5 | 203 | 8 | 1 |
| 243 | 53.84 | 176.6 | 203 | 4 | 1 |
| 244 | 53.84 | 176.6 | 286 | 3 | 0 |
| 245 | 53.87 | 176.8 | 188 | 3 | 0 |
| 246 | 53.91 | 176.9 | 112 | 22 | 0 |
| 247 | 53.94 | 177.0 | 261 | 18 | 0 |
| 248 | 53.95 | 177.0 | 110 | 18 | 0 |
| 249 | 54.02 | 177.2 | 249 | 7 | 0 |
| 250 | 54.10 | 177.5 | 282 | 6 | 0 |
| 251 | 54.11 | 177.5 | 3 | 23 | 1 |
| 252 | 54.18 | 177.7 | 325 | 9 | 0 |
| 253 | 54.21 | 177.9 | 235 | 5 | 0 |
| 254 | 54.29 | 178.1 | 185 | 8 | 0 |
| 255 | 54.37 | 178.4 | 216 | 5 | 0 |
| 256 | 54.55 | 179.0 | 212 | 12 | 0 |
| 257 | 54.59 | 179.1 | 199 | 7 | 0 |
| 258 | 54.64 | 179.3 | 82 | 10 | 0 |
| 259 | 54.77 | 179.7 | 260 | 5 | 0 |
| 260 | 54.96 | 180.3 | 197 | 9 | 0 |
| 261 | 55.05 | 180.6 | 267 | 8 | 0 |
| 262 | 55.07 | 180.7 | 5 | 13 | 0 |
| 263 | 55.10 | 180.8 | 5 | 6 | 0 |
| 264 | 55.14 | 180.9 | 277 | 6 | 0 |
| 265 | 55.20 | 181.1 | 344 | 11 | 0 |
| 266 | 55.28 | 181.4 | 303 | 8 | 0 |
| 267 | 55.28 | 181.4 | 66 | 13 | 0 |
| 268 | 55.36 | 181.6 | 48 | 11 | 0 |
| 269 | 55.39 | 181.7 | 4 | 5 | 0 |
| 270 | 55.45 | 181.9 | 157 | 21 | 0 |

All directions are with respect to Magnetic North.

**Table MW-100B: 1. Orientation Summary Table**
**Image Features**
**Arcadis**
**Project: Tyco (Ansul FTC)**
**Well: MW-100B**
**15 August 2018**

| Feature No. | Depth (meters) | Depth (feet) | Dip Direction (degrees) | Dip Angle (degrees) | Feature Rank (0 to 5) |
|---|---|---|---|---|---|
| 271 | 55.58 | 182.4 | 261 | 9 | 0 |
| 272 | 55.62 | 182.5 | 218 | 6 | 0 |
| 273 | 55.69 | 182.7 | 241 | 7 | 0 |
| 274 | 55.76 | 182.9 | 307 | 14 | 0 |
| 275 | 55.80 | 183.1 | 200 | 5 | 0 |
| 276 | 55.87 | 183.3 | 143 | 15 | 1 |
| 277 | 55.90 | 183.4 | 117 | 8 | 1 |
| 278 | 55.93 | 183.5 | 139 | 10 | 0 |
| 279 | 55.99 | 183.7 | 358 | 10 | 1 |
| 280 | 56.03 | 183.8 | 344 | 9 | 0 |
| 281 | 56.11 | 184.1 | 47 | 11 | 0 |
| 282 | 56.17 | 184.3 | 164 | 13 | 0 |
| 283 | 56.20 | 184.4 | 352 | 3 | 0 |
| 284 | 56.22 | 184.5 | 273 | 2 | 0 |
| 285 | 56.27 | 184.6 | 146 | 7 | 0 |
| 286 | 56.29 | 184.7 | 153 | 23 | 0 |
| 287 | 56.40 | 185.0 | 164 | 13 | 0 |
| 288 | 56.46 | 185.2 | 191 | 9 | 0 |
| 289 | 56.54 | 185.5 | 173 | 7 | 0 |
| 290 | 56.59 | 185.7 | 167 | 8 | 0 |
| 291 | 56.64 | 185.8 | 347 | 19 | 0 |
| 292 | 56.68 | 186.0 | 297 | 12 | 0 |
| 293 | 56.69 | 186.0 | 74 | 30 | 0 |
| 294 | 56.78 | 186.3 | 133 | 7 | 0 |
| 295 | 56.86 | 186.5 | 201 | 8 | 0 |
| 296 | 56.99 | 187.0 | 100 | 6 | 0 |
| 297 | 57.04 | 187.2 | 96 | 10 | 0 |
| 298 | 57.08 | 187.3 | 120 | 7 | 0 |
| 299 | 57.13 | 187.4 | 152 | 14 | 0 |
| 300 | 57.21 | 187.7 | 348 | 12 | 0 |
| 301 | 57.26 | 187.9 | 278 | 3 | 0 |
| 302 | 57.37 | 188.2 | 132 | 8 | 1 |
| 303 | 57.45 | 188.5 | 177 | 15 | 0 |
| 304 | 57.47 | 188.5 | 343 | 10 | 0 |
| 305 | 57.52 | 188.7 | 258 | 7 | 0 |
| 306 | 57.57 | 188.9 | 319 | 8 | 0 |
| 307 | 57.60 | 189.0 | 238 | 2 | 0 |
| 308 | 57.63 | 189.1 | 287 | 1 | 0 |
| 309 | 57.68 | 189.2 | 33 | 6 | 0 |
| 310 | 57.73 | 189.4 | 247 | 5 | 0 |
| 311 | 57.76 | 189.5 | 236 | 13 | 0 |
| 312 | 57.82 | 189.7 | 88 | 5 | 1 |
| 313 | 57.85 | 189.8 | 129 | 4 | 1 |
| 314 | 57.88 | 189.9 | 174 | 5 | 1 |
| 315 | 57.95 | 190.1 | 72 | 13 | 0 |

All directions are with respect to Magnetic North.

**Table MW-100B: 1. Orientation Summary Table**
**Image Features**
**Arcadis**
**Project: Tyco (Ansul FTC)**
**Well: MW-100B**
**15 August 2018**

| Feature No. | Depth (meters) | Depth (feet) | Dip Direction (degrees) | Dip Angle (degrees) | Feature Rank (0 to 5) |
|---|---|---|---|---|---|
| 316 | 57.96 | 190.2 | 167 | 13 | 0 |
| 317 | 58.09 | 190.6 | 195 | 6 | 0 |
| 318 | 58.12 | 190.7 | 91 | 6 | 0 |
| 319 | 58.15 | 190.8 | 200 | 2 | 0 |
| 320 | 58.17 | 190.9 | 235 | 9 | 0 |
| 321 | 58.22 | 191.0 | 247 | 9 | 0 |
| 322 | 58.29 | 191.2 | 115 | 10 | 0 |
| 323 | 58.33 | 191.4 | 120 | 6 | 0 |
| 324 | 58.39 | 191.6 | 140 | 7 | 0 |
| 325 | 58.44 | 191.7 | 4 | 5 | 0 |
| 326 | 58.47 | 191.8 | 173 | 12 | 0 |
| 327 | 58.49 | 191.9 | 316 | 16 | 0 |
| 328 | 58.51 | 192.0 | 150 | 4 | 0 |
| 329 | 58.58 | 192.2 | 124 | 5 | 0 |
| 330 | 58.62 | 192.3 | 83 | 4 | 0 |
| 331 | 58.64 | 192.4 | 107 | 6 | 0 |
| 332 | 58.67 | 192.5 | 158 | 10 | 0 |
| 333 | 58.71 | 192.6 | 215 | 5 | 0 |
| 334 | 58.73 | 192.7 | 200 | 11 | 0 |
| 335 | 58.81 | 192.9 | 2 | 3 | 0 |
| 336 | 58.86 | 193.1 | 25 | 4 | 0 |
| 337 | 58.89 | 193.2 | 275 | 22 | 0 |
| 338 | 58.89 | 193.2 | 98 | 19 | 0 |
| 339 | 59.02 | 193.6 | 19 | 5 | 0 |
| 340 | 59.23 | 194.3 | 297 | 6 | 0 |
| 341 | 59.31 | 194.6 | 139 | 14 | 0 |
| 342 | 59.35 | 194.7 | 150 | 23 | 0 |
| 343 | 59.39 | 194.9 | 176 | 10 | 0 |
| 344 | 59.44 | 195.0 | 204 | 7 | 0 |
| 345 | 59.53 | 195.3 | 293 | 20 | 0 |
| 346 | 59.54 | 195.3 | 106 | 13 | 0 |
| 347 | 59.61 | 195.6 | 205 | 7 | 0 |
| 348 | 59.66 | 195.7 | 294 | 26 | 0 |
| 349 | 59.69 | 195.8 | 131 | 9 | 0 |
| 350 | 59.72 | 195.9 | 163 | 3 | 0 |
| 351 | 59.77 | 196.1 | 291 | 5 | 0 |
| 352 | 59.83 | 196.3 | 237 | 6 | 0 |
| 353 | 59.91 | 196.6 | 16 | 21 | 0 |
| 354 | 59.93 | 196.6 | 41 | 10 | 0 |
| 355 | 60.01 | 196.9 | 338 | 2 | 0 |
| 356 | 60.06 | 197.1 | 300 | 6 | 0 |
| 357 | 60.16 | 197.4 | 281 | 2 | 0 |
| 358 | 60.18 | 197.5 | 210 | 4 | 1 |
| 359 | 60.23 | 197.6 | 200 | 8 | 0 |
| 360 | 60.25 | 197.7 | 211 | 6 | 0 |

All directions are with respect to Magnetic North.

**Table MW-100B: 1. Orientation Summary Table**
**Image Features**
**Arcadis**
**Project: Tyco (Ansul FTC)**
**Well: MW-100B**
**15 August 2018**

| Feature No. | Depth (meters) | Depth (feet) | Dip Direction (degrees) | Dip Angle (degrees) | Feature Rank (0 to 5) |
|---|---|---|---|---|---|
| 361 | 60.29 | 197.8 | 42 | 3 | 0 |
| 362 | 60.35 | 198.0 | 351 | 50 | 0 |
| 363 | 60.35 | 198.0 | 107 | 27 | 1 |
| 364 | 60.36 | 198.0 | 210 | 63 | 0 |
| 365 | 60.37 | 198.1 | 287 | 6 | 0 |
| 366 | 60.41 | 198.2 | 60 | 10 | 0 |
| 367 | 60.49 | 198.5 | 26 | 29 | 1 |
| 368 | 60.50 | 198.5 | 219 | 18 | 1 |
| 369 | 60.75 | 199.3 | 101 | 13 | 0 |
| 370 | 60.76 | 199.3 | 327 | 27 | 0 |
| 371 | 60.78 | 199.4 | 101 | 4 | 1 |
| 372 | 60.85 | 199.6 | 158 | 8 | 0 |
| 373 | 60.86 | 199.7 | 236 | 19 | 0 |
| 374 | 60.87 | 199.7 | 24 | 19 | 0 |
| 375 | 60.96 | 200.0 | 199 | 9 | 0 |
| 376 | 60.99 | 200.1 | 237 | 12 | 0 |
| 377 | 61.08 | 200.4 | 247 | 15 | 0 |
| 378 | 61.08 | 200.4 | 73 | 14 | 0 |
| 379 | 61.15 | 200.6 | 178 | 38 | 0 |
| 380 | 61.17 | 200.7 | 170 | 6 | 0 |
| 381 | 61.26 | 201.0 | 183 | 6 | 0 |
| 382 | 61.28 | 201.0 | 23 | 34 | 0 |
| 383 | 61.32 | 201.2 | 174 | 17 | 0 |
| 384 | 61.42 | 201.5 | 84 | 7 | 0 |
| 385 | 61.47 | 201.7 | 208 | 6 | 0 |
| 386 | 61.49 | 201.7 | 152 | 6 | 0 |
| 387 | 61.51 | 201.8 | 149 | 11 | 0 |
| 388 | 61.59 | 202.1 | 164 | 16 | 0 |
| 389 | 61.63 | 202.2 | 218 | 23 | 1 |
| 390 | 61.65 | 202.3 | 140 | 34 | 0 |
| 391 | 61.66 | 202.3 | 241 | 8 | 0 |
| 392 | 61.69 | 202.4 | 233 | 8 | 0 |
| 393 | 61.73 | 202.5 | 10 | 4 | 0 |
| 394 | 61.76 | 202.6 | 51 | 9 | 0 |
| 395 | 61.81 | 202.8 | 314 | 7 | 0 |
| 396 | 61.88 | 203.0 | 214 | 22 | 0 |
| 397 | 61.90 | 203.1 | 43 | 21 | 0 |
| 398 | 61.94 | 203.2 | 302 | 34 | 0 |
| 399 | 62.05 | 203.6 | 262 | 4 | 0 |

All directions are with respect to Magnetic North.

borehole geophysics / hydrophysics

810 Quail Street, Unit E
Lakewood, CO 80215
Office: (303) 279-0171
www.colog.com

# Natural Gamma-Ray Three-Arm Caliper Fluid Temp. / Cond.

| | |
|---|---|
| **Company** | Arcadis |
| **Well** | MW-100B |
| **Project** | Tyco (Ansul FTC) |
| **County** | Marinette |
| **State** | Wisconsin |

**COMPANY** Arcadis
**WELL** MW-100B
**PROJECT** Tyco (Ansul FTC)
**COUNTY** Marinette **STATE** Wisconsin

**LOCATION**

**QTR** **SEC** **TWP** **RGE**

**OTHER SERVICES**
Acoustic Televiewer
Optical Televiewer
Core-Dynamic Flowmeter

**PERMANENT DATUM** Gound Level **ELEVATION** NA
**LOG MEAS. FROM** Ground Level 0.0 ft **ABOVE PERMINANT DATUM**
**DRILLING MEAS. FROM** Ground Level

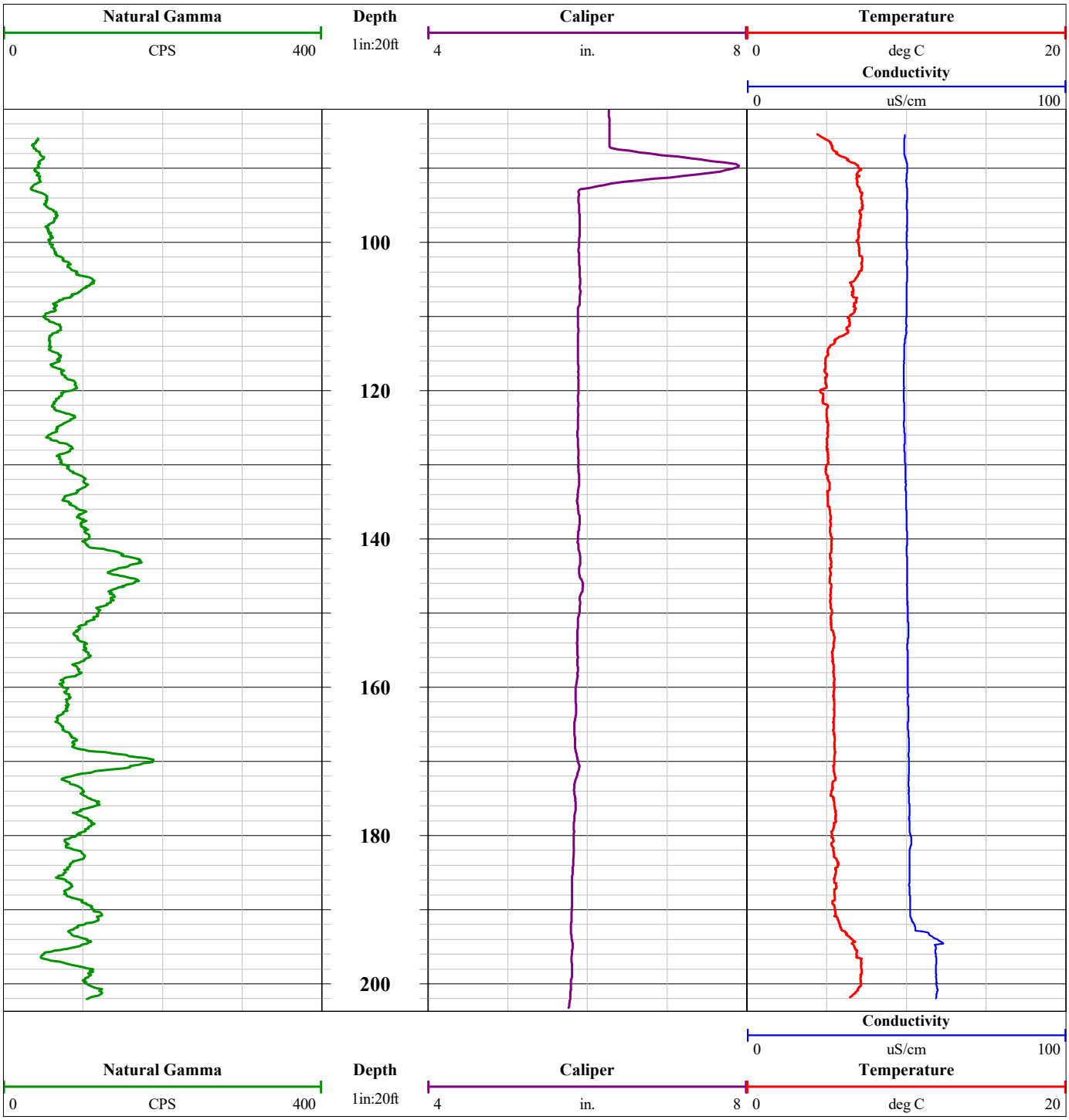
| | | | | |
|---|---|---|---|---|
| **DATE ACQUIRED** | 15 August 2018 | 15 August 2018 | 16 August 2018 | |
| **RUN NUMBER** | Three | Four | One | |
| **LOG TYPE** | Caliper | NGR | FTC | |
| **DEPTH-DRILLER** | 205.0 ft | 205.0 ft | 205.0 ft | |
| **DEPTH-LOGGER** | 203.9 ft | 203.9 ft | 203.9 ft | |
| **BTM LOG INTERVAL** | 203.3 ft | 202.0 ft | 201.8 ft | |
| **TOP LOG INTERVAL** | 88.7 ft | 86.0 ft | 85.4 ft | |
| **RECORDED BY** | D. Renner | D. Renner | D. Renner | |
| **WITNESSED BY** | Z. Westphal | Z. Westphal | Z. Westphal | |
| **PROBE TYPE, S/N** | CCP, 1751 | HLP, 2375 | 2PFA, 2656 | |
| **LOGGING SPEED** | 15 ft/min | 15 ft/min | 10 ft/min | |
| **SAMPLE INTERVAL** | 0.2 ft | 0.1 ft | 0.1 ft | |
| **FLUID LEVEL** | 5.3 ft | 5.3 ft | 5.3 ft | |

| **BOREHOLE RECORD** | | | | **CASING RECORD** | | | |
|---|---|---|---|---|---|---|---|
| **RUN No.** | **BIT** | **FROM** | **TO** | **SIZE** | **WGT.** | **FROM** | **TO** |
| One | NA | 0 ft | 88 ft | 6 in. | Steel | 0 ft | 88 ft |
| Two | 6 in. | 88 ft | 205 ft | | | | |
| | | | | | | | |
| | | | | | | | |

**NA - Not Available, N/A - Not Applicable**

**COMMENTS**

Input Files:
Arcadis_Tyco_VAP-30_Caliper_UL1.tfd
Arcadis_Tyco_VAP-30_NGR_UL1.tfd
Arcadis_Tyco_VAP-30_FTC_DL1.tfd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Caliper
4
in.
8
Temperature
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deg C
20
Conductivity
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uS/cm
100
100
120
140
160
180
200
Conductivity
0
uS/cm
100
Natural Gamma
0
CPS
400
Depth
1in:20ft
Caliper
4
in.
8
Temperature
0
deg C
20

borehole geophysics / hydrophysics

810 Quail Street, Unit E
Lakewood, CO 80215
Office: (303) 279-0171
www.colog.com

# Optical & Acoustic Televiewer

| | |
|---|---|
| **COMPANY** | Arcadis |
| **WELL** | MW-100B |
| **PROJECT** | Tyco (Ansul FTC) |
| **COUNTY** | Marinette |
| **STATE** | Wisconsin |

**Company** Arcadis
**Well** MW-100B
**Project** Tyco (Ansul FTC)
**County** Marinette
**State** Wisconsin

**LOCATION**

**QTR** **SEC** **TWP** **RGE**

**OTHER SERVICES**

Natural Gamma-Ray
Three-Arm Caliper
Fluid Temp. / Cond.
Core-Dynamic Flowmeter

**PERMANENT DATUM** Gound Level **ELEVATION** NA

**LOG MEAS. FROM** Ground Level 0.0 ft **ABOVE PERMINANT DATUM**

**DRILLING MEAS. FROM** Ground Level

| | | | | |
|---|---|---|---|---|
| **DATE ACQUIRED** | 15 August 2018 | | | |
| **RUN NUMBER** | One | Two | | |
| **LOG TYPE** | OTV | ATV | | |
| **DEPTH-DRILLER** | 205.0 ft | 205.0 ft | | |
| **DEPTH-LOGGER** | 203.9 ft | 203.9 ft | | |
| **BTM LOG INTERVAL** | 203.7 ft | 203.6 ft | | |
| **TOP LOG INTERVAL** | 88.7 ft | 88.7 ft | | |
| **RECORDED BY** | D. Renner | D. Renner | | |
| **WITNESSED BY** | Z. Westphal | Z. Westphal | | |
| **PROBE TYPE, S/N** | OBI, 121406 | ABI, 103806 | | |
| **LOGGING SPEED** | 6.0 ft/min | 6.0 ft/min | | |
| **SAMPLE INTERVAL** | 0.0088 ft | 0.0088 ft | | |
| **FLUID LEVEL** | 5.3 ft | | | |

| **BOREHOLE RECORD** | | | | **CASING RECORD** | | | |
|---|---|---|---|---|---|---|---|
| **RUN No.** | **BIT** | **FROM** | **TO** | **SIZE** | **WGT.** | **FROM** | **TO** |
| One | NA | 0 ft | 88 ft | 6 in. | Steel | 0 ft | 88 ft |
| Two | 6 in. | 88 ft | 205 ft | | | | |
| | | | | | | | |
| | | | | | | | |

**NA - Not Available, N/A - Not Applicable**

**COMMENTS**

Input File:
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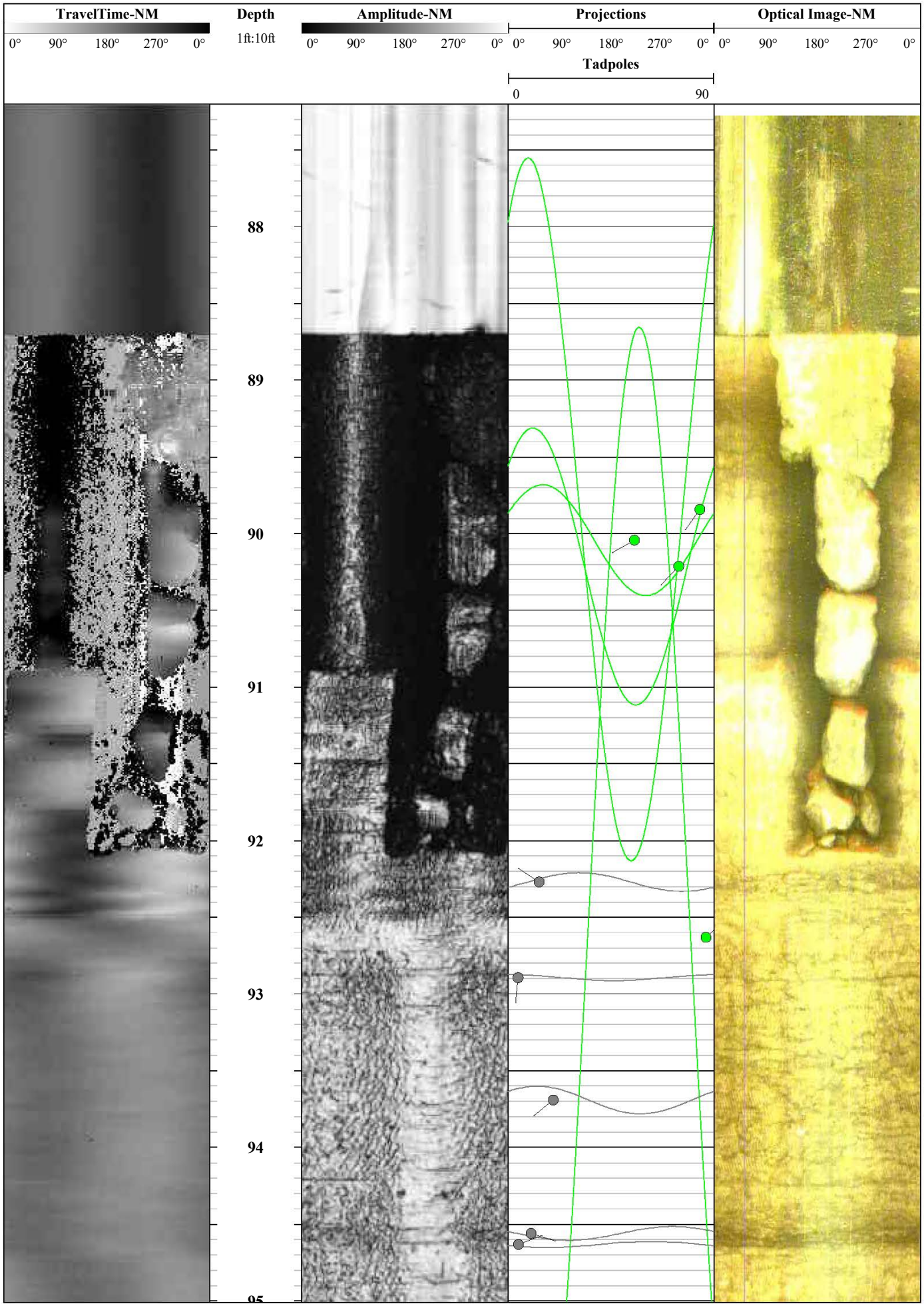
Arcadis_Tyco_VAP-30_ABI_UL1.tfd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Projections
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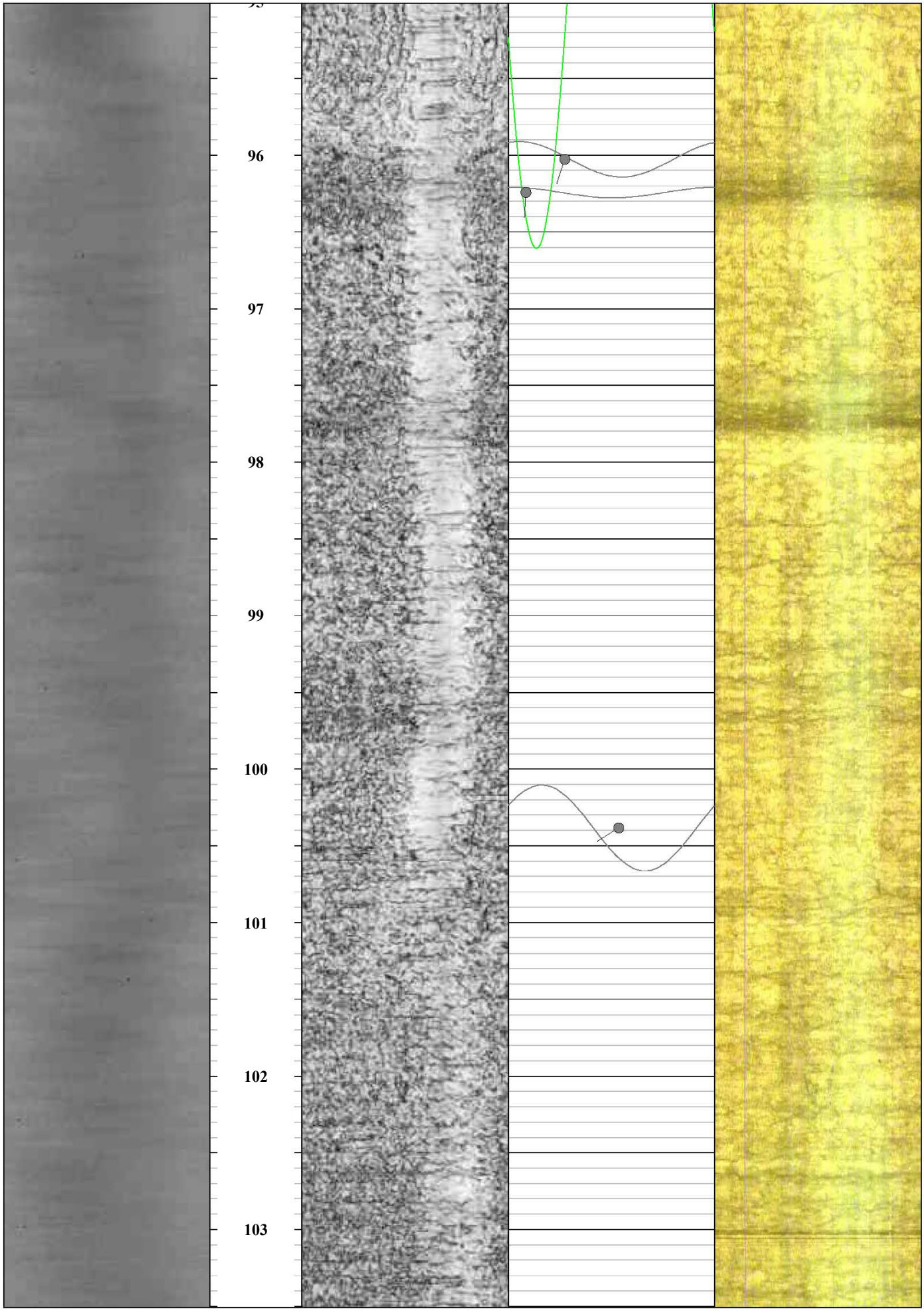
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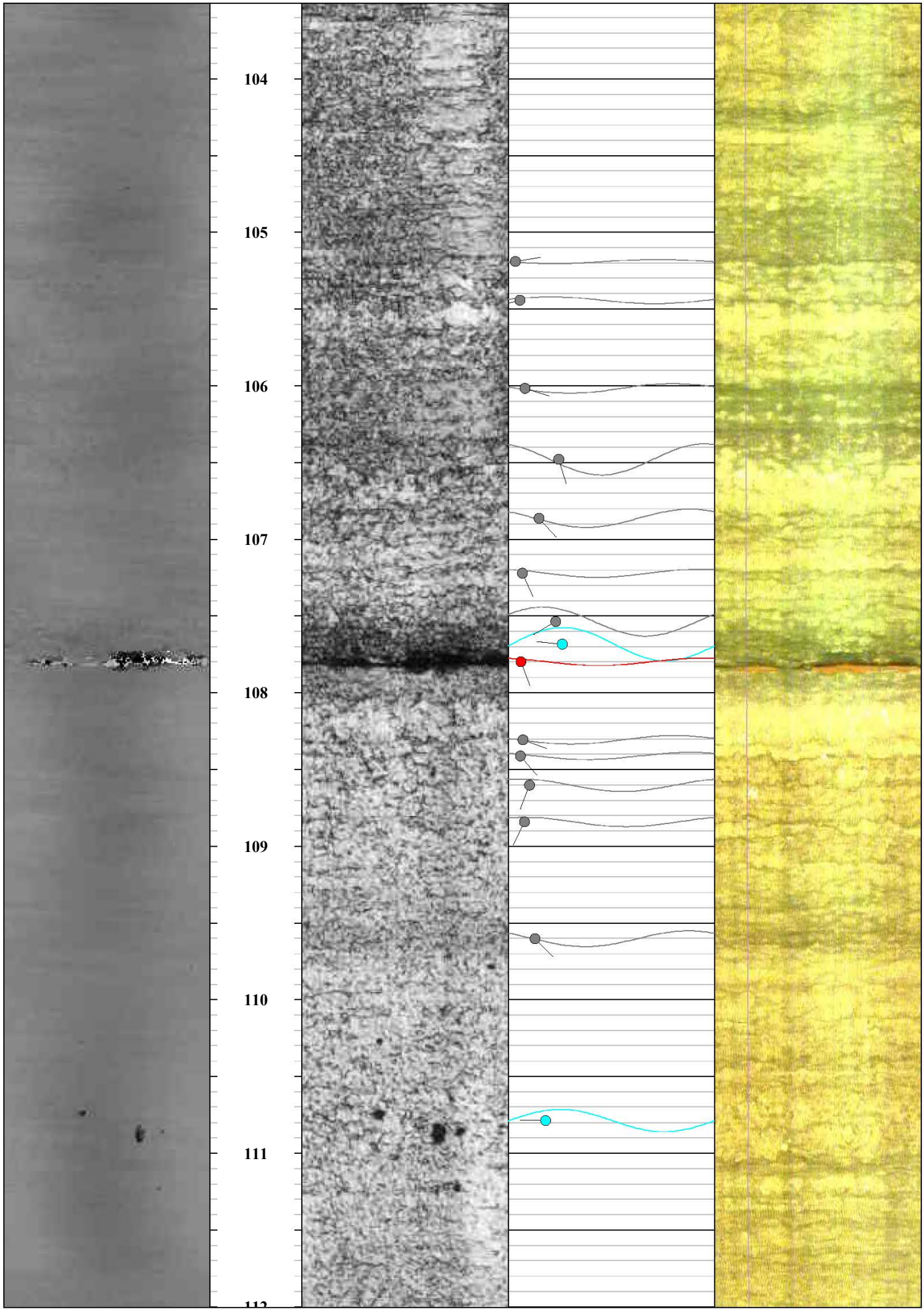
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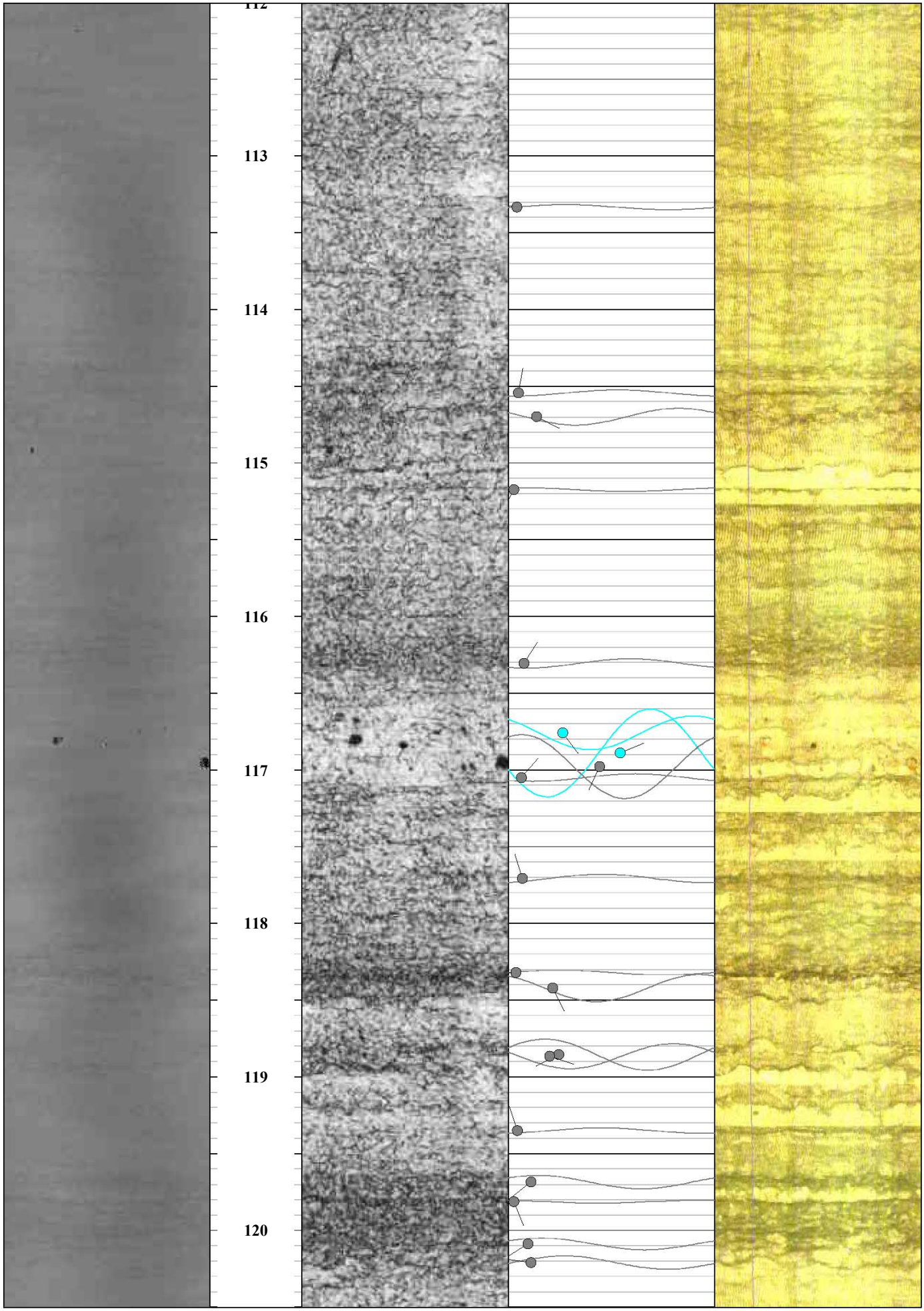
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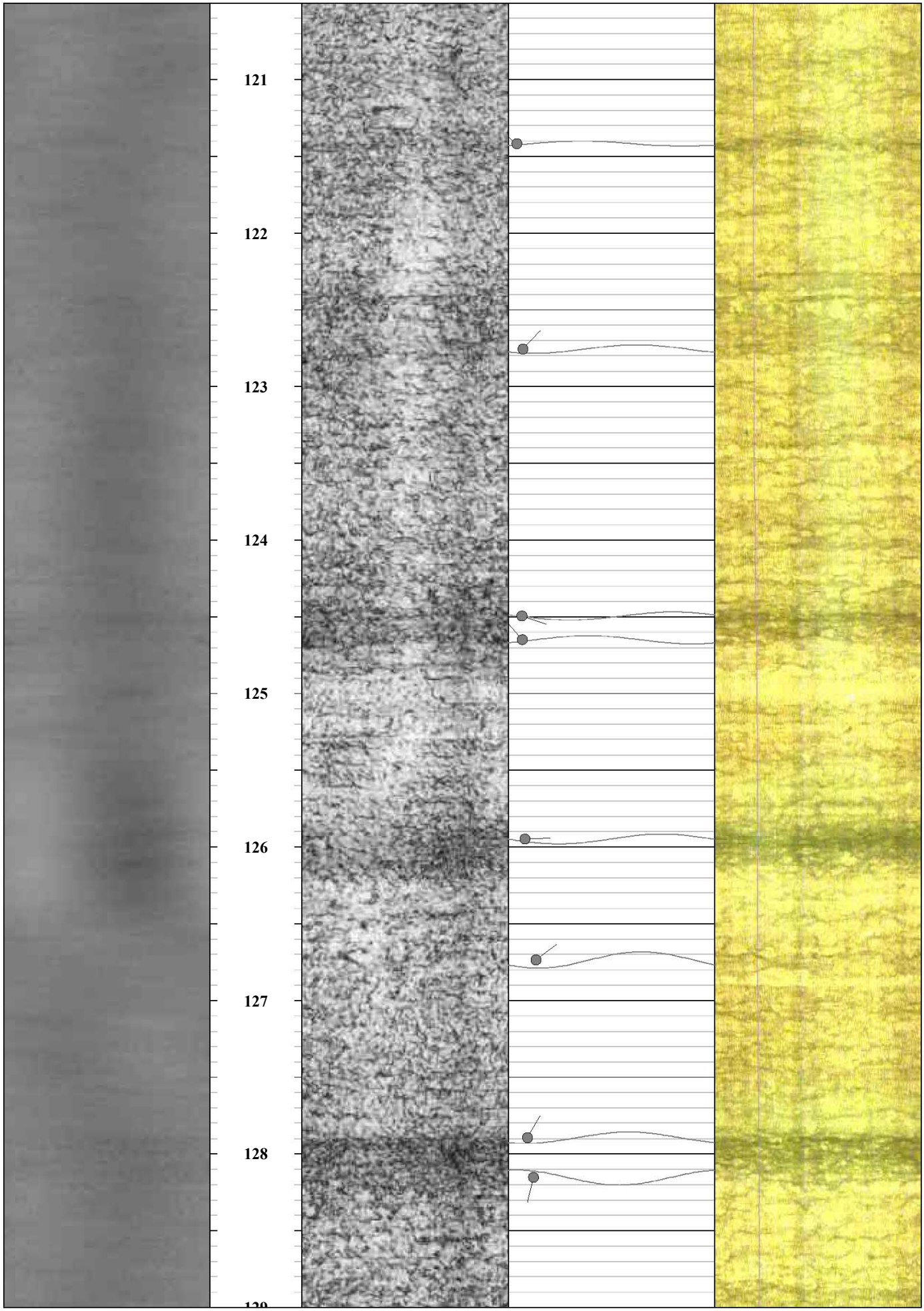
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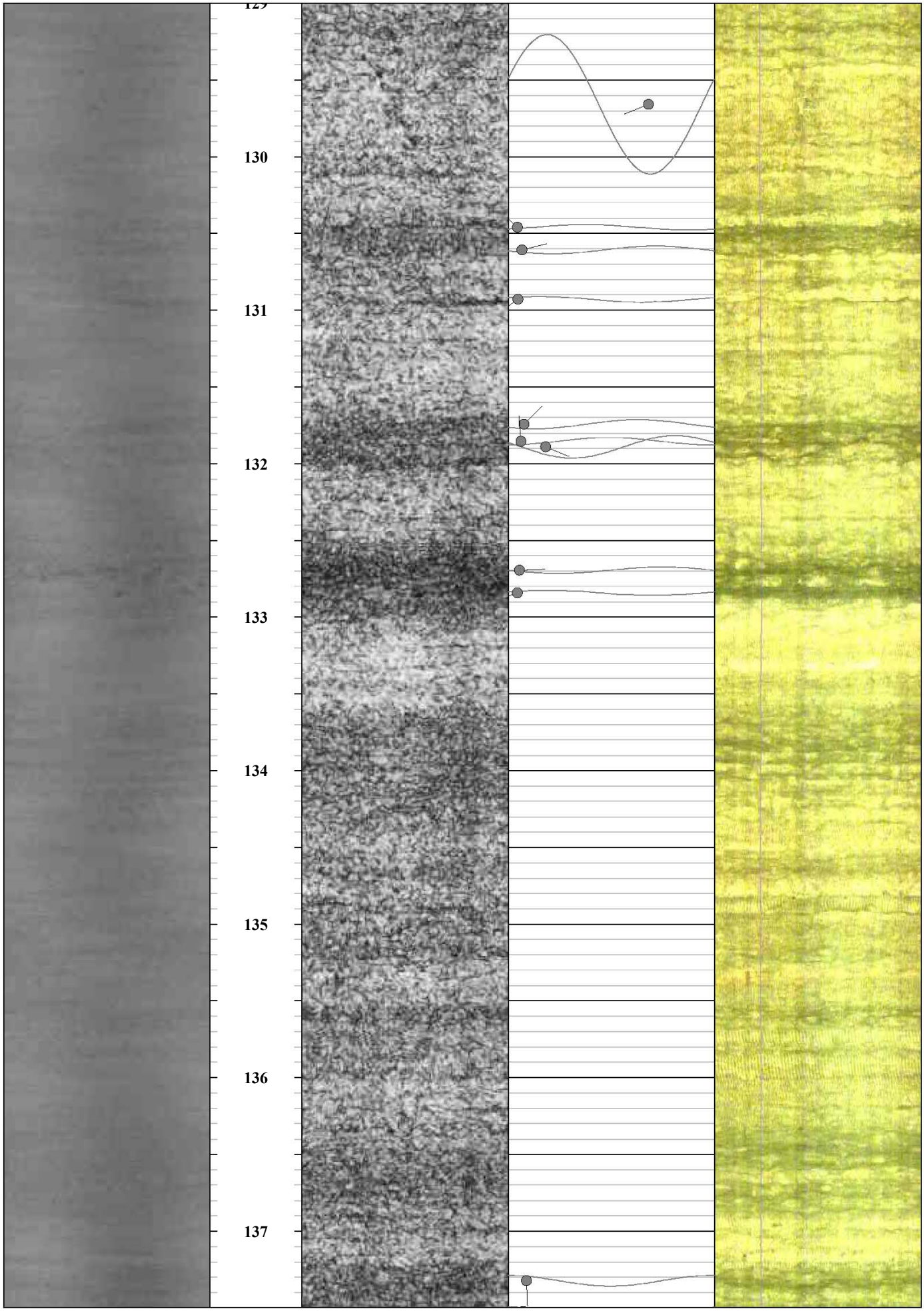
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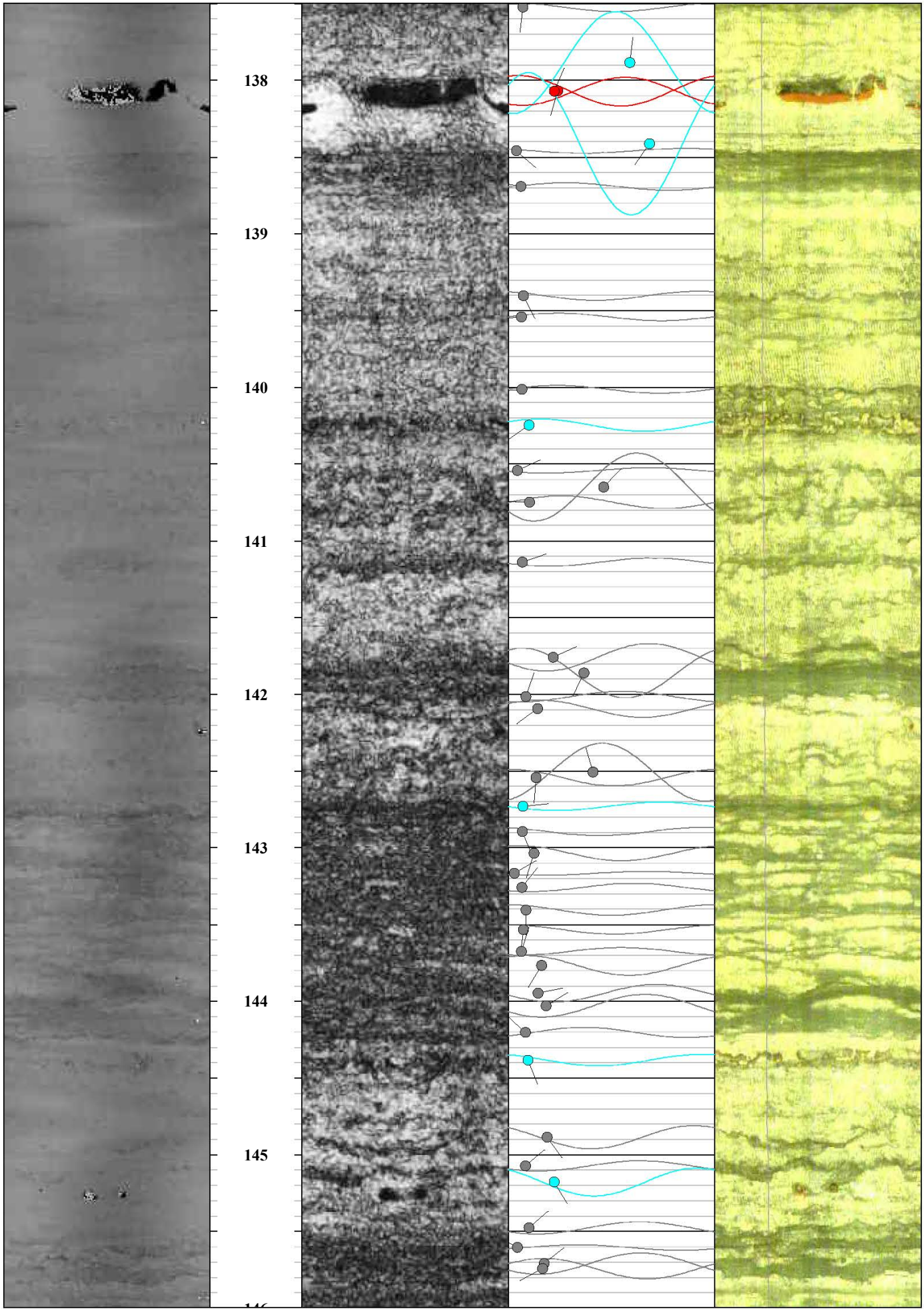
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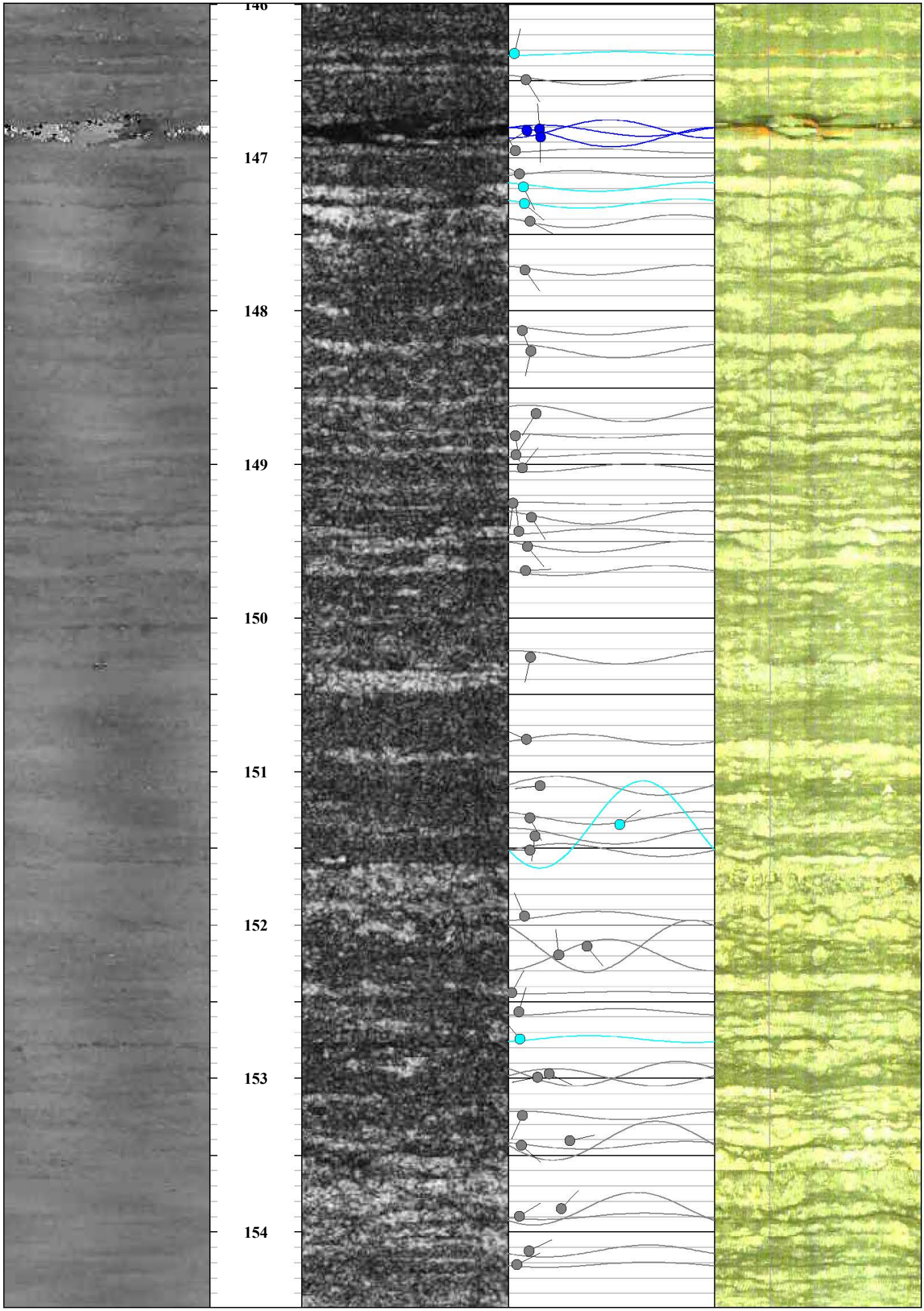
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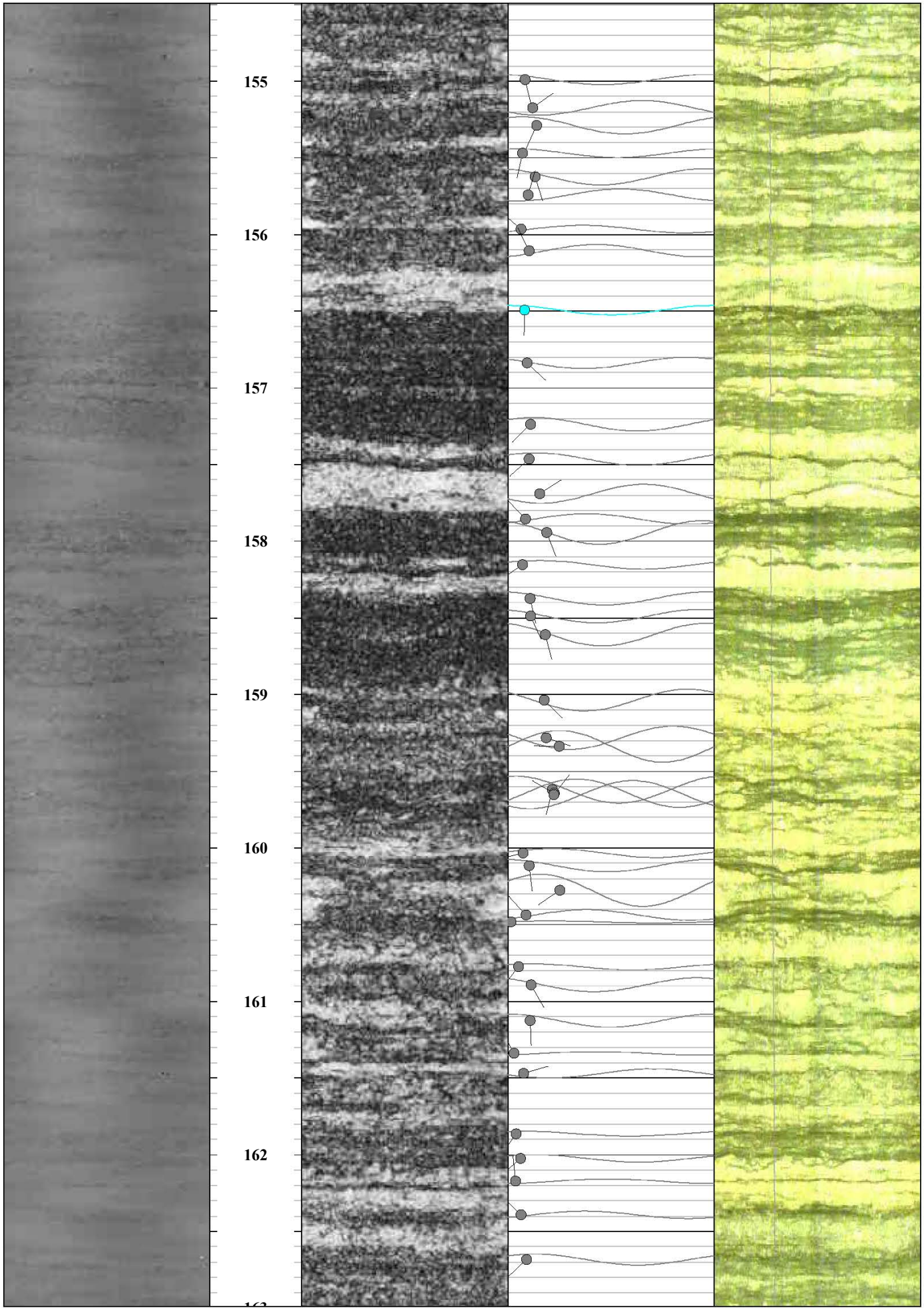
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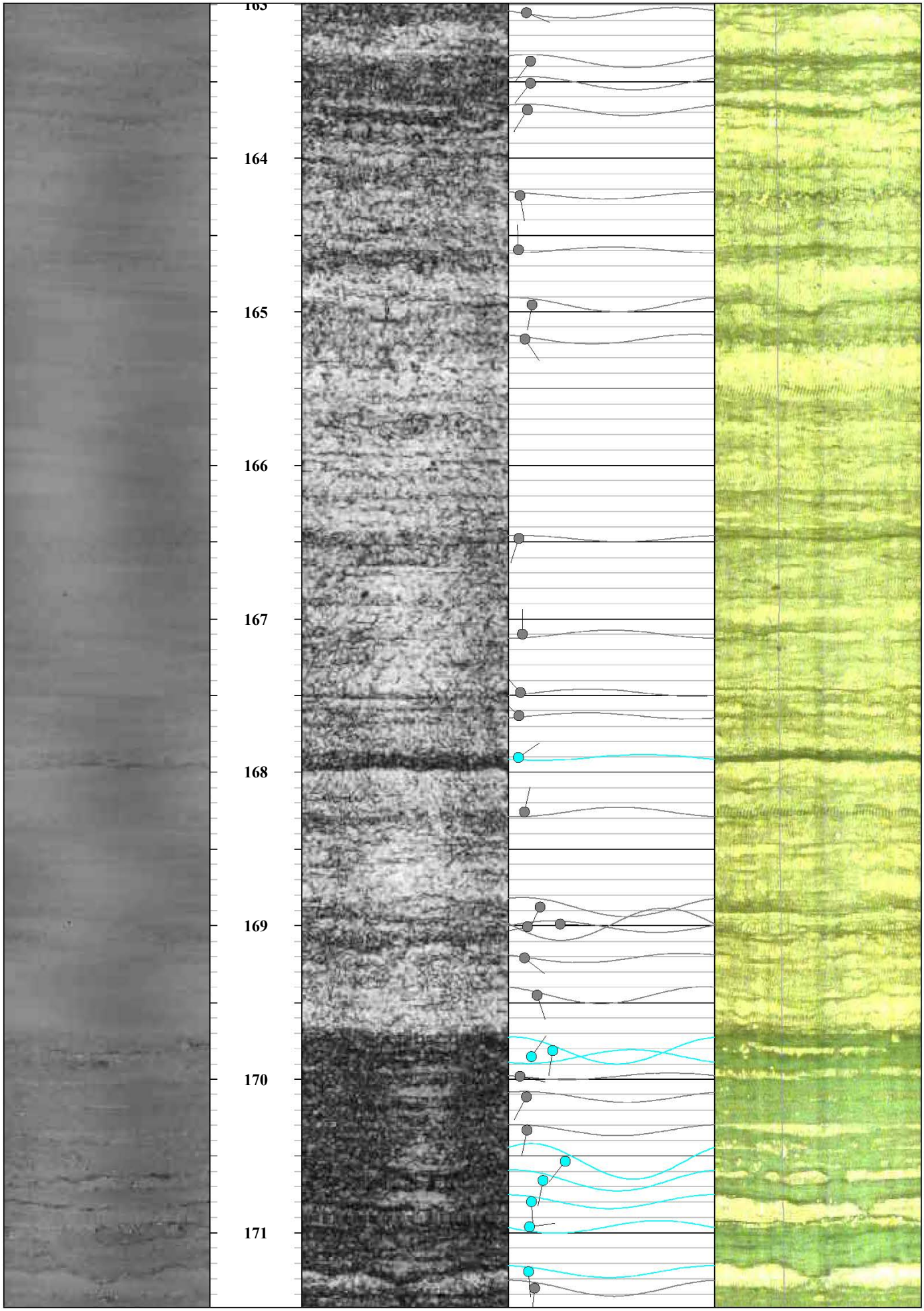
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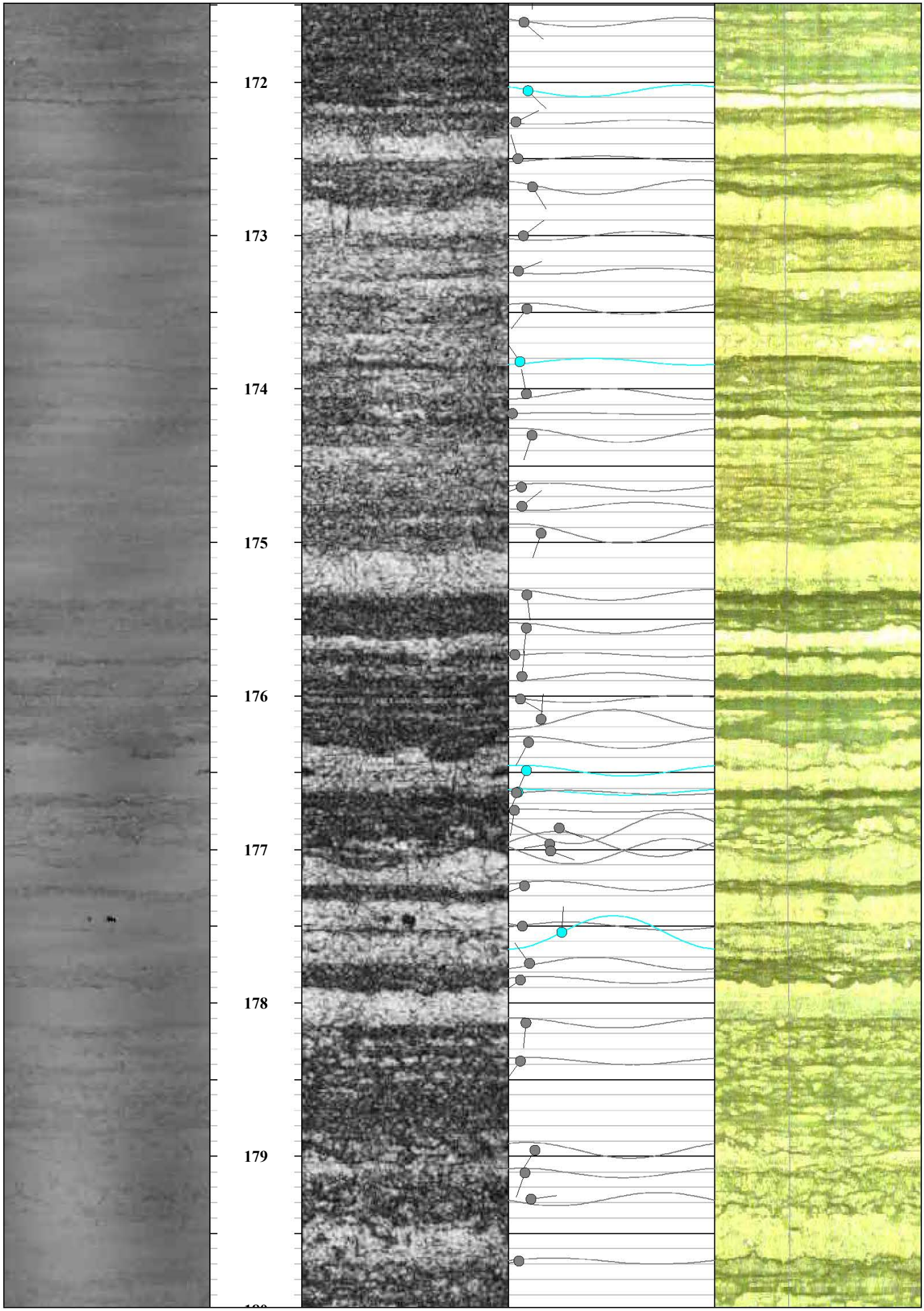
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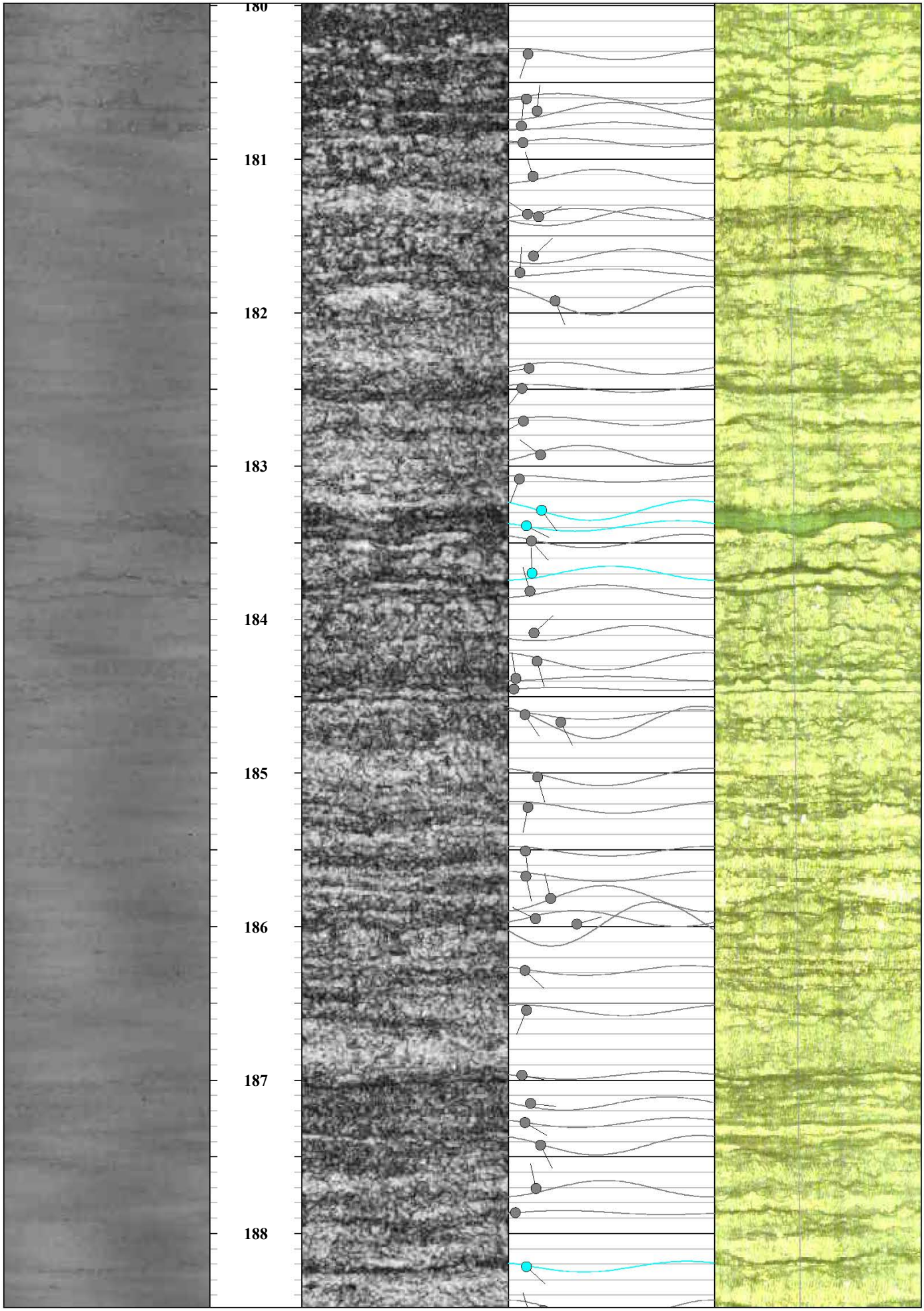
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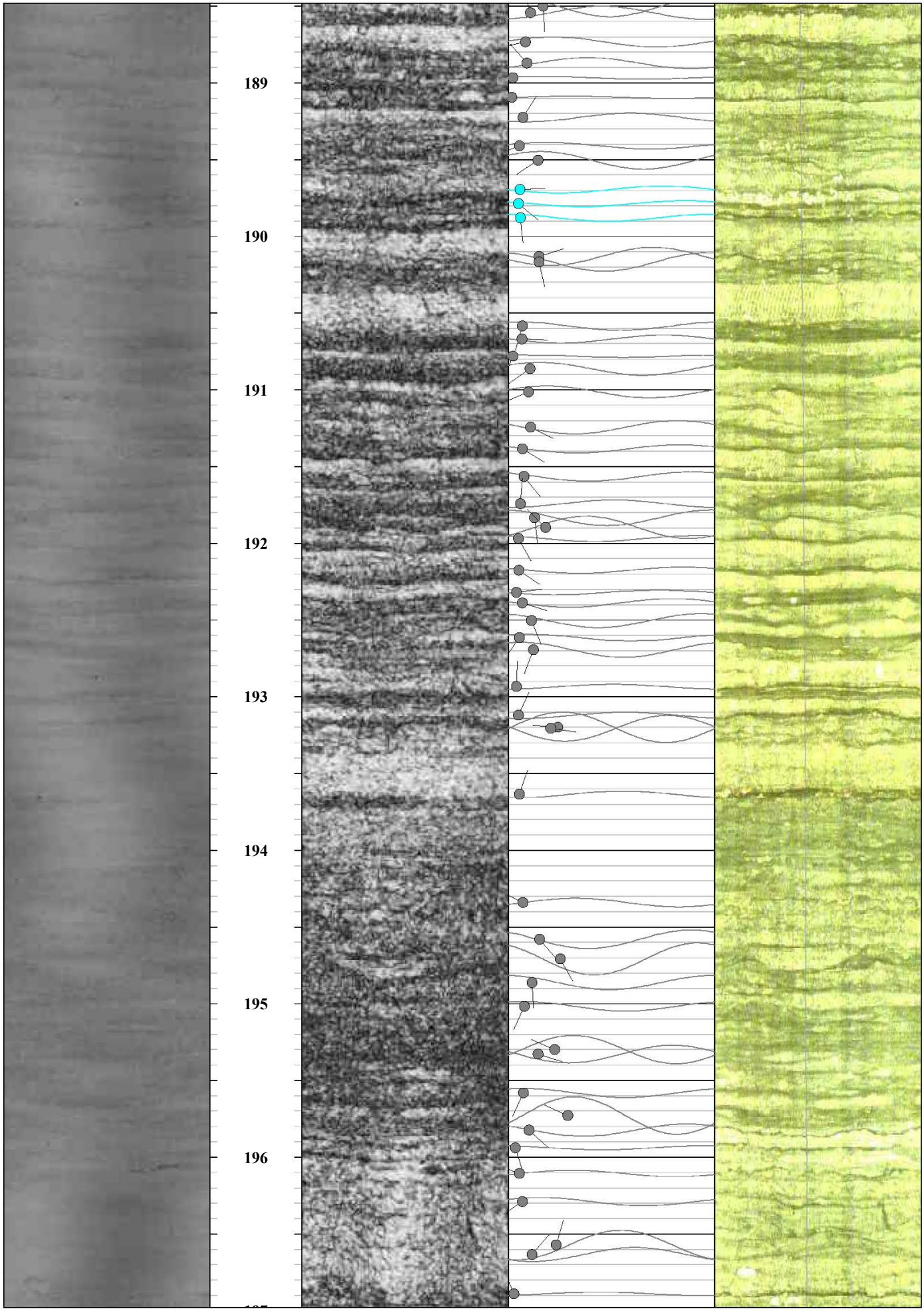
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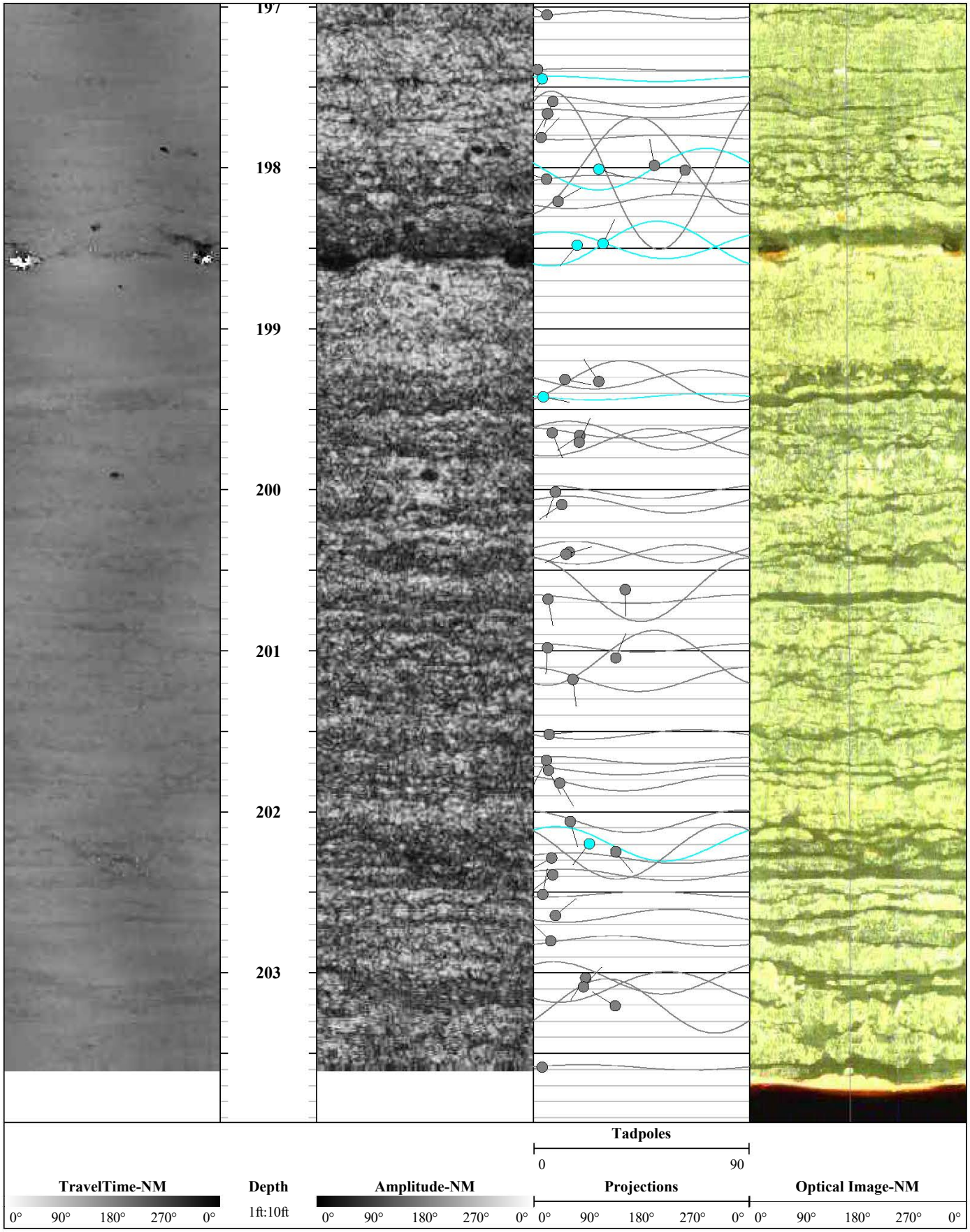
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200
201
202
203
Tadpoles
0
90
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Depth
1ft:10ft
Amplitude-NM
0° 90° 180° 270° 0°
Projections
0° 90° 180° 270° 0°
Optical Image-NM
0° 90° 180° 270° 0°

**Table MW-100B:2**. Summary Of Corehole Dynamic Flowmeter Results With Hydraulic Conductivity And Transmissivity Estimations; Arcadis; Tyco (Ansul FTC); Marinette, WI; Wellbore: MW-100B

| | |
|---|---|
| Well Name | MW-100B |
| Ambient Depth to Water (ftbtoc) | 8.80 |
| Ambient Depth to Water (ftbgs) | 5.30 |
| Open Borehole Interval (ftbgs) | 88.7 - 203.9 |

| | |
|---|---|
| Diameter of Well (ft) | 0.49 |
| Maximum Constant Drawdown (ft) | 55.8 |
| Effective Radius (ft) | 50 |
| Well Specific Capacity (gpm/ft-dd) | 0.002 |

**Corehole Dynamic Flowmeter Logging Results - MW-100B**

| Interval No. | Top of Interval (ft) | Bottom of Interval (ft) | Length of Interval (ft) | Ambient Flow[1] (gpm) | Interval-Specific Flow Rate During Pumping (gpm) | Delta Flow (gpm) | Transmissivity[2] ($ft^2$/day) | Comment |
|---|---|---|---|---|---|---|---|---|
| 1 | 88.7 | 93.0 | 4.3 | 0.000 | 0.068 | 0.068 | 1.99E-01 | High angle fracture. Flow may also originate from behind casing |
| 2 | 105.0 | 110.0 | 5.0 | 0.000 | 0.010 | 0.010 | 2.92E-02 | fracture with aperture |
| 3 | 136.0 | 139.5 | 3.5 | 0.000 | 0.006 | 0.006 | 1.75E-02 | solution opening |
| 4 | 139.5 | 203.9 | 64.4 | 0.000 | 0.039 | 0.039 | 1.14E-01 | Flow in the hole was surging because the pump kept shutting off due to the low yield of the hole. It is difficult to determine where this remaining 0.039 originates from below 139.5 feet.. |
| **Borehole Transmissivity Using Thiem Equation ($ft^2$/day)** | | | | | | | **3.59E-01** | |
| **Borehole Hydraulic Conductivity (K=T/b; b=length of open borehole) (ft/day)** | | | | | | **3.12E-03** | | |

Note: Negative flow, if any, is outflow from the borehole to the aquifer, positive flow is inflow to the borehole.

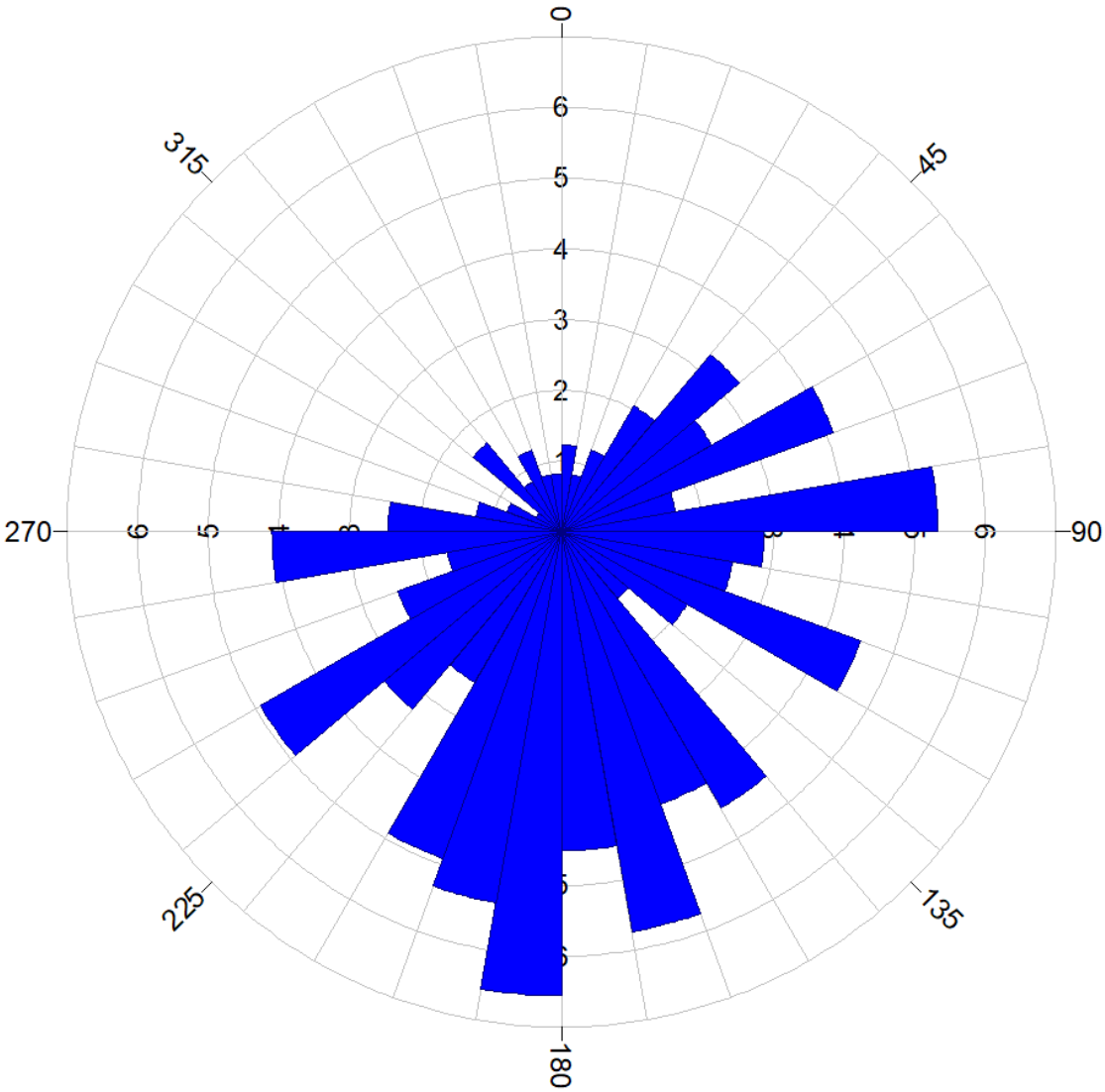
[1] No ambient vertical flow is identified in this borehole under ambient conditions.

[2] Hydraulic conductivity and transmissivity estimates are based on single well drawdown data, a porous-medium equivalent model and the Thiem equation.

NA = Not Applicable

**Rose Diagram of Televiewer Features**
**ARCADIS**
**Project: Tyco (Ansul FTC)**
**Well: MW-101B**
**14 August 2018**

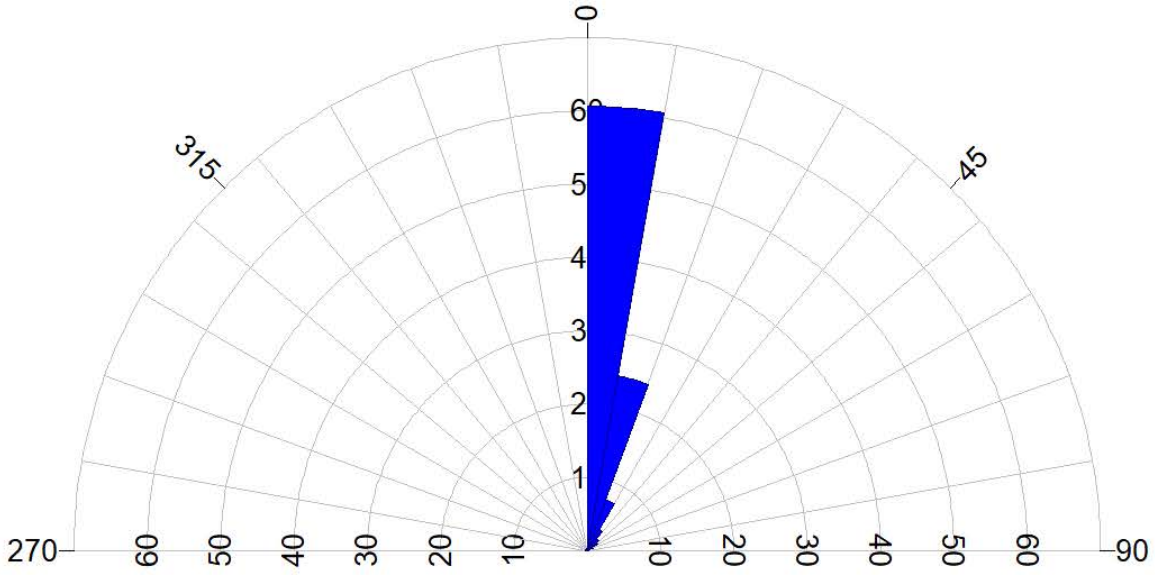
**Dip Direction**




All directions are with respect to Magnetic North.

**Rose Diagram of Televiewer Features**
**ARCADIS**
**Project: Tyco (Ansul FTC)**
**Well: MW-101B**
**14 August 2018**

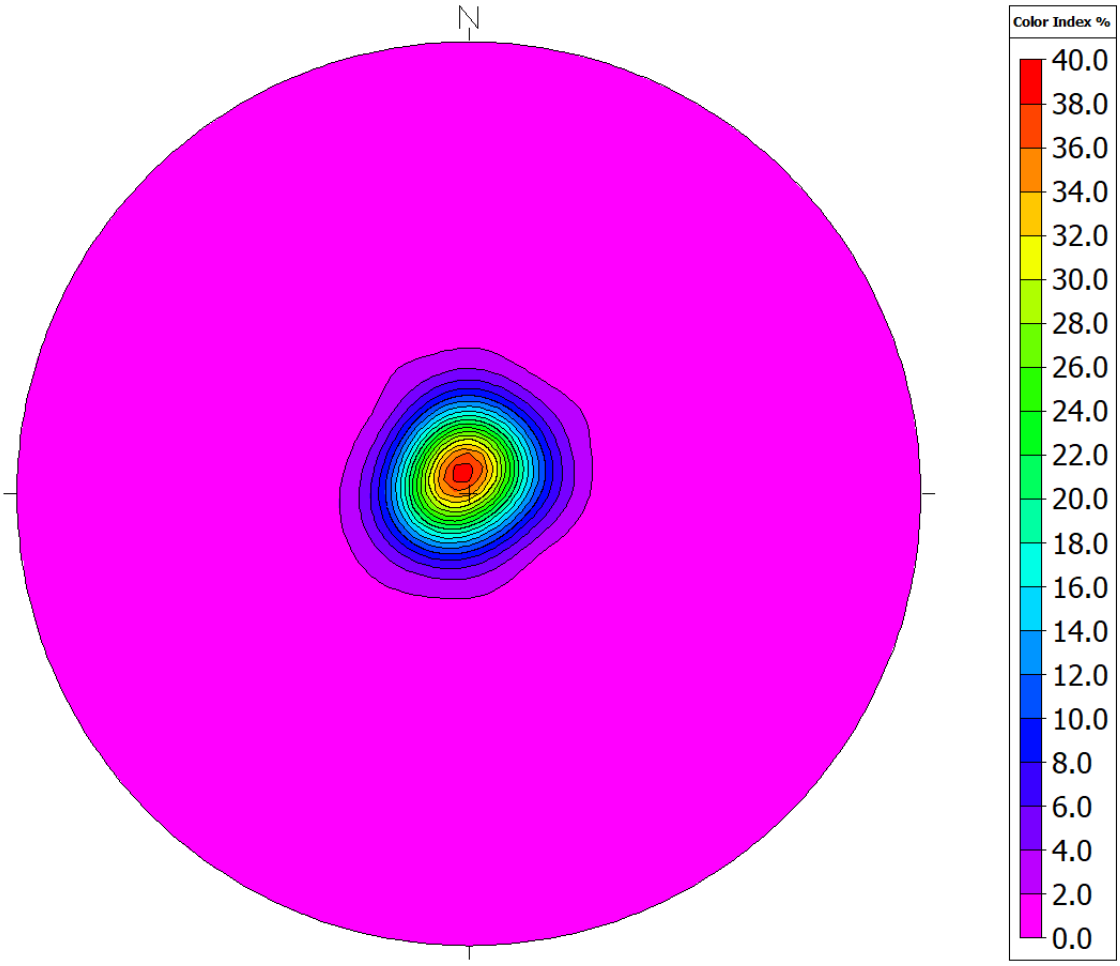
**Dip Angles**




All directions are with respect to Magnetic North.

**Stereonet Diagram of Televiewer Features**
**ARCADIS**
**Project: Tyco (Ansul FTC)**
**Well: MW-101B**
**14 August 2018**

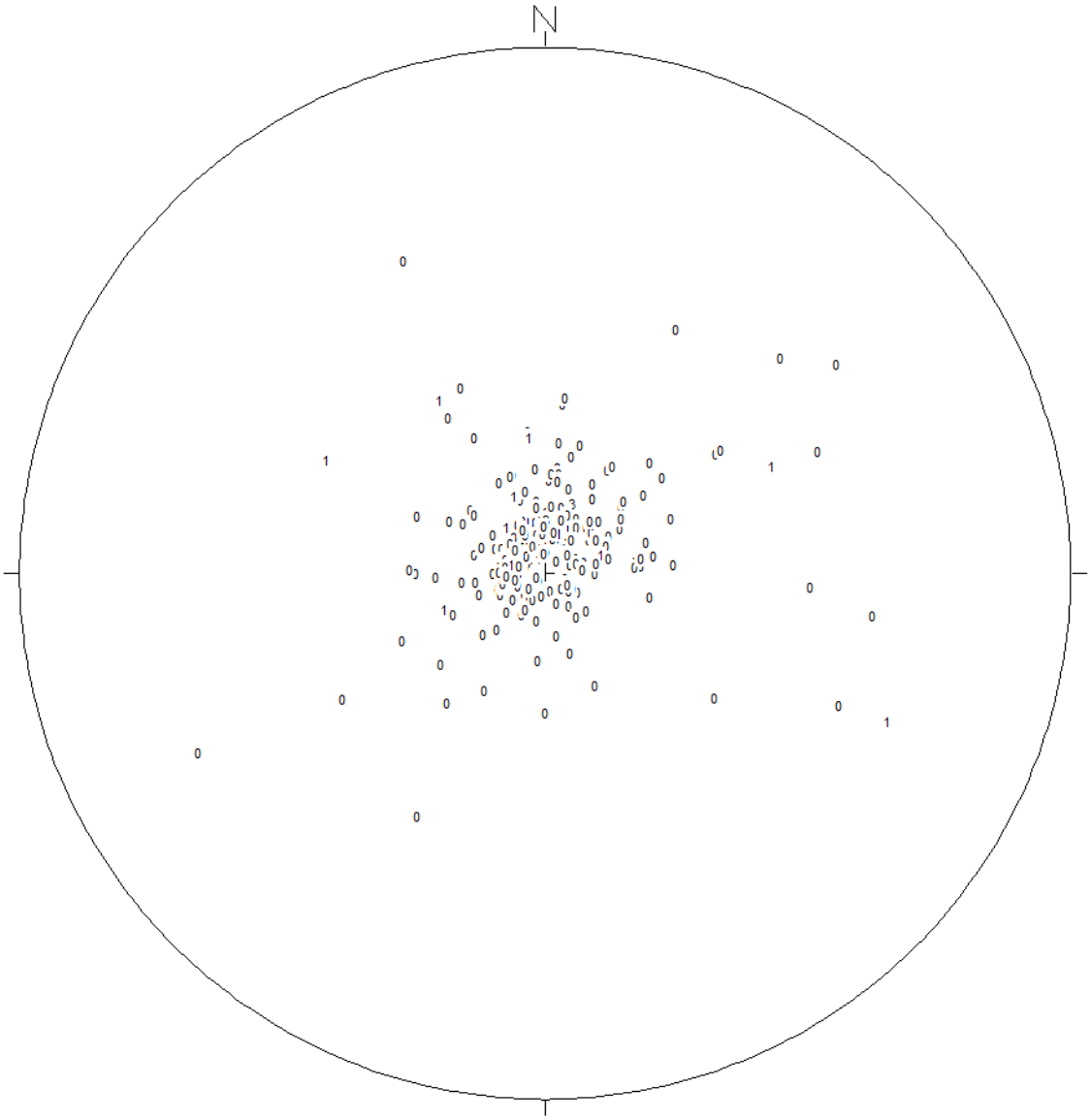
**Schmidt Projection with Contours**




All directions are with respect to Magnetic North.

**Stereonet Diagram of Televiewer Features**
**ARCADIS**
**Project: Tyco (Ansul FTC)**
**Well: MW-101B**
**14 August 2018**

**Schmidt Projections with Feature Ranks**




All directions are with respect to Magnetic North.

**Table MW-101B: 1. Orientation Summary Table**
**Image Features**
**Arcadis**
**Project: Tyco (Ansul FTC)**
**Well: MW-101B**
**14 August 2018**

| Feature No. | Depth (meters) | Depth (feet) | Dip Direction (degrees) | Dip Angle (degrees) | Feature Rank (0 to 5) |
|---|---|---|---|---|---|
| 1 | 29.85 | 97.9 | 50 | 8 | 0 |
| 2 | 31.08 | 102.0 | 122 | 5 | 0 |
| 3 | 33.93 | 111.3 | 207 | 4 | 0 |
| 4 | 34.05 | 111.7 | 186 | 7 | 0 |
| 5 | 34.28 | 112.5 | 81 | 8 | 0 |
| 6 | 34.39 | 112.8 | 148 | 4 | 0 |
| 7 | 34.57 | 113.4 | 147 | 6 | 1 |
| 8 | 34.76 | 114.0 | 2 | 4 | 0 |
| 9 | 34.87 | 114.4 | 80 | 7 | 0 |
| 10 | 35.35 | 116.0 | 237 | 7 | 0 |
| 11 | 35.42 | 116.2 | 244 | 10 | 0 |
| 12 | 35.58 | 116.7 | 139 | 5 | 0 |
| 13 | 36.65 | 120.3 | 172 | 6 | 0 |
| 14 | 36.67 | 120.3 | 184 | 25 | 0 |
| 15 | 36.99 | 121.4 | 170 | 21 | 0 |
| 16 | 37.15 | 121.9 | 231 | 14 | 0 |
| 17 | 37.20 | 122.0 | 145 | 28 | 0 |
| 18 | 37.39 | 122.7 | 160 | 7 | 0 |
| 19 | 37.57 | 123.3 | 183 | 4 | 0 |
| 20 | 37.77 | 123.9 | 190 | 5 | 1 |
| 21 | 37.89 | 124.3 | 157 | 15 | 0 |
| 22 | 37.94 | 124.5 | 316 | 6 | 0 |
| 23 | 37.95 | 124.5 | 184 | 15 | 0 |
| 24 | 38.02 | 124.7 | 242 | 12 | 0 |
| 25 | 38.02 | 124.7 | 79 | 14 | 0 |
| 26 | 38.10 | 125.0 | 154 | 5 | 0 |
| 27 | 38.31 | 125.7 | 124 | 15 | 0 |
| 28 | 38.37 | 125.9 | 211 | 17 | 0 |
| 29 | 38.38 | 125.9 | 57 | 39 | 0 |
| 30 | 38.72 | 127.0 | 167 | 6 | 0 |
| 31 | 38.81 | 127.3 | 43 | 6 | 0 |
| 32 | 39.54 | 129.7 | 352 | 6 | 0 |
| 33 | 39.65 | 130.1 | 186 | 9 | 0 |
| 34 | 39.74 | 130.4 | 191 | 17 | 0 |
| 35 | 40.24 | 132.0 | 157 | 9 | 0 |
| 36 | 40.31 | 132.2 | 106 | 9 | 0 |
| 37 | 40.36 | 132.4 | 102 | 6 | 0 |
| 38 | 40.45 | 132.7 | 274 | 3 | 0 |
| 39 | 40.70 | 133.5 | 264 | 7 | 0 |
| 40 | 40.97 | 134.4 | 64 | 9 | 0 |
| 41 | 41.04 | 134.6 | 169 | 3 | 0 |
| 42 | 41.08 | 134.8 | 160 | 9 | 0 |
| 43 | 41.21 | 135.2 | 208 | 9 | 0 |
| 44 | 41.85 | 137.3 | 205 | 5 | 0 |
| 45 | 41.88 | 137.4 | 35 | 6 | 0 |

All directions are with respect to Magnetic North.

**Table MW-101B: 1. Orientation Summary Table**
**Image Features**
**Arcadis**
**Project: Tyco (Ansul FTC)**
**Well: MW-101B**
**14 August 2018**

| Feature No. | Depth (meters) | Depth (feet) | Dip Direction (degrees) | Dip Angle (degrees) | Feature Rank (0 to 5) |
|---|---|---|---|---|---|
| 46 | 41.90 | 137.5 | 238 | 1 | 0 |
| 47 | 41.94 | 137.6 | 195 | 8 | 0 |
| 48 | 42.14 | 138.3 | 108 | 8 | 0 |
| 49 | 42.18 | 138.4 | 179 | 7 | 0 |
| 50 | 42.47 | 139.3 | 271 | 14 | 0 |
| 51 | 42.51 | 139.5 | 269 | 3 | 0 |
| 52 | 42.58 | 139.7 | 236 | 31 | 0 |
| 53 | 42.91 | 140.8 | 177 | 5 | 0 |
| 54 | 43.03 | 141.2 | 116 | 6 | 0 |
| 55 | 43.28 | 142.0 | 187 | 5 | 0 |
| 56 | 43.63 | 143.1 | 165 | 5 | 0 |
| 57 | 43.78 | 143.6 | 279 | 52 | 0 |
| 58 | 43.85 | 143.9 | 30 | 9 | 0 |
| 59 | 43.90 | 144.0 | 82 | 3 | 0 |
| 60 | 44.14 | 144.8 | 282 | 7 | 0 |
| 61 | 44.17 | 144.9 | 229 | 15 | 0 |
| 62 | 44.38 | 145.6 | 182 | 5 | 0 |
| 63 | 44.45 | 145.8 | 59 | 9 | 0 |
| 64 | 44.60 | 146.3 | 128 | 9 | 0 |
| 65 | 44.86 | 147.2 | 318 | 5 | 0 |
| 66 | 44.92 | 147.4 | 154 | 15 | 0 |
| 67 | 45.09 | 147.9 | 28 | 22 | 0 |
| 68 | 45.12 | 148.0 | 265 | 16 | 0 |
| 69 | 45.17 | 148.2 | 236 | 32 | 0 |
| 70 | 45.19 | 148.3 | 148 | 15 | 0 |
| 71 | 45.27 | 148.5 | 115 | 15 | 0 |
| 72 | 45.34 | 148.7 | 249 | 20 | 0 |
| 73 | 45.34 | 148.8 | 86 | 21 | 0 |
| 74 | 45.39 | 148.9 | 315 | 3 | 0 |
| 75 | 45.51 | 149.3 | 266 | 5 | 0 |
| 76 | 45.52 | 149.3 | 88 | 22 | 0 |
| 77 | 45.59 | 149.6 | 337 | 4 | 0 |
| 78 | 45.66 | 149.8 | 185 | 14 | 0 |
| 79 | 45.75 | 150.1 | 28 | 45 | 0 |
| 80 | 45.76 | 150.1 | 63 | 17 | 0 |
| 81 | 45.79 | 150.2 | 149 | 23 | 0 |
| 82 | 45.83 | 150.4 | 296 | 51 | 0 |
| 83 | 45.93 | 150.7 | 208 | 42 | 0 |
| 84 | 45.94 | 150.7 | 207 | 9 | 0 |
| 85 | 45.97 | 150.8 | 228 | 8 | 0 |
| 86 | 46.00 | 150.9 | 106 | 5 | 0 |
| 87 | 46.02 | 151.0 | 153 | 8 | 1 |
| 88 | 46.09 | 151.2 | 170 | 20 | 1 |
| 89 | 46.14 | 151.4 | 179 | 13 | 0 |
| 90 | 46.18 | 151.5 | 212 | 12 | 0 |

All directions are with respect to Magnetic North.

**Table MW-101B: 1. Orientation Summary Table**
**Image Features**
**Arcadis**
**Project: Tyco (Ansul FTC)**
**Well: MW-101B**
**14 August 2018**

| Feature No. | Depth (meters) | Depth (feet) | Dip Direction (degrees) | Dip Angle (degrees) | Feature Rank (0 to 5) |
|---|---|---|---|---|---|
| 91 | 46.34 | 152.0 | 336 | 7 | 0 |
| 92 | 46.34 | 152.0 | 228 | 49 | 0 |
| 93 | 46.36 | 152.1 | 115 | 39 | 1 |
| 94 | 46.40 | 152.2 | 64 | 8 | 1 |
| 95 | 46.46 | 152.4 | 247 | 46 | 0 |
| 96 | 46.51 | 152.6 | 57 | 6 | 0 |
| 97 | 46.60 | 152.9 | 88 | 7 | 1 |
| 98 | 46.61 | 152.9 | 44 | 15 | 0 |
| 99 | 46.69 | 153.2 | 147 | 8 | 0 |
| 100 | 46.73 | 153.3 | 190 | 7 | 0 |
| 101 | 47.05 | 154.4 | 95 | 7 | 0 |
| 102 | 47.10 | 154.5 | 209 | 8 | 0 |
| 103 | 47.15 | 154.7 | 167 | 10 | 0 |
| 104 | 47.18 | 154.8 | 87 | 8 | 0 |
| 105 | 47.25 | 155.0 | 109 | 4 | 0 |
| 106 | 47.25 | 155.0 | 2 | 23 | 0 |
| 107 | 47.41 | 155.5 | 202 | 6 | 0 |
| 108 | 47.53 | 155.9 | 127 | 7 | 0 |
| 109 | 47.59 | 156.1 | 140 | 8 | 0 |
| 110 | 47.87 | 157.0 | 216 | 7 | 0 |
| 111 | 47.91 | 157.2 | 191 | 4 | 0 |
| 112 | 47.95 | 157.3 | 96 | 7 | 0 |
| 113 | 48.07 | 157.7 | 356 | 11 | 0 |
| 114 | 48.12 | 157.9 | 288 | 16 | 0 |
| 115 | 48.12 | 157.9 | 110 | 22 | 0 |
| 116 | 48.21 | 158.2 | 268 | 13 | 0 |
| 117 | 48.29 | 158.4 | 171 | 15 | 0 |
| 118 | 48.34 | 158.6 | 325 | 5 | 0 |
| 119 | 48.43 | 158.9 | 237 | 13 | 0 |
| 120 | 48.47 | 159.0 | 168 | 7 | 0 |
| 121 | 48.66 | 159.7 | 256 | 4 | 0 |
| 122 | 48.69 | 159.8 | 48 | 8 | 0 |
| 123 | 48.73 | 159.9 | 137 | 4 | 0 |
| 124 | 48.79 | 160.1 | 251 | 9 | 0 |
| 125 | 48.83 | 160.2 | 123 | 14 | 0 |
| 126 | 48.91 | 160.5 | 99 | 6 | 0 |
| 127 | 48.94 | 160.6 | 14 | 9 | 0 |
| 128 | 49.05 | 160.9 | 53 | 3 | 0 |
| 129 | 49.15 | 161.3 | 257 | 15 | 0 |
| 130 | 49.18 | 161.4 | 161 | 2 | 0 |
| 131 | 49.22 | 161.5 | 194 | 19 | 0 |
| 132 | 49.30 | 161.7 | 219 | 7 | 0 |
| 133 | 49.33 | 161.9 | 40 | 13 | 0 |
| 134 | 49.52 | 162.5 | 265 | 5 | 0 |
| 135 | 49.59 | 162.7 | 259 | 8 | 1 |

All directions are with respect to Magnetic North.

**Table MW-101B: 1. Orientation Summary Table**
**Image Features**
**Arcadis**
**Project: Tyco (Ansul FTC)**
**Well: MW-101B**
**14 August 2018**

| Feature No. | Depth (meters) | Depth (feet) | Dip Direction (degrees) | Dip Angle (degrees) | Feature Rank (0 to 5) |
|---|---|---|---|---|---|
| 136 | 49.68 | 163.0 | 91 | 5 | 1 |
| 137 | 49.76 | 163.3 | 193 | 8 | 1 |
| 138 | 49.85 | 163.5 | 67 | 18 | 1 |
| 139 | 50.02 | 164.1 | 162 | 9 | 1 |
| 140 | 50.54 | 165.8 | 238 | 3 | 0 |
| 141 | 50.57 | 165.9 | 267 | 4 | 0 |
| 142 | 50.60 | 166.0 | 61 | 6 | 0 |
| 143 | 50.65 | 166.2 | 167 | 9 | 0 |
| 144 | 50.72 | 166.4 | 175 | 8 | 0 |
| 145 | 50.85 | 166.8 | 207 | 6 | 0 |
| 146 | 50.96 | 167.2 | 8 | 15 | 0 |
| 147 | 51.03 | 167.4 | 348 | 14 | 0 |
| 148 | 51.25 | 168.1 | 63 | 26 | 0 |
| 149 | 51.29 | 168.3 | 233 | 18 | 0 |
| 150 | 51.33 | 168.4 | 268 | 7 | 0 |
| 151 | 51.36 | 168.5 | 202 | 10 | 0 |
| 152 | 51.49 | 168.9 | 184 | 4 | 0 |
| 153 | 51.58 | 169.2 | 190 | 9 | 0 |
| 154 | 51.68 | 169.6 | 155 | 11 | 0 |
| 155 | 51.90 | 170.3 | 43 | 10 | 0 |
| 156 | 52.03 | 170.7 | 188 | 7 | 0 |
| 157 | 52.18 | 171.2 | 95 | 5 | 0 |
| 158 | 52.29 | 171.6 | 224 | 8 | 0 |
| 159 | 52.86 | 173.4 | 140 | 6 | 0 |
| 160 | 53.02 | 174.0 | 340 | 20 | 0 |
| 161 | 53.22 | 174.6 | 195 | 5 | 1 |
| 162 | 53.26 | 174.7 | 71 | 5 | 1 |
| 163 | 53.56 | 175.7 | 115 | 2 | 1 |
| 164 | 53.60 | 175.9 | 90 | 6 | 1 |
| 165 | 53.61 | 175.9 | 62 | 65 | 0 |
| 166 | 53.78 | 176.4 | 175 | 7 | 3 |
| 167 | 53.80 | 176.5 | 200 | 10 | 3 |
| 168 | 53.83 | 176.6 | 246 | 38 | 1 |
| 169 | 53.85 | 176.7 | 206 | 6 | 1 |
| 170 | 53.93 | 177.0 | 81 | 9 | 0 |
| 171 | 53.99 | 177.1 | 68 | 8 | 0 |
| 172 | 54.06 | 177.4 | 67 | 12 | 0 |
| 173 | 54.44 | 178.6 | 81 | 8 | 0 |
| 174 | 54.50 | 178.8 | 270 | 19 | 0 |
| 175 | 54.50 | 178.8 | 37 | 27 | 0 |
| 176 | 54.67 | 179.4 | 112 | 7 | 0 |
| 177 | 54.70 | 179.5 | 85 | 5 | 0 |
| 178 | 54.75 | 179.6 | 181 | 9 | 0 |
| 179 | 54.90 | 180.1 | 30 | 8 | 0 |
| 180 | 55.00 | 180.5 | 319 | 4 | 0 |

All directions are with respect to Magnetic North.

**Table MW-101B: 1. Orientation Summary Table**
**Image Features**
**Arcadis**
**Project: Tyco (Ansul FTC)**
**Well: MW-101B**
**14 August 2018**

| Feature No. | Depth (meters) | Depth (feet) | Dip Direction (degrees) | Dip Angle (degrees) | Feature Rank (0 to 5) |
|---|---|---|---|---|---|
| 181 | 55.10 | 180.8 | 27 | 6 | 0 |
| 182 | 55.21 | 181.2 | 170 | 6 | 0 |
| 183 | 55.36 | 181.6 | 130 | 9 | 1 |
| 184 | 55.39 | 181.7 | 334 | 9 | 0 |
| 185 | 55.40 | 181.8 | 153 | 31 | 0 |
| 186 | 55.54 | 182.2 | 161 | 12 | 1 |
| 187 | 55.58 | 182.4 | 191 | 7 | 1 |
| 188 | 55.65 | 182.6 | 232 | 22 | 0 |
| 189 | 55.70 | 182.7 | 152 | 12 | 1 |
| 190 | 55.76 | 183.0 | 228 | 10 | 0 |
| 191 | 55.81 | 183.1 | 264 | 9 | 0 |
| 192 | 55.89 | 183.4 | 199 | 8 | 0 |
| 193 | 56.16 | 184.3 | 166 | 9 | 0 |
| 194 | 56.32 | 184.8 | 215 | 7 | 0 |
| 195 | 56.42 | 185.1 | 170 | 6 | 0 |
| 196 | 56.47 | 185.3 | 180 | 14 | 0 |
| 197 | 56.55 | 185.5 | 57 | 6 | 0 |
| 198 | 56.65 | 185.9 | 224 | 22 | 0 |
| 199 | 56.65 | 185.9 | 48 | 23 | 0 |
| 200 | 56.78 | 186.3 | 146 | 31 | 1 |
| 201 | 56.83 | 186.4 | 154 | 54 | 0 |
| 202 | 56.88 | 186.6 | 207 | 14 | 0 |
| 203 | 56.90 | 186.7 | 295 | 60 | 1 |
| 204 | 57.01 | 187.1 | 97 | 12 | 0 |
| 205 | 57.06 | 187.2 | 117 | 10 | 0 |
| 206 | 57.10 | 187.3 | 280 | 5 | 0 |
| 207 | 57.13 | 187.4 | 235 | 56 | 0 |
| 208 | 57.17 | 187.6 | 145 | 2 | 0 |
| 209 | 57.29 | 188.0 | 220 | 5 | 0 |
| 210 | 57.70 | 189.3 | 16 | 5 | 0 |
| 211 | 57.75 | 189.5 | 272 | 13 | 0 |
| 212 | 57.83 | 189.7 | 309 | 33 | 0 |
| 213 | 58.03 | 190.4 | 67 | 6 | 0 |
| 214 | 58.08 | 190.5 | 185 | 5 | 0 |
| 215 | 58.11 | 190.7 | 117 | 7 | 0 |
| 216 | 58.35 | 191.5 | 36 | 3 | 0 |
| 217 | 58.59 | 192.2 | 212 | 18 | 0 |
| 218 | 58.76 | 192.8 | 48 | 3 | 0 |
| 219 | 58.86 | 193.1 | 113 | 17 | 0 |
| 220 | 58.99 | 193.6 | 238 | 8 | 0 |
| 221 | 59.05 | 193.7 | 155 | 15 | 0 |
| 222 | 59.10 | 193.9 | 117 | 7 | 0 |
| 223 | 59.43 | 195.0 | 231 | 8 | 0 |
| 224 | 59.57 | 195.5 | 141 | 7 | 0 |
| 225 | 59.69 | 195.8 | 166 | 9 | 0 |

All directions are with respect to Magnetic North.

**Table MW-101B: 1. Orientation Summary Table**
**Image Features**
**Arcadis**
**Project: Tyco (Ansul FTC)**
**Well: MW-101B**
**14 August 2018**

| Feature No. | Depth (meters) | Depth (feet) | Dip Direction (degrees) | Dip Angle (degrees) | Feature Rank (0 to 5) |
|---|---|---|---|---|---|
| 226 | 59.76 | 196.1 | 222 | 9 | 0 |
| 227 | 59.80 | 196.2 | 84 | 18 | 0 |
| 228 | 59.90 | 196.5 | 42 | 5 | 0 |
| 229 | 60.02 | 196.9 | 104 | 11 | 0 |
| 230 | 60.05 | 197.0 | 77 | 12 | 0 |
| 231 | 60.07 | 197.1 | 266 | 14 | 0 |
| 232 | 60.15 | 197.3 | 185 | 26 | 0 |
| 233 | 60.20 | 197.5 | 88 | 5 | 0 |
| 234 | 60.28 | 197.8 | 112 | 6 | 0 |
| 235 | 60.33 | 197.9 | 161 | 12 | 0 |
| 236 | 60.46 | 198.4 | 194 | 7 | 0 |
| 237 | 60.50 | 198.5 | 185 | 13 | 0 |
| 238 | 60.66 | 199.0 | 184 | 19 | 0 |
| 239 | 60.77 | 199.4 | 323 | 9 | 0 |
| 240 | 60.87 | 199.7 | 86 | 7 | 0 |
| 241 | 60.90 | 199.8 | 275 | 41 | 0 |
| 242 | 60.98 | 200.1 | 76 | 7 | 0 |
| 243 | 61.08 | 200.4 | 241 | 8 | 0 |
| 244 | 61.34 | 201.3 | 193 | 12 | 0 |

All directions are with respect to Magnetic North.

borehole geophysics / hydrophysics

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# Natural Gamma-Ray Three-Arm Caliper Fluid Temp. / Cond.

| | |
|---|---|
| **COMPANY** | Arcadis |
| **WELL** | MW-101B |
| **PROJECT** | Tyco (Ansul FTC) |
| **COUNTY** | Marinette |
| **STATE** | Wisconsin |

**Company** Arcadis
**Well** MW-101B
**Project** Tyco (Ansul FTC)
**County** Marinette
**State** Wisconsin

**LOCATION**

**QTR** **SEC** **TWP** **RGE**

**OTHER SERVICES**

Acoustic Televiewer
Optical Televiewer
Core-Dynamic Flowmeter

**PERMANENT DATUM** Gound Level **ELEVATION** NA

**LOG MEAS. FROM** Ground Level 0.0 ft **ABOVE PERMINANT DATUM**

**DRILLING MEAS. FROM** Ground Level

| | | | | |
|---|---|---|---|---|
| **DATE ACQUIRED** | 14 August 2018 | 14 August 2018 | 14 August 2018 | |
| **RUN NUMBER** | Three | Four | Five | |
| **LOG TYPE** | Caliper | NGR | FTC | |
| **DEPTH-DRILLER** | 205.0 ft | 205.0 ft | 205.0 ft | |
| **DEPTH-LOGGER** | 202.1 ft | 202.1 ft | 202.1 ft | |
| **BTM LOG INTERVAL** | 201.8 ft | 200.8 ft | 202.1 ft | |
| **TOP LOG INTERVAL** | 93.8 ft | 2.5 ft | 10.0 ft | |
| **RECORDED BY** | D. Renner | D. Renner | D. Renner | |
| **WITNESSED BY** | Z. Westphal | Z. Westphal | Z. Westphal | |
| **PROBE TYPE, S/N** | CCP, 1751 | HLP, 2375 | 2PFA, 2656 | |
| **LOGGING SPEED** | 15 ft/min | 15 ft/min | 10 ft/min | |
| **SAMPLE INTERVAL** | 0.2 ft | 0.2 ft | 0.2 ft | |
| **FLUID LEVEL** | 10.0 ft | 10.0 ft | 10.0 ft | |

**BOREHOLE RECORD**

| RUN No. | BIT | FROM | TO |
|---|---|---|---|
| One | NA | 0 ft | 94 ft |
| Two | 6 in. | 94 ft | 205 ft |
| | | | |
| | | | |

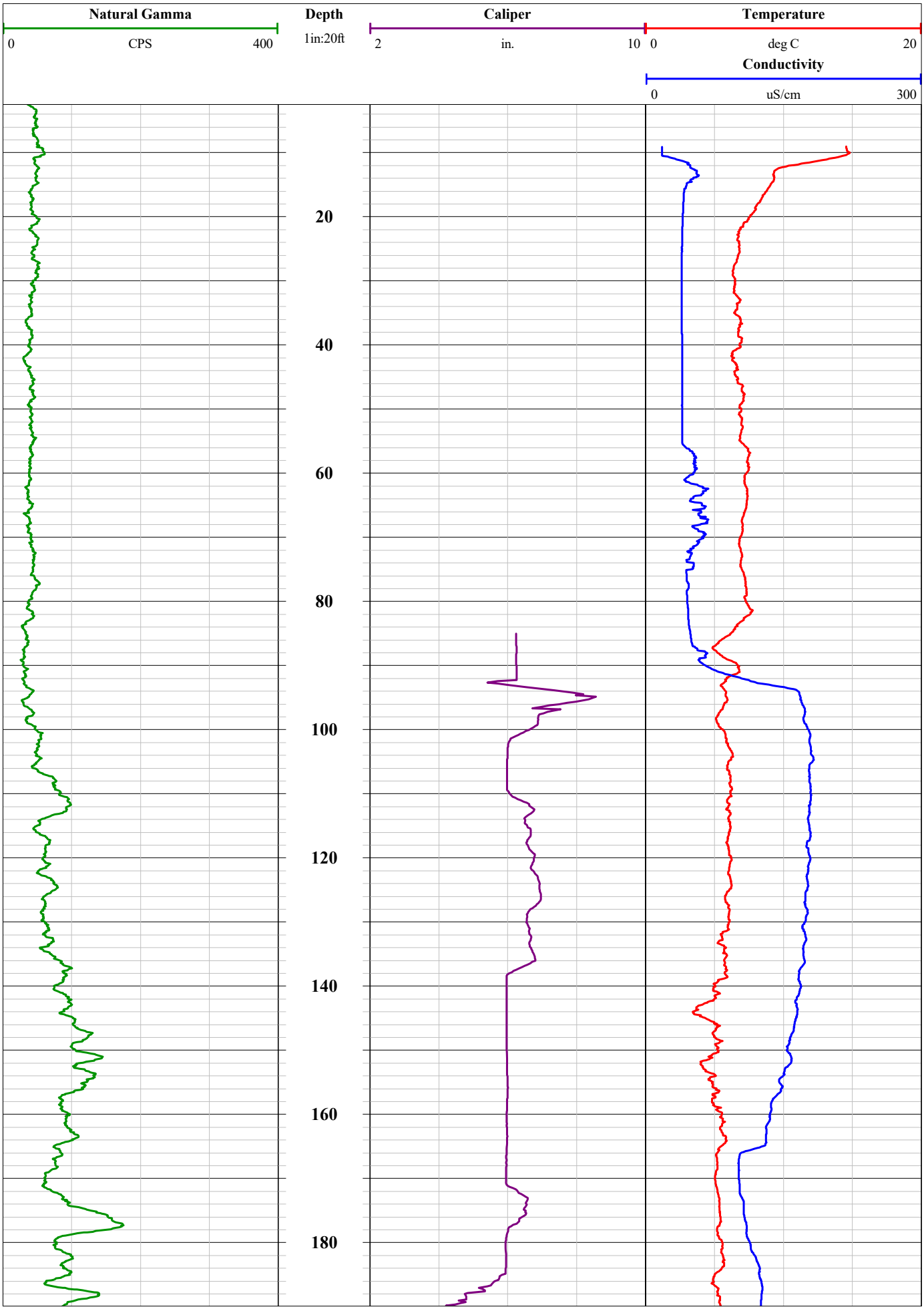
**CASING RECORD**

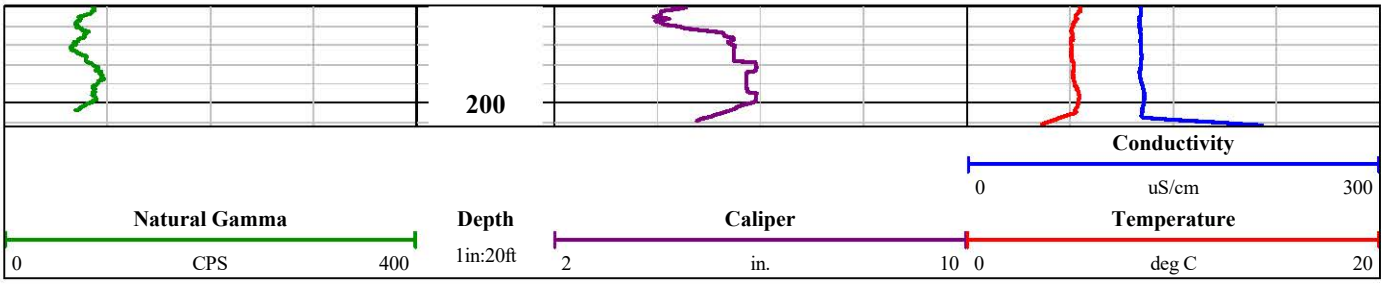
| SIZE | WGT. | FROM | TO |
|---|---|---|---|
| 6 in. | Steel | 0 ft | 94 ft |
| | | | |
| | | | |
| | | | |

**NA - Not Available, N/A - Not Applicable**

**COMMENTS**

Input Files:
Arcadis_Tyco_VAP-26_Caliper_UL1.tfd
Arcadis_Tyco_VAP-26_NGR_UL1.tfd
Arcadis_Tyco_VAP-26_FTC_DL1.tfd


Natural Gamma
0
CPS
400
Depth
1in:20ft
Caliper
2
in.
10
Temperature
0
deg C
20
Conductivity
0
uS/cm
300
20
40
60
80
100
120
140
160
180


200
Conductivity
0
uS/cm
300
Natural Gamma
0
CPS
400
Depth
1in:20ft
Caliper
2
in.
10
Temperature
0
deg C
20

borehole geophysics / hydrophysics

810 Quail Street, Unit E
Lakewood, CO 80215
Office: (303) 279-0171
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# Optical & Acoustic Televiewer

| | |
|---|---|
| **COMPANY** | Arcadis |
| **WELL** | MW-101B |
| **PROJECT** | Tyco (Ansul FTC) |
| **COUNTY** | Marinette |
| **STATE** | Wisconsin |

**Company** Arcadis
**Well** MW-101B
**Project** Tyco (Ansul FTC)
**County** Marinette
**State** Wisconsin

**LOCATION**

**QTR** **SEC** **TWP** **RGE**

**OTHER SERVICES**

Natural Gamma-Ray
Three-Arm Caliper
Fluid Temp. / Cond.
Core-Dynamic Flowmeter

**PERMANENT DATUM** Gound Level **ELEVATION** NA

**LOG MEAS. FROM** Ground Level 0.0 ft **ABOVE PERMINANT DATUM**

**DRILLING MEAS. FROM** Ground Level

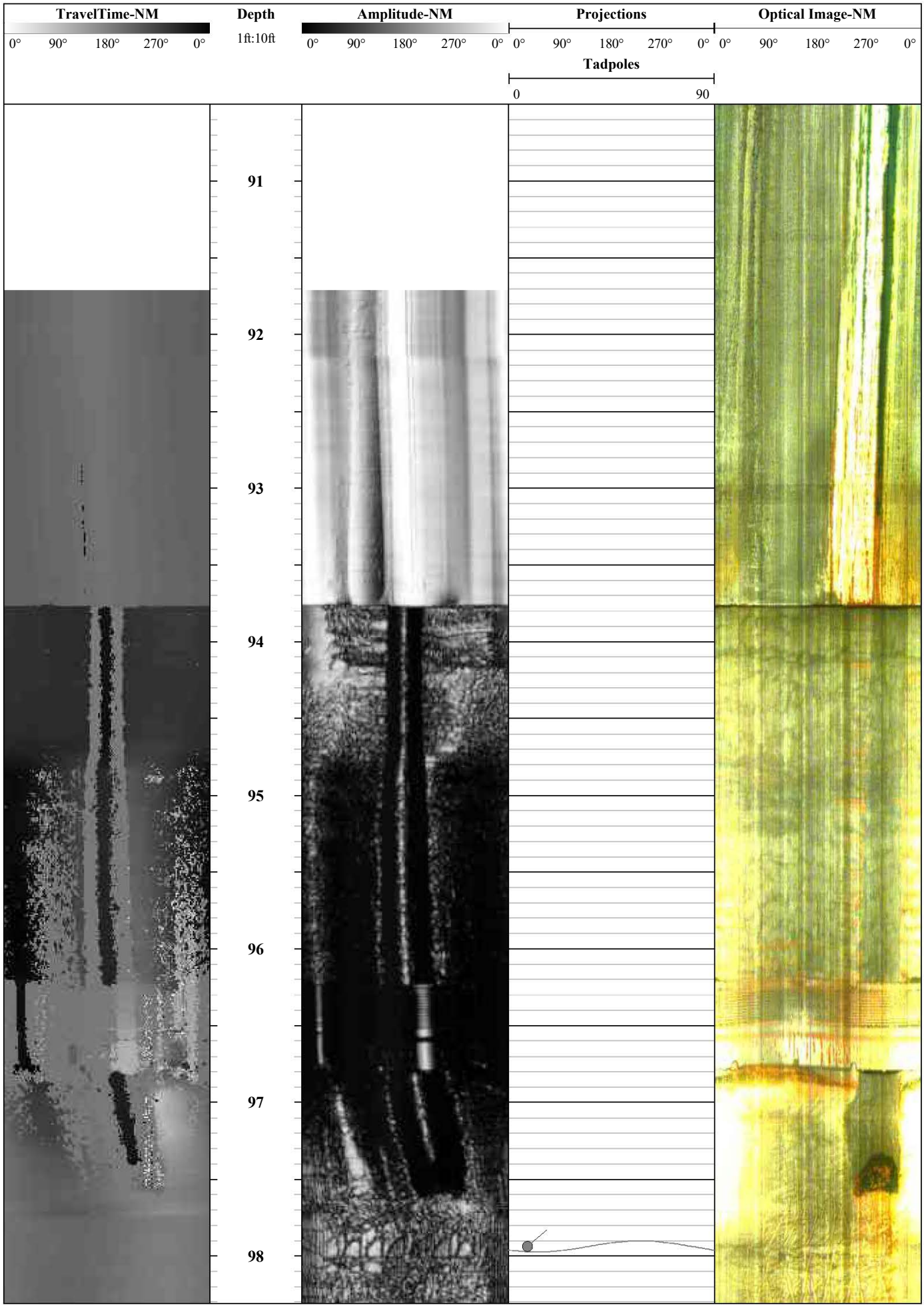
| | | | | |
|---|---|---|---|---|
| **DATE ACQUIRED** | 14 August 2018 | 14 August 2018 | | |
| **RUN NUMBER** | One | Two | | |
| **LOG TYPE** | OTV | ATV | | |
| **DEPTH-DRILLER** | 205.0 ft | | | |
| **DEPTH-LOGGER** | 202.1 ft | 202.1 ft | | |
| **BTM LOG INTERVAL** | 202.1 ft | 201.6 ft | | |
| **TOP LOG INTERVAL** | 93.8 ft | 93.8 ft | | |
| **RECORDED BY** | D. Renner | D. Renner | | |
| **WITNESSED BY** | Z. Westphal | Z. Westphal | | |
| **PROBE TYPE, S/N** | OBI, 121406 | ABI, 103806 | | |
| **LOGGING SPEED** | 6.0 ft/min | 6.0 ft/min | | |
| **SAMPLE INTERVAL** | 0.0088 ft | 0.0088 ft | | |
| **FLUID LEVEL** | 10.0 ft | | | |

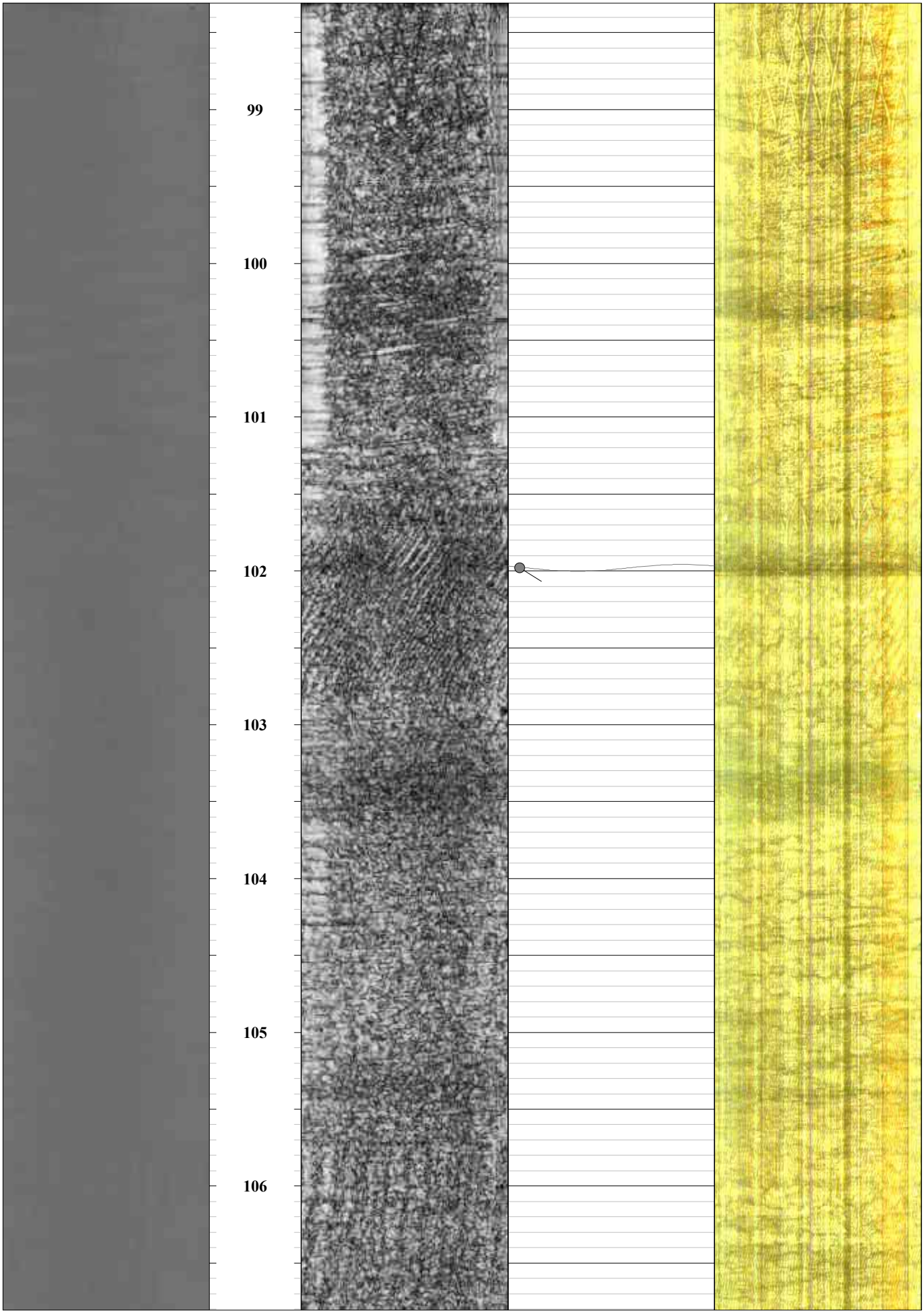
| **BOREHOLE RECORD** | | | | **CASING RECORD** | | | |
|---|---|---|---|---|---|---|---|
| **RUN No.** | **BIT** | **FROM** | **TO** | **SIZE** | **WGT.** | **FROM** | **TO** |
| One | NA | 0 ft | 94 ft | 6 in. | Steel | 0 ft | 94 ft |
| Two | 6 in. | 94 ft | 205 ft | | | | |
| | | | | | | | |
| | | | | | | | |

**NA - Not Available, N/A - Not Applicable**

**COMMENTS**

Input File:
Arcadis_Tyco_VAP-26_OBI_DL2.tfd
Arcadis_Tyco_VAP-26_ABI_UL1.tfd


TravelTime-NM
0° 90° 180° 270° 0°
Depth
1ft:10ft
Amplitude-NM
0° 90° 180° 270° 0°
Projections
0° 90° 180° 270° 0°
Tadpoles
0
90
Optical Image-NM
0° 90° 180° 270° 0°
91
92
93
94
95
96
97
98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102
103
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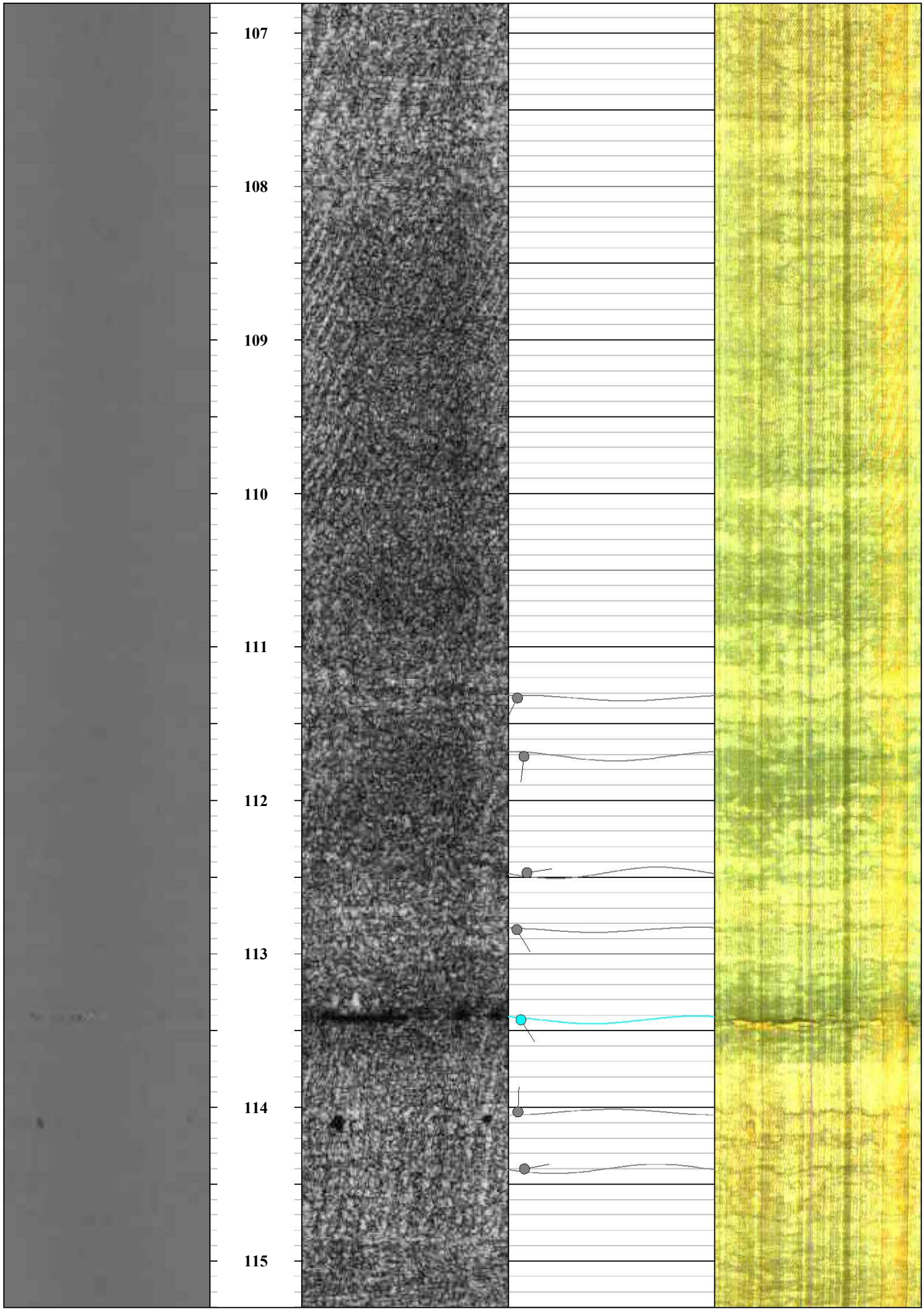
106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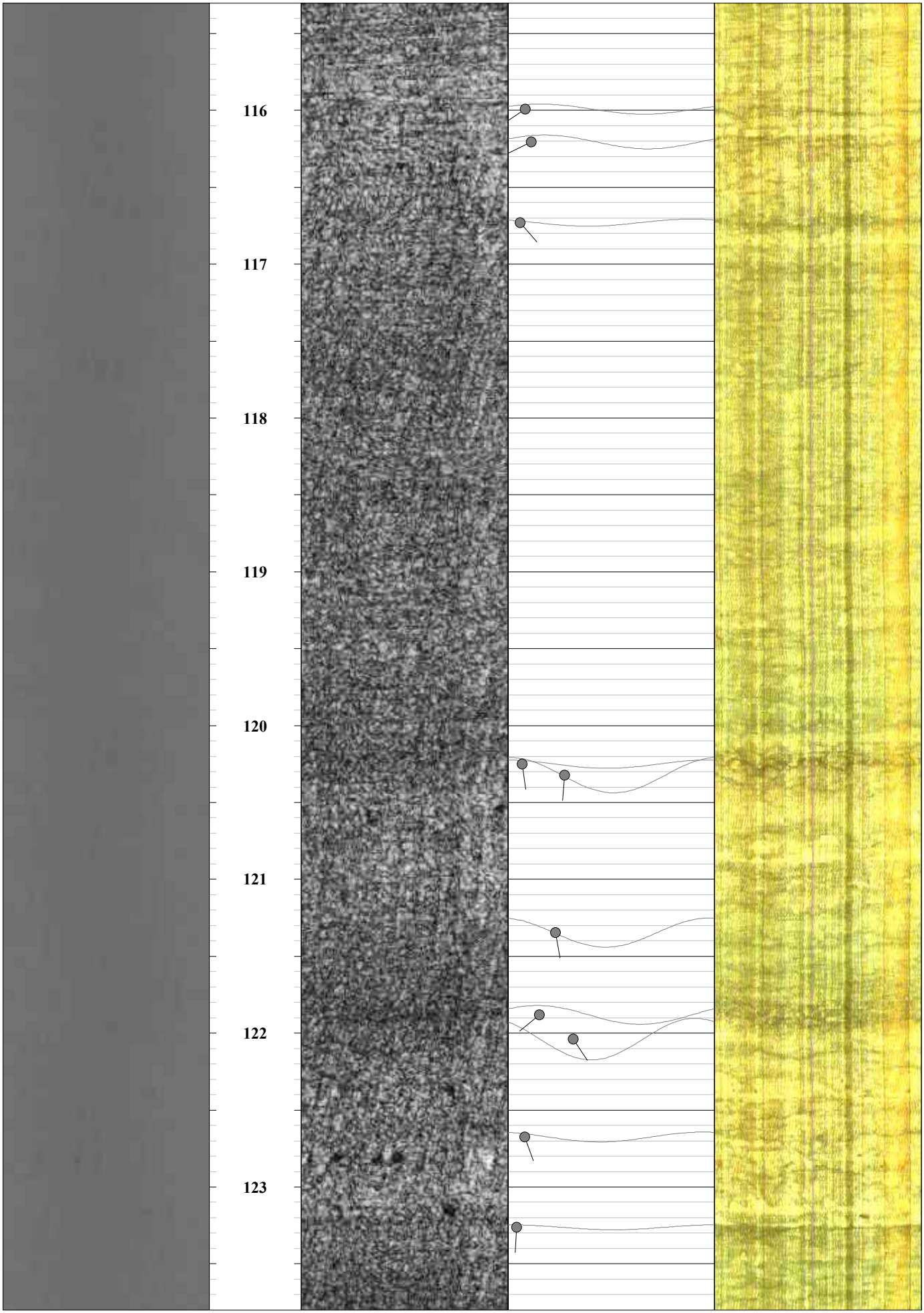
112
113
114
115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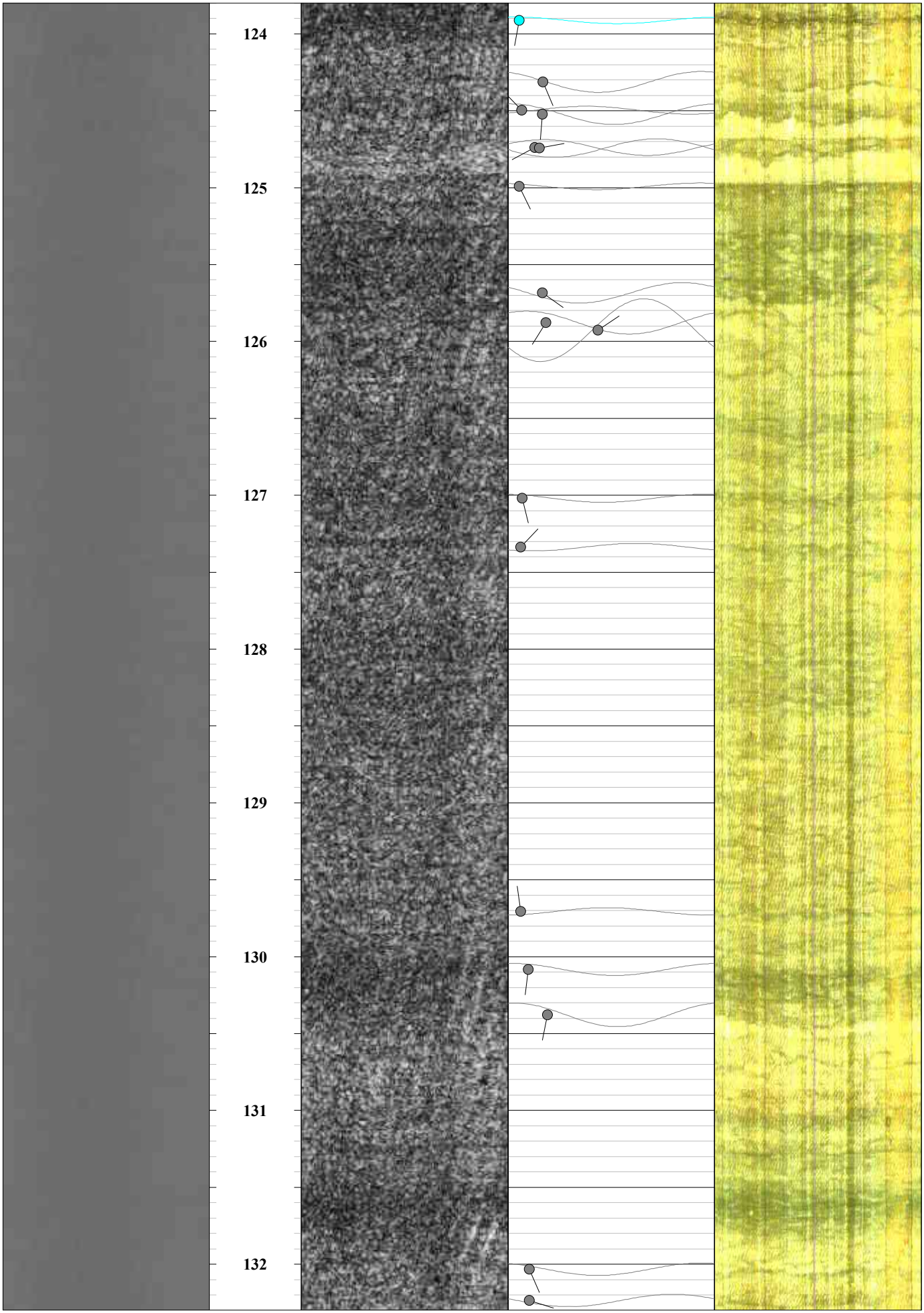
123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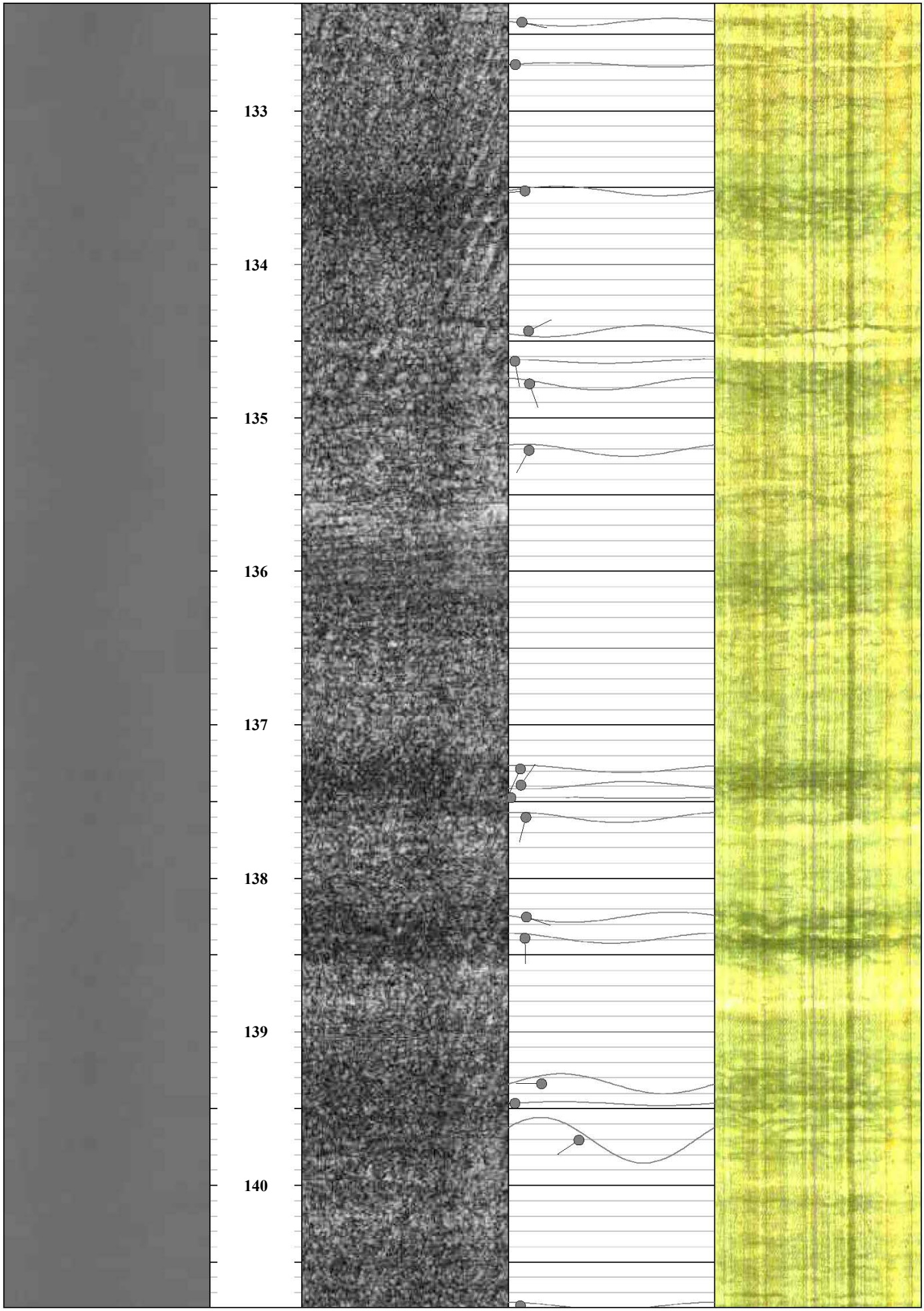
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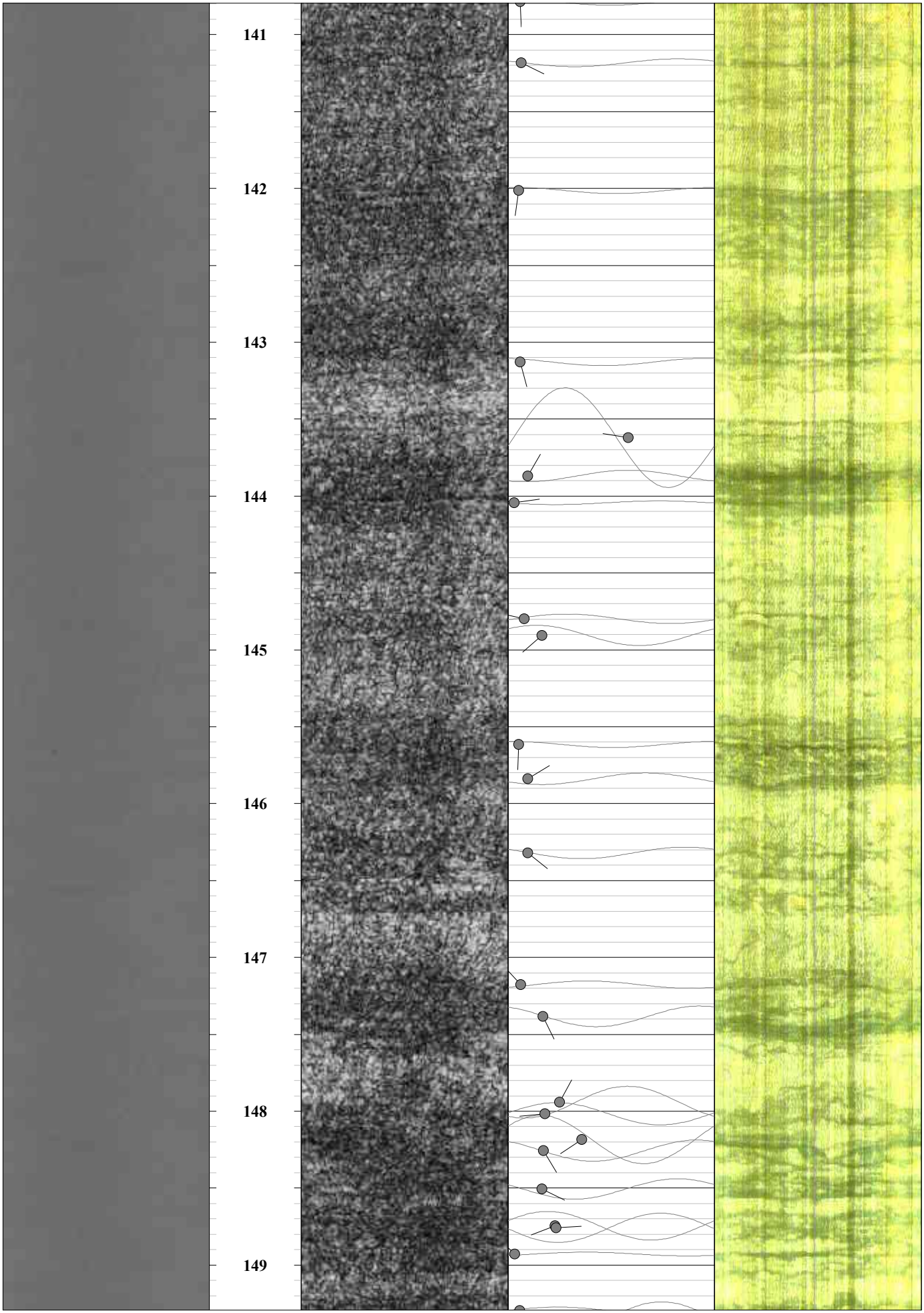
139
140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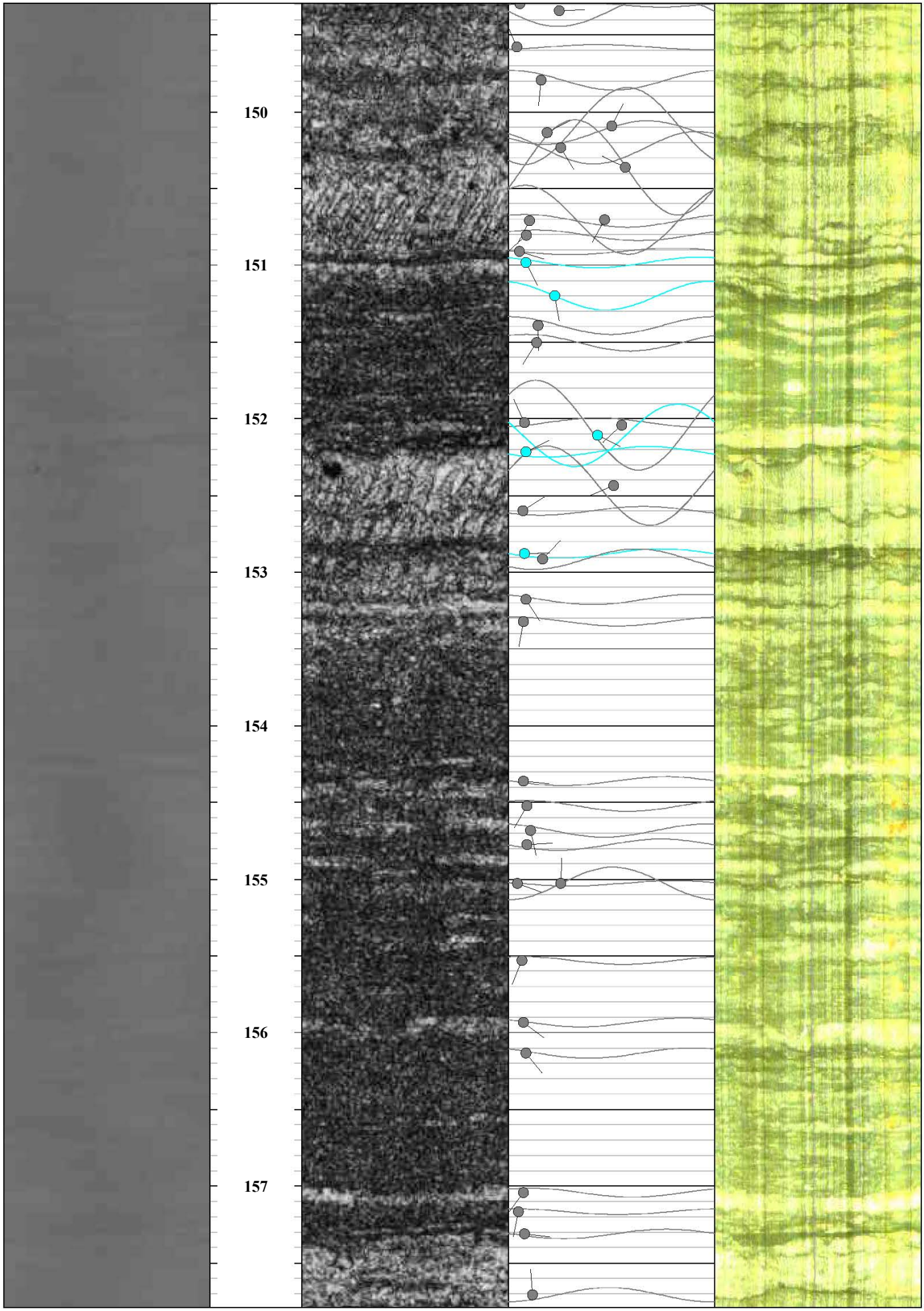
148
149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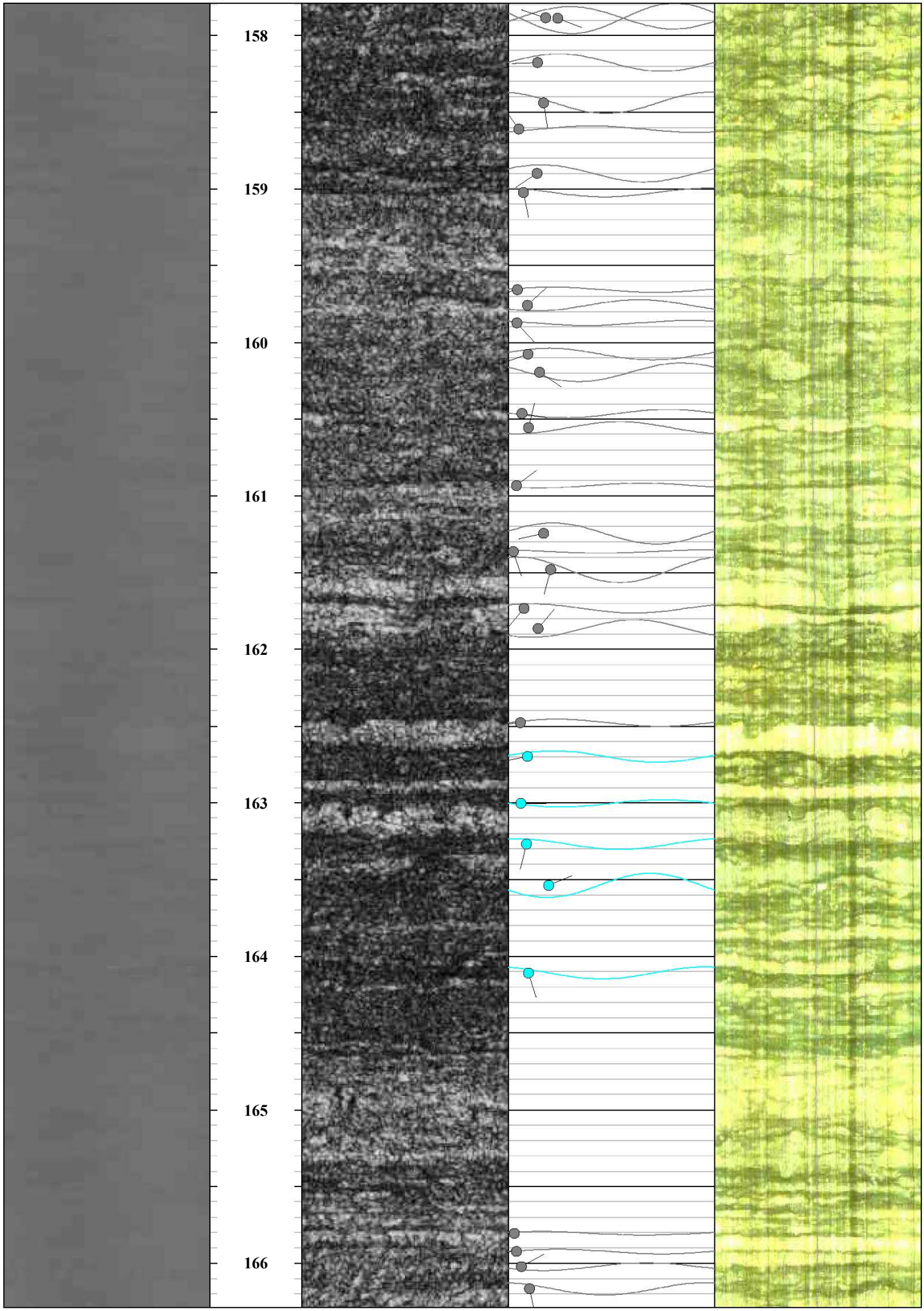
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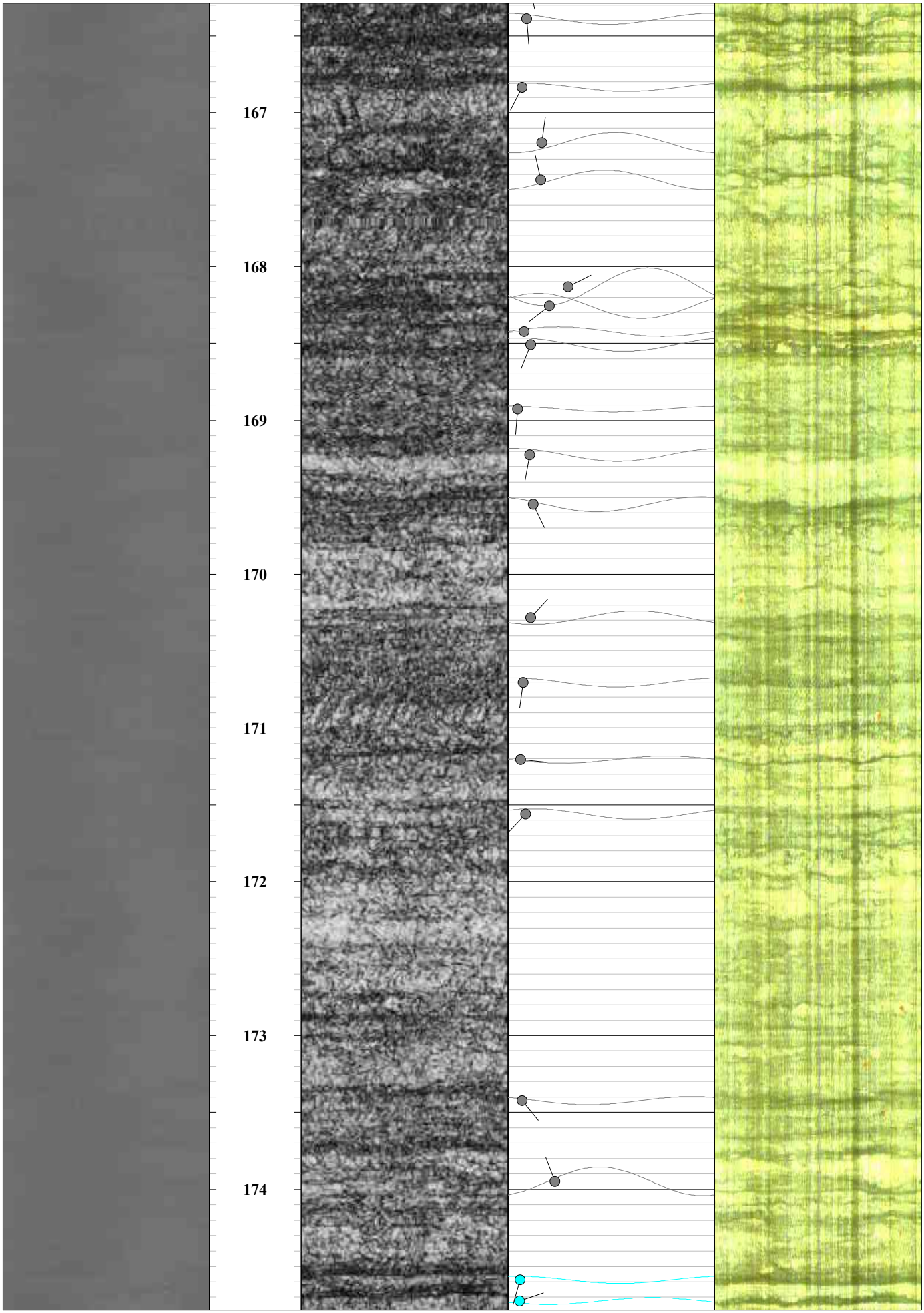
165
166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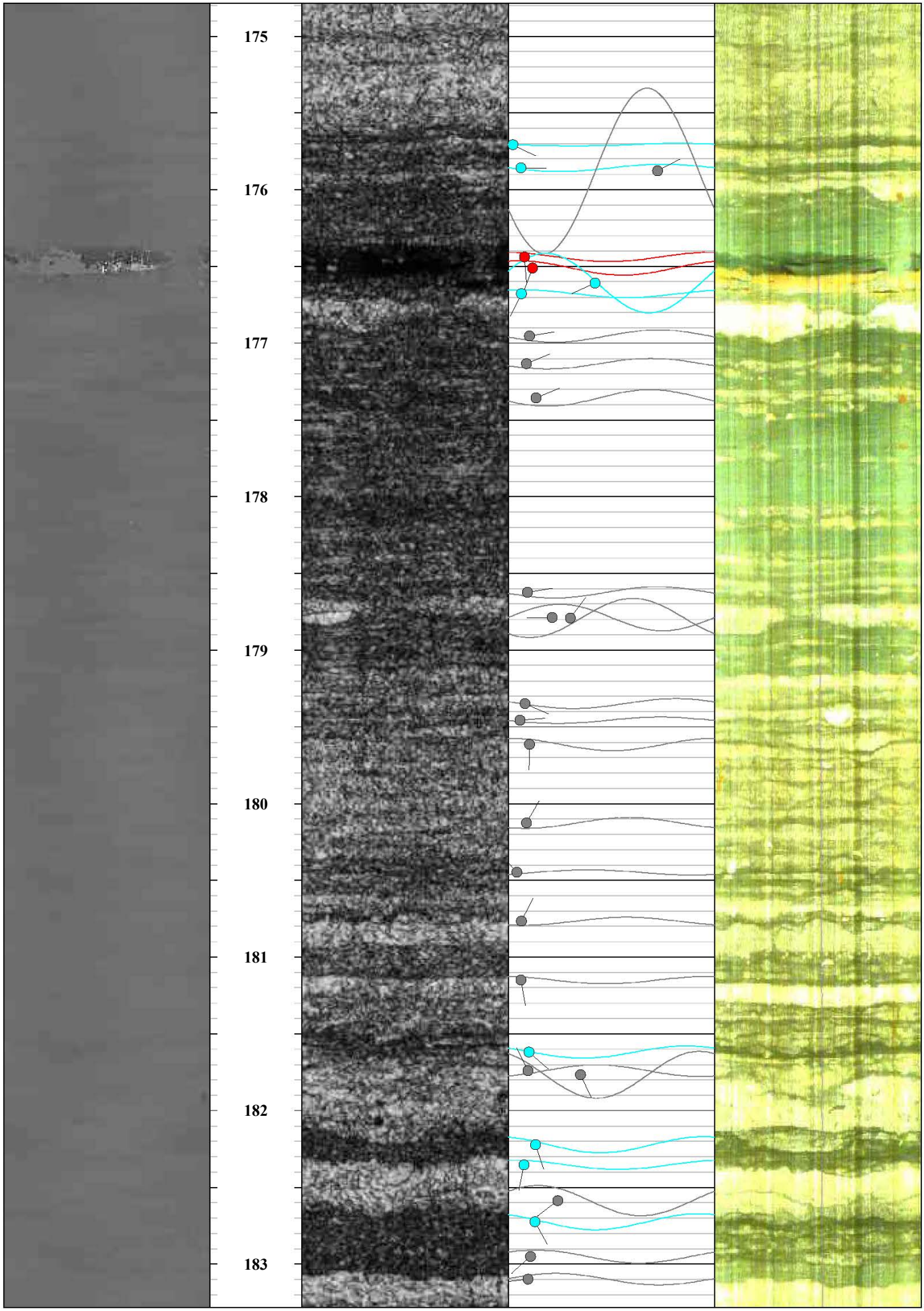
168
169
170
171
172
173
174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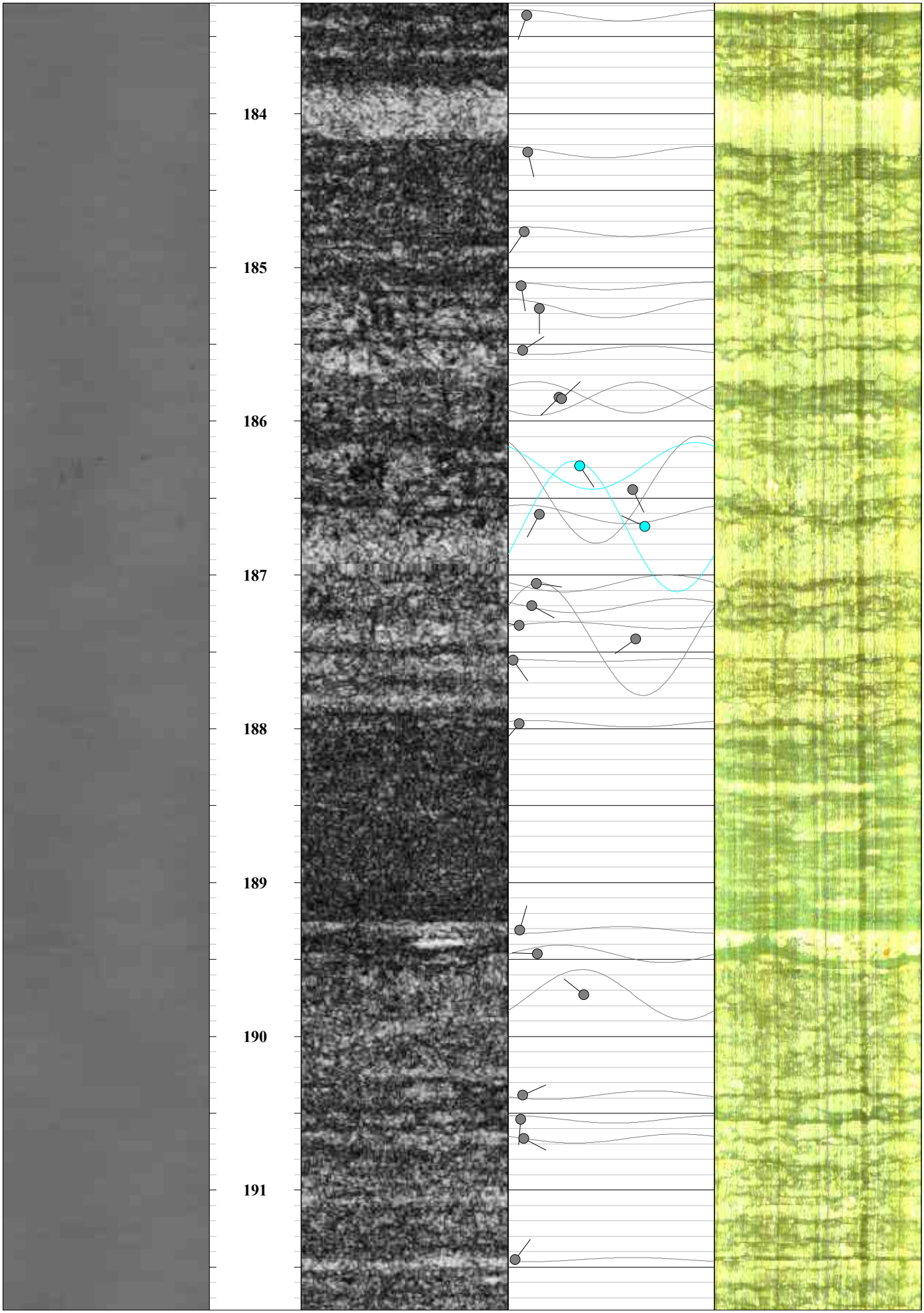
178
179
180
181
182
183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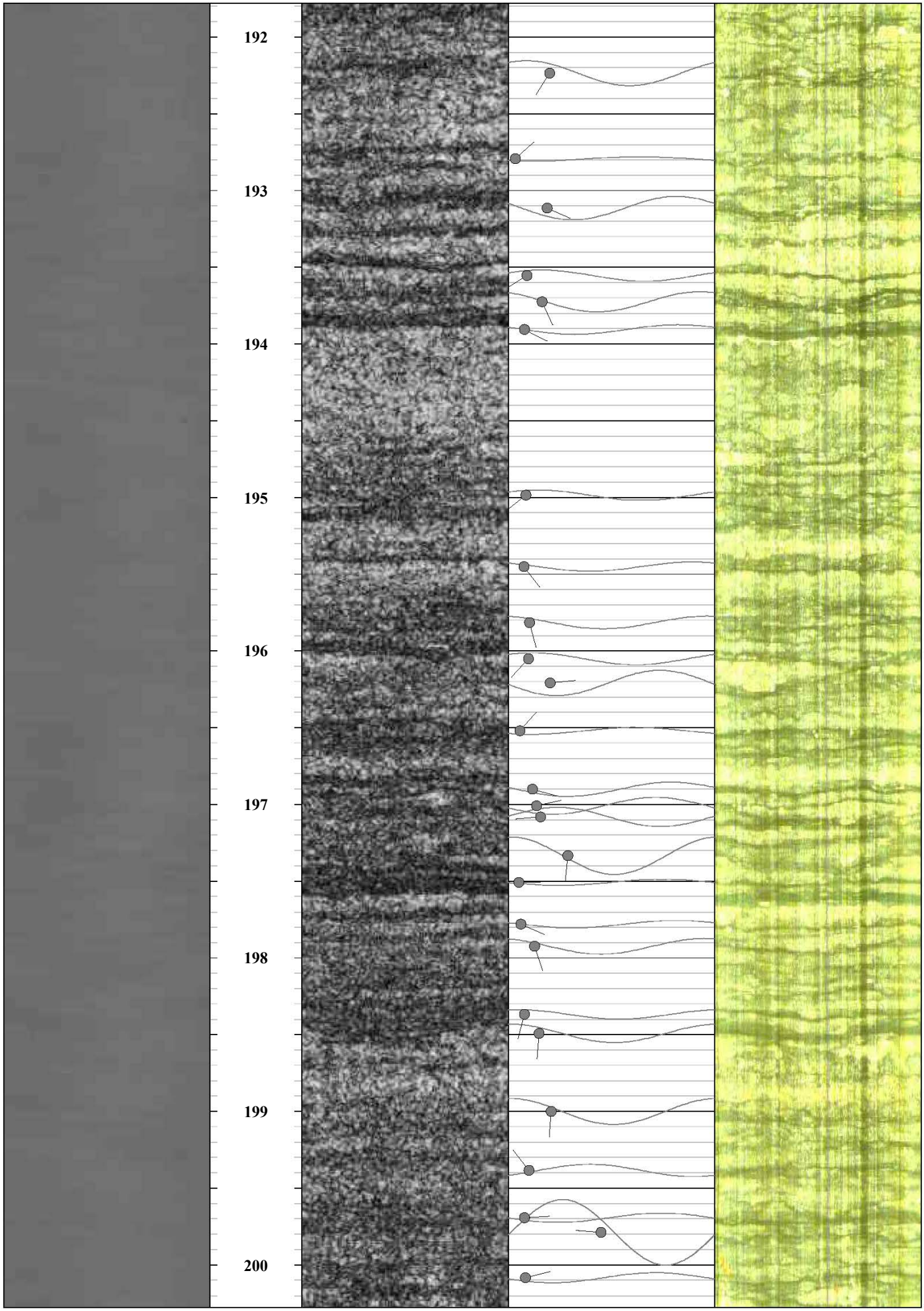
186
187
188
189
190
191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193
194
195
196
197
198
199
200

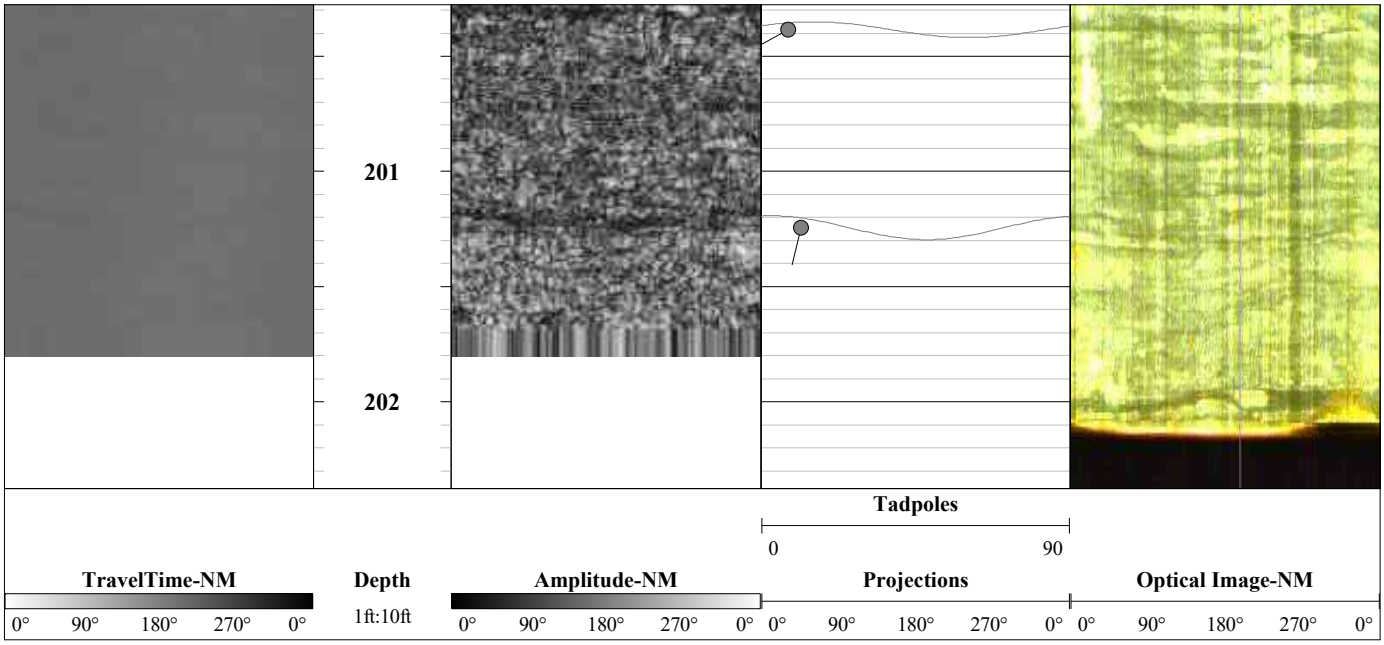

201
202
Tadpoles
0
90
TravelTime-NM
Depth
Amplitude-NM
Projections
Optical Image-NM
0° 90° 180° 270° 0°
1ft:10ft
0° 90° 180° 270° 0°
0° 90° 180° 270° 0°
0° 90° 180° 270° 0°

**Table MW-101B:2**. Summary Of Corehole Dynamic Flowmeter Results With Hydraulic Conductivity And Transmissivity Estimations; Arcadis; Tyco (Ansul FTC); Marinette, WI; Wellbore: MW-101B

| | |
|---|---|
| Well Name | MW-101B |
| Ambient Depth to Water (ftbtoc) | NA |
| Ambient Depth to Water (ftbgs) | 10.00 |
| Open Borehole Interval (ftbgs) | 93.8 - 202.2 |

| | |
|---|---|
| Diameter of Well (ft) | 0.50 |
| Maximum Constant Drawdown (ft) | 47.1 |
| Effective Radius (ft) | 100 |
| Well Specific Capacity (gpm/ft-dd) | 0.013 |

| Corehole Dynamic Flowmeter Logging Results - MW-101B | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Interval No.** | **Top of Interval (ft)** | **Bottom of Interval (ft)** | **Length of Interval (ft)** | **Ambient Flow[1] (gpm)** | **Interval-Specific Flow Rate During Pumping (gpm)** | **Delta Flow (gpm)** | **Transmissivity[2] ($ft^2$/day)** | **Comment** |
| 1 | 93.8 | 95.5 | 1.7 | 0.000 | 0.63 | 0.630 | 2.46E+00 | Flow likely originating from behind casing. No other flow identified. |
| **Borehole Transmissivity Using Thiem Equation ($ft^2$/day)** | | | | | | | **2.46E+00** | |
| **Borehole Hydraulic Conductivity (K=T/b; b=length of open borehole) (ft/day)** | | | | | | **2.27E-02** | | |

Note: Negative flow, if any, is outflow from the borehole to the aquifer, positive flow is inflow to the borehole.

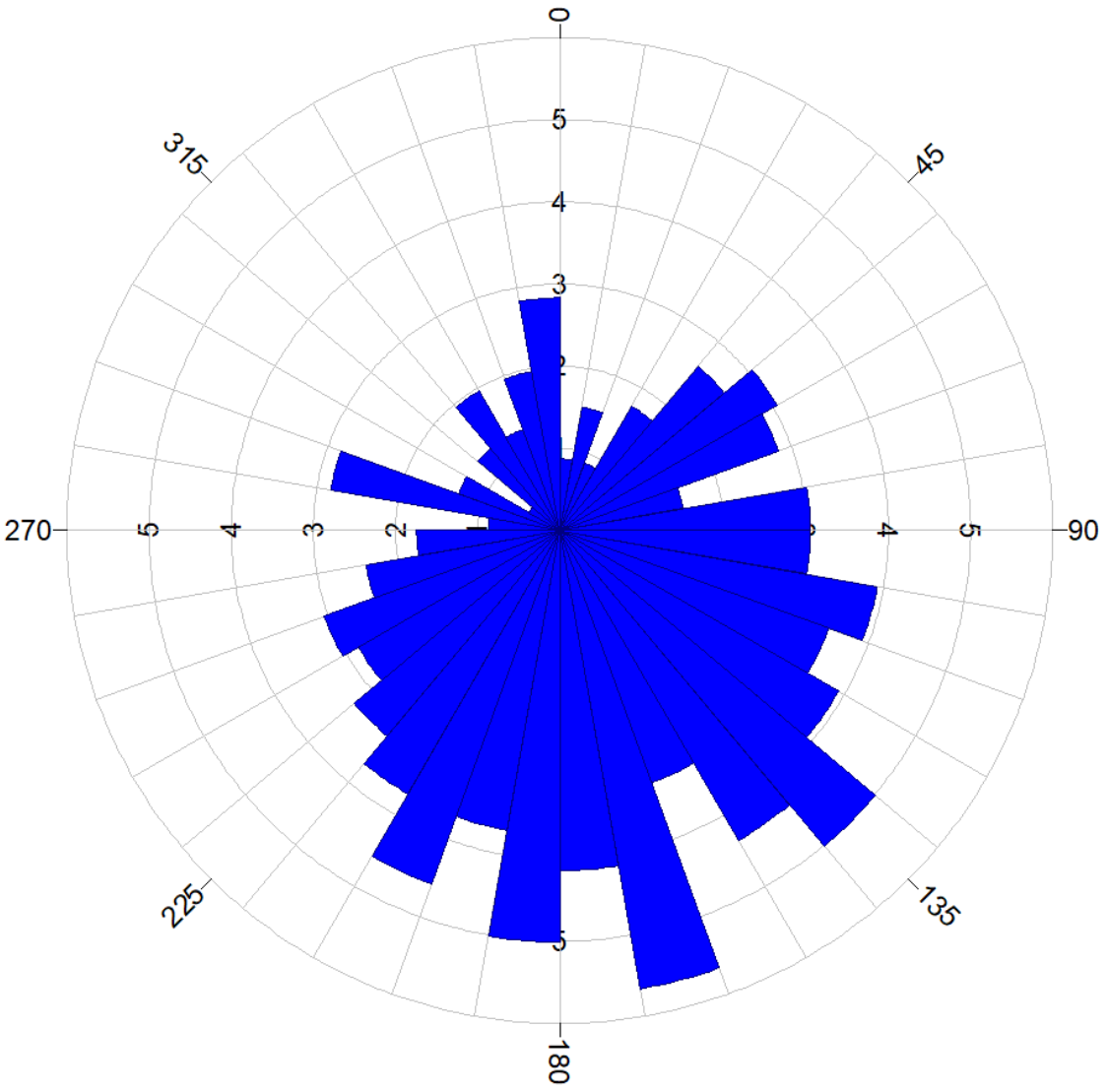
[1] No ambient flow is identified in this borehole under ambient conditions.

[2] Hydraulic conductivity and transmissivity estimates are based on single well drawdown data, a porous-medium equivalent model and the Thiem equation.

NA = Not Applicable

**Rose Diagram of Televiewer Features**
**ARCADIS**
**Project: Tyco (Ansul FTC)**
**Well: MW-102B**
**16 August 2018**

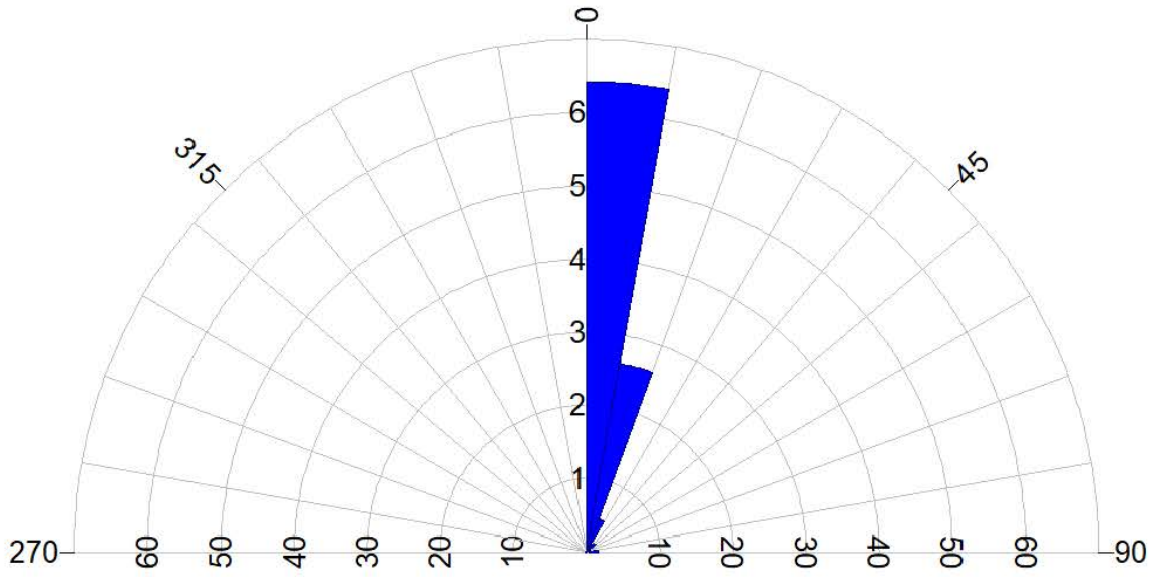
**Dip Direction**




All directions are with respect to Magnetic North.

**Rose Diagram of Televiewer Features**
**ARCADIS**
**Project: Tyco (Ansul FTC)**
**Well: MW-102B**
**16 August 2018**

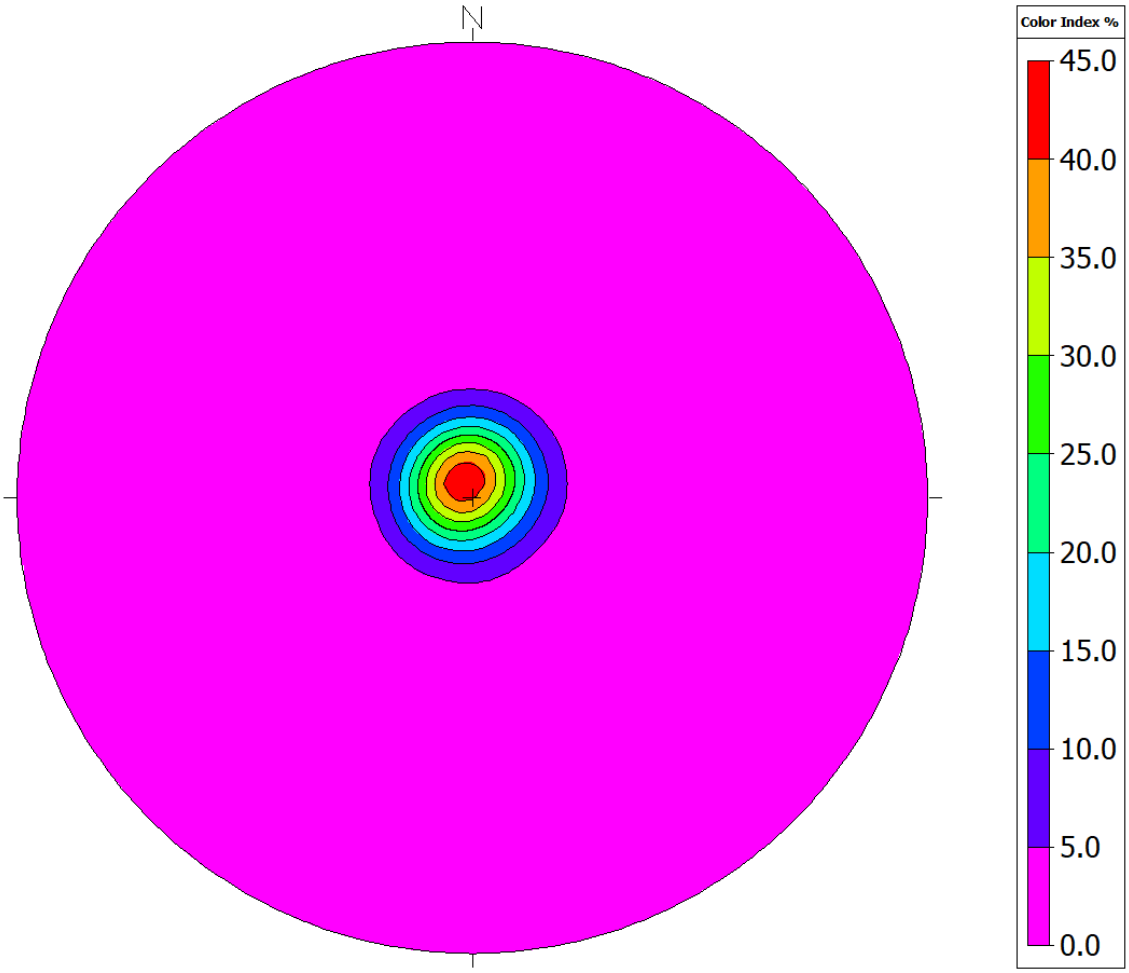
**Dip Angles**




All directions are with respect to Magnetic North.

**Stereonet Diagram of Televiewer Features**
**ARCADIS**
**Project: Tyco (Ansul FTC)**
**Well: MW-102B**
**16 August 2018**

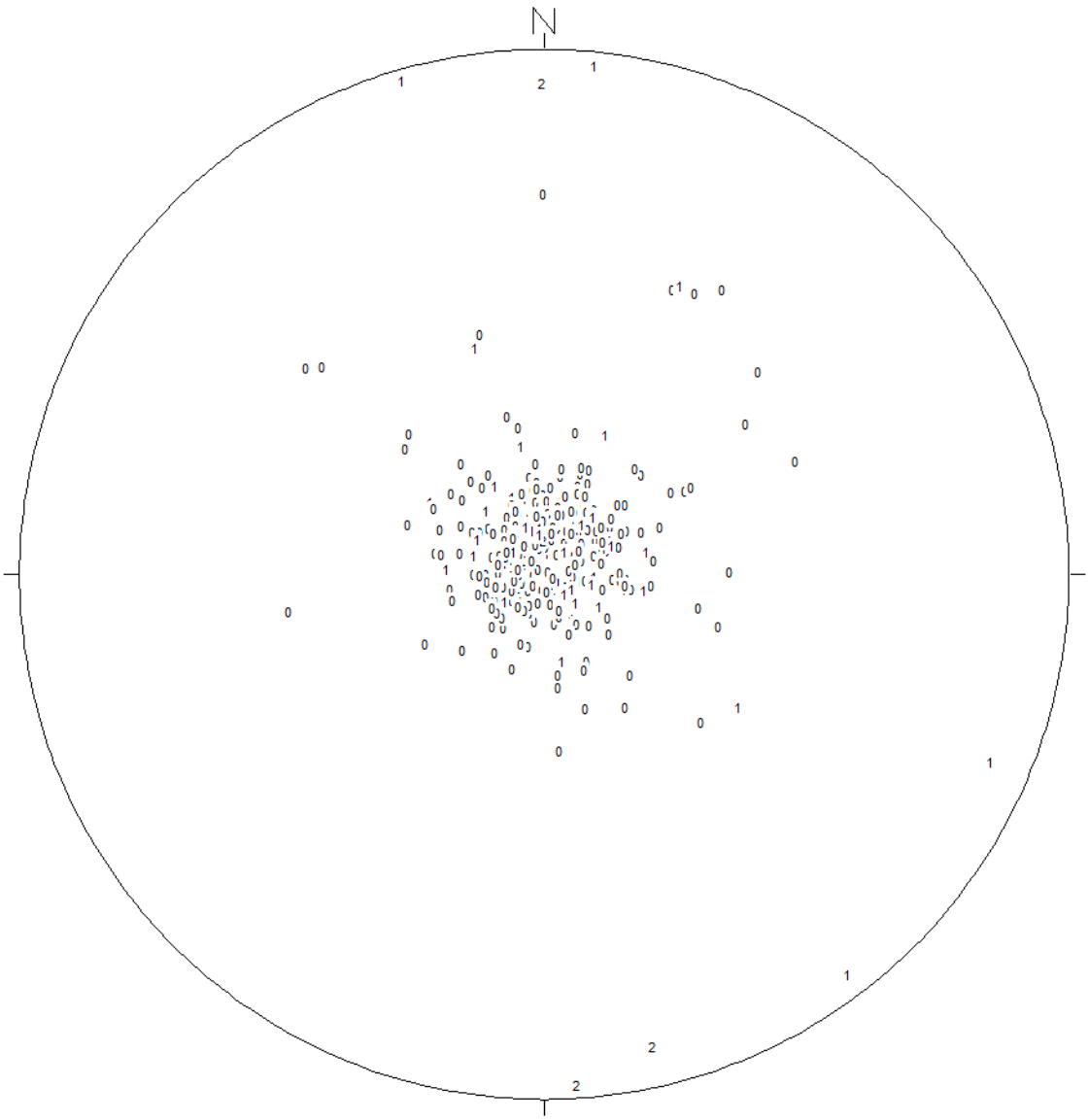
**Schmidt Projection with Contours**




All directions are with respect to Magnetic North.

**Stereonet Diagram of Televiewer Features**
**ARCADIS**
**Project: Tyco (Ansul FTC)**
**Well: MW-102B**
**16 August 2018**

**Schmidt Projections with Feature Ranks**




All directions are with respect to Magnetic North.

**Table MW-102B:1. Orientation Summary Table**
**Image Features**
**Arcadis**
**Project: Tyco (Ansul FTC)**
**Well: MW-102B**
**16 August 2018**

| Feature No. | Depth (meters) | Depth (feet) | Dip Direction (degrees) | Dip Angle (degrees) | Feature Rank (0 to 5) |
|---|---|---|---|---|---|
| 1 | 24.69 | 81.0 | 153 | 5 | 0 |
| 2 | 24.96 | 81.9 | 52 | 3 | 1 |
| 3 | 24.97 | 81.9 | 163 | 86 | 1 |
| 4 | 26.57 | 87.2 | 348 | 83 | 2 |
| 5 | 26.61 | 87.3 | 11 | 4 | 0 |
| 6 | 26.79 | 87.9 | 324 | 86 | 1 |
| 7 | 27.01 | 88.6 | 219 | 7 | 1 |
| 8 | 27.13 | 89.0 | 160 | 8 | 0 |
| 9 | 27.17 | 89.1 | 132 | 5 | 0 |
| 10 | 27.20 | 89.2 | 166 | 11 | 0 |
| 11 | 27.30 | 89.6 | 200 | 5 | 0 |
| 12 | 27.51 | 90.3 | 358 | 5 | 0 |
| 13 | 27.64 | 90.7 | 179 | 81 | 2 |
| 14 | 27.76 | 91.1 | 80 | 42 | 0 |
| 15 | 27.90 | 91.5 | 199 | 6 | 0 |
| 16 | 28.13 | 92.3 | 87 | 5 | 1 |
| 17 | 28.26 | 92.7 | 185 | 85 | 1 |
| 18 | 28.29 | 92.8 | 324 | 21 | 0 |
| 19 | 28.30 | 92.9 | 205 | 14 | 0 |
| 20 | 28.36 | 93.1 | 281 | 16 | 0 |
| 21 | 28.37 | 93.1 | 127 | 17 | 0 |
| 22 | 28.44 | 93.3 | 85 | 3 | 1 |
| 23 | 28.85 | 94.7 | 145 | 8 | 0 |
| 24 | 29.85 | 97.9 | 203 | 6 | 0 |
| 25 | 30.11 | 98.8 | 201 | 5 | 0 |
| 26 | 30.26 | 99.3 | 179 | 60 | 0 |
| 27 | 30.43 | 99.8 | 56 | 5 | 0 |
| 28 | 30.57 | 100.3 | 181 | 12 | 0 |
| 29 | 30.60 | 100.4 | 290 | 28 | 0 |
| 30 | 30.67 | 100.6 | 154 | 6 | 0 |
| 31 | 30.76 | 100.9 | 144 | 6 | 1 |
| 32 | 31.04 | 101.8 | 300 | 5 | 1 |
| 33 | 31.07 | 101.9 | 310 | 10 | 1 |
| 34 | 31.32 | 102.8 | 65 | 4 | 0 |
| 35 | 31.58 | 103.6 | 42 | 8 | 0 |
| 36 | 31.60 | 103.7 | 357 | 89 | 2 |
| 37 | 31.80 | 104.3 | 125 | 6 | 1 |
| 38 | 32.20 | 105.6 | 143 | 9 | 1 |
| 39 | 32.46 | 106.5 | 159 | 11 | 1 |
| 40 | 32.49 | 106.6 | 149 | 9 | 1 |
| 41 | 33.02 | 108.3 | 41 | 5 | 0 |
| 42 | 33.21 | 109.0 | 242 | 8 | 0 |
| 43 | 33.33 | 109.4 | 94 | 3 | 0 |
| 44 | 33.87 | 111.1 | 61 | 5 | 0 |
| 45 | 33.93 | 111.3 | 65 | 8 | 0 |

All directions are with respect to Magnetic North.

**Table MW-102B:1. Orientation Summary Table**
**Image Features**
**Arcadis**
**Project: Tyco (Ansul FTC)**
**Well: MW-102B**
**16 August 2018**

| Feature No. | Depth (meters) | Depth (feet) | Dip Direction (degrees) | Dip Angle (degrees) | Feature Rank (0 to 5) |
|---|---|---|---|---|---|
| 46 | 33.93 | 111.3 | 223 | 5 | 0 |
| 47 | 34.03 | 111.7 | 353 | 8 | 0 |
| 48 | 34.05 | 111.7 | 15 | 9 | 0 |
| 49 | 34.17 | 112.1 | 190 | 10 | 0 |
| 50 | 34.25 | 112.4 | 121 | 11 | 0 |
| 51 | 34.52 | 113.2 | 35 | 8 | 0 |
| 52 | 34.60 | 113.5 | 255 | 11 | 0 |
| 53 | 34.70 | 113.8 | 225 | 8 | 1 |
| 54 | 34.71 | 113.9 | 338 | 9 | 1 |
| 55 | 34.76 | 114.0 | 327 | 11 | 0 |
| 56 | 34.78 | 114.1 | 260 | 6 | 0 |
| 57 | 34.85 | 114.3 | 279 | 7 | 0 |
| 58 | 34.89 | 114.5 | 272 | 28 | 0 |
| 59 | 34.93 | 114.6 | 129 | 29 | 0 |
| 60 | 34.98 | 114.8 | 312 | 12 | 0 |
| 61 | 35.07 | 115.1 | 208 | 49 | 0 |
| 62 | 35.09 | 115.1 | 40 | 2 | 0 |
| 63 | 35.16 | 115.4 | 174 | 6 | 1 |
| 64 | 35.20 | 115.5 | 170 | 6 | 0 |
| 65 | 35.24 | 115.6 | 167 | 10 | 0 |
| 66 | 35.27 | 115.7 | 115 | 12 | 0 |
| 67 | 35.41 | 116.2 | 319 | 14 | 0 |
| 68 | 35.46 | 116.3 | 226 | 10 | 0 |
| 69 | 35.56 | 116.7 | 231 | 15 | 0 |
| 70 | 35.64 | 116.9 | 244 | 10 | 0 |
| 71 | 35.70 | 117.1 | 6 | 5 | 0 |
| 72 | 35.76 | 117.3 | 187 | 14 | 0 |
| 73 | 35.82 | 117.5 | 64 | 6 | 1 |
| 74 | 35.88 | 117.7 | 227 | 45 | 0 |
| 75 | 35.89 | 117.8 | 129 | 7 | 1 |
| 76 | 35.95 | 117.9 | 262 | 15 | 1 |
| 77 | 35.95 | 117.9 | 118 | 8 | 1 |
| 78 | 35.97 | 118.0 | 294 | 81 | 1 |
| 79 | 36.01 | 118.1 | 177 | 5 | 1 |
| 80 | 36.03 | 118.2 | 197 | 9 | 1 |
| 81 | 36.06 | 118.3 | 209 | 11 | 0 |
| 82 | 36.11 | 118.5 | 116 | 12 | 0 |
| 83 | 36.16 | 118.7 | 120 | 10 | 0 |
| 84 | 36.21 | 118.8 | 193 | 11 | 0 |
| 85 | 36.24 | 118.9 | 166 | 19 | 1 |
| 86 | 36.34 | 119.2 | 58 | 23 | 0 |
| 87 | 36.36 | 119.3 | 151 | 5 | 1 |
| 88 | 36.40 | 119.4 | 82 | 10 | 0 |
| 89 | 36.45 | 119.6 | 82 | 4 | 1 |
| 90 | 36.64 | 120.2 | 35 | 4 | 0 |

All directions are with respect to Magnetic North.

**Table MW-102B:1. Orientation Summary Table**
**Image Features**
**Arcadis**
**Project: Tyco (Ansul FTC)**
**Well: MW-102B**
**16 August 2018**

| Feature No. | Depth (meters) | Depth (feet) | Dip Direction (degrees) | Dip Angle (degrees) | Feature Rank (0 to 5) |
|---|---|---|---|---|---|
| 91 | 36.89 | 121.0 | 47 | 11 | 0 |
| 92 | 36.96 | 121.3 | 274 | 11 | 0 |
| 93 | 36.99 | 121.4 | 129 | 50 | 0 |
| 94 | 37.06 | 121.6 | 339 | 16 | 0 |
| 95 | 37.08 | 121.7 | 163 | 38 | 0 |
| 96 | 37.37 | 122.6 | 83 | 12 | 0 |
| 97 | 37.43 | 122.8 | 166 | 14 | 2 |
| 98 | 37.44 | 122.9 | 307 | 37 | 1 |
| 99 | 37.48 | 123.0 | 203 | 22 | 1 |
| 100 | 37.48 | 123.0 | 142 | 9 | 1 |
| 101 | 37.51 | 123.1 | 237 | 6 | 0 |
| 102 | 37.69 | 123.6 | 223 | 6 | 0 |
| 103 | 37.72 | 123.8 | 59 | 11 | 0 |
| 104 | 37.72 | 123.8 | 254 | 7 | 0 |
| 105 | 37.79 | 124.0 | 223 | 7 | 0 |
| 106 | 37.82 | 124.1 | 261 | 3 | 1 |
| 107 | 38.07 | 124.9 | 163 | 5 | 0 |
| 108 | 38.11 | 125.0 | 248 | 5 | 0 |
| 109 | 38.15 | 125.2 | 233 | 11 | 0 |
| 110 | 38.19 | 125.3 | 75 | 10 | 0 |
| 111 | 38.28 | 125.6 | 118 | 21 | 1 |
| 112 | 38.28 | 125.6 | 180 | 5 | 1 |
| 113 | 38.31 | 125.7 | 268 | 4 | 1 |
| 114 | 38.39 | 125.9 | 98 | 14 | 0 |
| 115 | 38.42 | 126.1 | 159 | 12 | 0 |
| 116 | 38.45 | 126.1 | 189 | 7 | 0 |
| 117 | 38.47 | 126.2 | 187 | 15 | 0 |
| 118 | 38.51 | 126.4 | 184 | 5 | 1 |
| 119 | 38.60 | 126.6 | 78 | 8 | 0 |
| 120 | 38.63 | 126.7 | 82 | 8 | 0 |
| 121 | 38.67 | 126.9 | 98 | 18 | 0 |
| 122 | 38.79 | 127.3 | 246 | 13 | 0 |
| 123 | 38.82 | 127.4 | 356 | 19 | 0 |
| 124 | 38.98 | 127.9 | 135 | 4 | 0 |
| 125 | 39.01 | 128.0 | 114 | 15 | 0 |
| 126 | 39.07 | 128.2 | 344 | 4 | 0 |
| 127 | 39.12 | 128.3 | 204 | 5 | 1 |
| 128 | 39.21 | 128.6 | 163 | 3 | 0 |
| 129 | 39.25 | 128.8 | 130 | 13 | 1 |
| 130 | 39.31 | 129.0 | 161 | 36 | 1 |
| 131 | 39.34 | 129.1 | 350 | 6 | 0 |
| 132 | 39.34 | 129.1 | 316 | 34 | 0 |
| 133 | 39.38 | 129.2 | 58 | 10 | 0 |
| 134 | 39.42 | 129.3 | 192 | 7 | 1 |
| 135 | 39.45 | 129.4 | 151 | 12 | 1 |

All directions are with respect to Magnetic North.

**Table MW-102B:1. Orientation Summary Table**
**Image Features**
**Arcadis**
**Project: Tyco (Ansul FTC)**
**Well: MW-102B**
**16 August 2018**

| Feature No. | Depth (meters) | Depth (feet) | Dip Direction (degrees) | Dip Angle (degrees) | Feature Rank (0 to 5) |
|---|---|---|---|---|---|
| 136 | 39.57 | 129.8 | 184 | 4 | 1 |
| 137 | 39.61 | 130.0 | 212 | 8 | 1 |
| 138 | 39.64 | 130.1 | 180 | 7 | 1 |
| 139 | 39.68 | 130.2 | 168 | 2 | 1 |
| 140 | 39.75 | 130.4 | 288 | 12 | 1 |
| 141 | 39.76 | 130.4 | 97 | 12 | 1 |
| 142 | 39.82 | 130.7 | 233 | 9 | 0 |
| 143 | 39.86 | 130.8 | 190 | 5 | 1 |
| 144 | 39.91 | 130.9 | 212 | 6 | 0 |
| 145 | 39.95 | 131.1 | 280 | 11 | 0 |
| 146 | 40.03 | 131.3 | 256 | 8 | 1 |
| 147 | 40.28 | 132.1 | 168 | 8 | 1 |
| 148 | 40.35 | 132.4 | 218 | 11 | 0 |
| 149 | 40.43 | 132.7 | 100 | 6 | 0 |
| 150 | 40.48 | 132.8 | 63 | 4 | 0 |
| 151 | 40.56 | 133.1 | 236 | 5 | 1 |
| 152 | 40.56 | 133.1 | 104 | 8 | 1 |
| 153 | 40.62 | 133.3 | 197 | 5 | 1 |
| 154 | 40.70 | 133.5 | 342 | 6 | 1 |
| 155 | 40.76 | 133.7 | 166 | 8 | 1 |
| 156 | 40.79 | 133.8 | 190 | 8 | 1 |
| 157 | 40.83 | 134.0 | 137 | 8 | 1 |
| 158 | 40.89 | 134.1 | 111 | 8 | 1 |
| 159 | 40.95 | 134.4 | 100 | 6 | 1 |
| 160 | 41.01 | 134.5 | 156 | 5 | 1 |
| 161 | 41.04 | 134.7 | 211 | 7 | 1 |
| 162 | 41.17 | 135.1 | 282 | 10 | 0 |
| 163 | 41.20 | 135.2 | 37 | 12 | 0 |
| 164 | 41.32 | 135.6 | 188 | 6 | 1 |
| 165 | 41.41 | 135.9 | 15 | 13 | 0 |
| 166 | 41.51 | 136.2 | 219 | 5 | 0 |
| 167 | 41.75 | 137.0 | 46 | 19 | 0 |
| 168 | 41.85 | 137.3 | 48 | 8 | 0 |
| 169 | 41.93 | 137.6 | 44 | 7 | 0 |
| 170 | 42.03 | 137.9 | 148 | 11 | 0 |
| 171 | 42.07 | 138.0 | 123 | 7 | 0 |
| 172 | 42.24 | 138.6 | 5 | 6 | 0 |
| 173 | 42.29 | 138.7 | 181 | 8 | 0 |
| 174 | 42.38 | 139.0 | 179 | 3 | 0 |
| 175 | 42.40 | 139.1 | 134 | 7 | 0 |
| 176 | 42.46 | 139.3 | 169 | 4 | 0 |
| 177 | 42.47 | 139.4 | 145 | 3 | 0 |
| 178 | 42.53 | 139.5 | 191 | 3 | 0 |
| 179 | 42.63 | 139.9 | 143 | 7 | 0 |
| 180 | 42.67 | 140.0 | 225 | 20 | 0 |

All directions are with respect to Magnetic North.

**Table MW-102B:1. Orientation Summary Table**
**Image Features**
**Arcadis**
**Project: Tyco (Ansul FTC)**
**Well: MW-102B**
**16 August 2018**

| Feature No. | Depth (meters) | Depth (feet) | Dip Direction (degrees) | Dip Angle (degrees) | Feature Rank (0 to 5) |
|---|---|---|---|---|---|
| 181 | 42.73 | 140.2 | 171 | 12 | 0 |
| 182 | 42.84 | 140.6 | 184 | 8 | 0 |
| 183 | 42.95 | 140.9 | 141 | 9 | 0 |
| 184 | 42.97 | 141.0 | 114 | 5 | 0 |
| 185 | 43.06 | 141.3 | 253 | 7 | 0 |
| 186 | 43.10 | 141.4 | 20 | 17 | 0 |
| 187 | 43.12 | 141.5 | 138 | 7 | 0 |
| 188 | 43.26 | 141.9 | 117 | 7 | 0 |
| 189 | 43.31 | 142.1 | 138 | 4 | 0 |
| 190 | 43.33 | 142.2 | 109 | 6 | 0 |
| 191 | 43.40 | 142.4 | 154 | 4 | 0 |
| 192 | 43.45 | 142.5 | 149 | 4 | 0 |
| 193 | 43.56 | 142.9 | 129 | 5 | 0 |
| 194 | 43.64 | 143.2 | 147 | 7 | 0 |
| 195 | 43.65 | 143.2 | 346 | 23 | 0 |
| 196 | 43.84 | 143.8 | 187 | 3 | 1 |
| 197 | 43.86 | 143.9 | 157 | 6 | 1 |
| 198 | 43.96 | 144.2 | 109 | 5 | 0 |
| 199 | 44.06 | 144.6 | 152 | 6 | 0 |
| 200 | 44.09 | 144.7 | 237 | 11 | 0 |
| 201 | 44.10 | 144.7 | 43 | 13 | 0 |
| 202 | 44.17 | 144.9 | 200 | 13 | 0 |
| 203 | 44.19 | 145.0 | 13 | 4 | 0 |
| 204 | 44.28 | 145.3 | 206 | 3 | 1 |
| 205 | 44.38 | 145.6 | 171 | 16 | 0 |
| 206 | 44.43 | 145.8 | 245 | 5 | 0 |
| 207 | 44.53 | 146.1 | 134 | 6 | 0 |
| 208 | 44.57 | 146.2 | 126 | 4 | 0 |
| 209 | 44.62 | 146.4 | 42 | 4 | 0 |
| 210 | 44.65 | 146.5 | 66 | 9 | 0 |
| 211 | 44.78 | 146.9 | 159 | 4 | 0 |
| 212 | 44.80 | 147.0 | 162 | 6 | 0 |
| 213 | 44.84 | 147.1 | 51 | 3 | 0 |
| 214 | 44.87 | 147.2 | 157 | 8 | 0 |
| 215 | 44.91 | 147.3 | 30 | 5 | 0 |
| 216 | 45.02 | 147.7 | 99 | 5 | 0 |
| 217 | 45.07 | 147.9 | 133 | 4 | 0 |
| 218 | 45.10 | 148.0 | 314 | 5 | 0 |
| 219 | 45.18 | 148.2 | 23 | 8 | 0 |
| 220 | 45.28 | 148.6 | 145 | 15 | 1 |
| 221 | 45.30 | 148.6 | 170 | 7 | 1 |
| 222 | 45.34 | 148.8 | 321 | 3 | 0 |
| 223 | 45.36 | 148.8 | 161 | 3 | 1 |
| 224 | 45.42 | 149.0 | 180 | 7 | 0 |
| 225 | 45.44 | 149.1 | 114 | 3 | 1 |

All directions are with respect to Magnetic North.

**Table MW-102B:1. Orientation Summary Table**
**Image Features**
**Arcadis**
**Project: Tyco (Ansul FTC)**
**Well: MW-102B**
**16 August 2018**

| Feature No. | Depth (meters) | Depth (feet) | Dip Direction (degrees) | Dip Angle (degrees) | Feature Rank (0 to 5) |
|---|---|---|---|---|---|
| 226 | 45.47 | 149.2 | 210 | 8 | 1 |
| 227 | 45.52 | 149.3 | 196 | 2 | 0 |
| 228 | 45.54 | 149.4 | 237 | 5 | 0 |
| 229 | 45.57 | 149.5 | 58 | 2 | 0 |
| 230 | 45.61 | 149.7 | 75 | 6 | 0 |
| 231 | 45.67 | 149.8 | 102 | 6 | 0 |
| 232 | 45.80 | 150.3 | 64 | 11 | 0 |
| 233 | 45.90 | 150.6 | 88 | 4 | 1 |
| 234 | 45.92 | 150.7 | 51 | 9 | 1 |
| 235 | 46.00 | 150.9 | 353 | 15 | 1 |
| 236 | 46.01 | 150.9 | 93 | 7 | 1 |
| 237 | 46.04 | 151.0 | 326 | 7 | 0 |
| 238 | 46.08 | 151.2 | 294 | 9 | 0 |
| 239 | 46.09 | 151.2 | 69 | 9 | 0 |
| 240 | 46.14 | 151.4 | 293 | 6 | 0 |
| 241 | 46.24 | 151.7 | 329 | 6 | 0 |
| 242 | 46.32 | 152.0 | 255 | 5 | 1 |
| 243 | 46.39 | 152.2 | 325 | 6 | 1 |
| 244 | 46.48 | 152.5 | 350 | 2 | 0 |
| 245 | 46.52 | 152.6 | 287 | 3 | 1 |
| 246 | 46.53 | 152.7 | 88 | 16 | 1 |
| 247 | 46.63 | 153.0 | 101 | 3 | 0 |
| 248 | 46.69 | 153.2 | 55 | 5 | 0 |
| 249 | 46.77 | 153.4 | 166 | 3 | 0 |
| 250 | 46.83 | 153.6 | 54 | 6 | 0 |
| 251 | 46.86 | 153.7 | 64 | 6 | 0 |
| 252 | 46.88 | 153.8 | 57 | 3 | 0 |
| 253 | 46.93 | 154.0 | 180 | 12 | 0 |
| 254 | 46.98 | 154.1 | 255 | 9 | 0 |
| 255 | 47.02 | 154.3 | 216 | 10 | 0 |
| 256 | 47.08 | 154.5 | 41 | 5 | 0 |
| 257 | 47.13 | 154.6 | 174 | 11 | 0 |
| 258 | 47.15 | 154.7 | 177 | 10 | 0 |
| 259 | 47.17 | 154.8 | 205 | 9 | 0 |
| 260 | 47.20 | 154.9 | 167 | 14 | 0 |
| 261 | 47.27 | 155.1 | 295 | 4 | 0 |
| 262 | 47.42 | 155.6 | 211 | 7 | 0 |
| 263 | 47.45 | 155.7 | 182 | 7 | 0 |
| 264 | 47.52 | 155.9 | 145 | 4 | 0 |
| 265 | 47.62 | 156.2 | 325 | 7 | 1 |
| 266 | 47.67 | 156.4 | 286 | 13 | 0 |
| 267 | 47.68 | 156.4 | 113 | 13 | 0 |
| 268 | 47.75 | 156.7 | 20 | 13 | 0 |
| 269 | 47.81 | 156.9 | 27 | 7 | 0 |
| 270 | 47.91 | 157.2 | 205 | 7 | 0 |

All directions are with respect to Magnetic North.

**Table MW-102B:1. Orientation Summary Table**
**Image Features**
**Arcadis**
**Project: Tyco (Ansul FTC)**
**Well: MW-102B**
**16 August 2018**

| Feature No. | Depth (meters) | Depth (feet) | Dip Direction (degrees) | Dip Angle (degrees) | Feature Rank (0 to 5) |
|---|---|---|---|---|---|
| 271 | 47.95 | 157.3 | 324 | 4 | 0 |
| 272 | 47.98 | 157.4 | 185 | 6 | 0 |
| 273 | 48.00 | 157.5 | 58 | 5 | 0 |
| 274 | 48.06 | 157.7 | 101 | 5 | 1 |
| 275 | 48.11 | 157.8 | 351 | 3 | 0 |
| 276 | 48.15 | 158.0 | 317 | 5 | 1 |
| 277 | 48.16 | 158.0 | 104 | 7 | 1 |
| 278 | 48.20 | 158.1 | 257 | 7 | 0 |
| 279 | 48.24 | 158.3 | 167 | 22 | 0 |
| 280 | 48.30 | 158.5 | 202 | 16 | 0 |
| 281 | 48.51 | 159.2 | 30 | 8 | 0 |
| 282 | 48.53 | 159.2 | 82 | 11 | 0 |
| 283 | 48.57 | 159.3 | 39 | 4 | 0 |
| 284 | 48.65 | 159.6 | 139 | 16 | 0 |
| 285 | 48.66 | 159.6 | 286 | 24 | 0 |
| 286 | 48.77 | 160.0 | 178 | 8 | 0 |
| 287 | 48.82 | 160.2 | 121 | 7 | 0 |
| 288 | 48.85 | 160.3 | 99 | 6 | 0 |
| 289 | 48.90 | 160.4 | 221 | 7 | 0 |
| 290 | 48.96 | 160.6 | 149 | 3 | 0 |
| 291 | 48.99 | 160.7 | 99 | 5 | 0 |
| 292 | 49.02 | 160.8 | 280 | 12 | 0 |
| 293 | 49.04 | 160.9 | 176 | 5 | 0 |
| 294 | 49.10 | 161.1 | 204 | 48 | 0 |
| 295 | 49.14 | 161.2 | 133 | 30 | 0 |
| 296 | 49.16 | 161.3 | 282 | 11 | 0 |
| 297 | 49.21 | 161.5 | 37 | 8 | 0 |
| 298 | 49.26 | 161.6 | 127 | 5 | 0 |
| 299 | 49.30 | 161.7 | 199 | 13 | 0 |
| 300 | 49.37 | 162.0 | 87 | 5 | 1 |
| 301 | 49.38 | 162.0 | 284 | 7 | 1 |
| 302 | 49.41 | 162.1 | 7 | 6 | 0 |
| 303 | 49.44 | 162.2 | 123 | 7 | 0 |
| 304 | 49.46 | 162.3 | 137 | 6 | 0 |
| 305 | 49.54 | 162.5 | 138 | 5 | 1 |
| 306 | 49.57 | 162.6 | 93 | 4 | 1 |
| 307 | 49.58 | 162.7 | 148 | 10 | 0 |
| 308 | 49.63 | 162.8 | 183 | 4 | 0 |
| 309 | 49.69 | 163.0 | 139 | 10 | 0 |
| 310 | 49.87 | 163.6 | 84 | 5 | 1 |
| 311 | 49.98 | 164.0 | 179 | 5 | 0 |
| 312 | 49.99 | 164.0 | 356 | 9 | 0 |
| 313 | 50.04 | 164.2 | 208 | 7 | 0 |
| 314 | 50.06 | 164.2 | 198 | 5 | 0 |
| 315 | 50.12 | 164.5 | 189 | 8 | 0 |

All directions are with respect to Magnetic North.

**Table MW-102B:1. Orientation Summary Table**
**Image Features**
**Arcadis**
**Project: Tyco (Ansul FTC)**
**Well: MW-102B**
**16 August 2018**

| Feature No. | Depth (meters) | Depth (feet) | Dip Direction (degrees) | Dip Angle (degrees) | Feature Rank (0 to 5) |
|---|---|---|---|---|---|
| 316 | 50.21 | 164.7 | 190 | 8 | 0 |
| 317 | 50.29 | 165.0 | 202 | 9 | 0 |
| 318 | 50.32 | 165.1 | 134 | 5 | 0 |
| 319 | 50.36 | 165.2 | 128 | 9 | 0 |
| 320 | 50.39 | 165.3 | 154 | 7 | 0 |
| 321 | 50.45 | 165.5 | 209 | 4 | 0 |
| 322 | 50.54 | 165.8 | 61 | 6 | 0 |
| 323 | 50.58 | 165.9 | 56 | 7 | 0 |
| 324 | 50.61 | 166.0 | 153 | 4 | 0 |
| 325 | 50.69 | 166.3 | 102 | 4 | 0 |
| 326 | 50.71 | 166.4 | 118 | 8 | 0 |
| 327 | 50.76 | 166.6 | 210 | 2 | 0 |
| 328 | 50.85 | 166.8 | 171 | 7 | 0 |
| 329 | 50.90 | 167.0 | 43 | 11 | 0 |
| 330 | 50.94 | 167.1 | 247 | 10 | 0 |
| 331 | 51.02 | 167.4 | 223 | 4 | 0 |
| 332 | 51.07 | 167.5 | 138 | 7 | 0 |
| 333 | 51.10 | 167.7 | 191 | 21 | 0 |
| 334 | 51.19 | 168.0 | 19 | 4 | 0 |
| 335 | 51.27 | 168.2 | 17 | 6 | 0 |
| 336 | 51.33 | 168.4 | 215 | 10 | 0 |
| 337 | 51.38 | 168.6 | 185 | 9 | 0 |
| 338 | 51.42 | 168.7 | 139 | 8 | 0 |
| 339 | 51.44 | 168.8 | 198 | 15 | 0 |
| 340 | 51.50 | 169.0 | 242 | 4 | 0 |
| 341 | 51.54 | 169.1 | 106 | 23 | 0 |
| 342 | 51.61 | 169.3 | 101 | 9 | 0 |
| 343 | 51.71 | 169.7 | 135 | 7 | 0 |
| 344 | 51.74 | 169.8 | 237 | 4 | 0 |
| 345 | 51.76 | 169.8 | 77 | 16 | 0 |
| 346 | 52.06 | 170.8 | 295 | 7 | 1 |
| 347 | 52.10 | 170.9 | 188 | 9 | 0 |
| 348 | 52.14 | 171.1 | 74 | 5 | 0 |
| 349 | 52.18 | 171.2 | 239 | 22 | 0 |
| 350 | 52.22 | 171.3 | 267 | 16 | 0 |
| 351 | 52.26 | 171.5 | 137 | 18 | 0 |
| 352 | 52.27 | 171.5 | 357 | 29 | 0 |
| 353 | 52.34 | 171.7 | 32 | 16 | 0 |
| 354 | 52.38 | 171.8 | 227 | 8 | 0 |
| 355 | 52.48 | 172.2 | 351 | 7 | 0 |
| 356 | 52.52 | 172.3 | 233 | 12 | 0 |
| 357 | 52.62 | 172.7 | 332 | 25 | 0 |
| 358 | 52.64 | 172.7 | 247 | 42 | 0 |
| 359 | 52.66 | 172.8 | 234 | 38 | 0 |
| 360 | 52.75 | 173.1 | 139 | 21 | 0 |

All directions are with respect to Magnetic North.

**Table MW-102B:1. Orientation Summary Table**
**Image Features**
**Arcadis**
**Project: Tyco (Ansul FTC)**
**Well: MW-102B**
**16 August 2018**

| Feature No. | Depth (meters) | Depth (feet) | Dip Direction (degrees) | Dip Angle (degrees) | Feature Rank (0 to 5) |
|---|---|---|---|---|---|
| 361 | 52.78 | 173.2 | 116 | 20 | 0 |
| 362 | 52.80 | 173.2 | 96 | 18 | 0 |
| 363 | 52.90 | 173.6 | 228 | 14 | 0 |
| 364 | 52.96 | 173.7 | 126 | 19 | 0 |
| 365 | 52.97 | 173.8 | 356 | 17 | 0 |
| 366 | 53.15 | 174.4 | 221 | 10 | 1 |
| 367 | 53.23 | 174.6 | 220 | 6 | 0 |
| 368 | 53.25 | 174.7 | 99 | 9 | 0 |
| 369 | 53.28 | 174.8 | 96 | 17 | 0 |
| 370 | 53.35 | 175.0 | 248 | 4 | 0 |
| 371 | 53.42 | 175.3 | 97 | 8 | 0 |
| 372 | 53.42 | 175.3 | 233 | 10 | 0 |
| 373 | 53.46 | 175.4 | 252 | 10 | 0 |
| 374 | 53.49 | 175.5 | 131 | 48 | 0 |
| 375 | 53.51 | 175.6 | 267 | 8 | 0 |
| 376 | 53.57 | 175.8 | 13 | 1 | 0 |
| 377 | 53.60 | 175.9 | 287 | 3 | 0 |
| 378 | 53.65 | 176.0 | 193 | 8 | 0 |
| 379 | 53.69 | 176.2 | 162 | 8 | 0 |
| 380 | 53.77 | 176.4 | 221 | 20 | 0 |
| 381 | 53.81 | 176.5 | 252 | 10 | 1 |
| 382 | 53.91 | 176.9 | 132 | 7 | 0 |
| 383 | 53.96 | 177.0 | 251 | 18 | 0 |
| 384 | 54.01 | 177.2 | 110 | 12 | 1 |
| 385 | 54.09 | 177.5 | 334 | 3 | 1 |
| 386 | 54.16 | 177.7 | 217 | 4 | 1 |
| 387 | 54.21 | 177.9 | 110 | 7 | 0 |
| 388 | 54.30 | 178.2 | 100 | 7 | 0 |
| 389 | 54.34 | 178.3 | 111 | 5 | 0 |
| 390 | 54.46 | 178.7 | 360 | 6 | 0 |
| 391 | 54.51 | 178.8 | 261 | 5 | 0 |
| 392 | 54.54 | 178.9 | 70 | 16 | 0 |
| 393 | 54.61 | 179.2 | 111 | 6 | 1 |
| 394 | 54.64 | 179.3 | 146 | 7 | 1 |
| 395 | 54.66 | 179.3 | 211 | 6 | 0 |
| 396 | 54.70 | 179.5 | 172 | 7 | 0 |
| 397 | 54.72 | 179.5 | 164 | 24 | 0 |
| 398 | 54.81 | 179.8 | 48 | 11 | 0 |
| 399 | 54.85 | 179.9 | 212 | 52 | 0 |
| 400 | 54.91 | 180.2 | 68 | 12 | 0 |
| 401 | 54.92 | 180.2 | 246 | 9 | 0 |
| 402 | 55.01 | 180.5 | 101 | 7 | 0 |
| 403 | 55.14 | 180.9 | 67 | 6 | 0 |
| 404 | 55.21 | 181.2 | 276 | 11 | 0 |
| 405 | 55.28 | 181.4 | 101 | 8 | 0 |

All directions are with respect to Magnetic North.

**Table MW-102B:1. Orientation Summary Table**
**Image Features**
**Arcadis**
**Project: Tyco (Ansul FTC)**
**Well: MW-102B**
**16 August 2018**

| Feature No. | Depth (meters) | Depth (feet) | Dip Direction (degrees) | Dip Angle (degrees) | Feature Rank (0 to 5) |
|---|---|---|---|---|---|
| 406 | 55.30 | 181.4 | 136 | 4 | 0 |
| 407 | 55.36 | 181.6 | 164 | 6 | 1 |
| 408 | 55.45 | 181.9 | 171 | 13 | 0 |
| 409 | 55.52 | 182.2 | 201 | 12 | 0 |
| 410 | 55.53 | 182.2 | 350 | 8 | 0 |
| 411 | 55.63 | 182.5 | 236 | 6 | 0 |
| 412 | 55.67 | 182.7 | 108 | 7 | 0 |
| 413 | 55.71 | 182.8 | 91 | 8 | 0 |
| 414 | 55.76 | 182.9 | 67 | 6 | 0 |
| 415 | 55.80 | 183.1 | 212 | 4 | 0 |
| 416 | 55.81 | 183.1 | 184 | 5 | 0 |
| 417 | 55.85 | 183.3 | 189 | 8 | 0 |
| 418 | 55.87 | 183.3 | 128 | 5 | 0 |
| 419 | 55.90 | 183.4 | 7 | 4 | 0 |
| 420 | 56.03 | 183.8 | 146 | 17 | 0 |
| 421 | 56.08 | 184.0 | 207 | 12 | 0 |
| 422 | 56.16 | 184.3 | 267 | 4 | 0 |
| 423 | 56.22 | 184.5 | 152 | 6 | 1 |
| 424 | 56.27 | 184.6 | 227 | 3 | 1 |
| 425 | 56.29 | 184.7 | 165 | 4 | 2 |
| 426 | 56.30 | 184.7 | 205 | 49 | 1 |
| 427 | 56.32 | 184.8 | 167 | 12 | 0 |
| 428 | 56.43 | 185.2 | 165 | 8 | 0 |
| 429 | 56.47 | 185.3 | 108 | 18 | 0 |
| 430 | 56.53 | 185.5 | 149 | 7 | 0 |
| 431 | 56.58 | 185.6 | 198 | 16 | 0 |
| 432 | 56.76 | 186.2 | 87 | 5 | 0 |
| 433 | 56.85 | 186.5 | 121 | 3 | 0 |
| 434 | 56.88 | 186.6 | 241 | 24 | 0 |
| 435 | 57.03 | 187.1 | 170 | 12 | 0 |
| 436 | 57.06 | 187.2 | 347 | 2 | 0 |
| 437 | 57.24 | 187.8 | 250 | 15 | 0 |
| 438 | 57.30 | 188.0 | 246 | 12 | 0 |
| 439 | 57.39 | 188.3 | 336 | 10 | 0 |
| 440 | 57.41 | 188.3 | 172 | 16 | 0 |
| 441 | 57.60 | 189.0 | 126 | 7 | 0 |
| 442 | 57.68 | 189.2 | 145 | 4 | 0 |
| 443 | 57.71 | 189.4 | 345 | 6 | 1 |
| 444 | 57.77 | 189.5 | 243 | 5 | 0 |
| 445 | 57.82 | 189.7 | 206 | 6 | 0 |
| 446 | 57.95 | 190.1 | 54 | 11 | 0 |
| 447 | 57.97 | 190.2 | 241 | 25 | 0 |
| 448 | 58.01 | 190.3 | 160 | 5 | 1 |
| 449 | 58.05 | 190.5 | 348 | 7 | 0 |
| 450 | 58.10 | 190.6 | 71 | 2 | 0 |

All directions are with respect to Magnetic North.

**Table MW-102B:1. Orientation Summary Table**
**Image Features**
**Arcadis**
**Project: Tyco (Ansul FTC)**
**Well: MW-102B**
**16 August 2018**

| Feature No. | Depth (meters) | Depth (feet) | Dip Direction (degrees) | Dip Angle (degrees) | Feature Rank (0 to 5) |
|---|---|---|---|---|---|
| 451 | 58.16 | 190.8 | 106 | 3 | 0 |
| 452 | 58.21 | 191.0 | 344 | 11 | 0 |
| 453 | 58.31 | 191.3 | 335 | 5 | 1 |
| 454 | 58.38 | 191.5 | 342 | 17 | 0 |
| 455 | 58.43 | 191.7 | 218 | 8 | 1 |
| 456 | 58.44 | 191.7 | 285 | 15 | 1 |
| 457 | 58.44 | 191.7 | 147 | 7 | 1 |
| 458 | 59.77 | 196.1 | 285 | 12 | 0 |
| 459 | 59.97 | 196.8 | 214 | 6 | 0 |
| 460 | 60.02 | 196.9 | 84 | 5 | 0 |

All directions are with respect to Magnetic North.

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# Natural Gamma-Ray Three-Arm Caliper Fluid Temp. / Cond.

| | |
|---|---|
| Company | Arcadis |
| Well | MW-102B |
| Project | Tyco (Ansul FTC) |
| County | Marinette |
| State | Wisconsin |

**COMPANY** Arcadis
**WELL** MW-102B
**PROJECT** Tyco (Ansul FTC)
**COUNTY** Marinette **STATE** Wisconsin

**LOCATION**

QTR SEC TWP RGE

**OTHER SERVICES**
Acoustic Televiewer
Optical Televiewer
Core-Dynamic Flowmeter

**PERMANENT DATUM** Gound Level **ELEVATION** NA
**LOG MEAS. FROM** Ground Level 0.0 ft **ABOVE PERMINANT DATUM**
**DRILLING MEAS. FROM** Ground Level

| | | | | |
|---|---|---|---|---|
| **DATE ACQUIRED** | 16 August 2018 | 17 August 2018 | 17 August 2018 | |
| **RUN NUMBER** | Three | One | Two | |
| **LOG TYPE** | Caliper | FTC | NGR | |
| **DEPTH-DRILLER** | 205.0 ft | 205.0 ft | 205.0 ft | |
| **DEPTH-LOGGER** | 197.6 ft | 197.6 ft | 197.6 ft | |
| **BTM LOG INTERVAL** | 197.0 ft | 197.0 ft | 195.7 ft | |
| **TOP LOG INTERVAL** | 80.1 ft | 80.1 ft | 57.1 ft | |
| **RECORDED BY** | D. Renner | D. Renner | D. Renner | |
| **WITNESSED BY** | Z. Westphal | Z. Westphal | Z. Westphal | |
| **PROBE TYPE, S/N** | CCP, 1751 | 2PFA, 2375 | HLP, 2375 | |
| **LOGGING SPEED** | 15 ft/min | 10 ft/min | 15 ft/min | |
| **SAMPLE INTERVAL** | 0.2 ft | 0.1 ft | 0.1 ft | |
| **FLUID LEVEL** | 10.2 ft | 10.2 ft | 10.2 ft | |

**BOREHOLE RECORD**

| RUN No. | BIT | FROM | TO |
|---|---|---|---|
| One | NA | 0 ft | 75 ft |
| Two | 6 in. | 75 ft | 205 ft |
| | | | |
| | | | |

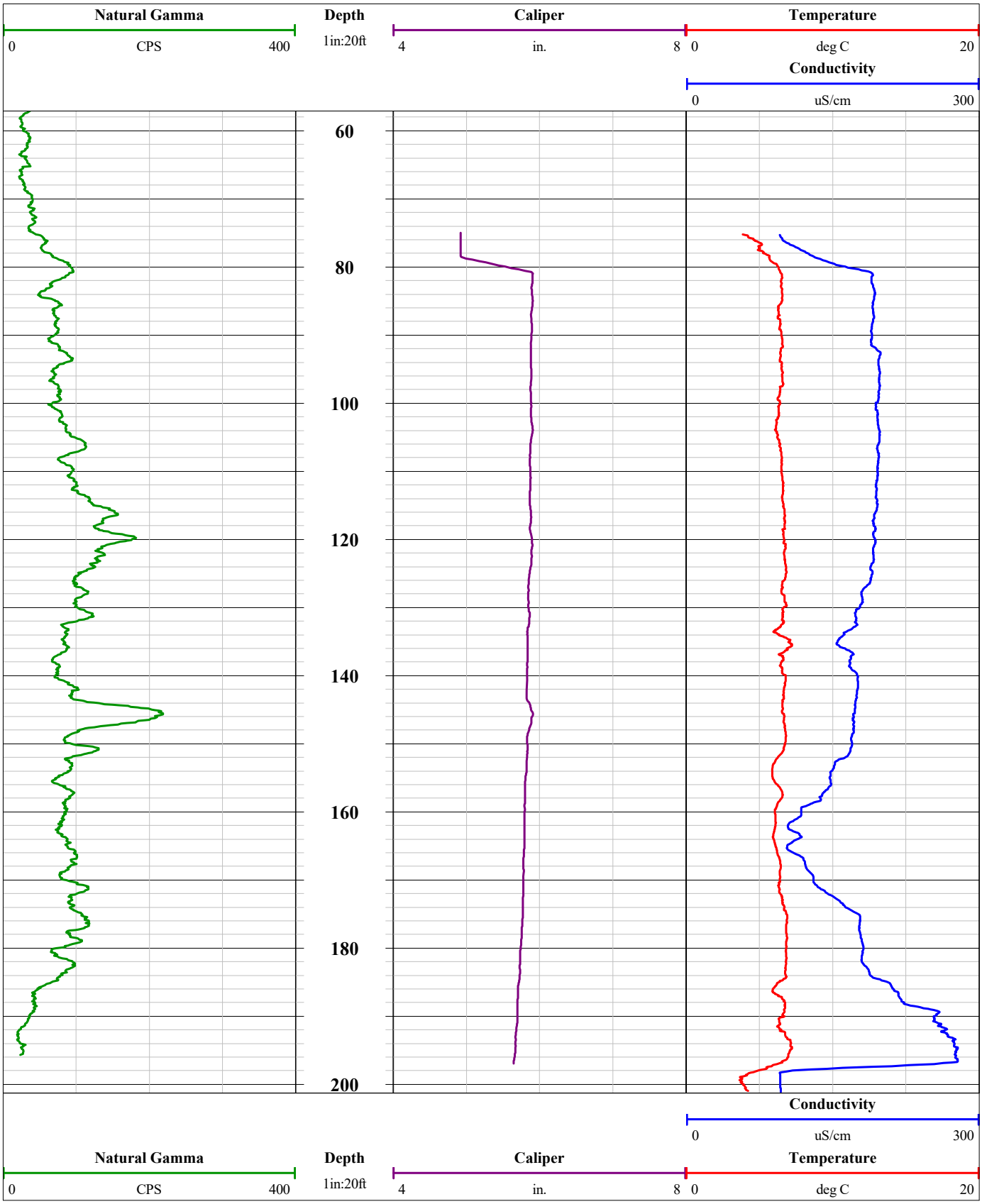
**CASING RECORD**

| SIZE | WGT. | FROM | TO |
|---|---|---|---|
| 5.25 in. | Steel | 0 ft | 75 ft |
| | | | |
| | | | |
| | | | |

**NA - Not Available, N/A - Not Applicable**

**COMMENTS**

Input Files:
Arcadis_Tyco_VAP-25_Caliper_UL1.tfd
Arcadis_Tyco_VAP-25_NGR_UL1.tfd
Arcadis_Tyco_VAP-25_FTC_DL1.tfd


Natural Gamma
0
CPS
400
Depth
1in:20ft
Caliper
4
in.
8
Temperature
0
deg C
20
Conductivity
0
uS/cm
300
60
80
100
120
140
160
180
200
Conductivity
0
uS/cm
300
Natural Gamma
0
CPS
400
Depth
1in:20ft
Caliper
4
in.
8
Temperature
0
deg C
20

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# Optical & Acoustic Televiewer

| | |
|---|---|
| Company | Arcadis |
| Well | MW-102B |
| Project | Tyco (Ansul FTC) |
| County | Marinette |
| State | Wisconsin |

**COMPANY** Arcadis
**WELL** MW-102B
**PROJECT** Tyco (Ansul FTC)
**COUNTY** Marinette **STATE** Wisconsin

**LOCATION**

QTR SEC TWP RGE

**OTHER SERVICES**

Natural Gamma-Ray
Three-Arm Caliper
Fluid Temp. / Cond.
Core-Dynamic Flowmeter

**PERMANENT DATUM** Gound Level **ELEVATION** NA

**LOG MEAS. FROM** Ground Level 0.0 ft **ABOVE PERMINANT DATUM**

**DRILLING MEAS. FROM** Ground Level

| | | | | |
|---|---|---|---|---|
| **DATE ACQUIRED** | 16 August 2018 | 16 August 2018 | | |
| **RUN NUMBER** | One | Two | | |
| **LOG TYPE** | OTV | ATV | | |
| **DEPTH-DRILLER** | 205.0 ft | | | |
| **DEPTH-LOGGER** | 197.6 ft | | | |
| **BTM LOG INTERVAL** | 197.0 ft | 197.2 ft | | |
| **TOP LOG INTERVAL** | 80.1 ft | 80.1 ft | | |
| **RECORDED BY** | D. Renner | D. Renner | | |
| **WITNESSED BY** | Z. Westphal | Z. Westphal | | |
| **PROBE TYPE, S/N** | OBI, 121406 | ABI, 103806 | | |
| **LOGGING SPEED** | 6.0 ft/min | 6.0 ft/min | | |
| **SAMPLE INTERVAL** | 0.0088 ft | 0.0088 ft | | |
| **FLUID LEVEL** | 10.2 ft | | | |

| **BOREHOLE RECORD** | | | | **CASING RECORD** | | | |
|---|---|---|---|---|---|---|---|
| **RUN No.** | **BIT** | **FROM** | **TO** | **SIZE** | **WGT.** | **FROM** | **TO** |
| One | NA | 0 ft | 75 ft | 5.25 in. | Steel | 0 ft | 75 ft |
| Two | 6 in. | 75 ft | 205 ft | | | | |
| | | | | | | | |
| | | | | | | | |

**NA - Not Available, N/A - Not Applicable**

**COMMENTS**

Input File:
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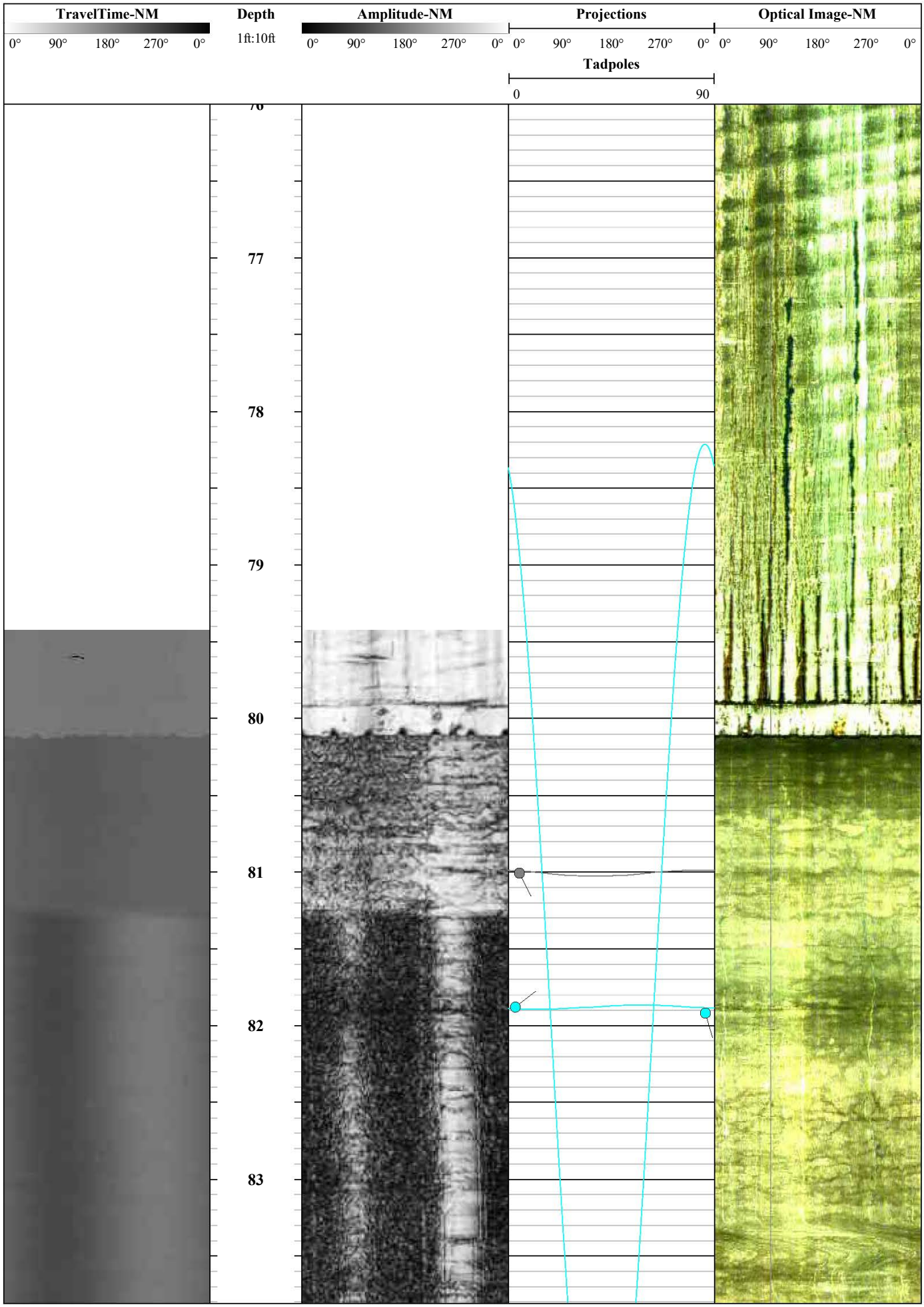
Arcadis_Tyco_VAP-25_ABI_UL1.tfd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Amplitude-NM
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Projections
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Tadpoles
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Optical Image-NM
0° 90° 180° 270° 0°
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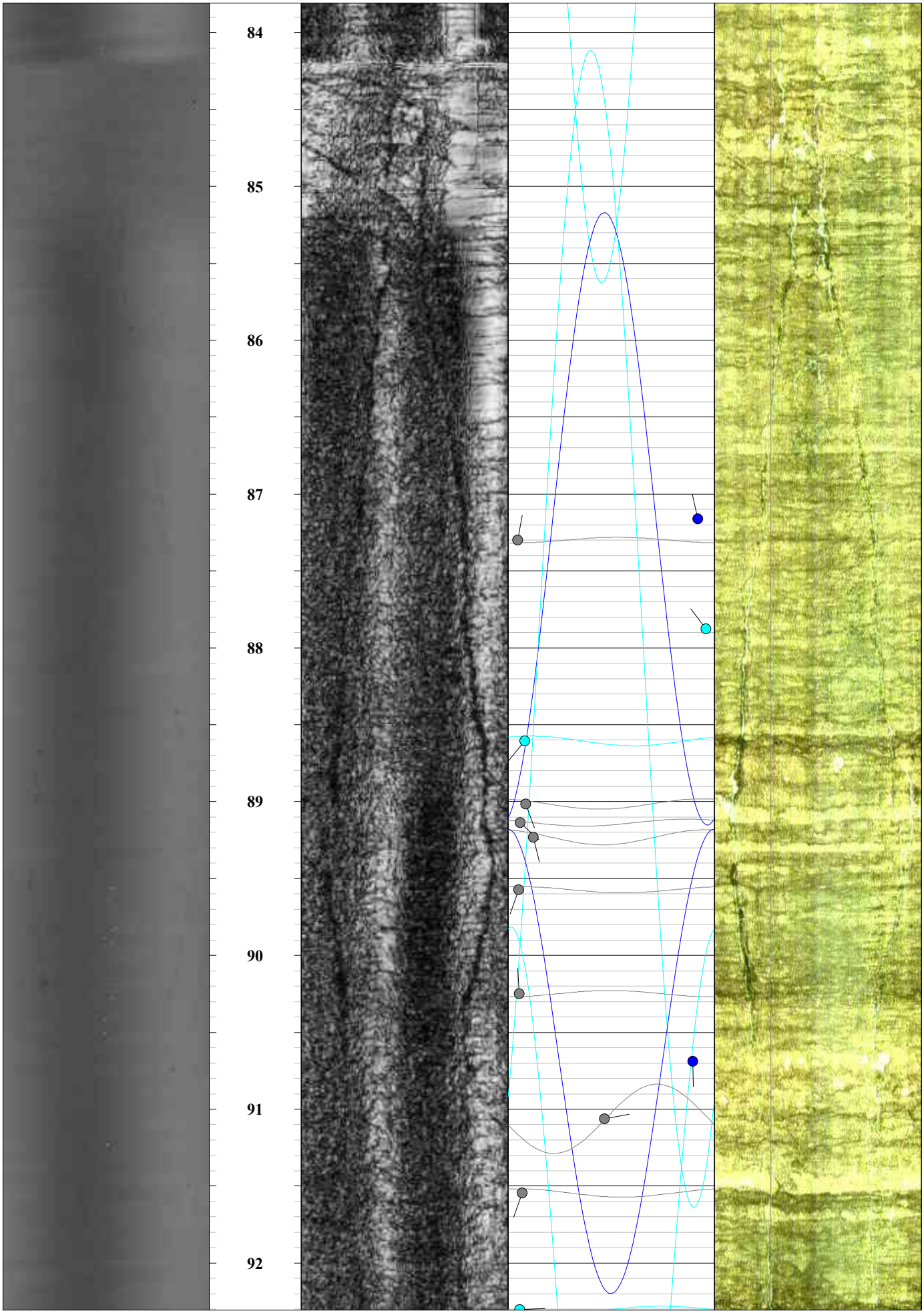
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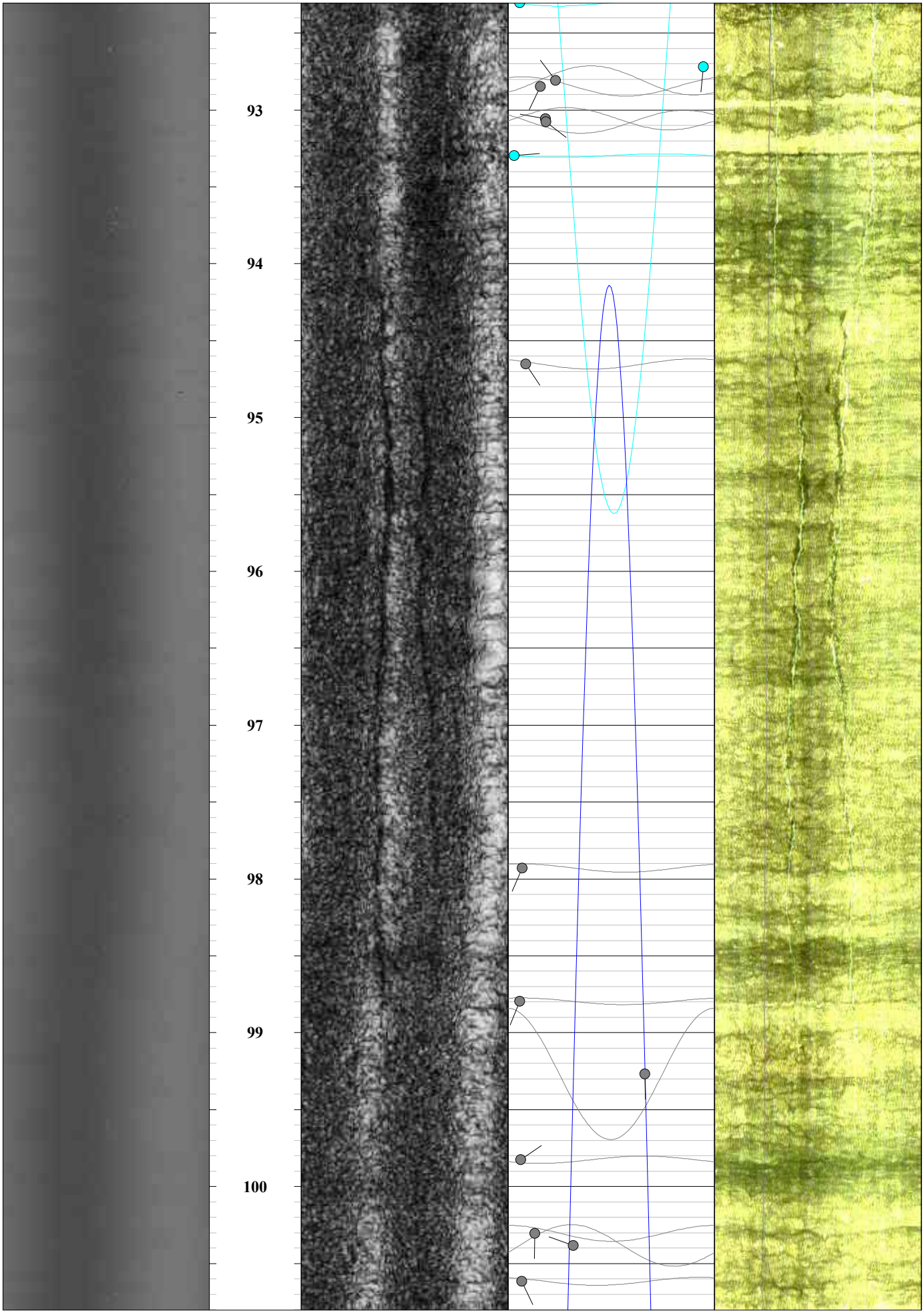
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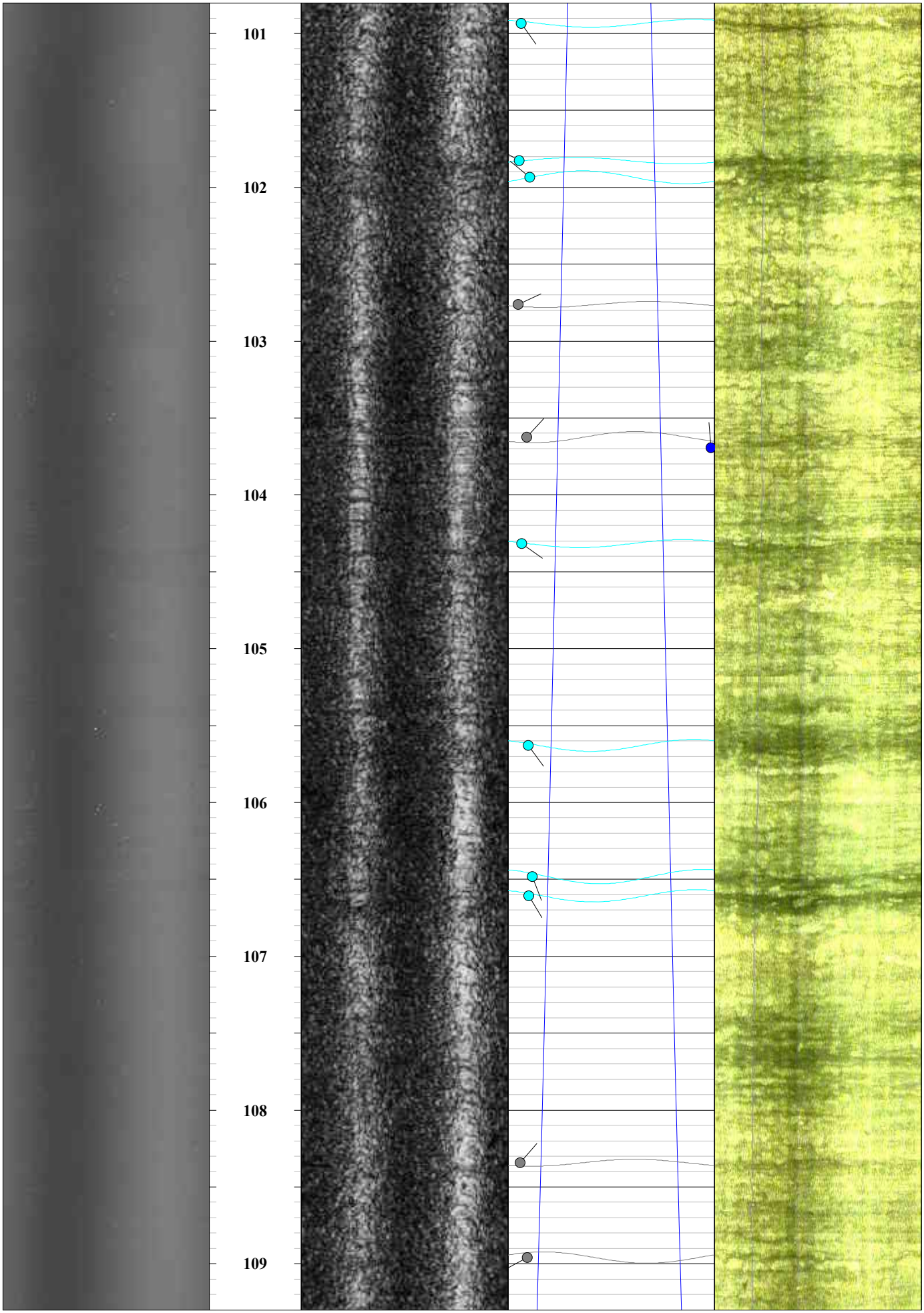
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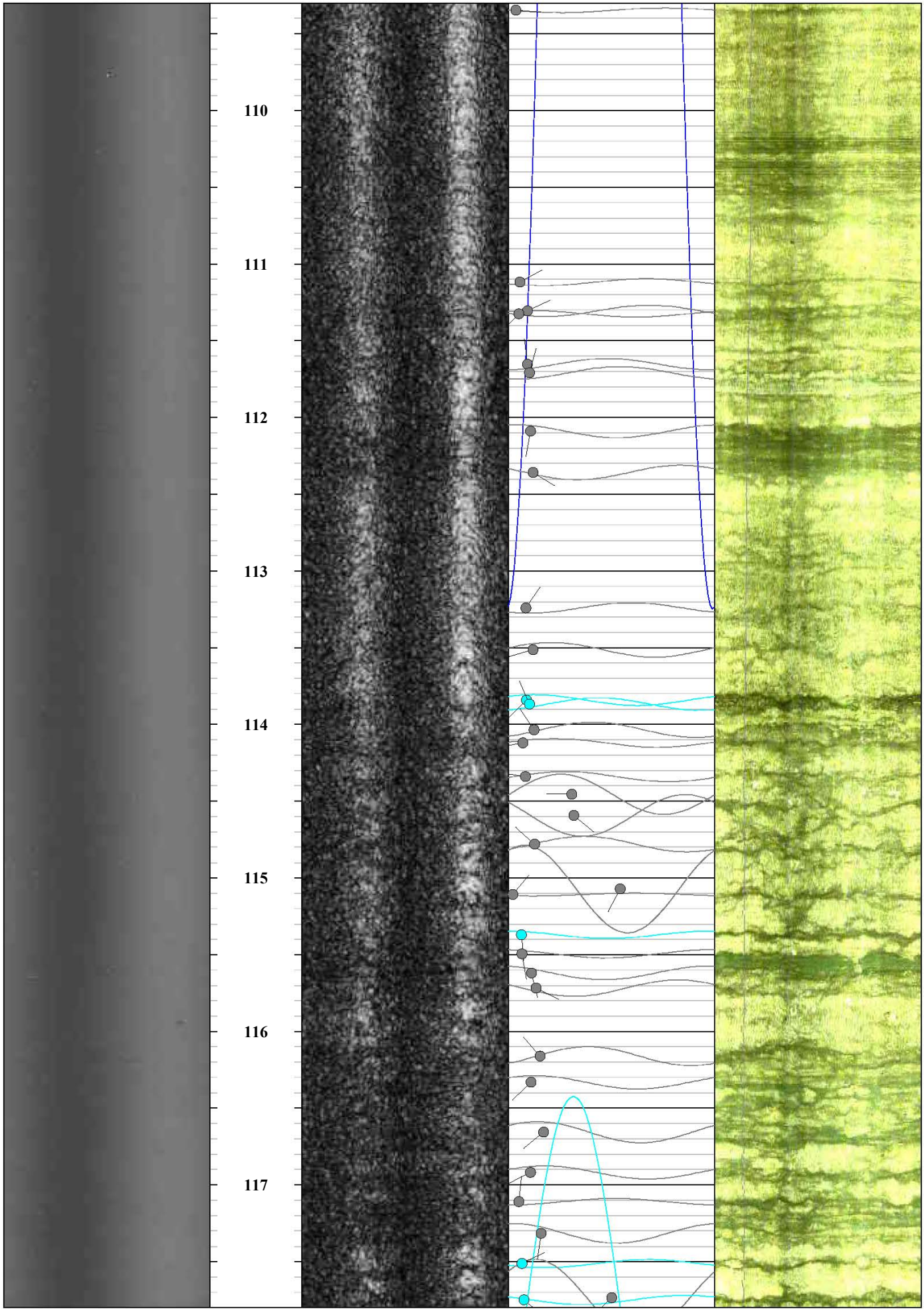
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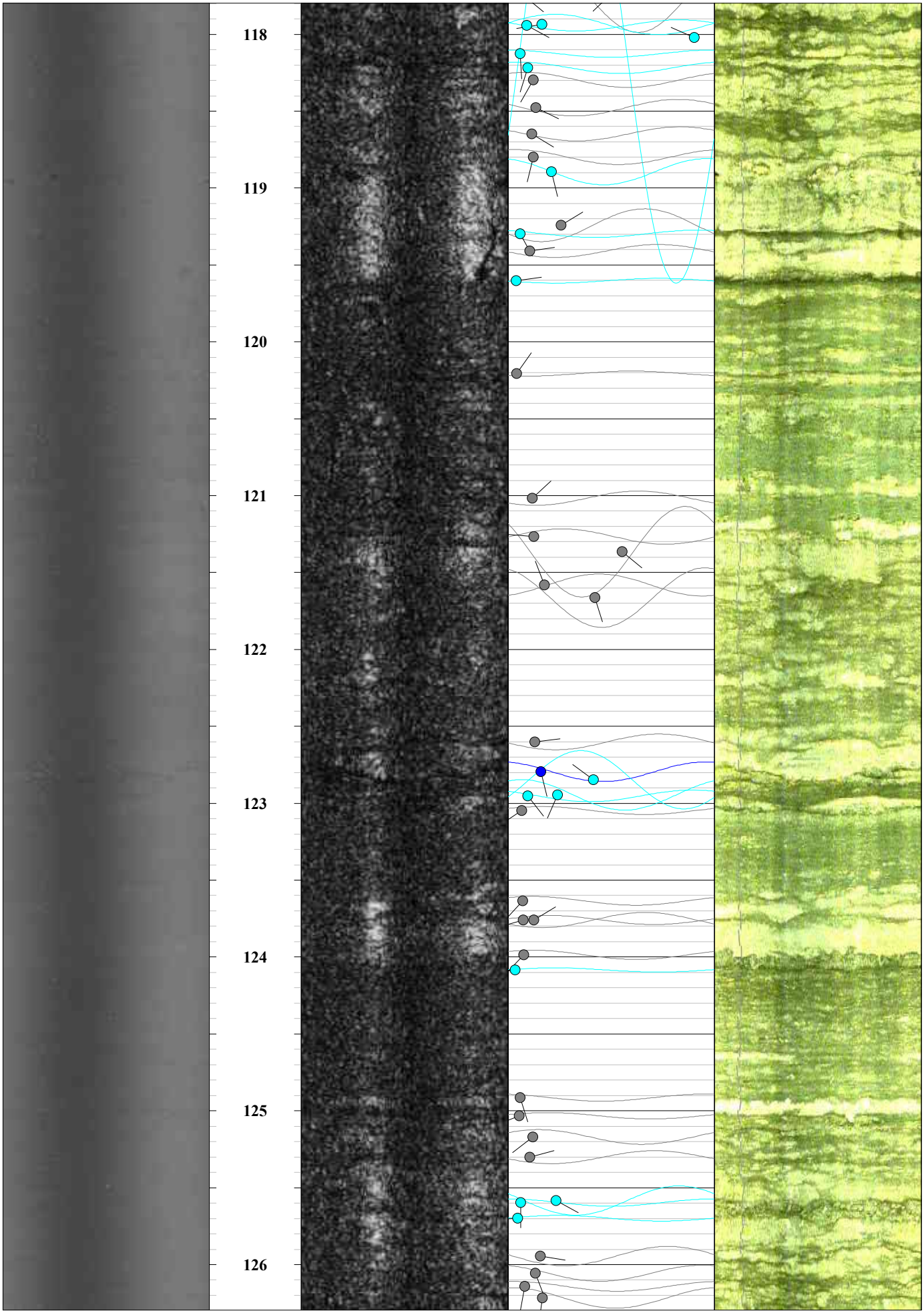
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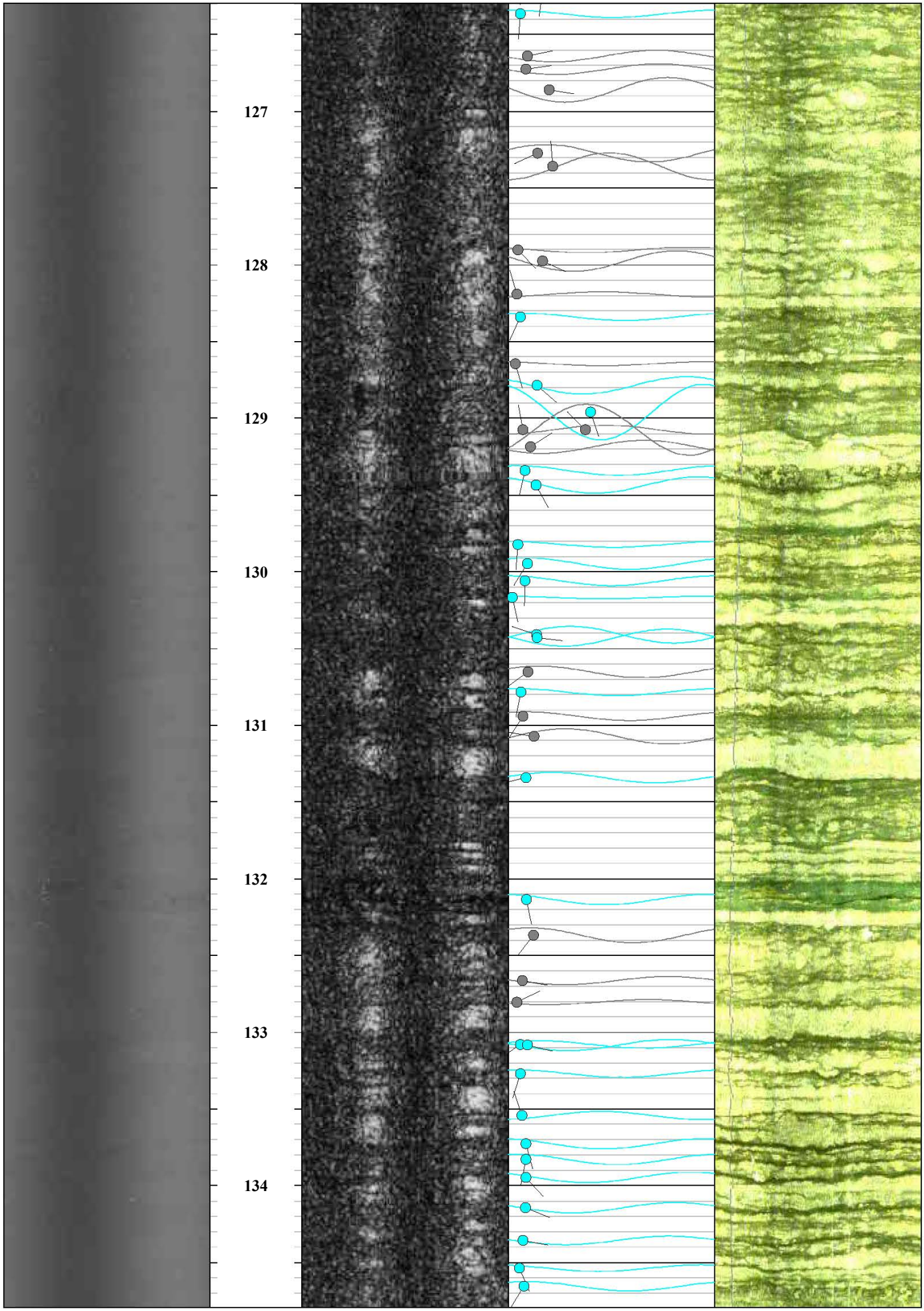
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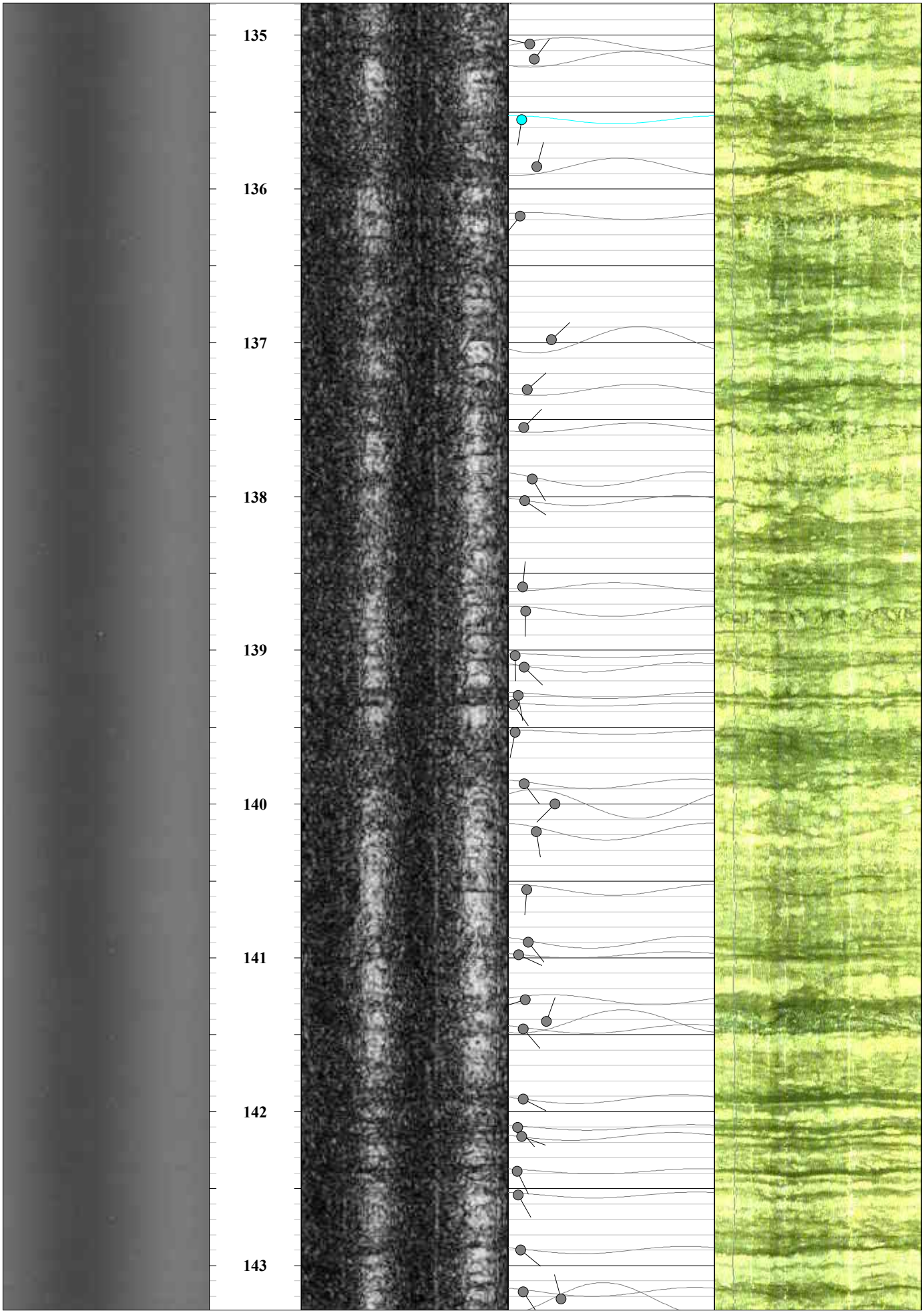
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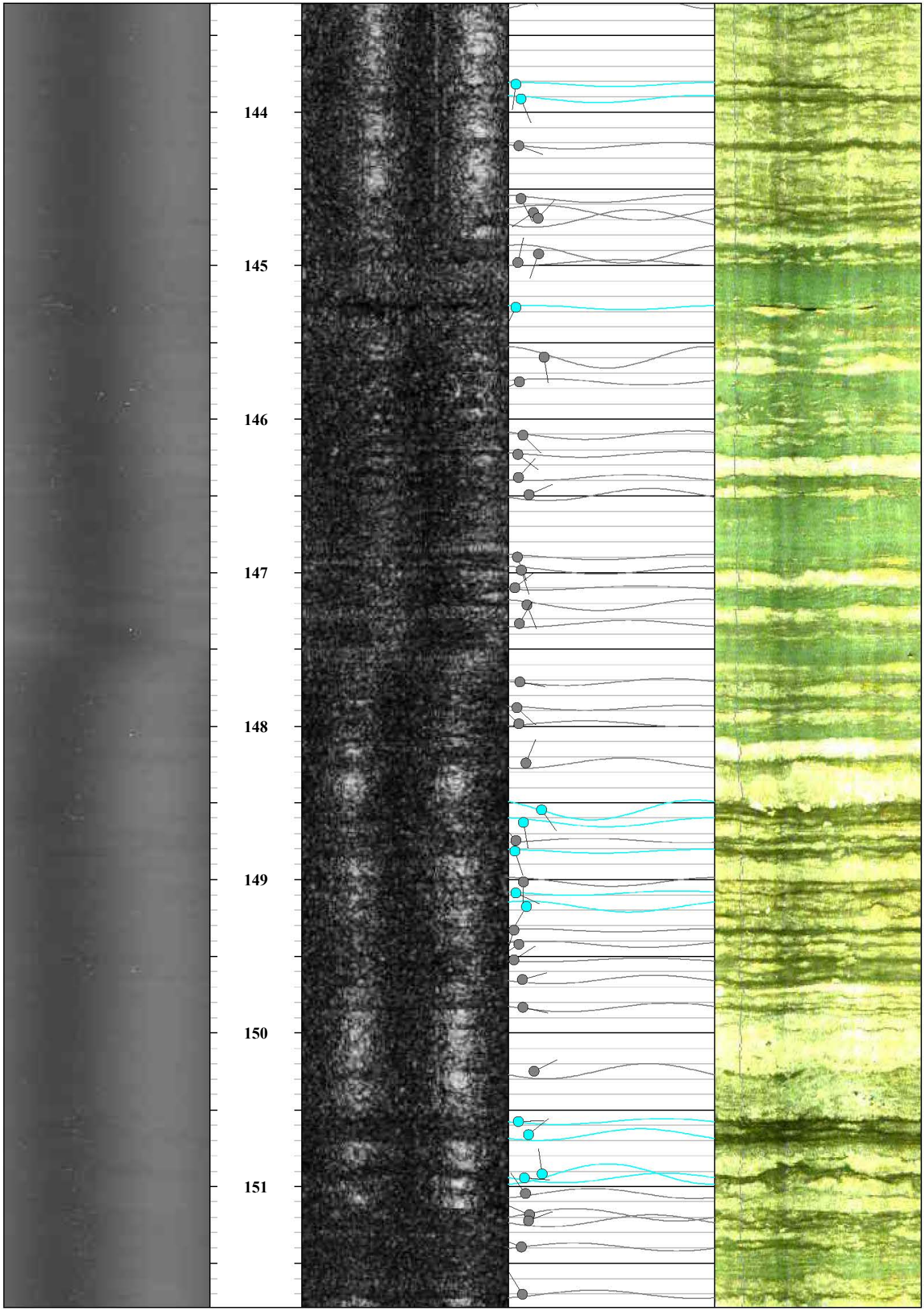
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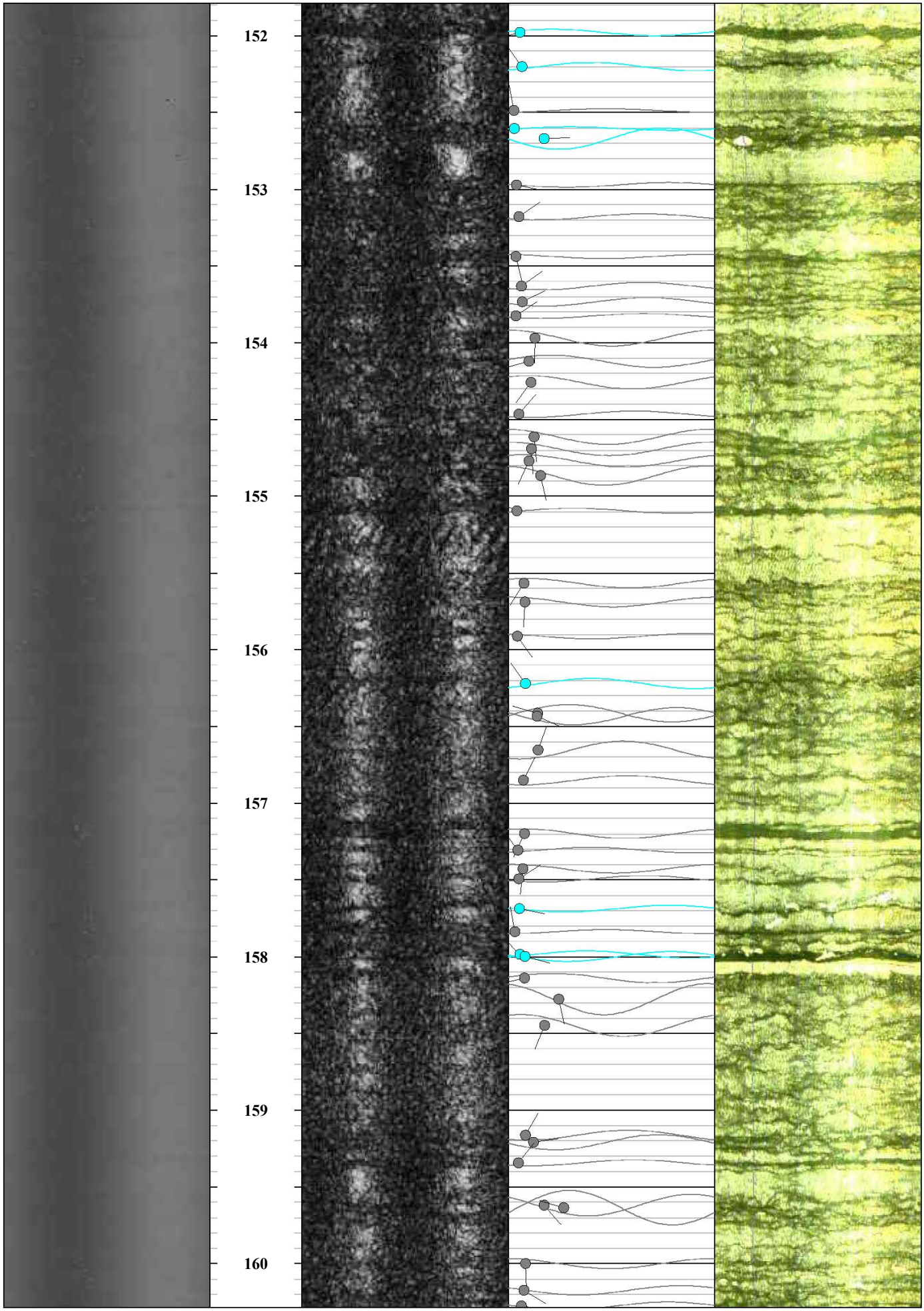
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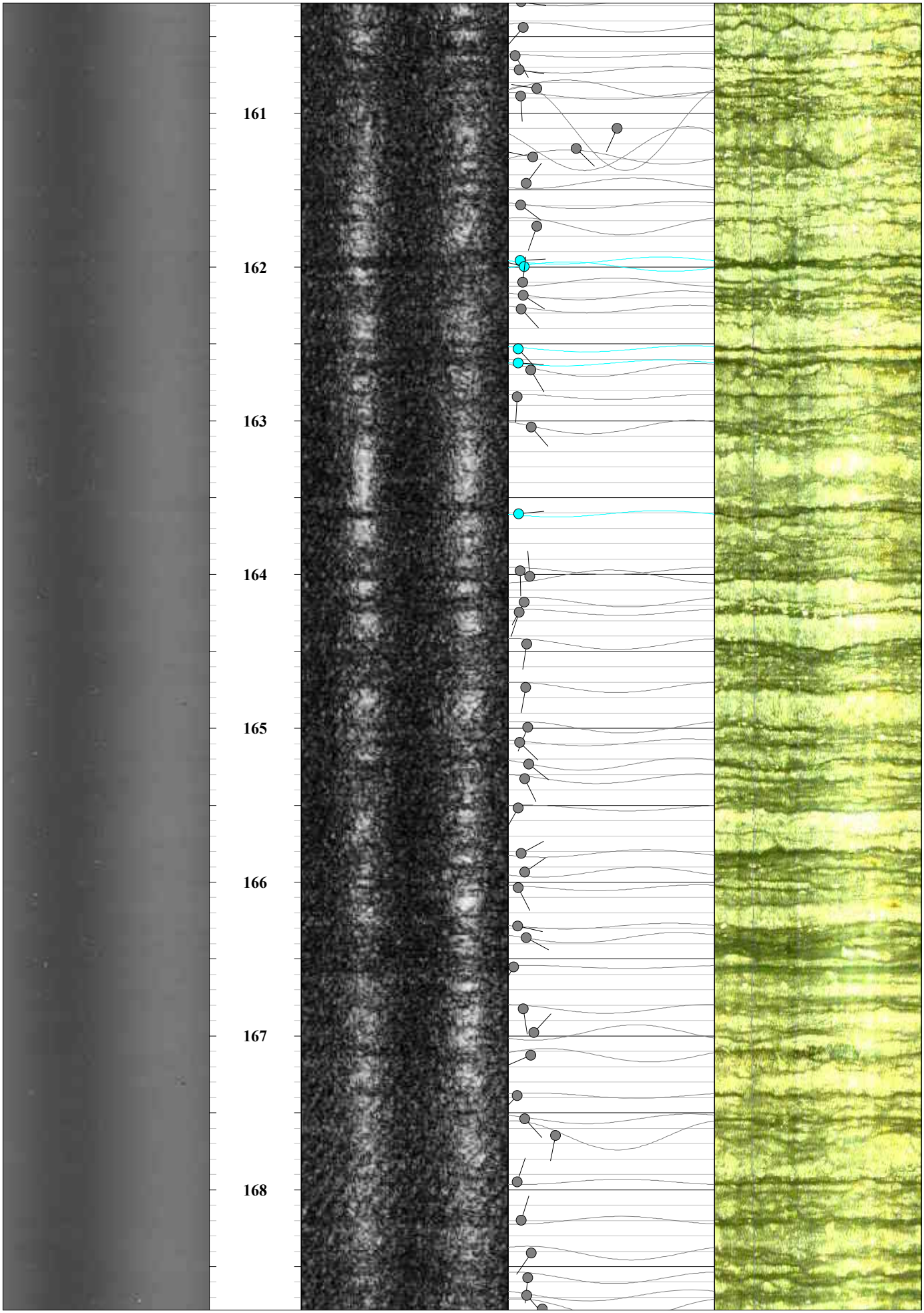
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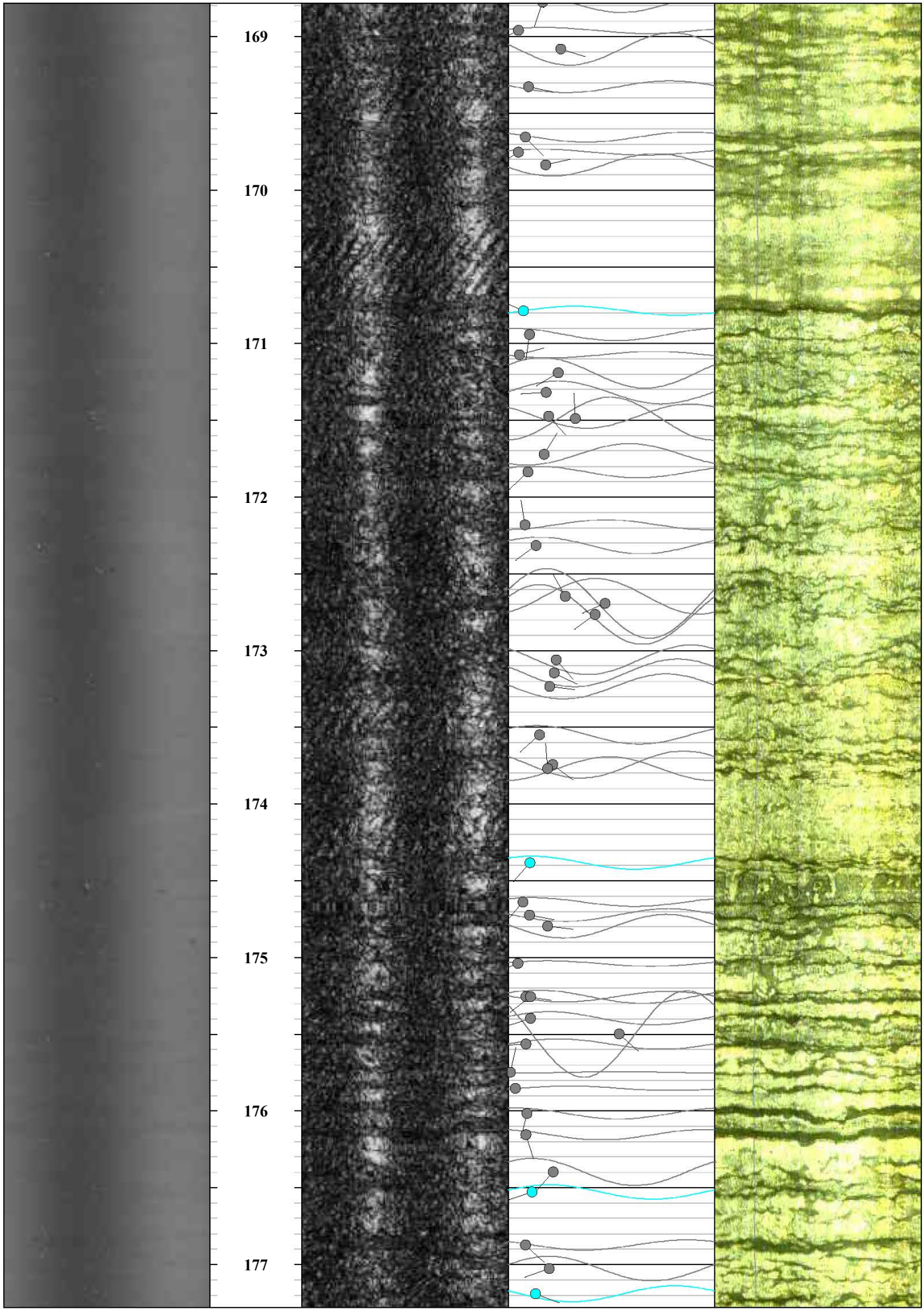
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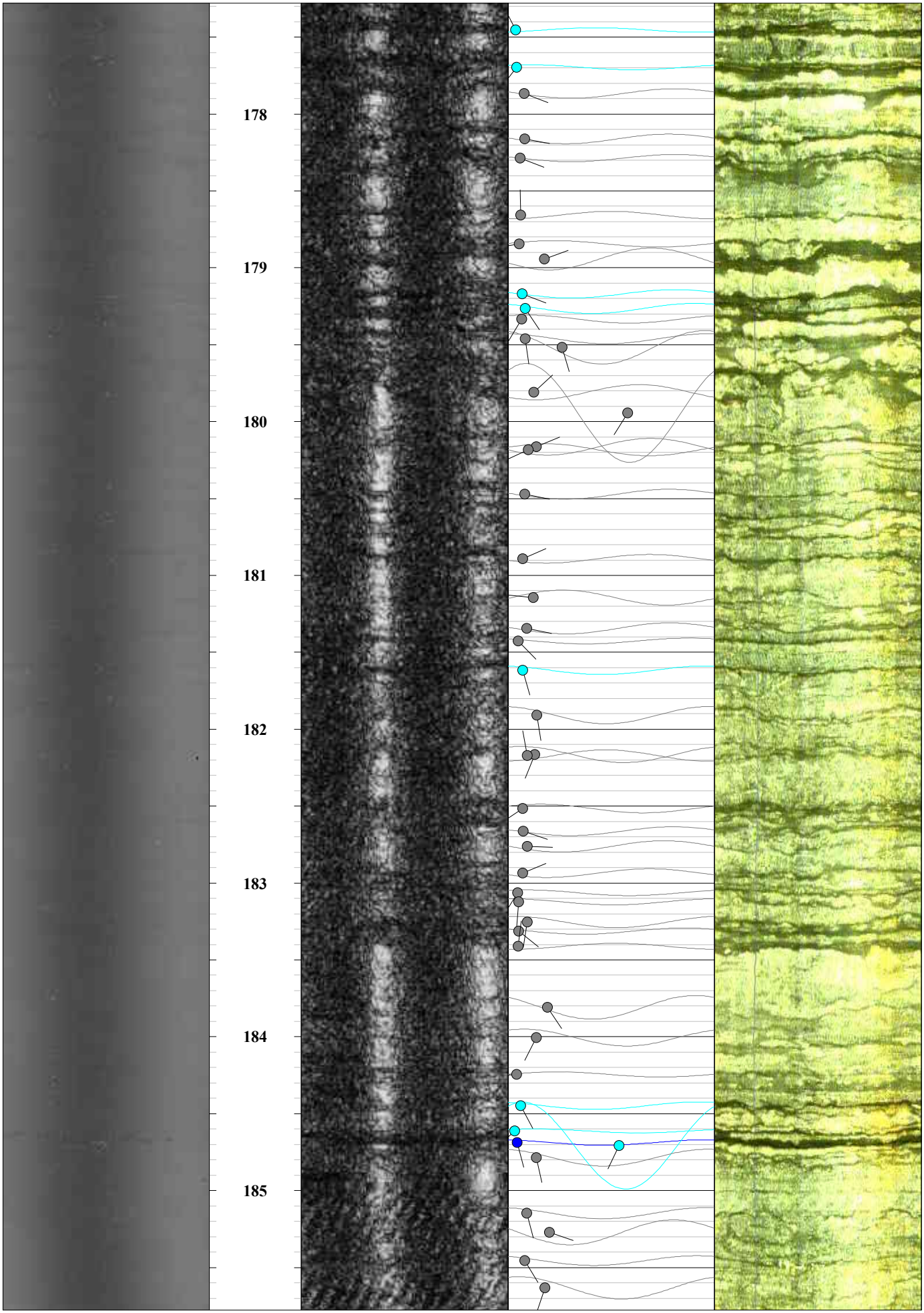
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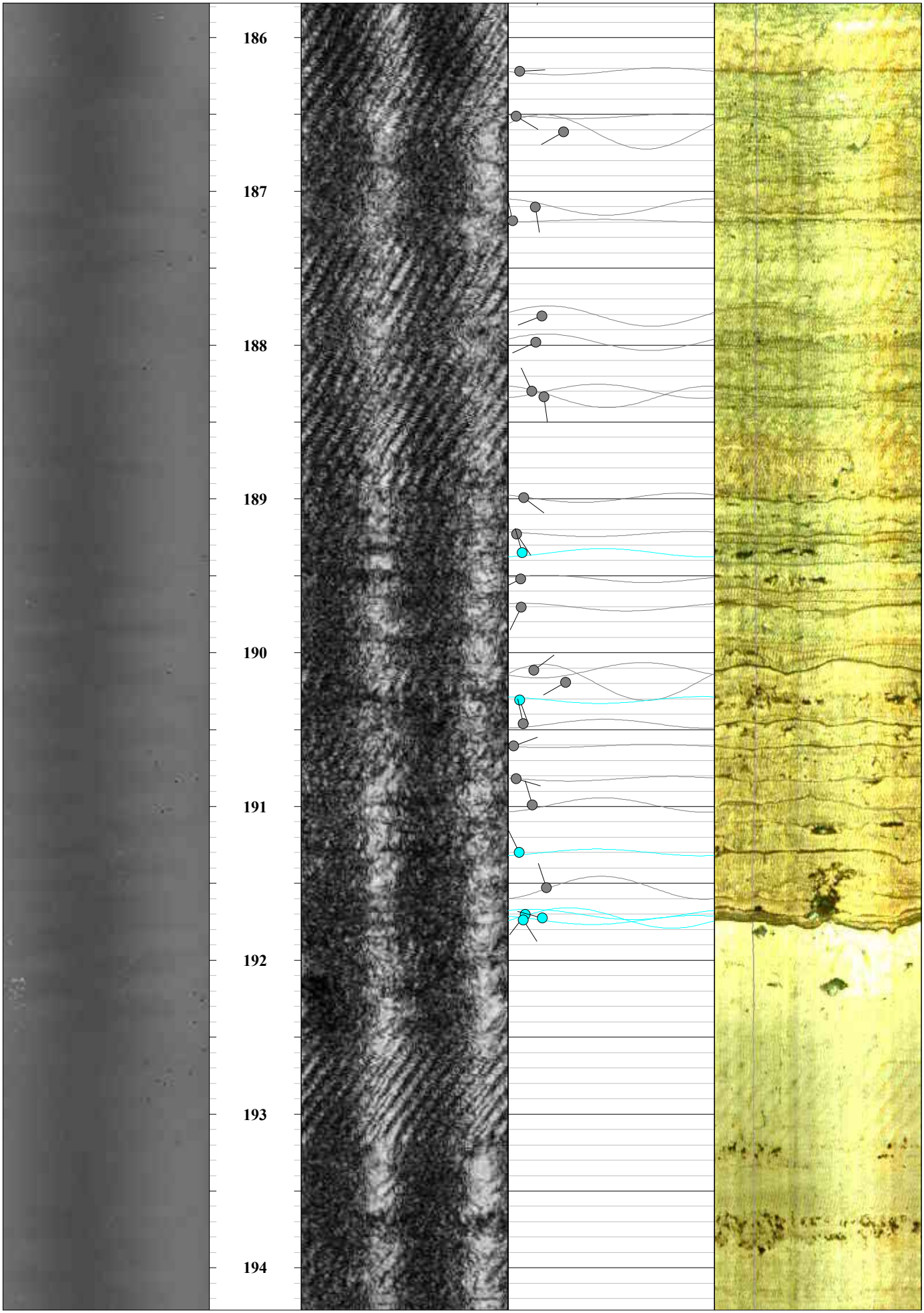
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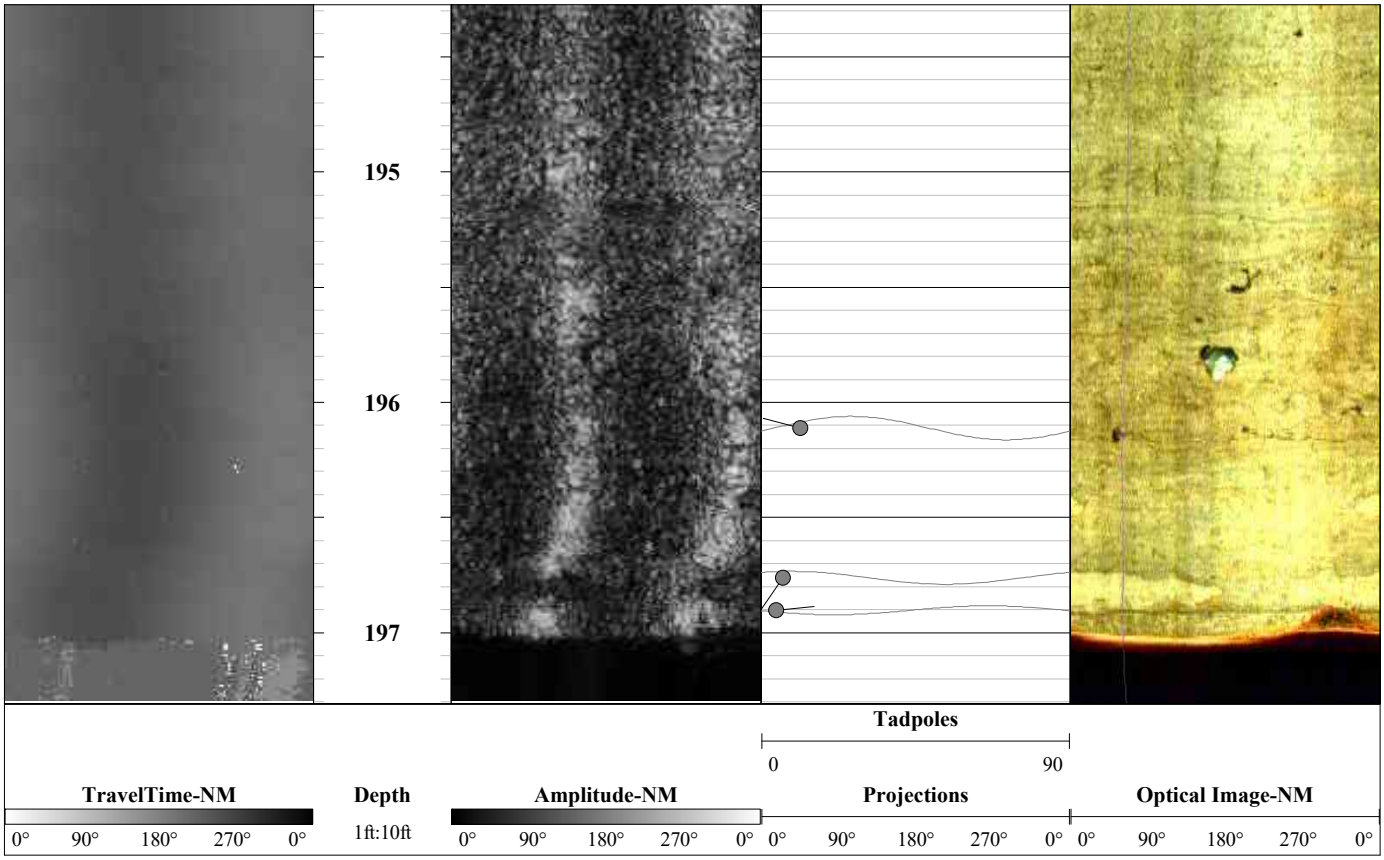
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Depth
Amplitude-NM
Projections
Optical Image-NM
0° 90° 180° 270° 0°
1ft:10ft
0° 90° 180° 270° 0°
0° 90° 180° 270° 0°
0° 90° 180° 270° 0°

**Table MW-102B:2**. Summary Of Corehole Dynamic Flowmeter Results With Hydraulic Conductivity And Transmissivity Estimations; Arcadis; Tyco (Ansul FTC); Marinette, WI; Wellbore: MW-102B

| | |
|---|---|
| Well Name | MW-102B |
| Ambient Depth to Water (ftbtoc) | 12.70 |
| Ambient Depth to Water (ftbgs) | 10.20 |
| Open Borehole Interval (ftbgs) | 80.1 - 197.2 |

| | |
|---|---|
| Diameter of Well (ft) | 0.49 |
| Maximum Constant Drawdown (ft) | 19.35 |
| Effective Radius (ft) | 50 |
| Well Specific Capacity (gpm/ft-dd) | 0.003 |

**Corehole Dynamic Flowmeter Logging Results - MW-102B**

| Interval No. | Top of Interval (ft) | Bottom of Interval (ft) | Length of Interval (ft) | Ambient Flow[1] (gpm) | Interval-Specific Flow Rate During Pumping (gpm) | Delta Flow (gpm) | Transmissivity[2] ($ft^2$/day) | Comment |
|---|---|---|---|---|---|---|---|---|
| 1 | 80.1 | 83.0 | 2.9 | -0.021 | 0.000 | 0.021 | 1.77E-01 | poor diverter seal during pumping or outflow reversed to no flow |
| 2 | 83.0 | 93.0 | 10.0 | 0.000 | 0.006 | 0.006 | 5.06E-02 | high-angle fracture |
| 3 | 93.0 | 103.0 | 10.0 | 0.000 | 0.001 | 0.001 | 8.43E-03 | high-angle fracture |
| 4 | 103.0 | 117.0 | 14.0 | 0.000 | 0.003 | 0.003 | 2.53E-02 | bedding plane fractures |
| 5 | 121.0 | 135.0 | 14.0 | 0.000 | 0.002 | 0.002 | 1.69E-02 | bedding plane fractures |
| 6 | 135.0 | 142.0 | 7.0 | 0.006 | 0.008 | 0.002 | 1.69E-02 | bedding plane fractures |
| 7 | 170.0 | 188.0 | 18.0 | 0.008 | 0.008 | NA | NA | No identifiable change in flow, therefore no perm est. |
| 8 | 189.0 | 193.9 | 4.9 | 0.005 | 0.007 | 0.002 | 1.69E-02 | fractures/solution openings |
| 9 | 195.0 | 197.2 | 2.2 | 0.001 | 0.015 | 0.014 | 1.18E-01 | flow may originate from TD or solution openings |
| **Borehole Transmissivity Using Thiem Equation ($ft^2$/day)** | | | | | | | **4.30E-01** | |
| **Borehole Hydraulic Conductivity (K=T/b; b=length of open borehole) (ft/day)** | | | | | | **3.67E-03** | | |

Note: Negative flow, if any, is outflow from the borehole to the aquifer, positive flow is inflow to the borehole.

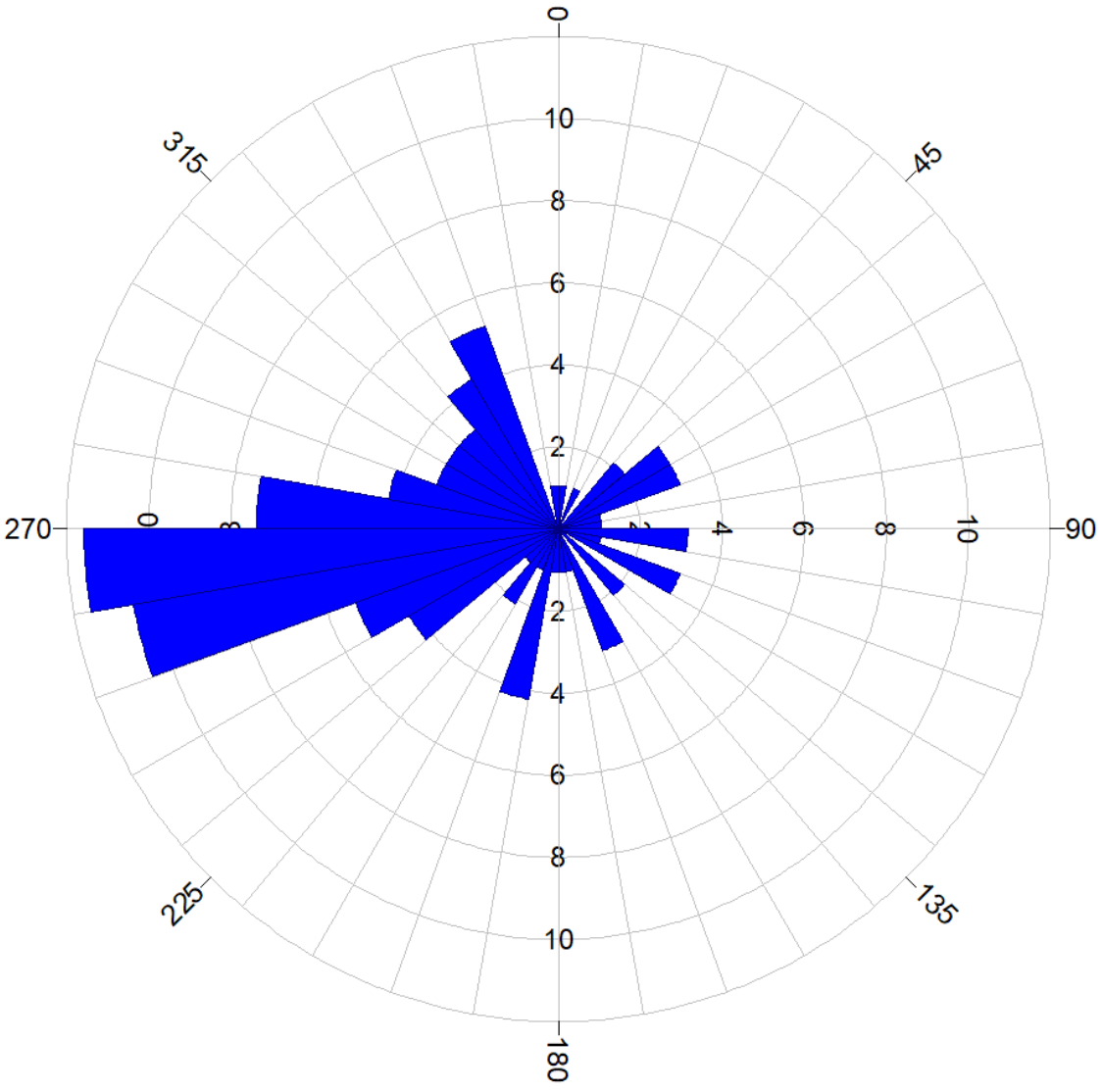
[1] Upward vertical flow is identified in this borehole under ambient conditions.

[2] Hydraulic conductivity and transmissivity estimates are based on single well drawdown data, a porous-medium equivalent model and the Thiem equation.

NA = Not Applicable

**Rose Diagram of Televiewer Features**
**ARCADIS**
**Project: Tyco (Ansul FTC)**
**Well: Tyco Production Well**
**18-19 June 2018**

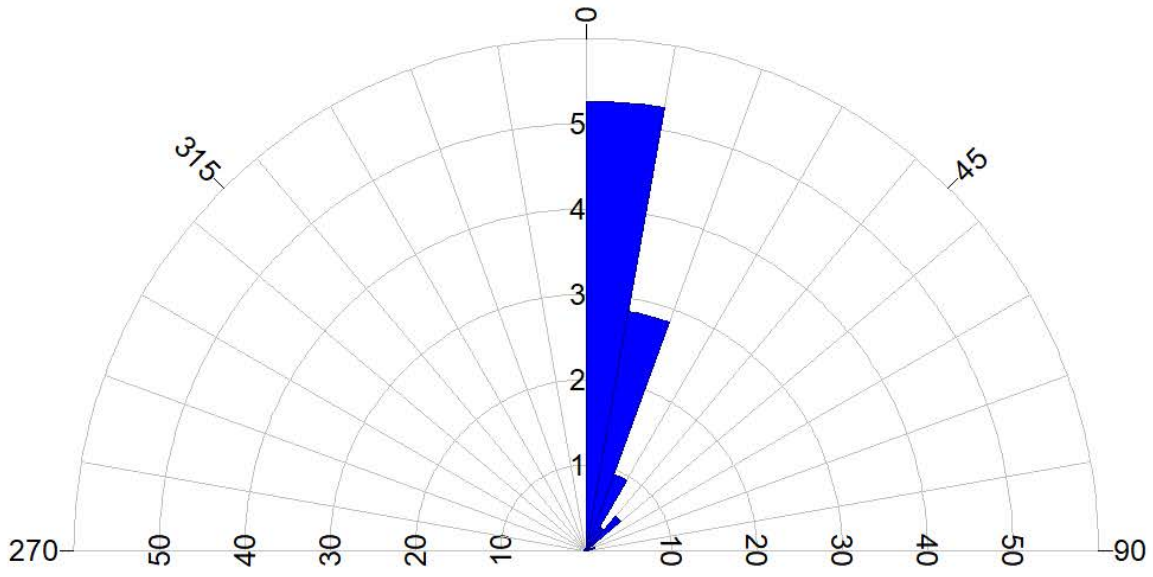
**Dip Direction**




All directions are with respect to Magnetic North.

**Rose Diagram of Televiewer Features**
**ARCADIS**
**Project: Tyco (Ansul FTC)**
**Well: Tyco Production Well**
**18-19 June 2018**

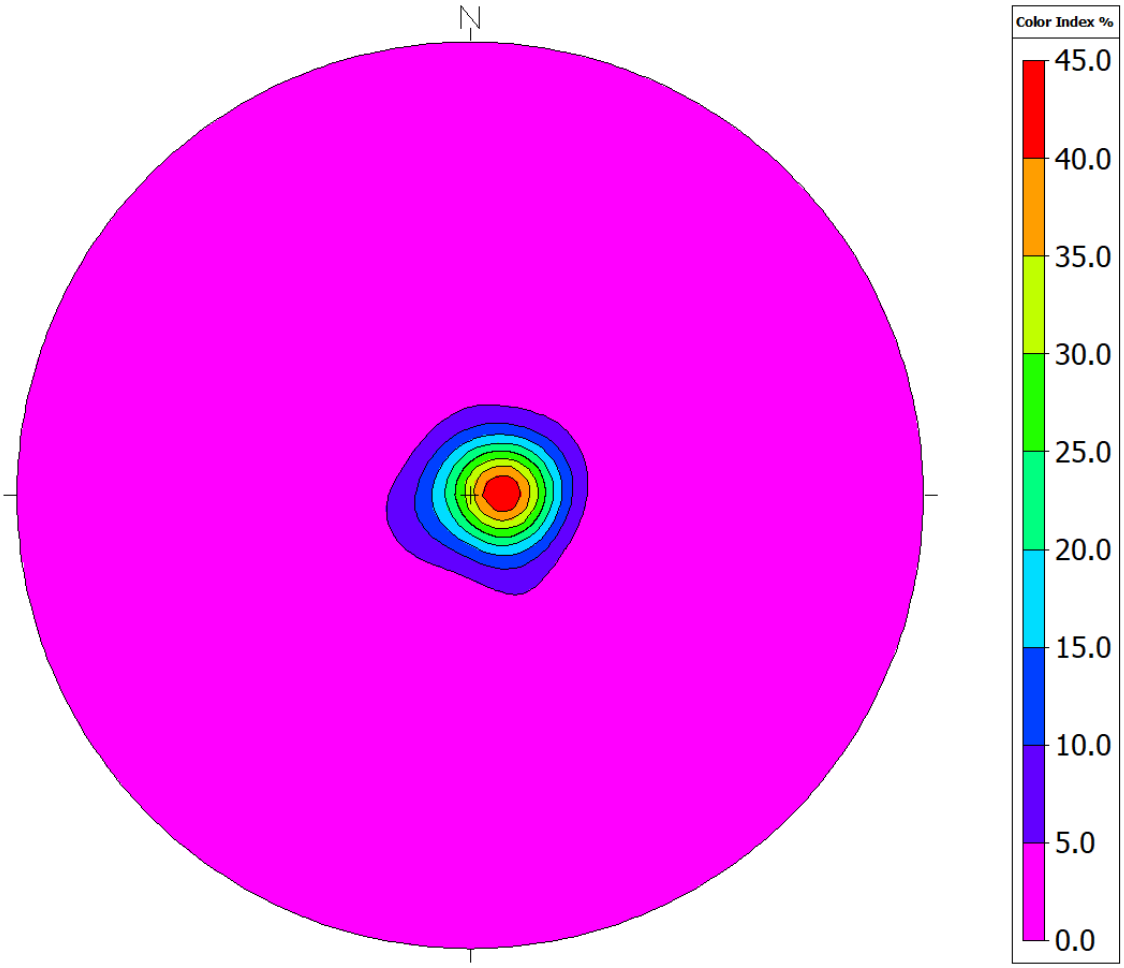
**Dip Angles**




All directions are with respect to Magnetic North.

**Stereonet Diagram of Televiewer Features**
**ARCADIS**
**Project: Tyco (Ansul FTC)**
**Well: Tyco Production Well**
**18-19 June 2018**

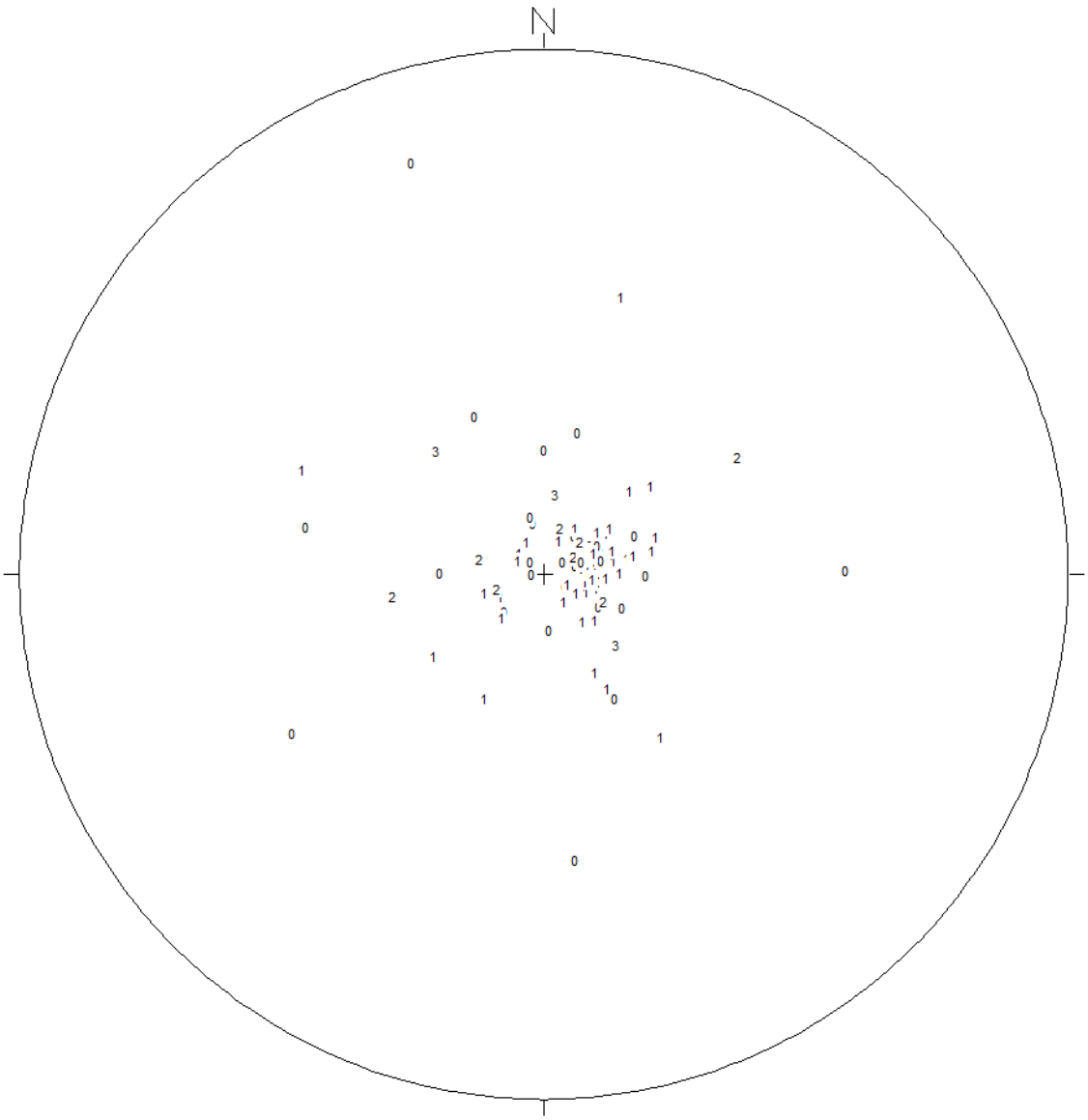
**Schmidt Projection with Contours**




All directions are with respect to Magnetic North.

**Stereonet Diagram of Televiewer Features**
**ARCADIS**
**Project: Tyco (Ansul FTC)**
**Well: Tyco Production Well**
**18-19 June 2018**

**Schmidt Projections with Feature Ranks**




All directions are with respect to Magnetic North.

**Table Production Well: 1. Orientation Summary Table**
**Image Features**
**Arcadis**
**Project: Tyco (Ansul FTC)**
**Well: Production Well**
**18-19 June 2018**

| Feature No. | Depth (meters) | Depth (feet) | Dip Direction (degrees) | Dip Angle (degrees) | Feature Rank (0 to 5) |
|---|---|---|---|---|---|
| 1 | 20.23 | 66.4 | 330 | 10 | 1 |
| 2 | 20.35 | 66.8 | 184 | 11 | 3 |
| 3 | 20.41 | 67.0 | 135 | 25 | 3 |
| 4 | 20.42 | 67.0 | 320 | 16 | 3 |
| 5 | 20.72 | 68.0 | 337 | 18 | 1 |
| 6 | 21.34 | 70.0 | 159 | 7 | 0 |
| 7 | 21.96 | 72.0 | 271 | 47 | 0 |
| 8 | 22.11 | 72.5 | 276 | 15 | 0 |
| 9 | 23.18 | 76.1 | 64 | 3 | 0 |
| 10 | 23.80 | 78.1 | 355 | 47 | 0 |
| 11 | 23.89 | 78.4 | 99 | 39 | 0 |
| 12 | 24.09 | 79.0 | 100 | 3 | 0 |
| 13 | 24.27 | 79.6 | 153 | 26 | 0 |
| 14 | 24.35 | 79.9 | 1 | 10 | 0 |
| 15 | 24.79 | 81.3 | 334 | 23 | 0 |
| 16 | 24.86 | 81.6 | 295 | 8 | 0 |
| 17 | 27.94 | 91.7 | 305 | 7 | 1 |
| 18 | 28.36 | 93.1 | 295 | 6 | 1 |
| 19 | 28.58 | 93.8 | 191 | 6 | 0 |
| 20 | 30.65 | 100.6 | 255 | 4 | 0 |
| 21 | 30.98 | 101.6 | 44 | 10 | 0 |
| 22 | 31.36 | 102.9 | 219 | 6 | 0 |
| 23 | 31.58 | 103.6 | 118 | 5 | 1 |
| 24 | 31.79 | 104.3 | 269 | 6 | 0 |
| 25 | 31.91 | 104.7 | 265 | 5 | 0 |
| 26 | 32.04 | 105.1 | 262 | 7 | 0 |
| 27 | 32.18 | 105.6 | 323 | 4 | 0 |
| 28 | 32.54 | 106.8 | 310 | 10 | 0 |
| 29 | 33.60 | 110.2 | 271 | 4 | 0 |
| 30 | 33.95 | 111.4 | 67 | 11 | 1 |
| 31 | 34.53 | 113.3 | 316 | 6 | 1 |
| 32 | 35.96 | 118.0 | 296 | 8 | 1 |
| 33 | 36.03 | 118.2 | 252 | 4 | 2 |
| 34 | 36.86 | 120.9 | 254 | 6 | 0 |
| 35 | 37.47 | 122.9 | 240 | 7 | 1 |
| 36 | 37.62 | 123.4 | 52 | 23 | 1 |
| 37 | 37.63 | 123.5 | 201 | 4 | 1 |
| 38 | 37.67 | 123.6 | 195 | 44 | 1 |
| 39 | 37.88 | 124.3 | 161 | 70 | 0 |
| 40 | 38.01 | 124.7 | 264 | 5 | 0 |
| 41 | 38.17 | 125.2 | 244 | 7 | 0 |
| 42 | 38.40 | 126.0 | 112 | 5 | 1 |
| 43 | 38.41 | 126.0 | 57 | 49 | 0 |
| 44 | 38.47 | 126.2 | 192 | 21 | 0 |
| 45 | 38.67 | 126.9 | 86 | 17 | 0 |

All directions are with respect to Magnetic North.

**Table Production Well: 1. Orientation Summary Table**
**Image Features**
**Arcadis**
**Project: Tyco (Ansul FTC)**
**Well: Production Well**
**18-19 June 2018**

| Feature No. | Depth (meters) | Depth (feet) | Dip Direction (degrees) | Dip Angle (degrees) | Feature Rank (0 to 5) |
|---|---|---|---|---|---|
| 46 | 38.67 | 126.9 | 327 | 32 | 1 |
| 47 | 38.70 | 127.0 | 95 | 11 | 2 |
| 48 | 38.94 | 127.8 | 274 | 6 | 2 |
| 49 | 39.02 | 128.0 | 177 | 18 | 0 |
| 50 | 39.18 | 128.5 | 158 | 8 | 0 |
| 51 | 39.27 | 128.8 | 253 | 2 | 0 |
| 52 | 39.36 | 129.1 | 274 | 7 | 1 |
| 53 | 39.56 | 129.8 | 335 | 21 | 1 |
| 54 | 39.60 | 129.9 | 111 | 42 | 1 |
| 55 | 39.67 | 130.2 | 195 | 6 | 2 |
| 56 | 39.79 | 130.5 | 339 | 6 | 1 |
| 57 | 39.82 | 130.7 | 265 | 12 | 1 |
| 58 | 39.86 | 130.8 | 240 | 10 | 1 |
| 59 | 40.00 | 131.2 | 232 | 20 | 1 |
| 60 | 40.02 | 131.3 | 262 | 16 | 1 |
| 61 | 40.05 | 131.4 | 266 | 10 | 1 |
| 62 | 40.18 | 131.8 | 240 | 34 | 2 |
| 63 | 40.18 | 131.8 | 79 | 25 | 2 |
| 64 | 40.31 | 132.2 | 304 | 10 | 2 |
| 65 | 40.46 | 132.7 | 251 | 7 | 1 |
| 66 | 40.59 | 133.2 | 275 | 5 | 0 |
| 67 | 40.78 | 133.8 | 214 | 7 | 1 |
| 68 | 40.84 | 134.0 | 280 | 6 | 1 |
| 69 | 40.94 | 134.3 | 255 | 17 | 1 |
| 70 | 41.05 | 134.7 | 315 | 4 | 1 |
| 71 | 41.35 | 135.7 | 238 | 11 | 1 |
| 72 | 41.43 | 135.9 | 289 | 8 | 0 |
| 73 | 41.65 | 136.7 | 255 | 8 | 0 |
| 74 | 41.79 | 137.1 | 58 | 9 | 1 |
| 75 | 41.89 | 137.4 | 247 | 8 | 0 |
| 76 | 41.98 | 137.7 | 267 | 5 | 1 |
| 77 | 42.36 | 139.0 | 251 | 14 | 0 |
| 78 | 42.60 | 139.8 | 263 | 5 | 0 |
| 79 | 42.64 | 139.9 | 264 | 8 | 0 |
| 80 | 42.72 | 140.2 | 300 | 13 | 0 |
| 81 | 42.75 | 140.3 | 276 | 11 | 1 |
| 82 | 42.92 | 140.8 | 26 | 23 | 1 |
| 83 | 43.00 | 141.1 | 66 | 9 | 2 |
| 84 | 43.19 | 141.7 | 99 | 5 | 1 |
| 85 | 43.34 | 142.2 | 287 | 7 | 1 |
| 86 | 43.45 | 142.6 | 136 | 5 | 1 |
| 87 | 43.54 | 142.8 | 255 | 7 | 1 |
| 88 | 43.59 | 143.0 | 257 | 10 | 1 |
| 89 | 43.64 | 143.2 | 232 | 6 | 2 |
| 90 | 43.78 | 143.6 | 42 | 11 | 1 |

All directions are with respect to Magnetic North.

**Table Production Well: 1. Orientation Summary Table**
**Image Features**
**Arcadis**
**Project: Tyco (Ansul FTC)**
**Well: Production Well**
**18-19 June 2018**

| Feature No. | Depth (meters) | Depth (feet) | Dip Direction (degrees) | Dip Angle (degrees) | Feature Rank (0 to 5) |
|---|---|---|---|---|---|
| 91 | 44.19 | 145.0 | 321 | 11 | 1 |
| 92 | 44.24 | 145.2 | 283 | 9 | 1 |
| 93 | 44.36 | 145.5 | 227 | 17 | 1 |
| 94 | 44.45 | 145.8 | 263 | 13 | 1 |
| 95 | 44.78 | 146.9 | 235 | 9 | 1 |

All directions are with respect to Magnetic North.

borehole geophysics / hydrophysics

810 Quail Street, Unit E
Lakewood, CO 80215
Office: (303) 279-0171
www.colog.com

# Natural Gamma-Ray Three-Arm Caliper Fluid Temp. / Cond.

| | |
|---|---|
| Company | Arcadis |
| Well | Tyco Production Well |
| Project | Tyco (Ansul FTC) |
| County | Marinette |
| State | Wisconsin |

**COMPANY** Arcadis
**WELL** Tyco Production Well
**PROJECT** Tyco (Ansul FTC)
**COUNTY** Marinette **STATE** WI

**LOCATION**

QTR SEC TWP RGE

**OTHER SERVICES**
Optical Televiewer
Acoustic Televiewer
CDFM

**PERMANENT DATUM** Ground Level **ELEVATION**
**LOG MEAS. FROM** Ground Level 0.0 ft **ABOVE PERMINANT DATUM**
**DRILLING MEAS. FROM** Ground Level

| | | | | |
|---|---|---|---|---|
| **DATE ACQUIRED** | 18 June 2018 | 18 June 2018 | 18 June 2018 | |
| **RUN NUMBER** | Three | One | Two | |
| **LOG TYPE** | Caliper | FTC | NGR | |
| **DEPTH-DRILLER** | 171.0 ft | 171.0 ft | 171.0 ft | |
| **DEPTH-LOGGER** | 161.0 ft | 161.0 ft | 161.0 ft | |
| **BTM LOG INTERVAL** | 161.0 ft | 160.7 ft | 160.7 ft | |
| **TOP LOG INTERVAL** | 58.6 ft | 50.0 ft | 53.1 ft | |
| **RECORDED BY** | K. Genuchi | K. Genuchi | K. Genuchi | |
| **WITNESSED BY** | NA | NA | NA | |
| **PROBE TYPE, S/N** | CCP, 1751 | 2PFA, 2656 | 2PGA | |
| **LOGGING SPEED** | 15 ft/min | 10 ft/min | 15 ft/min | |
| **SAMPLE INTERVAL** | 0.2 ft | 0.1 ft | 0.1 ft | |
| **FLUID LEVEL** | 10.2 ft | 10.2 ft | 10.2 ft | |

| **BOREHOLE RECORD** | | | | **CASING RECORD** | | | |
|---|---|---|---|---|---|---|---|
| **RUN No.** | **BIT** | **FROM** | **TO** | **SIZE** | **WGT.** | **FROM** | **TO** |
| 1 | 6" | 65ft | 171ft | 8" | | GL | 65ft |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

**NA - Not Available, N/A - Not Applicable**

**COMMENTS**

Input Files:
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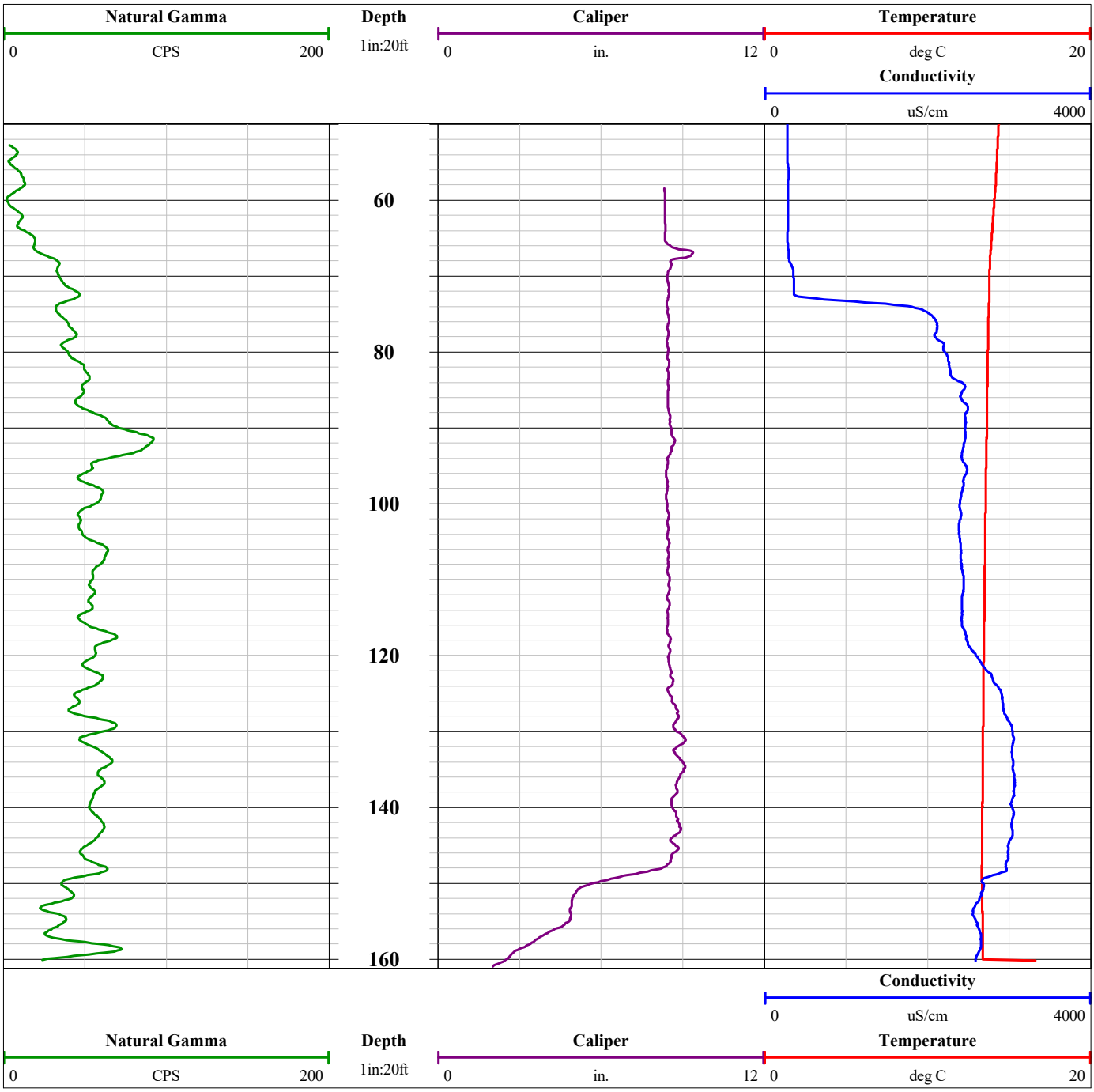
Arcadis_Tyco_Production Well_NGR_UL1.tfd
Arcadis_Tyco_Production Well_FTC_DL1.tfd


Natural Gamma
0
CPS
200
Depth
1in:20ft
Caliper
0
in.
12
Temperature
0
deg C
20
Conductivity
0
uS/cm
4000
60
80
100
120
140
160
Conductivity
0
uS/cm
4000
Natural Gamma
0
CPS
200
Depth
1in:20ft
Caliper
0
in.
12
Temperature
0
deg C
20

borehole geophysics / hydrophysics

810 Quail Street, Unit E
Lakewood, CO 80215
Office: (303) 279-0171
www.colog.com

# Optical & Acoustic Televiewer

| | |
|---|---|
| Company | Arcadis |
| Well | Tyco Production Well |
| Project | Tyco (Ansul FTC) |
| County | Marinette |
| State | Wisconsin |

**COMPANY** Arcadis
**WELL** Tyco Production Well
**PROJECT** Tyco (Ansul FTC)
**COUNTY** Marinette **STATE**

**LOCATION**

**QTR** **SEC** **TWP** **RGE**

**OTHER SERVICES**

**PERMANENT DATUM** Ground Level **ELEVATION**
**LOG MEAS. FROM** Ground Level 0.0 ft **ABOVE PERMINANT DATUM**
**DRILLING MEAS. FROM** Ground Level

| | | | | |
|---|---|---|---|---|
| **DATE ACQUIRED** | 19 June 2018 | 18 June 2018 | | |
| **RUN NUMBER** | One | One | | |
| **LOG TYPE** | OTV | ATV | | |
| **DEPTH-DRILLER** | 171.0 ft | 171.0 ft | | |
| **DEPTH-LOGGER** | 161.0 ft | 161.0 ft | | |
| **BTM LOG INTERVAL** | 147.1 ft | 148.6 ft | | |
| **TOP LOG INTERVAL** | 3.0 ft | 62.1 ft | | |
| **RECORDED BY** | K. Genuchi | K. Genuchi | | |
| **WITNESSED BY** | NA | NA | | |
| **PROBE TYPE, S/N** | OBI, 121406 | ABI, 103806 | | |
| **LOGGING SPEED** | 5.0 ft/min | 5.0 ft/min | | |
| **SAMPLE INTERVAL** | 0.0088 ft | 0.0088 ft | | |
| **FLUID LEVEL** | 4.9 ft | | | |

| **BOREHOLE RECORD** | | | | **CASING RECORD** | | | |
|---|---|---|---|---|---|---|---|
| **RUN No.** | **BIT** | **FROM** | **TO** | **SIZE** | **WGT.** | **FROM** | **TO** |
| 1 | 6" | 65ft | 171ft | 8" | | GL | 65ft |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

**NA - Not Available, N/A - Not Applicable**

**COMMENTS**

Input File:
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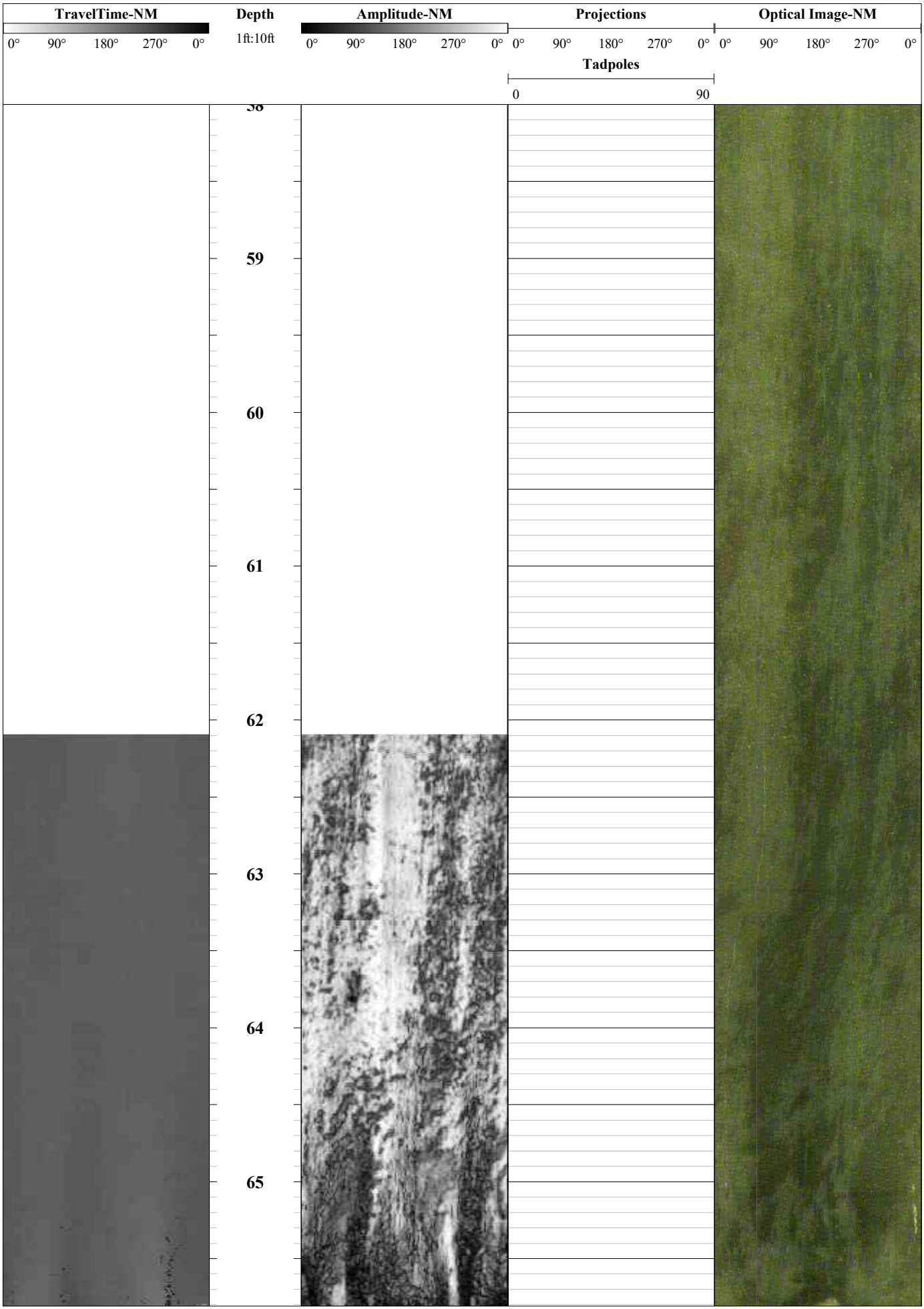
Arcadis_Tyco_Production Well_ABI_UL1.tfd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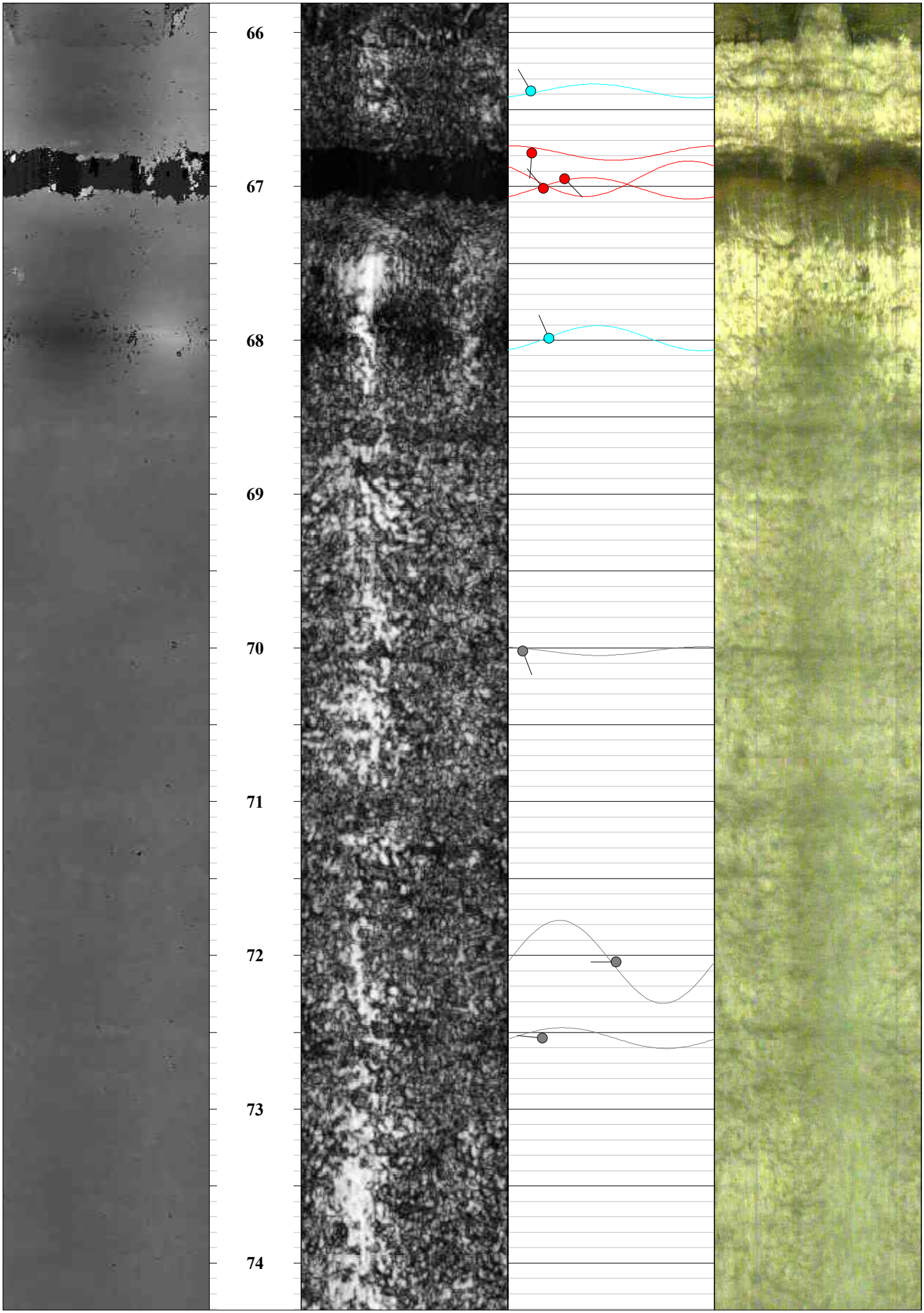
0° 90° 180° 270° 0°
Depth
1ft:10ft
Amplitude-NM
0° 90° 180° 270° 0°
Projections
0° 90° 180° 270° 0°
Tadpoles
0
90
Optical Image-NM
0° 90° 180° 270° 0°
58
59
60
61
62
63
64
65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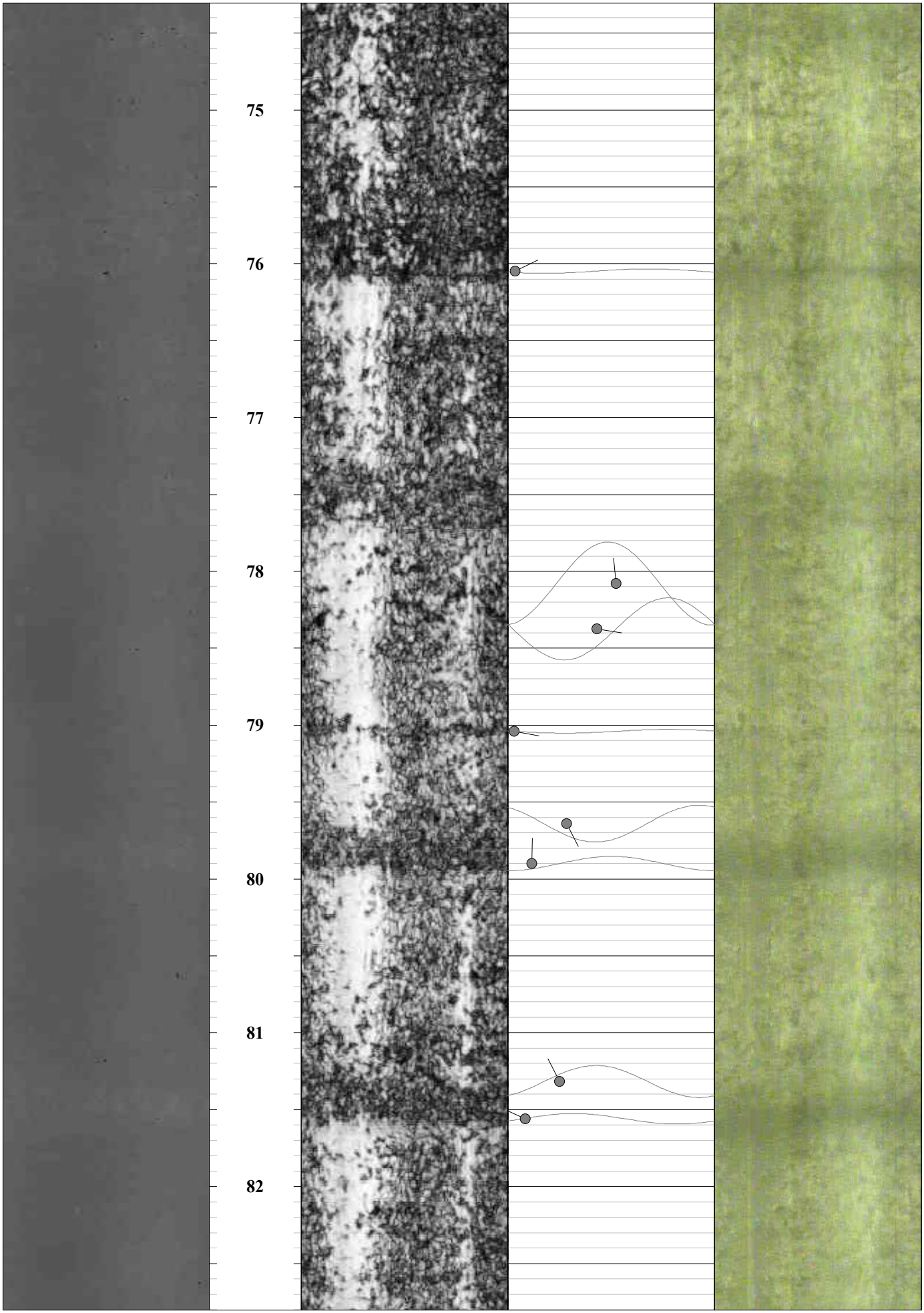
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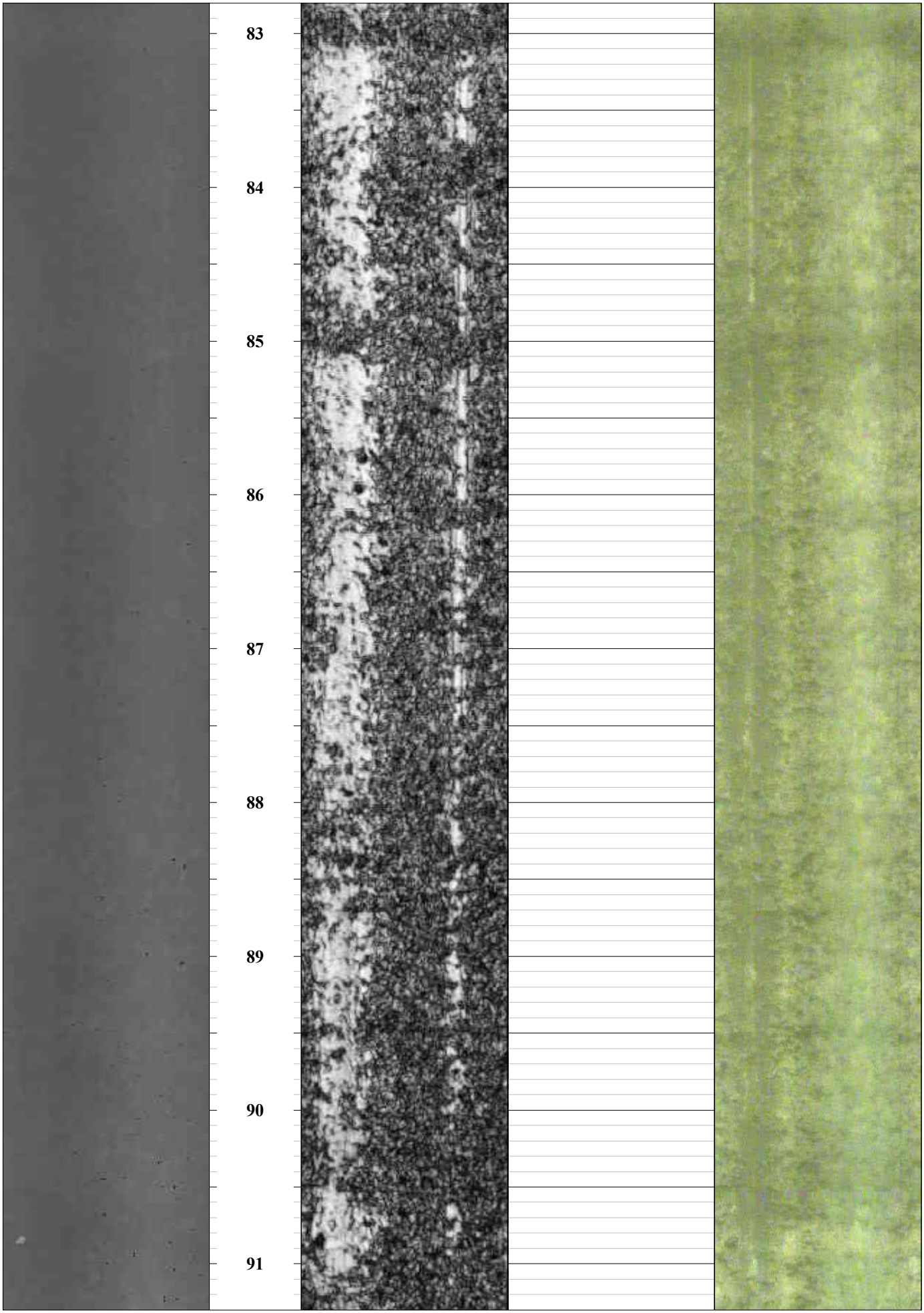
82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84
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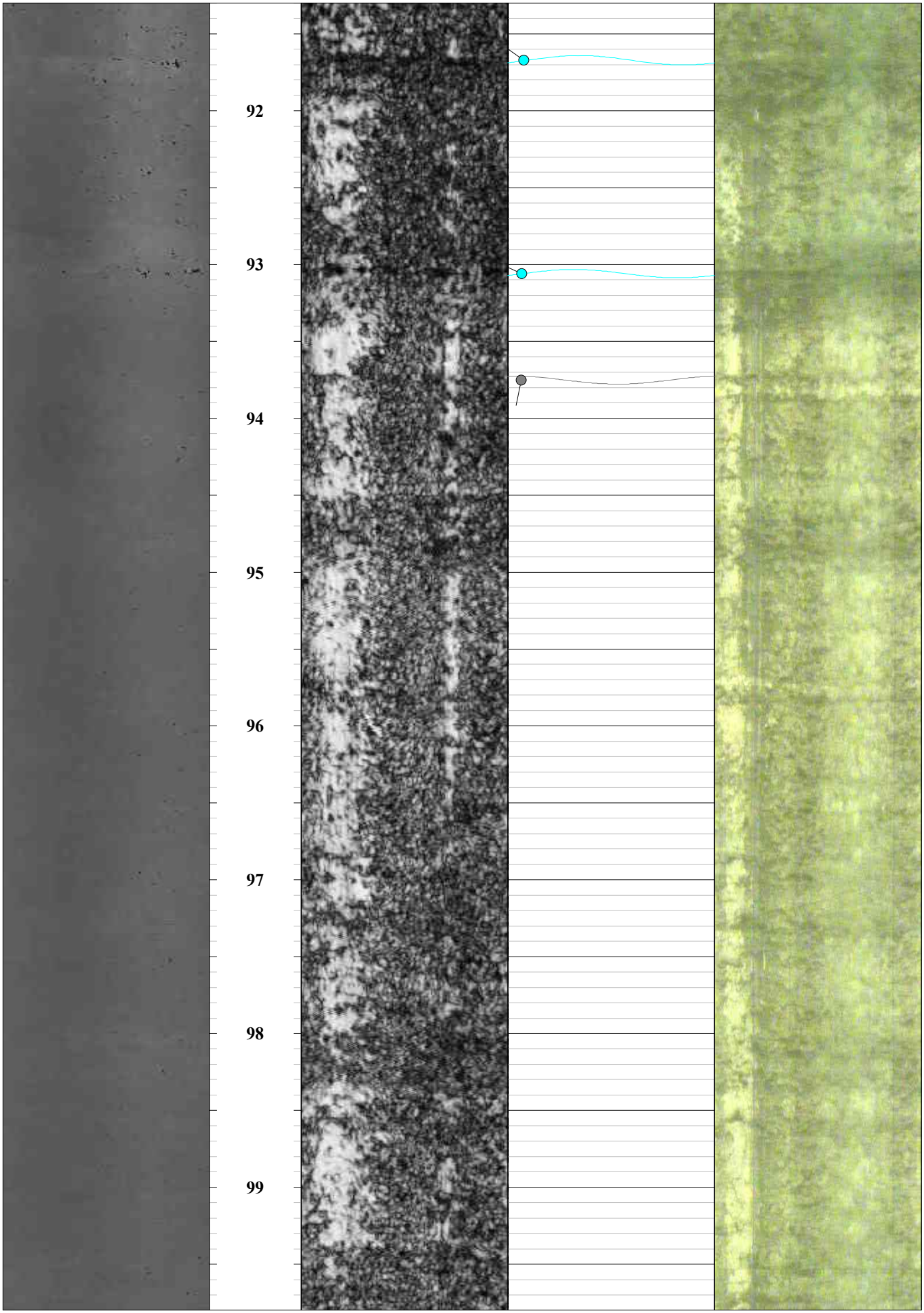
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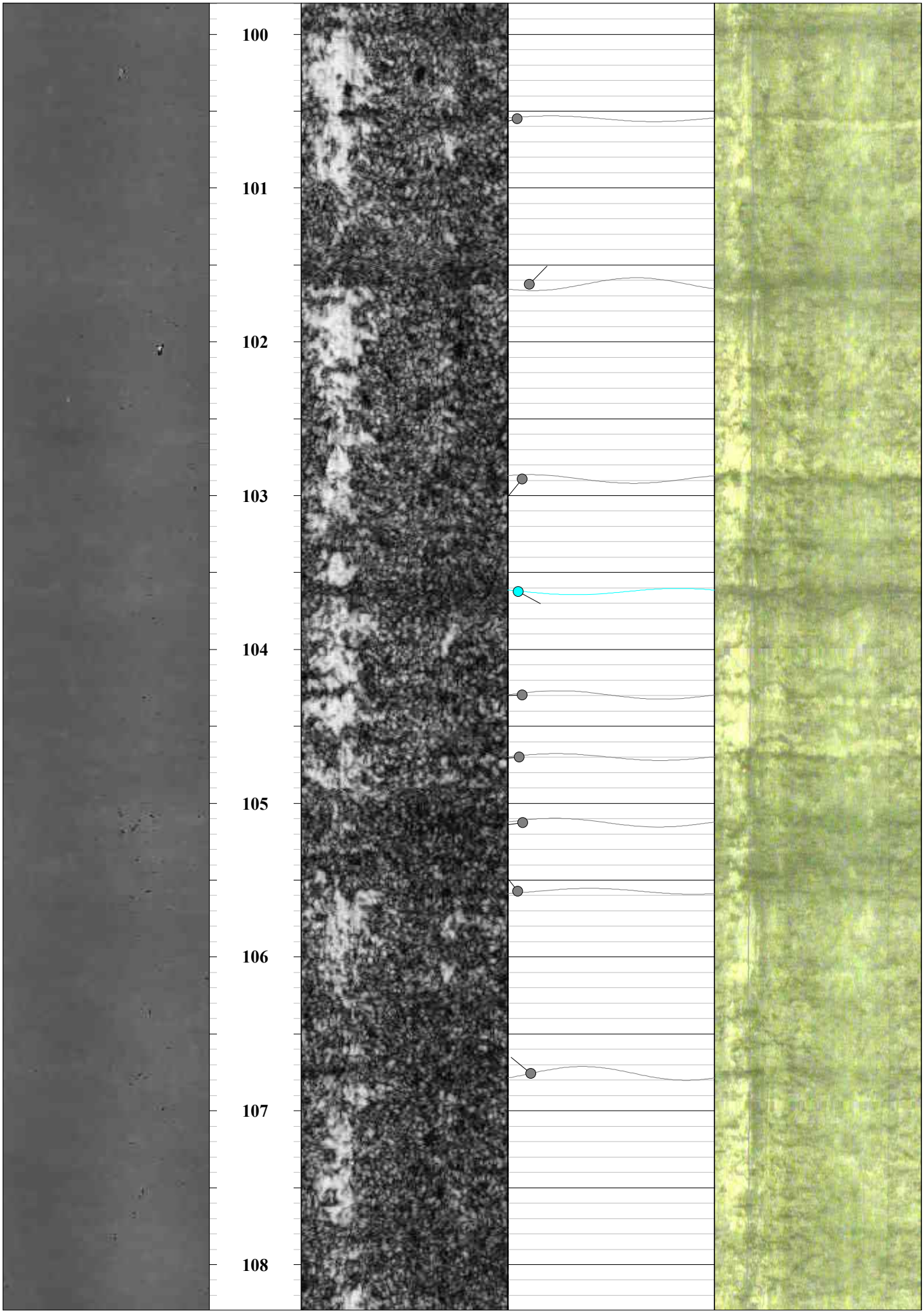
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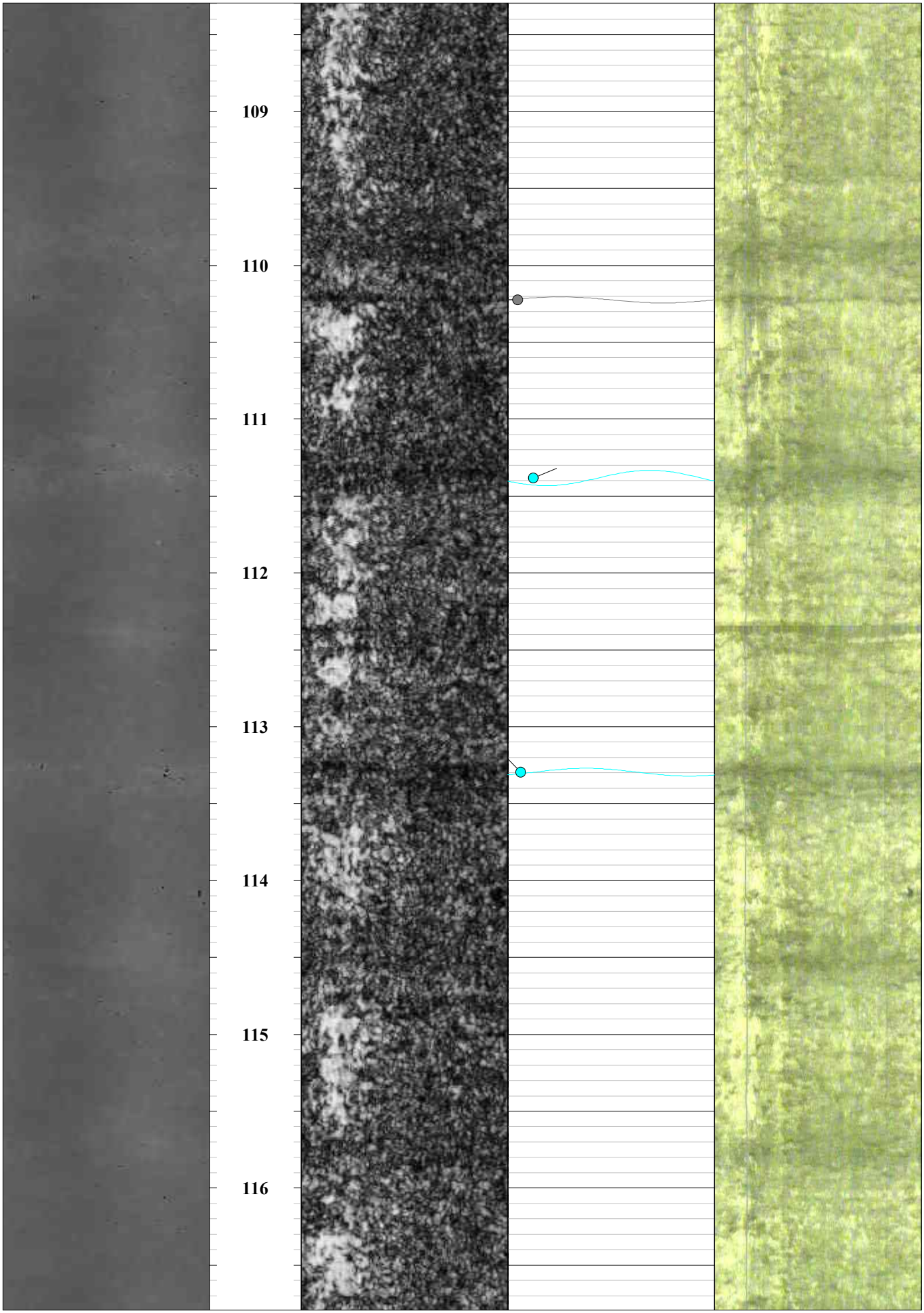
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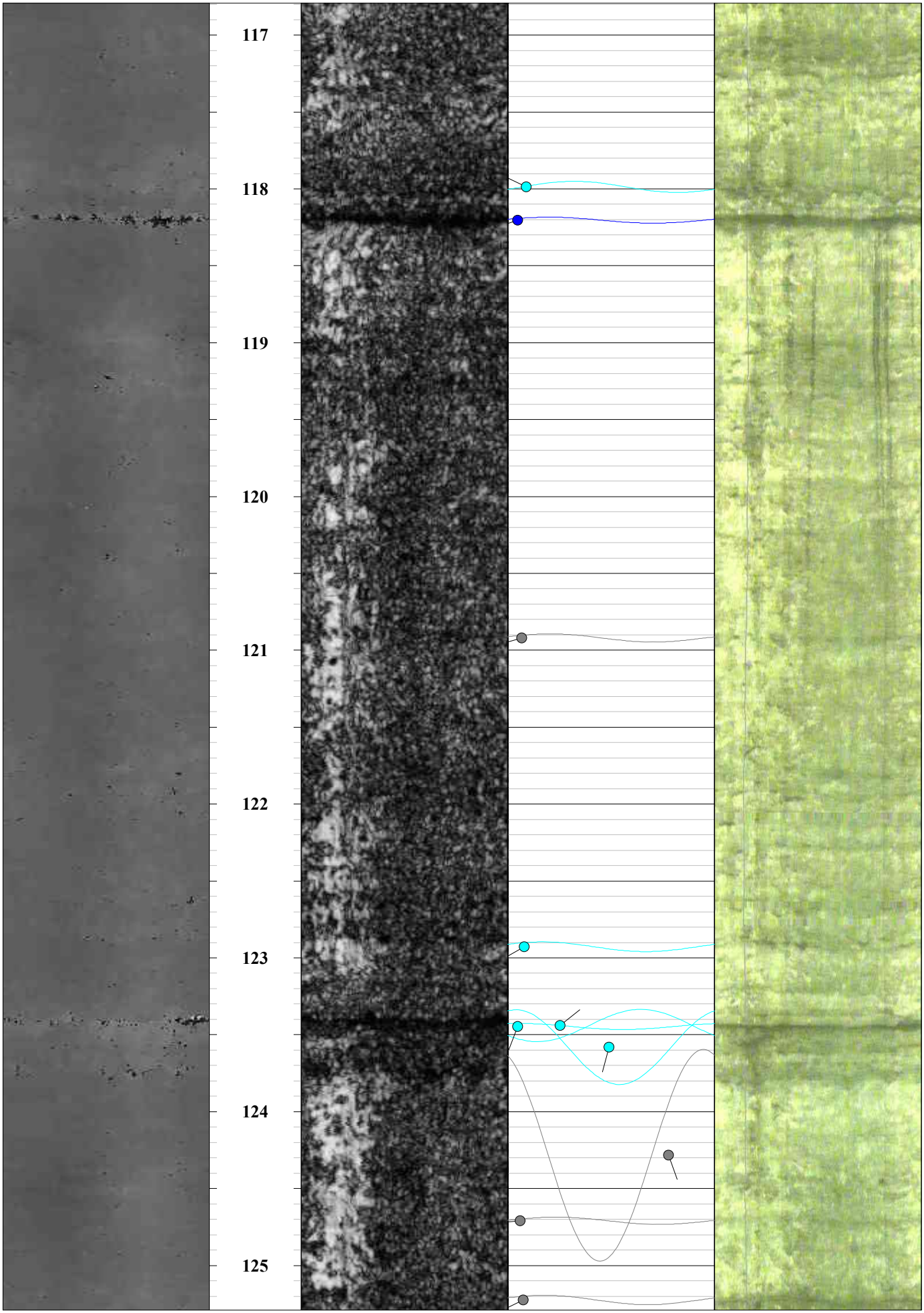
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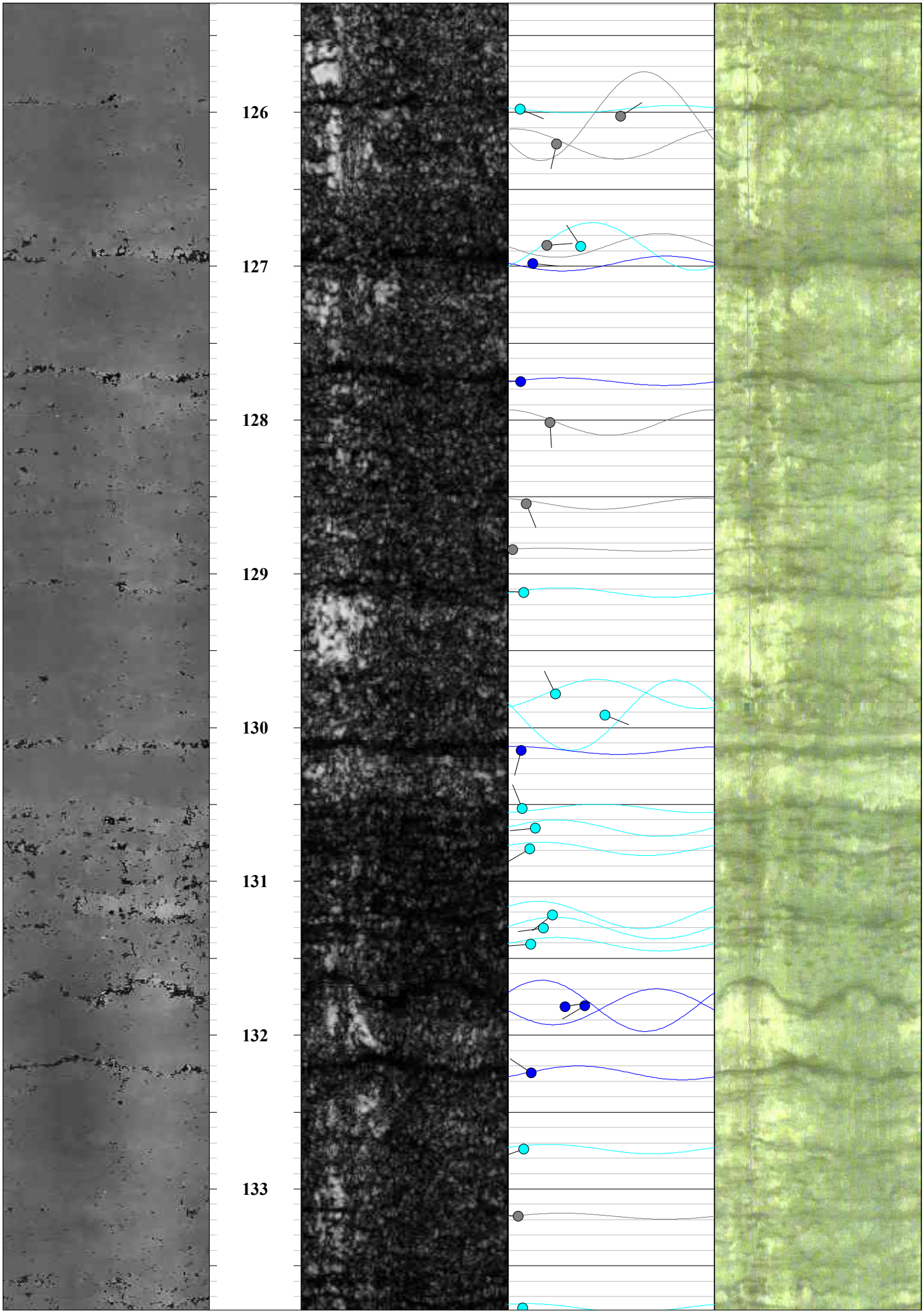
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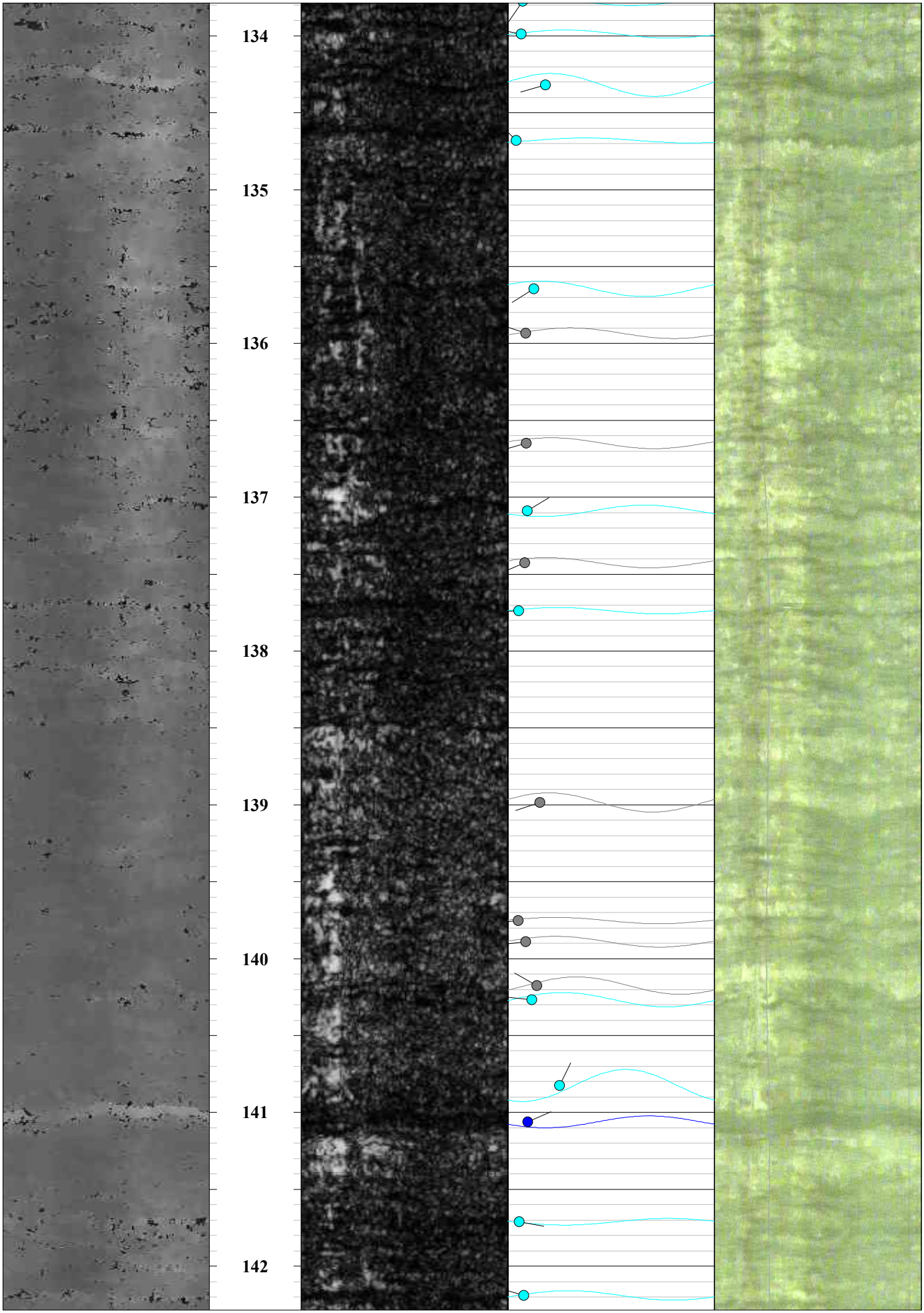
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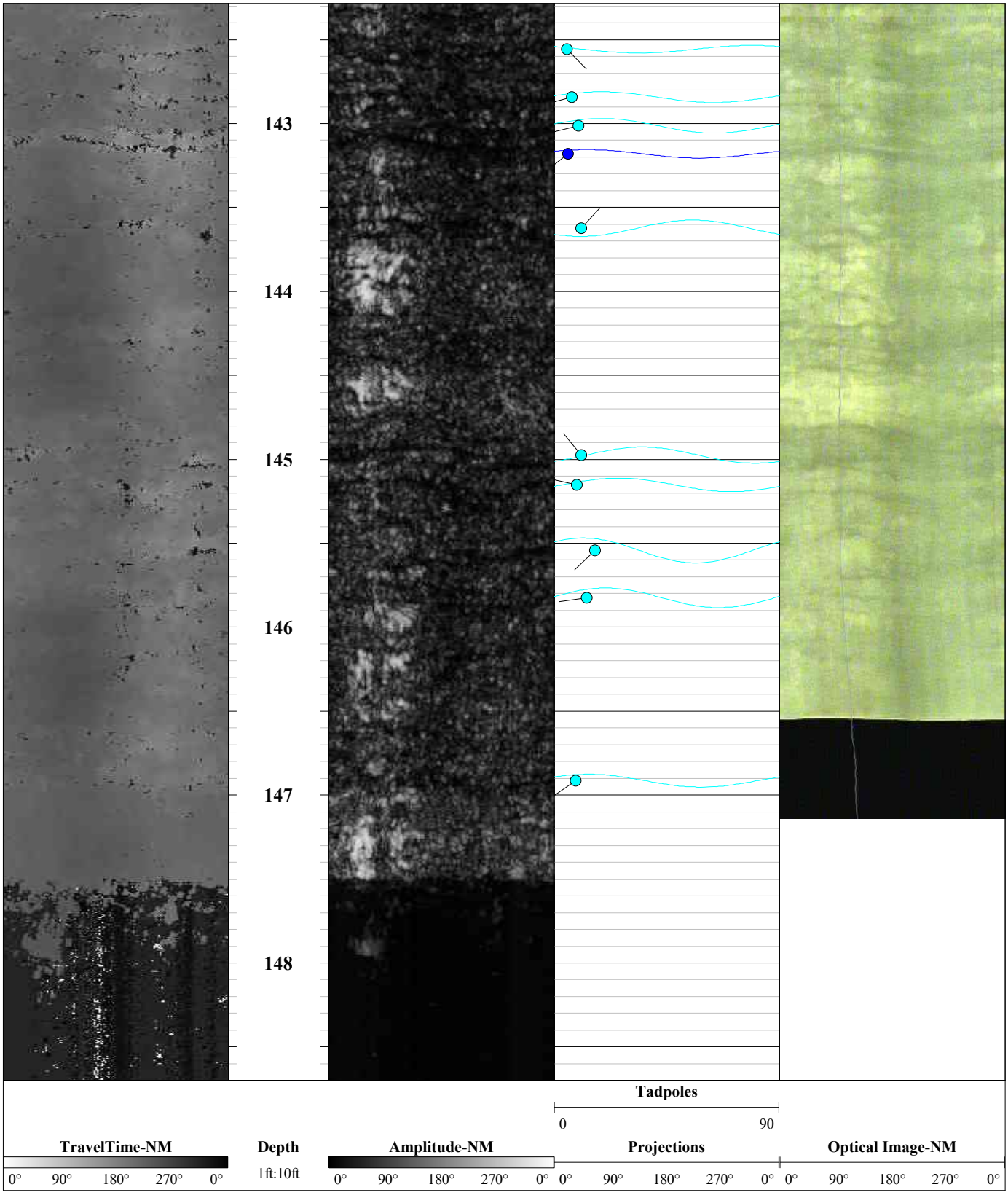
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147
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Tadpoles
0
90
TravelTime-NM
0° 90° 180° 270° 0°
Depth
1ft:10ft
Amplitude-NM
0° 90° 180° 270° 0°
Projections
0° 90° 180° 270° 0°
Optical Image-NM
0° 90° 180° 270° 0°

**Table Production Well:2**. Summary Of Corehole Dynamic Flowmeter Results With Hydraulic Conductivity And Transmissivity Estimations; Arcadis; Tyco (Ansul FTC); Marinette, WI; Wellbore: Production Well

| | |
|---|---|
| Well Name | Production Well |
| Ambient Depth to Water (ftbtoc) | 6.27 |
| Ambient Depth to Water (ftbgs) | 5.17 |
| Open Borehole Interval (ftbgs) | 66.1 - 160.0 |

| | |
|---|---|
| Diameter of Well (ft) | 0.67 |
| Maximum Constant Drawdown (ft) | 0.51 |
| Effective Radius (ft) | 50 |
| Well Specific Capacity (gpm/ft-dd) | 7.843 |

| Corehole Dynamic Flowmeter Logging Results - Production Well | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Interval No.** | **Top of Interval (ft)** | **Bottom of Interval (ft)** | **Length of Interval (ft)** | **Ambient Flow[1] (gpm)** | **Interval-Specific Flow Rate During Pumping (gpm)** | **Delta Flow (gpm)** | **Transmissivity[2] ($ft^2$/day)** | **Comment** |
| 1 | 66.1 | 66.5 | 0.4 | 0.000 | 2.0 | 2.00 | 6.02E+02 | Flow likely originates from behind casing, enters at base of casing |
| 2 | 66.5 | 69.8 | 3.3 | 0.000 | 2.0 | 2.00 | 6.02E+02 | fracture with aperture |
| **Borehole Transmissivity Using Thiem Equation ($ft^2$/day)** | | | | | | | **1.20E+03** | |
| **Borehole Hydraulic Conductivity (K=T/b; b=length of open borehole) (ft/day)** | | | | | | **1.04E+01** | | |

Note: Negative flow, if any, is outflow from the borehole to the aquifer, positive flow is inflow to the borehole.

[1] No ambient vertical flow is identified in this borehole under ambient conditions.

[2] Hydraulic conductivity and transmissivity estimates are based on single well drawdown data, a porous-medium equivalent model and the Thiem equation.

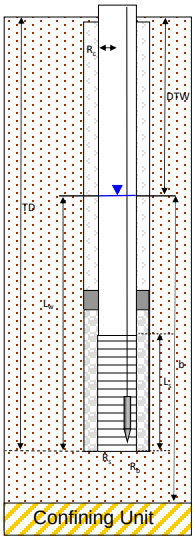
NA = Not Applicable

# APPENDIX F

## Slug Testing Results

**Table G-1**
**Estimated Hydraulic Conductivity (K) Values**

| Well ID | Screen Interval (ft bgs) | Aquifer Thickness (ft) | Screened Interval Description | Slug Test Type | Test Number | Hydraulic Conductivity (cm/sec) | Hydraulic Conductivity (ft/day) |
|---|---|---|---|---|---|---|---|
| **2016 Data** | | | | | | | |
| FTC-2S | 5 - 15 | 10.72 | Sand (F) Silty | Baildown | 1 | 1.3E-03 | 3.7 |
| | | | | Baildown | 2 | 1.3E-03 | 3.7 |
| | | | | Baildown | 3 | 1.5E-03 | 4.3 |
| | | | | | Mean | 1.4E-03 | 3.9 |
| PZ-1S | 36 - 41 | 33.10 | Clayey Silt | Pneumatic | 1 | 2.5E-05 | 7.1E-02 |
| PZ-3 | 38 - 43 | 34.94 | Clayey Silt | Pneumatic | 1 | 7.1E-05 | 0.2 |
| | | | | Pneumatic | 2 | 7.3E-05 | 0.2 |
| PZ-6S | 4 - 19 | 10.56 | Sand (F-M), trace silt | Baildown | 1 | 1.5E-02 | 43 |
| | | | | Baildown | 2 | 1.7E-02 | 48 |
| | | | | Baildown | 3 | 1.1E-02 | 31 |
| | | | | | Mean | 1.4E-02 | 41 |
| PZ-14S | 4 - 19 | 14.40 | Sand | pneumataic | 1 | 2.7E-03 | 7.7 |
| | | | | pneumataic | 2 | 2.6E-03 | 7.4 |
| | | | | pneumataic | 3 | 2.9E-03 | 8.2 |
| | | | | | Mean | 2.7E-03 | 7.7 |
| PZ-22s | 10 - 22 | 12.14 | Sand | pneumataic | 1 | 1.2E-03 | 3.4 |
| | | | | pneumataic | 2 | 1.0E-03 | 2.8 |
| | | | | pneumataic | 3 | 1.0E-03 | 2.8 |
| | | | | | Mean | 1.1E-03 | 3.0 |
| | | | | | **Mean** | **3.9E-03** | **11** |
| | | | | | **Geometric Mean** | **1.2E-03** | **3.5** |
| | | | | | **Minimum** | **2.5E-05** | **0.1** |
| | | | | | **Maximum** | **1.7E-02** | **48** |
| **2018 Data** | | | | | | | |
| MW-100-32 | 23.3 -33.3 | 29.41 | Sand (F), well sorted, loose, trace to some sand (VF-M) | Solid Slug In | 1 | 1.0E-01 | 2.8E+02 |
| | | | | Solid Slug Out | 2 | 6.0E-01 | 1.7E+03 |
| MW-100-68 | 59.2 - 69.2 | 63.95 | 59.2 - 68.0': Sand (VF-F), loose, well sorted, trace sand (M)<br>68.0 - 69.2': Silt, stiff | Solid Slug In | 1 | 3.2E-02 | 9.1E+01 |
| | | | | Solid Slug Out | 2 | 1.4E-01 | 4.0E+02 |
| MW-101-16 | 5.3 - 15.3 | 10.82 | Sand (F), well sorted, some silt | Solid Slug In | 1 | -- | -- |
| | | | | Solid Slug Out | 2 | 1.3E-01 | 3.7E+02 |
| MW-101-72 | 62.4 - 72.4 | 67.31 | Sand (F), trace pebbles | Solid Slug In | 1 | 3.4E-02 | 9.6E+01 |
| | | | | Solid Slug Out | 2 | 2.7E-01 | 7.7E+02 |
| | | | | | **Mean** | **1.9E-01** | **5.3E+02** |
| | | | | | **Geometric Mean** | **1.2E-01** | **3.3E+02** |
| | | | | | **Minimum** | **3.2E-02** | **9.1E+01** |
| | | | | | **Maximum** | **6.0E-01** | **1.7E+03** |




**Notes**
- ft/day - feet per day
- cm/sec - centimeters per second
- 2016 pneumatic test variences between observed and theoretical head are assumed to be less than 10% since the measured head was not provided.
- 2018 slug tests had low resolution data in comparison to aquifer response. Results should be flagged and should be .

| Well | Ls | Lw | Rs | Rb | Rc | DTW | TD |
|---|---|---|---|---|---|---|---|
| FTC-2S | 10 | 10.72 | 0.33 | 0.33 | 0.083 | 4.28 | 15.00 |
| PZ-1S | 5 | 33.10 | 0.33 | 0.33 | 0.083 | 7.90 | 41.00 |
| PZ-3 | 5 | 34.94 | 0.33 | 0.33 | 0.083 | 8.06 | 43.00 |
| PZ-6S | 15 | 10.56 | 0.33 | 0.33 | 0.083 | 8.44 | 19.00 |
| PZ-14S | 15 | 14.40 | 0.33 | 0.33 | 0.083 | 4.60 | 19.00 |
| PZ-22S | 10 | 12.13 | 0.33 | 0.33 | 0.083 | 7.87 | 20.00 |
| MW-100-32 | 10 | 29.41 | 0.33 | 0.33 | 0.083 | 4.56 | 33.30 |
| MW-100-68 | 10 | 65.15 | 0.33 | 0.33 | 0.083 | 4.35 | 69.20 |
| MW-101-16 | 10 | 10.82 | 0.33 | 0.33 | 0.083 | 4.70 | 15.30 |
| MW-101-72 | 10 | 67.31 | 0.33 | 0.33 | 0.083 | 5.38 | 72.40 |

All units in feet bgs

$L_s$ True screen length
$L_w$ Length of water column in Well (TD-DTW)
$R_s$ Screen radius
$R_b$ Radius of filter pack or borehole
$R_c$ Casing radius
DTW Static depth to water below top of casing
TD Total depth of well/screen below top of casing

**References**


Butler, J.J., Jr., 1998. The Design, Performance, and Analysis of Slug Tests, Lewis Publishers, Boca Raton, 252p.

Bouwer, H., 1989. The Bouwer and Rice slug test--an update, Ground Water, vol. 27, no. 3, pp. 304-309.

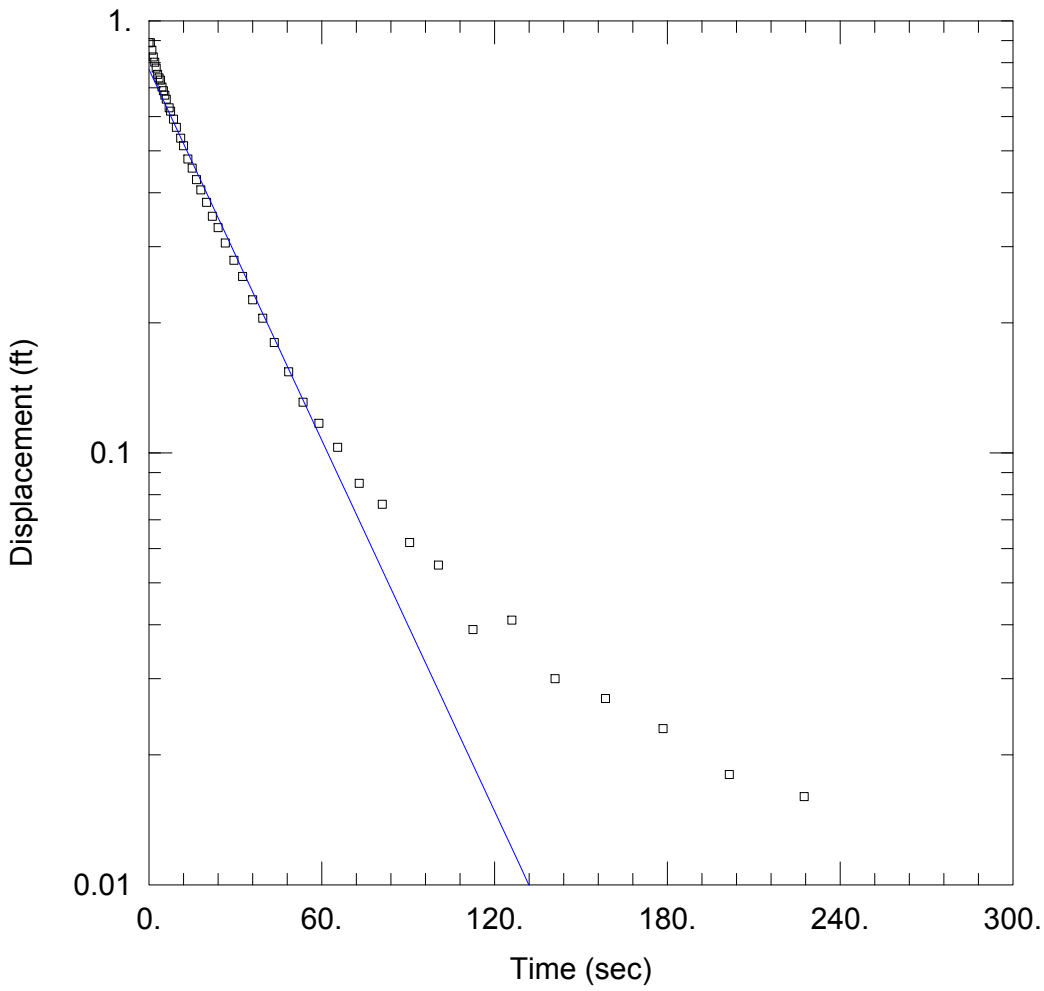
Bouwer, H. and R.C. Rice, 1976. A slug test method for determining hydraulic conductivity of unconfined aquifers with completely or partially penetrating wells, Water Resources Research, vol. 12, no. 3, pp. 423-428.

Hyder, Z, J.J. Butler, Jr., C.D. McElwee and W. Liu, 1994. Slug tests in partially penetrating wells, Water Resources Research, vol. 30, no. 11, pp. 2945-2957.

Zlotnik, V., 1994. Interpretation of slug and packer tests in anisotropic aquifers, Ground Water, vol. 32, no. 5, pp.

# FTC-2S Test 1

| Prepared By: | Prepared For: |
|---|---|
| ARCADIS | Tyco |
| Project: | Location: |
| WI001519.0001 | Marinette |




## SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 0.0013 cm/sec  y0 = 0.772 ft

## AQUIFER DATA

Saturated Thickness: 10.72 ft

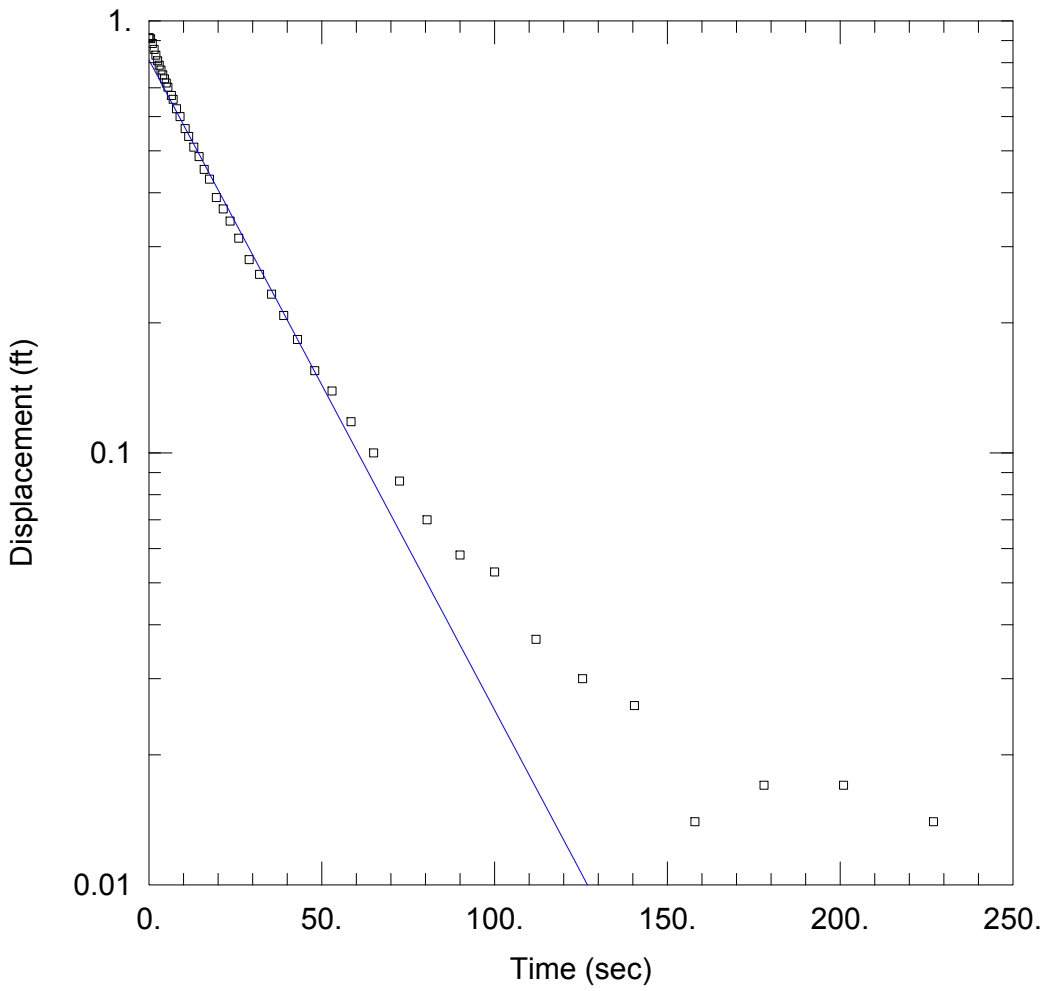
## WELL DATA (FTC-2S)

Initial Displacement: 0.89 ft
Static Water Column Height: 10.72 ft
Total Well Penetration Depth: 10.72 ft
Screen Length: 10. ft
Casing Radius: 0.083 ft
Well Radius: 0.3333 ft

ARCADIS

# FTC-2S Test 2

| Prepared By: | Prepared For: |
|---|---|
| ARCADIS | Tyco |
| Project: | Location: |
| WI001519.0001 | Marinette |




## SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 0.0013 cm/sec  y0 = 0.812 ft

## AQUIFER DATA

Saturated Thickness: 10.72 ft

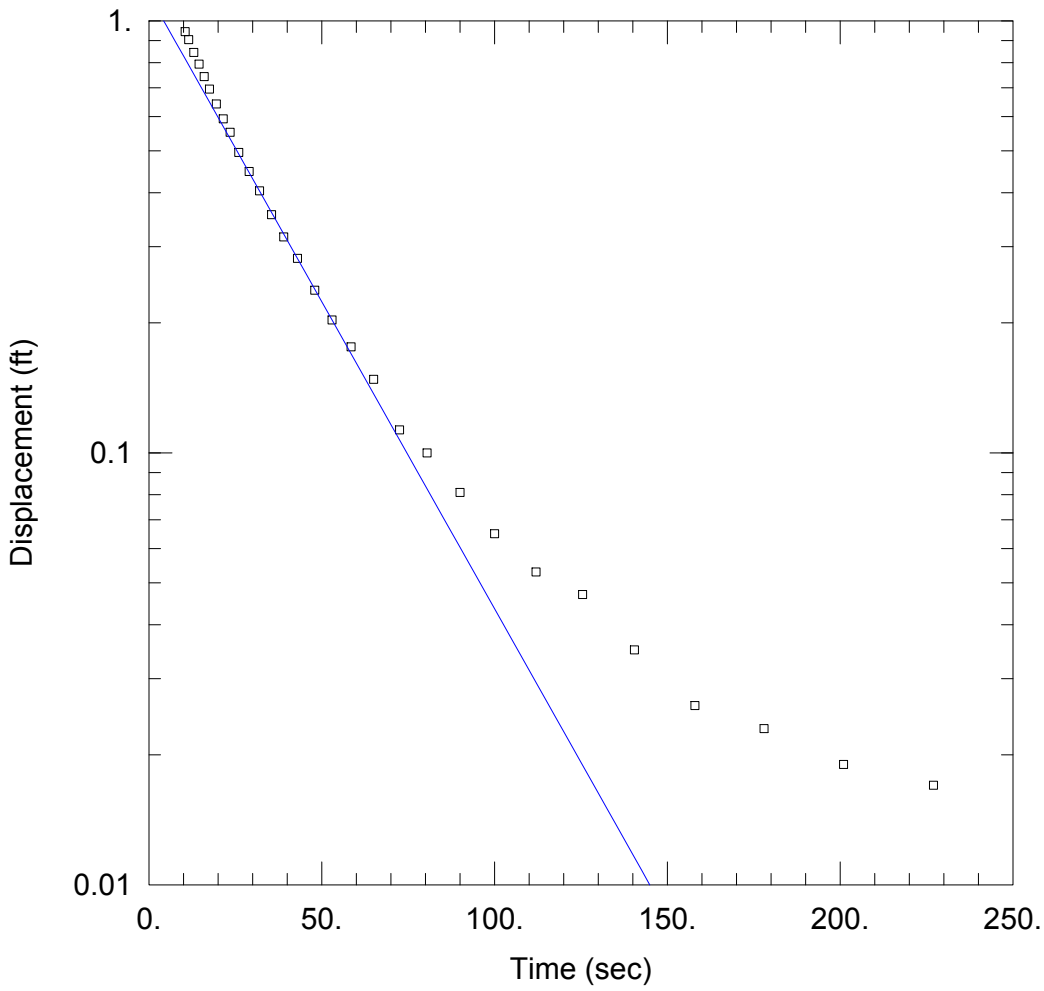
## WELL DATA (FTC-2S)

Initial Displacement: 0.914 ft
Static Water Column Height: 10.72 ft
Total Well Penetration Depth: 10.72 ft
Screen Length: 10. ft
Casing Radius: 0.083 ft
Well Radius: 0.3333 ft

ARCADIS

# FTC-2S Test 3

| Prepared By: | Prepared For: |
|---|---|
| ARCADIS | Tyco |
| Project: | Location: |
| WI001519.0001 | Marinette |




## SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 0.0015 cm/sec  y0 = 1.15 ft

## AQUIFER DATA

Saturated Thickness: 10.72 ft

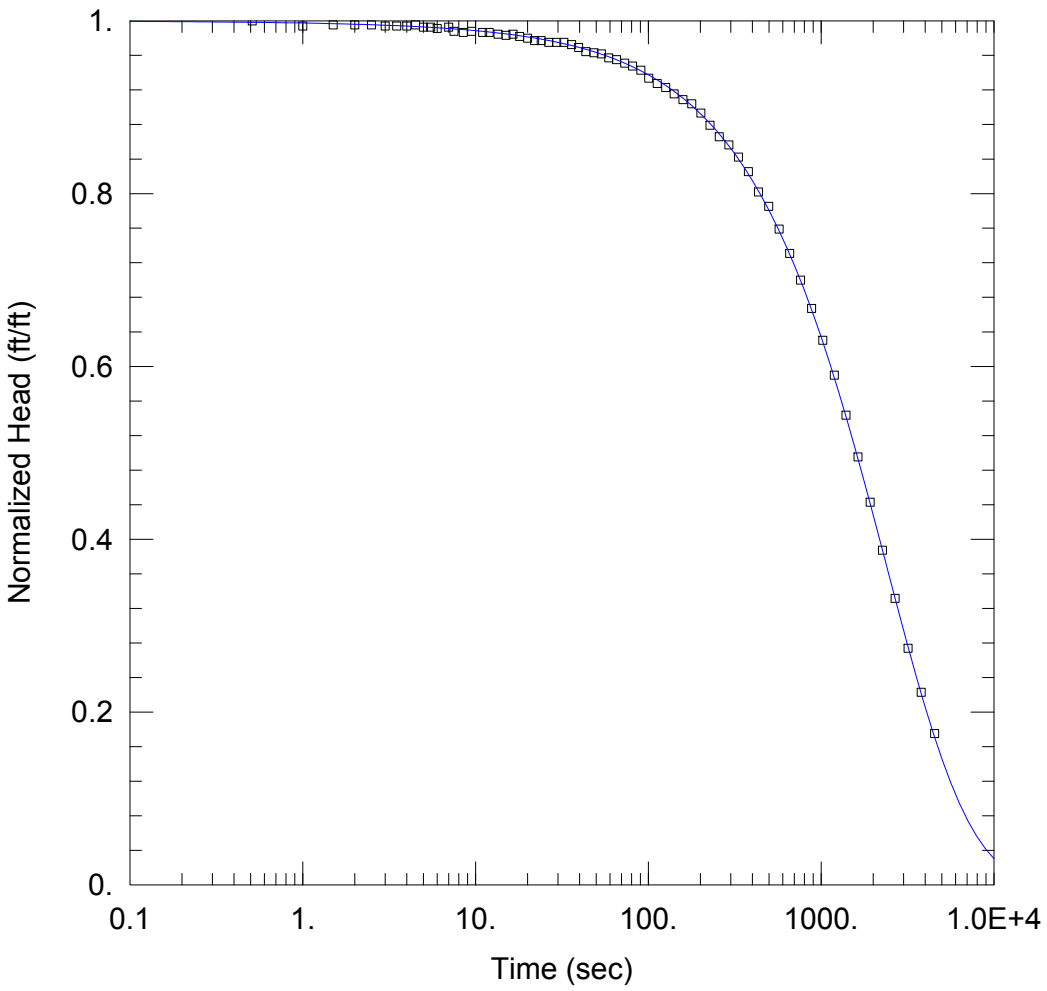
## WELL DATA (FTC-2S)

Initial Displacement: 1.691 ft
Static Water Column Height: 10.72 ft
Total Well Penetration Depth: 10.72 ft
Screen Length: 10. ft
Casing Radius: 0.083 ft
Well Radius: 0.3333 ft

ARCADIS

# PZ-1S Test 1

| Prepared By: | Prepared For: |
|---|---|
| ARCADIS | Tyco |
| Project: | Location: |
| WI0001519.0001 | Marinette |




## SOLUTION

Aquifer Model: Unconfined
Solution Method: KGS Model

Kr = 2.5E-5 cm/sec  Ss = 1.6E-5 $ft^{-1}$
Kz/Kr = 1.

## AQUIFER DATA

Saturated Thickness: 33.1 ft

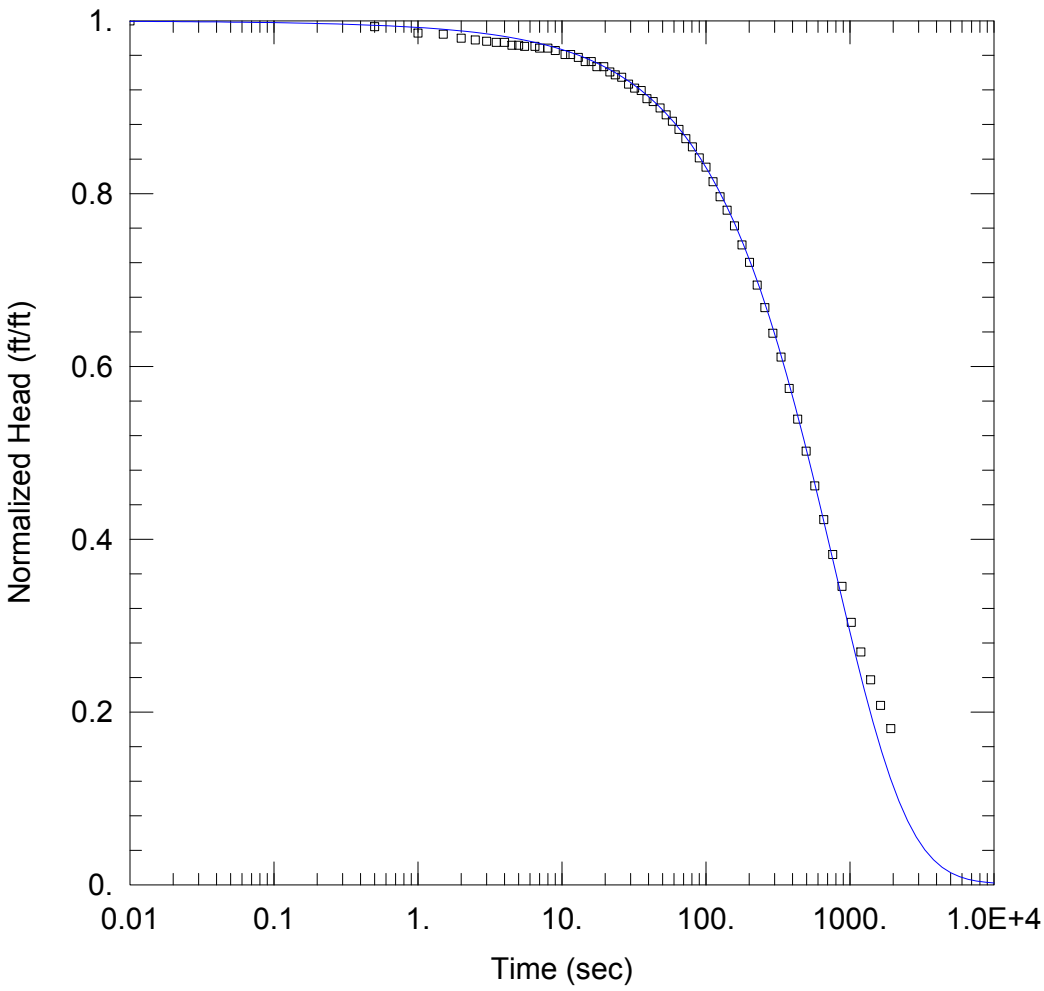
## WELL DATA (PZ-1S)

Initial Displacement: 1.49 ft
Static Water Column Height: 33.1 ft
Total Well Penetration Depth: 33.1 ft
Screen Length: 5. ft
Casing Radius: 0.083 ft
Well Radius: 0.3333 ft

ARCADIS

# PZ-3 Test 1

| Prepared By: | Prepared For: |
|---|---|
| ARCADIS | Tyco |
| Project: | Location: |
| WI0001519.0001 | Marinette |




## SOLUTION

Aquifer Model: Unconfined
Solution Method: KGS Model

Kr = 7.1E-5 cm/sec  Ss = 5.3E-5 $ft^{-1}$
Kz/Kr = 1.

## AQUIFER DATA

Saturated Thickness: 34.94 ft

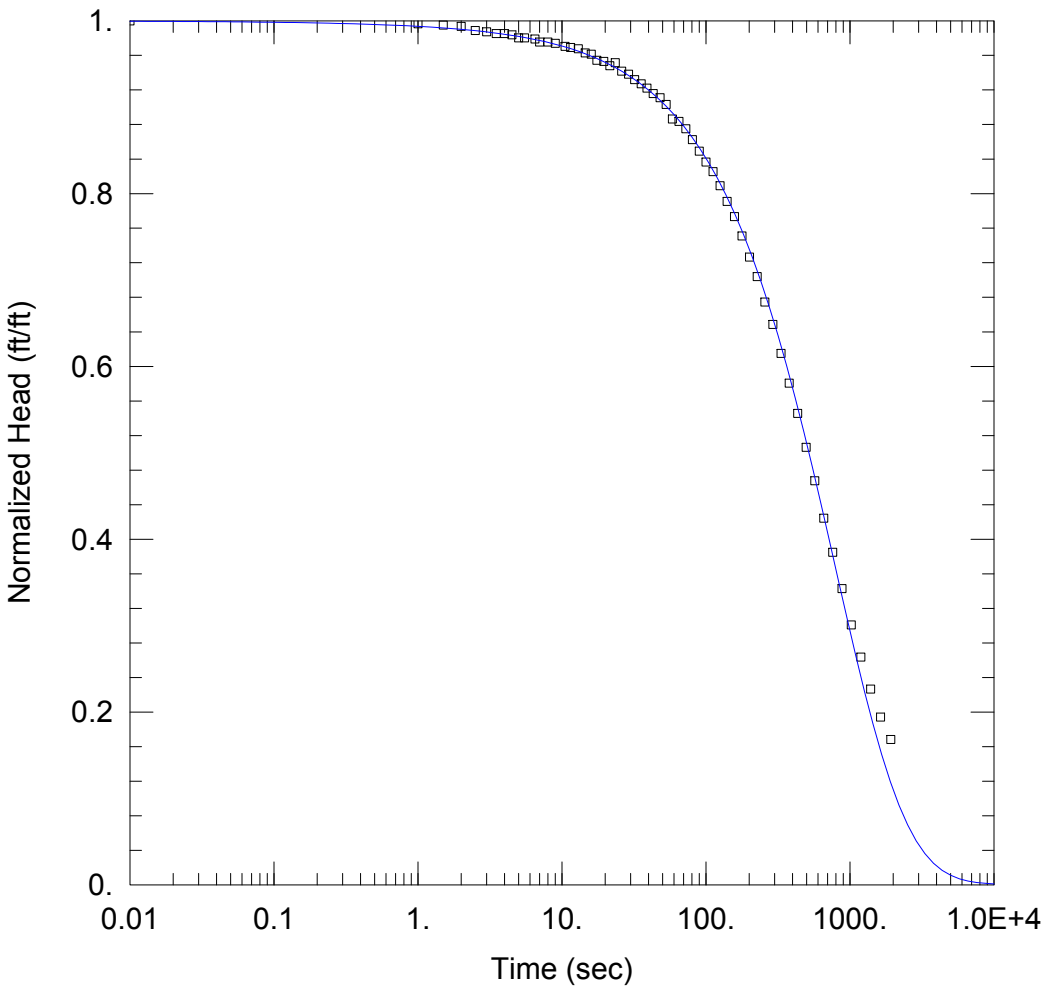
## WELL DATA (PZ-3)

Initial Displacement: 1.488 ft
Static Water Column Height: 34.94 ft
Total Well Penetration Depth: 34.94 ft
Screen Length: 5. ft
Casing Radius: 0.083 ft
Well Radius: 0.3333 ft

ARCADIS

# PZ-3 Test 2

| Prepared By: | Prepared For: |
|---|---|
| ARCADIS | Tyco |
| Project: | Location: |
| WI0001519.0001 | Marinette |




## SOLUTION

Aquifer Model: Unconfined
Solution Method: KGS Model

Kr = 7.3E-5 cm/sec  Ss = 3.15E-5 $ft^{-1}$
Kz/Kr = 1.

## AQUIFER DATA

Saturated Thickness: 34.94 ft

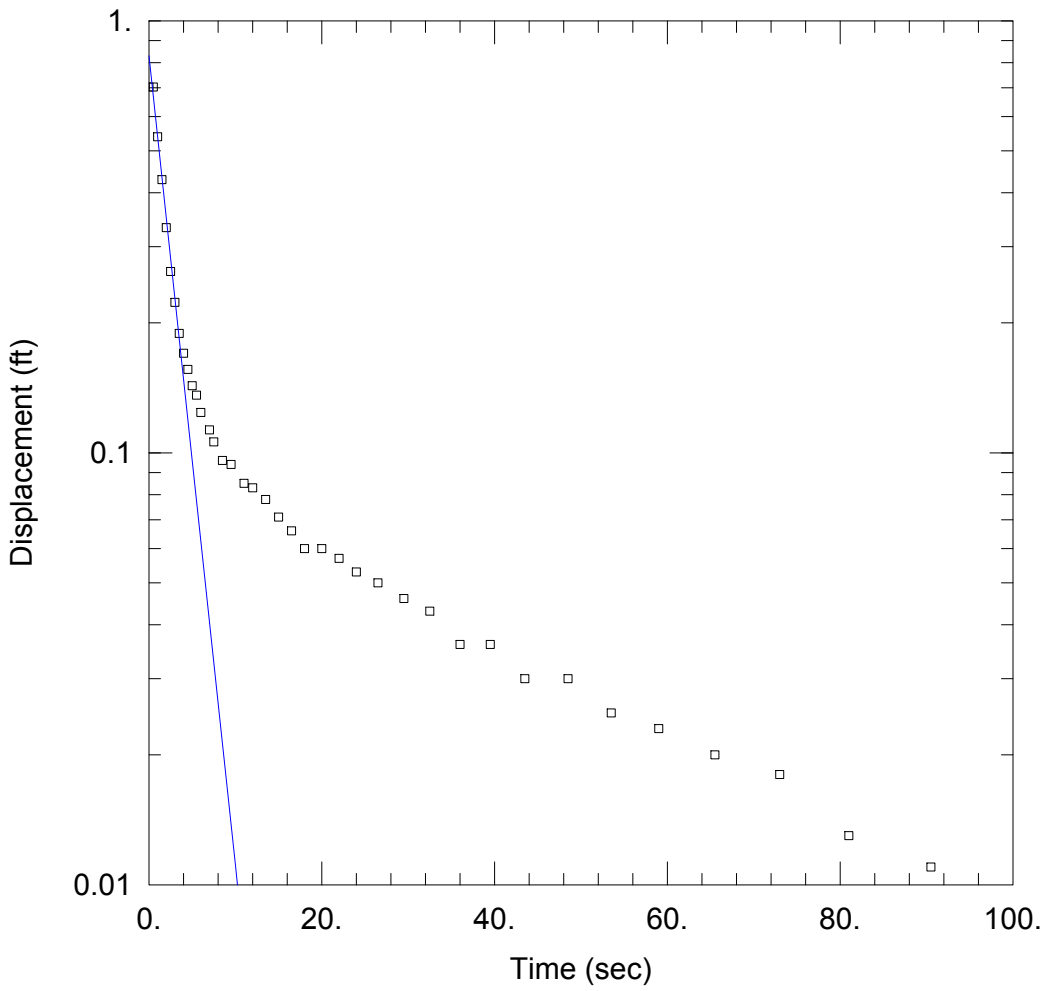
## WELL DATA (PZ-3)

Initial Displacement: 1.426 ft
Static Water Column Height: 34.94 ft
Total Well Penetration Depth: 34.94 ft
Screen Length: 5. ft
Casing Radius: 0.083 ft
Well Radius: 0.3333 ft

ARCADIS

# PZ-6S Test 1

| Prepared By: | Prepared For: |
|---|---|
| ARCADIS | Tyco |
| Project: | Location: |
| WI0001519.0001 | Marinette |




## SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 0.015 cm/sec  y0 = 0.83 ft

## AQUIFER DATA

Saturated Thickness: 10.56 ft

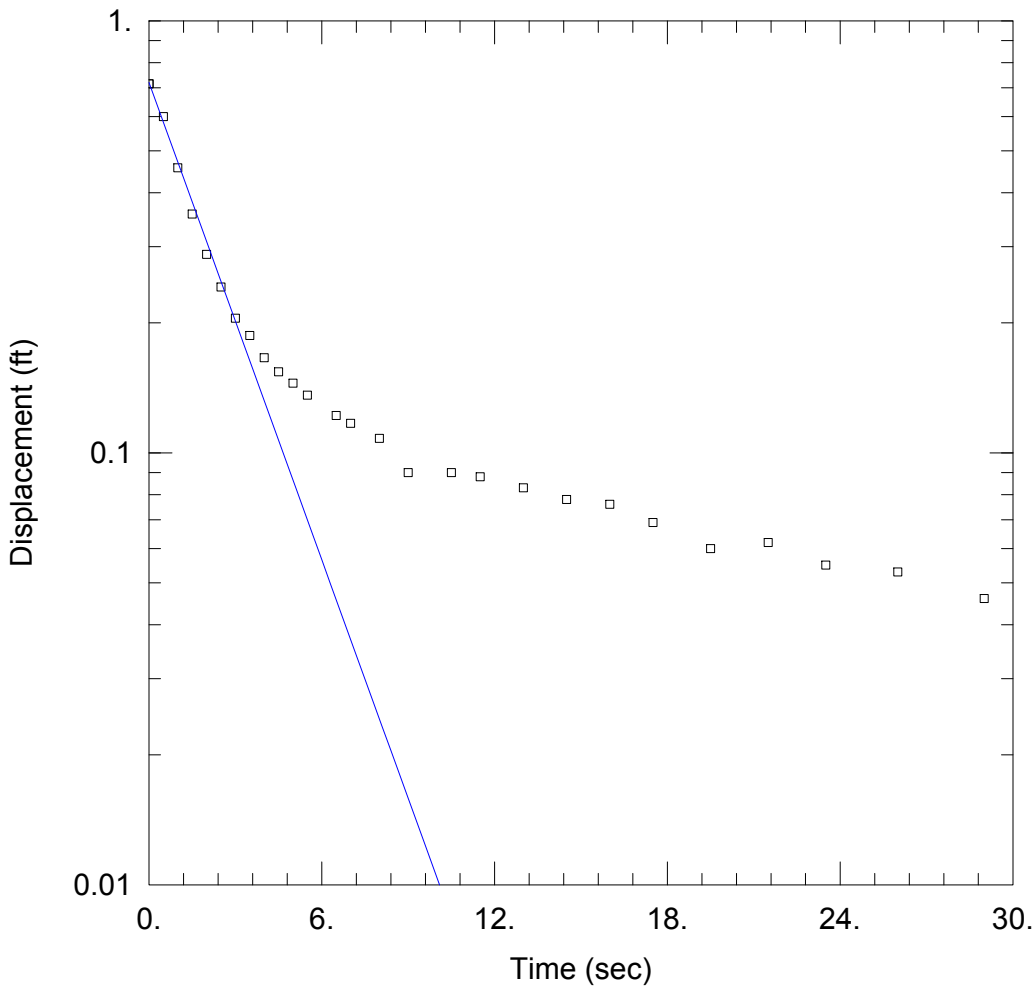
## WELL DATA (PZ-6S)

Initial Displacement: 0.703 ft
Static Water Column Height: 10.56 ft
Total Well Penetration Depth: 10.56 ft
Screen Length: 10.56 ft
Casing Radius: 0.083 ft
Well Radius: 0.3333 ft

ARCADIS

# PZ-6S Test 2

| Prepared By: | Prepared For: |
|---|---|
| ARCADIS | Tyco |
| Project: | Location: |
| WI0001519.0001 | Marinette |




## SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 0.017 cm/sec  y0 = 0.72 ft

## AQUIFER DATA

Saturated Thickness: 10.56 ft

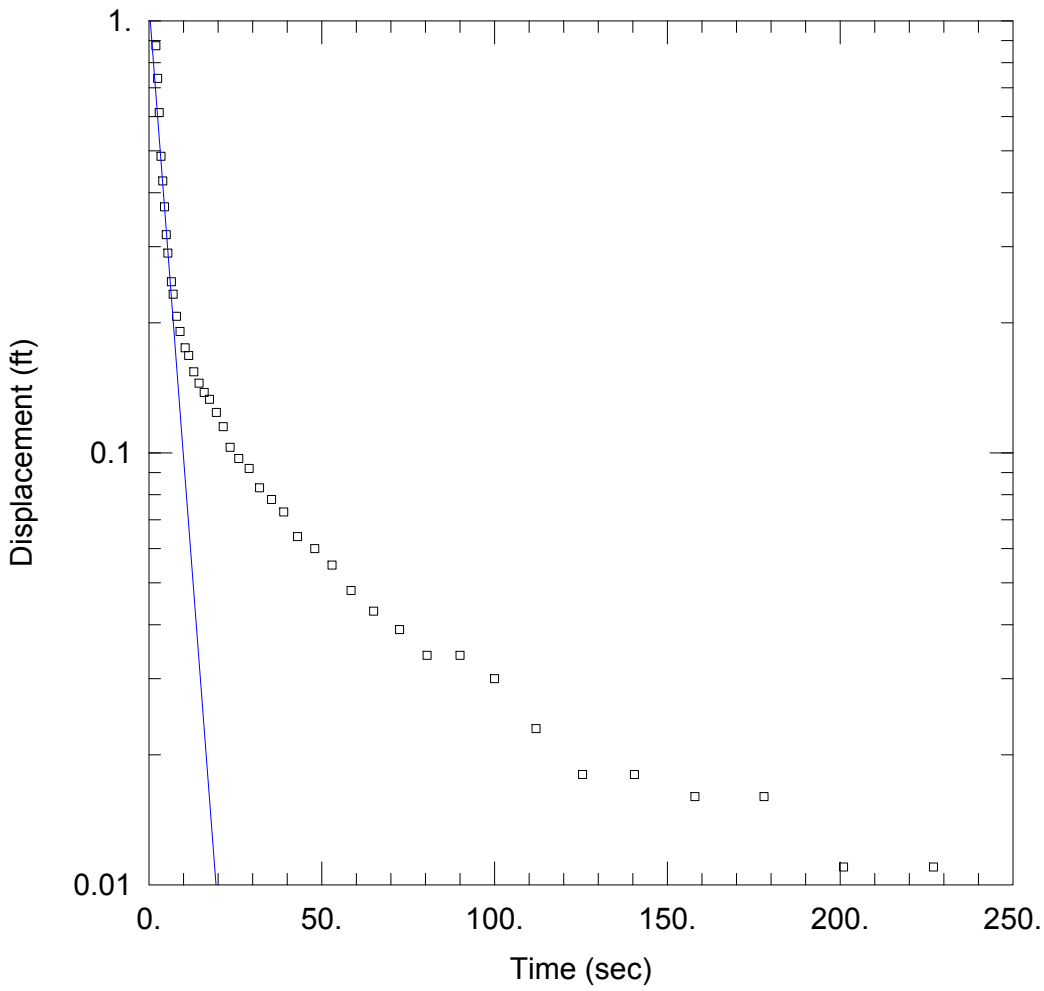
## WELL DATA (PZ-6S)

Initial Displacement: 0.715 ft
Static Water Column Height: 10.56 ft
Total Well Penetration Depth: 10.56 ft
Screen Length: 10.56 ft
Casing Radius: 0.083 ft
Well Radius: 0.3333 ft

ARCADIS

# PZ-6S Test 3

| Prepared By: | Prepared For: |
|---|---|
| ARCADIS | Tyco |
| Project: | Location: |
| WI0001519.0001 | Marinette |




## SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 0.011 cm/sec  y0 = 1.1 ft

## AQUIFER DATA

Saturated Thickness: 10.56 ft

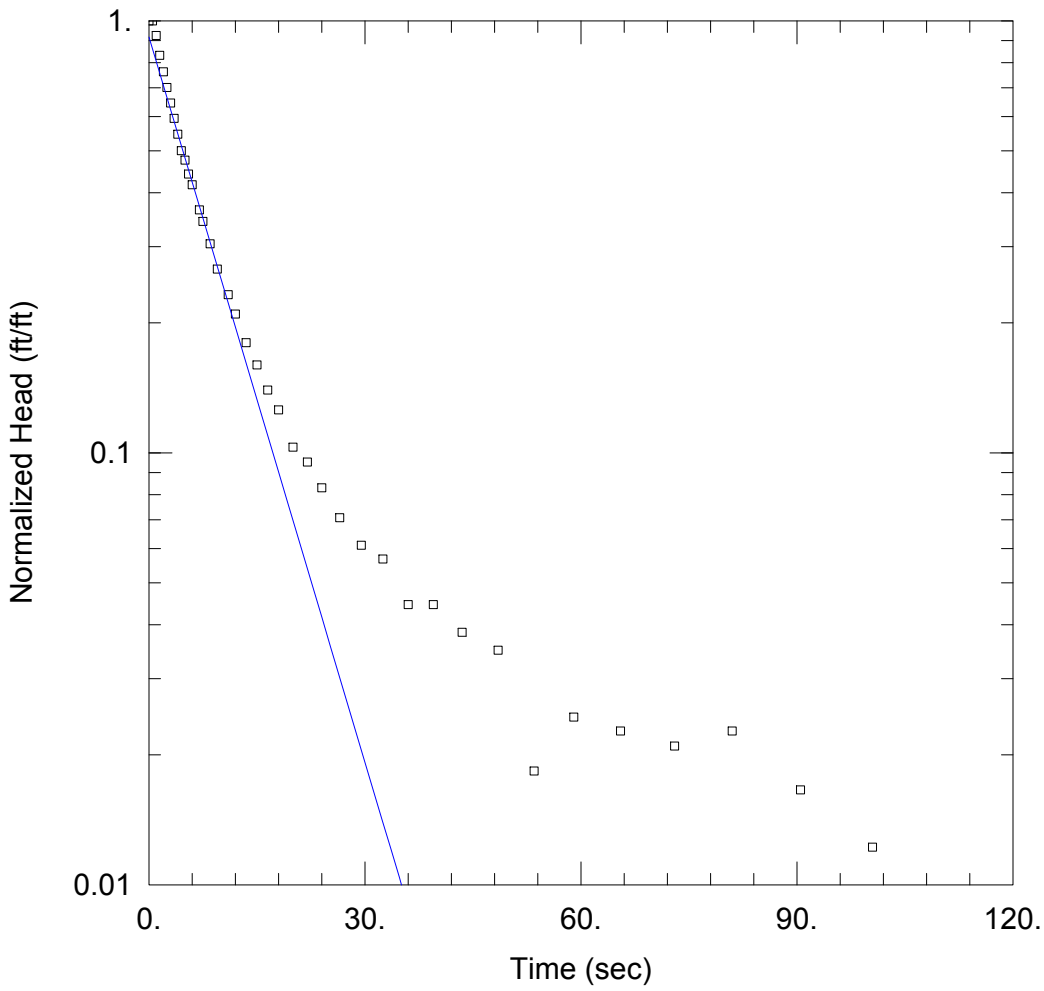
## WELL DATA (PZ-6S)

Initial Displacement: 1.665 ft
Static Water Column Height: 10.56 ft
Total Well Penetration Depth: 10.56 ft
Screen Length: 10.56 ft
Casing Radius: 0.083 ft
Well Radius: 0.3333 ft

ARCADIS

# PZ-14S Test 1

| Prepared By: | Prepared For: |
|---|---|
| ARCADIS | Tyco |
| Project: | Location: |
| WI0001519.0001 | Marinette |




## SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 0.0027 cm/sec  y0 = 1.05 ft

## AQUIFER DATA

Saturated Thickness: 14.4 ft

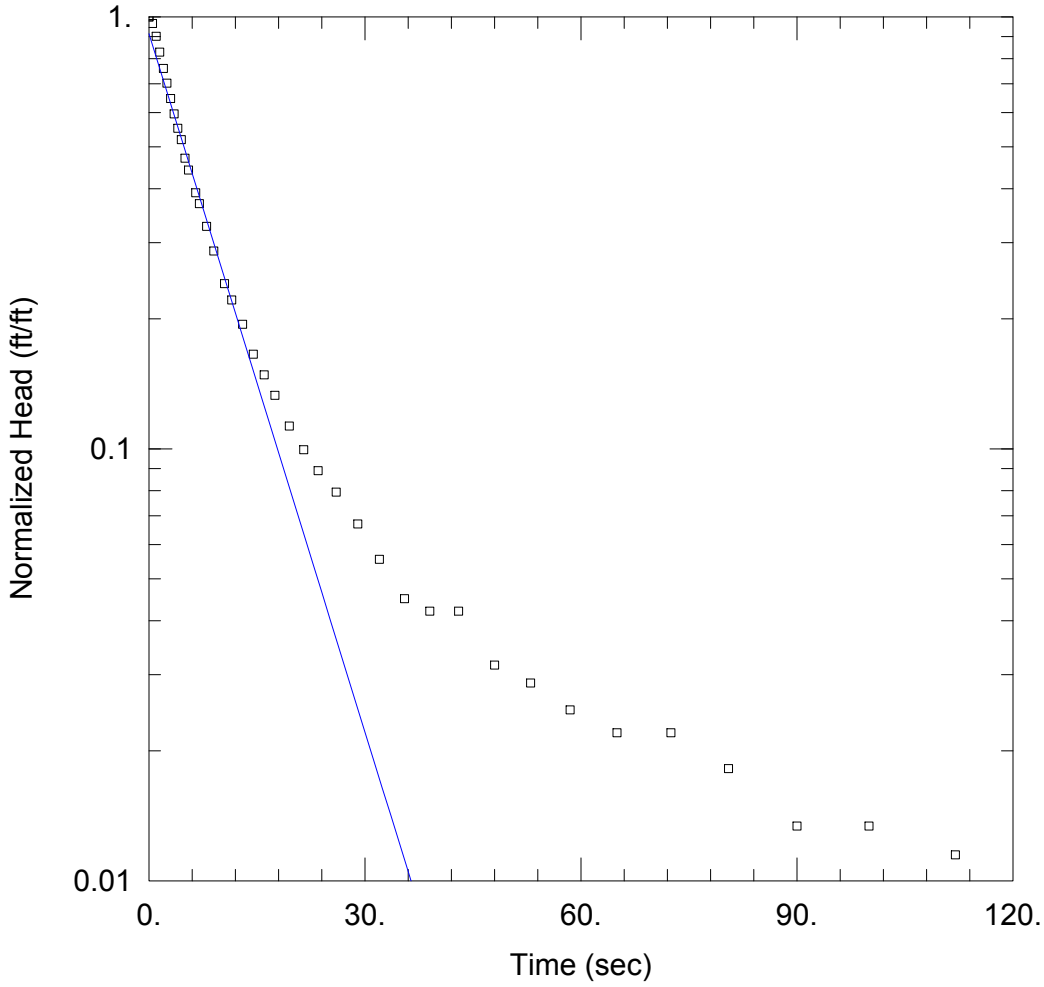
## WELL DATA (PZ-14S)

Initial Displacement: 1.145 ft
Static Water Column Height: 14.4 ft
Total Well Penetration Depth: 14.4 ft
Screen Length: 14.4 ft
Casing Radius: 0.083 ft
Well Radius: 0.3333 ft

ARCADIS

# PZ-14S Test 2

| Prepared By: | Prepared For: |
|---|---|
| ARCADIS | Tyco |
| Project: | Location: |
| WI0001519.0001 | Marinette |




## SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 0.0026 cm/sec  y0 = 0.955 ft

## AQUIFER DATA

Saturated Thickness: 14.4 ft

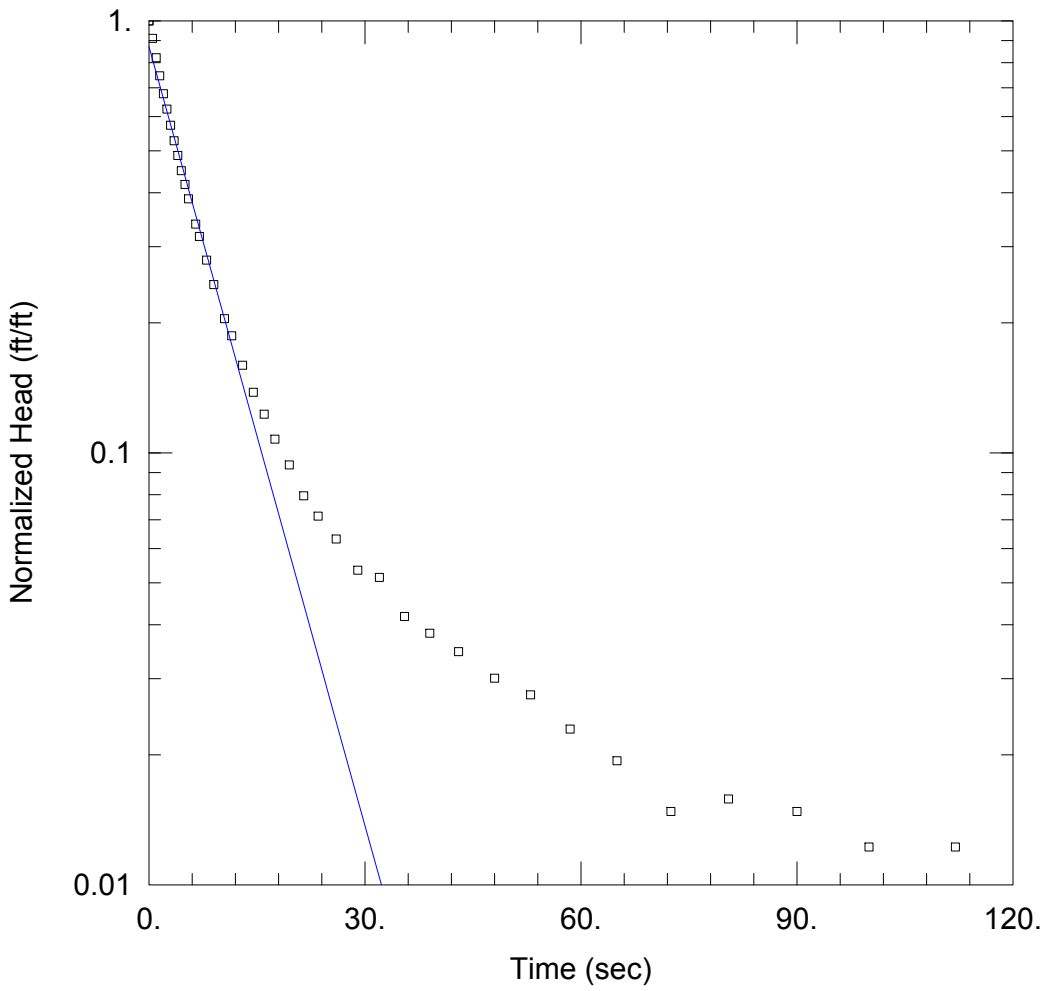
## WELL DATA (PZ-14S)

Initial Displacement: 1.045 ft
Static Water Column Height: 14.4 ft
Total Well Penetration Depth: 14.4 ft
Screen Length: 14.4 ft
Casing Radius: 0.083 ft
Well Radius: 0.3333 ft

ARCADIS

# PZ-14S Test 3

| Prepared By: | Prepared For: |
|---|---|
| ARCADIS | Tyco |
| Project: | Location: |
| WI0001519.0001 | Marinette |




## SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 0.0029 cm/sec  y0 = 1.71 ft

## AQUIFER DATA

Saturated Thickness: 14.4 ft

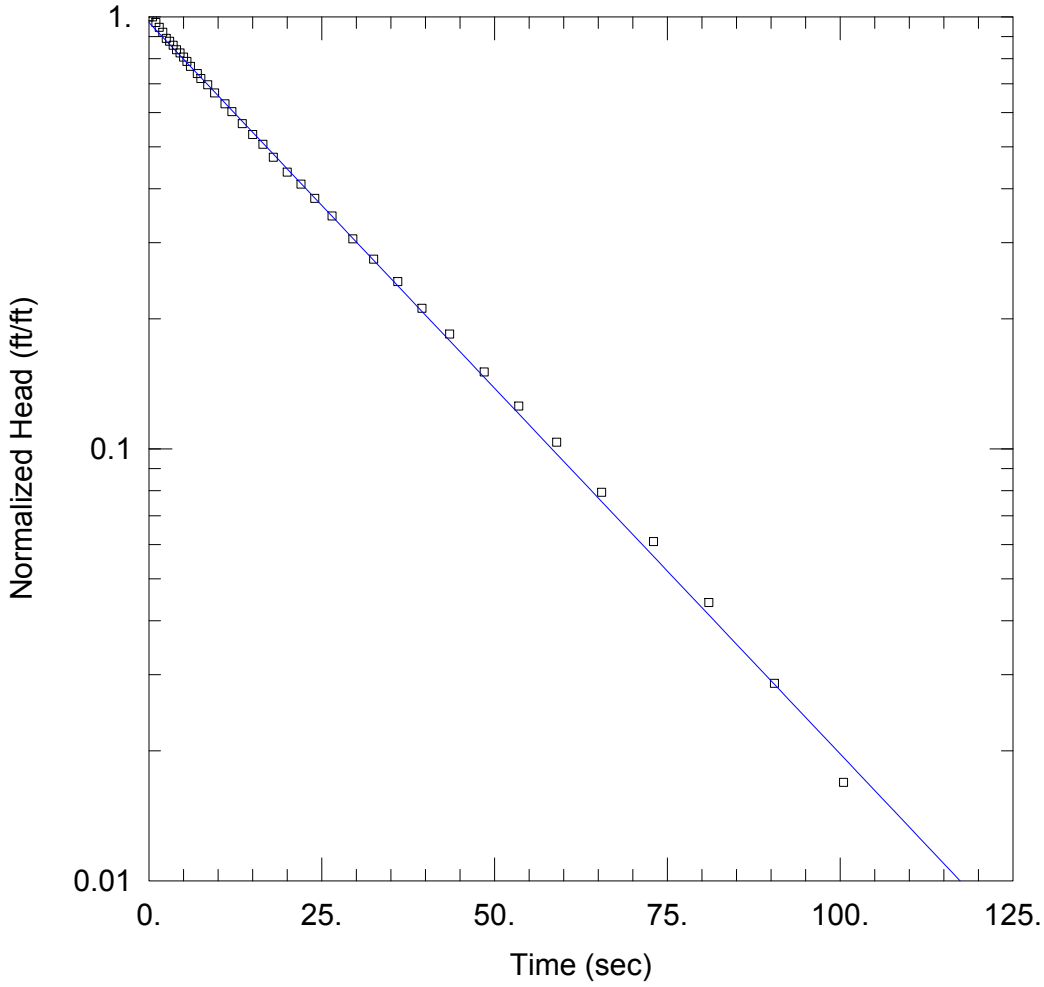
## WELL DATA (PZ-14S)

Initial Displacement: 1.962 ft
Static Water Column Height: 14.4 ft
Total Well Penetration Depth: 14.4 ft
Screen Length: 14.4 ft
Casing Radius: 0.083 ft
Well Radius: 0.3333 ft

ARCADIS

# PZ-22S Test 1

| Prepared By: | Prepared For: |
|---|---|
| ARCADIS | Tyco |
| Project: | Location: |
| WI0001519.0001 | Marinette |




## SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 0.0012 cm/sec  y0 = 1.32 ft

## AQUIFER DATA

Saturated Thickness: 12.14 ft

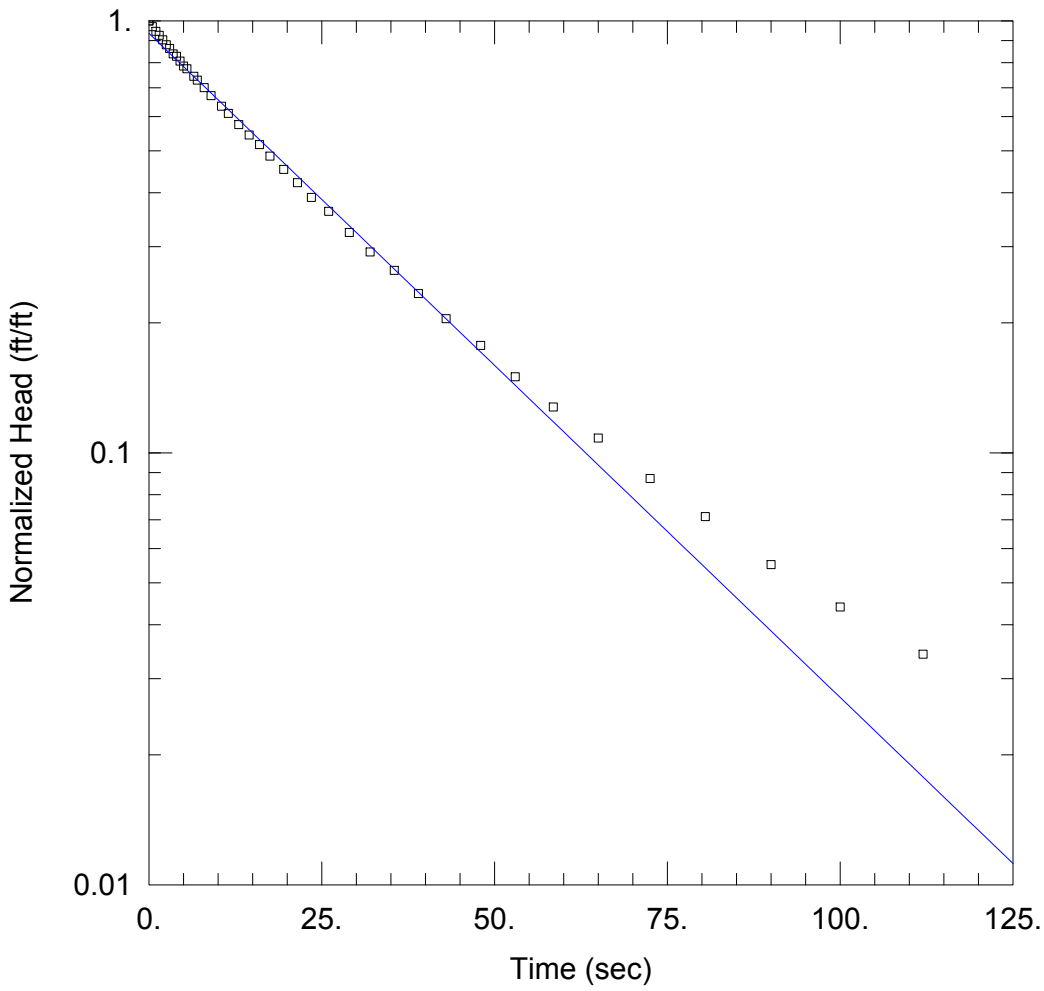
## WELL DATA (PZ-22S)

Initial Displacement: 1.361 ft
Static Water Column Height: 12.13 ft
Total Well Penetration Depth: 12.13 ft
Screen Length: 10. ft
Casing Radius: 0.083 ft
Well Radius: 0.3333 ft

ARCADIS

# PZ-22S Test 2

| Prepared By: | Prepared For: |
|---|---|
| ARCADIS | Tyco |
| Project: | Location: |
| WI0001519.0001 | Marinette |




## SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 0.001 cm/sec  y0 = 1.34 ft

## AQUIFER DATA

Saturated Thickness: 12.14 ft

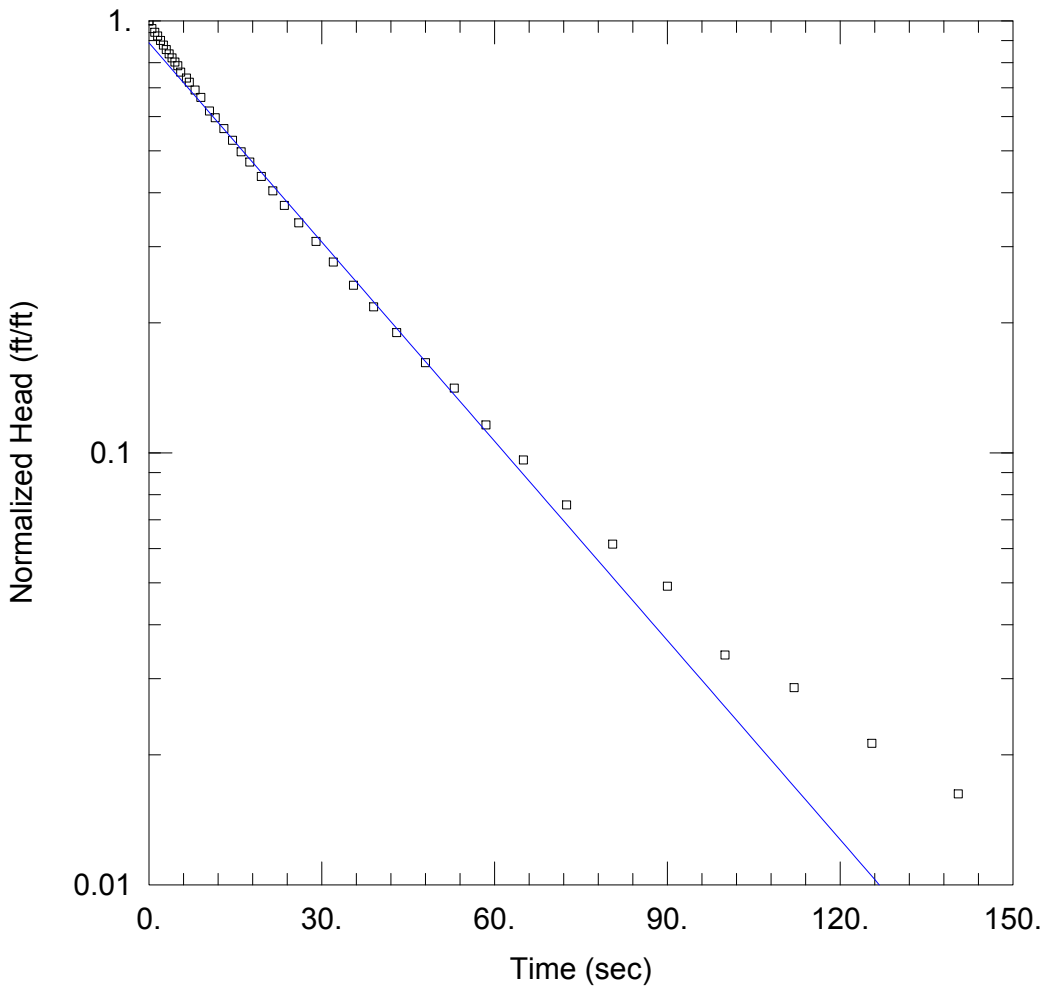
## WELL DATA (PZ-22S)

Initial Displacement: 1.433 ft
Static Water Column Height: 12.13 ft
Total Well Penetration Depth: 12.14 ft
Screen Length: 10. ft
Casing Radius: 0.083 ft
Well Radius: 0.3333 ft

ARCADIS

# PZ-22S Test 3

| Prepared By: | Prepared For: |
|---|---|
| ARCADIS | Tyco |
| Project: | Location: |
| WI0001519.0001 | Marinette |




## SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 0.001 cm/sec  y0 = 2.3 ft

## AQUIFER DATA

Saturated Thickness: 12.14 ft

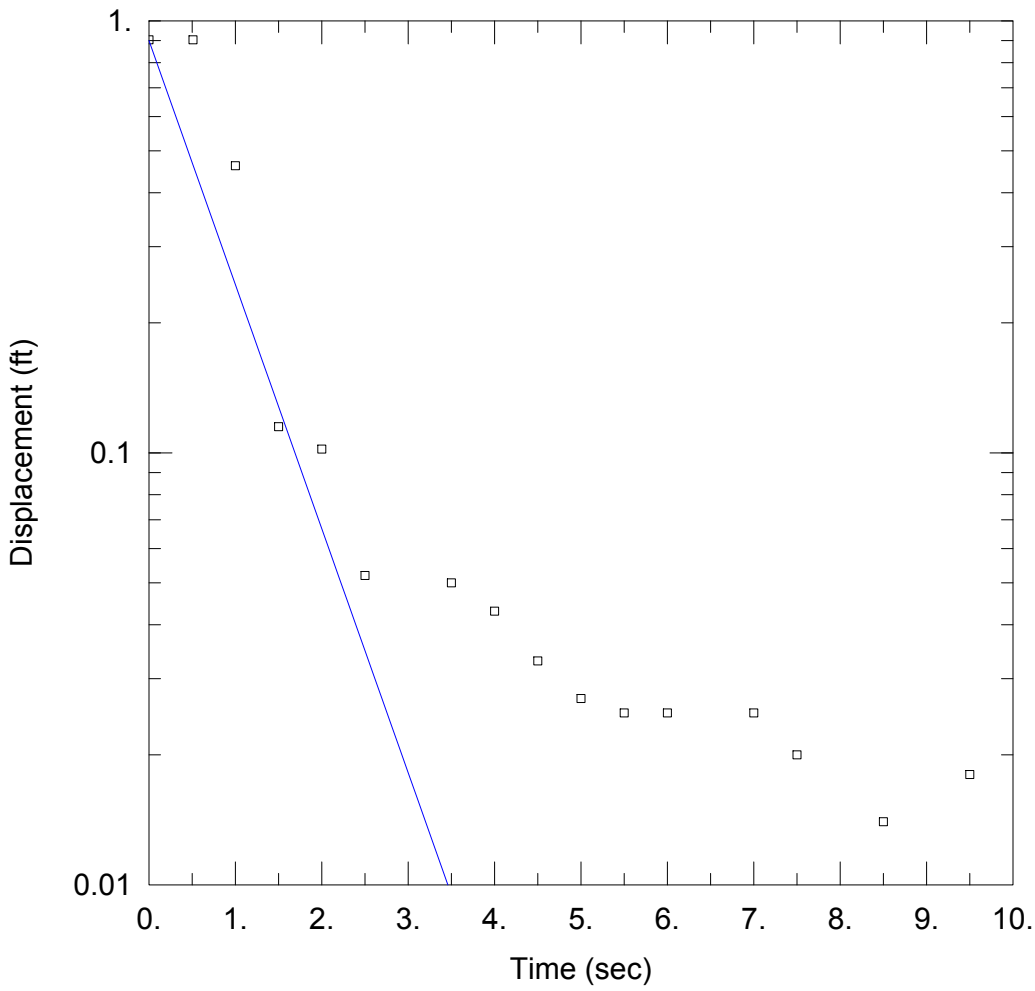
## WELL DATA (PZ-22S)

Initial Displacement: 2.586 ft
Static Water Column Height: 12.13 ft
Total Well Penetration Depth: 12.14 ft
Screen Length: 10. ft
Casing Radius: 0.083 ft
Well Radius: 0.3333 ft

ARCADIS

# MW-100-32 Slug In

| Prepared By: | Prepared For: |
|---|---|
| Arcadis | Tyco |
| Project: | Location: |
| WI001605.0009 | Marinette, WI |




## SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 0.1 cm/sec  y0 = 0.9 ft

## AQUIFER DATA

Saturated Thickness: 29.41 ft

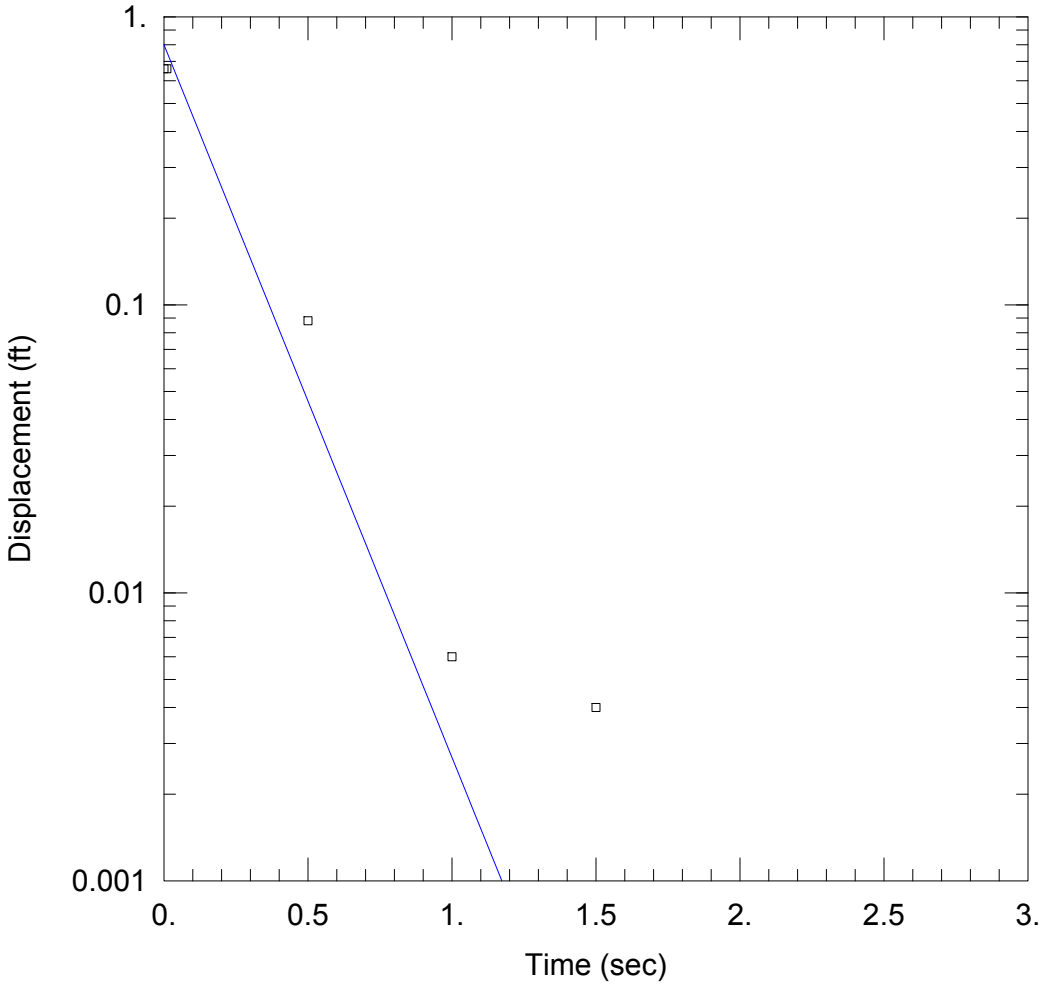
## WELL DATA (MW-100-32)

Initial Displacement: 0.904 ft
Static Water Column Height: 29.41 ft
Total Well Penetration Depth: 28.74 ft
Screen Length: 10. ft
Casing Radius: 0.083 ft
Well Radius: 0.333 ft

ARCADIS

# MW-100-32 Slug Out

| Prepared By: | Prepared For: |
|---|---|
| Arcadis | Tyco |
| Project: | Location: |
| WI001605.0009 | Marinette, WI |




## SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 0.6 cm/sec  y0 = 0.8 ft

## AQUIFER DATA

Saturated Thickness: 29.41 ft

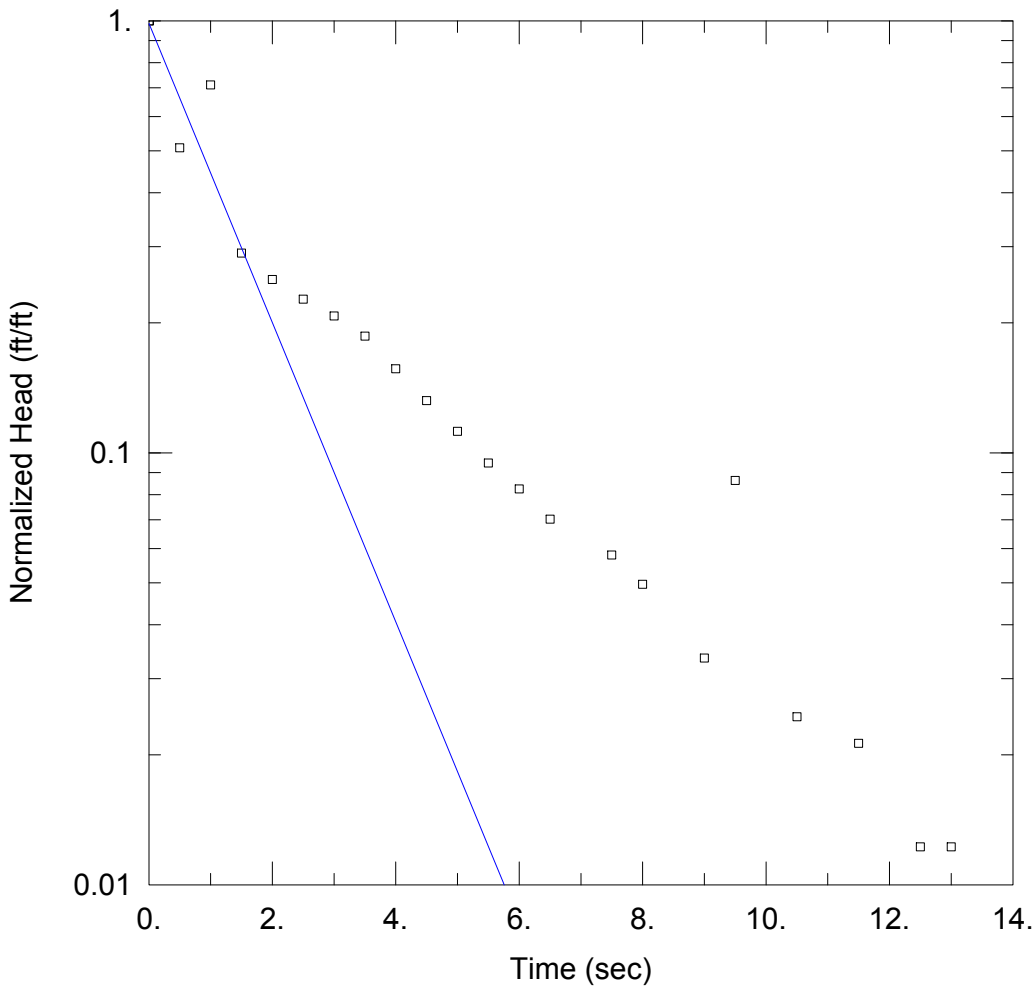
## WELL DATA (MW-100-32)

Initial Displacement: 0.66 ft
Static Water Column Height: 29.41 ft
Total Well Penetration Depth: 28.74 ft
Screen Length: 10. ft
Casing Radius: 0.083 ft
Well Radius: 0.333 ft

ARCADIS

# MW-100-68 Slug In

| Prepared By: | Prepared For: |
|---|---|
| Arcadis | Tyco |
| Project: | Location: |
| WI001605.0009 | Marinette, WI |




## SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 0.032 cm/sec  y0 = 1.53 ft

## AQUIFER DATA

Saturated Thickness: 65. ft

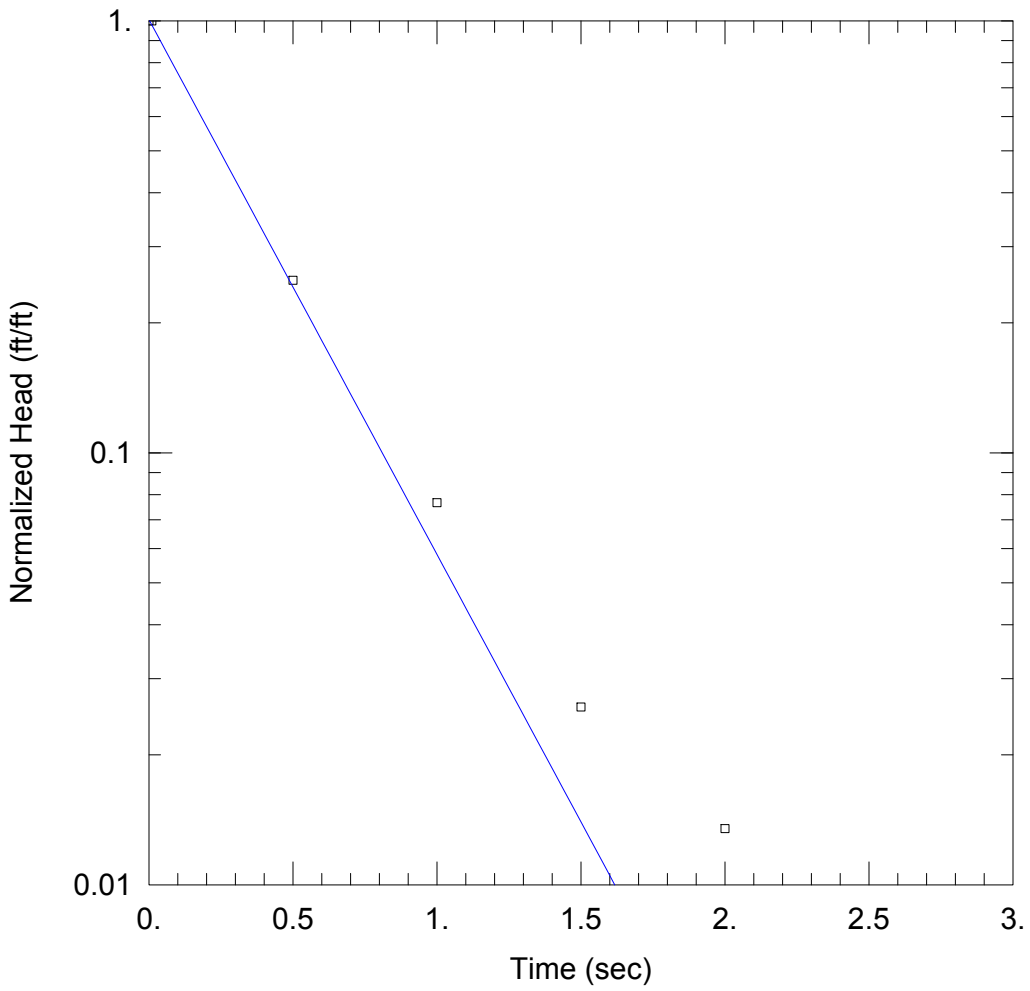
## WELL DATA (MW-100-68)

Initial Displacement: 1.552 ft
Static Water Column Height: 65.15 ft
Total Well Penetration Depth: 64.85 ft
Screen Length: 10. ft
Casing Radius: 0.083 ft
Well Radius: 0.333 ft

ARCADIS

# MW-100-68 Slug Out

| Prepared By: | Prepared For: |
|---|---|
| Arcadis | Tyco |
| Project: | Location: |
| WI001605.0009.00004 | Marinette, WI |




## SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 0.14 cm/sec  y0 = 1.25 ft

## AQUIFER DATA

Saturated Thickness: 65. ft

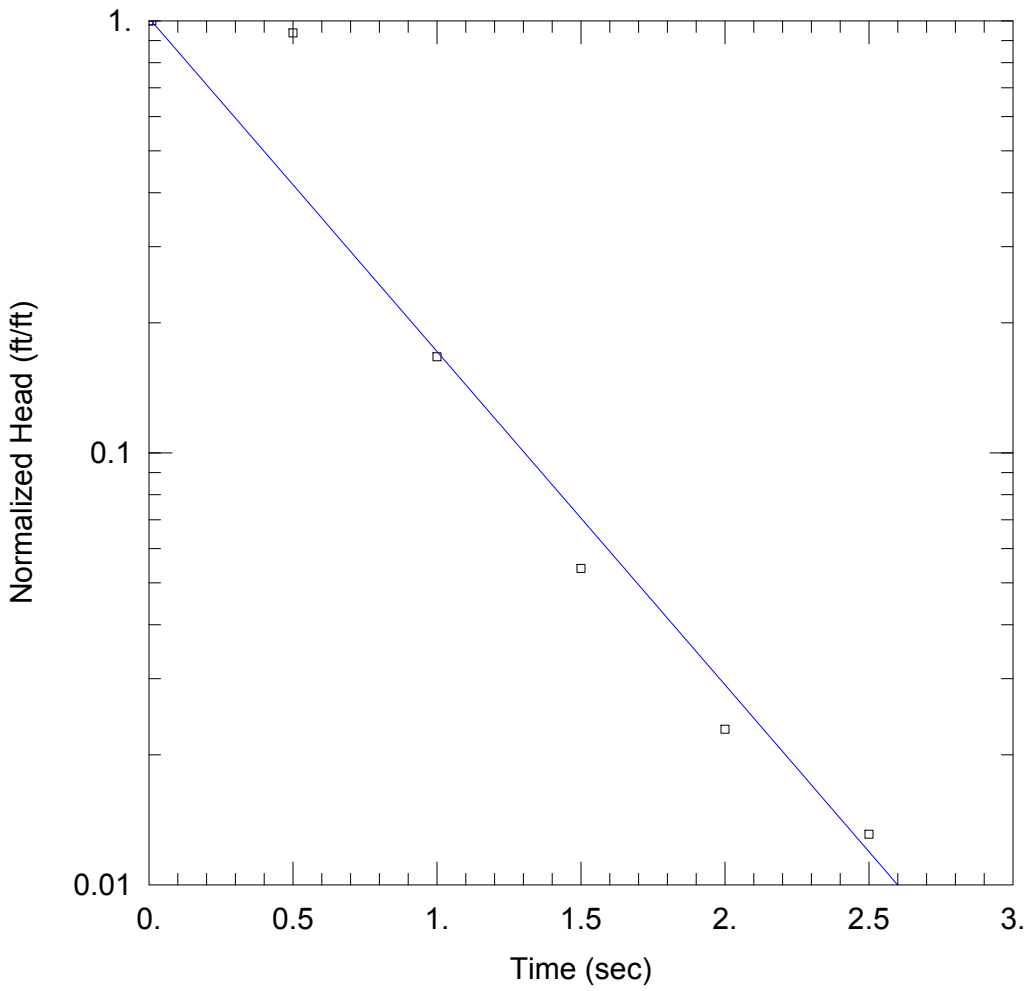
## WELL DATA (MW-100-68)

Initial Displacement: 1.242 ft
Static Water Column Height: 65.15 ft
Total Well Penetration Depth: 64.85 ft
Screen Length: 10. ft
Casing Radius: 0.083 ft
Well Radius: 0.333 ft

ARCADIS

# MW-101-16 Slug Out

| Prepared By: | Prepared For: |
|---|---|
| Arcadis | Tyco |
| Project: | Location: |
| WI001605.0009 | Marinette, WI |




## SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 0.13 cm/sec  y0 = 0.62 ft

## AQUIFER DATA

Saturated Thickness: 10. ft

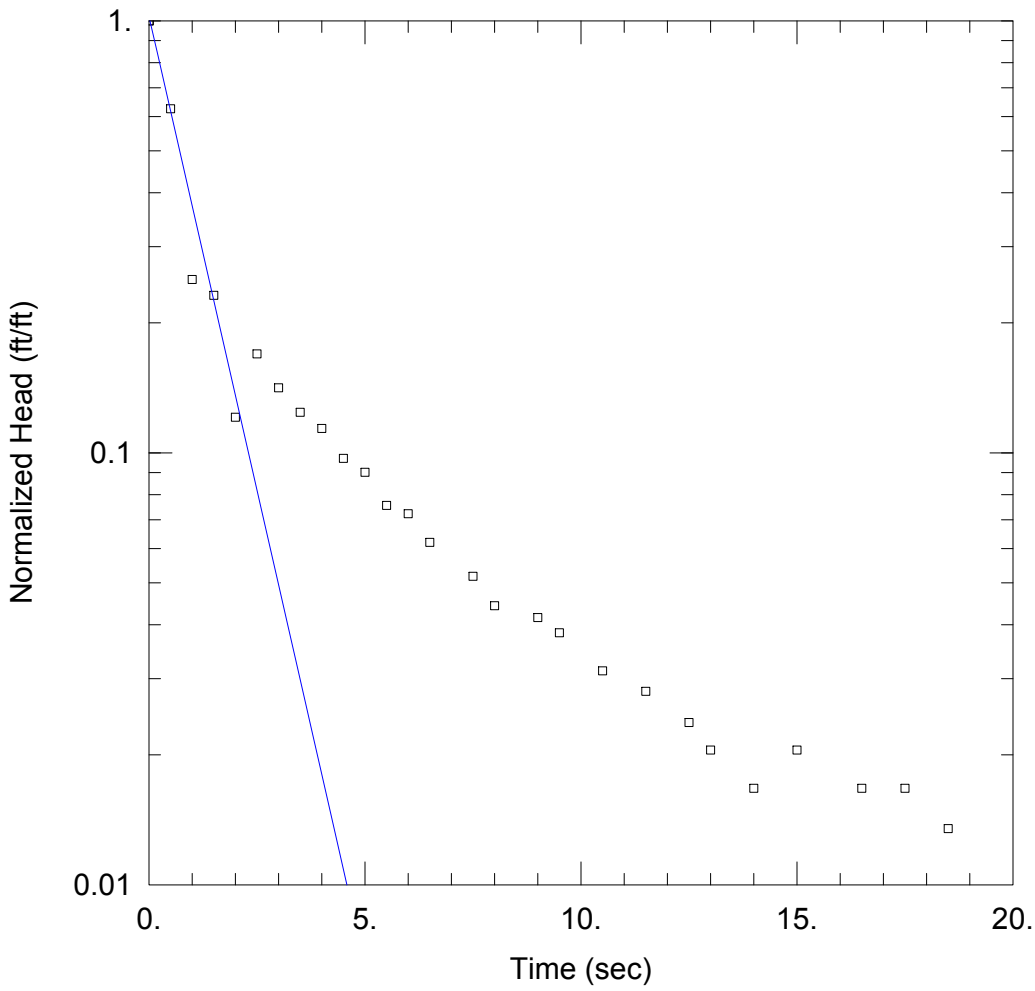
## WELL DATA (MW-101-16)

Initial Displacement: 0.611 ft
Static Water Column Height: 10.82 ft
Total Well Penetration Depth: 10.6 ft
Screen Length: 10. ft
Casing Radius: 0.08333 ft
Well Radius: 0.333 ft

ARCADIS

# MW-101-72 Slug In

| Prepared By: | Prepared For: |
|---|---|
| Arcadis | Tyco |
| Project: | Location: |
| WI001605.0009 | Marinette, WI |




## SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 0.034 cm/sec  y0 = 1.9 ft

## AQUIFER DATA

Saturated Thickness: 67. ft

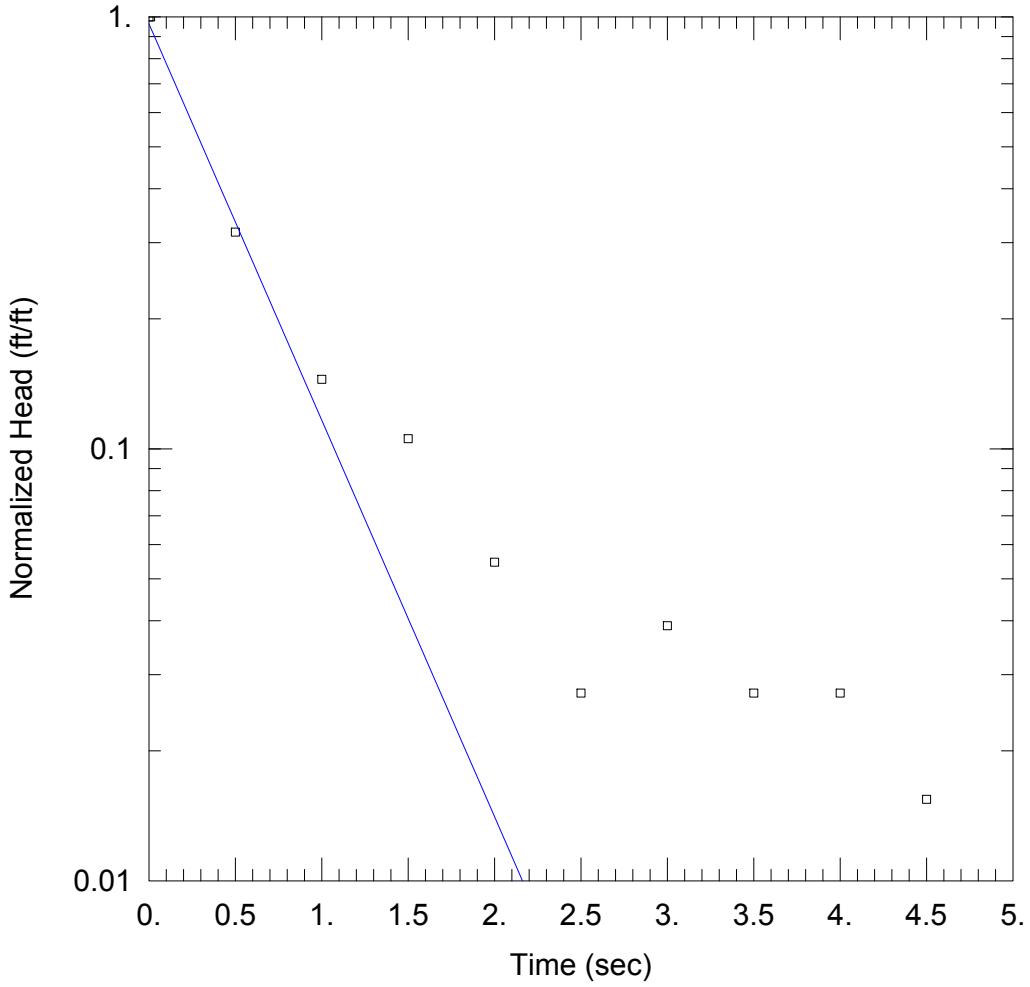
## WELL DATA (MW-101-72)

Initial Displacement: 1.853 ft
Static Water Column Height: 67.31 ft
Total Well Penetration Depth: 67.02 ft
Screen Length: 10. ft
Casing Radius: 0.0833 ft
Well Radius: 0.33 ft

ARCADIS

# MW-101-72 Slug Out

| Prepared By: | Prepared For: |
|---|---|
| Arcadis | Tyco |
| Project: | Location: |
| WI001605.0009 | Marinette, WI |




## SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 0.27 cm/sec  y0 = 0.47 ft

## AQUIFER DATA

Saturated Thickness: 67. ft

## WELL DATA (MW-101-72)

Initial Displacement: 0.488 ft
Static Water Column Height: 67.31 ft
Total Well Penetration Depth: 67.02 ft
Screen Length: 10. ft
Casing Radius: 0.0833 ft
Well Radius: 0.33 ft

ARCADIS

# APPENDIX G

## Hydraulic Profiling Tool Report

# High Resolution Site Characterization Report – Hydraulic Profiling Tool

**Client: Arcadis**

**Project Name: Tyco**

**Location: Marinette, WI**


**Prepared by:**

**Dakota Technologies Company, LLC**

**11253 91st Avenue N.**

**Maple Grove, Minnesota 55369**

**763.424.4803**


**August 30, 2016**

**Project Number: 0200.16**

# TABLE OF CONTENTS

**1.0 HYDRAULIC PROFILING TOOL (HPT) SYSTEM DESCRIPTION..... 1**

**2.0 ELECTRICAL CONDUCTIVITY (EC) DESCRIPTION..... 3**

**3.0 DISCUSSION AND COMMENTS..... 4**

**4.0 LIMITATIONS..... 5**

**5.0 REFERENCES..... 6**

**APPENDICES**

Appendix A HPT Field Summary Log
Appendix B HPT Logs
Appendix C HPT Reference Log

## 1.0 HYDRAULIC PROFILING TOOL (HPT) SYSTEM DESCRIPTION

The Hydraulic Profiling Tool (HPT) is a logging tool that measures the pressure required to inject a flow of water into the soil as the probe is advanced into the subsurface. The injection pressure log is an excellent indicator of formation permeability. In addition to measurement of injection pressure, the HPT can also be used to measure hydrostatic pressure under the zero flow condition. This allows the development of a hydrostatic pressure graph for the log and prediction of the position of the water table.

The probe is advanced into the ground at a rate of approximately 2 cm/sec. The pump in the HPT flow module draws water from the supply tank and pumps water down the trunk line at a constant flow rate (250-mL/min). An inline flow meter measures the flow rate. The downhole pressure sensor monitors the pressure generated by injecting water into the formation matrix. The HPT probe also includes a Wenner type array for measurement of soil electrical conductivity (EC) as the probe is advanced to depth. The HPT log provides graphs of the electrical conductance, HPT pressure and flow rate versus depth.

Prior to running an HPT log, quality assurance (QA) tests are run on the Wenner array and pressure sensor. The results of the QA tests are saved in an information file for later review and reporting. The Wenner array electrodes are placed on a test jig and the test load is used to verify the electrical continuity and isolation of the EC system. Next, a reference test is performed on the pressure sensor. This is accomplished by submerging the HPT probe a specified depth below the water level in a reference tube. A two-step test enables the operator to verify that the pressure sensor is providing the correct measurement for a defined length of water column. If the result is more than +/-10% out of range, the transducer fails the QA test. At completion of the field boring, another QA test is performed to verify proper probe performance during the logging event.

The HPT pressure log reveals observed pressure depending on the characteristics of the soil or sediment penetrated. It is apparent that higher pressure resulting from the injection of water into a sediment at a given flow rate indicates lower permeability and conversely, that lower pressure from injection of water at a given flow rate indicates higher permeability. This simple relationship allows you to evaluate changes in relative permeability of soils and sediments in an HPT log by reviewing the pressure versus depth log. High EC readings in general correlate with high pressure readings and conversely low EC readings usually correlate with low pressure readings. However, pressure plots frequently reveal hydraulic behavior of the soil not observed by the EC, and the EC may display responses associated with minerology and chemical conductance not observed by the pressure plot. Another important feature of the HPT pressure log is the increase in hydrostatic pressure as the probe is advanced below the water table. The increase in hydrostatic pressure results in a “rising baseline” on the pressure log. To obtain a quantitative determination of the local static water level a pressure dissipation test must be performed during the

logging operation. To perform the dissipation test the advancement of the probe is halted and the operator starts a time log. Water flow is turned off to observe and record the dissipation of the HPT pressure versus time, until pressure stabilizes. The stabilized pressure is the absolute hydrostatic pressure at the depth of the test. Knowing the depth of the test, the absolute hydrostatic pressure and the atmospheric pressure the static water level may be calculated. Multiple dissipation tests may be performed at different depths during a single log to evaluate variations in piezometric head with depth and local vertical gradients in the aquifer.

Dissipation test data can be used in conjunction with the pressure and flow logs to estimate hydraulic conductivity (K) for the entire log after logging is completed. From Darcy's Law, K is proportional to the flow rate (Q) divided by the pressure (P) required to induce that flow rate in the given sediment or soil. The raw HPT pressure provided by the HPT log is the total pressure observed at the depth where the water is injected. This total pressure includes the ambient atmospheric pressure at the time of the log, the local hydrostatic pressure and the pressure required to inject the fluid into the formation:

$$P\ (total) = P\ (atm) + P\ (hydro) + P\ (inj)$$

As discussed above, the atmospheric pressure is determined from the pre and post log response tests and the hydrostatic pressure is defined by one or more dissipation tests obtained as the log is produced. The actual injection pressure [Pinj = Ptotal – (Phydro + Patm)] that was required to inject the water into the formation is calculated for each depth increment of the log. The actual injection pressure (Pinj) and the measured flow rate (Q) are then used to model an estimated K value for each depth increment of the HPT log (Geoprobe 2010b).

## 2.0 ELECTRICAL CONDUCTIVITY (EC) DESCRIPTION

Electrical Conductivity (EC) is a measure of the soil's ability to conduct an electrical current using the Wenner array of the HPT/EC probe. Conductivity is the reciprocal of electrical resistivity and has the units (in our application) of millisiemens per meter (mS/m). Since soil is in the pathway of the charge flow, the grain size can be determined by comparing the EC log to a soil boring. Conductivity readings in the 100s indicate smaller grain (such as clay). Larger grain size (sand and gravels) are typically in the 10s of mS/m range. Prior to every log, the Wenner array of the HPT probe is checked for proper operation by performing a conductivity test with a Wenner array test jig. The probe is put through a check of isolation and continuity.

## 3.0 DISCUSSION AND COMMENTS

Dakota Technologies Company, LLC (Dakota) pushed a total of twenty two HPT logs to depths ranging from 27.9 to 55.5 feet below ground surface (bgs).

Dissipation tests were attempted at each location for the purpose of calculating static water levels. The calculated estimated K values assume accurate static water level data points.

The transducer passed all QA testing for each log with the exception of SB-34 (HPT.06) where the probe string was snapped off which prevented acquisition of post-log data. The HPT system utilizes a transducer that produces pressure readings between 0 and 110 psi. The pressure data graph is set at 120 psi to capture all HPT readings, with a flat line at 110 psi resulting when the transducer maximum is reached (representing soil of small grain size, such as clay).

Electrical conductivity (EC) data was collected simultaneously at each HPT location. The EC was tested before and after each HPT log was performed and passed all QA checks in the normal manner with the exception of SB-34 (HPT-06) as previously noted. The HPT pressure plots did reveal several zones (see summary) that are less permeable to water. These high-pressure zones, recorded on the field summary log, were generally not distinguishable by the electrical conductivity.

## 4.0 LIMITATIONS

The analysis and opinions expressed in this report are based upon data obtained from the specific test locations and from other information discussed in this report. Exceptions, if any, are discussed in the accompanying comments section of this report. This report is prepared for the exclusive use of our client for specific application to the project discussed and has been prepared in accordance with generally accepted practices. Reported results shall not be reproduced, except in full, without written approval of Dakota. No warranties, expressed or implied are intended or made.

## 5.0 REFERENCES

*Geoprobe 2006a. Hydrostratigraphic Characterization Using the Hydraulic Profiling Tool (HPT), Tech Bul. No. MK3099, Kejr Inc., Salina, KS*; April 2006.

*Geoprobe, 2007. Geoprobe Hydraulic Profiling Tool (HPT) System, Standard Operating System Procedure, Tech. Bul. No. MK3137, Kejr Inc., Salina, KS*; March 2007.

*Geoprobe, 2010b. Tech Guide for Calculation of Estimated Hydraulic Conductivity (Est. K) Log from HPT Data, Kejr Inc. Salina, KS;* November 2010.

*McCall, Wesley and Thomas Christy, 2010. Development of a Hydraulic Conductivity Estimate for the Hydraulic Profiling Tool (HPT): Abstract and Presentation;* The 2010 North American Environmental Field Conference & Exposition, The Nielsen Environmental Field School, Las Cruces, NM; January 2010.

# Appendix A

# HPT Field Summary Log

# HPT Field Summary Log

Tyco

Marinette, WI.

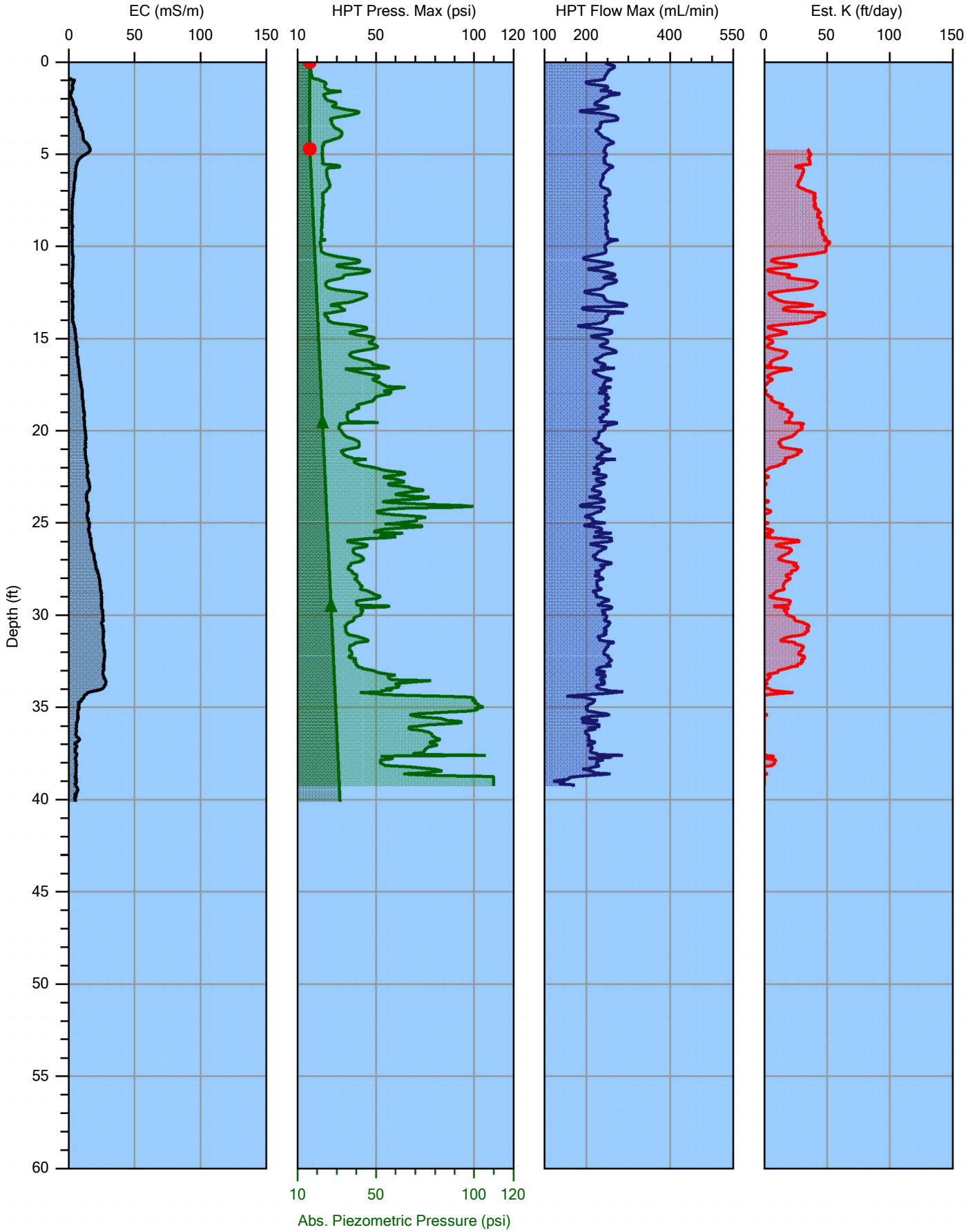
| File Log ID | Date | Total Depth *(ft)* | Preprobed Depth *(ft)* | QA/QC (*pass / fail*) EC Results Pre-Log pass / fail | EC Results Post-Log pass / fail | Transducer Results Pre-Log pass / fail | Transducer Results Post-Log pass / fail | Static Water Level *based on dissipation* *(ft)* | Dissipation Test Depth *(ft)* | Dissipation Test Stable? *yes / no* | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| SB-26 (HPT.04) | 08/16/16 | 39.25 | 0 | pass | pass | pass | pass | 4.8 | 19.6, 29.6 | Y, Y | no comments |
| SB-27 (HPT.03) | 08/16/16 | 41.00 | 0 | pass | pass | pass | pass | 5.5 | 10 | Y | no comments |
| SB-28 (HPT.02) | 08/15/16 | 38.65 | 0 | pass | pass | pass | pass | 4.3 | 14 | Y | no comments |
| SB-29 (HPT.01) | 08/15/16 | 34.65 | 0 | pass | pass | pass | pass | 6.5 | 11, 34.65 | Y, Y | Refusal encountered at appx 34.5' |
| SB-30 (HPT.16) | 08/18/16 | 41.90 | 0 | pass | pass | pass | pass | 4.2 | 14 | Y | no comments |
| SB-31 (HPT.13) | 08/17/16 | 55.50 | 0 | pass | pass | pass | pass | 4.1 | 14 | Y | no comments |
| SB-32 (HPT.12) | 08/17/16 | 47.40 | 0 | pass | pass | pass | pass | 6.8 | 14 | Y | no comments |
| SB-33 (HPT.11) | 08/17/16 | 27.90 | 0 | pass | pass | pass | pass | 15.7 | 17 | Y | no comments |
| SB-33A (HPT.11A) | 08/17/16 | 28.10 | 0 | pass | pass | pass | pass | 16.1 | 18 | Y | This is HPT-11A. Offset appx 8' south of HPT-11. |
| SB-34 (HPT.06) | 08/16/16 | 45.75 | 0 | pass | fail | pass | fail | 12.5 | 20 | Y | Snapped off probe. |
| SB-35 (HPT.05) | 08/16/16 | 54.25 | 0 | pass | pass | pass | pass | 2.9 | 9.55, 54.2 | Y | Added 4 rods to accommodate request of 60' capability. |
| SB-36 (HPT.15) | 08/18/16 | 31.00 | 0 | pass | pass | pass | pass | 5.6 | 11.2, 25.75 | Y | no comments |
| SB-37 (HPT.14) | 08/18/16 | 36.75 | 0 | pass | pass | pass | pass | 8.4 | 12 | Y | no comments |
| SB-38 (HPT.21) | 08/18/16 | 31.90 | 0 | pass | pass | pass | pass | 9.9 | 14 | Y | no comments |
| SB-39 (HPT.17) | 08/18/16 | 52.10 | 0 | pass | pass | pass | pass | 7.5 | 10 | Y | no comments |
| SB-40 (HPT.18) | 08/18/16 | 39.00 | 0 | pass | pass | pass | pass | 6.2 | 13.15, 25.8 | Y | no comments |
| SB-41 (HPT.19) | 08/18/16 | 38.85 | 0 | pass | pass | pass | pass | 6.7 | 14 | Y | no comments |
| SB-42 (HPT.20) | 08/18/16 | 51.20 | 0 | pass | pass | pass | pass | 4.9 | 10 | Y | no comments |
| SB-43 (HPT.08) | 08/17/16 | 33.20 | 0 | pass | pass | pass | pass | 5.5 | 14 | Y | no comments |
| SB-44 (HPT.09) | 08/17/16 | 38.05 | 0 | pass | pass | pass | pass | 3.8 | 10 | Y | no comments |
| SB-45 (HPT.07) | 08/17/16 | 29.25 | 0 | pass | pass | pass | pass | 4.6 | 12 | Y | no comments |
| SB-46 (HPT.10) | 08/17/16 | 37.65 | 0 | pass | pass | pass | pass | 3.9 | 12 | Y | Hard pushing/slow RoP @ 24'-27'. |
| | Total Depth | 873.30 | | | | | | | | | |

(1) Reported static water level data below typical level of certainty where footnoted

DAKOTA TECHNOLOGIES

# Appendix B

# HPT Logs




| | | | |
|---|---|---|---|
| | | | File: HPT-04.HPT |
| Company: Dakota Technologies | | Operator: Darin Slusher | Date: 8/16/2016 |
| Project ID: 200.16 | | Client: Arcadis | Location: |

DAKOTA TECHNOLOGIES
www.DakotaTechnologies.com

HPT-04.zip

SITE INFORMATION -- DIRECT IMAGE HPT PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.7  Build: 16064

Pre-Log EC Load Tests (Post-Log From HPT-03a.zip)

| Test | Target (mS/m) | Actual (mS/m) | % Diff | P/F |
|---|---|---|---|---|
| Test 1 | 195.0 | 187.5 | 3.9 | PASS |
| Test 2 | 97.0 | 94.3 | 2.7 | PASS |
| Test 3 | 24.0 | 24.0 | 0.0 | PASS |

COMPANY: Dakota Technologies
OPERATOR: Darin Slusher
PROJECT ID: 200.16
CLIENT: Arcadis
UNITS: ENGLISH
PROBE AND ARRAY: K6050 HPT Probe with Wenner
LOCATION: Marinette, WI
100 INCH STRING POT USED
ROD LENGTH: 4 feet

PRE-LOG HPT REFERENCE TEST VALUES (Post-Log From HPT-03a.zip)

PRE TEST TIME: Tue Aug 16 2016 12:07:19

| TEST | HPT PRESSURE (psi) | FLOW (mL/min) | HPT PRESSURE (kPa) |
|---|---|---|---|
| TOP with FLOW=0 | 16.708 | 0.0 | 115.190 |
| TOP with FLOW>0 | 16.979 | 241.3 | 117.060 |
| BOTTOM with FLOW=0 | 16.500 | 0.0 | 113.760 |
| BOTTOM with FLOW>0 | 16.770 | 242.1 | 115.620 |

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
  ACTUAL FLOW=0 HPT DIFF.: 0.21 psi (1.4 kPa)

TRANSDUCER TEST PASSED

HPT IDEAL COEFFS:  2.2696e1,-2.2356
HPT SENSOR CAL NUMBERS: XD2266A,0.0000,0.0000,0.0000,0.0000,1.0000,0.0000
LOG START TIME: Tue Aug 16 2016 12:10:43

LOG END DEPTH: 39.25 ft (11.963 m)
LOG END TIME: Tue Aug 16 2016 13:02:52

LATITUDE: 0.000000000
LONGITUDE: 0.000000000
ELEVATION: 0.000 METERS  0.00 FEET
GPS Quality: None

POST-LOG HPT REFERENCE TEST VALUES

POST TEST TIME: Tue Aug 16 2016 13:13:39

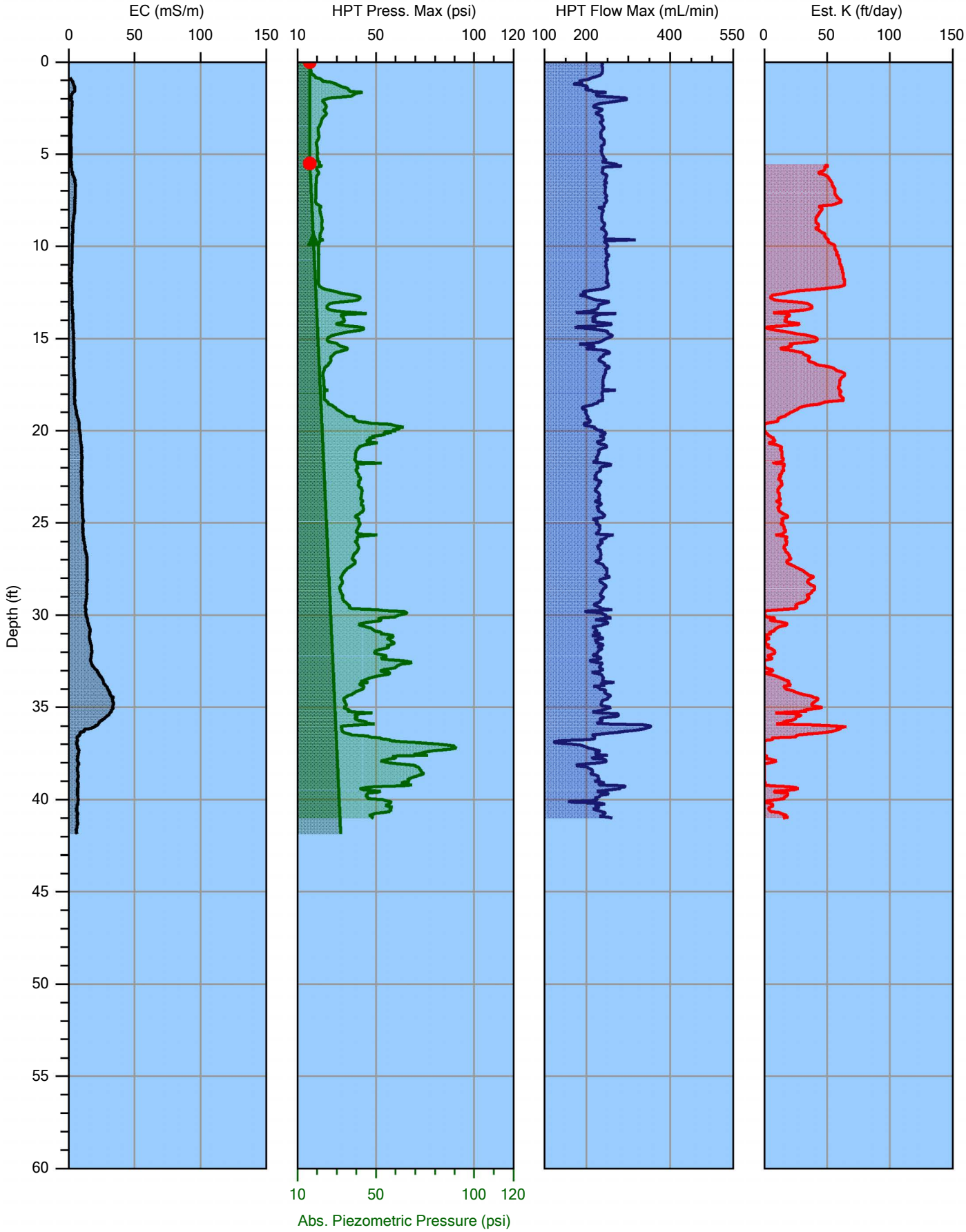
| TEST | HPT PRESSURE (psi) | FLOW (mL/min) | HPT PRESSURE (kPa) |
|---|---|---|---|
| TOP with FLOW=0 | 16.717 | 0.0 | 115.260 |
| TOP with FLOW>0 | 16.986 | 241.1 | 117.120 |
| BOTTOM with FLOW=0 | 16.504 | 0.0 | 113.790 |
| BOTTOM with FLOW>0 | 16.776 | 240.7 | 115.670 |

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
ACTUAL FLOW=0 HPT DIFF.: 0.21 psi (1.5 kPa)

TRANSDUCER TEST PASSED

Post-Log EC Load Tests

| Test | Target (mS/m) | Actual (mS/m) | % Diff | P/F |
|---|---|---|---|---|
| Test 1 | 195.0 | 187.0 | 4.1 | PASS |
| Test 2 | 97.0 | 94.2 | 2.9 | PASS |
| Test 3 | 24.0 | 24.0 | 0.0 | PASS |




| | | | |
|---|---|---|---|
| | | | File: HPT-03A.HPT |
| Company: Dakota Technologies | | Operator: Darin Slusher | Date: 8/16/2016 |
| Project ID: 200.16 | | Client: Arcadis | Location: |

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www.DakotaTechnologies.com

HPT-03a.zip

SITE INFORMATION -- DIRECT IMAGE HPT PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.7  Build: 16064

Pre-Log EC Load Tests

| Test | Target (mS/m) | Actual (mS/m) | % Diff | P/F |
|---|---|---|---|---|
| Test 1 | 195.0 | 187.0 | 4.1 | PASS |
| Test 2 | 97.0 | 94.1 | 3.0 | PASS |
| Test 3 | 24.0 | 24.0 | 0.1 | PASS |

COMPANY: Dakota Technologies
OPERATOR: Darin Slusher
PROJECT ID: 200.16
CLIENT: Arcadis
UNITS: ENGLISH
PROBE AND ARRAY: K6050 HPT Probe with Wenner
LOCATION: Marinette, WI
100 INCH STRING POT USED
ROD LENGTH: 4 feet

PRE-LOG HPT REFERENCE TEST VALUES

PRE TEST TIME: Tue Aug 16 2016 11:23:42

| TEST | HPT PRESSURE (psi) | FLOW (mL/min) | HPT PRESSURE (kPa) |
|---|---|---|---|
| TOP with FLOW=0 | 16.696 | 0.0 | 115.110 |
| TOP with FLOW>0 | 17.023 | 234.3 | 117.370 |
| BOTTOM with FLOW=0 | 16.492 | 0.0 | 113.710 |
| BOTTOM with FLOW>0 | 16.816 | 235.5 | 115.940 |

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
  ACTUAL FLOW=0 HPT DIFF.: 0.20 psi (1.4 kPa)

TRANSDUCER TEST PASSED

HPT IDEAL COEFFS:  2.2696e1,-2.2356
HPT SENSOR CAL NUMBERS: XD2266A,0.0000,0.0000,0.0000,0.0000,1.0000,0.0000
LOG START TIME: Tue Aug 16 2016 11:25:20

LOG END DEPTH: 41.00 ft (12.497 m)
LOG END TIME: Tue Aug 16 2016 11:54:32

LATITUDE: 0.000000000
LONGITUDE: 0.000000000
ELEVATION: 0.000 METERS  0.00 FEET
GPS Quality: None

POST-LOG HPT REFERENCE TEST VALUES

POST TEST TIME: Tue Aug 16 2016 12:07:19

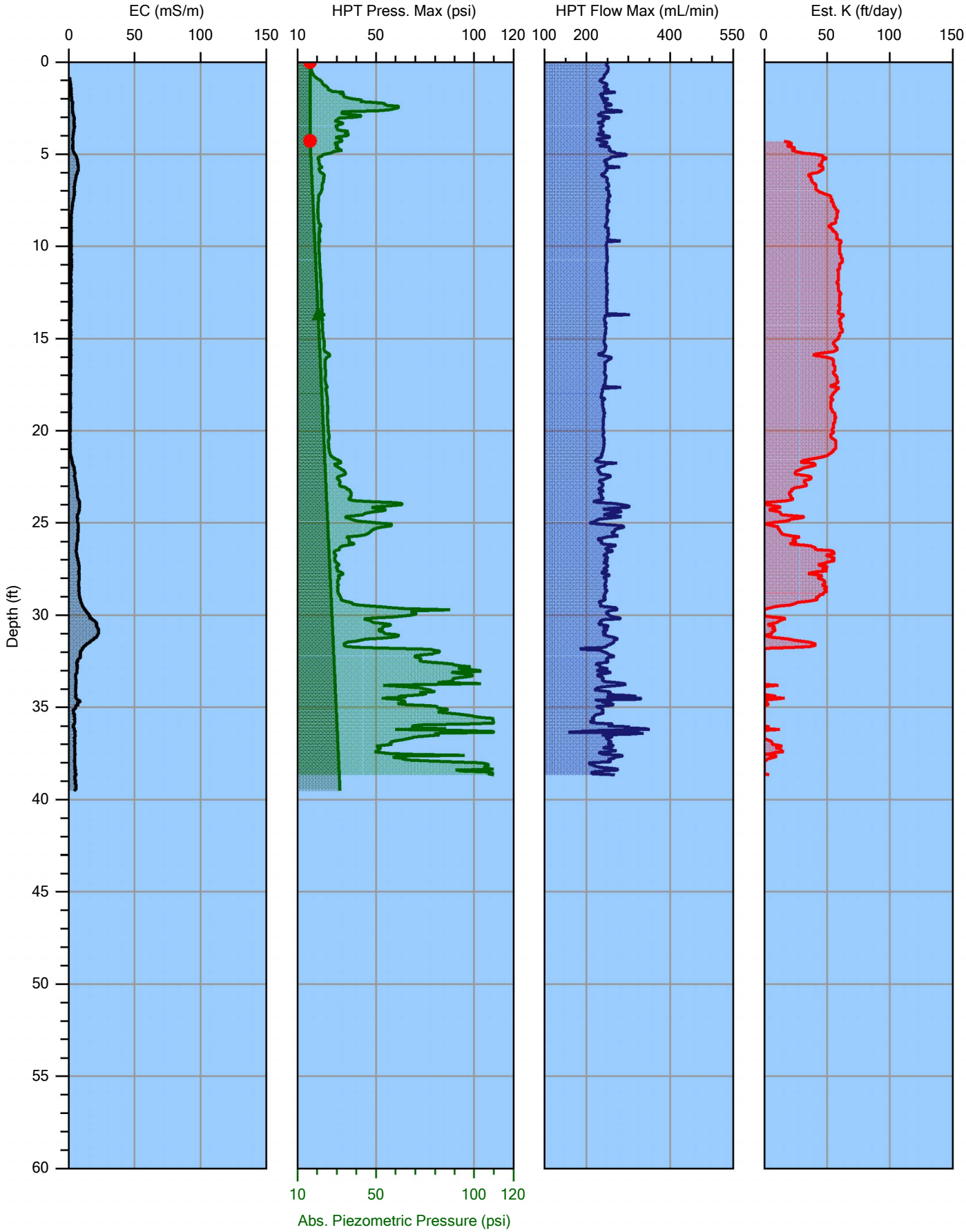
| TEST | HPT PRESSURE (psi) | FLOW (mL/min) | HPT PRESSURE (kPa) |
|---|---|---|---|
| TOP with FLOW=0 | 16.708 | 0.0 | 115.190 |
| TOP with FLOW>0 | 16.979 | 241.3 | 117.060 |
| BOTTOM with FLOW=0 | 16.500 | 0.0 | 113.760 |
| BOTTOM with FLOW>0 | 16.770 | 242.1 | 115.620 |

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
ACTUAL FLOW=0 HPT DIFF.: 0.21 psi (1.4 kPa)

TRANSDUCER TEST PASSED

Post-Log EC Load Tests

| Test | Target (mS/m) | Actual (mS/m) | % Diff | P/F |
|---|---|---|---|---|
| Test 1 | 195.0 | 187.5 | 3.9 | PASS |
| Test 2 | 97.0 | 94.3 | 2.7 | PASS |
| Test 3 | 24.0 | 24.0 | 0.0 | PASS |




| | | | |
|---|---|---|---|
| | | | File: HPT-02.HPT |
| Company: Dakota Technologies | | Operator: Darin Slusher | Date: 8/15/2016 |
| Project ID: 200.16 | | Client: Arcadis | Location: |

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HPT-02.zip

SITE INFORMATION -- DIRECT IMAGE HPT PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.7  Build: 16064

Pre-Log EC Load Tests (Post-Log From HPT-01.zip)

| Test | Target (mS/m) | Actual (mS/m) | % Diff | P/F |
|---|---|---|---|---|
| Test 1 | 195.0 | 187.0 | 4.1 | PASS |
| Test 2 | 97.0 | 94.2 | 2.9 | PASS |
| Test 3 | 24.0 | 24.0 | 0.2 | PASS |

COMPANY: Dakota Technologies
OPERATOR: Darin Slusher
PROJECT ID: 200.16
CLIENT: Arcadis
UNITS: ENGLISH
PROBE AND ARRAY: K6050 HPT Probe with Wenner
LOCATION: Marinette, WI
100 INCH STRING POT USED
ROD LENGTH: 4 feet

PRE-LOG HPT REFERENCE TEST VALUES (Post-Log From HPT-01.zip)

PRE TEST TIME: Mon Aug 15 2016 12:21:27

| TEST | HPT PRESSURE (psi) | FLOW (mL/min) | HPT PRESSURE (kPa) |
|---|---|---|---|
| TOP with FLOW=0 | 16.817 | 0.0 | 115.950 |
| TOP with FLOW>0 | 17.101 | 250.0 | 117.910 |
| BOTTOM with FLOW=0 | 16.617 | 0.0 | 114.570 |
| BOTTOM with FLOW>0 | 16.905 | 249.3 | 116.560 |

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
  ACTUAL FLOW=0 HPT DIFF.: 0.20 psi (1.4 kPa)

TRANSDUCER TEST PASSED

HPT IDEAL COEFFS:  2.2696e1,-2.2356
HPT SENSOR CAL NUMBERS: XD2266A,0.0000,0.0000,0.0000,0.0000,1.0000,0.0000
LOG START TIME: Mon Aug 15 2016 12:29:58

LOG END DEPTH: 38.65 ft (11.781 m)
LOG END TIME: Mon Aug 15 2016 13:32:19

LATITUDE: 0.000000000
LONGITUDE: 0.000000000
ELEVATION: 0.000 METERS  0.00 FEET
GPS Quality: None

POST-LOG HPT REFERENCE TEST VALUES

POST TEST TIME: Mon Aug 15 2016 13:43:58

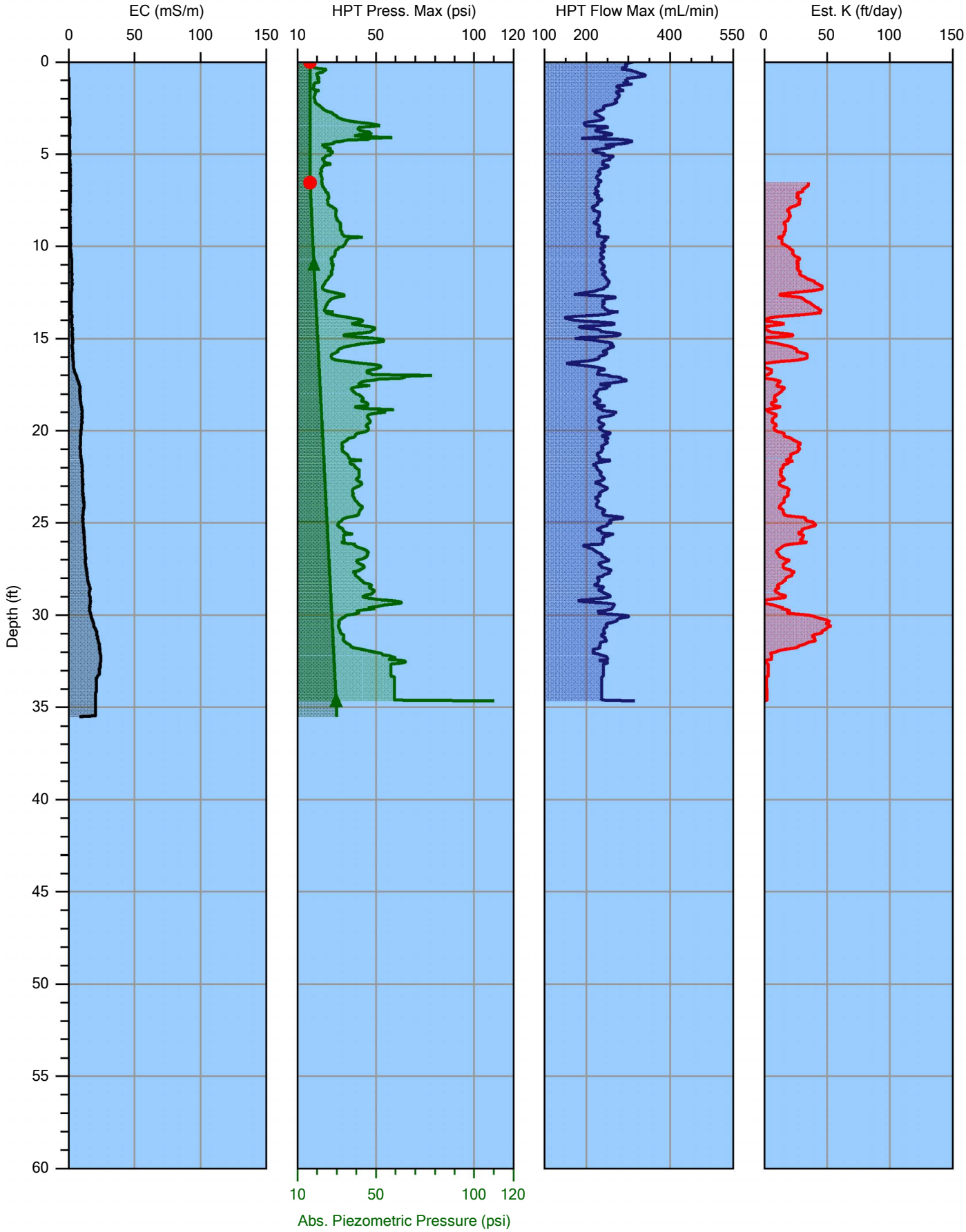
| TEST | HPT PRESSURE (psi) | FLOW (mL/min) | HPT PRESSURE (kPa) |
|---|---|---|---|
| TOP with FLOW=0 | 16.800 | 0.0 | 115.830 |
| TOP with FLOW>0 | 17.091 | 249.4 | 117.840 |
| BOTTOM with FLOW=0 | 16.589 | 0.0 | 114.370 |
| BOTTOM with FLOW>0 | 16.879 | 250.0 | 116.370 |

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
ACTUAL FLOW=0 HPT DIFF.: 0.21 psi (1.5 kPa)

TRANSDUCER TEST PASSED

Post-Log EC Load Tests

| Test | Target (mS/m) | Actual (mS/m) | % Diff | P/F |
|---|---|---|---|---|
| Test 1 | 195.0 | 187.1 | 4.0 | PASS |
| Test 2 | 97.0 | 94.2 | 2.9 | PASS |
| Test 3 | 24.0 | 24.0 | 0.2 | PASS |




| | | | |
|---|---|---|---|
| | | | File: HPT-01.HPT |
| Company: Dakota Technologies | | Operator: Darin Slusher | Date: 8/15/2016 |
| Project ID: 200.16 | | Client: Arcadis | Location: |

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HPT-01.zip

SITE INFORMATION -- DIRECT IMAGE HPT PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.7  Build: 16064

Pre-Log EC Load Tests

| Test | Target (mS/m) | Actual (mS/m) | % Diff | P/F |
|---|---|---|---|---|
| Test 1 | 195.0 | 186.9 | 4.1 | PASS |
| Test 2 | 97.0 | 94.3 | 2.8 | PASS |
| Test 3 | 24.0 | 24.0 | 0.1 | PASS |

COMPANY: Dakota Technologies
OPERATOR: Darin Slusher
PROJECT ID: 200.16
CLIENT: Arcadis
UNITS: ENGLISH
PROBE AND ARRAY: K6050 HPT Probe with Wenner
LOCATION: Marinette, WI
100 INCH STRING POT USED
ROD LENGTH: 4 feet

PRE-LOG HPT REFERENCE TEST VALUES

PRE TEST TIME: Mon Aug 15 2016 10:26:11

| TEST | HPT PRESSURE (psi) | FLOW (mL/min) | HPT PRESSURE (kPa) |
|---|---|---|---|
| TOP with FLOW=0 | 16.818 | 0.0 | 115.960 |
| TOP with FLOW>0 | 17.283 | 231.0 | 119.160 |
| BOTTOM with FLOW=0 | 16.608 | 0.0 | 114.510 |
| BOTTOM with FLOW>0 | 17.080 | 236.4 | 117.760 |

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
  ACTUAL FLOW=0 HPT DIFF.: 0.21 psi (1.4 kPa)

TRANSDUCER TEST PASSED

HPT IDEAL COEFFS:  2.2696e1,-2.2356
HPT SENSOR CAL NUMBERS: XD2266A,0.0000,0.0000,0.0000,0.0000,1.0000,0.0000
LOG START TIME: Mon Aug 15 2016 10:29:48

LOG END DEPTH: 34.65 ft (10.561 m)
LOG END TIME: Mon Aug 15 2016 12:03:26

LATITUDE: 0.000000000
LONGITUDE: 0.000000000
ELEVATION: 0.000 METERS  0.00 FEET
GPS Quality: None

POST-LOG HPT REFERENCE TEST VALUES

POST TEST TIME: Mon Aug 15 2016 12:21:27

| TEST | HPT PRESSURE (psi) | FLOW (mL/min) | HPT PRESSURE (kPa) |
|---|---|---|---|
| TOP with FLOW=0 | 16.817 | 0.0 | 115.950 |
| TOP with FLOW>0 | 17.101 | 250.0 | 117.910 |
| BOTTOM with FLOW=0 | 16.617 | 0.0 | 114.570 |
| BOTTOM with FLOW>0 | 16.905 | 249.3 | 116.560 |

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
ACTUAL FLOW=0 HPT DIFF.: 0.20 psi (1.4 kPa)

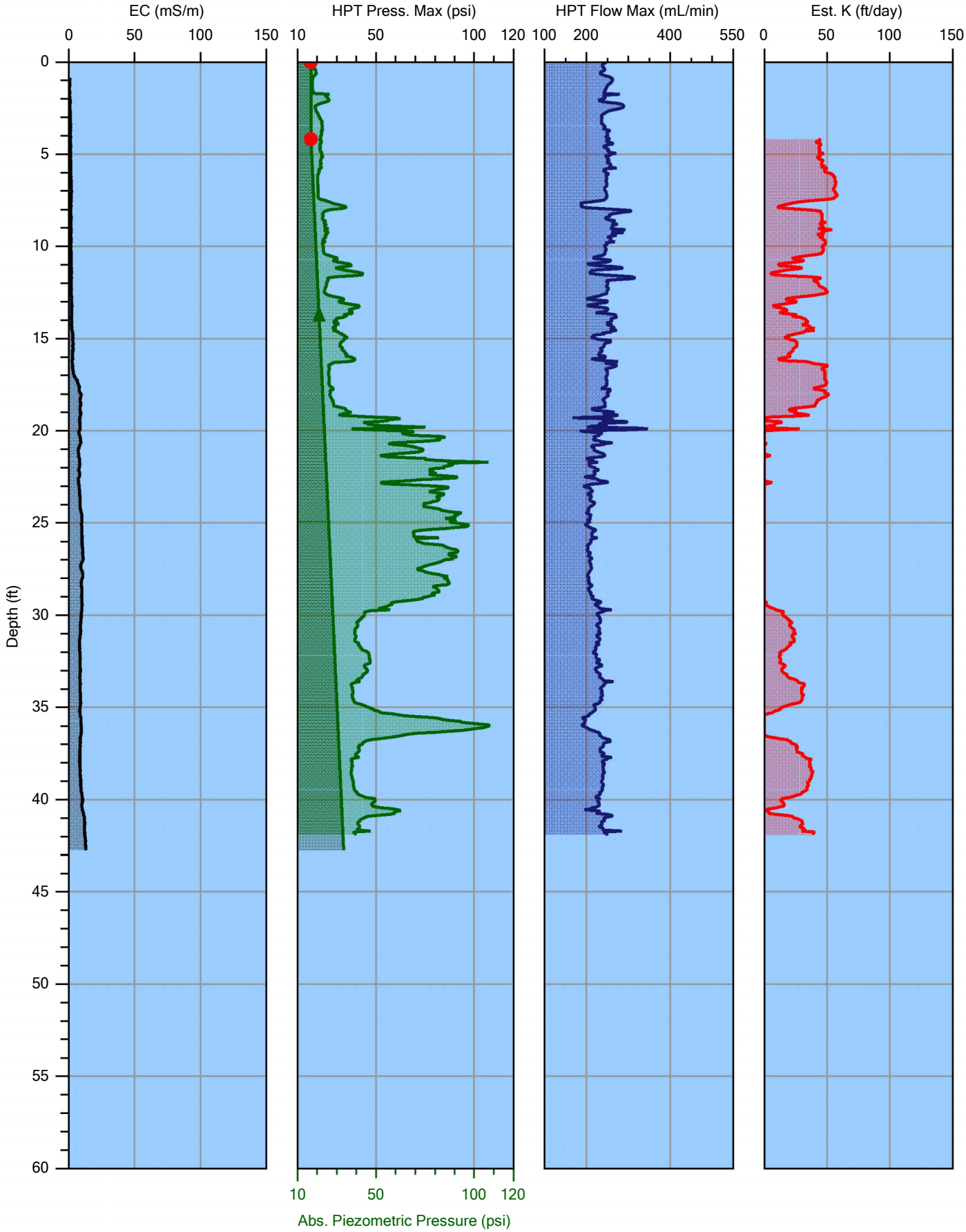
TRANSDUCER TEST PASSED

Post-Log EC Load Tests

| Test | Target (mS/m) | Actual (mS/m) | % Diff | P/F |
|---|---|---|---|---|
| Test 1 | 195.0 | 187.0 | 4.1 | PASS |
| Test 2 | 97.0 | 94.2 | 2.9 | PASS |
| Test 3 | 24.0 | 24.0 | 0.2 | PASS |

********** USER NOTES **********

Refusal encountered at appx 34.5'




| | | | |
|---|---|---|---|
| | | | File: HPT-16A.HPT |
| Company: Dakota Technologies | Operator: Darin Slusher | | Date: 8/18/2016 |
| Project ID: 200.16 | Client: Arcadis | | Location: |

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HPT-16a.zip

SITE INFORMATION -- DIRECT IMAGE HPT PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.7  Build: 16064

Pre-Log EC Load Tests (Post-Log From HPT-16.zip)

| Test | Target (mS/m) | Actual (mS/m) | % Diff | P/F |
|---|---|---|---|---|
| Test 1 | 195.0 | 186.5 | 4.3 | PASS |
| Test 2 | 97.0 | 94.0 | 3.0 | PASS |
| Test 3 | 24.0 | 24.1 | 0.3 | PASS |

COMPANY: Dakota Technologies
OPERATOR: Darin Slusher
PROJECT ID: 200.16
CLIENT: Arcadis
UNITS: ENGLISH
PROBE AND ARRAY: K6050 HPT Probe with Wenner
LOCATION: Marinette, WI
100 INCH STRING POT USED
ROD LENGTH: 4 feet

PRE-LOG HPT REFERENCE TEST VALUES (Post-Log From HPT-16.zip)

PRE TEST TIME: Thu Aug 18 2016 11:54:06

| TEST | HPT PRESSURE (psi) | FLOW (mL/min) | HPT PRESSURE (kPa) |
|---|---|---|---|
| TOP with FLOW=0 | 17.234 | 0.0 | 118.830 |
| TOP with FLOW>0 | 17.579 | 246.1 | 121.200 |
| BOTTOM with FLOW=0 | 17.034 | 0.0 | 117.450 |
| BOTTOM with FLOW>0 | 17.379 | 245.9 | 119.820 |

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
  ACTUAL FLOW=0 HPT DIFF.: 0.20 psi (1.4 kPa)

TRANSDUCER TEST PASSED

HPT IDEAL COEFFS:  2.2696e1,-2.2356
HPT SENSOR CAL NUMBERS: XD2191A,0.0000,0.0000,0.0000,0.0000,1.0000,0.0000
LOG START TIME: Thu Aug 18 2016 11:56:53

LOG END DEPTH: 41.90 ft (12.771 m)
LOG END TIME: Thu Aug 18 2016 12:31:10

LATITUDE: 0.000000000
LONGITUDE: 0.000000000
ELEVATION: 0.000 METERS  0.00 FEET
GPS Quality: None

POST-LOG HPT REFERENCE TEST VALUES

POST TEST TIME: Thu Aug 18 2016 12:46:58

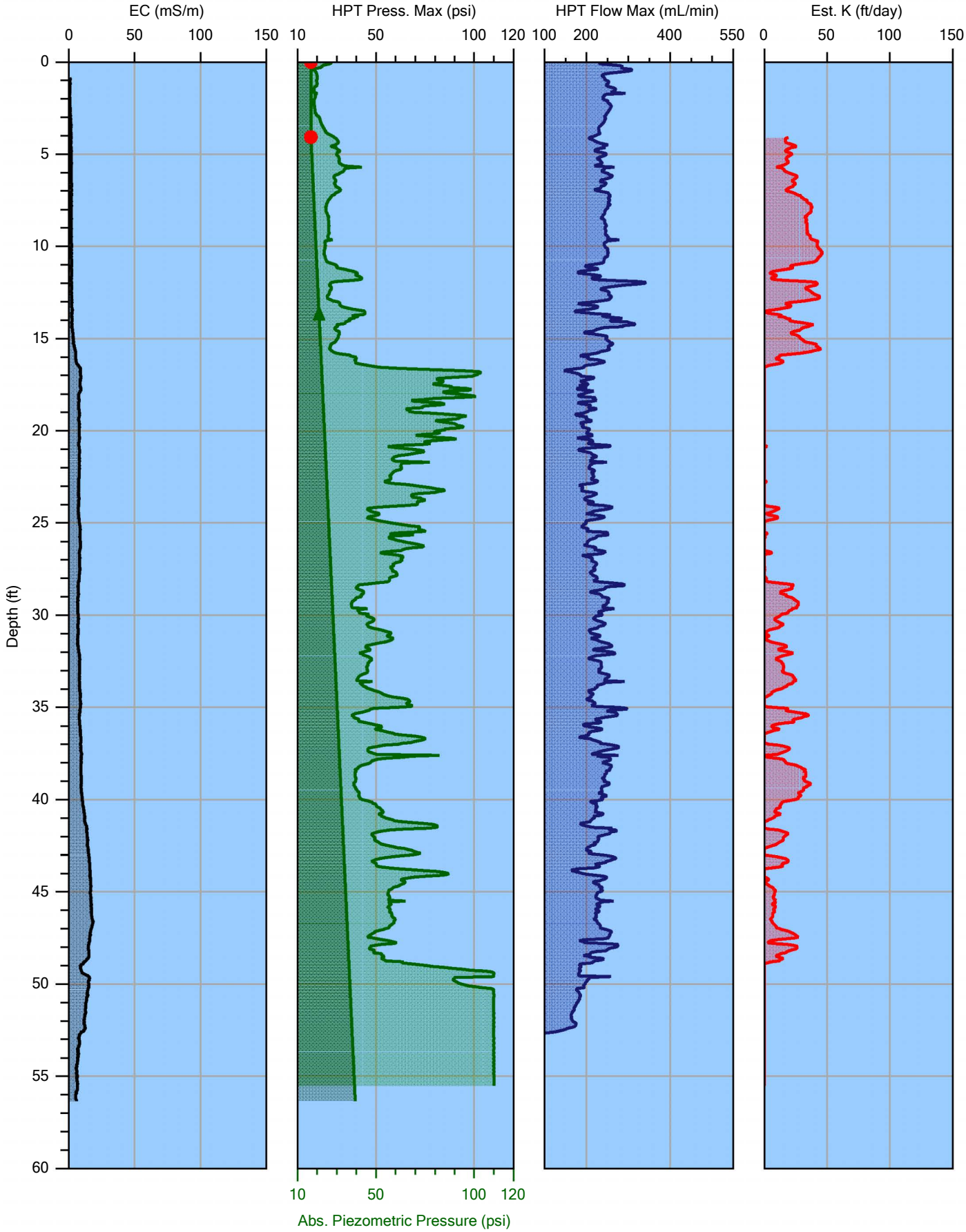
| TEST | HPT PRESSURE (psi) | FLOW (mL/min) | HPT PRESSURE (kPa) |
|---|---|---|---|
| TOP with FLOW=0 | 17.259 | 0.0 | 119.000 |
| TOP with FLOW>0 | 17.589 | 248.0 | 121.270 |
| BOTTOM with FLOW=0 | 17.055 | 0.0 | 117.590 |
| BOTTOM with FLOW>0 | 17.390 | 247.7 | 119.900 |

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
ACTUAL FLOW=0 HPT DIFF.: 0.20 psi (1.4 kPa)

TRANSDUCER TEST PASSED

Post-Log EC Load Tests

| Test | Target (mS/m) | Actual (mS/m) | % Diff | P/F |
|---|---|---|---|---|
| Test 1 | 195.0 | 186.0 | 4.6 | PASS |
| Test 2 | 97.0 | 94.1 | 3.0 | PASS |
| Test 3 | 24.0 | 24.0 | 0.1 | PASS |




| | | | |
|---|---|---|---|
| | | | File: HPT-13.HPT |
| Company: Dakota Technologies | | Operator: Darin Slusher | Date: 8/17/2016 |
| Project ID: 200.16 | | Client: Arcadis | Location: |

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HPT-13.zip

SITE INFORMATION -- DIRECT IMAGE HPT PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.7  Build: 16064

Pre-Log EC Load Tests (Post-Log From HPT-12A.zip)

| Test | Target (mS/m) | Actual (mS/m) | % Diff | P/F |
|---|---|---|---|---|
| Test 1 | 195.0 | 185.3 | 5.0 | PASS |
| Test 2 | 97.0 | 93.9 | 3.2 | PASS |
| Test 3 | 24.0 | 24.1 | 0.2 | PASS |

COMPANY: Dakota Technologies
OPERATOR: Darin Slusher
PROJECT ID: 200.16
CLIENT: Arcadis
UNITS: ENGLISH
PROBE AND ARRAY: K6050 HPT Probe with Wenner
LOCATION: Marinette, WI
100 INCH STRING POT USED
ROD LENGTH: 4 feet

PRE-LOG HPT REFERENCE TEST VALUES (Post-Log From HPT-12A.zip)

PRE TEST TIME: Wed Aug 17 2016 18:50:09

| TEST | HPT PRESSURE (psi) | FLOW (mL/min) | HPT PRESSURE (kPa) |
|---|---|---|---|
| TOP with FLOW=0 | 17.223 | 0.0 | 118.750 |
| TOP with FLOW>0 | 17.519 | 247.2 | 120.790 |
| BOTTOM with FLOW=0 | 17.019 | 0.0 | 117.340 |
| BOTTOM with FLOW>0 | 17.313 | 247.1 | 119.370 |

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
  ACTUAL FLOW=0 HPT DIFF.: 0.20 psi (1.4 kPa)

TRANSDUCER TEST PASSED

HPT IDEAL COEFFS:  2.2696e1,-2.2356
HPT SENSOR CAL NUMBERS: XD2266A,0.0000,0.0000,0.0000,0.0000,1.0000,0.0000
LOG START TIME: Wed Aug 17 2016 18:55:26

LOG END DEPTH: 55.50 ft (16.916 m)
LOG END TIME: Wed Aug 17 2016 19:40:41

LATITUDE: 0.000000000
LONGITUDE: 0.000000000
ELEVATION: 0.000 METERS  0.00 FEET
GPS Quality: None

POST-LOG HPT REFERENCE TEST VALUES

POST TEST TIME: Wed Aug 17 2016 20:00:55

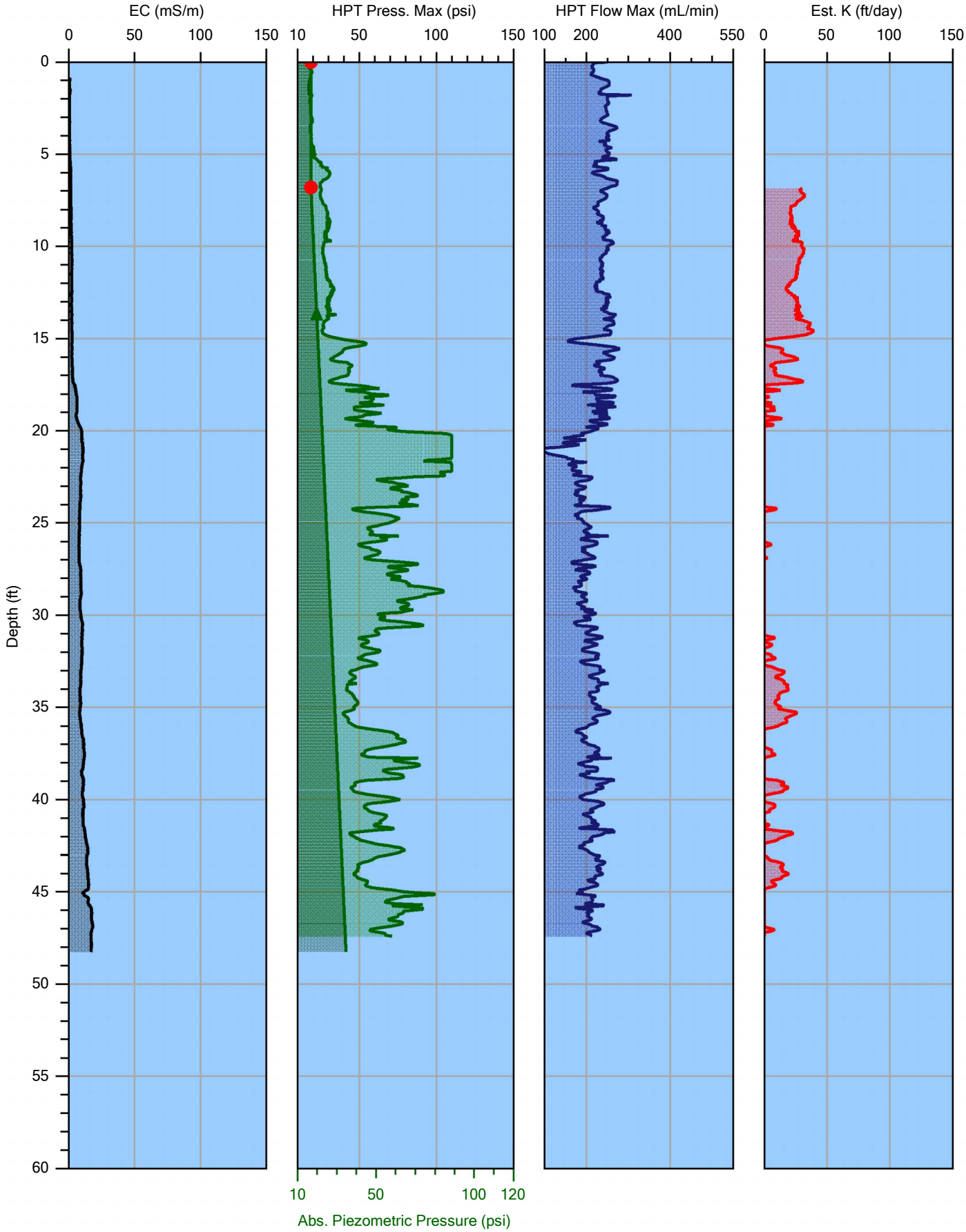
| TEST | HPT PRESSURE (psi) | FLOW (mL/min) | HPT PRESSURE (kPa) |
|---|---|---|---|
| TOP with FLOW=0 | 17.229 | 0.0 | 118.790 |
| TOP with FLOW>0 | 17.628 | 242.4 | 121.540 |
| BOTTOM with FLOW=0 | 17.028 | 0.0 | 117.400 |
| BOTTOM with FLOW>0 | 17.429 | 243.3 | 120.170 |

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
ACTUAL FLOW=0 HPT DIFF.: 0.20 psi (1.4 kPa)

TRANSDUCER TEST PASSED

Post-Log EC Load Tests

| Test | Target (mS/m) | Actual (mS/m) | % Diff | P/F |
|---|---|---|---|---|
| Test 1 | 195.0 | 185.0 | 5.1 | PASS |
| Test 2 | 97.0 | 93.9 | 3.2 | PASS |
| Test 3 | 24.0 | 24.0 | 0.2 | PASS |




| | | | |
|---|---|---|---|
| | | | File: HPT-12A.HPT |
| Company: Dakota Technologies | | Operator: Darin Slusher | Date: 8/17/2016 |
| Project ID: 200.16 | | Client: Arcadis | Location: |

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HPT-12A.zip

SITE INFORMATION -- DIRECT IMAGE HPT PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.7  Build: 16064

Pre-Log EC Load Tests (Post-Log From HPT-12.zip)

| Test | Target (mS/m) | Actual (mS/m) | % Diff | P/F |
|---|---|---|---|---|
| Test 1 | 195.0 | 183.3 | 6.0 | PASS |
| Test 2 | 97.0 | 93.5 | 3.7 | PASS |
| Test 3 | 24.0 | 24.2 | 0.7 | PASS |

COMPANY: Dakota Technologies
OPERATOR: Darin Slusher
PROJECT ID: 200.16
CLIENT: Arcadis
UNITS: ENGLISH
PROBE AND ARRAY: K6050 HPT Probe with Wenner
LOCATION: Marinette, WI
100 INCH STRING POT USED
ROD LENGTH: 4 feet

PRE-LOG HPT REFERENCE TEST VALUES (Post-Log From HPT-12.zip)

PRE TEST TIME: Wed Aug 17 2016 17:43:36

| TEST | HPT PRESSURE (psi) | FLOW (mL/min) | HPT PRESSURE (kPa) |
|---|---|---|---|
| TOP with FLOW=0 | 17.183 | 0.0 | 118.470 |
| TOP with FLOW>0 | 17.563 | 246.9 | 121.090 |
| BOTTOM with FLOW=0 | 16.977 | 0.0 | 117.050 |
| BOTTOM with FLOW>0 | 17.363 | 248.6 | 119.720 |

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
  ACTUAL FLOW=0 HPT DIFF.: 0.21 psi (1.4 kPa)

TRANSDUCER TEST PASSED

HPT IDEAL COEFFS:  2.2696e1,-2.2356
HPT SENSOR CAL NUMBERS: XD2266A,0.0000,0.0000,0.0000,0.0000,1.0000,0.0000
LOG START TIME: Wed Aug 17 2016 17:49:44

LOG END DEPTH: 47.40 ft (14.448 m)
LOG END TIME: Wed Aug 17 2016 18:33:03

LATITUDE: 0.000000000
LONGITUDE: 0.000000000
ELEVATION: 0.000 METERS  0.00 FEET
GPS Quality: None

POST-LOG HPT REFERENCE TEST VALUES

POST TEST TIME: Wed Aug 17 2016 18:50:09

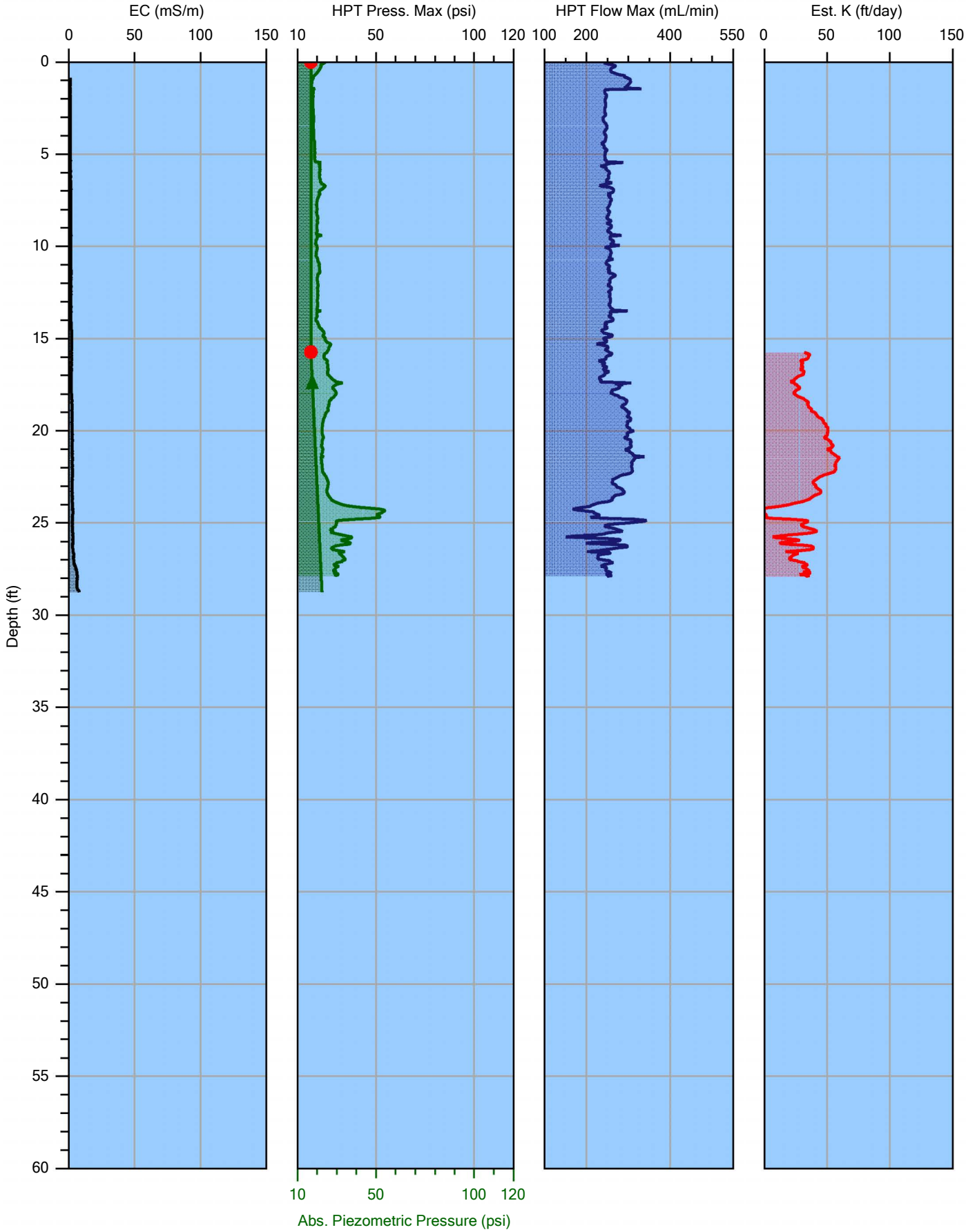
| TEST | HPT PRESSURE (psi) | FLOW (mL/min) | HPT PRESSURE (kPa) |
|---|---|---|---|
| TOP with FLOW=0 | 17.223 | 0.0 | 118.750 |
| TOP with FLOW>0 | 17.519 | 247.2 | 120.790 |
| BOTTOM with FLOW=0 | 17.019 | 0.0 | 117.340 |
| BOTTOM with FLOW>0 | 17.313 | 247.1 | 119.370 |

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
ACTUAL FLOW=0 HPT DIFF.: 0.20 psi (1.4 kPa)

TRANSDUCER TEST PASSED

Post-Log EC Load Tests

| Test | Target (mS/m) | Actual (mS/m) | % Diff | P/F |
|---|---|---|---|---|
| Test 1 | 195.0 | 185.3 | 5.0 | PASS |
| Test 2 | 97.0 | 93.9 | 3.2 | PASS |
| Test 3 | 24.0 | 24.1 | 0.2 | PASS |




| | | |
|---|---|---|
| | | File: HPT-11.HPT |
| Company: Dakota Technologies | Operator: Darin Slusher | Date: 8/17/2016 |
| Project ID: 200.16 | Client: Arcadis | Location: |

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HPT-11.zip

SITE INFORMATION -- DIRECT IMAGE HPT PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.7  Build: 16064

Pre-Log EC Load Tests

| Test | Target (mS/m) | Actual (mS/m) | % Diff | P/F |
|---|---|---|---|---|
| Test 1 | 195.0 | 185.3 | 4.9 | PASS |
| Test 2 | 97.0 | 93.8 | 3.3 | PASS |
| Test 3 | 24.0 | 24.1 | 0.3 | PASS |

COMPANY: Dakota Technologies
OPERATOR: Darin Slusher
PROJECT ID: 200.16
CLIENT: Arcadis
UNITS: ENGLISH
PROBE AND ARRAY: K6050 HPT Probe with Wenner
LOCATION: Marinette, WI
100 INCH STRING POT USED
ROD LENGTH: 4 feet

PRE-LOG HPT REFERENCE TEST VALUES

PRE TEST TIME: Wed Aug 17 2016 16:10:25

| TEST | HPT PRESSURE (psi) | FLOW (mL/min) | HPT PRESSURE (kPa) |
|---|---|---|---|
| TOP with FLOW=0 | 17.220 | 0.0 | 118.730 |
| TOP with FLOW>0 | 17.571 | 242.9 | 121.150 |
| BOTTOM with FLOW=0 | 17.016 | 0.0 | 117.320 |
| BOTTOM with FLOW>0 | 17.331 | 239.5 | 119.500 |

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
  ACTUAL FLOW=0 HPT DIFF.: 0.20 psi (1.4 kPa)

TRANSDUCER TEST PASSED

HPT IDEAL COEFFS:  2.2696e1,-2.2356
HPT SENSOR CAL NUMBERS: XD2266A,0.0000,0.0000,0.0000,0.0000,1.0000,0.0000
LOG START TIME: Wed Aug 17 2016 16:14:30

LOG END DEPTH: 27.90 ft (8.504 m)
LOG END TIME: Wed Aug 17 2016 16:37:26

LATITUDE: 0.000000000
LONGITUDE: 0.000000000
ELEVATION: 0.000 METERS  0.00 FEET
GPS Quality: None

POST-LOG HPT REFERENCE TEST VALUES

POST TEST TIME: Wed Aug 17 2016 16:46:27

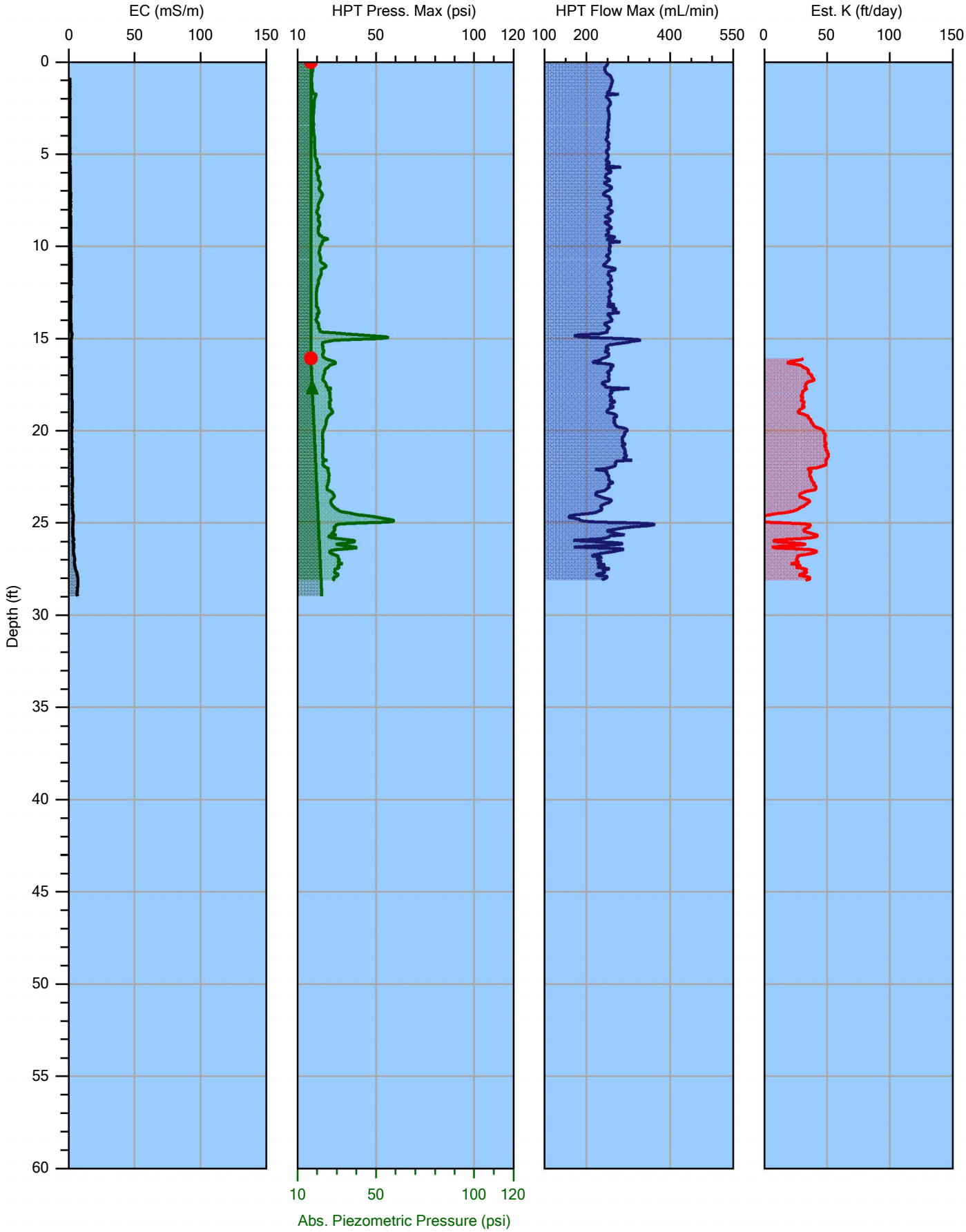
| TEST | HPT PRESSURE (psi) | FLOW (mL/min) | HPT PRESSURE (kPa) |
|---|---|---|---|
| TOP with FLOW=0 | 17.192 | 0.0 | 118.530 |
| TOP with FLOW>0 | 17.628 | 248.7 | 121.540 |
| BOTTOM with FLOW=0 | 16.989 | 0.0 | 117.140 |
| BOTTOM with FLOW>0 | 17.421 | 249.8 | 120.110 |

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
ACTUAL FLOW=0 HPT DIFF.: 0.20 psi (1.4 kPa)

TRANSDUCER TEST PASSED

Post-Log EC Load Tests

| Test | Target (mS/m) | Actual (mS/m) | % Diff | P/F |
|---|---|---|---|---|
| Test 1 | 195.0 | 183.6 | 5.8 | PASS |
| Test 2 | 97.0 | 93.6 | 3.5 | PASS |
| Test 3 | 24.0 | 24.2 | 0.6 | PASS |




| | | | |
|---|---|---|---|
| | | | File: HPT-12.HPT |
| Company: Dakota Technologies | | Operator: Darin Slusher | Date: 8/17/2016 |
| Project ID: 200.16 | | Client: Arcadis | Location: |

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HPT-12.zip

SITE INFORMATION -- DIRECT IMAGE HPT PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.7  Build: 16064

Pre-Log EC Load Tests (Post-Log From HPT-11.zip)

| Test | Target (mS/m) | Actual (mS/m) | % Diff | P/F |
|---|---|---|---|---|
| Test 1 | 195.0 | 183.6 | 5.8 | PASS |
| Test 2 | 97.0 | 93.6 | 3.5 | PASS |
| Test 3 | 24.0 | 24.2 | 0.6 | PASS |

COMPANY: Dakota Technologies
OPERATOR: Darin Slusher
PROJECT ID: 200.16
CLIENT: Arcadis
UNITS: ENGLISH
PROBE AND ARRAY: K6050 HPT Probe with Wenner
LOCATION: Marinette, WI
100 INCH STRING POT USED
ROD LENGTH: 4 feet

PRE-LOG HPT REFERENCE TEST VALUES (Post-Log From HPT-11.zip)

PRE TEST TIME: Wed Aug 17 2016 16:46:27

| TEST | HPT PRESSURE (psi) | FLOW (mL/min) | HPT PRESSURE (kPa) |
|---|---|---|---|
| TOP with FLOW=0 | 17.192 | 0.0 | 118.530 |
| TOP with FLOW>0 | 17.628 | 248.7 | 121.540 |
| BOTTOM with FLOW=0 | 16.989 | 0.0 | 117.140 |
| BOTTOM with FLOW>0 | 17.421 | 249.8 | 120.110 |

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
  ACTUAL FLOW=0 HPT DIFF.: 0.20 psi (1.4 kPa)

TRANSDUCER TEST PASSED

HPT IDEAL COEFFS:  2.2696e1,-2.2356
HPT SENSOR CAL NUMBERS: XD2266A,0.0000,0.0000,0.0000,0.0000,1.0000,0.0000
LOG START TIME: Wed Aug 17 2016 16:50:55

LOG END DEPTH: 28.10 ft (8.565 m)
LOG END TIME: Wed Aug 17 2016 17:31:17

LATITUDE: 0.000000000
LONGITUDE: 0.000000000
ELEVATION: 0.000 METERS  0.00 FEET
GPS Quality: None

POST-LOG HPT REFERENCE TEST VALUES

POST TEST TIME: Wed Aug 17 2016 17:43:36

| TEST | HPT PRESSURE (psi) | FLOW (mL/min) | HPT PRESSURE (kPa) |
|---|---|---|---|
| TOP with FLOW=0 | 17.183 | 0.0 | 118.470 |
| TOP with FLOW>0 | 17.563 | 246.9 | 121.090 |
| BOTTOM with FLOW=0 | 16.977 | 0.0 | 117.050 |
| BOTTOM with FLOW>0 | 17.363 | 248.6 | 119.720 |

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
ACTUAL FLOW=0 HPT DIFF.: 0.21 psi (1.4 kPa)

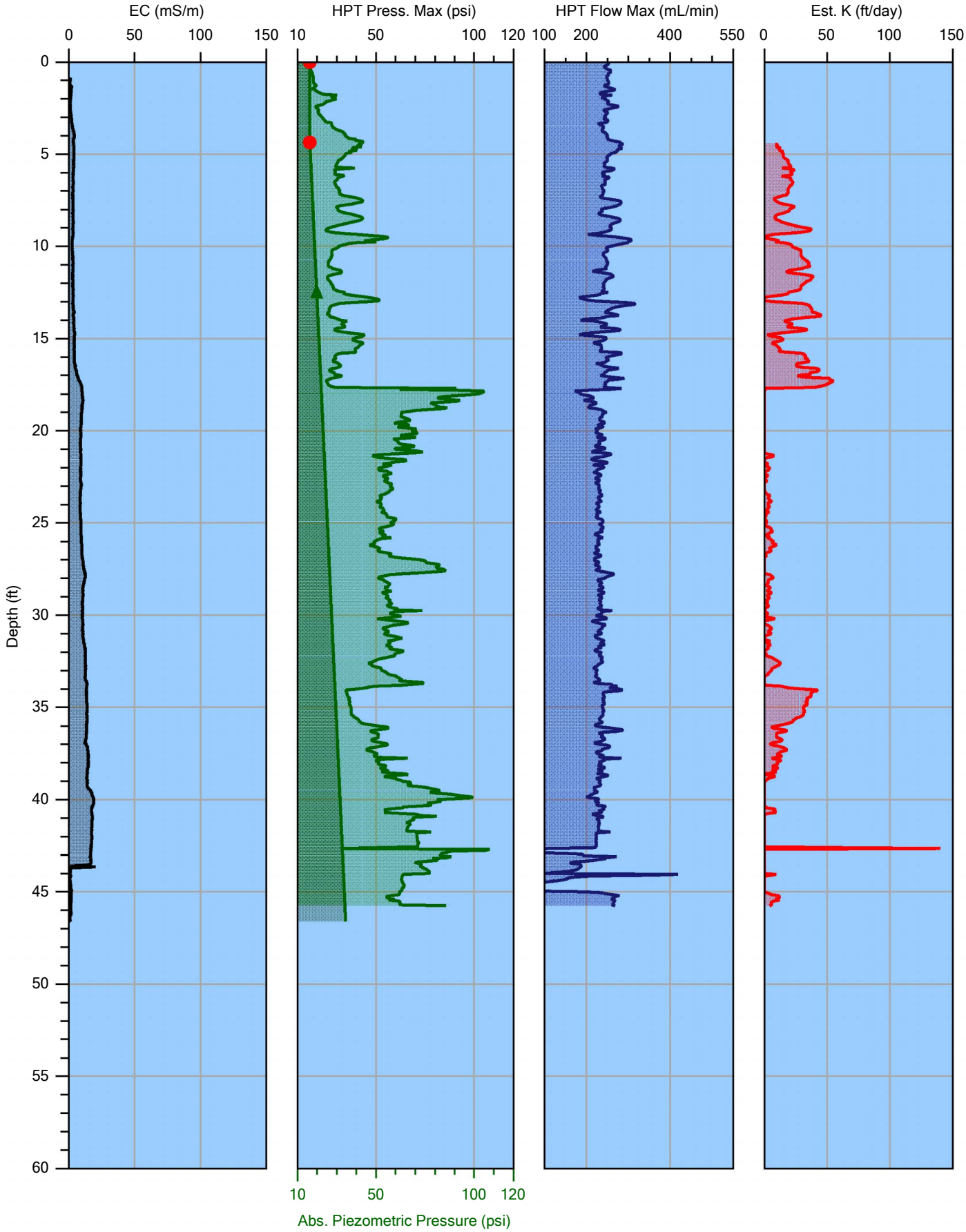
TRANSDUCER TEST PASSED

Post-Log EC Load Tests

| Test | Target (mS/m) | Actual (mS/m) | % Diff | P/F |
|---|---|---|---|---|
| Test 1 | 195.0 | 183.3 | 6.0 | PASS |
| Test 2 | 97.0 | 93.5 | 3.7 | PASS |
| Test 3 | 24.0 | 24.2 | 0.7 | PASS |

********** USER NOTES **********

This is HPT-11A. Offeset appx 8' south of HPT-11. Refusal at similar depth.




| | | | |
|---|---|---|---|
| | | | File: HPT-06.HPT |
| Company: Dakota Technologies | | Operator: Darin Slusher | Date: 8/16/2016 |
| Project ID: 200.16 | | Client: Arcadis | Location: |

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HPT-06.zip

SITE INFORMATION -- DIRECT IMAGE HPT PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.7  Build: 16064

Pre-Log EC Load Tests (Post-Log From HPT-05.zip)

| Test | Target (mS/m) | Actual (mS/m) | % Diff | P/F |
|---|---|---|---|---|
| Test 1 | 195.0 | 185.3 | 5.0 | PASS |
| Test 2 | 97.0 | 93.9 | 3.2 | PASS |
| Test 3 | 24.0 | 24.1 | 0.3 | PASS |

COMPANY: Dakota Technologies
OPERATOR: Darin Slusher
PROJECT ID: 200.16
CLIENT: Arcadis
UNITS: ENGLISH
PROBE AND ARRAY: K6050 HPT Probe with Wenner
LOCATION: Marinette, WI
100 INCH STRING POT USED
ROD LENGTH: 4 feet

PRE-LOG HPT REFERENCE TEST VALUES (Post-Log From HPT-05.zip)

PRE TEST TIME: Tue Aug 16 2016 16:50:37

| TEST | HPT PRESSURE (psi) | FLOW (mL/min) | HPT PRESSURE (kPa) |
|---|---|---|---|
| TOP with FLOW=0 | 16.680 | 0.0 | 115.010 |
| TOP with FLOW>0 | 17.018 | 248.4 | 117.340 |
| BOTTOM with FLOW=0 | 16.482 | 0.0 | 113.640 |
| BOTTOM with FLOW>0 | 16.814 | 248.6 | 115.930 |

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
  ACTUAL FLOW=0 HPT DIFF.: 0.20 psi (1.4 kPa)

TRANSDUCER TEST PASSED

HPT IDEAL COEFFS:  2.2696e1,-2.2356
HPT SENSOR CAL NUMBERS: XD2266A,0.0000,0.0000,0.0000,0.0000,1.0000,0.0000
LOG START TIME: Tue Aug 16 2016 16:55:22

LOG END DEPTH: 45.75 ft (13.945 m)
LOG END TIME: Tue Aug 16 2016 17:43:07

LATITUDE: 0.000000000
LONGITUDE: 0.000000000
ELEVATION: 0.000 METERS  0.00 FEET
GPS Quality: None

POST-LOG HPT REFERENCE TEST VALUES

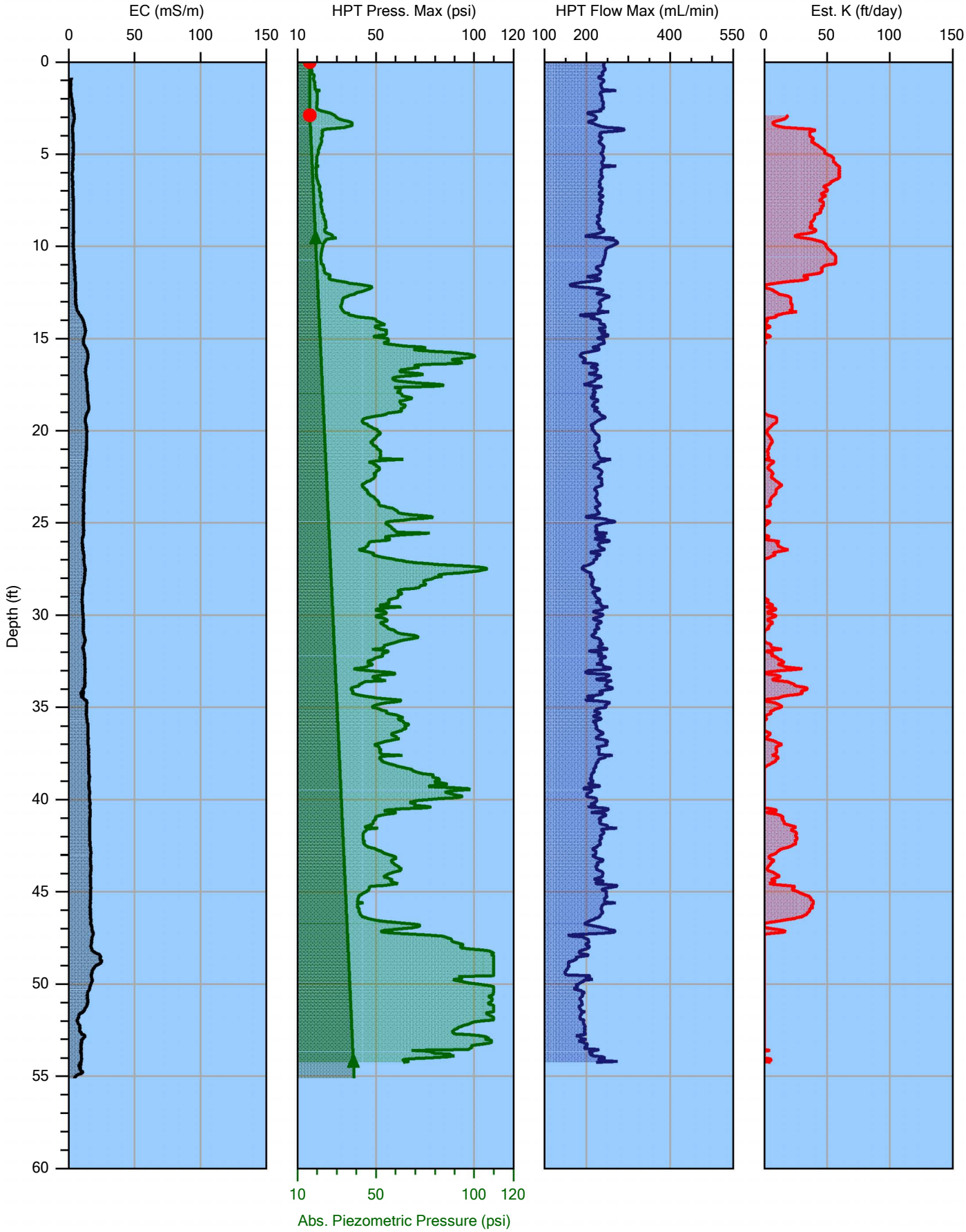
POST TEST TIME: Tue Aug 16 2016 17:49:30

POST-LOG HPT REFERENCE TESTS BYPASSED

EC POST-LOG TESTS BYPASSED

********** USER NOTES **********

Snapped of probe.




| | | | |
|---|---|---|---|
| | | | File: HPT-05.HPT |
| Company: Dakota Technologies | | Operator: Darin Slusher | Date: 8/16/2016 |
| Project ID: 200.16 | | Client: Arcadis | Location: |

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HPT-05.zip

SITE INFORMATION -- DIRECT IMAGE HPT PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.7  Build: 16064

Pre-Log EC Load Tests

| Test | Target (mS/m) | Actual (mS/m) | % Diff | P/F |
|---|---|---|---|---|
| Test 1 | 195.0 | 185.3 | 5.0 | PASS |
| Test 2 | 97.0 | 94.0 | 3.1 | PASS |
| Test 3 | 24.0 | 24.1 | 0.4 | PASS |

COMPANY: Dakota Technologies
OPERATOR: Darin Slusher
PROJECT ID: 200.16
CLIENT: Arcadis
UNITS: ENGLISH
PROBE AND ARRAY: K6050 HPT Probe with Wenner
LOCATION: Marinette, WI
100 INCH STRING POT USED
ROD LENGTH: 4 feet

PRE-LOG HPT REFERENCE TEST VALUES

PRE TEST TIME: Tue Aug 16 2016 15:45:07

| TEST | HPT PRESSURE (psi) | FLOW (mL/min) | HPT PRESSURE (kPa) |
|---|---|---|---|
| TOP with FLOW=0 | 16.689 | 0.0 | 115.060 |
| TOP with FLOW>0 | 17.010 | 253.6 | 117.280 |
| BOTTOM with FLOW=0 | 16.476 | 0.0 | 113.600 |
| BOTTOM with FLOW>0 | 16.811 | 252.0 | 115.910 |

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
  ACTUAL FLOW=0 HPT DIFF.: 0.21 psi (1.5 kPa)

TRANSDUCER TEST PASSED

HPT IDEAL COEFFS:  2.2696e1,-2.2356
HPT SENSOR CAL NUMBERS: XD2266A,0.0000,0.0000,0.0000,0.0000,1.0000,0.0000
LOG START TIME: Tue Aug 16 2016 15:47:36

LOG END DEPTH: 54.25 ft (16.535 m)
LOG END TIME: Tue Aug 16 2016 16:37:01

LATITUDE: 0.000000000
LONGITUDE: 0.000000000
ELEVATION: 0.000 METERS  0.00 FEET
GPS Quality: None

POST-LOG HPT REFERENCE TEST VALUES

POST TEST TIME: Tue Aug 16 2016 16:50:37

| TEST | HPT PRESSURE (psi) | FLOW (mL/min) | HPT PRESSURE (kPa) |
|---|---|---|---|
| TOP with FLOW=0 | 16.680 | 0.0 | 115.010 |
| TOP with FLOW>0 | 17.018 | 248.4 | 117.340 |
| BOTTOM with FLOW=0 | 16.482 | 0.0 | 113.640 |
| BOTTOM with FLOW>0 | 16.814 | 248.6 | 115.930 |

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
ACTUAL FLOW=0 HPT DIFF.: 0.20 psi (1.4 kPa)

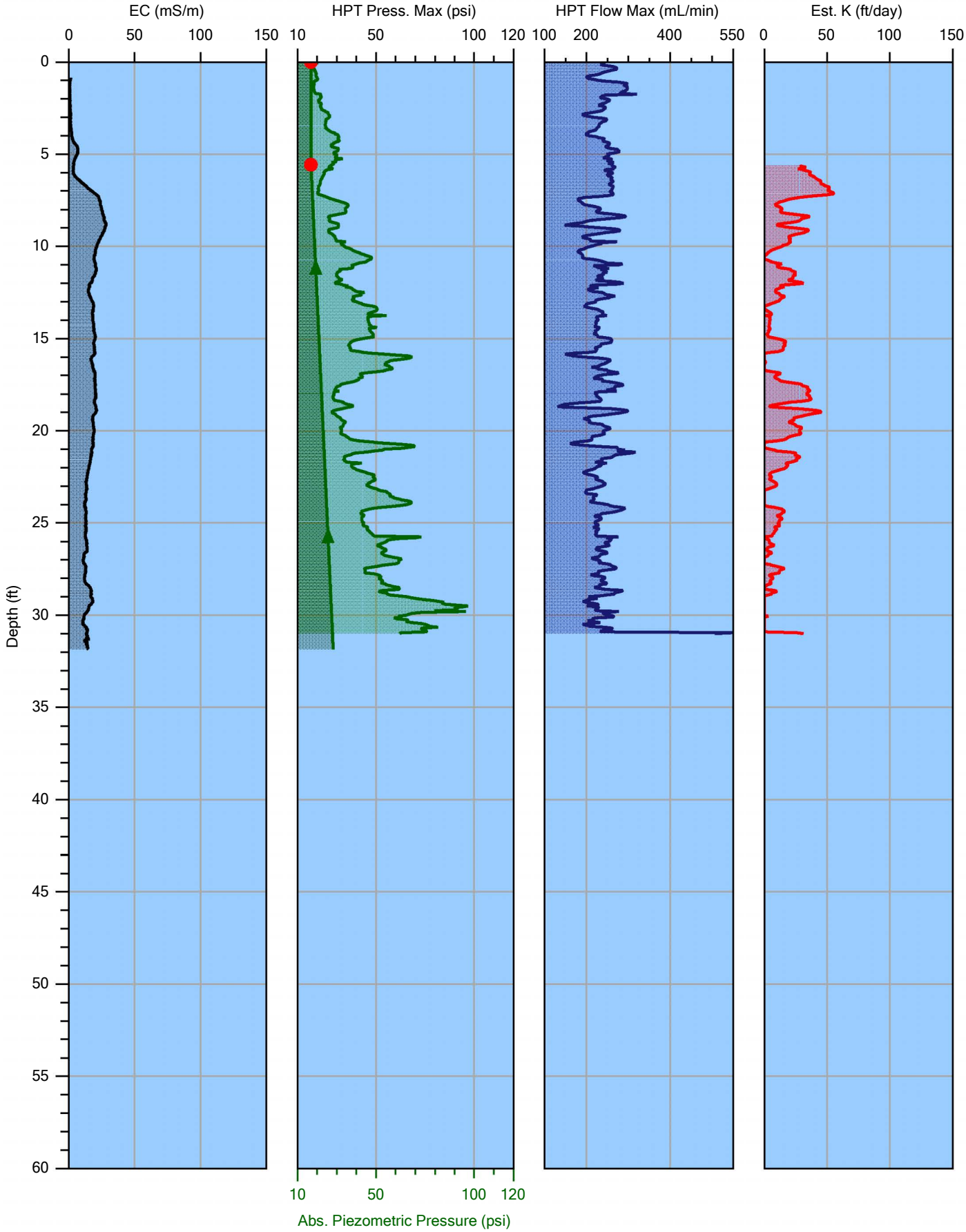
TRANSDUCER TEST PASSED

Post-Log EC Load Tests

| Test | Target (mS/m) | Actual (mS/m) | % Diff | P/F |
|---|---|---|---|---|
| Test 1 | 195.0 | 185.3 | 5.0 | PASS |
| Test 2 | 97.0 | 93.9 | 3.2 | PASS |
| Test 3 | 24.0 | 24.1 | 0.3 | PASS |

********** USER NOTES **********

Added 4 (16') rods previous to this hole to accomodate Arcadis request of 60' capability. Two dissipation tests conducted.




| | | | |
|---|---|---|---|
| | | | File: HPT-15.HPT |
| Company: Dakota Technologies | Operator: Darin Slusher | | Date: 8/18/2016 |
| Project ID: 200.16 | Client: Arcadis | | Location: |

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HPT-15.zip

SITE INFORMATION -- DIRECT IMAGE HPT PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.7  Build: 16064

Pre-Log EC Load Tests (Post-Log From HPT-14.zip)

| Test | Target (mS/m) | Actual (mS/m) | % Diff | P/F |
|---|---|---|---|---|
| Test 1 | 195.0 | 186.5 | 4.4 | PASS |
| Test 2 | 97.0 | 94.2 | 2.9 | PASS |
| Test 3 | 24.0 | 24.0 | 0.2 | PASS |

COMPANY: Dakota Technologies
OPERATOR: Darin Slusher
PROJECT ID: 200.16
CLIENT: Arcadis
UNITS: ENGLISH
PROBE AND ARRAY: K6050 HPT Probe with Wenner
LOCATION: Marinette, WI
100 INCH STRING POT USED
ROD LENGTH: 4 feet

PRE-LOG HPT REFERENCE TEST VALUES (Post-Log From HPT-14.zip)

PRE TEST TIME: Thu Aug 18 2016 09:37:51

| TEST | HPT PRESSURE (psi) | FLOW (mL/min) | HPT PRESSURE (kPa) |
|---|---|---|---|
| TOP with FLOW=0 | 17.231 | 0.0 | 118.800 |
| TOP with FLOW>0 | 17.535 | 244.6 | 120.900 |
| BOTTOM with FLOW=0 | 17.026 | 0.0 | 117.390 |
| BOTTOM with FLOW>0 | 17.317 | 243.3 | 119.400 |

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
  ACTUAL FLOW=0 HPT DIFF.: 0.20 psi (1.4 kPa)

TRANSDUCER TEST PASSED

HPT IDEAL COEFFS:  2.2696e1,-2.2356
HPT SENSOR CAL NUMBERS: XD2191A,0.0000,0.0000,0.0000,0.0000,1.0000,0.0000
LOG START TIME: Thu Aug 18 2016 09:42:53

LOG END DEPTH: 31.00 ft (9.449 m)
LOG END TIME: Thu Aug 18 2016 11:02:55

LATITUDE: 0.000000000
LONGITUDE: 0.000000000
ELEVATION: 0.000 METERS  0.00 FEET
GPS Quality: None

POST-LOG HPT REFERENCE TEST VALUES

POST TEST TIME: Thu Aug 18 2016 11:13:35

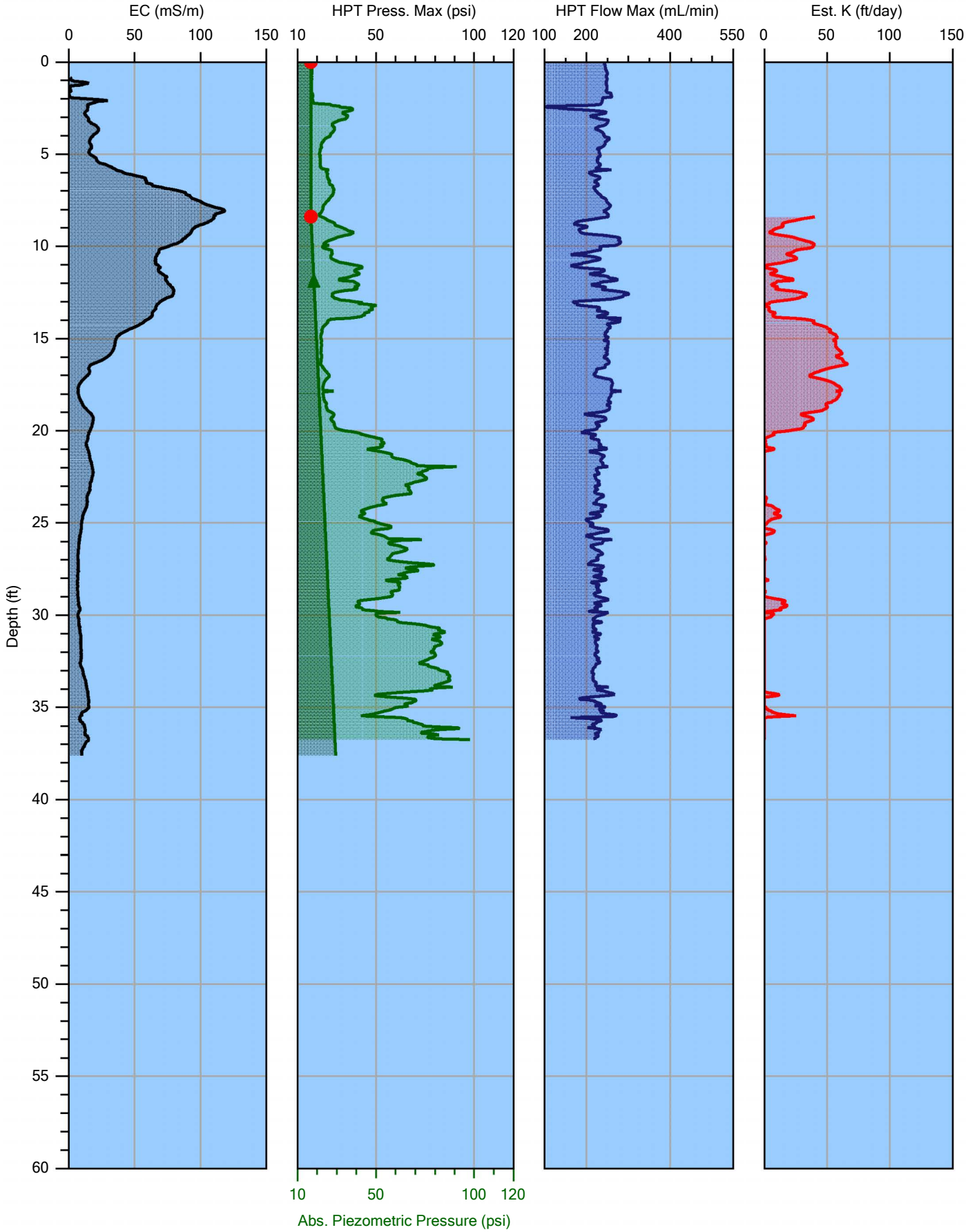
| TEST | HPT PRESSURE (psi) | FLOW (mL/min) | HPT PRESSURE (kPa) |
|---|---|---|---|
| TOP with FLOW=0 | 17.261 | 0.0 | 119.010 |
| TOP with FLOW>0 | 17.538 | 241.6 | 120.920 |
| BOTTOM with FLOW=0 | 17.036 | 0.0 | 117.460 |
| BOTTOM with FLOW>0 | 17.335 | 242.5 | 119.520 |

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
ACTUAL FLOW=0 HPT DIFF.: 0.22 psi (1.6 kPa)

TRANSDUCER TEST PASSED

Post-Log EC Load Tests

| Test | Target (mS/m) | Actual (mS/m) | % Diff | P/F |
|---|---|---|---|---|
| Test 1 | 195.0 | 186.3 | 4.5 | PASS |
| Test 2 | 97.0 | 94.0 | 3.1 | PASS |
| Test 3 | 24.0 | 24.0 | 0.1 | PASS |




| | | | |
|---|---|---|---|
| | | | File: HPT-14.HPT |
| Company: Dakota Technologies | Operator: Darin Slusher | | Date: 8/18/2016 |
| Project ID: 200.16 | Client: Arcadis | | Location: |

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HPT-14.zip

SITE INFORMATION -- DIRECT IMAGE HPT PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.7  Build: 16064

Pre-Log EC Load Tests

| Test | Target (mS/m) | Actual (mS/m) | % Diff | P/F |
|---|---|---|---|---|
| Test 1 | 195.0 | 187.3 | 3.9 | PASS |
| Test 2 | 97.0 | 94.3 | 2.8 | PASS |
| Test 3 | 24.0 | 24.0 | 0.0 | PASS |

COMPANY: Dakota Technologies
OPERATOR: Darin Slusher
PROJECT ID: 200.16
CLIENT: Arcadis
UNITS: ENGLISH
PROBE AND ARRAY: K6050 HPT Probe with Wenner
LOCATION: Marinette, WI
100 INCH STRING POT USED
ROD LENGTH: 4 feet

PRE-LOG HPT REFERENCE TEST VALUES

PRE TEST TIME: Thu Aug 18 2016 08:55:13

| TEST | HPT PRESSURE (psi) | FLOW (mL/min) | HPT PRESSURE (kPa) |
|---|---|---|---|
| TOP with FLOW=0 | 17.200 | 0.0 | 118.590 |
| TOP with FLOW>0 | 17.736 | 252.7 | 122.290 |
| BOTTOM with FLOW=0 | 16.986 | 0.0 | 117.110 |
| BOTTOM with FLOW>0 | 17.516 | 254.9 | 120.770 |

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
  ACTUAL FLOW=0 HPT DIFF.: 0.21 psi (1.5 kPa)

TRANSDUCER TEST PASSED

HPT IDEAL COEFFS:  2.2696e1,-2.2356
HPT SENSOR CAL NUMBERS: XD2191A,0.0000,0.0000,0.0000,0.0000,1.0000,0.0000
LOG START TIME: Thu Aug 18 2016 08:58:29

LOG END DEPTH: 36.75 ft (11.201 m)
LOG END TIME: Thu Aug 18 2016 09:24:10

LATITUDE: 0.000000000
LONGITUDE: 0.000000000
ELEVATION: 0.000 METERS  0.00 FEET
GPS Quality: None

POST-LOG HPT REFERENCE TEST VALUES

POST TEST TIME: Thu Aug 18 2016 09:37:51

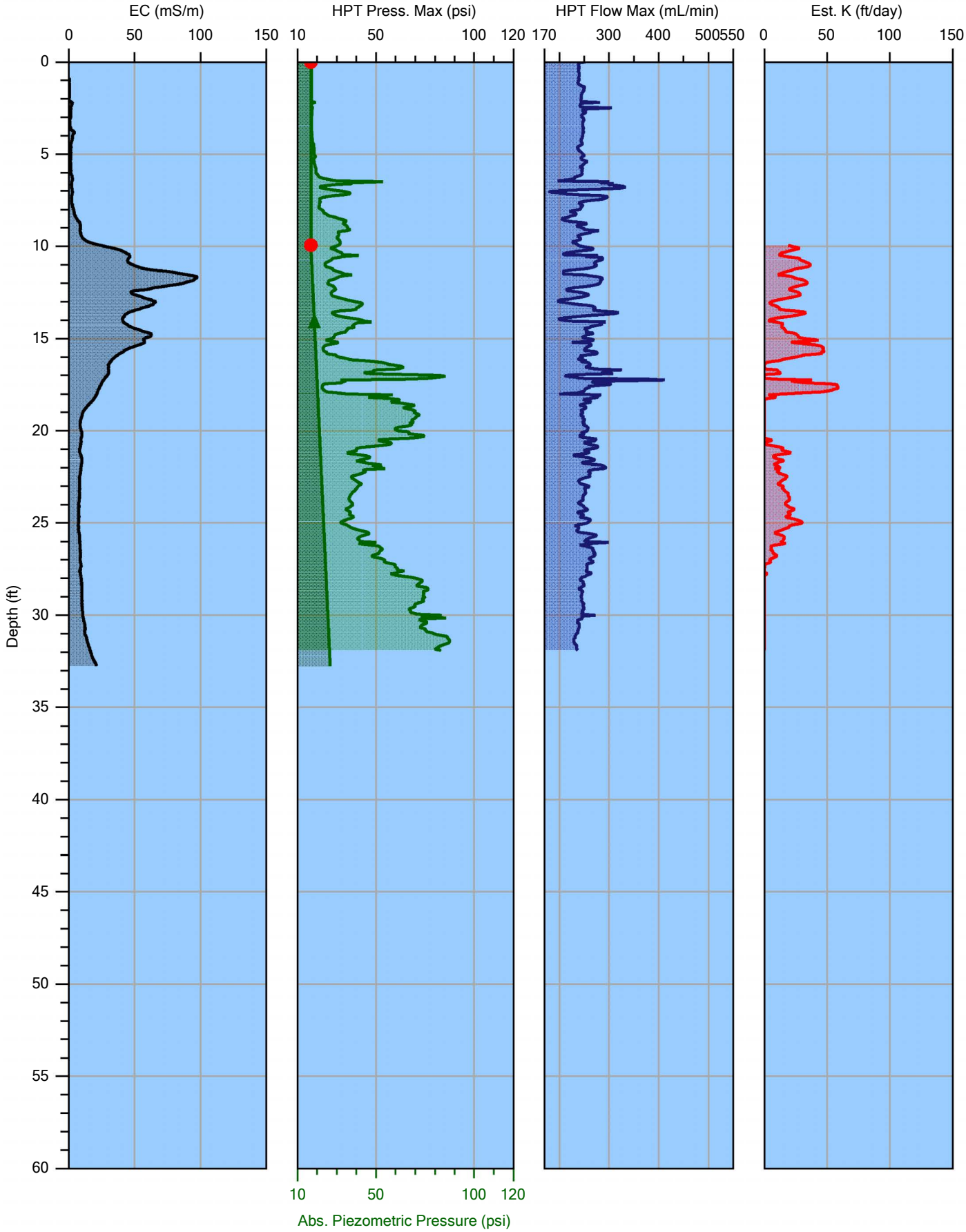
| TEST | HPT PRESSURE (psi) | FLOW (mL/min) | HPT PRESSURE (kPa) |
|---|---|---|---|
| TOP with FLOW=0 | 17.231 | 0.0 | 118.800 |
| TOP with FLOW>0 | 17.535 | 244.6 | 120.900 |
| BOTTOM with FLOW=0 | 17.026 | 0.0 | 117.390 |
| BOTTOM with FLOW>0 | 17.317 | 243.3 | 119.400 |

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
ACTUAL FLOW=0 HPT DIFF.: 0.20 psi (1.4 kPa)

TRANSDUCER TEST PASSED

Post-Log EC Load Tests

| Test | Target (mS/m) | Actual (mS/m) | % Diff | P/F |
|---|---|---|---|---|
| Test 1 | 195.0 | 186.5 | 4.4 | PASS |
| Test 2 | 97.0 | 94.2 | 2.9 | PASS |
| Test 3 | 24.0 | 24.0 | 0.2 | PASS |




| | | | |
|---|---|---|---|
| | | | File: HPT-21.HPT |
| Company: Dakota Technologies | Operator: Darin Slusher | | Date: 8/18/2016 |
| Project ID: 200.16 | Client: Arcadis | | Location: |

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HPT-21.zip

SITE INFORMATION -- DIRECT IMAGE HPT PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.7  Build: 16064

Pre-Log EC Load Tests (Post-Log From HPT-20.zip)

| Test | Target (mS/m) | Actual (mS/m) | % Diff | P/F |
|---|---|---|---|---|
| Test 1 | 195.0 | 185.5 | 4.9 | PASS |
| Test 2 | 97.0 | 93.9 | 3.2 | PASS |
| Test 3 | 24.0 | 24.1 | 0.2 | PASS |

COMPANY: Dakota Technologies
OPERATOR: Darin Slusher
PROJECT ID: 200.16
CLIENT: Arcadis
UNITS: ENGLISH
PROBE AND ARRAY: K6050 HPT Probe with Wenner
LOCATION: Marinette, WI
100 INCH STRING POT USED
ROD LENGTH: 4 feet

PRE-LOG HPT REFERENCE TEST VALUES (Post-Log From HPT-20.zip)

PRE TEST TIME: Thu Aug 18 2016 19:05:41

| TEST | HPT PRESSURE (psi) | FLOW (mL/min) | HPT PRESSURE (kPa) |
|---|---|---|---|
| TOP with FLOW=0 | 17.188 | 0.0 | 118.510 |
| TOP with FLOW>0 | 17.509 | 247.2 | 120.720 |
| BOTTOM with FLOW=0 | 16.978 | 0.0 | 117.060 |
| BOTTOM with FLOW>0 | 17.296 | 247.4 | 119.250 |

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
  ACTUAL FLOW=0 HPT DIFF.: 0.21 psi (1.5 kPa)

TRANSDUCER TEST PASSED

HPT IDEAL COEFFS:  2.2696e1,-2.2356
HPT SENSOR CAL NUMBERS: XD2191A,0.0000,0.0000,0.0000,0.0000,1.0000,0.0000
LOG START TIME: Thu Aug 18 2016 19:09:35

LOG END DEPTH: 31.90 ft (9.723 m)
LOG END TIME: Thu Aug 18 2016 19:52:47

LATITUDE: 0.000000000
LONGITUDE: 0.000000000
ELEVATION: 0.000 METERS  0.00 FEET
GPS Quality: None

POST-LOG HPT REFERENCE TEST VALUES

POST TEST TIME: Thu Aug 18 2016 20:05:35

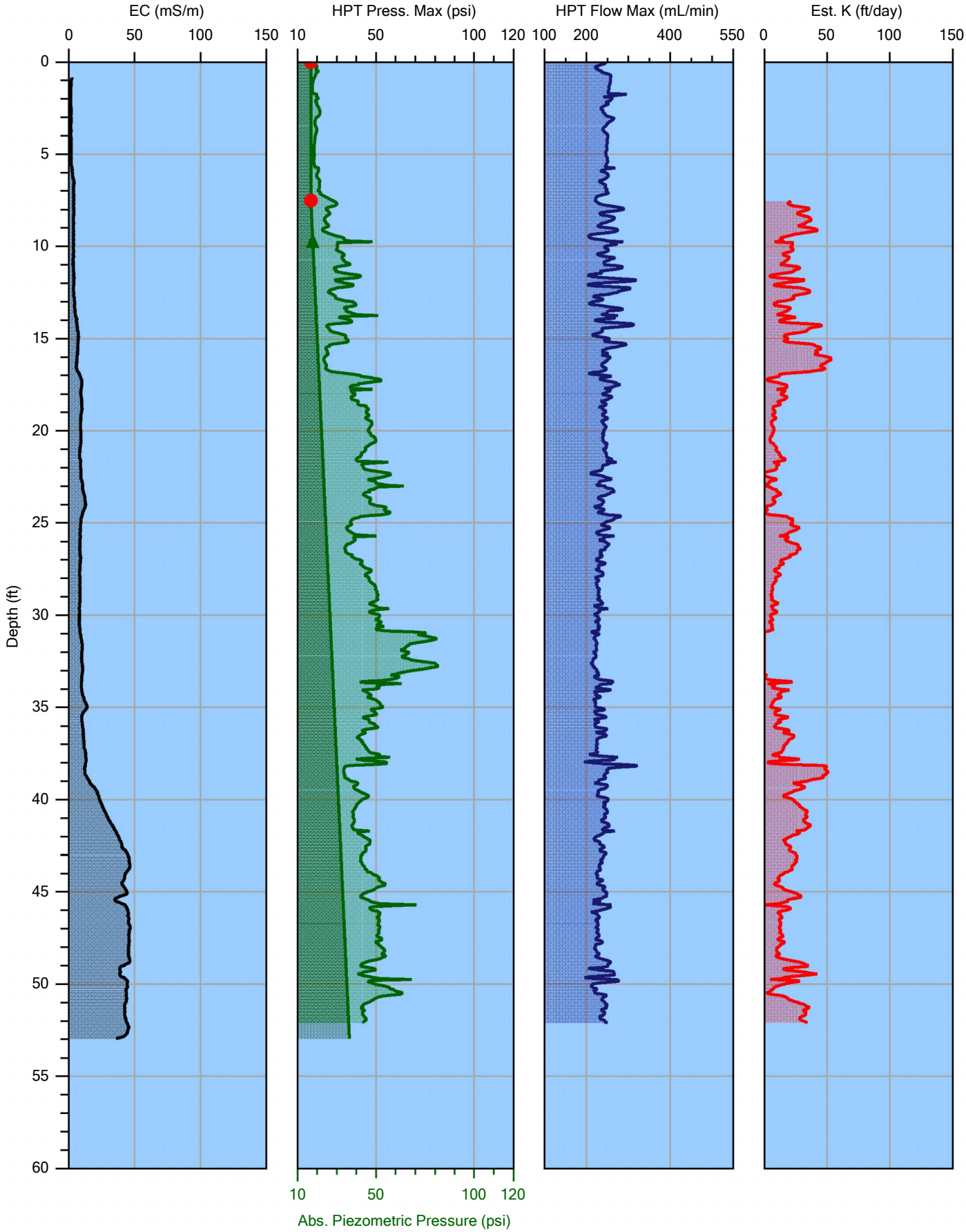
| TEST | HPT PRESSURE (psi) | FLOW (mL/min) | HPT PRESSURE (kPa) |
|---|---|---|---|
| TOP with FLOW=0 | 17.161 | 0.0 | 118.320 |
| TOP with FLOW>0 | 17.470 | 252.7 | 120.450 |
| BOTTOM with FLOW=0 | 16.962 | 0.0 | 116.950 |
| BOTTOM with FLOW>0 | 17.272 | 253.1 | 119.090 |

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
ACTUAL FLOW=0 HPT DIFF.: 0.20 psi (1.4 kPa)

TRANSDUCER TEST PASSED

Post-Log EC Load Tests

| Test | Target (mS/m) | Actual (mS/m) | % Diff | P/F |
|---|---|---|---|---|
| Test 1 | 195.0 | 186.8 | 4.2 | PASS |
| Test 2 | 97.0 | 94.6 | 2.5 | PASS |
| Test 3 | 24.0 | 24.5 | 2.1 | PASS |




| | | | |
|---|---|---|---|
| | | | File: HPT-17.HPT |
| Company: Dakota Technologies | Operator: Darin Slusher | | Date: 8/18/2016 |
| Project ID: 200.16 | Client: Arcadis | | Location: |

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www.DakotaTechnologies.com

HPT-17.zip

SITE INFORMATION -- DIRECT IMAGE HPT PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.7  Build: 16064

Pre-Log EC Load Tests

| Test | Target (mS/m) | Actual (mS/m) | % Diff | P/F |
|---|---|---|---|---|
| Test 1 | 195.0 | 184.7 | 5.3 | PASS |
| Test 2 | 97.0 | 93.8 | 3.3 | PASS |
| Test 3 | 24.0 | 24.1 | 0.4 | PASS |

COMPANY: Dakota Technologies
OPERATOR: Darin Slusher
PROJECT ID: 200.16
CLIENT: Arcadis
UNITS: ENGLISH
PROBE AND ARRAY: K6050 HPT Probe with Wenner
LOCATION: Marinette, WI
100 INCH STRING POT USED
ROD LENGTH: 4 feet

PRE-LOG HPT REFERENCE TEST VALUES

PRE TEST TIME: Thu Aug 18 2016 14:46:05

| TEST | HPT PRESSURE (psi) | FLOW (mL/min) | HPT PRESSURE (kPa) |
|---|---|---|---|
| TOP with FLOW=0 | 17.191 | 0.0 | 118.530 |
| TOP with FLOW>0 | 17.601 | 244.7 | 121.360 |
| BOTTOM with FLOW=0 | 16.987 | 0.0 | 117.120 |
| BOTTOM with FLOW>0 | 17.379 | 244.9 | 119.830 |

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
  ACTUAL FLOW=0 HPT DIFF.: 0.20 psi (1.4 kPa)

TRANSDUCER TEST PASSED

HPT IDEAL COEFFS:  2.2696e1,-2.2356
HPT SENSOR CAL NUMBERS: XD2191A,0.0000,0.0000,0.0000,0.0000,1.0000,0.0000
LOG START TIME: Thu Aug 18 2016 14:49:12

LOG END DEPTH: 52.10 ft (15.880 m)
LOG END TIME: Thu Aug 18 2016 15:17:03

LATITUDE: 0.000000000
LONGITUDE: 0.000000000
ELEVATION: 0.000 METERS  0.00 FEET
GPS Quality: None

POST-LOG HPT REFERENCE TEST VALUES

POST TEST TIME: Thu Aug 18 2016 15:37:25

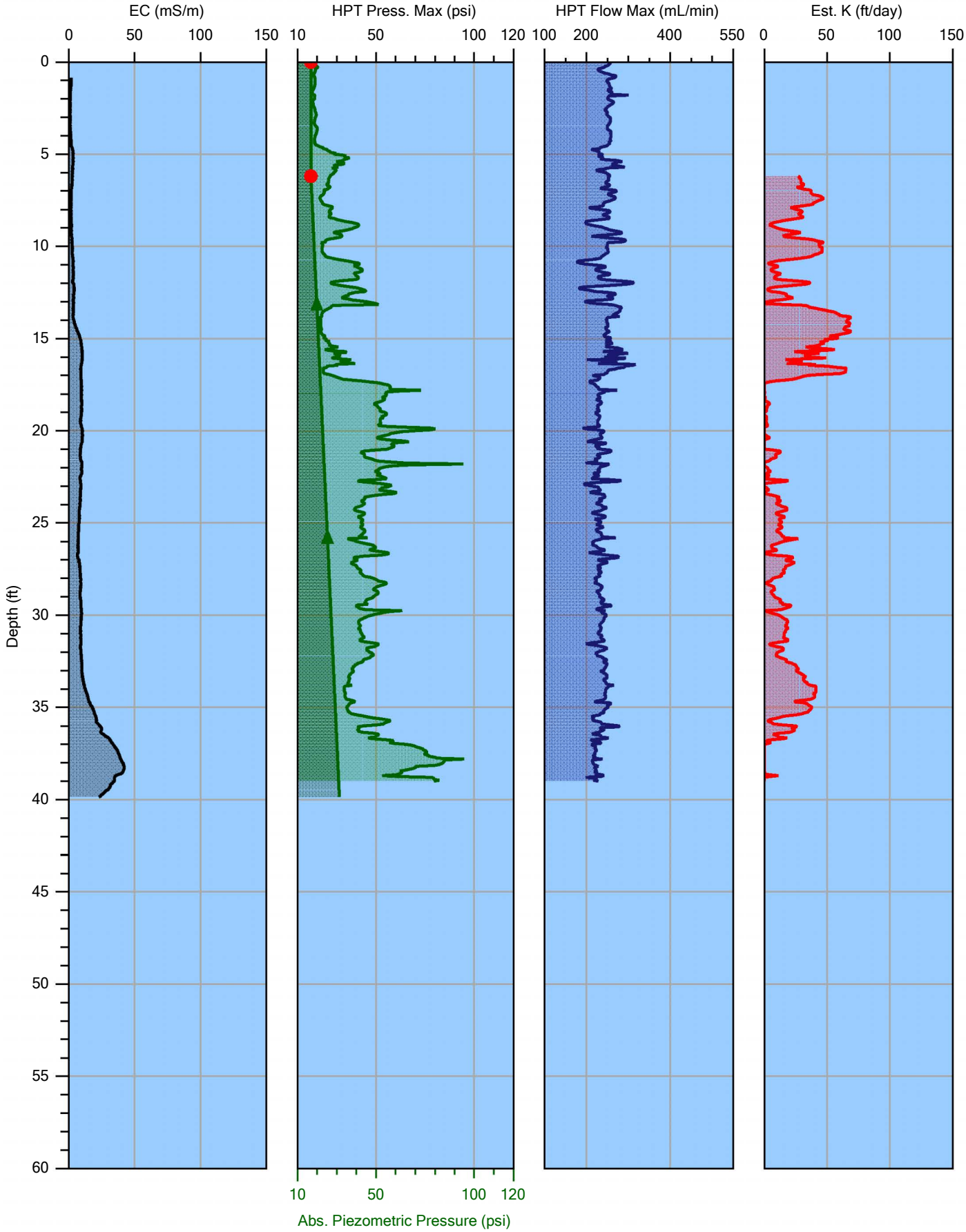
| TEST | HPT PRESSURE (psi) | FLOW (mL/min) | HPT PRESSURE (kPa) |
|---|---|---|---|
| TOP with FLOW=0 | 17.200 | 0.0 | 118.590 |
| TOP with FLOW>0 | 17.529 | 251.3 | 120.860 |
| BOTTOM with FLOW=0 | 17.000 | 0.0 | 117.210 |
| BOTTOM with FLOW>0 | 17.329 | 251.2 | 119.480 |

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
ACTUAL FLOW=0 HPT DIFF.: 0.20 psi (1.4 kPa)

TRANSDUCER TEST PASSED

Post-Log EC Load Tests

| Test | Target (mS/m) | Actual (mS/m) | % Diff | P/F |
|---|---|---|---|---|
| Test 1 | 195.0 | 184.3 | 5.5 | PASS |
| Test 2 | 97.0 | 93.7 | 3.4 | PASS |
| Test 3 | 24.0 | 24.1 | 0.3 | PASS |




| | | | |
|---|---|---|---|
| | | | File: HPT-18.HPT |
| Company: Dakota Technologies | | Operator: Darin Slusher | Date: 8/18/2016 |
| Project ID: 200.16 | | Client: Arcadis | Location: |

DAKOTA TECHNOLOGIES
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HPT-18.zip

SITE INFORMATION -- DIRECT IMAGE HPT PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.7  Build: 16064

Pre-Log EC Load Tests (Post-Log From HPT-17.zip)

| Test | Target (mS/m) | Actual (mS/m) | % Diff | P/F |
|---|---|---|---|---|
| Test 1 | 195.0 | 184.3 | 5.5 | PASS |
| Test 2 | 97.0 | 93.7 | 3.4 | PASS |
| Test 3 | 24.0 | 24.1 | 0.3 | PASS |

COMPANY: Dakota Technologies
OPERATOR: Darin Slusher
PROJECT ID: 200.16
CLIENT: Arcadis
UNITS: ENGLISH
PROBE AND ARRAY: K6050 HPT Probe with Wenner
LOCATION: Marinette, WI
100 INCH STRING POT USED
ROD LENGTH: 4 feet

PRE-LOG HPT REFERENCE TEST VALUES (Post-Log From HPT-17.zip)

PRE TEST TIME: Thu Aug 18 2016 15:37:25

| TEST | HPT PRESSURE (psi) | FLOW (mL/min) | HPT PRESSURE (kPa) |
|---|---|---|---|
| TOP with FLOW=0 | 17.200 | 0.0 | 118.590 |
| TOP with FLOW>0 | 17.529 | 251.3 | 120.860 |
| BOTTOM with FLOW=0 | 17.000 | 0.0 | 117.210 |
| BOTTOM with FLOW>0 | 17.329 | 251.2 | 119.480 |

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
  ACTUAL FLOW=0 HPT DIFF.: 0.20 psi (1.4 kPa)

TRANSDUCER TEST PASSED

HPT IDEAL COEFFS:  2.2696e1,-2.2356
HPT SENSOR CAL NUMBERS: XD2191A,0.0000,0.0000,0.0000,0.0000,1.0000,0.0000
LOG START TIME: Thu Aug 18 2016 15:40:32

LOG END DEPTH: 39.00 ft (11.887 m)
LOG END TIME: Thu Aug 18 2016 16:26:32

LATITUDE: 0.000000000
LONGITUDE: 0.000000000
ELEVATION: 0.000 METERS  0.00 FEET
GPS Quality: None

POST-LOG HPT REFERENCE TEST VALUES

POST TEST TIME: Thu Aug 18 2016 16:44:23

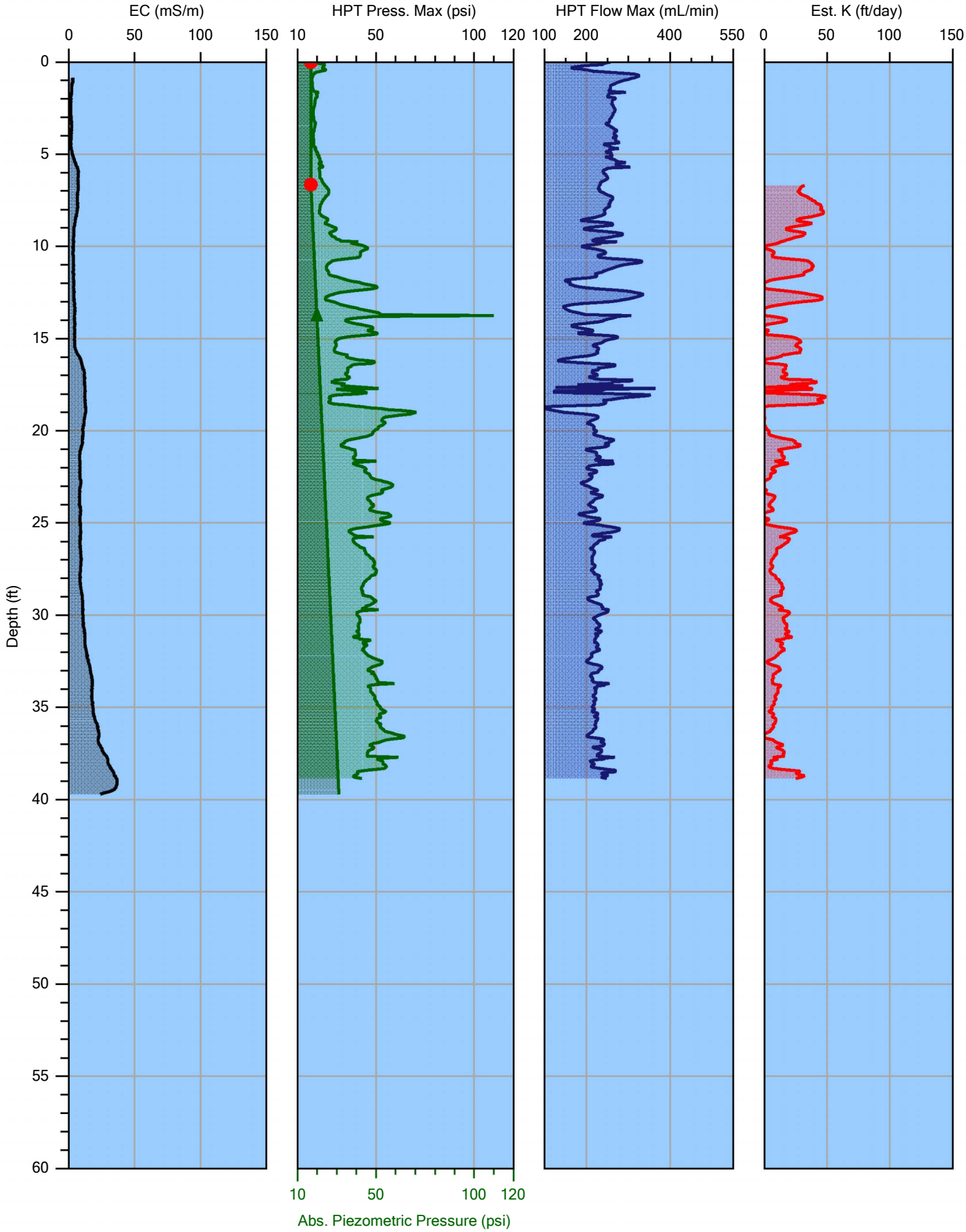
| TEST | HPT PRESSURE (psi) | FLOW (mL/min) | HPT PRESSURE (kPa) |
|---|---|---|---|
| TOP with FLOW=0 | 17.216 | 0.0 | 118.700 |
| TOP with FLOW>0 | 17.464 | 244.0 | 120.410 |
| BOTTOM with FLOW=0 | 17.011 | 0.0 | 117.280 |
| BOTTOM with FLOW>0 | 17.263 | 244.1 | 119.030 |

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
ACTUAL FLOW=0 HPT DIFF.: 0.21 psi (1.4 kPa)

TRANSDUCER TEST PASSED

Post-Log EC Load Tests

| Test | Target (mS/m) | Actual (mS/m) | % Diff | P/F |
|---|---|---|---|---|
| Test 1 | 195.0 | 185.9 | 4.7 | PASS |
| Test 2 | 97.0 | 94.1 | 2.9 | PASS |
| Test 3 | 24.0 | 24.0 | 0.1 | PASS |




| | | | |
|---|---|---|---|
| | | | File: HPT-19.HPT |
| Company: Dakota Technologies | | Operator: Darin Slusher | Date: 8/18/2016 |
| Project ID: 200.16 | | Client: Arcadis | Location: |

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HPT-19.zip

SITE INFORMATION -- DIRECT IMAGE HPT PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.7  Build: 16064

Pre-Log EC Load Tests

| Test | Target (mS/m) | Actual (mS/m) | % Diff | P/F |
|---|---|---|---|---|
| Test 1 | 195.0 | 184.0 | 5.6 | PASS |
| Test 2 | 97.0 | 93.5 | 3.6 | PASS |
| Test 3 | 24.0 | 24.0 | 0.2 | PASS |

COMPANY: Dakota Technologies
OPERATOR: Darin Slusher
PROJECT ID: 200.16
CLIENT: Arcadis
UNITS: ENGLISH
PROBE AND ARRAY: K6050 HPT Probe with Wenner
LOCATION: Marinette, WI
100 INCH STRING POT USED
ROD LENGTH: 4 feet

PRE-LOG HPT REFERENCE TEST VALUES

PRE TEST TIME: Thu Aug 18 2016 17:22:14

| TEST | HPT PRESSURE (psi) | FLOW (mL/min) | HPT PRESSURE (kPa) |
|---|---|---|---|
| TOP with FLOW=0 | 17.199 | 0.0 | 118.580 |
| TOP with FLOW>0 | 17.521 | 235.9 | 120.800 |
| BOTTOM with FLOW=0 | 16.993 | 0.0 | 117.170 |
| BOTTOM with FLOW>0 | 17.305 | 237.0 | 119.310 |

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
  ACTUAL FLOW=0 HPT DIFF.: 0.21 psi (1.4 kPa)

TRANSDUCER TEST PASSED

HPT IDEAL COEFFS:  2.2696e1,-2.2356
HPT SENSOR CAL NUMBERS: XD2191A,0.0000,0.0000,0.0000,0.0000,1.0000,0.0000
LOG START TIME: Thu Aug 18 2016 17:26:26

LOG END DEPTH: 38.85 ft (11.841 m)
LOG END TIME: Thu Aug 18 2016 17:46:34

LATITUDE: 0.000000000
LONGITUDE: 0.000000000
ELEVATION: 0.000 METERS  0.00 FEET
GPS Quality: None

POST-LOG HPT REFERENCE TEST VALUES

POST TEST TIME: Thu Aug 18 2016 18:00:28

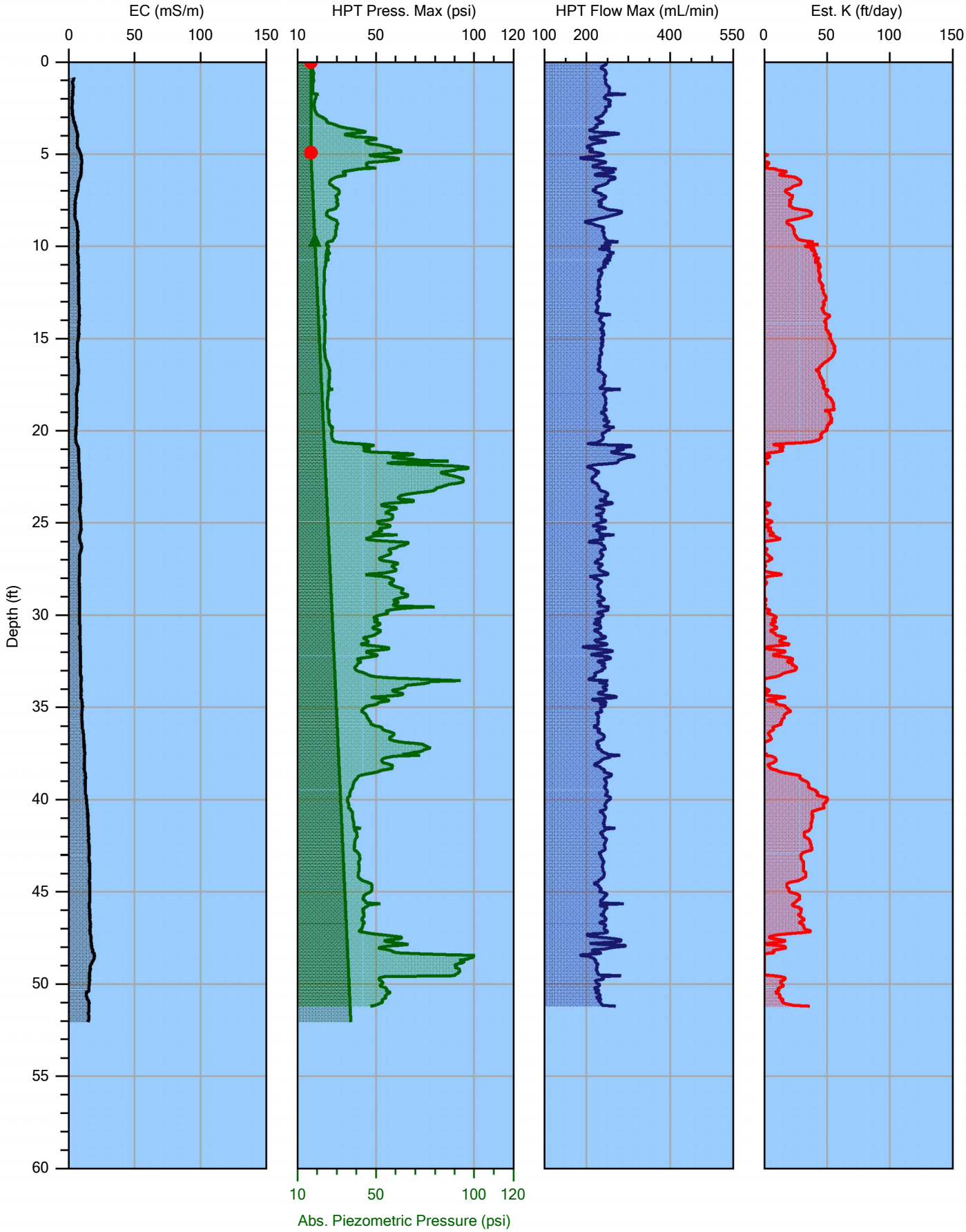
| TEST | HPT PRESSURE (psi) | FLOW (mL/min) | HPT PRESSURE (kPa) |
|---|---|---|---|
| TOP with FLOW=0 | 17.185 | 0.0 | 118.490 |
| TOP with FLOW>0 | 17.488 | 246.3 | 120.570 |
| BOTTOM with FLOW=0 | 16.986 | 0.0 | 117.110 |
| BOTTOM with FLOW>0 | 17.287 | 245.8 | 119.190 |

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
ACTUAL FLOW=0 HPT DIFF.: 0.20 psi (1.4 kPa)

TRANSDUCER TEST PASSED

Post-Log EC Load Tests

| Test | Target (mS/m) | Actual (mS/m) | % Diff | P/F |
|---|---|---|---|---|
| Test 1 | 195.0 | 184.2 | 5.5 | PASS |
| Test 2 | 97.0 | 93.6 | 3.5 | PASS |
| Test 3 | 24.0 | 24.1 | 0.5 | PASS |




| | | | |
|---|---|---|---|
| | | | File: HPT-20.HPT |
| Company: Dakota Technologies | | Operator: Darin Slusher | Date: 8/18/2016 |
| Project ID: 200.16 | | Client: Arcadis | Location: |

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HPT-20.zip

SITE INFORMATION -- DIRECT IMAGE HPT PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.7  Build: 16064

Pre-Log EC Load Tests (Post-Log From HPT-19.zip)

| Test | Target (mS/m) | Actual (mS/m) | % Diff | P/F |
|---|---|---|---|---|
| Test 1 | 195.0 | 184.2 | 5.5 | PASS |
| Test 2 | 97.0 | 93.6 | 3.5 | PASS |
| Test 3 | 24.0 | 24.1 | 0.5 | PASS |

COMPANY: Dakota Technologies
OPERATOR: Darin Slusher
PROJECT ID: 200.16
CLIENT: Arcadis
UNITS: ENGLISH
PROBE AND ARRAY: K6050 HPT Probe with Wenner
LOCATION: Marinette, WI
100 INCH STRING POT USED
ROD LENGTH: 4 feet

PRE-LOG HPT REFERENCE TEST VALUES (Post-Log From HPT-19.zip)

PRE TEST TIME: Thu Aug 18 2016 18:00:28

| TEST | HPT PRESSURE (psi) | FLOW (mL/min) | HPT PRESSURE (kPa) |
|---|---|---|---|
| TOP with FLOW=0 | 17.185 | 0.0 | 118.490 |
| TOP with FLOW>0 | 17.488 | 246.3 | 120.570 |
| BOTTOM with FLOW=0 | 16.986 | 0.0 | 117.110 |
| BOTTOM with FLOW>0 | 17.287 | 245.8 | 119.190 |

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
  ACTUAL FLOW=0 HPT DIFF.: 0.20 psi (1.4 kPa)

TRANSDUCER TEST PASSED

HPT IDEAL COEFFS:  2.2696e1,-2.2356
HPT SENSOR CAL NUMBERS: XD2191A,0.0000,0.0000,0.0000,0.0000,1.0000,0.0000
LOG START TIME: Thu Aug 18 2016 18:04:12

LOG END DEPTH: 51.20 ft (15.606 m)
LOG END TIME: Thu Aug 18 2016 18:46:54

LATITUDE: 0.000000000
LONGITUDE: 0.000000000
ELEVATION: 0.000 METERS  0.00 FEET
GPS Quality: None

POST-LOG HPT REFERENCE TEST VALUES

POST TEST TIME: Thu Aug 18 2016 19:05:41

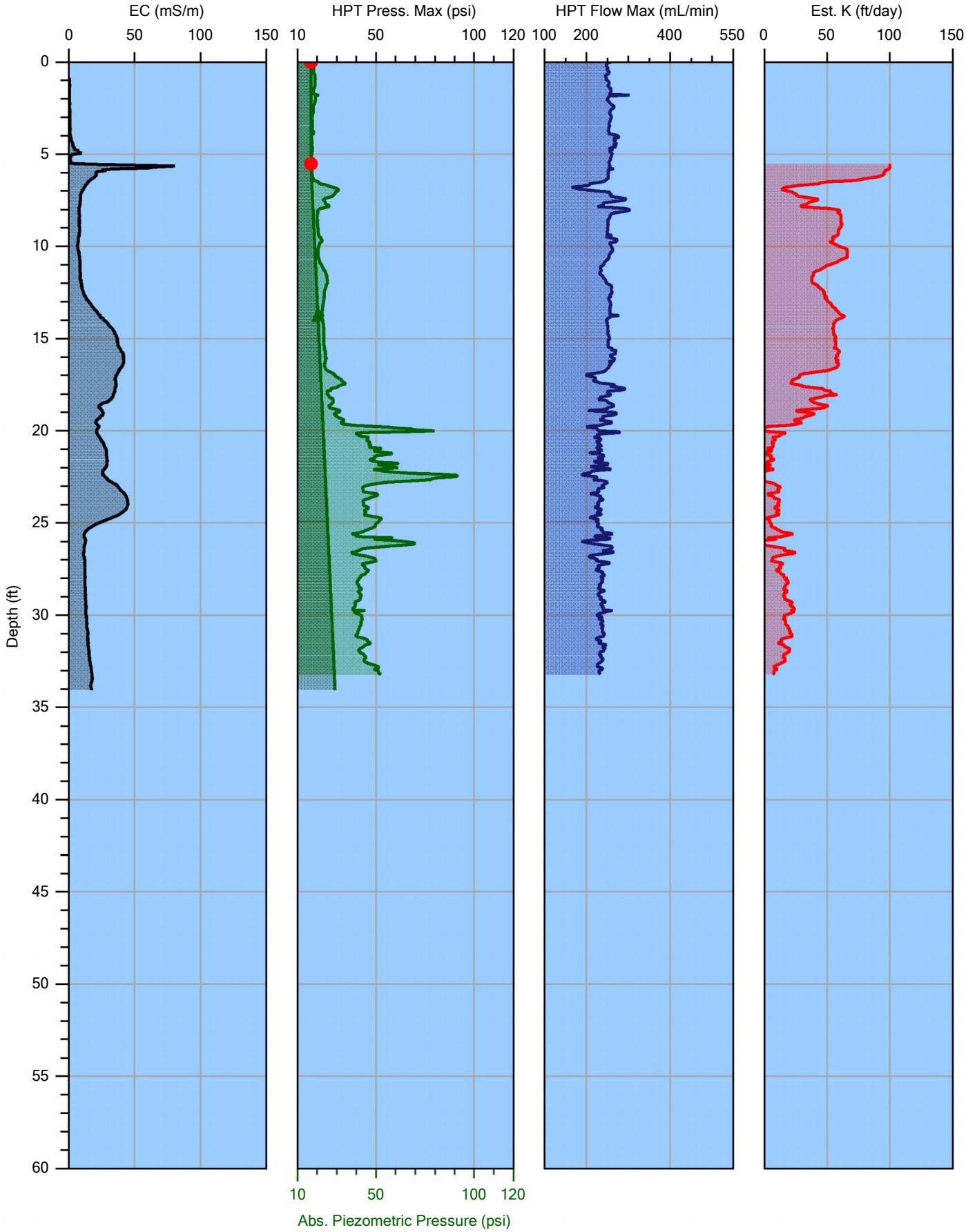
| TEST | HPT PRESSURE (psi) | FLOW (mL/min) | HPT PRESSURE (kPa) |
|---|---|---|---|
| TOP with FLOW=0 | 17.188 | 0.0 | 118.510 |
| TOP with FLOW>0 | 17.509 | 247.2 | 120.720 |
| BOTTOM with FLOW=0 | 16.978 | 0.0 | 117.060 |
| BOTTOM with FLOW>0 | 17.296 | 247.4 | 119.250 |

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
ACTUAL FLOW=0 HPT DIFF.: 0.21 psi (1.5 kPa)

TRANSDUCER TEST PASSED

Post-Log EC Load Tests

| Test | Target (mS/m) | Actual (mS/m) | % Diff | P/F |
|---|---|---|---|---|
| Test 1 | 195.0 | 185.5 | 4.9 | PASS |
| Test 2 | 97.0 | 93.9 | 3.2 | PASS |
| Test 3 | 24.0 | 24.1 | 0.2 | PASS |




| | | | |
|---|---|---|---|
| | | | File: HPT-08A.HPT |
| Company: Dakota Technologies | Operator: Darin Slusher | | Date: 8/17/2016 |
| Project ID: 200.16 | Client: Arcadis | | Location: |

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HPT-08a.zip

SITE INFORMATION -- DIRECT IMAGE HPT PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.7  Build: 16064

Pre-Log EC Load Tests (Post-Log From test.zip)

| Test | Target (mS/m) | Actual (mS/m) | % Diff | P/F |
|---|---|---|---|---|
| Test 1 | 195.0 | 199.8 | 2.5 | PASS |
| Test 2 | 97.0 | 101.1 | 4.2 | PASS |
| Test 3 | 24.0 | 25.9 | 7.7 | PASS |

COMPANY: Dakota Technologies
OPERATOR: Darin Slusher
PROJECT ID: 200.16
CLIENT: Arcadis
UNITS: ENGLISH
PROBE AND ARRAY: K6050 HPT Probe with Wenner
LOCATION: Marinette, WI
100 INCH STRING POT USED
ROD LENGTH: 4 feet

PRE-LOG HPT REFERENCE TEST VALUES (Post-Log From test.zip)

PRE TEST TIME: Wed Aug 17 2016 10:17:04

| TEST | HPT PRESSURE (psi) | FLOW (mL/min) | HPT PRESSURE (kPa) |
|---|---|---|---|
| TOP with FLOW=0 | 17.219 | 0.0 | 118.720 |
| TOP with FLOW>0 | 17.551 | 249.2 | 121.010 |
| BOTTOM with FLOW=0 | 17.013 | 0.0 | 117.300 |
| BOTTOM with FLOW>0 | 17.346 | 249.8 | 119.590 |

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
  ACTUAL FLOW=0 HPT DIFF.: 0.21 psi (1.4 kPa)

TRANSDUCER TEST PASSED

HPT IDEAL COEFFS:  2.2696e1,-2.2356
HPT SENSOR CAL NUMBERS: XD2266A,0.0000,0.0000,0.0000,0.0000,1.0000,0.0000
LOG START TIME: Wed Aug 17 2016 10:20:11

LOG END DEPTH: 33.20 ft (10.119 m)
LOG END TIME: Wed Aug 17 2016 10:41:25

LATITUDE: 0.000000000
LONGITUDE: 0.000000000
ELEVATION: 0.000 METERS  0.00 FEET
GPS Quality: None

POST-LOG HPT REFERENCE TEST VALUES

POST TEST TIME: Wed Aug 17 2016 11:01:04

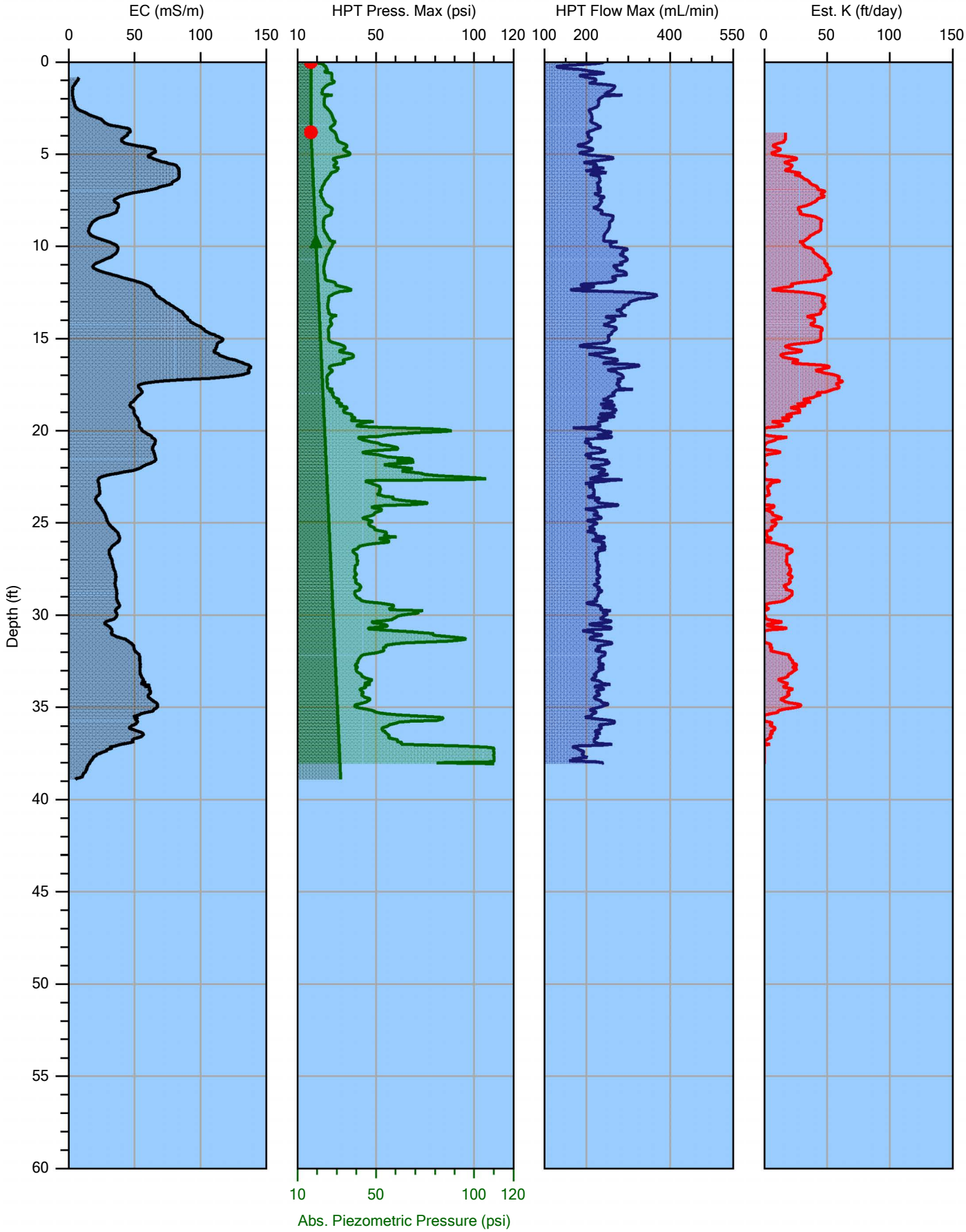
| TEST | HPT PRESSURE (psi) | FLOW (mL/min) | HPT PRESSURE (kPa) |
|---|---|---|---|
| TOP with FLOW=0 | 17.236 | 0.0 | 118.840 |
| TOP with FLOW>0 | 17.555 | 242.1 | 121.040 |
| BOTTOM with FLOW=0 | 17.027 | 0.0 | 117.400 |
| BOTTOM with FLOW>0 | 17.352 | 239.8 | 119.640 |

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
ACTUAL FLOW=0 HPT DIFF.: 0.21 psi (1.4 kPa)

TRANSDUCER TEST PASSED

Post-Log EC Load Tests

| Test | Target (mS/m) | Actual (mS/m) | % Diff | P/F |
|---|---|---|---|---|
| Test 1 | 195.0 | 187.0 | 4.1 | PASS |
| Test 2 | 97.0 | 94.3 | 2.8 | PASS |
| Test 3 | 24.0 | 24.0 | 0.1 | PASS |




| | | | |
|---|---|---|---|
| | | | File: HPT-09.HPT |
| Company: Dakota Technologies | | Operator: Darin Slusher | Date: 8/17/2016 |
| Project ID: 200.16 | | Client: Arcadis | Location: |

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HPT-09.zip

SITE INFORMATION -- DIRECT IMAGE HPT PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.7  Build: 16064

Pre-Log EC Load Tests (Post-Log From HPT-08a.zip)

| Test | Target (mS/m) | Actual (mS/m) | % Diff | P/F |
|---|---|---|---|---|
| Test 1 | 195.0 | 187.0 | 4.1 | PASS |
| Test 2 | 97.0 | 94.3 | 2.8 | PASS |
| Test 3 | 24.0 | 24.0 | 0.1 | PASS |

COMPANY: Dakota Technologies
OPERATOR: Darin Slusher
PROJECT ID: 200.16
CLIENT: Arcadis
UNITS: ENGLISH
PROBE AND ARRAY: K6050 HPT Probe with Wenner
LOCATION: Marinette, WI
100 INCH STRING POT USED
ROD LENGTH: 4 feet

PRE-LOG HPT REFERENCE TEST VALUES (Post-Log From HPT-08a.zip)

PRE TEST TIME: Wed Aug 17 2016 11:01:04

| TEST | HPT PRESSURE (psi) | FLOW (mL/min) | HPT PRESSURE (kPa) |
|---|---|---|---|
| TOP with FLOW=0 | 17.236 | 0.0 | 118.840 |
| TOP with FLOW>0 | 17.555 | 242.1 | 121.040 |
| BOTTOM with FLOW=0 | 17.027 | 0.0 | 117.400 |
| BOTTOM with FLOW>0 | 17.352 | 239.8 | 119.640 |

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
  ACTUAL FLOW=0 HPT DIFF.: 0.21 psi (1.4 kPa)

TRANSDUCER TEST PASSED

HPT IDEAL COEFFS:  2.2696e1,-2.2356
HPT SENSOR CAL NUMBERS: XD2266A,0.0000,0.0000,0.0000,0.0000,1.0000,0.0000
LOG START TIME: Wed Aug 17 2016 11:12:57

LOG END DEPTH: 38.05 ft (11.598 m)
LOG END TIME: Wed Aug 17 2016 12:02:57

LATITUDE: 0.000000000
LONGITUDE: 0.000000000
ELEVATION: 0.000 METERS  0.00 FEET
GPS Quality: None

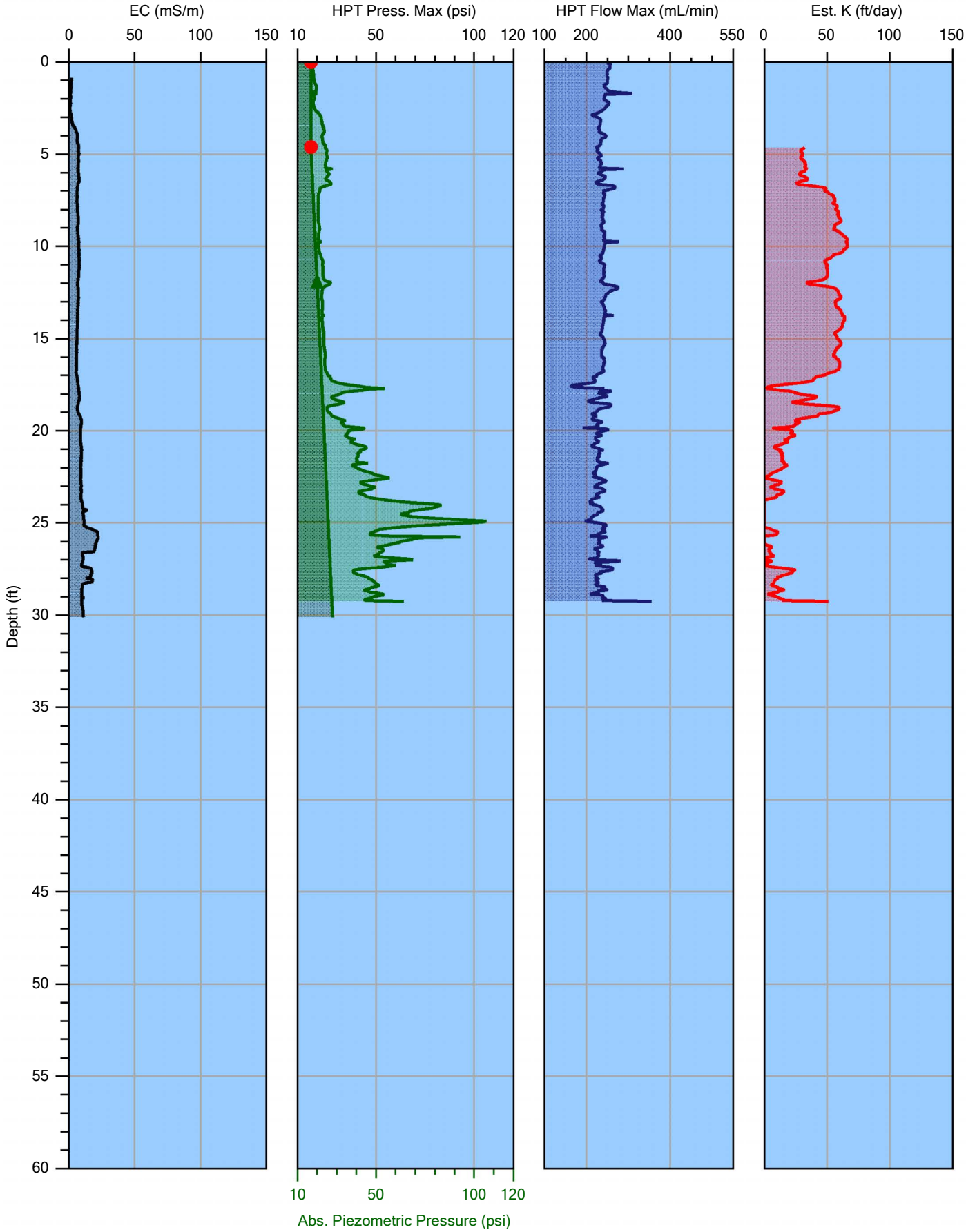
POST-LOG HPT REFERENCE TEST VALUES

POST TEST TIME: Wed Aug 17 2016 12:24:12

POST-LOG HPT REFERENCE TESTS BYPASSED

Post-Log EC Load Tests

| Test | Target (mS/m) | Actual (mS/m) | % Diff | P/F |
|---|---|---|---|---|
| Test 1 | 195.0 | 186.6 | 4.3 | PASS |
| Test 2 | 97.0 | 94.1 | 3.0 | PASS |
| Test 3 | 24.0 | 24.0 | 0.0 | PASS |




| | | | |
|---|---|---|---|
| | | | File: HPT-07.HPT |
| Company: Dakota Technologies | | Operator: Darin Slusher | Date: 8/17/2016 |
| Project ID: 200.16 | | Client: Arcadis | Location: |

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HPT-07.zip

SITE INFORMATION -- DIRECT IMAGE HPT PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.7  Build: 16064

Pre-Log EC Load Tests

| Test | Target (mS/m) | Actual (mS/m) | % Diff | P/F |
|---|---|---|---|---|
| Test 1 | 195.0 | 187.3 | 3.9 | PASS |
| Test 2 | 97.0 | 94.3 | 2.7 | PASS |
| Test 3 | 24.0 | 24.0 | 0.1 | PASS |

COMPANY: Dakota Technologies
OPERATOR: Darin Slusher
PROJECT ID: 200.16
CLIENT: Arcadis
UNITS: ENGLISH
PROBE AND ARRAY: K6050 HPT Probe with Wenner
LOCATION: Marinette, WI
100 INCH STRING POT USED
ROD LENGTH: 4 feet

PRE-LOG HPT REFERENCE TEST VALUES

PRE TEST TIME: Wed Aug 17 2016 08:52:21

| TEST | HPT PRESSURE (psi) | FLOW (mL/min) | HPT PRESSURE (kPa) |
|---|---|---|---|
| TOP with FLOW=0 | 17.206 | 0.0 | 118.630 |
| TOP with FLOW>0 | 17.482 | 239.5 | 120.530 |
| BOTTOM with FLOW=0 | 16.997 | 0.0 | 117.190 |
| BOTTOM with FLOW>0 | 17.279 | 237.6 | 119.140 |

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
  ACTUAL FLOW=0 HPT DIFF.: 0.21 psi (1.4 kPa)

TRANSDUCER TEST PASSED

HPT IDEAL COEFFS:  2.2696e1,-2.2356
HPT SENSOR CAL NUMBERS: XD2266A,0.0000,0.0000,0.0000,0.0000,1.0000,0.0000
LOG START TIME: Wed Aug 17 2016 08:58:56

LOG END DEPTH: 29.25 ft (8.915 m)
LOG END TIME: Wed Aug 17 2016 09:37:10

LATITUDE: 0.000000000
LONGITUDE: 0.000000000
ELEVATION: 0.000 METERS  0.00 FEET
GPS Quality: None

POST-LOG HPT REFERENCE TEST VALUES

POST TEST TIME: Wed Aug 17 2016 09:38:02

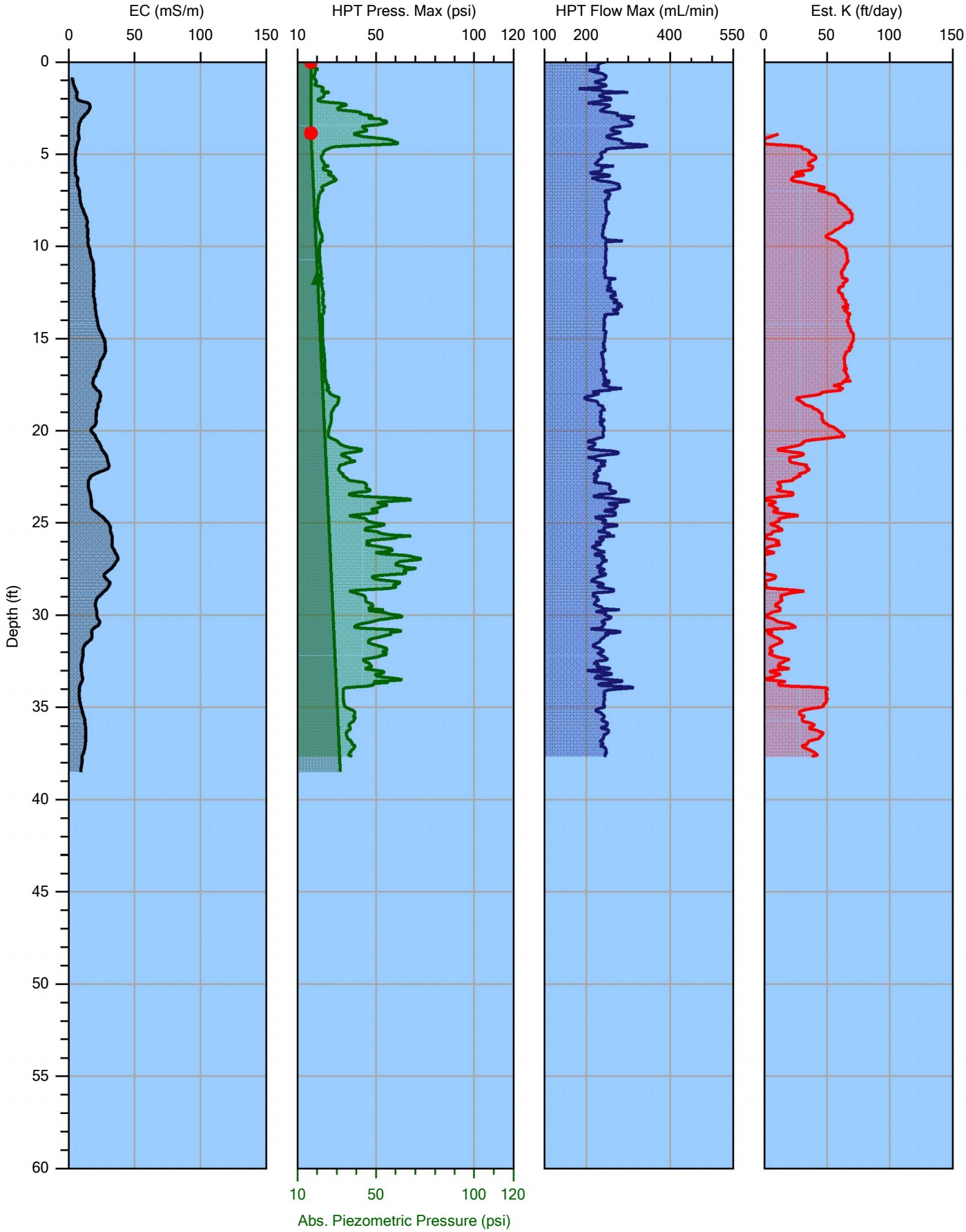
| TEST | HPT PRESSURE (psi) | FLOW (mL/min) | HPT PRESSURE (kPa) |
|---|---|---|---|
| TOP with FLOW=0 | 17.224 | 0.0 | 118.760 |
| TOP with FLOW>0 | 17.511 | 245.4 | 120.730 |
| BOTTOM with FLOW=0 | 17.017 | 0.0 | 117.330 |
| BOTTOM with FLOW>0 | 17.310 | 245.1 | 119.350 |

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
ACTUAL FLOW=0 HPT DIFF.: 0.21 psi (1.4 kPa)

TRANSDUCER TEST PASSED

Post-Log EC Load Tests

| Test | Target (mS/m) | Actual (mS/m) | % Diff | P/F |
|---|---|---|---|---|
| Test 1 | 195.0 | 186.7 | 4.3 | PASS |
| Test 2 | 97.0 | 94.2 | 2.9 | PASS |
| Test 3 | 24.0 | 24.0 | 0.1 | PASS |




| | | | |
|---|---|---|---|
| | | | File: HPT-10.HPT |
| Company: Dakota Technologies | | Operator: Darin Slusher | Date: 8/17/2016 |
| Project ID: 200.16 | | Client: Arcadis | Location: |

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HPT-10.zip

SITE INFORMATION -- DIRECT IMAGE HPT PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.7  Build: 16064

Pre-Log EC Load Tests

| Test | Target (mS/m) | Actual (mS/m) | % Diff | P/F |
|---|---|---|---|---|
| Test 1 | 195.0 | 185.6 | 4.8 | PASS |
| Test 2 | 97.0 | 93.9 | 3.2 | PASS |
| Test 3 | 24.0 | 24.1 | 0.3 | PASS |

COMPANY: Dakota Technologies
OPERATOR: Darin Slusher
PROJECT ID: 200.16
CLIENT: Arcadis
UNITS: ENGLISH
PROBE AND ARRAY: K6050 HPT Probe with Wenner
LOCATION: Marinette, WI
100 INCH STRING POT USED
ROD LENGTH: 4 feet

PRE-LOG HPT REFERENCE TEST VALUES

PRE TEST TIME: Wed Aug 17 2016 14:33:39

| TEST | HPT PRESSURE (psi) | FLOW (mL/min) | HPT PRESSURE (kPa) |
|---|---|---|---|
| TOP with FLOW=0 | 17.236 | 0.0 | 118.840 |
| TOP with FLOW>0 | 17.505 | 243.3 | 120.690 |
| BOTTOM with FLOW=0 | 17.017 | 0.0 | 117.330 |
| BOTTOM with FLOW>0 | 17.296 | 243.9 | 119.250 |

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
  ACTUAL FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa)

TRANSDUCER TEST PASSED

HPT IDEAL COEFFS:  2.2696e1,-2.2356
HPT SENSOR CAL NUMBERS: XD2266A,0.0000,0.0000,0.0000,0.0000,1.0000,0.0000
LOG START TIME: Wed Aug 17 2016 14:39:58

LOG END DEPTH: 37.65 ft (11.476 m)
LOG END TIME: Wed Aug 17 2016 15:05:16

LATITUDE: 0.000000000
LONGITUDE: 0.000000000
ELEVATION: 0.000 METERS  0.00 FEET
GPS Quality: None

POST-LOG HPT REFERENCE TEST VALUES

POST TEST TIME: Wed Aug 17 2016 15:19:11

| TEST | HPT PRESSURE (psi) | FLOW (mL/min) | HPT PRESSURE (kPa) |
|---|---|---|---|
| TOP with FLOW=0 | 17.215 | 0.0 | 118.700 |
| TOP with FLOW>0 | 17.549 | 239.4 | 121.000 |
| BOTTOM with FLOW=0 | 17.003 | 0.0 | 117.230 |
| BOTTOM with FLOW>0 | 17.333 | 240.5 | 119.510 |

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
ACTUAL FLOW=0 HPT DIFF.: 0.21 psi (1.5 kPa)

TRANSDUCER TEST PASSED

Post-Log EC Load Tests

| Test | Target (mS/m) | Actual (mS/m) | % Diff | P/F |
|---|---|---|---|---|
| Test 1 | 195.0 | 185.3 | 5.0 | PASS |
| Test 2 | 97.0 | 93.8 | 3.3 | PASS |
| Test 3 | 24.0 | 24.1 | 0.3 | PASS |

********** USER NOTES **********

Hard pushing/slow RoP at 24' to 27'.

# Appendix C

# HPT Reference Log

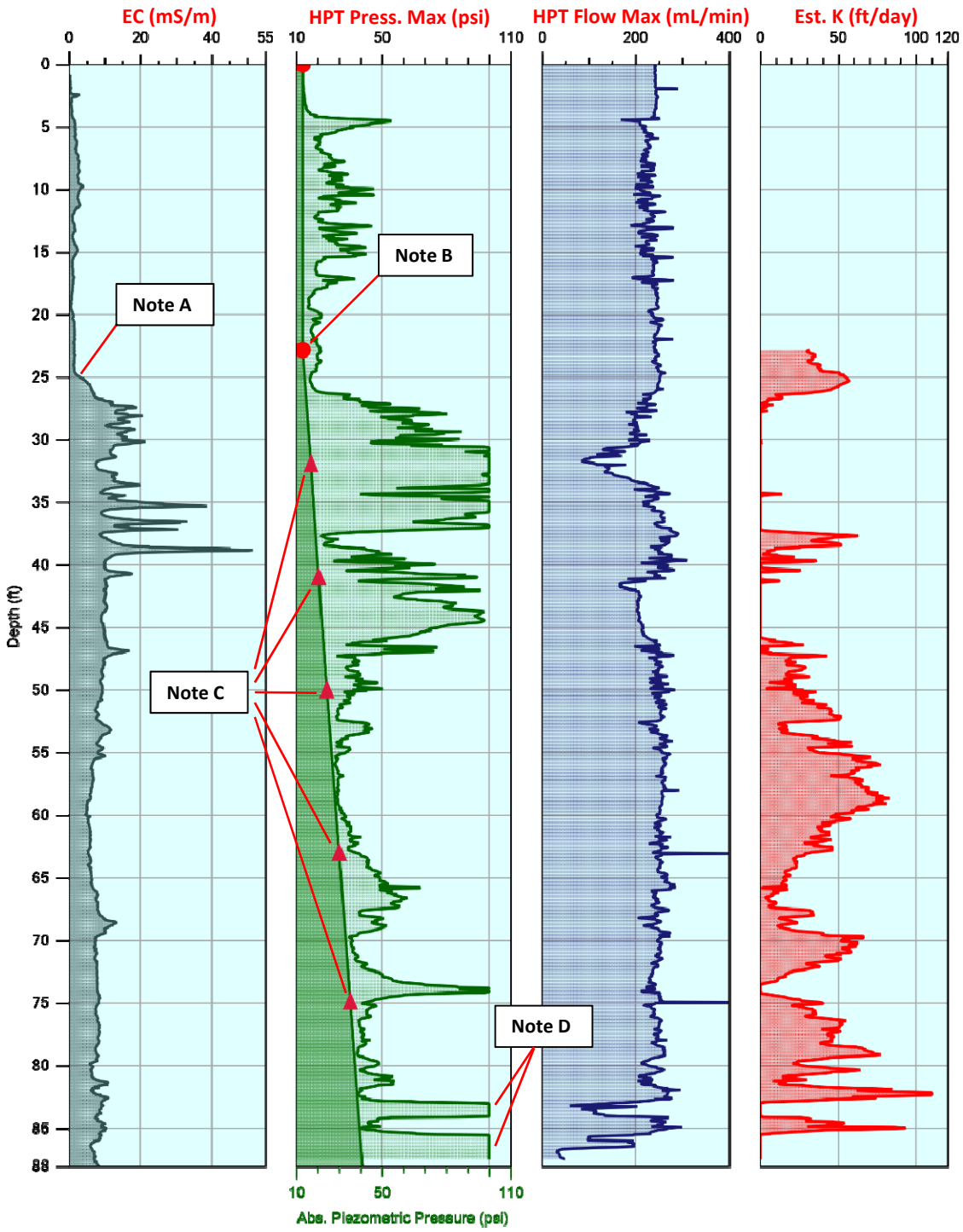
# Dakota Technologies
# HPT Reference Log

## Conductivity Plot:
The Electrical Conductivity **(EC)** of the soil is logged simultaneously with the HPT data utilizing an integrated Wenner array. EC often provides insight into the stratigraphy and correlates with the HPT pressure plot in many instances. Typically an increase in EC (and increase in pressure) is indicative of finer, tighter soil types.

## HPT Pressure Plot:
The HPT pressure gives insight into hydraulic properties of the soil as water is pumped into the formation at a constant rate. The pressure (unlike EC) is independent of certain factors such as pore water chemistry or mineralogy (contaminants, brines) and so further aids in defining soil/hydraulic properties of the area of investigation.

## HPT Flow Plot:
Water is pumped out of the HPT probe and into the formation at a constant rate of typically 250 ml/min. A change in flow (usually accompanied by an inverse pressure change) is an indicator of the hydraulic properties of the soil

## Estimated K Plot:
The estimated hydraulic conductivity (K) is internally calculated by utilizing pressure and flow data in conjunction with dissipation tests performed at each location. This data is useful for directing sampling, remediation and slug testing protocols.




## Note A:
Increasing EC readings starting at 25 feet indicate a transition to finer grain silt with clay stringers at 35 to 39 feet.

## Note B:
The hydrostatic water level has been indicated with a round marker at 22.5 feet.

## Note C:
The Absolute Piezometric pressure has been calculated and graphed with the individual dissipation test points indicated by triangular markers. The pressure increases relative to the head pressure as soon as the water table is encountered. Since these points form a straight line (no inflections) it can be inferred that the water table is hydraulically connected from the first to the last dissipation test.

## Note D:
The significant pressure increase (transducer maxed out, 100 psi) and drop in flow at 83 to 88 feet is due to tight formation conditions discovered by HPT parameters (and not observed by EC measurements).

# High Resolution Site Characterization Report – HPT Investigation

**Client: Braun**

**Project Name: Tyco Fire Products**

**Location: Marinette, WI**


**Prepared by:**

**Dakota Technologies Company, LLC**

**5001 Boone Avenue N.**

**New Hope, Minnesota 55428**

**763.424.4803**


**August 12, 2019**

**Project Number: 251.19**

# TABLE OF CONTENTS

**1.0 HYDRAULIC PROFILING TOOL (HPT) SYSTEM DESCRIPTION..... 1**

**2.0 ELECTRICAL CONDUCTIVITY (EC) DESCRIPTION..... 3**

**3.0 DISCUSSION AND COMMENTS..... 4**

**4.0 LIMITATIONS..... 5**

**5.0 REFERENCES..... 5**

**APPENDICES**

Appendix A HPT Field Summary Log
Appendix B HPT Logs Autoscaled
Appendix C HPT Logs Common Scale
Appendix D HPT Reference Log

## 1.0 HYDRAULIC PROFILING TOOL (HPT) SYSTEM DESCRIPTION

The Hydraulic Profiling Tool (HPT) is a logging tool that measures the pressure required to inject a flow of water into the soil as the probe is advanced into the subsurface. The injection pressure log is an excellent indicator of formation permeability. In addition to measurement of injection pressure, the HPT can also be used to measure hydrostatic pressure under the zero-flow condition. This allows the development of a hydrostatic pressure graph for the log and prediction of the position of the water table.

The probe is advanced into the ground at a rate of approximately 2 cm/sec. The pump in the HPT flow module draws water from the supply tank and pumps water down the trunk line at a constant flow rate (250-mL/min). An inline flow meter measures the flow rate. The downhole pressure sensor monitors the pressure generated by injecting water into the formation matrix. The HPT probe also includes a Wenner type array for measurement of soil electrical conductivity (EC) as the probe is advanced to depth. The HPT log provides graphs of the electrical conductance, HPT pressure and flow rate versus depth.

Prior to running an HPT log, quality assurance (QA) tests are run on the Wenner array and pressure sensor. The results of the QA tests are saved in an information file for later review and reporting. The Wenner array electrodes are placed on a test jig and the test load is used to verify the electrical continuity and isolation of the EC system. Next, a reference test is performed on the pressure sensor. This is accomplished by submerging the HPT probe a specified depth below the water level in a reference tube. A two-step test enables the operator to verify that the pressure sensor is providing the correct measurement for a defined length of water column. If the result is more than +/-10% out of range, the transducer fails the QA test. At completion of the field boring, another QA test is performed to verify proper probe performance during the logging event.

The HPT pressure log reveals observed pressure depending on the characteristics of the soil or sediment penetrated. It is apparent that higher pressure resulting from the injection of water into a sediment at a given flow rate indicates lower permeability and conversely, that lower pressure from injection of water at a given flow rate indicates higher permeability. This simple relationship allows you to evaluate changes in relative permeability of soils and sediments in an HPT log by reviewing the pressure versus depth log.
High EC readings in general correlate with high pressure readings and conversely low EC readings usually correlate with low pressure readings. However, pressure plots frequently reveal hydraulic behavior of the soil not observed by the EC, and the EC may display responses associated with minerology and chemical conductance not observed by the pressure plot. Another important feature of the HPT pressure log is the increase in hydrostatic pressure as the probe is advanced below the water table. The increase in hydrostatic pressure results in a “rising baseline” on the pressure log. To obtain a quantitative determination of the local static water level a pressure dissipation test must be performed during the logging operation. To

perform the dissipation test, the advancement of the probe is stopped, and the operator starts a time log. Water flow is turned off to observe and record the dissipation of the HPT pressure versus time, until pressure stabilizes. The stabilized pressure is the absolute hydrostatic pressure at the depth of the test. Knowing the depth of the test, the absolute hydrostatic pressure and the atmospheric pressure the static water level may be calculated. Multiple dissipation tests may be performed at different depths during a single log to evaluate variations in piezometric head with depth and local vertical gradients in the aquifer.

Dissipation test data can be used in conjunction with the pressure and flow logs to estimate hydraulic conductivity (K) for the entire log after logging is completed. From Darcy's Law, K is proportional to the flow rate (Q) divided by the pressure (P) required to induce that flow rate in the given sediment or soil. The raw HPT pressure provided by the HPT log is the total pressure observed at the depth where the water is injected. This total pressure includes the ambient atmospheric pressure at the time of the log, the local hydrostatic pressure and the pressure required to inject the fluid into the formation:

$$P\ (total) = P\ (atm) + P\ (hydro) + P\ (inj)$$

As discussed above, the atmospheric pressure is determined from the pre and post log response tests and the hydrostatic pressure is defined by one or more dissipation tests obtained as the log is produced. The actual injection pressure [Pinj = Ptotal – (Phydro + Patm)] that was required to inject the water into the formation is calculated for each depth increment of the log. The actual injection pressure (Pinj) and the measured flow rate (Q) are then used to model an estimated K value for each depth increment of the HPT log (Geoprobe 2010b).

## 2.0 ELECTRICAL CONDUCTIVITY (EC) DESCRIPTION

Electrical Conductivity (EC) is a measure of the soil's ability to conduct an electrical current using the Wenner array of the HPT/EC probe. Conductivity is the reciprocal of electrical resistivity and has the units (in our application) of millisiemens per meter (mS/m). Since soil is in the pathway of the charge flow, the grain size can be determined by comparing the EC log to a soil boring. Conductivity readings in the 100s indicate smaller grain (such as clay). Larger grain size (sand and gravels) are typically in the 10s of mS/m range. Prior to every log, the Wenner array of the HPT probe is checked for proper operation by performing a conductivity test with a Wenner array test jig. The probe is put through a check of isolation and continuity.

## 3.0 DISCUSSION AND COMMENTS

Dakota Technologies pushed a total of 17 HPT logs to depths ranging from 19-66 feet below ground surface over a period of 5 days in July 2019.

The transducer passed all QA testing for each log. The HPT system utilizes a transducer that produces pressure readings between 0 and 110 psi. The pressure data graph is set at 120 psi to capture all HPT readings, with a flat line at 110 psi resulting when the transducer maximum is reached (representing soil of small grain size, such as clay). Dissipation tests were attempted at each location for the purpose of calculating static water levels and hydraulic conductivity (estimated K) plots. The calculated estimated K values assume dissipation tests reached equilibrium. Electrical conductivity (EC) data was collected simultaneously at each HPT location. The EC was tested before and after each HPT log was performed and passed all QA checks in the normal manner.

The HPT data from this site showed much of the material encountered during the advancement of borings was relatively permeable. Some of the borings showed higher pressure reading towards the end of advancement (less permeable) but the pressure transducer only maxed out in borings HPT-27 and HPT-37. A dissipation test was not able to be successfully run in boring HPT-27 before the probe reached the area where the pressure transducer maxed out, meaning a static water level and estimated K plot was not able to be calculated. Additionally, a successful dissipation was not conducted in boring HPT-36. Static water levels across the site were relatively shallow, calculated be 0-6ft below ground surface. The estimated K plots for the HPT borings show approximate K values between 50-80ft/day for the areas of high permeability.

## 4.0 LIMITATIONS

The HPT tool is limited to a working depth (max) of 120 feet below ground water and the pressure transducer operating range is 0-101 psi. Coarse (sandy), saturated soils are required for dissipation tests to be performed. Successful (fully stabilized) dissipations are required for water table and hydraulic conductivity (Est. K) calculations. The lower K boundary for Geoprobe's empirical calculation model is about 0.1 ft./day and the upper boundary is near 75 ft./day.

The analysis and opinions expressed in this report are based upon data obtained from the specific test locations and from other information discussed in this report. Exceptions, if any, are discussed in the accompanying comments section of this report. This report is prepared for the exclusive use of our client for specific application to the project discussed and has been prepared in accordance with generally accepted practices. Reported results shall not be reproduced, except in full, without written approval of Dakota. No warranties, expressed or implied are intended or made.

## 5.0 REFERENCES

*Geoprobe 2006a. Hydrostratigraphic Characterization Using the Hydraulic Profiling Tool (HPT), Tech Bul. No. MK3099, Kejr Inc., Salina, KS*; April 2006.

*Geoprobe, 2007. Geoprobe Hydraulic Profiling Tool (HPT) System, Standard Operating System Procedure, Tech. Bul. No. MK3137, Kejr Inc., Salina, KS*; March 2007.

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*McCall, Wesley and Thomas Christy, 2010. Development of a Hydraulic Conductivity Estimate for the Hydraulic Profiling Tool (HPT): Abstract and Presentation;* The 2010 North American Environmental Field Conference & Exposition, The Nielsen Environmental Field School, Las Cruces, NM; January 2010.

# Appendix A

# HPT Field Summary Log

# HPT Field Summary Log

Tyco Fire Products Site

Marinette, WI 251.19

| | | | | QA/QC (*pass / fail*) | | | | Static Water | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | EC Results | | Transducer Results | | Level | Dissipation Test | | |
| File Log ID | Date | Total Depth *(ft)* | Preprobed Depth *(ft)* | Pre-Log pass / fail | Post-Log pass / fail | Pre-Log pass / fail | Post-Log pass / fail | *based on dissipation* *(ft)* | Depth *(ft)* | Stable? *yes / no* | Comments |
| HPT-22 | 07/16/19 | 36.60 | - | pass | pass | pass | pass | 6.2 | 36.5 | y | |
| HPT-23 | 07/16/19 | 27.10 | - | pass | pass | pass | pass | 6.6 | 18.4 | y | |
| HPT-24 | 07/17/19 | 54.30 | - | pass | pass | pass | pass | 5.5 | 24.2 | y | |
| HPT-25 | 07/30/19 | 66.15 | - | pass | pass | pass | pass | 5.3 | 17.4 | y | |
| HPT-26 | 07/17/19 | 52.15 | - | pass | pass | pass | pass | 4.6 | 38.6 | y | |
| HPT-27 | 07/17/19 | 29.25 | - | pass | pass | pass | pass | - | n/a | - | |
| HPT-28 | 07/17/19 | 25.95 | - | pass | pass | pass | pass | 2.9 | 25.1 | y | |
| HPT-29 | 07/18/19 | 41.10 | - | pass | pass | pass | pass | 3.3 | 19.6 | y | |
| HPT-30 | 07/30/19 | 29.60 | - | pass | pass | pass | pass | 2.5 | 29.6 | y | |
| HPT-31 | 07/18/19 | 52.15 | - | pass | pass | pass | pass | 0.9 | 18.5 | y | |
| HPT-32 | 07/19/19 | 27.50 | - | pass | pass | pass | pass | 6.2 | 17.5 | y | |
| HPT-33 | 07/18/19 | 30.95 | - | pass | pass | pass | pass | - | 11.6 | y | |
| HPT-34 | 07/19/19 | 45.50 | - | pass | pass | pass | pass | 1.6 | 14.3 | y | |
| HPT-35 | 07/30/19 | 55.85 | - | pass | pass | pass | pass | | 10.4/42.5/55.9 | y/n/y | |
| HPT-36 | 07/18/19 | 30.30 | - | pass | pass | pass | pass | - | n/a | - | |
| HPT-37 | 07/30/19 | 43.65 | - | pass | pass | pass | pass | 0.0 | 10.4/43.6 | y/y | |
| HPT-38 | 07/30/19 | 19.35 | - | pass | pass | pass | pass | 2.3 | 17.2 | y | |
| | Total Depth | 667.45 | | | | | | | | | |

(1) Reported static water level data below typical level of certainty where footnoted

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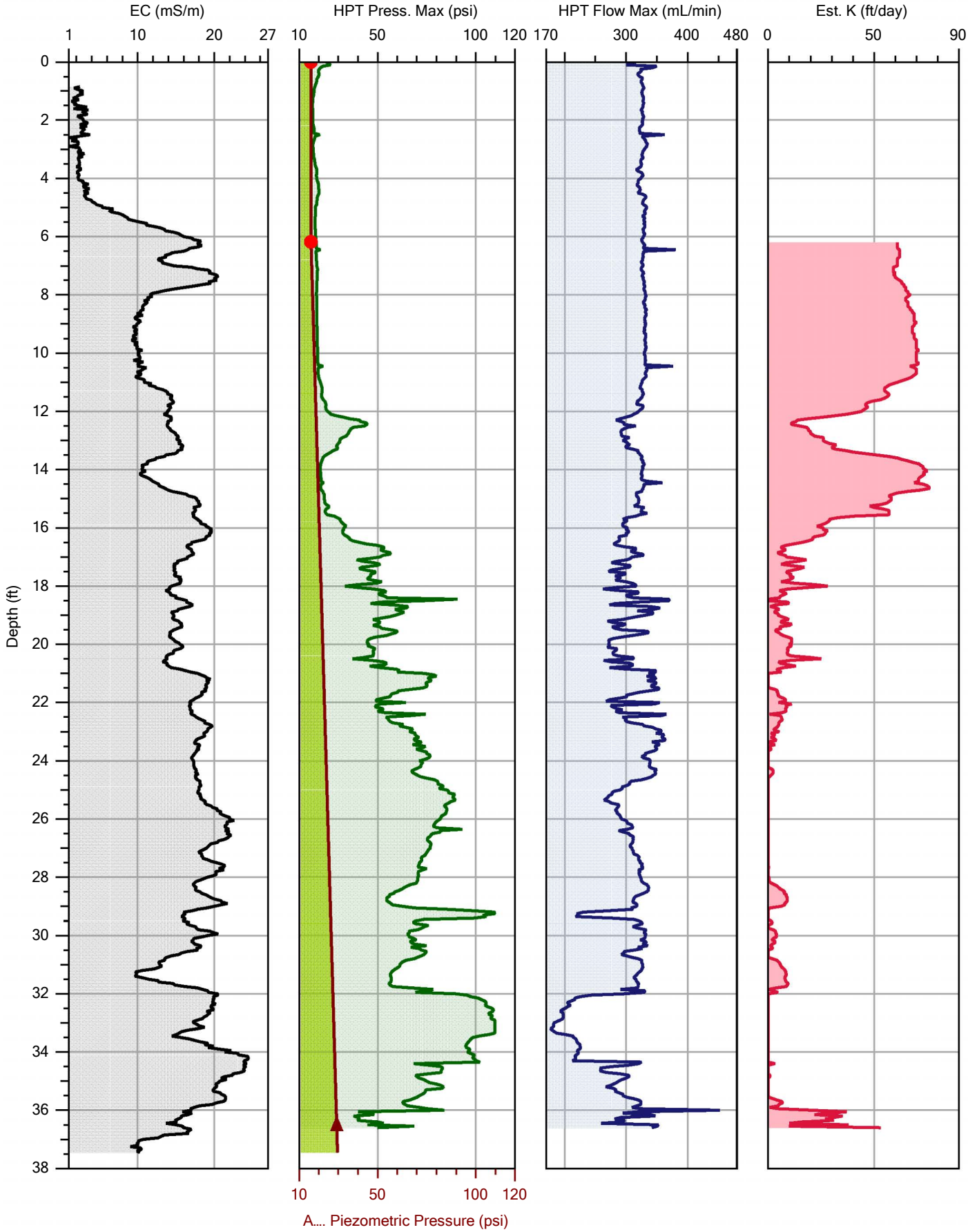
# Appendix B

# HPT Logs Auto Scale

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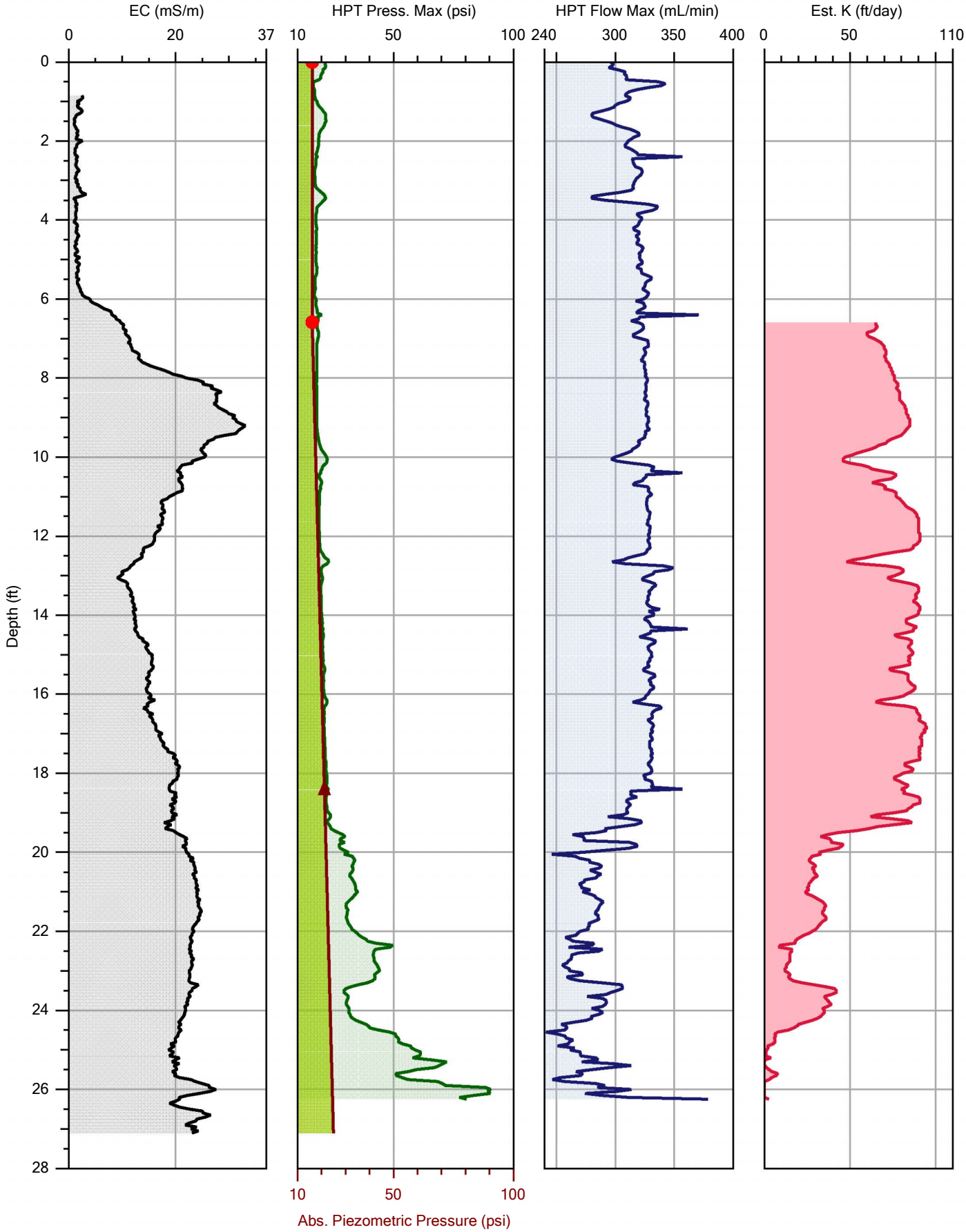


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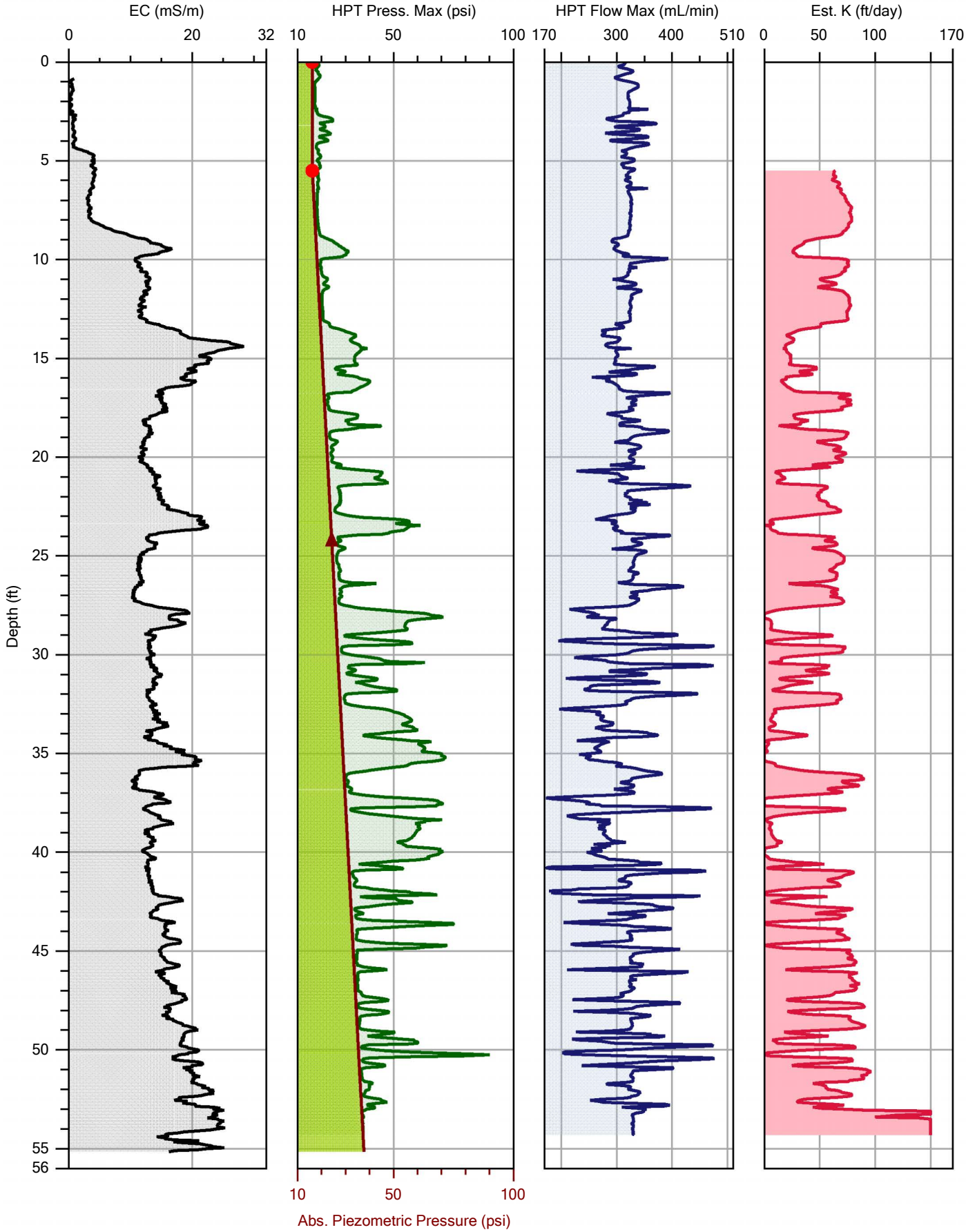


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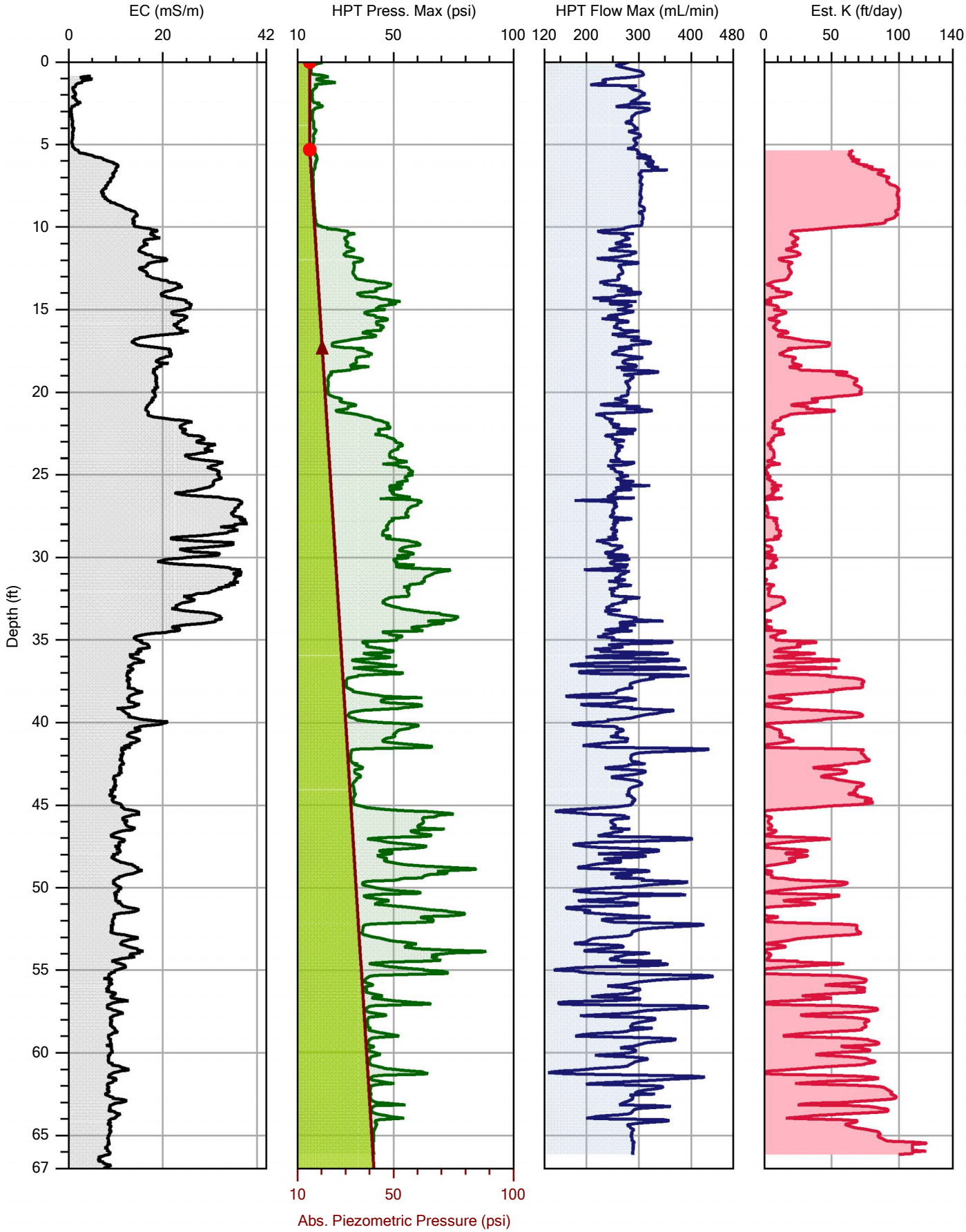


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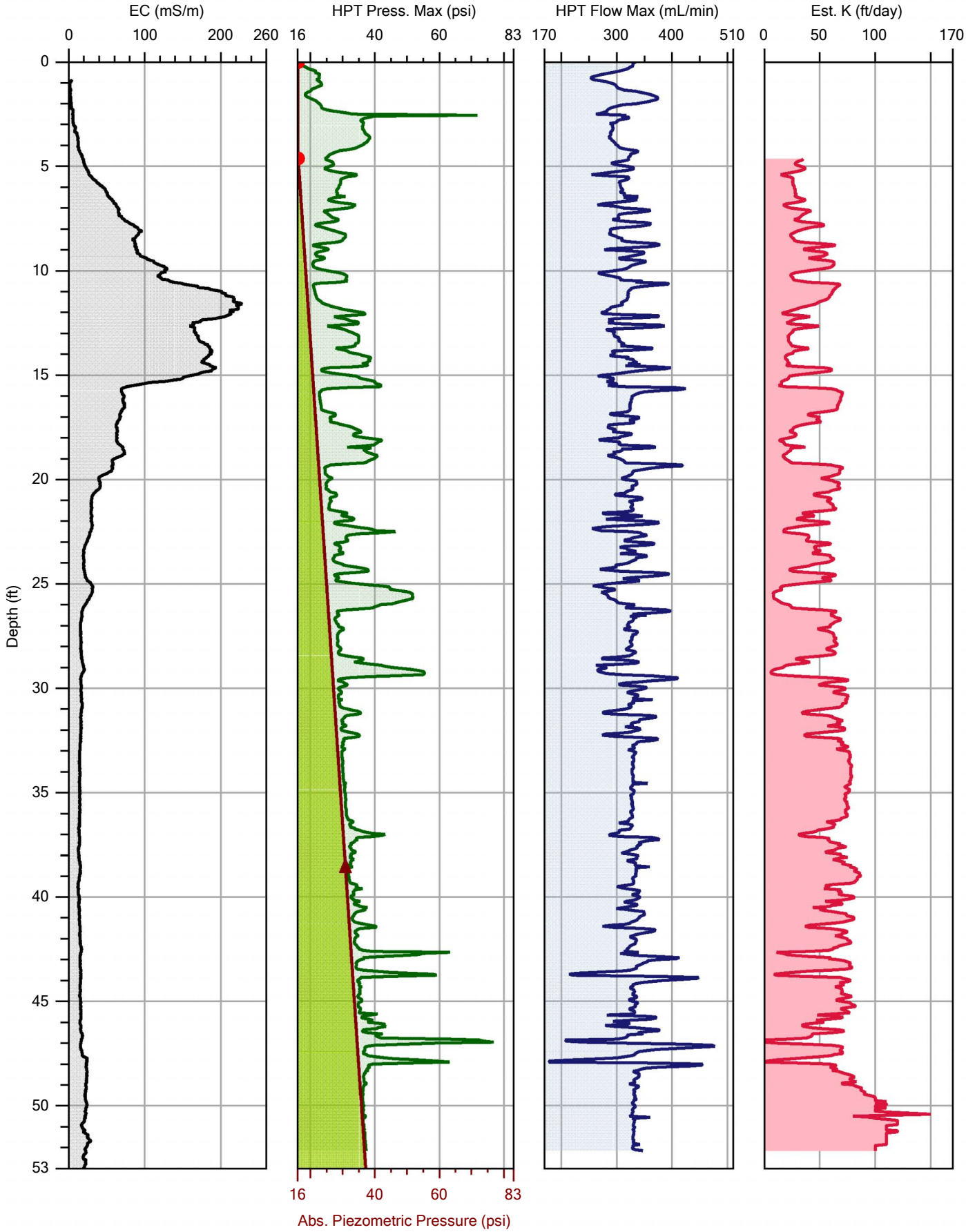


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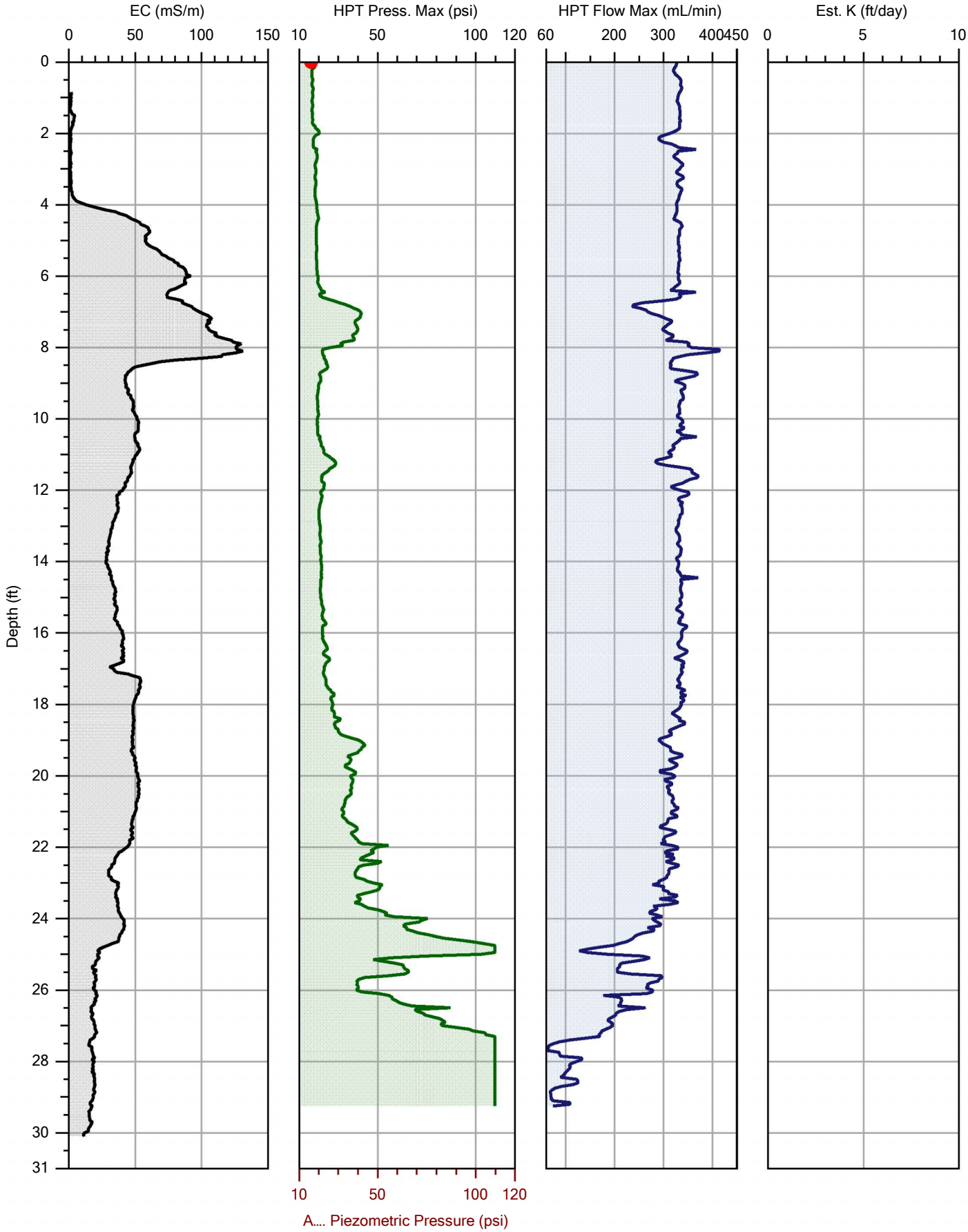


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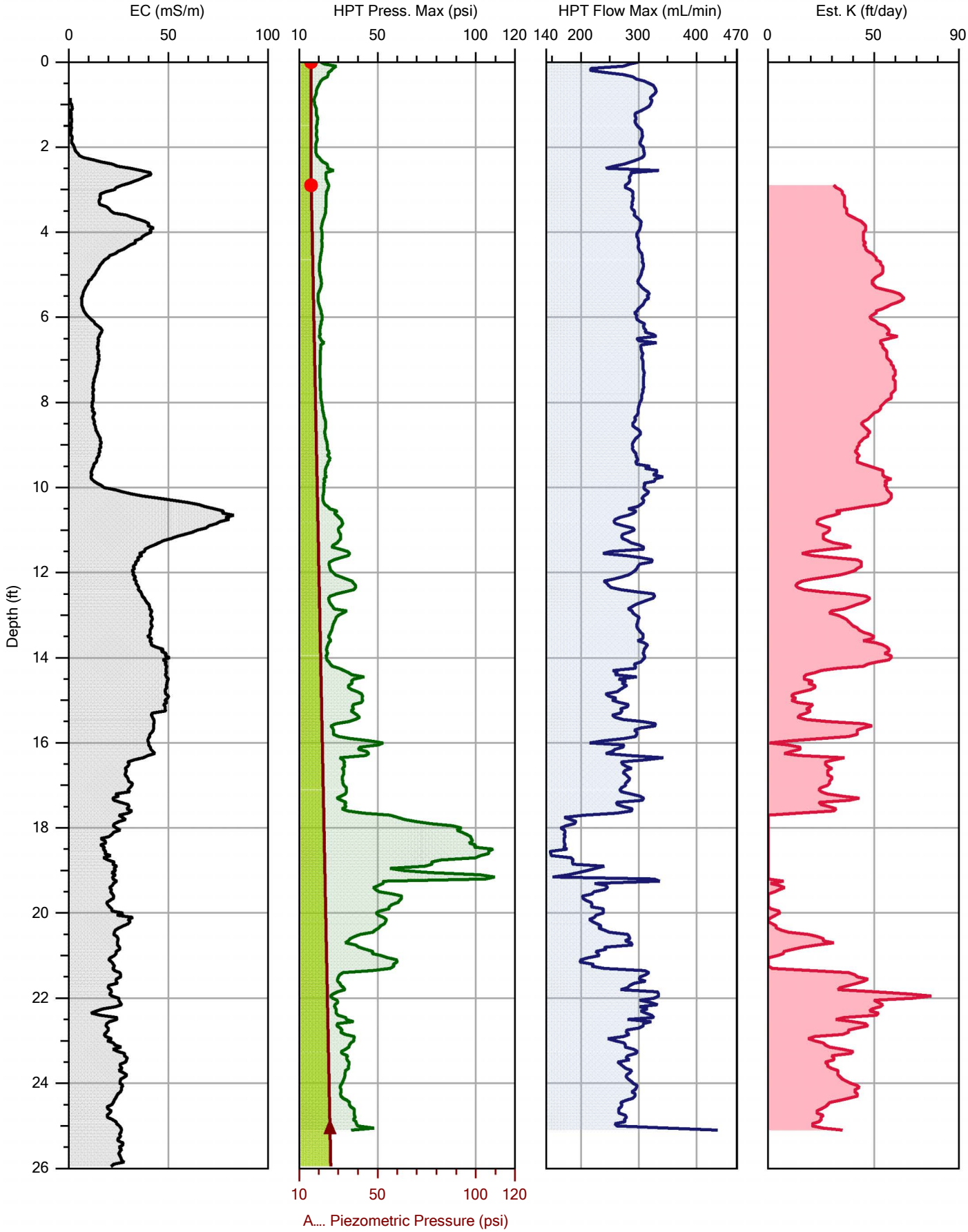


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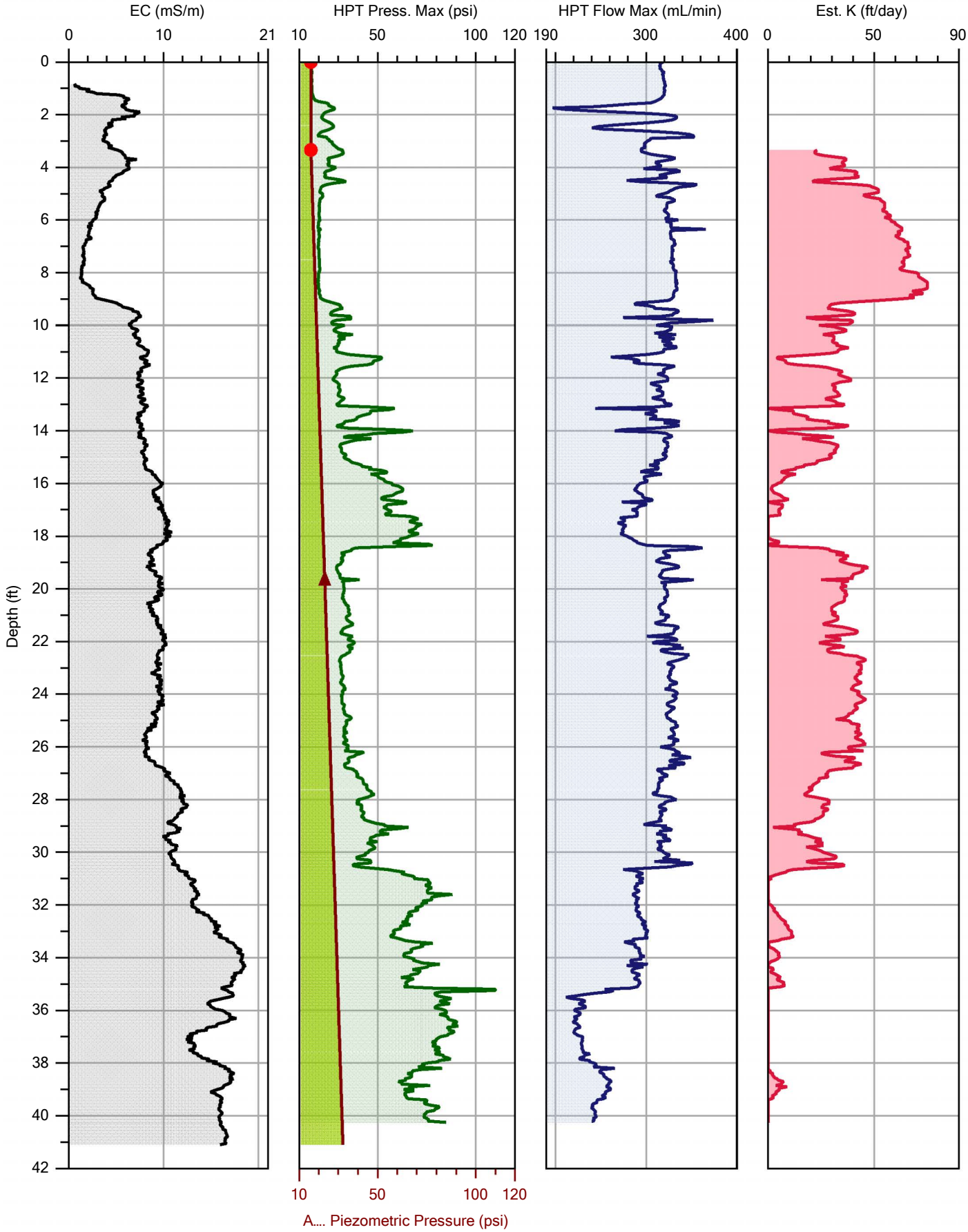


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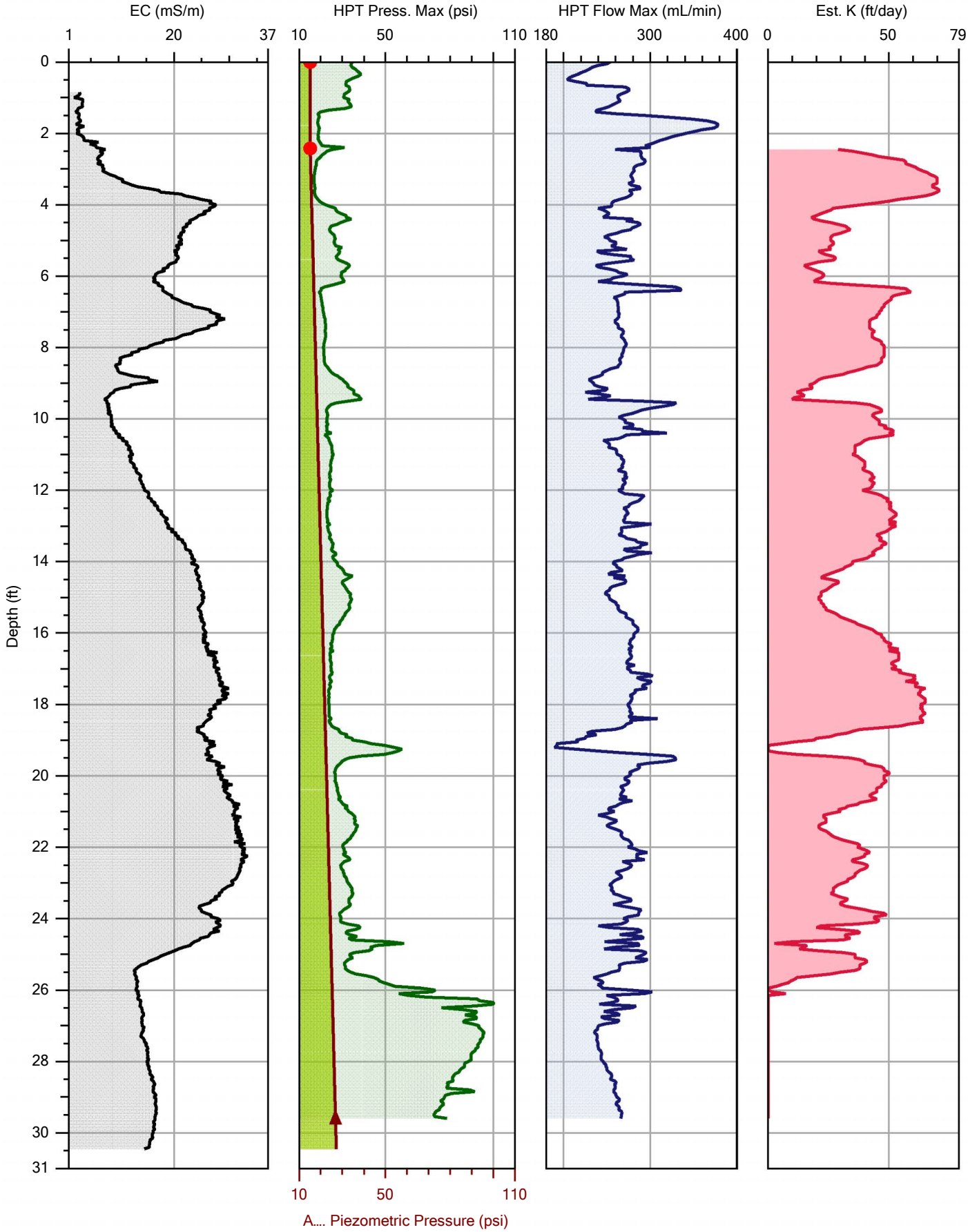


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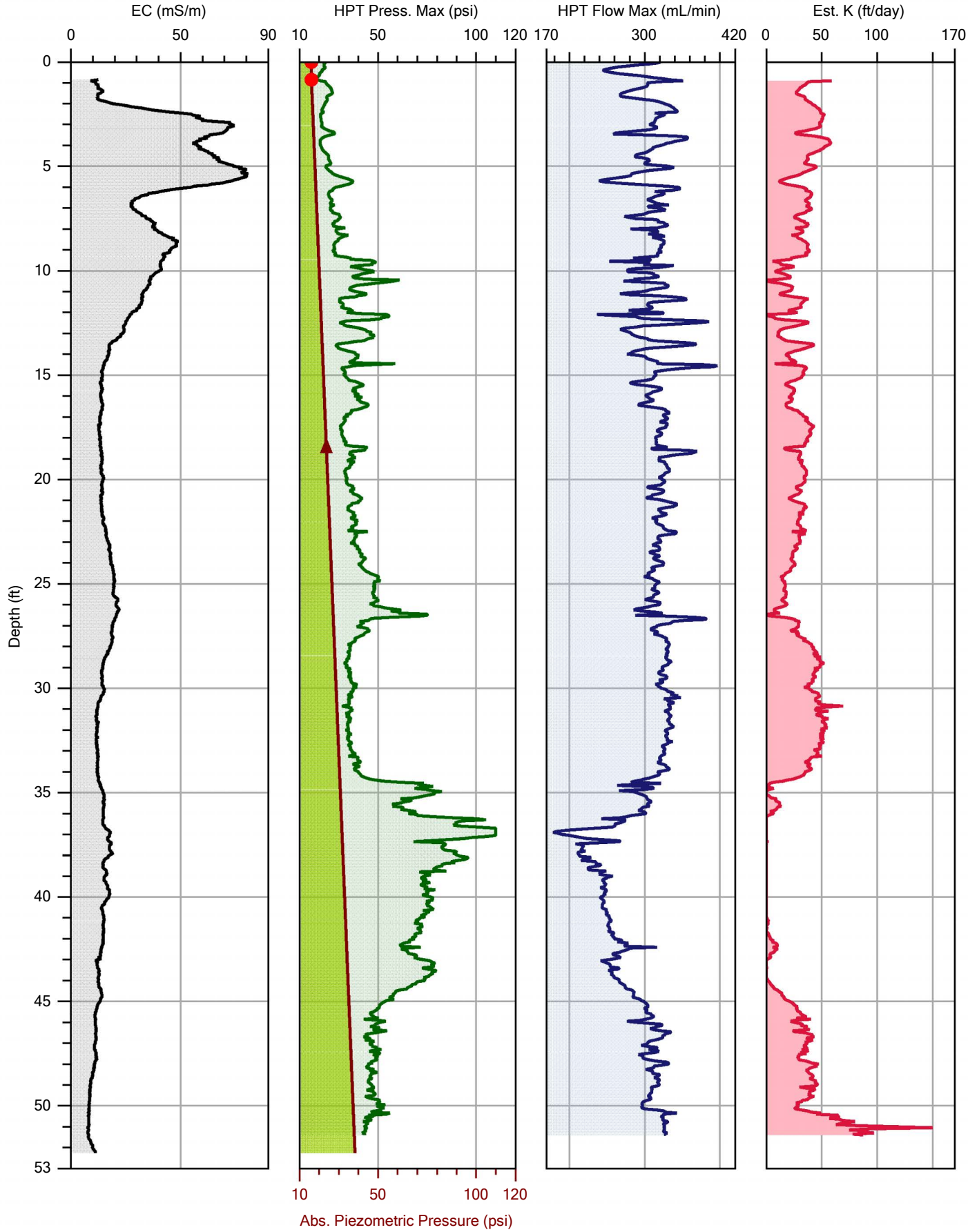


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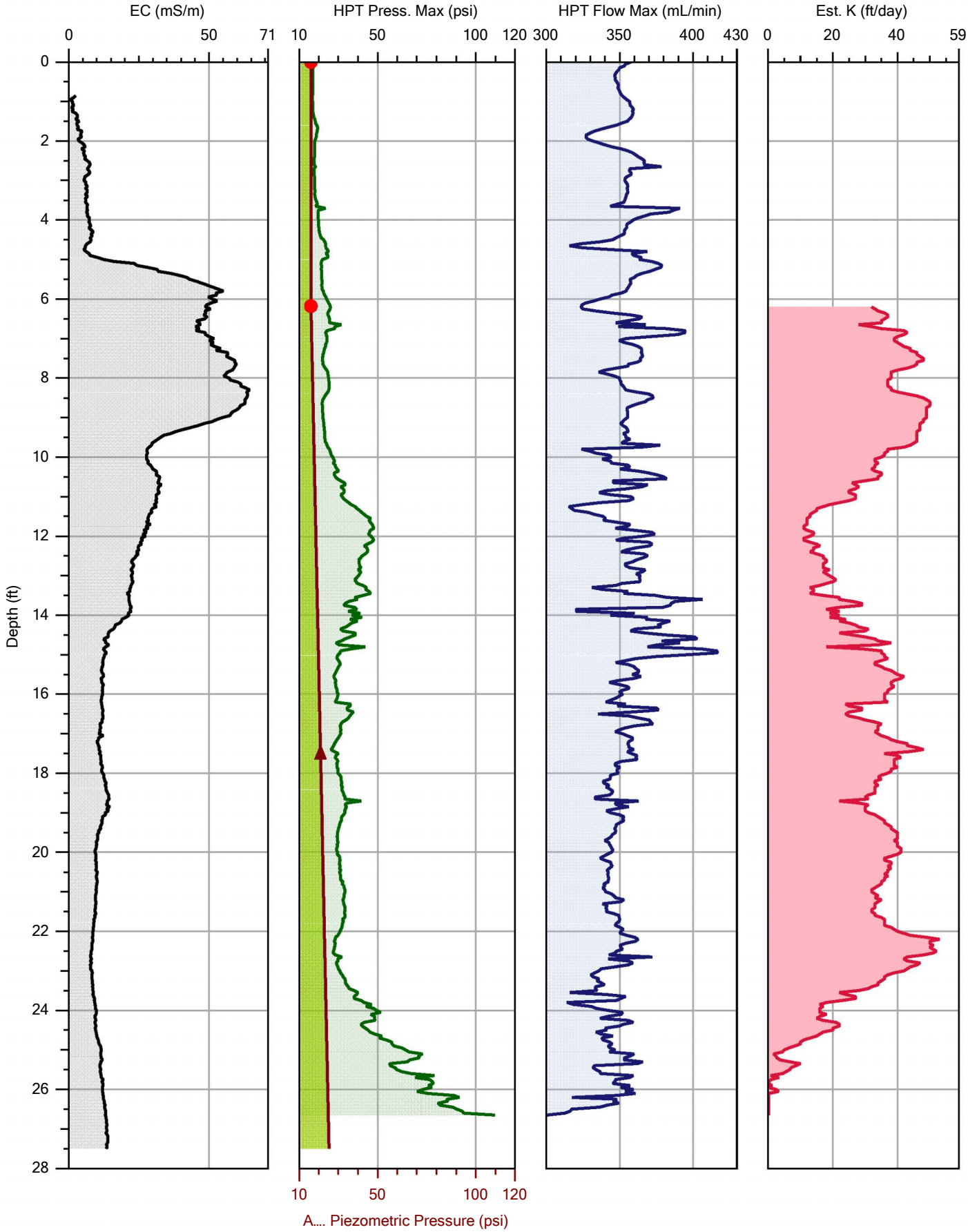


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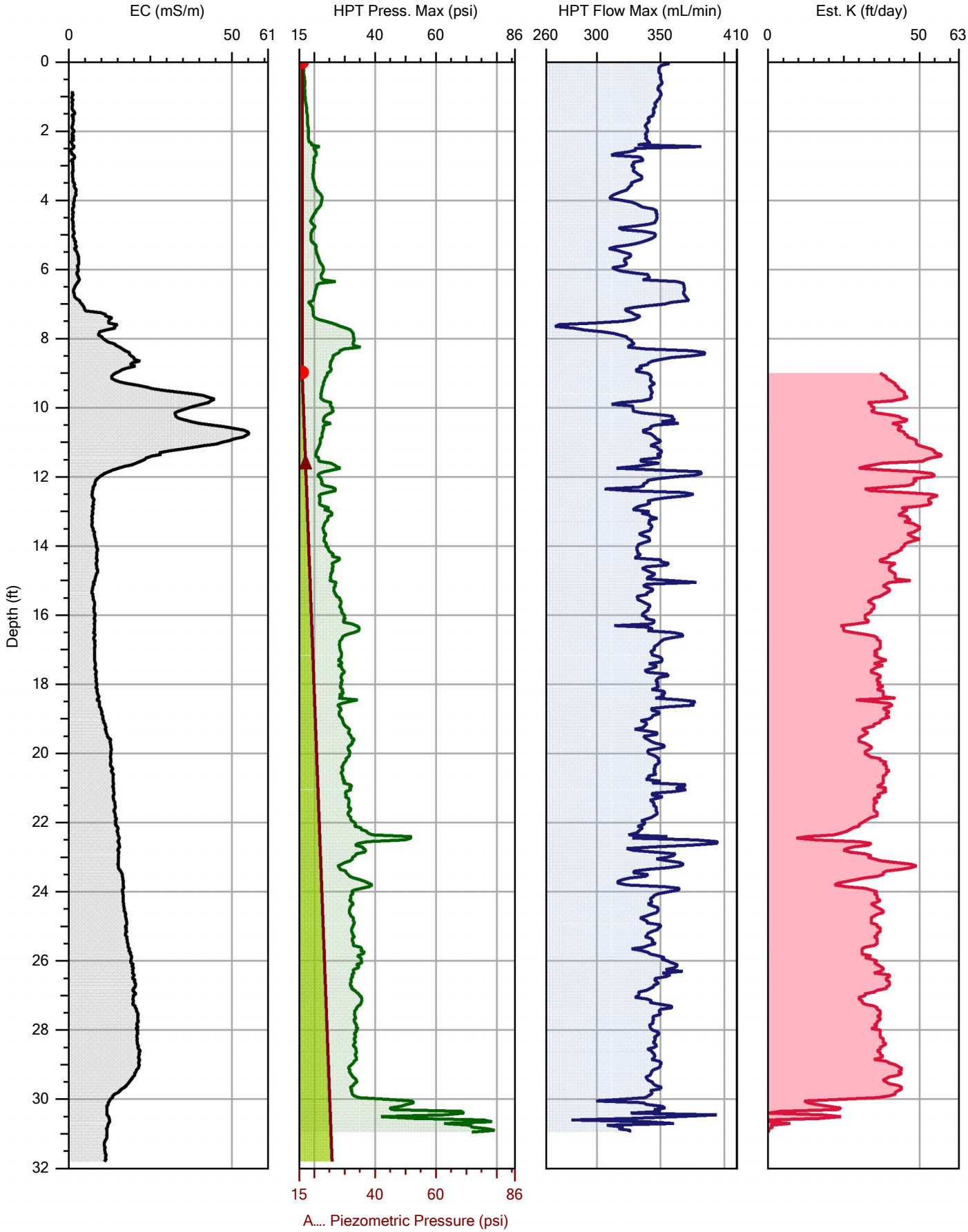


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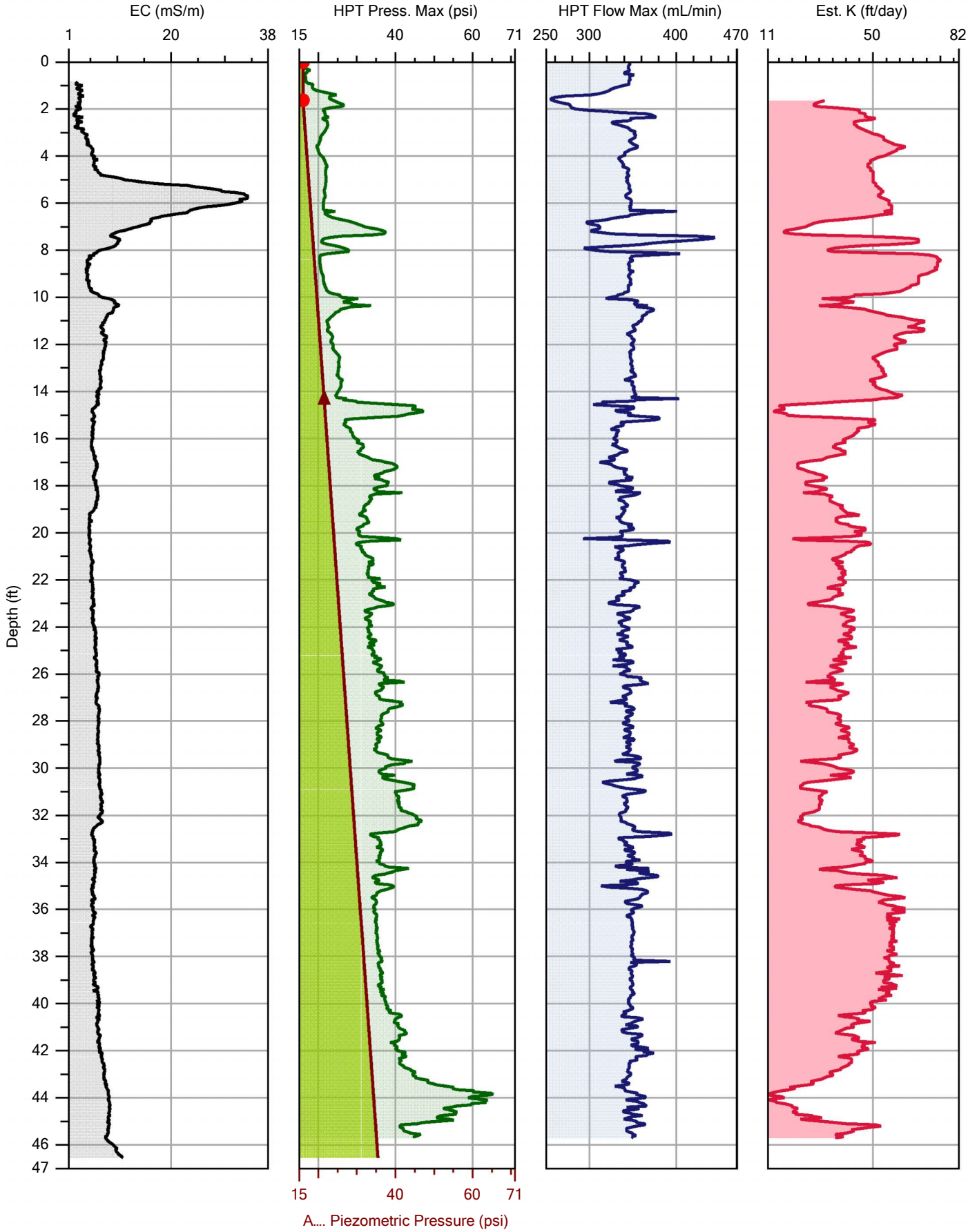


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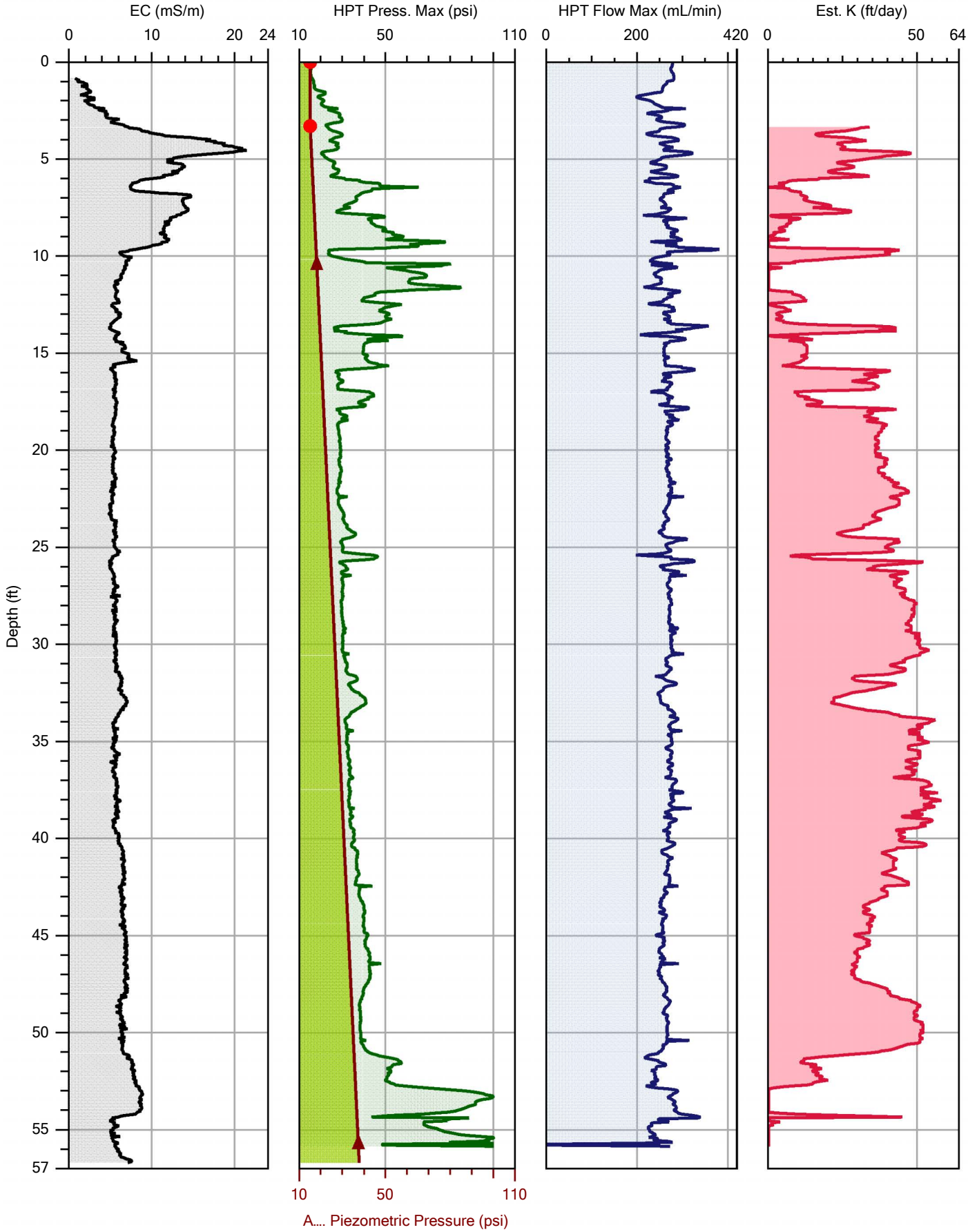


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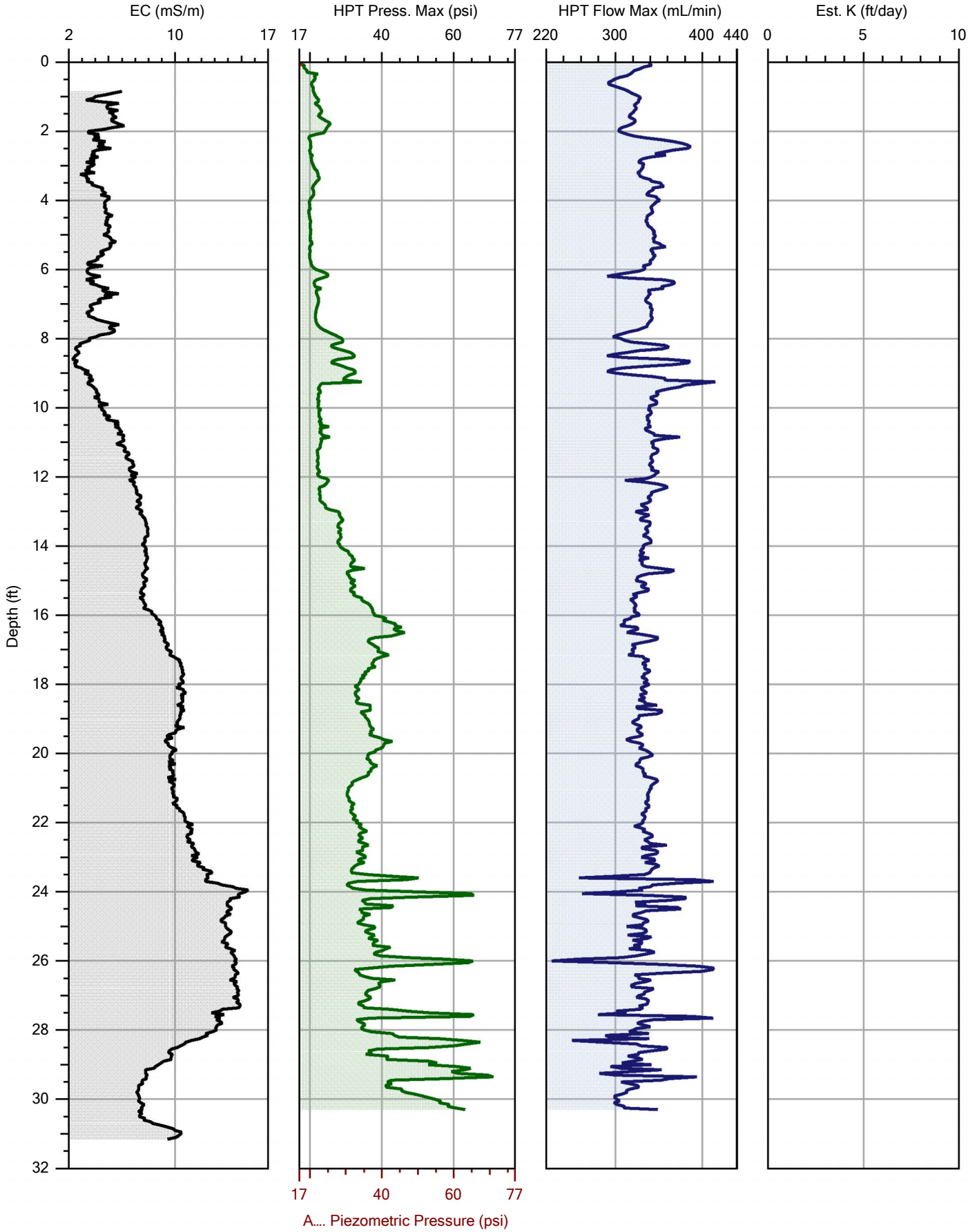


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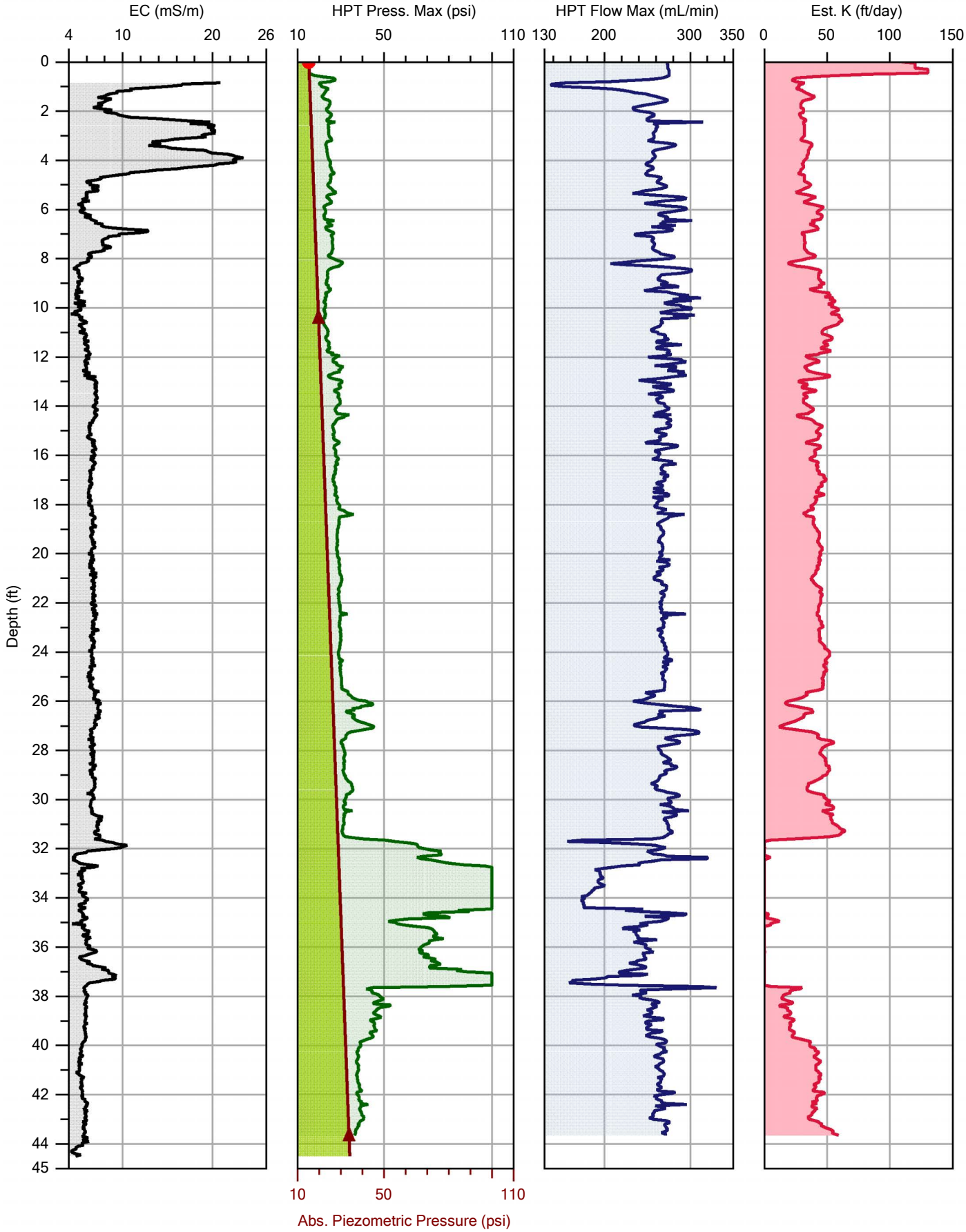


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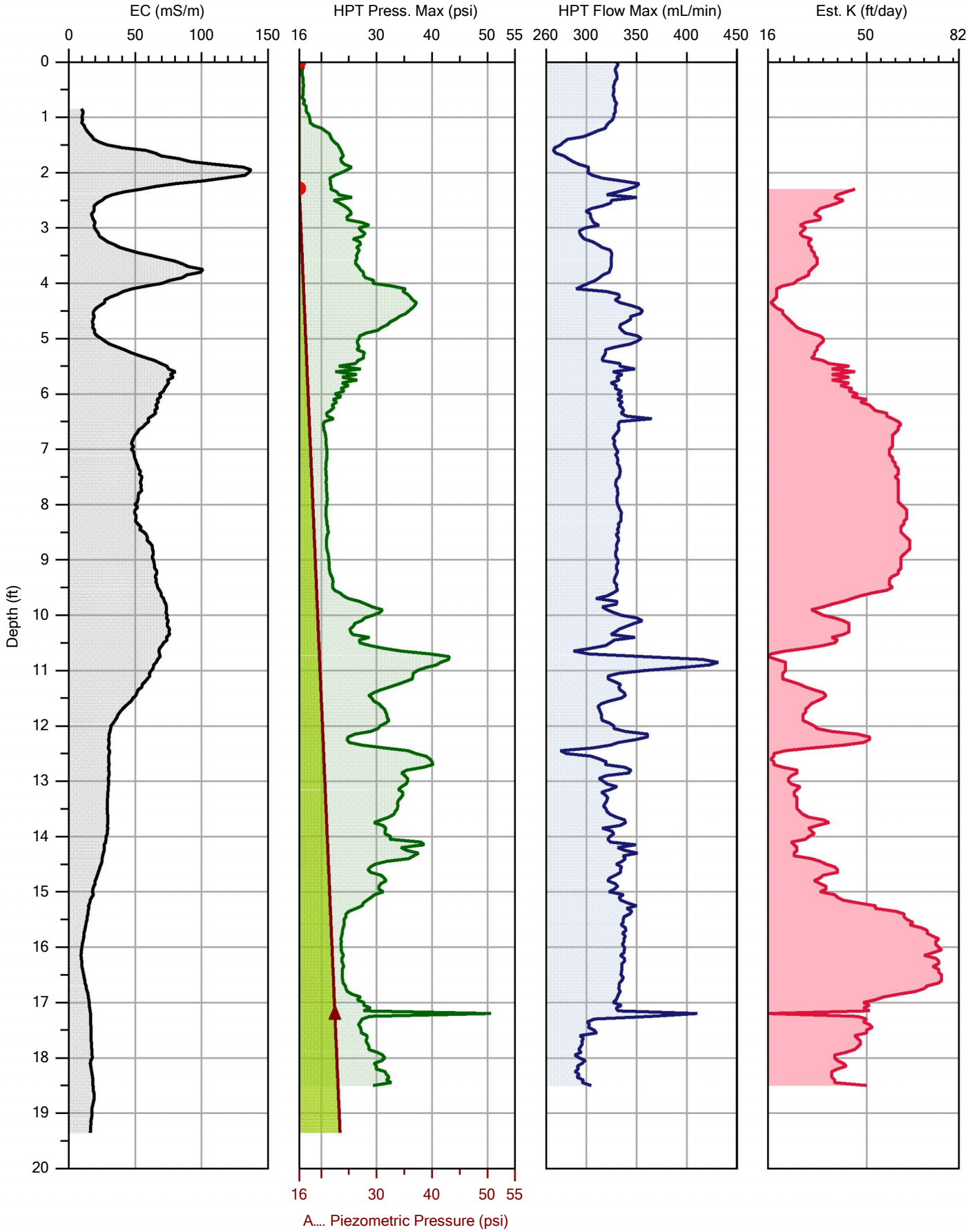


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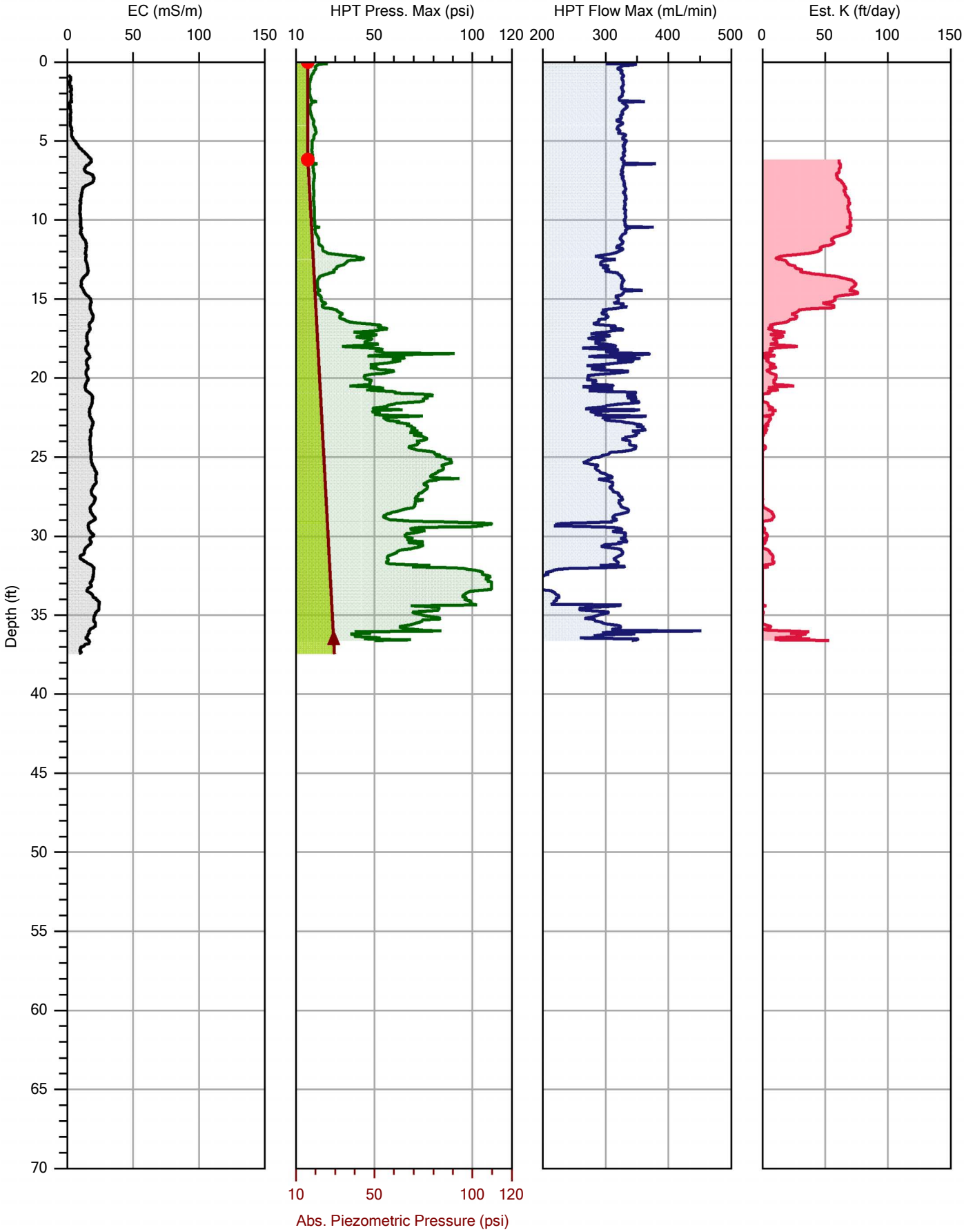
# Appendix C

# HPT Logs Common Scale

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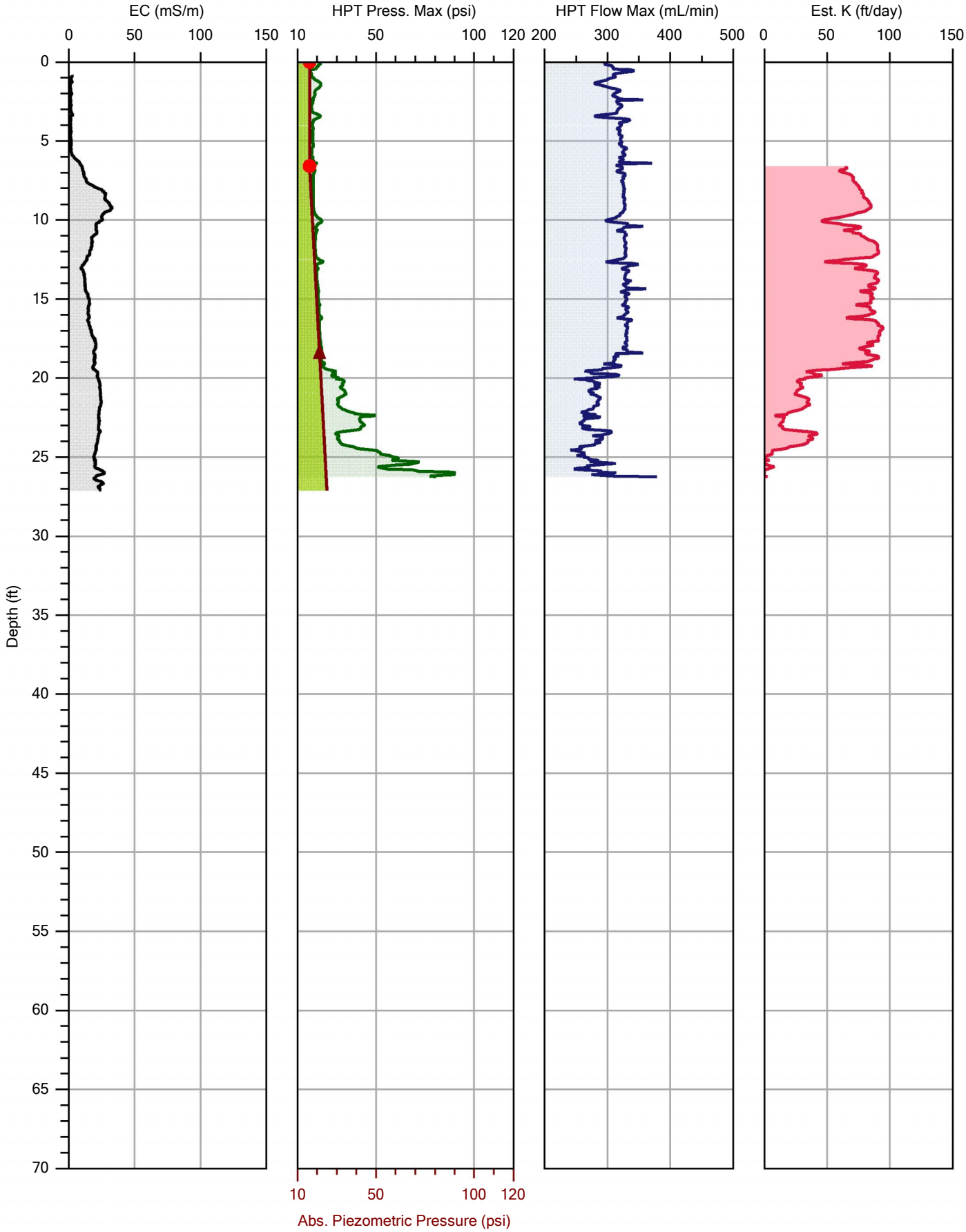


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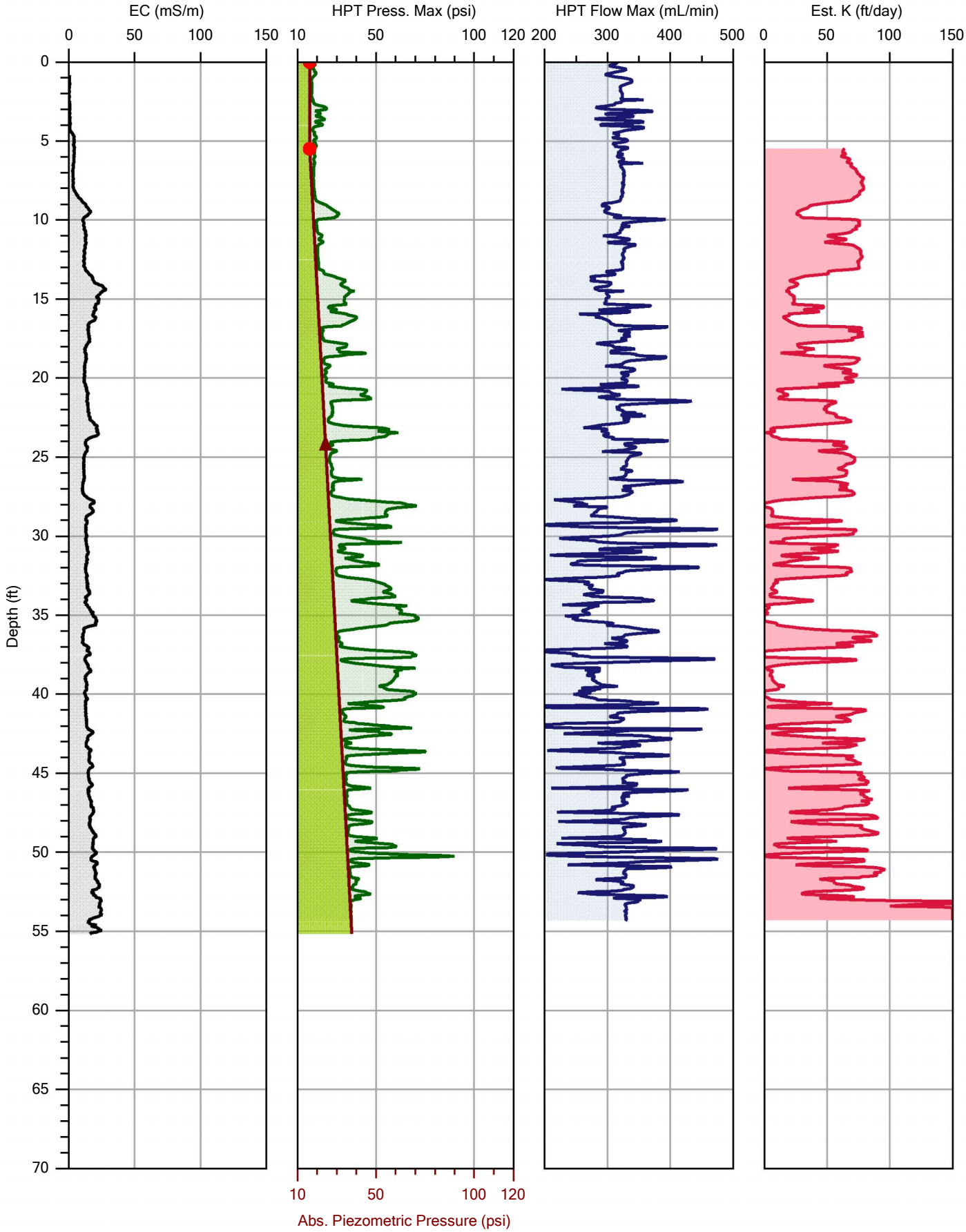
| Company: Dakota Technologies | Operator: Bob G. Guy P. | | Date: 7/16/2019 |
| Project ID: 0251.19 | Client: Braun Intertec | | Location: |

DAKOTA TECHNOLOGIES
www.DakotaTechnologies.com

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| Company: Dakota Technologies | | Operator: Bob G. Guy P. | Date: 7/17/2019 |
| Project ID: 0251.19 | | Client: Braun Intertec | Location: |

DAKOTA TECHNOLOGIES
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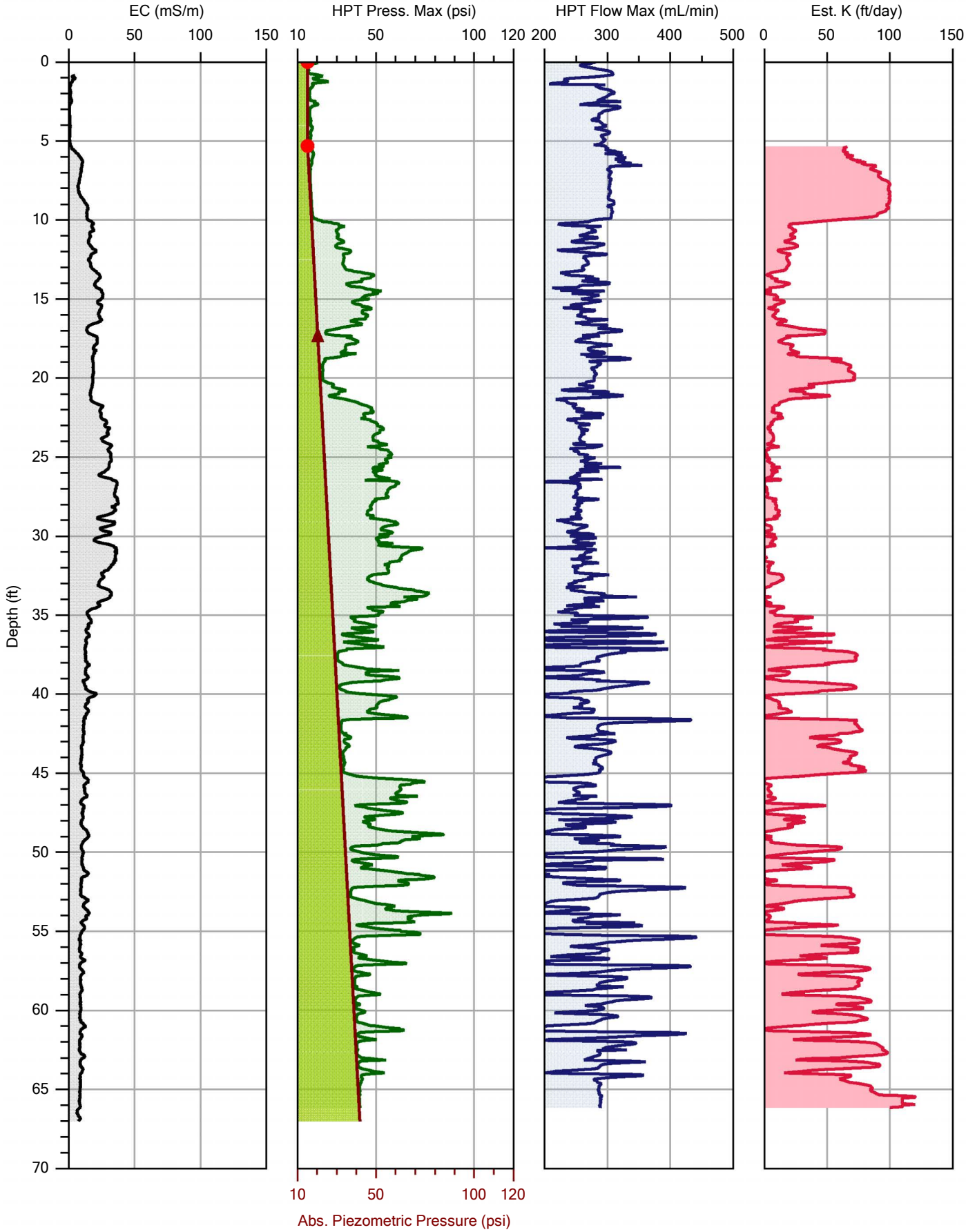


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| Project ID: 0251.19 | | Client: ARCADIS | Location: |

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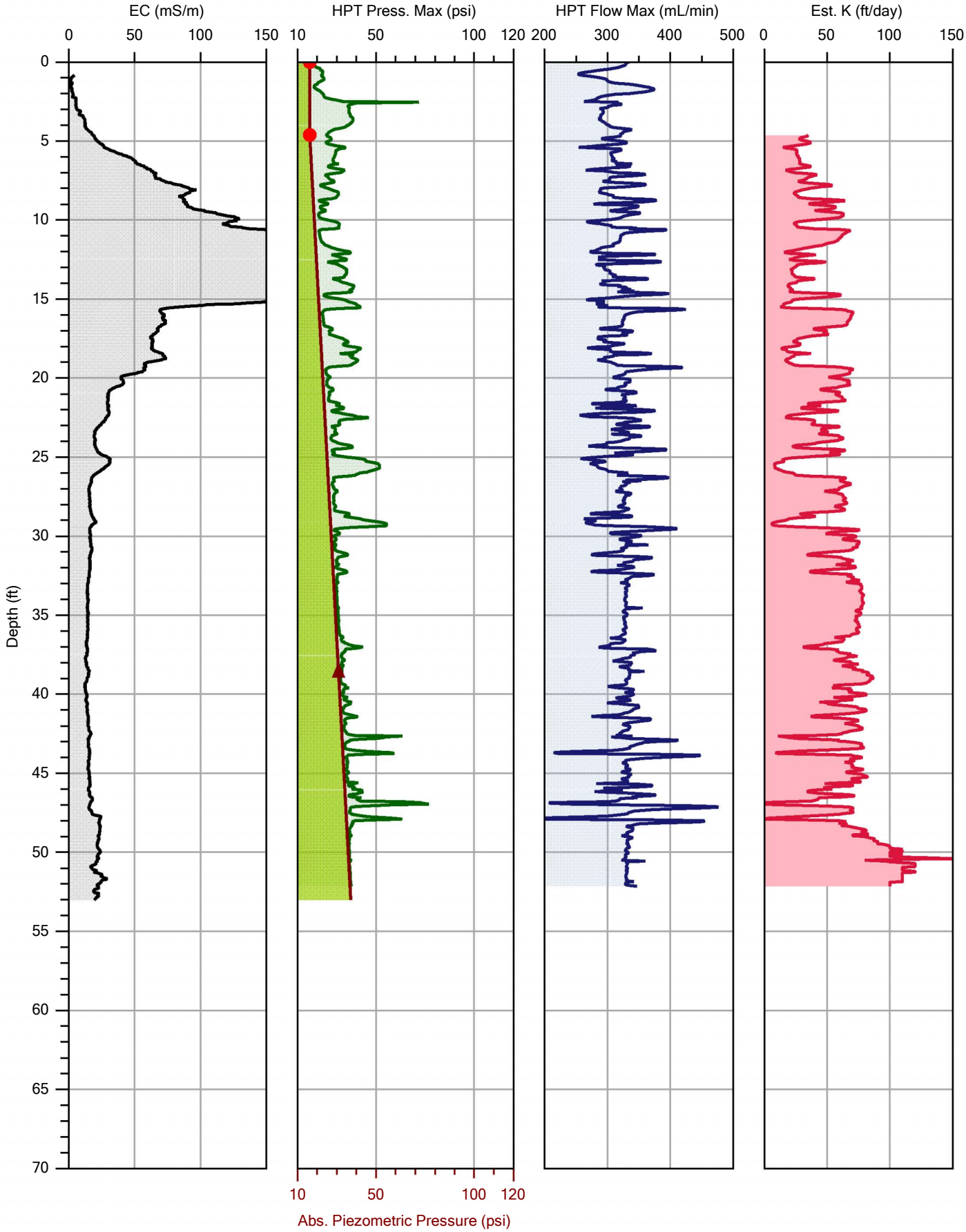


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| Project ID: 0251.19 | | Client: Braun Intertec | Location: |

DAKOTA TECHNOLOGIES
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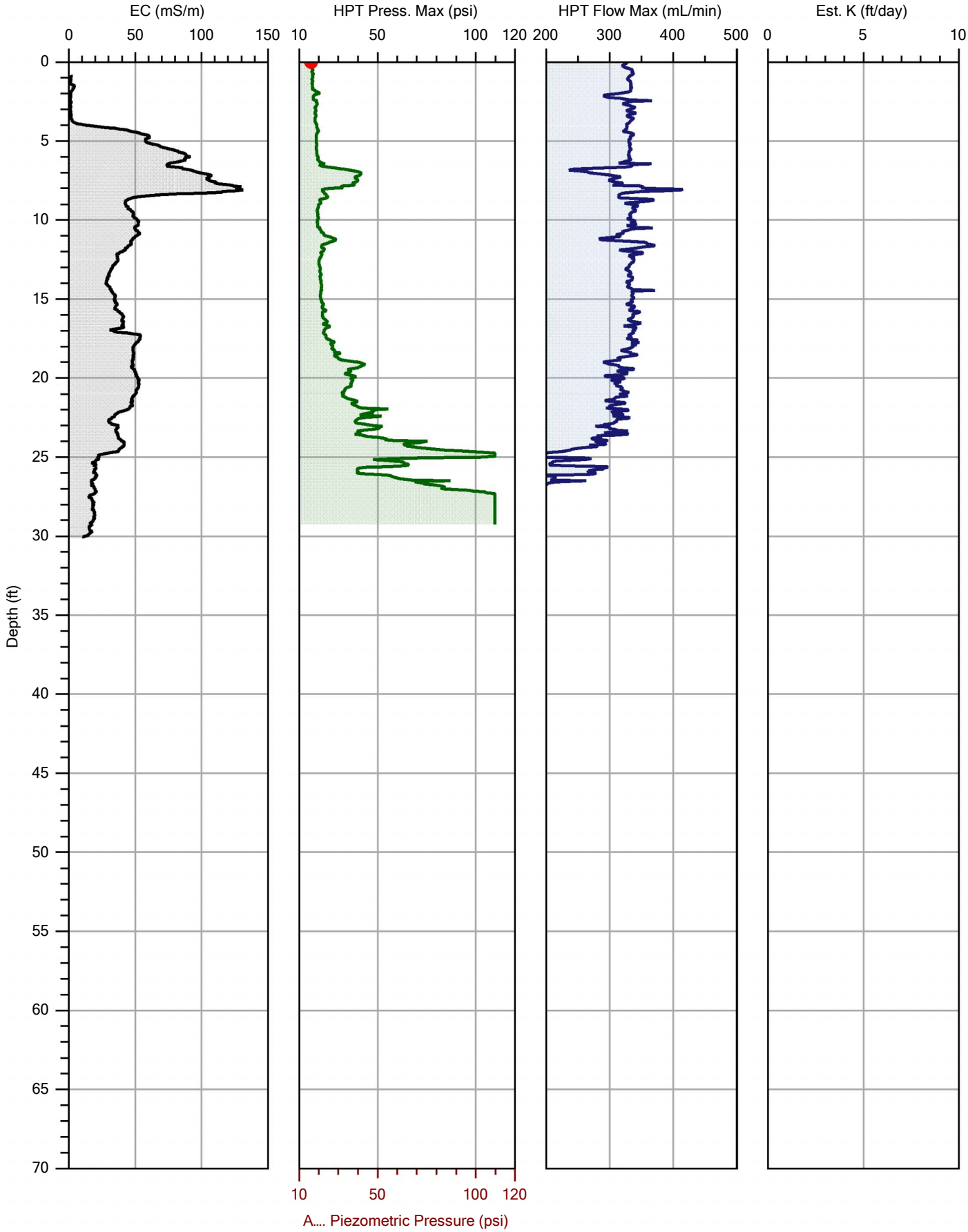


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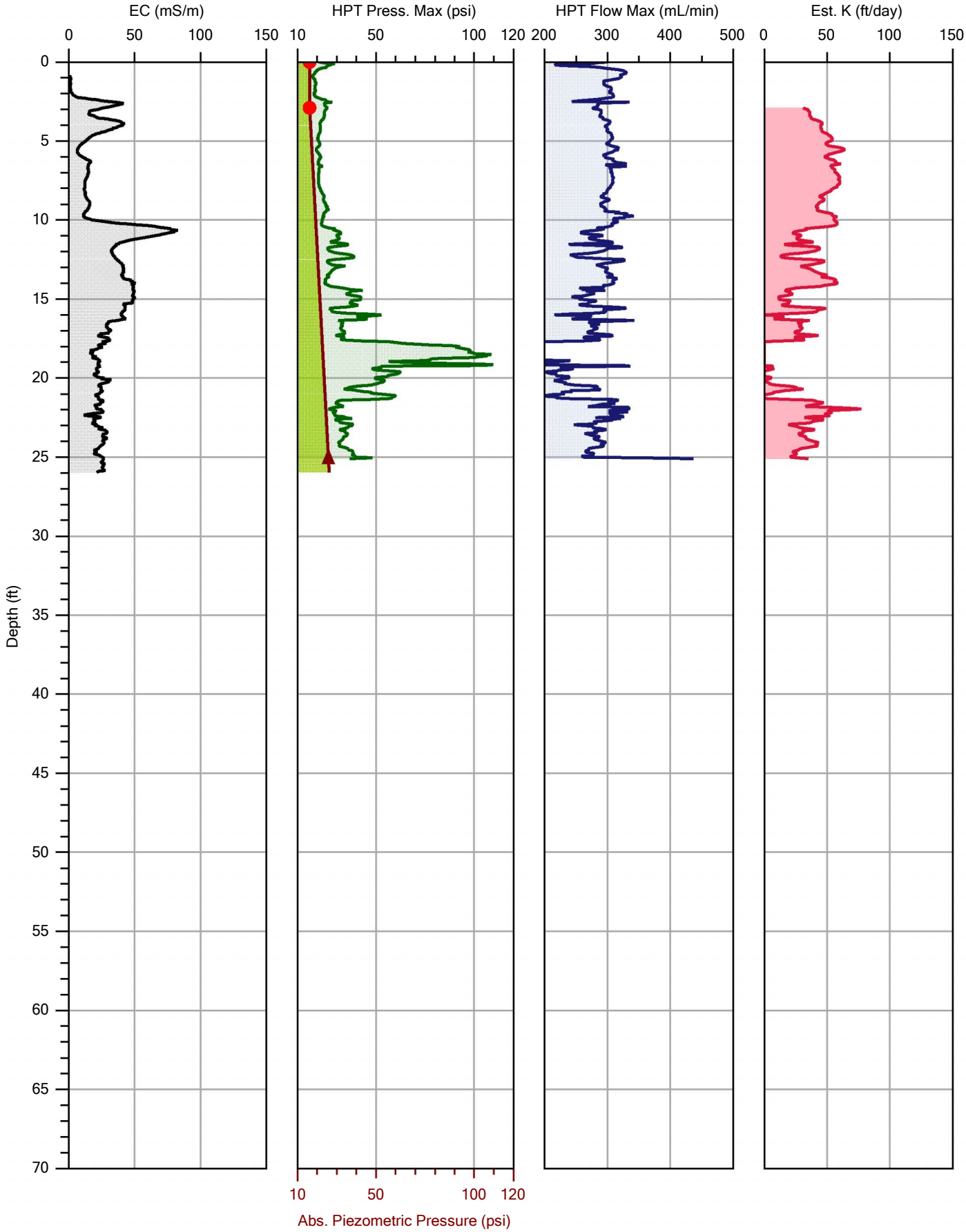
|---|---|---|---|
| | | | File: HPT-27.HPT |
| Company: Dakota Technologies | | Operator: Bob G. Guy P. | Date: 7/17/2019 |
| Project ID: 0251.19 | | Client: Braun Intertec | Location: |

DAKOTA TECHNOLOGIES
www.DakotaTechnologies.com

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| | | | File: HPT-28.HPT |
| Company: Dakota Technologies | Operator: Bob G. Guy P. | | Date: 7/17/2019 |
| Project ID: 0251.19 | Client: Braun Intertec | | Location: |

DAKOTA TECHNOLOGIES
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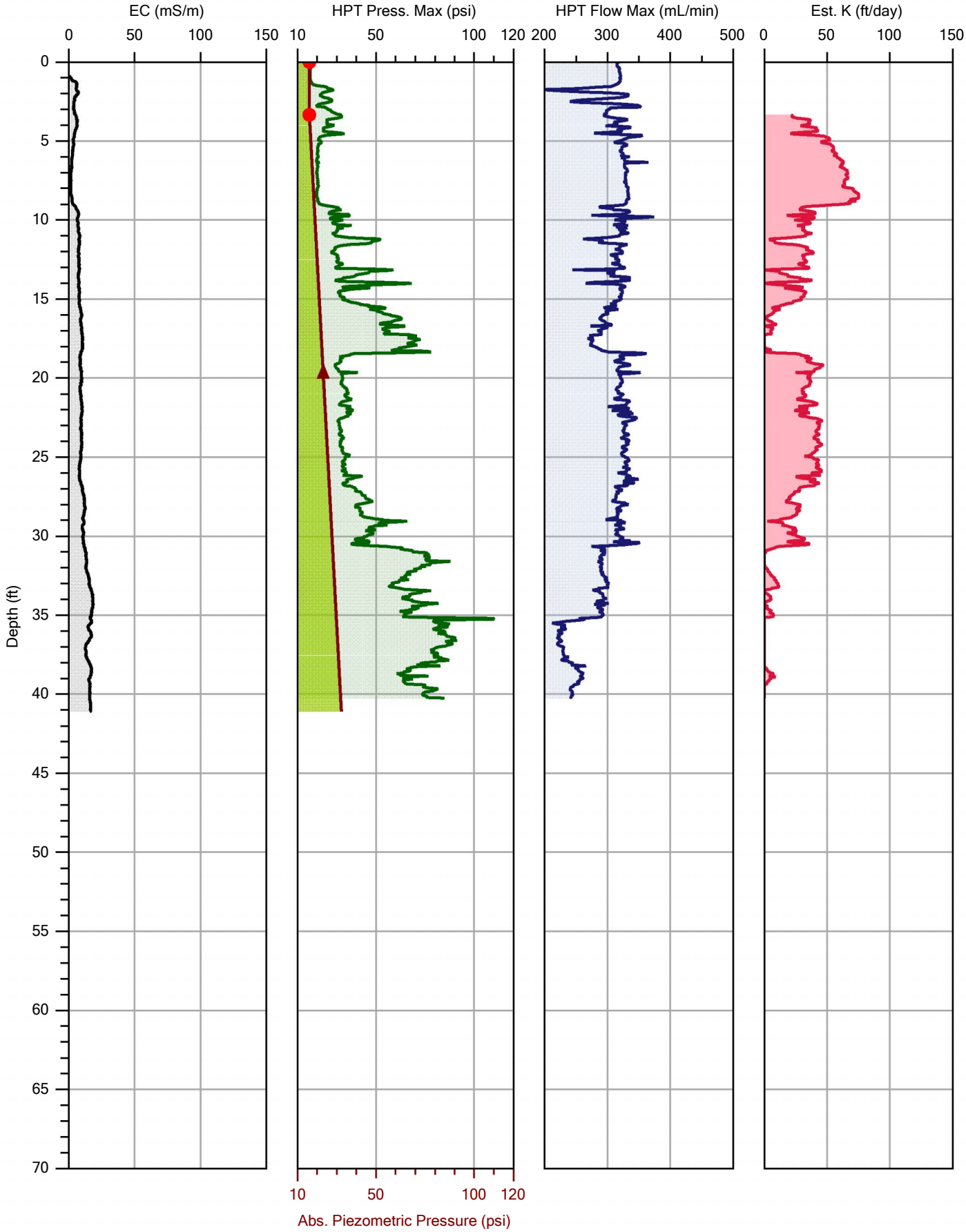


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|---|---|---|---|
| | | | File: HPT-29.HPT |
| Company: Dakota Technologies | | Operator: Bob G. Guy P. | Date: 7/18/2019 |
| Project ID: 0251.19 | | Client: Braun Intertec | Location: |

DAKOTA TECHNOLOGIES
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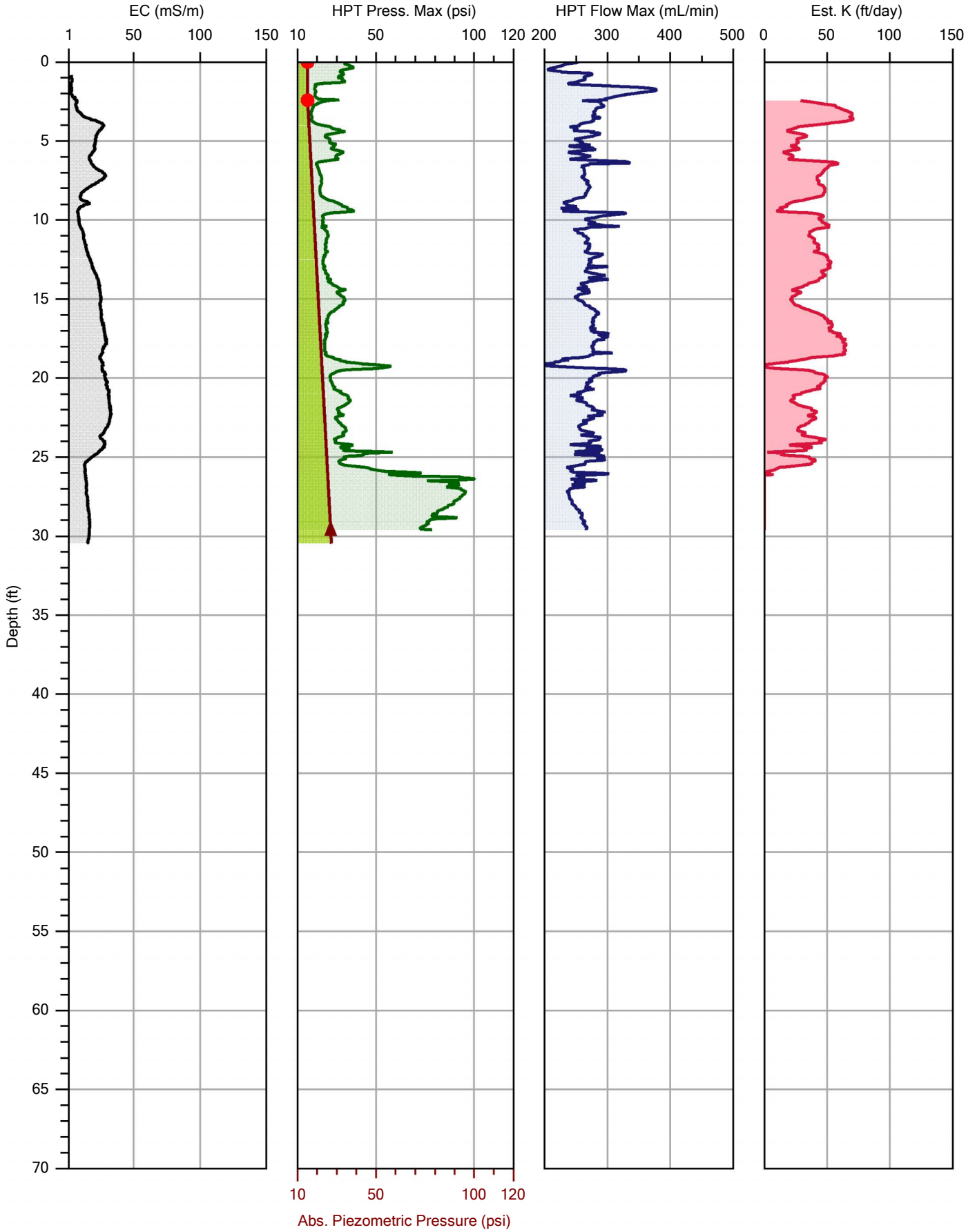


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| Company: Dakota Technologies | Operator: DT/GP | | Date: 7/30/2019 |
| Project ID: 0251.19 | Client: ARCADIS | | Location: |

DAKOTA TECHNOLOGIES
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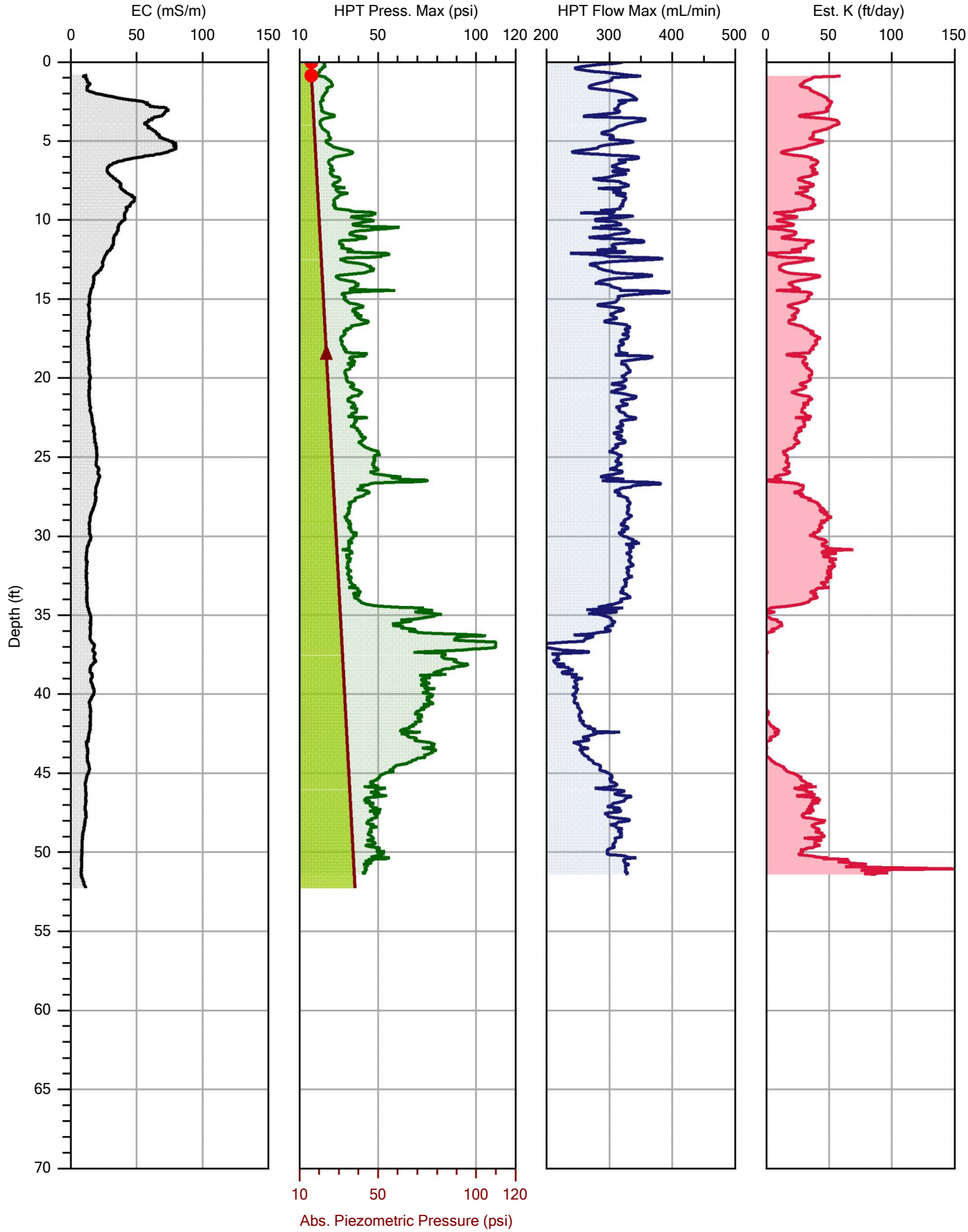


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|---|---|---|---|
| | | | File: HPT-31.HPT |
| Company: Dakota Technologies | Operator: Bob G. Guy P. | | Date: 7/18/2019 |
| Project ID: 0251.19 | Client: Braun Intertec | | Location: |

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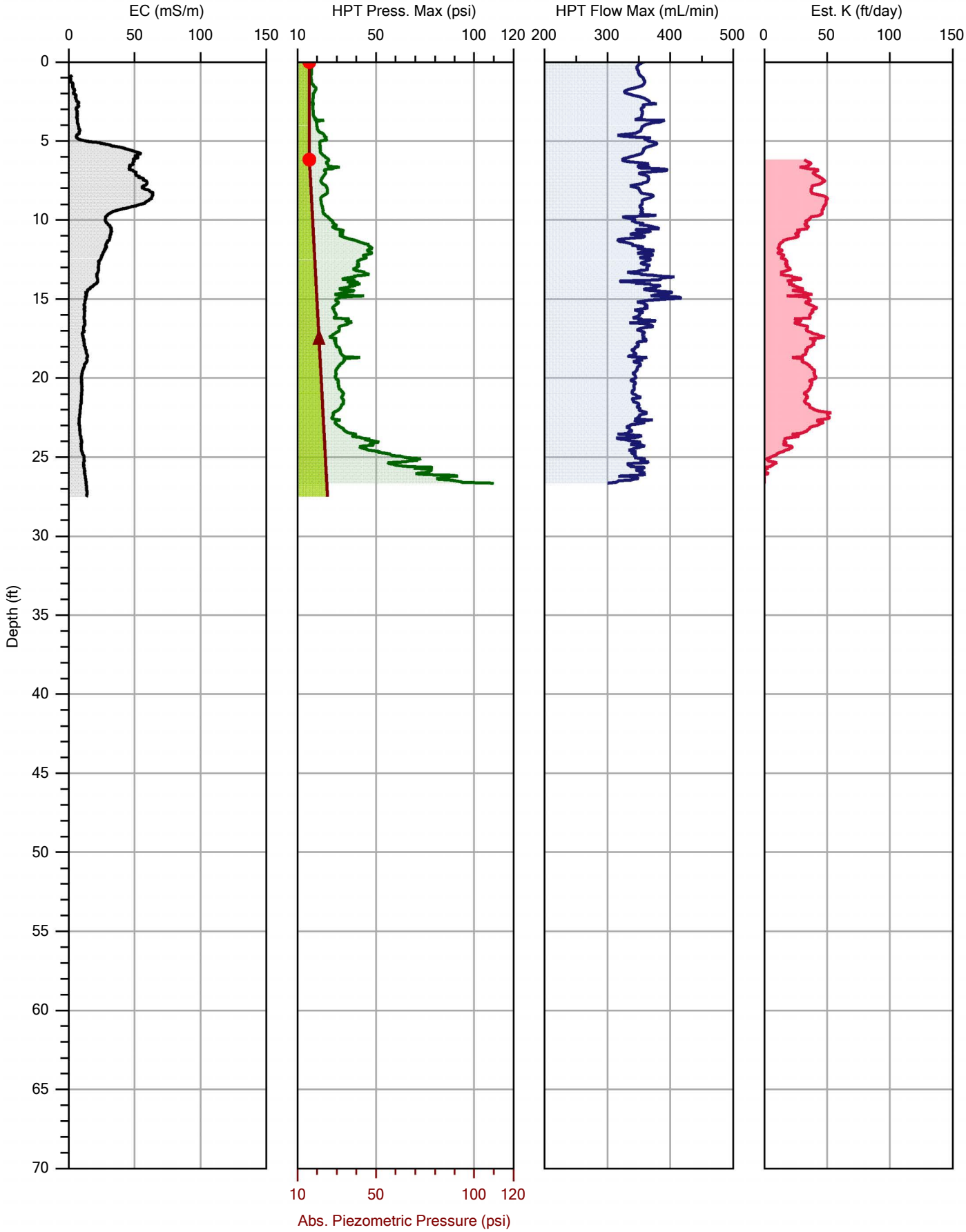


| | | | |
|---|---|---|---|
| | | | File: HPT-32.HPT |
| Company: Dakota Technologies | | Operator: Bob G. Guy P. | Date: 7/19/2019 |
| Project ID: 0251.19 | | Client: Braun Intertec | Location: |

DAKOTA TECHNOLOGIES
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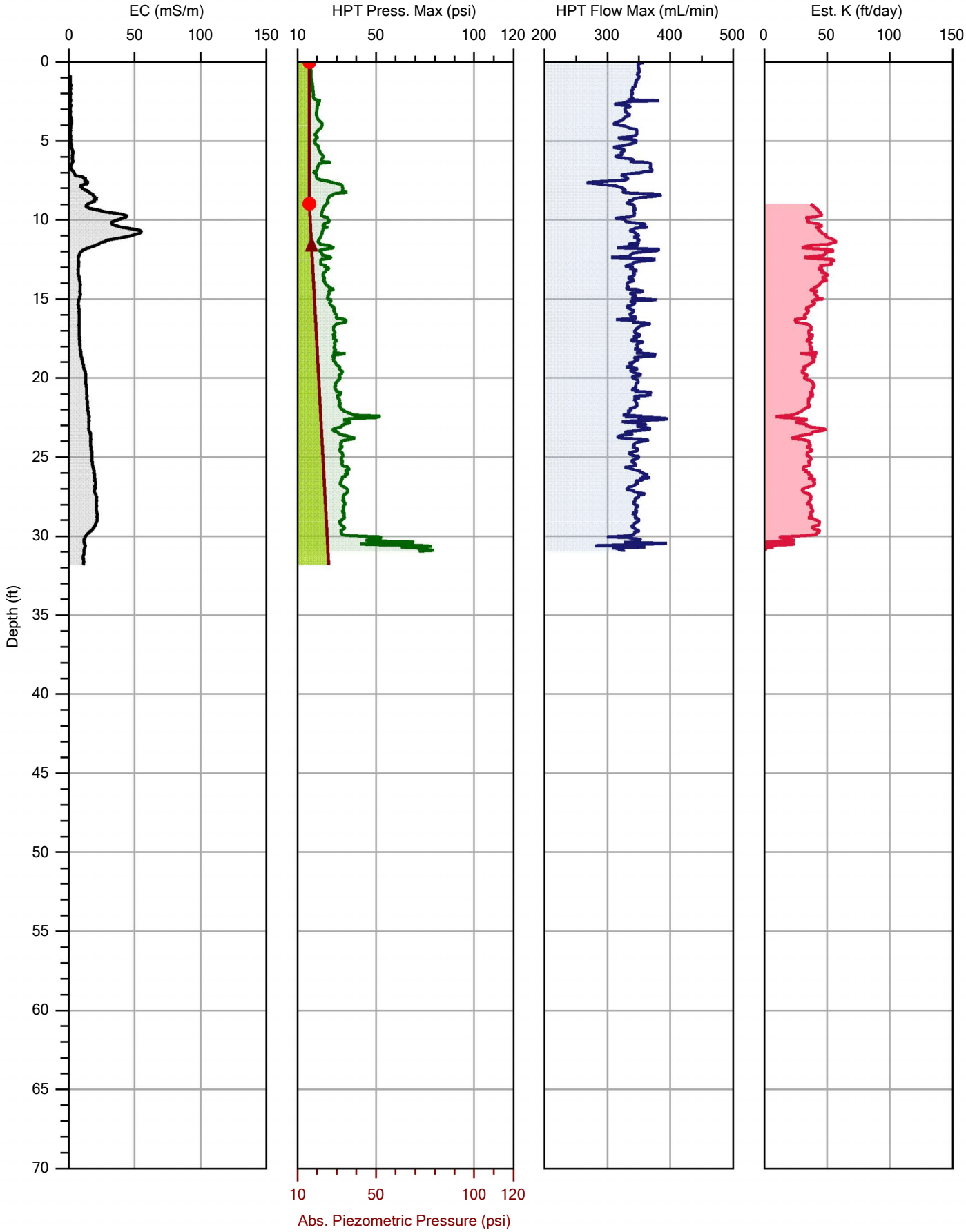


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|---|---|---|---|
| | | | File: HPT-33.HPT |
| Company: Dakota Technologies | Operator: Bob G. Guy P. | | Date: 7/18/2019 |
| Project ID: 0251.19 | Client: Braun Intertec | | Location: |

DAKOTA TECHNOLOGIES
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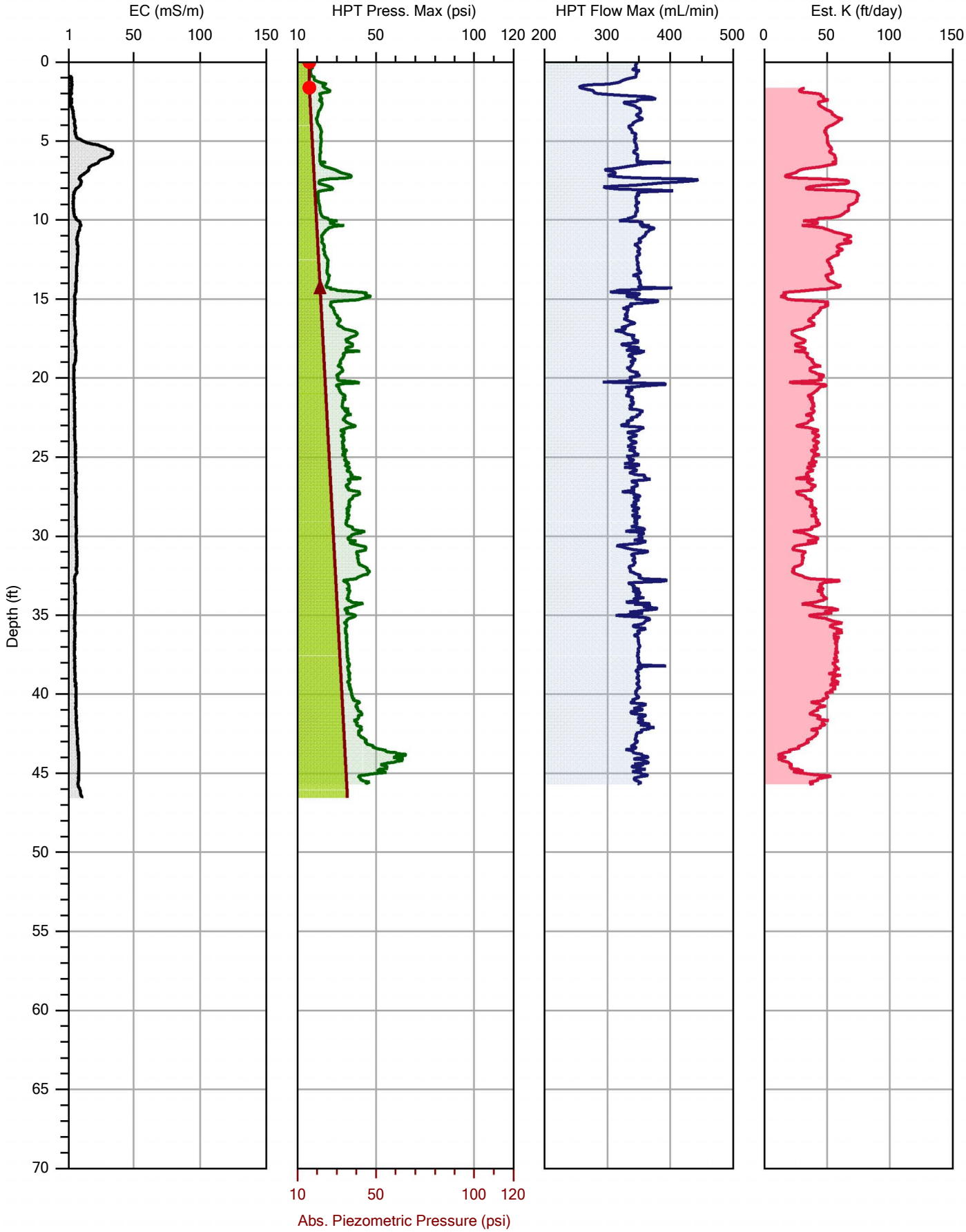


| | | | |
|---|---|---|---|
| | | | File: HPT-34.HPT |
| Company: Dakota Technologies | | Operator: Bob G. Guy P. | Date: 7/19/2019 |
| Project ID: 0251.19 | | Client: Braun Intertec | Location: |

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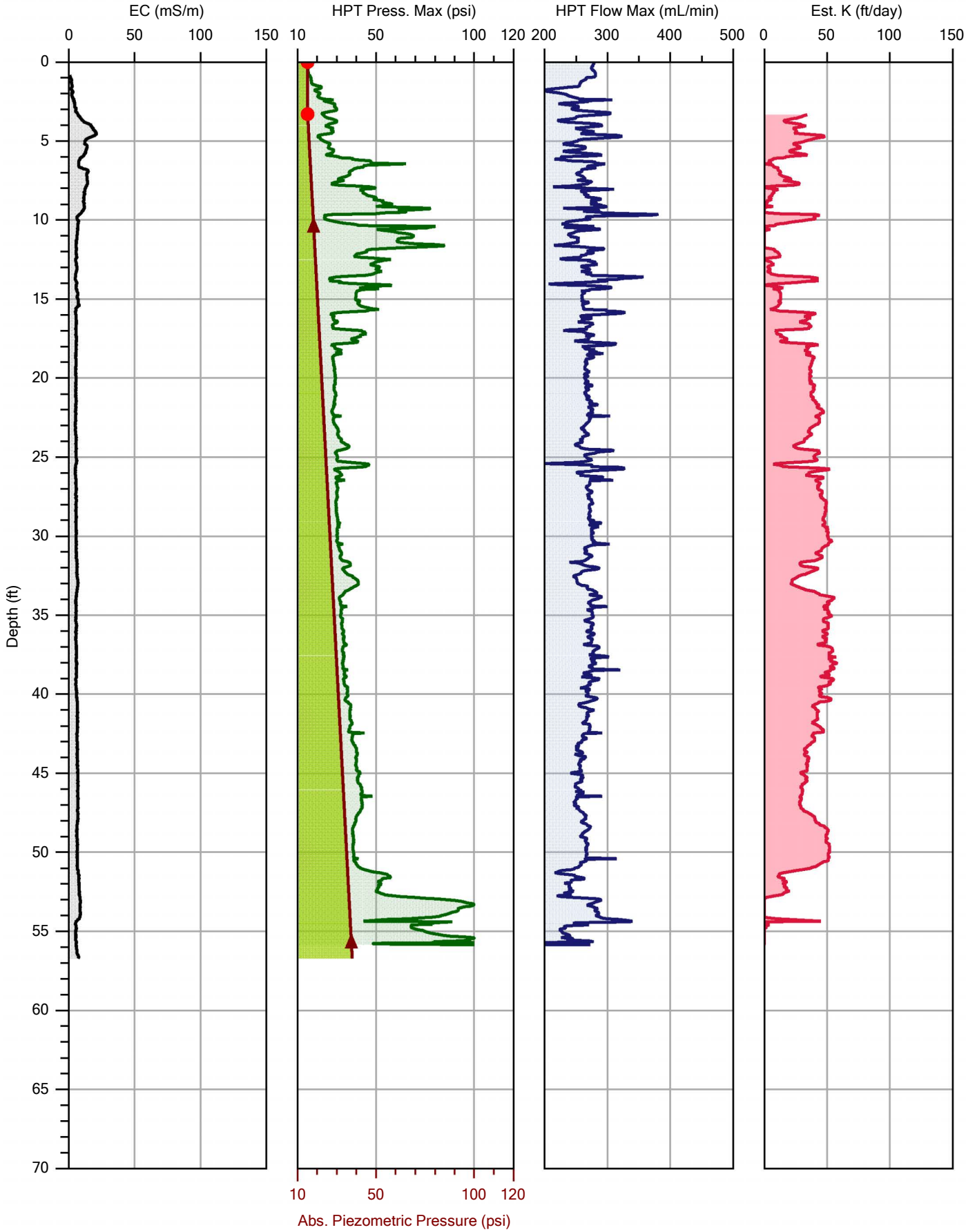


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|---|---|---|---|
| | | | File: HPT-35.HPT |
| Company: Dakota Technologies | | Operator: DT/GP | Date: 7/30/2019 |
| Project ID: 0251.19 | | Client: ARCADIS | Location: |

DAKOTA TECHNOLOGIES
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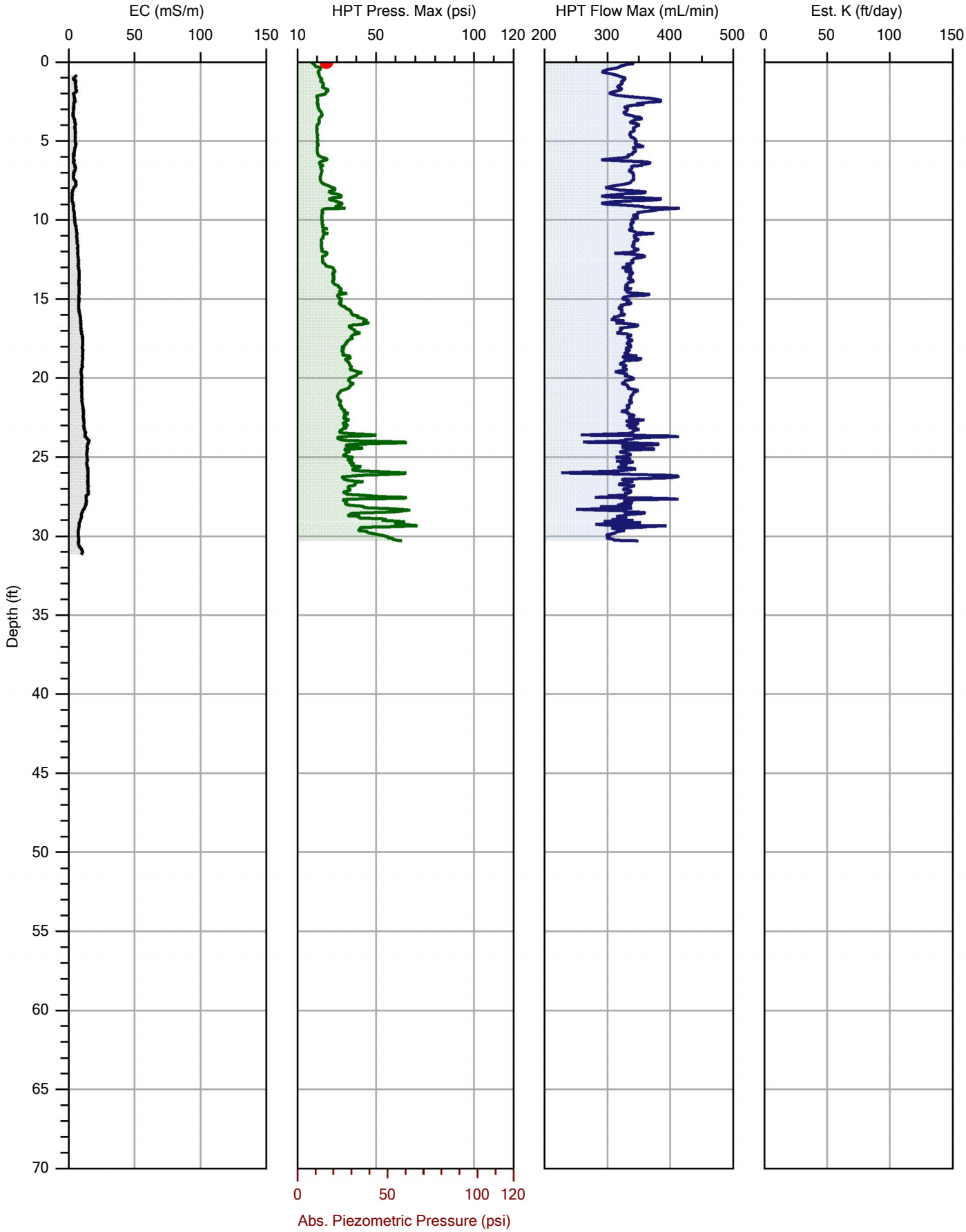


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|---|---|---|---|
| | | | File: HPT-36.HPT |
| Company: Dakota Technologies | | Operator: Bob G. Guy P. | Date: 7/18/2019 |
| Project ID: 0251.19 | | Client: Braun Intertec | Location: |

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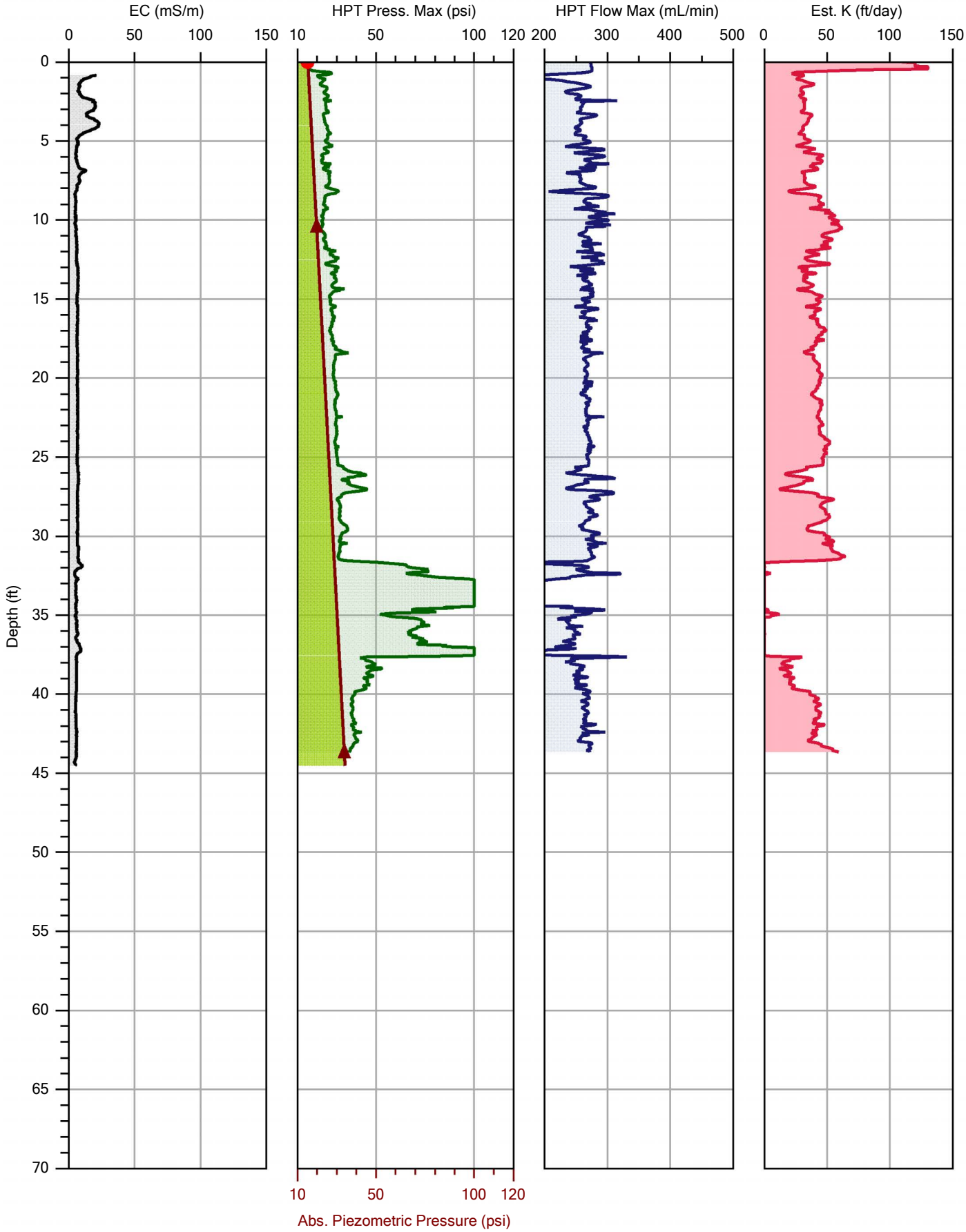


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|---|---|---|---|
| | | | File: HPT-37.HPT |
| Company: Dakota Technologies | | Operator: DT/GP | Date: 7/30/2019 |
| Project ID: 0251.19 | | Client: ARCADIS | Location: |

DAKOTA TECHNOLOGIES
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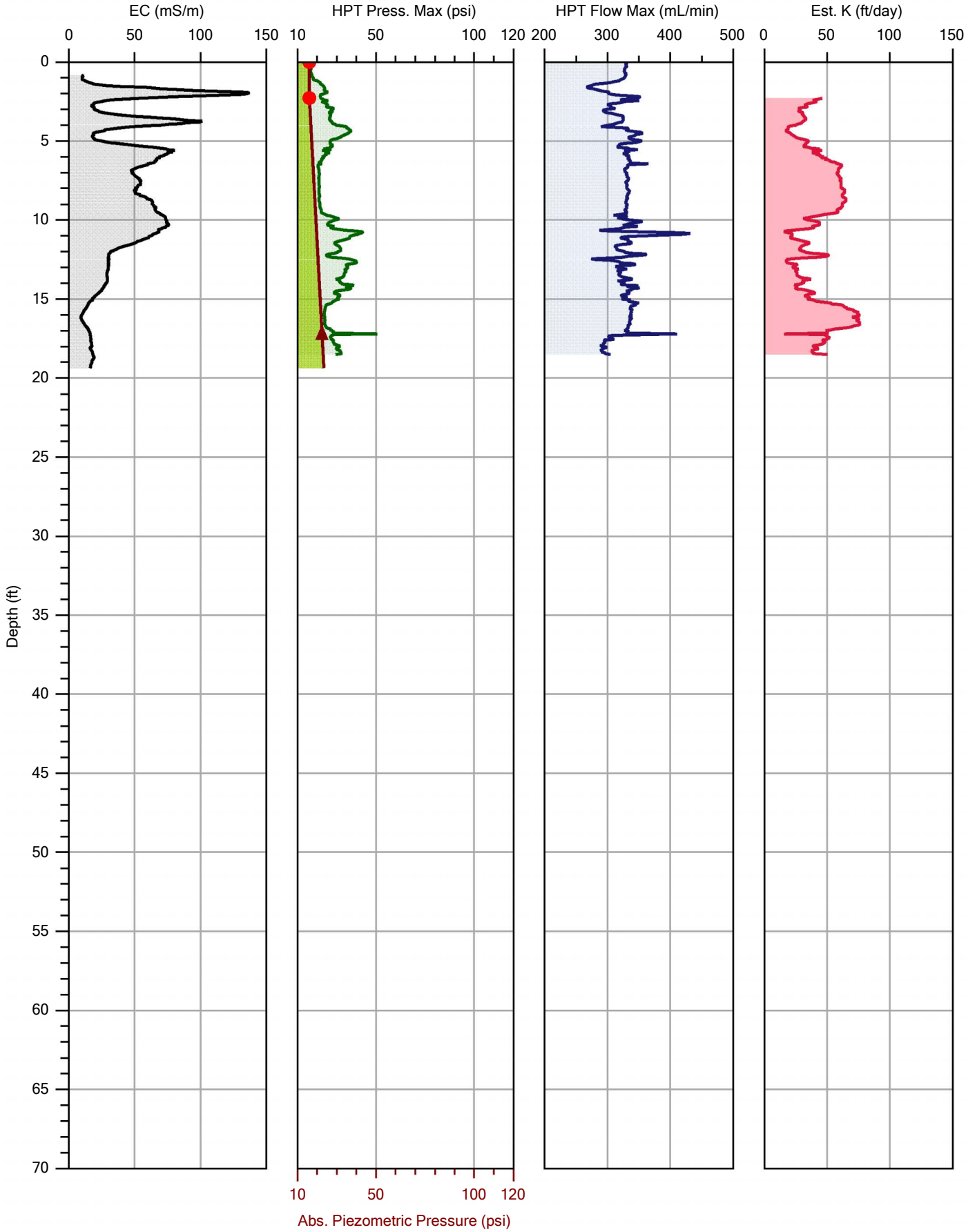


| | | | |
|---|---|---|---|
| | | | File: HPT-38.HPT |
| Company: Dakota Technologies | Operator: Bob G. Guy P. | | Date: 7/19/2019 |
| Project ID: 0251.19 | Client: Braun Intertec | | Location: |

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# Appendix D

# HPT Reference Log

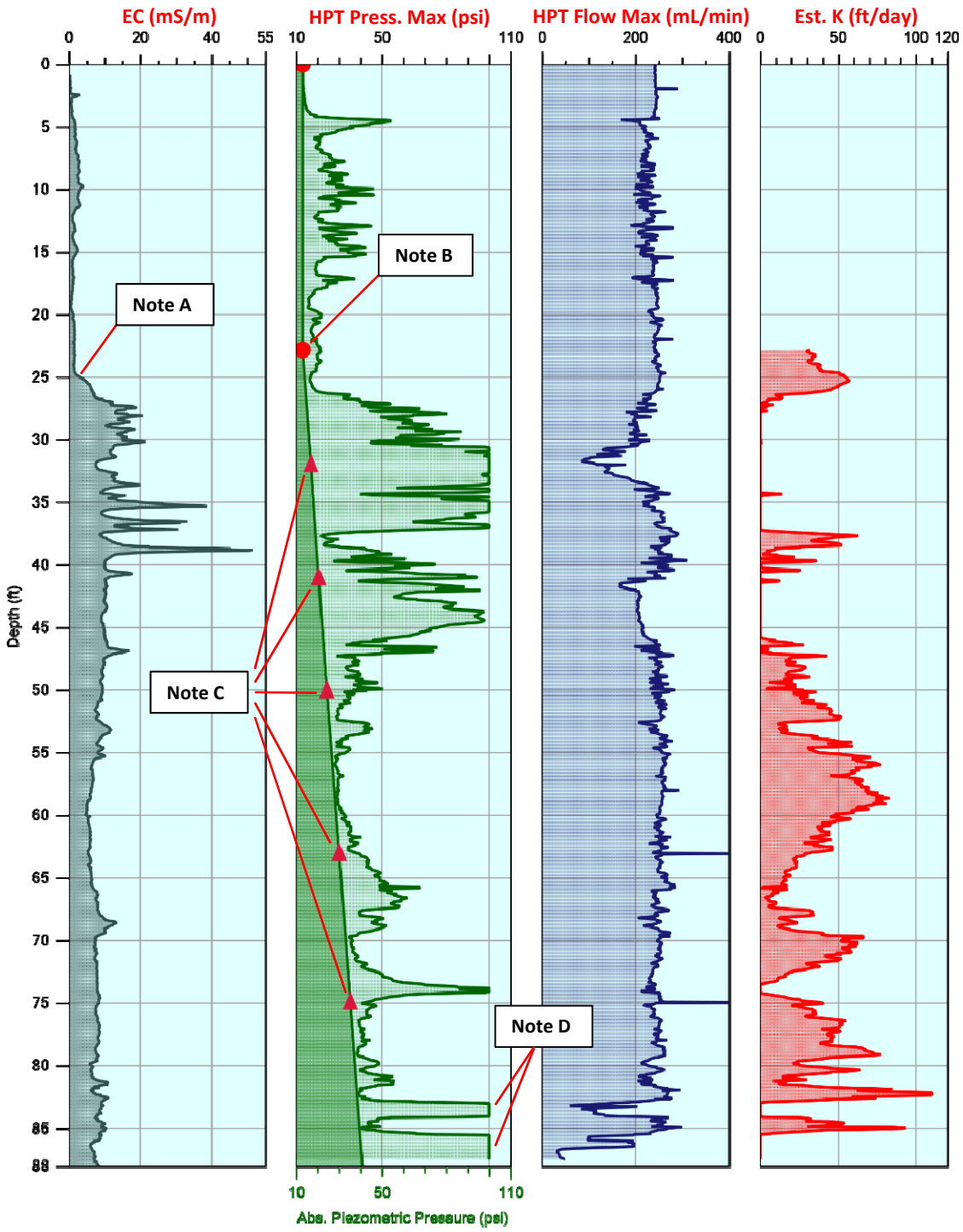
# Dakota Technologies
# HPT Reference Log

## Conductivity Plot:
The Electrical Conductivity **(EC)** of the soil is logged simultaneously with the HPT data utilizing an integrated Wenner array. EC often provides insight into the stratigraphy and correlates with the HPT pressure plot in many instances. Typically an increase in EC (and increase in pressure) is indicative of finer, tighter soil types.

## HPT Pressure Plot:
The HPT pressure gives insight into hydraulic properties of the soil as water is pumped into the formation at a constant rate. The pressure (unlike EC) is independent of certain factors such as pore water chemistry or mineralogy (contaminants, brines) and so further aids in defining soil/hydraulic properties of the area of investigation.

## HPT Flow Plot:
Water is pumped out of the HPT probe and into the formation at a constant rate of typically 250 ml/min. A change in flow (usually accompanied by an inverse pressure change) is an indicator of the hydraulic properties of the soil

## Estimated K Plot:
The estimated hydraulic conductivity (K) is internally calculated by utilizing pressure and flow data in conjunction with dissipation tests performed at each location. This data is useful for directing sampling, remediation and slug testing protocols.




## Note A:
Increasing EC readings starting at 25 feet indicate a transition to finer grain silt with clay stringers at 35 to 39 feet.

## Note B:
The hydrostatic water level has been indicated with a round marker at 22.5 feet.

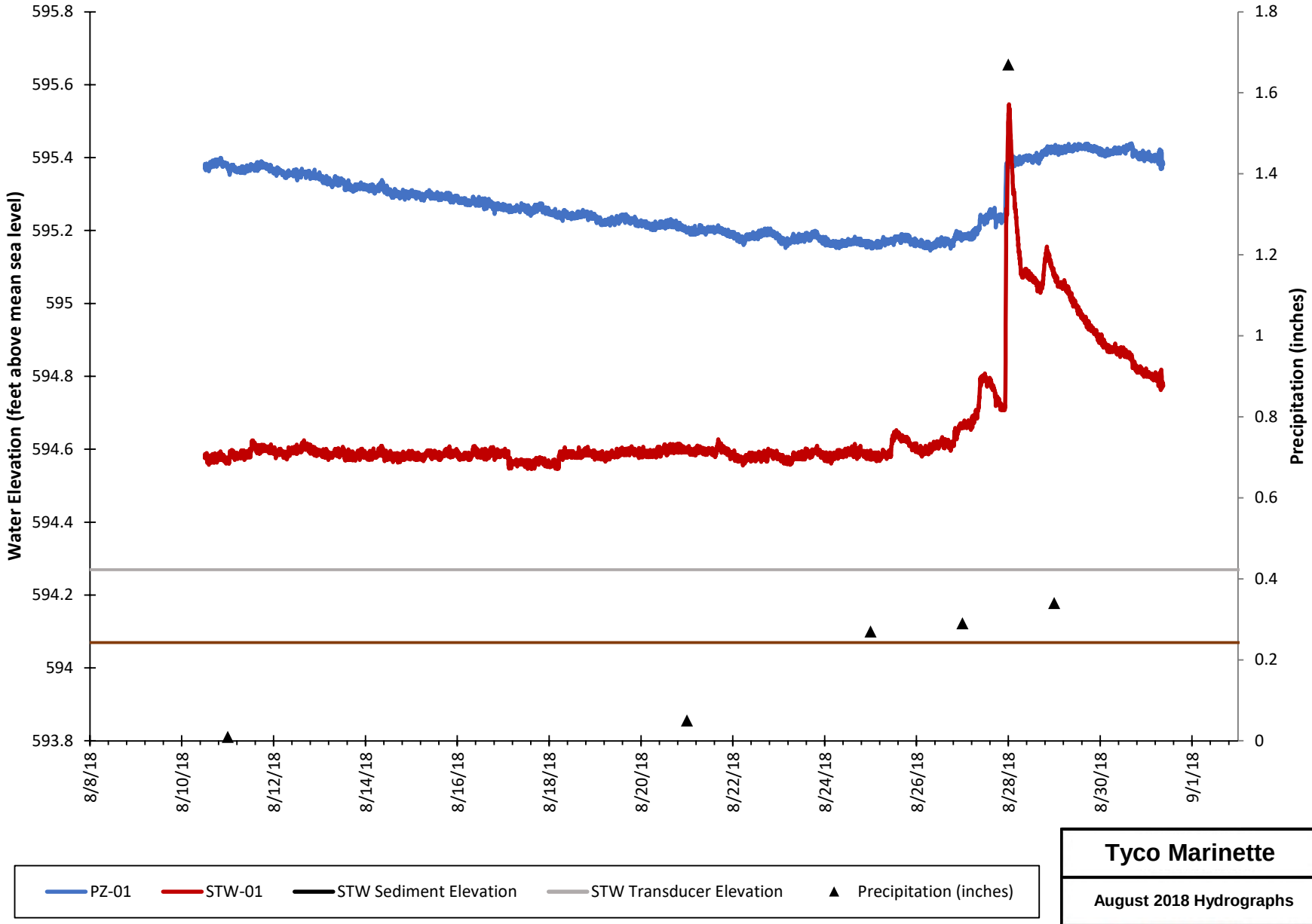
## Note C:
The Absolute Piezometric pressure has been calculated and graphed with the individual dissipation test points indicated by triangular markers. The pressure increases relative to the head pressure as soon as the water table is encountered. Since these points form a straight line (no inflections) it can be inferred that the water table is hydraulically connected from the first to the last dissipation test.

## Note D:
The significant pressure increase (transducer maxed out, 100 psi) and drop in flow at 83 to 88 feet is due to tight formation conditions discovered by HPT parameters (and not observed by EC measurements).

# APPENDIX H

## Precipitation Data – Hydrographs

# August 2018 Hydrographs

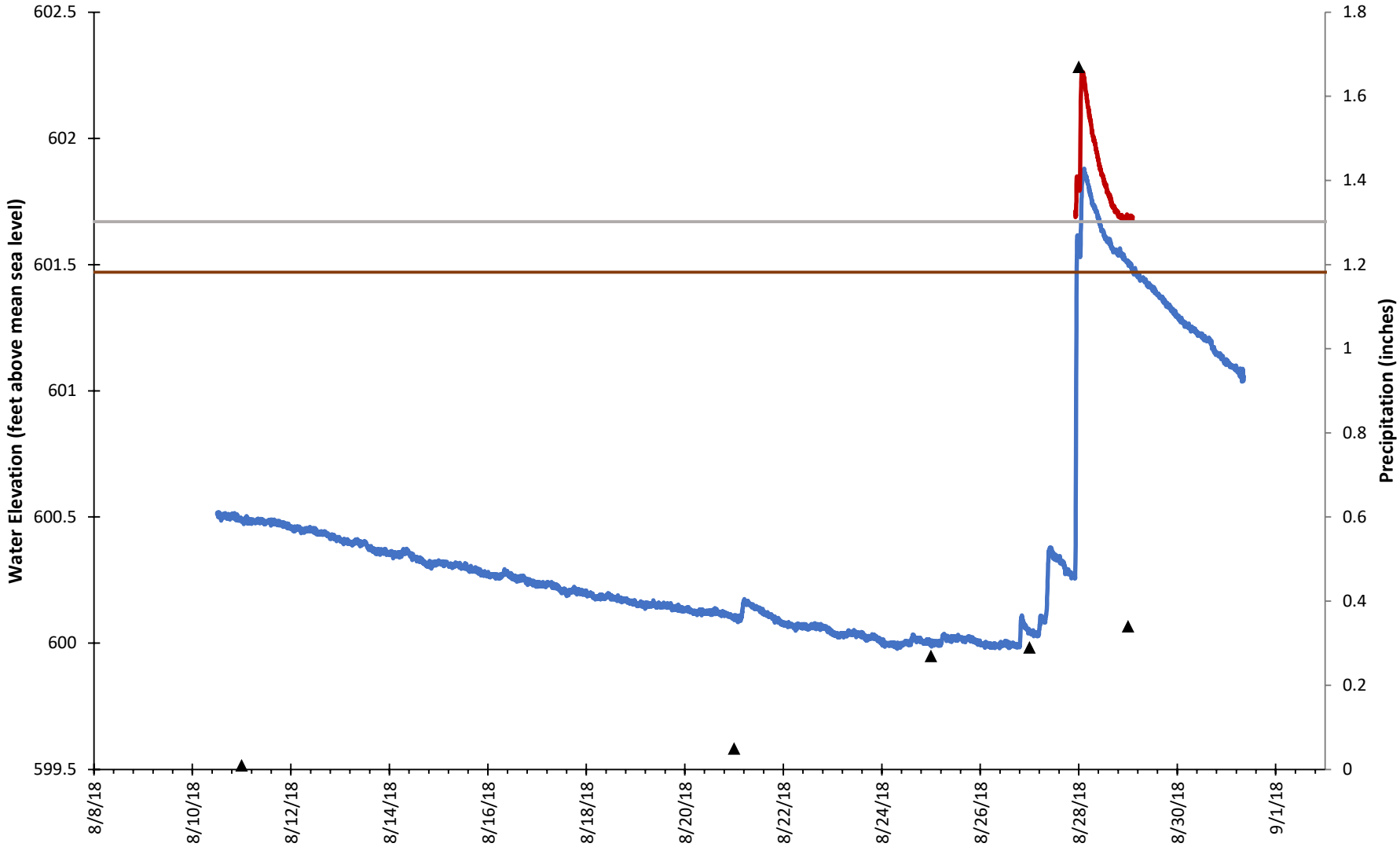



**Tyco Marinette**

**August 2018 Hydrographs**

ARCADIS

FIGURE 1



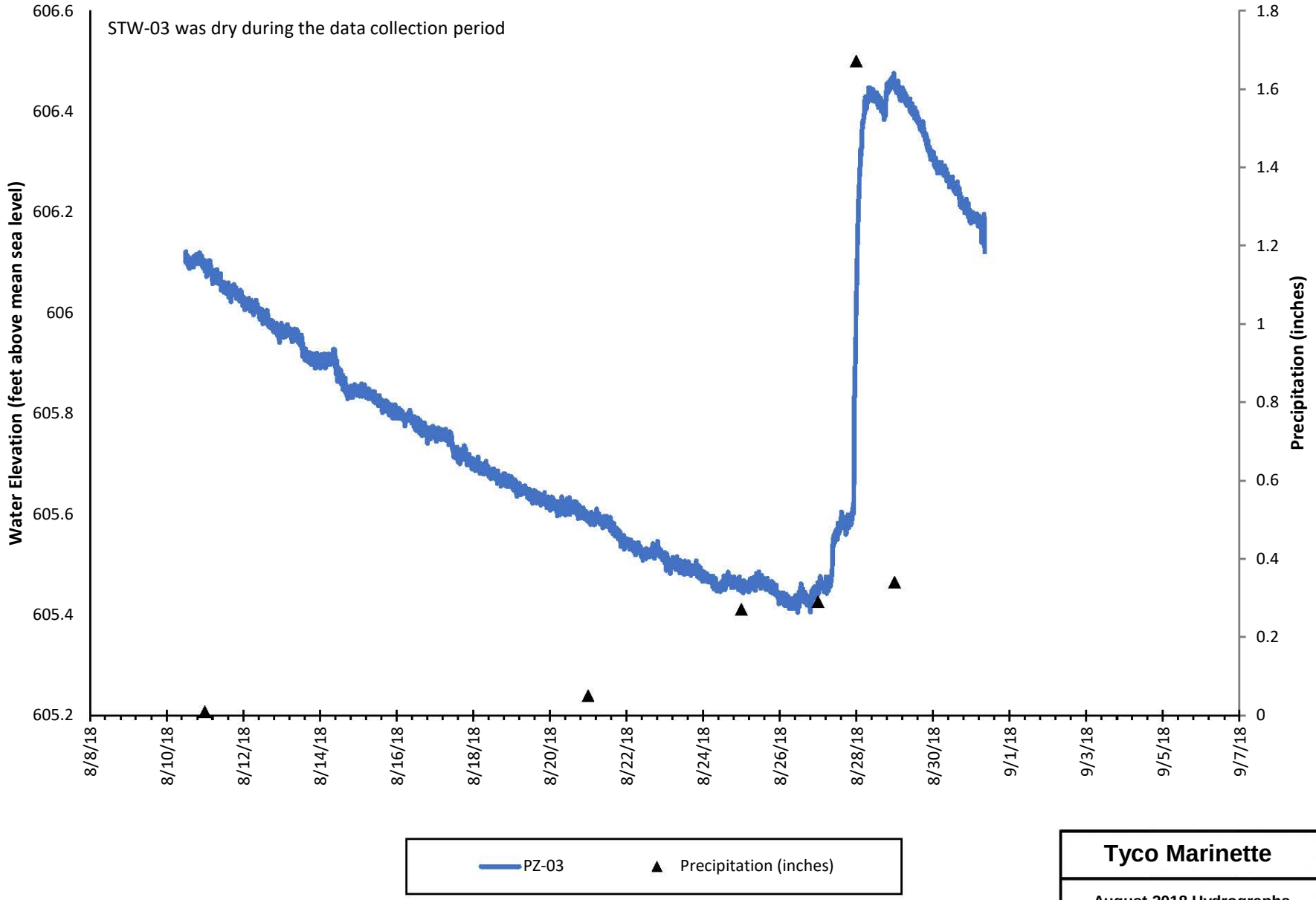

PZ-02 | STW-02 | STW Sediment Elevation | STW Transducer Elevation | Precipitation (inches)

**Tyco Marinette**

**August 2018 Hydrographs**

ARCADIS

FIGURE 2

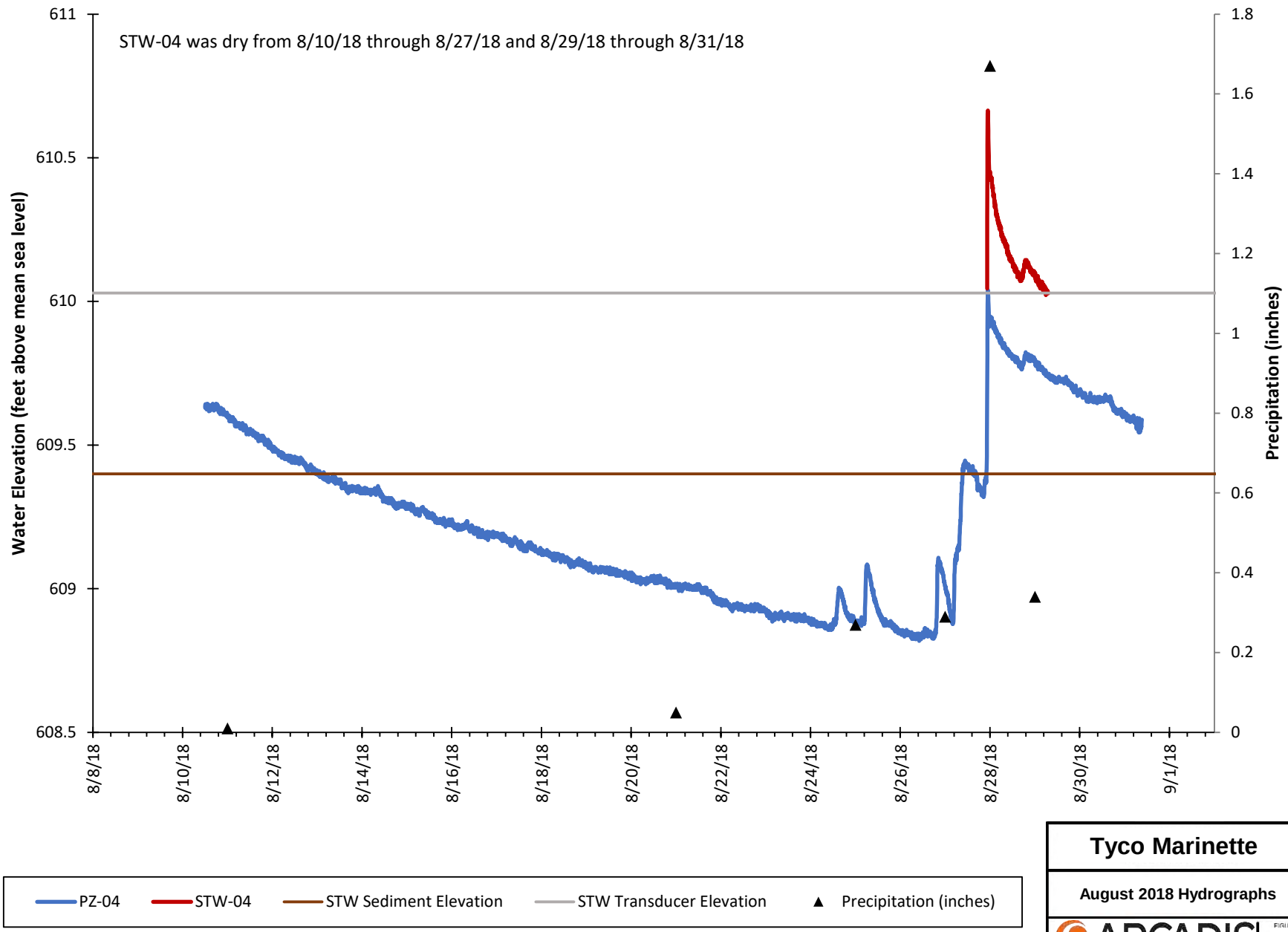



**Tyco Marinette**

**August 2018 Hydrographs**

ARCADIS

FIGURE 3

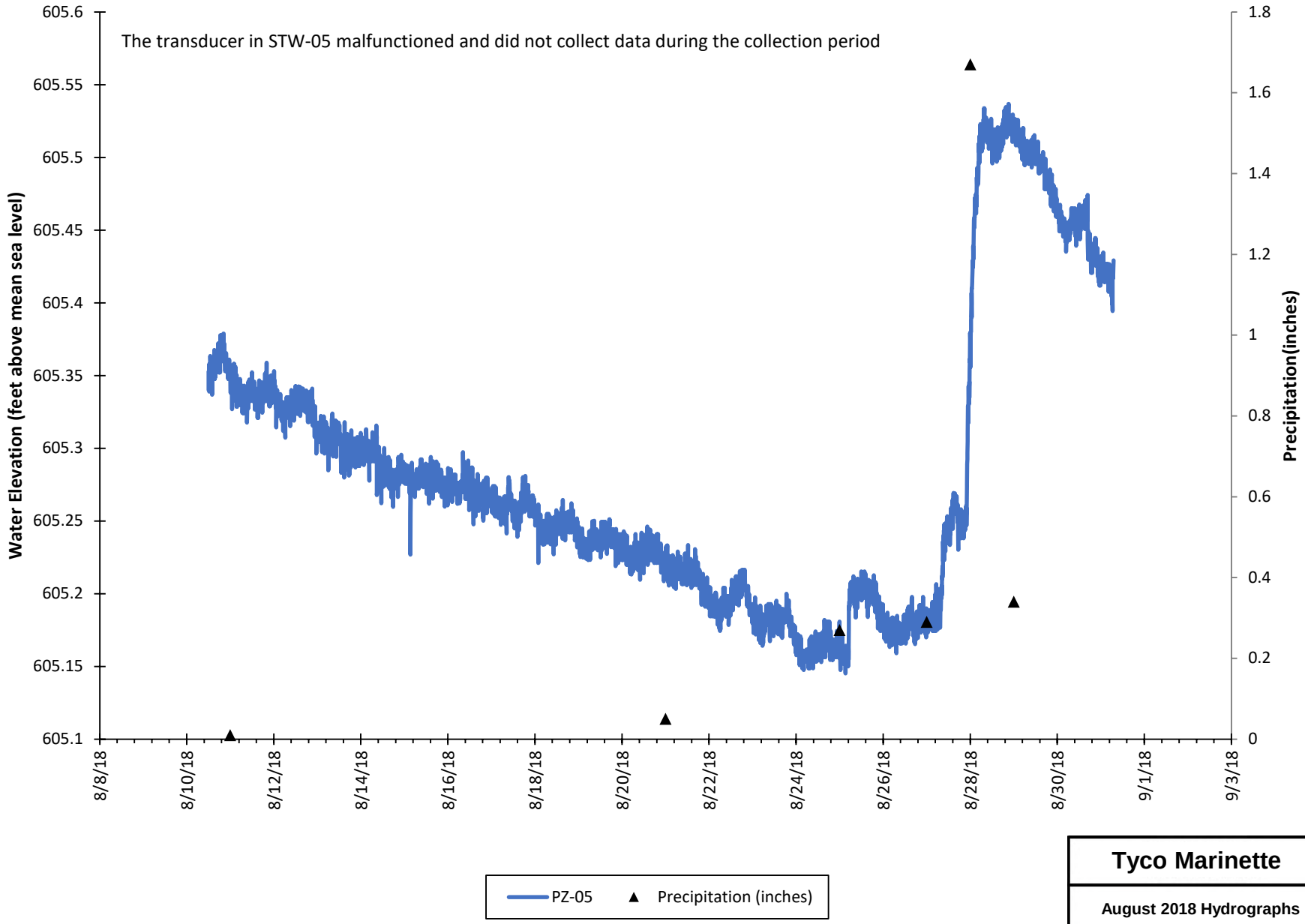



**Tyco Marinette**

**August 2018 Hydrographs**

ARCADIS

FIGURE 4

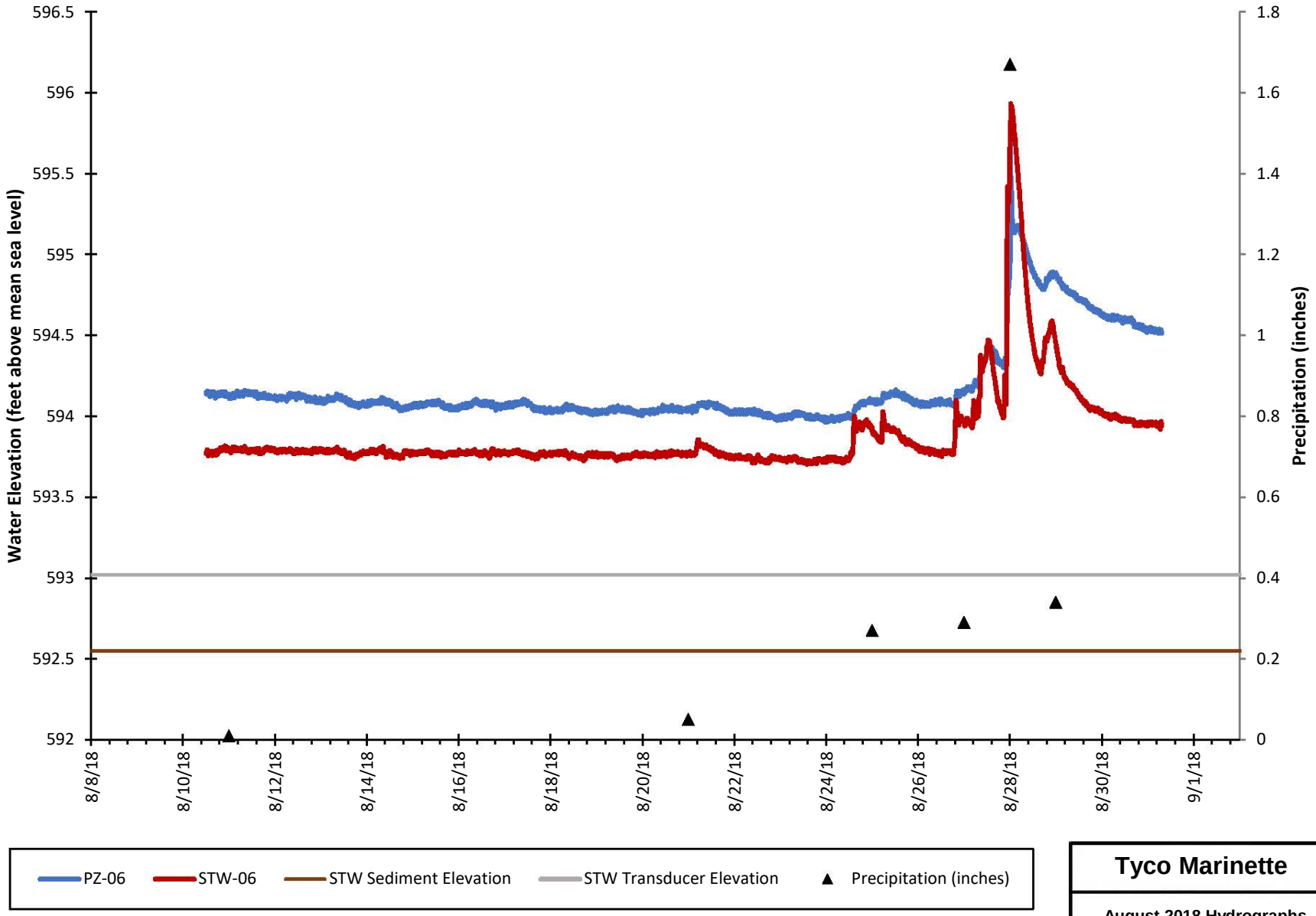



**Tyco Marinette**

**August 2018 Hydrographs**

ARCADIS

FIGURE 5

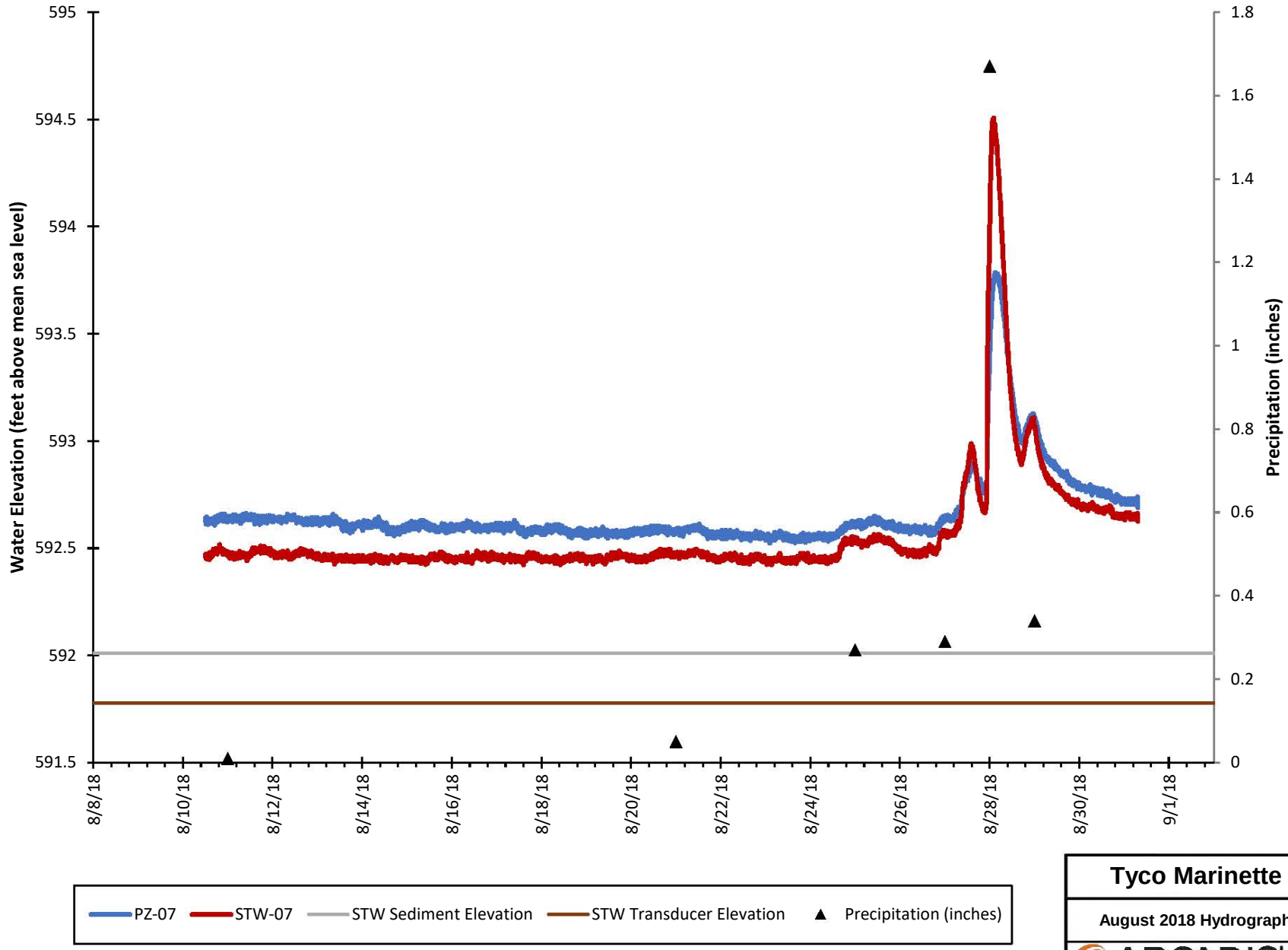



**Tyco Marinette**

**August 2018 Hydrographs**

ARCADIS

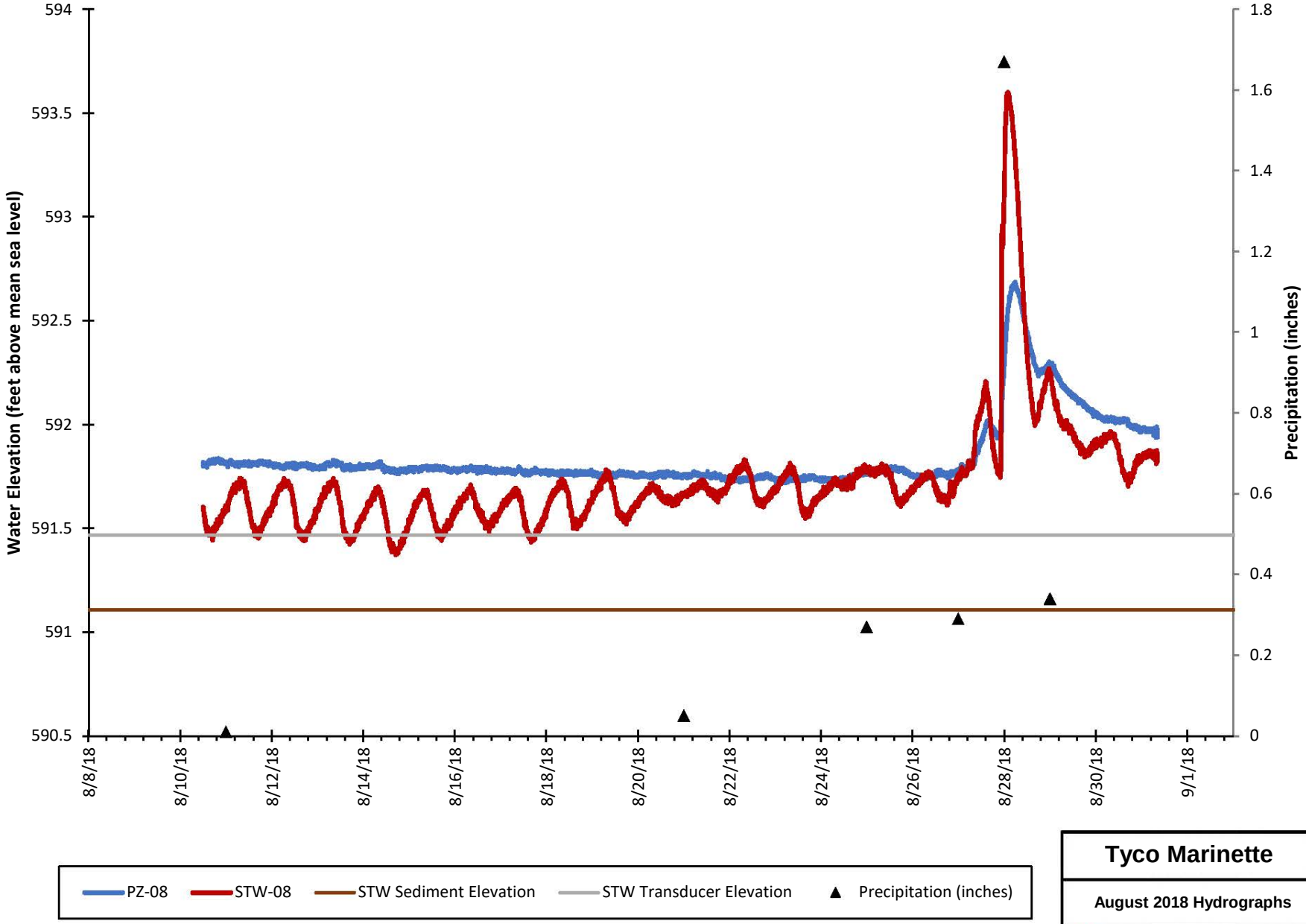
6




**Tyco Marinette**

**August 2018 Hydrographs**

ARCADIS FIGURE 7

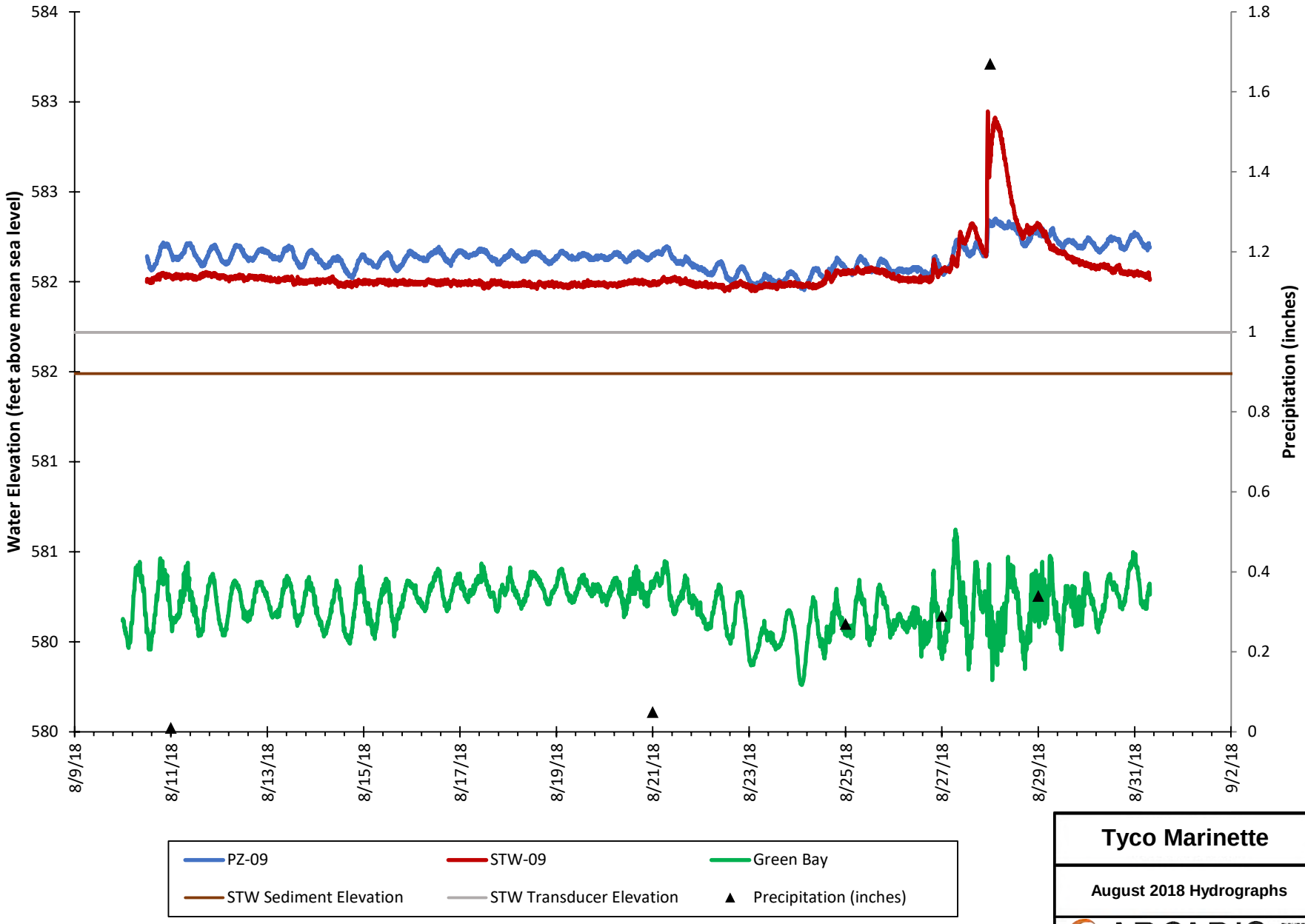



**Tyco Marinette**

**August 2018 Hydrographs**

ARCADIS

FIGURE 8



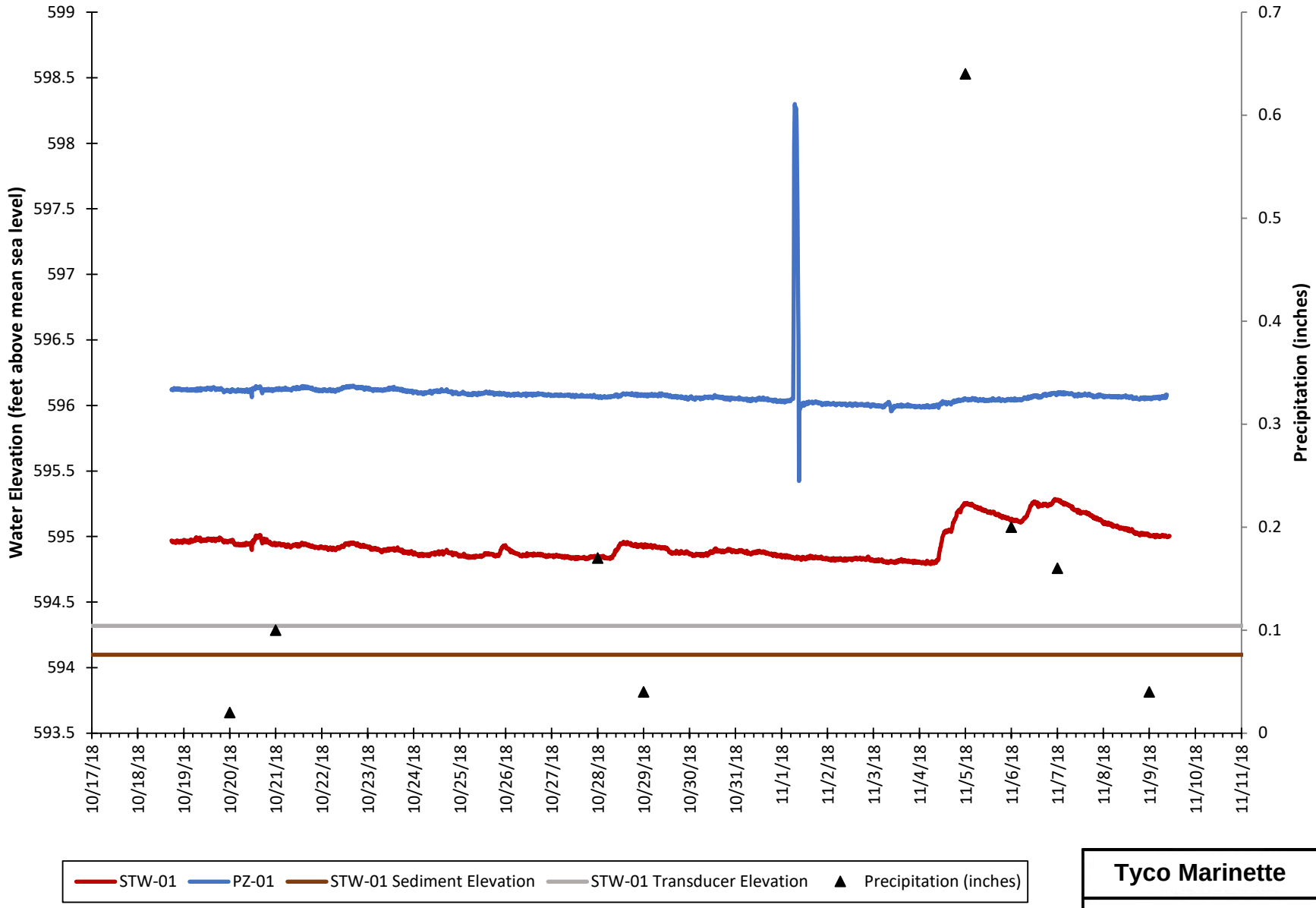

**Tyco Marinette**

**August 2018 Hydrographs**

ARCADIS

FIGURE 9

# October 2018 Hydrographs

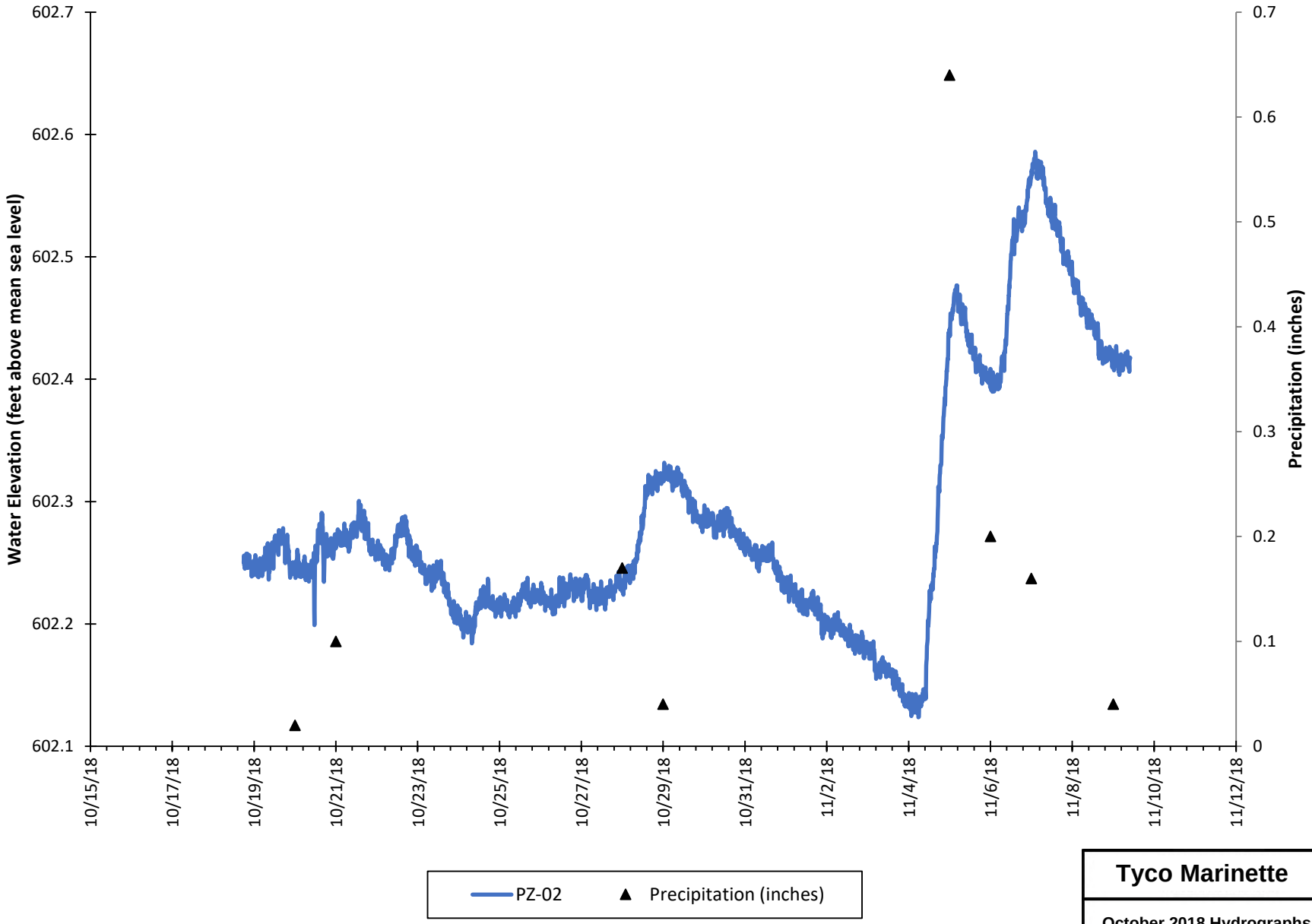



**Tyco Marinette**

**October 2018 Hydrographs**

ARCADIS

FIGURE 10

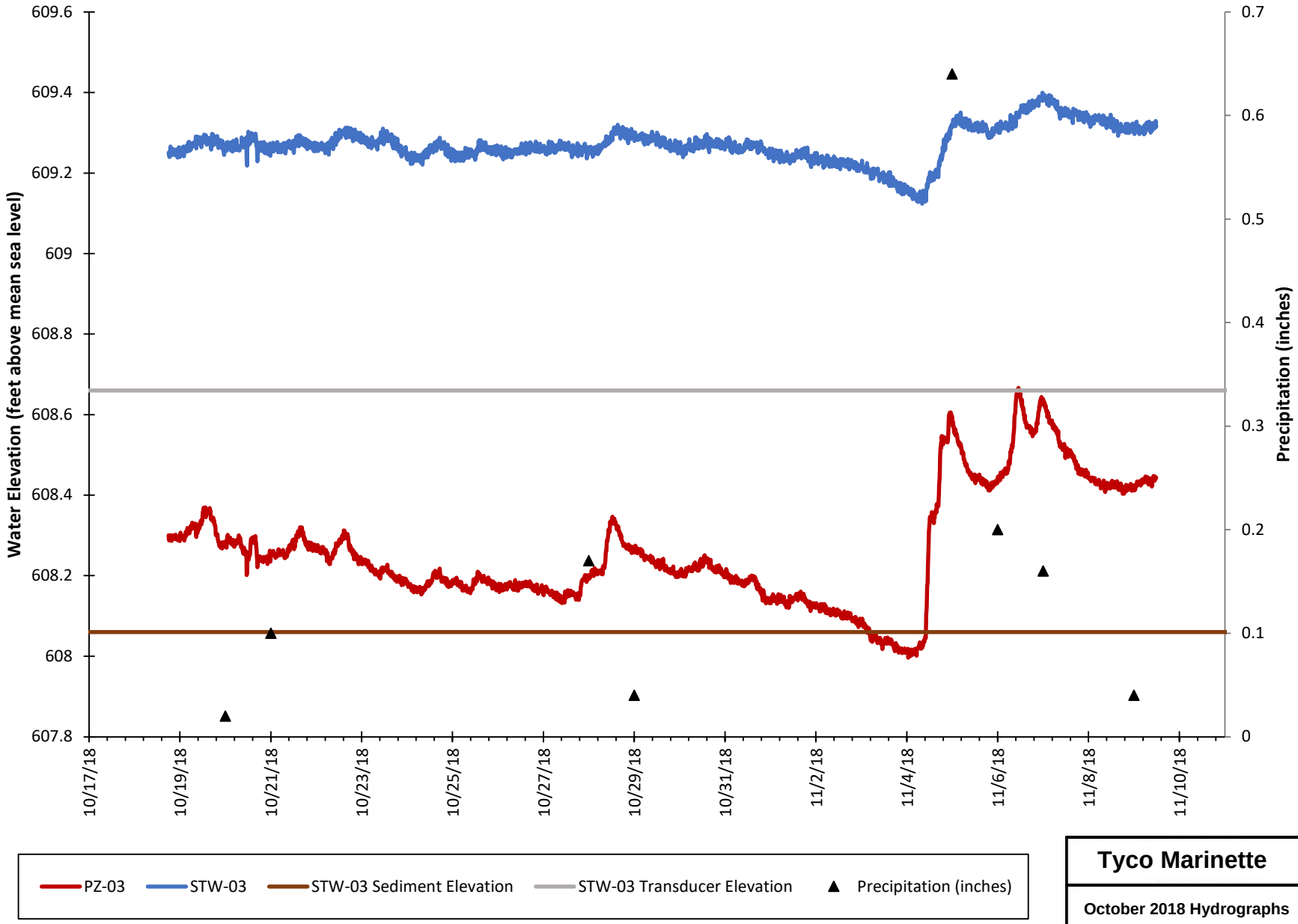



**Tyco Marinette**

**October 2018 Hydrographs**

ARCADIS

FIGURE 11

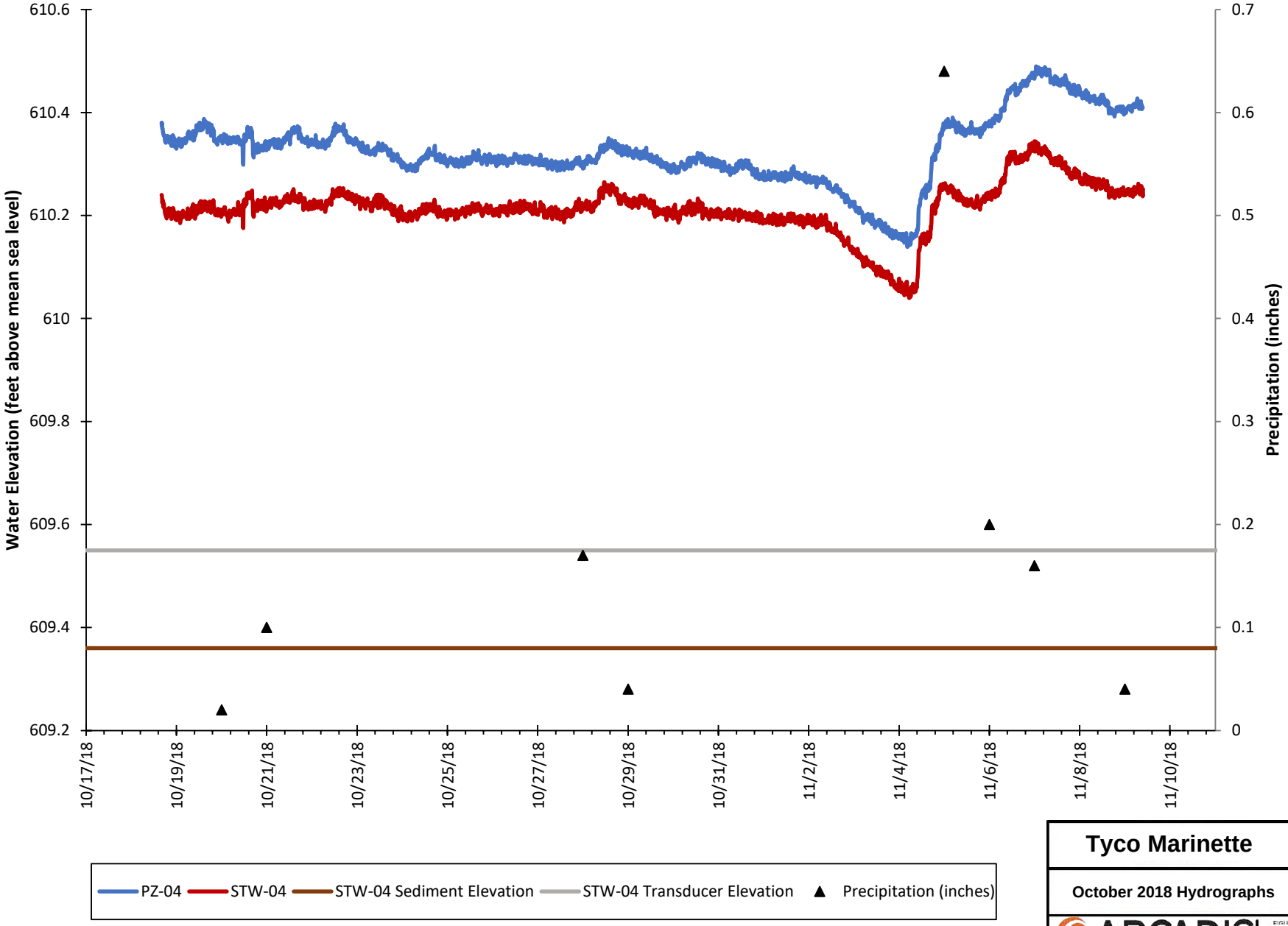



**Tyco Marinette**

**October 2018 Hydrographs**

ARCADIS

FIGURE 12

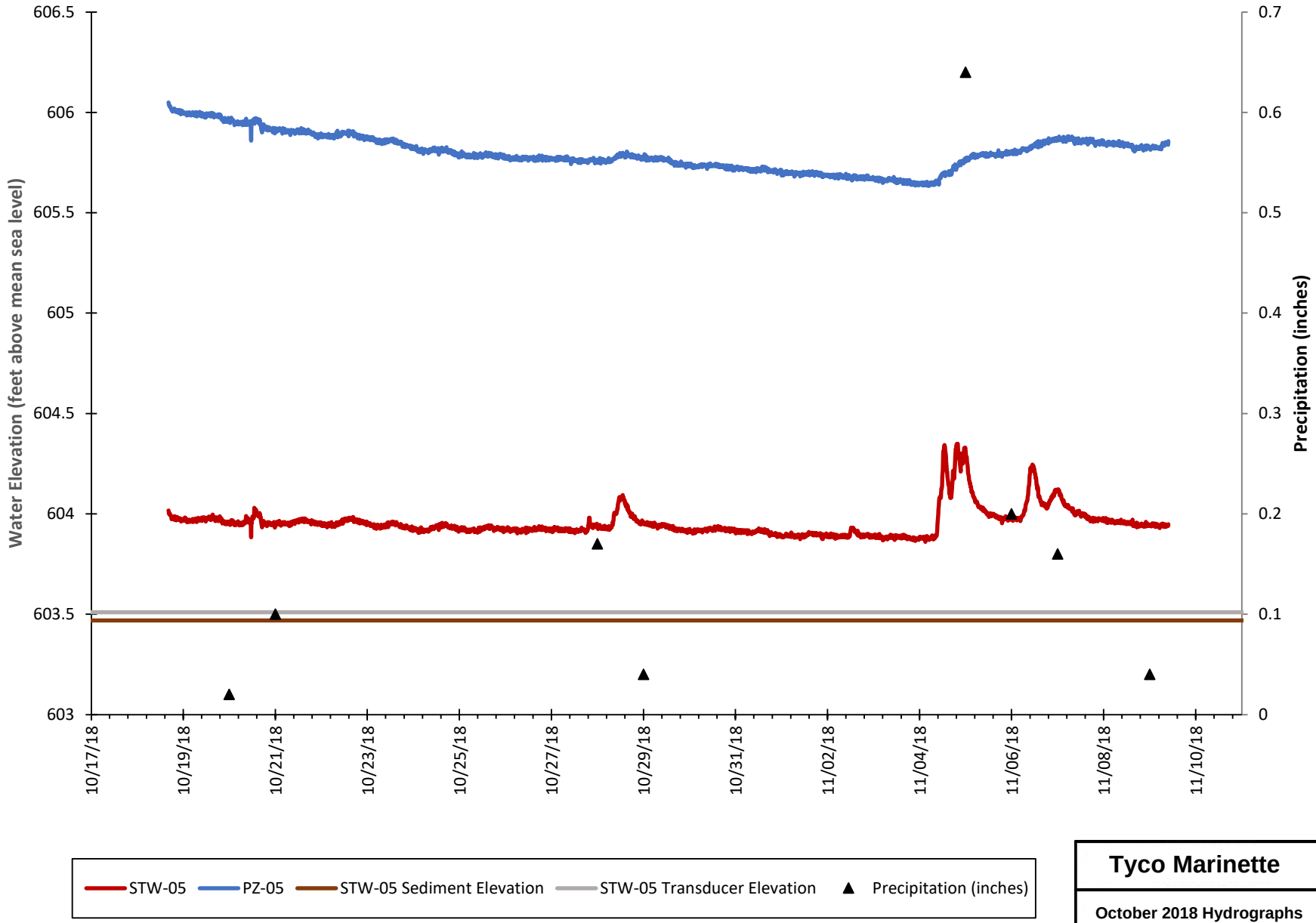



**Tyco Marinette**

**October 2018 Hydrographs**

ARCADIS

FIGURE 13

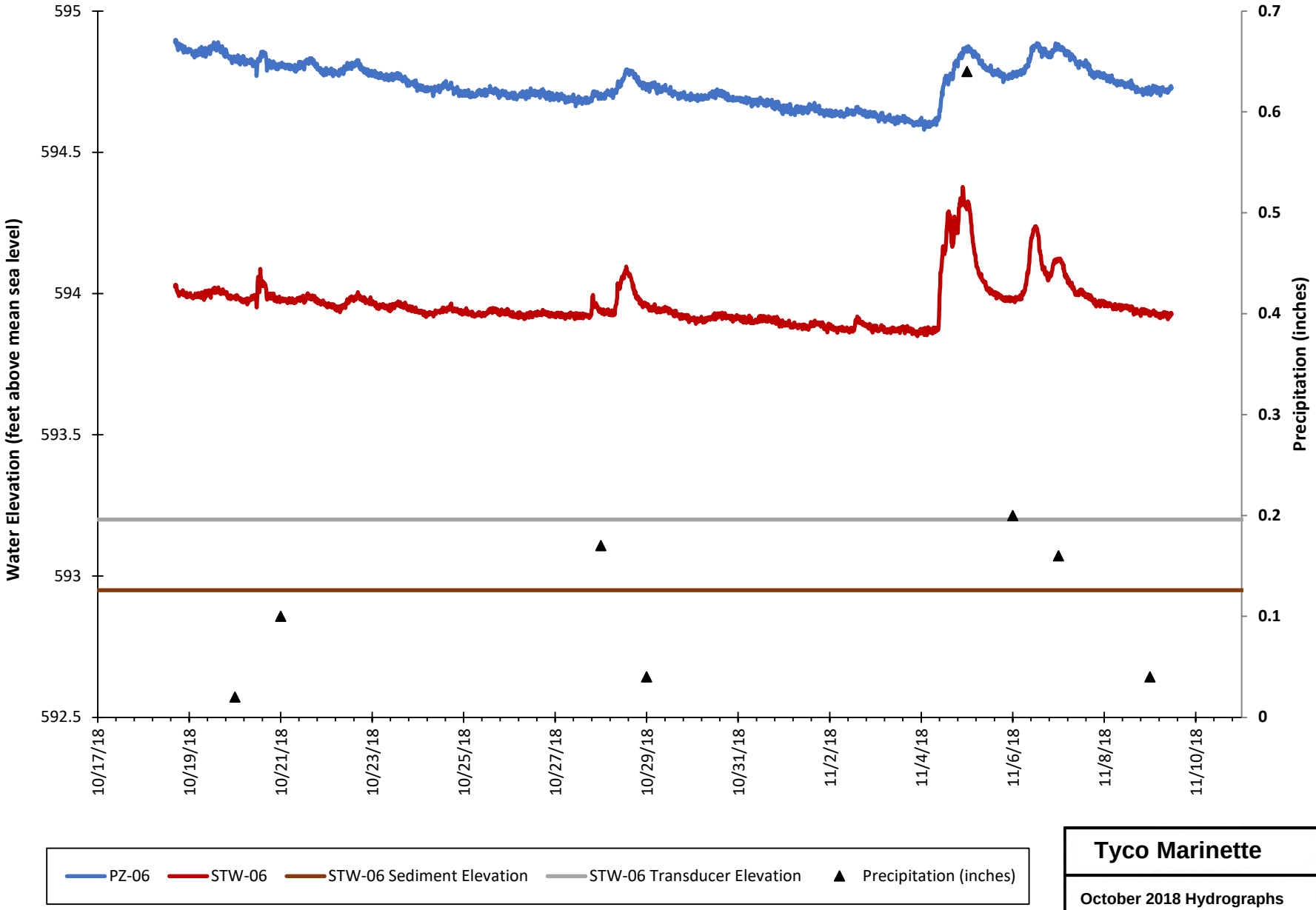



**Tyco Marinette**

**October 2018 Hydrographs**

ARCADIS

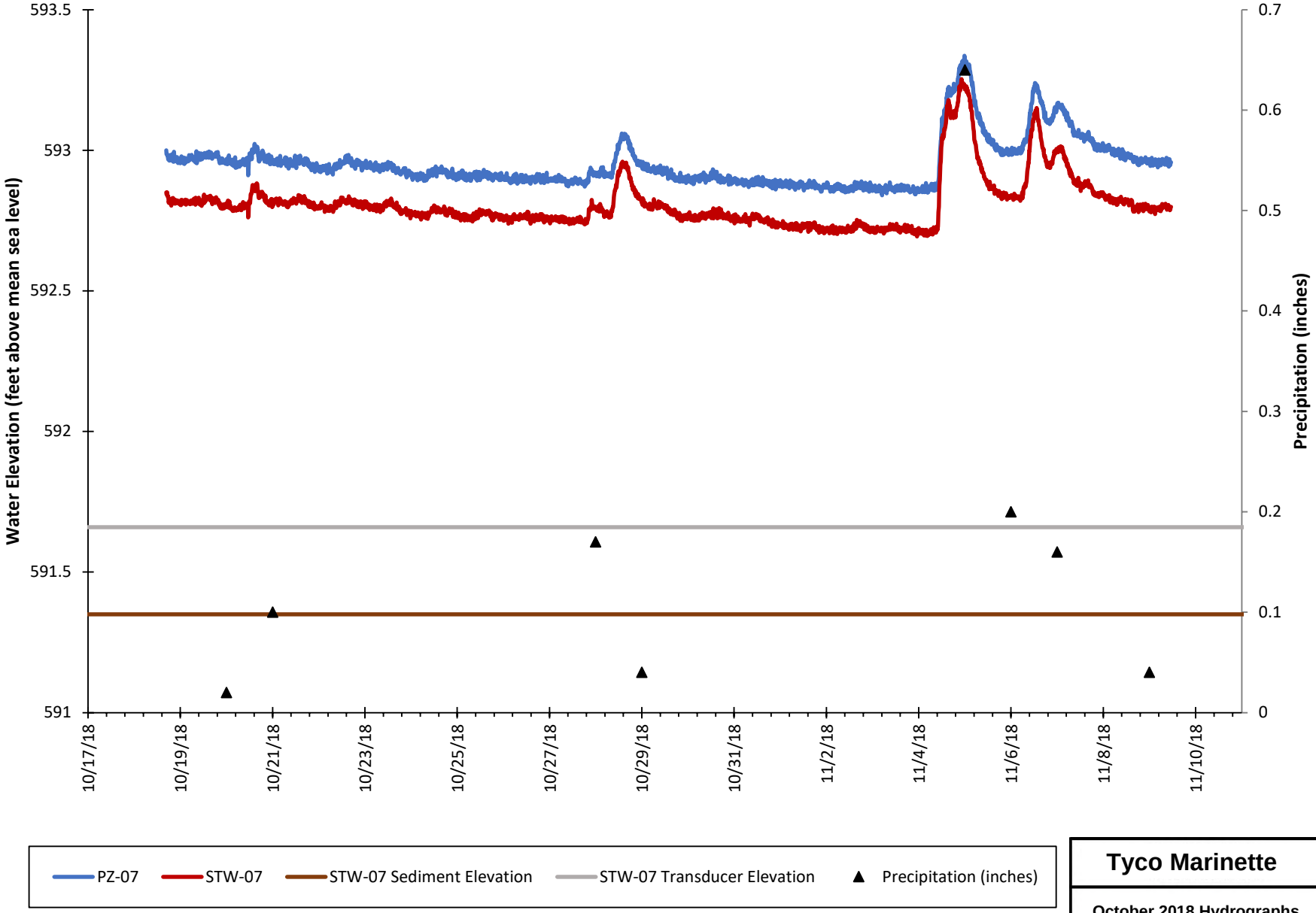
FIGURE 14




**Tyco Marinette**

**October 2018 Hydrographs**

ARCADIS 15

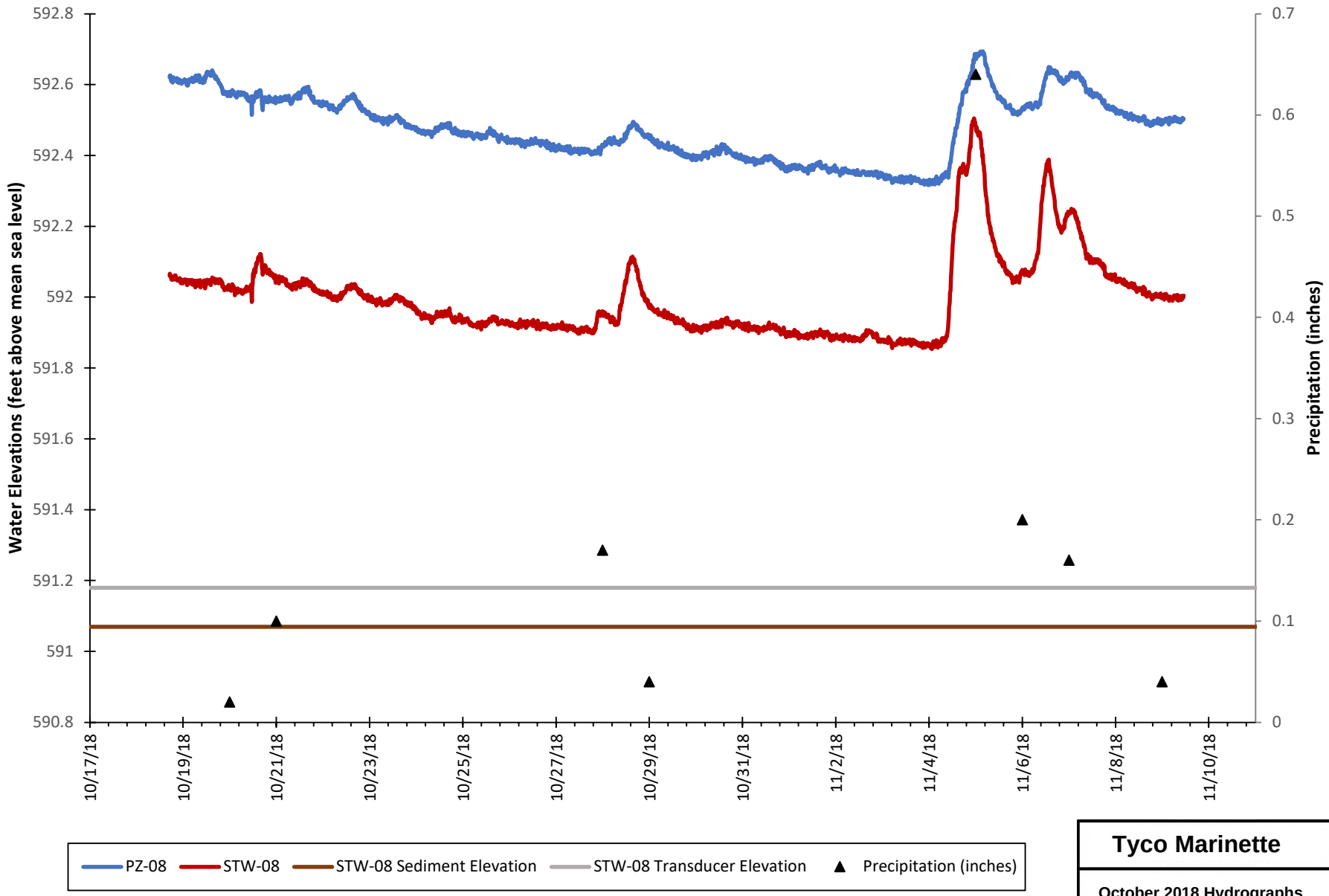



**Tyco Marinette**

**October 2018 Hydrographs**

ARCADIS

FIGURE 16

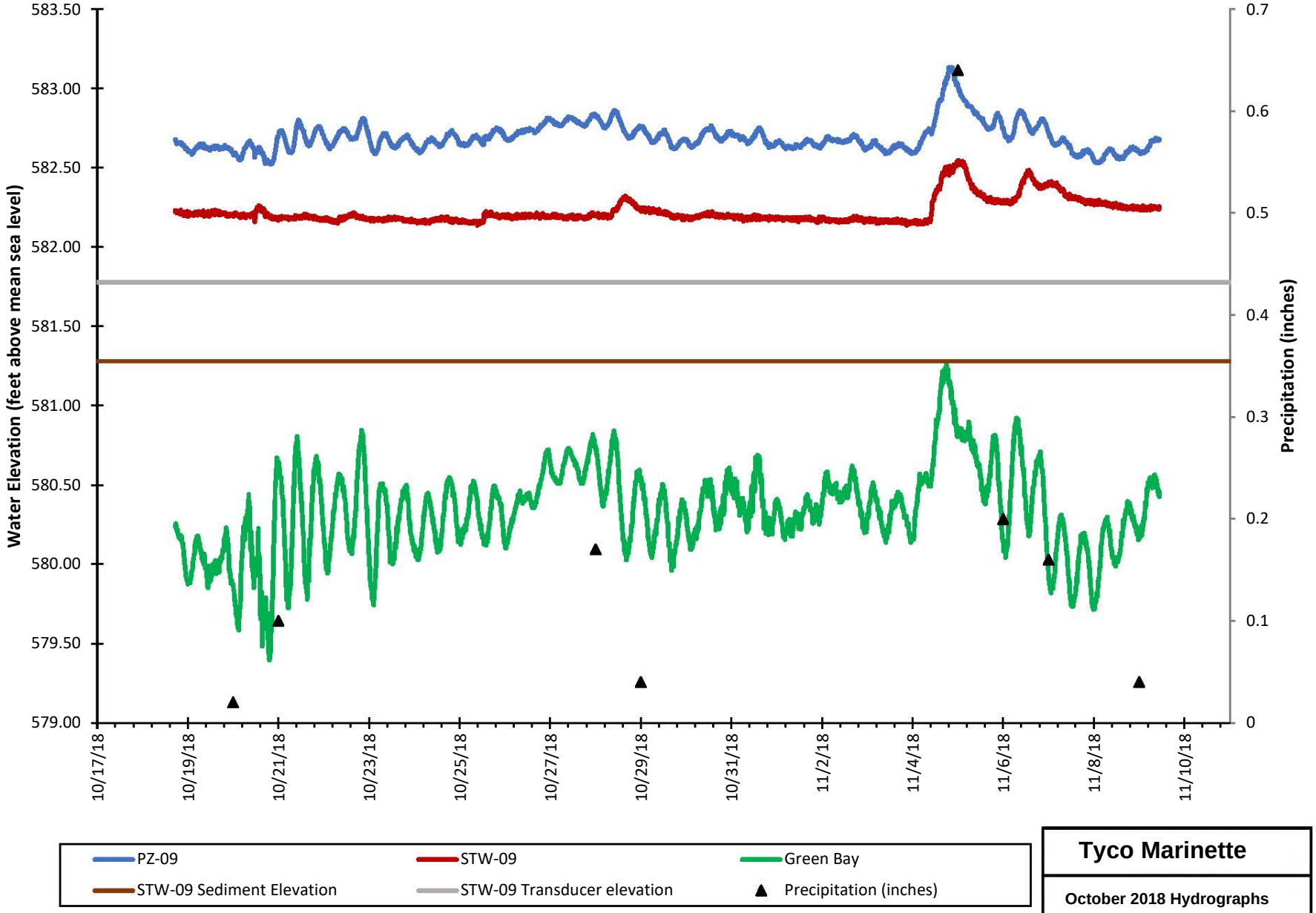



**Tyco Marinette**

**October 2018 Hydrographs**

ARCADIS

FIGURE 17

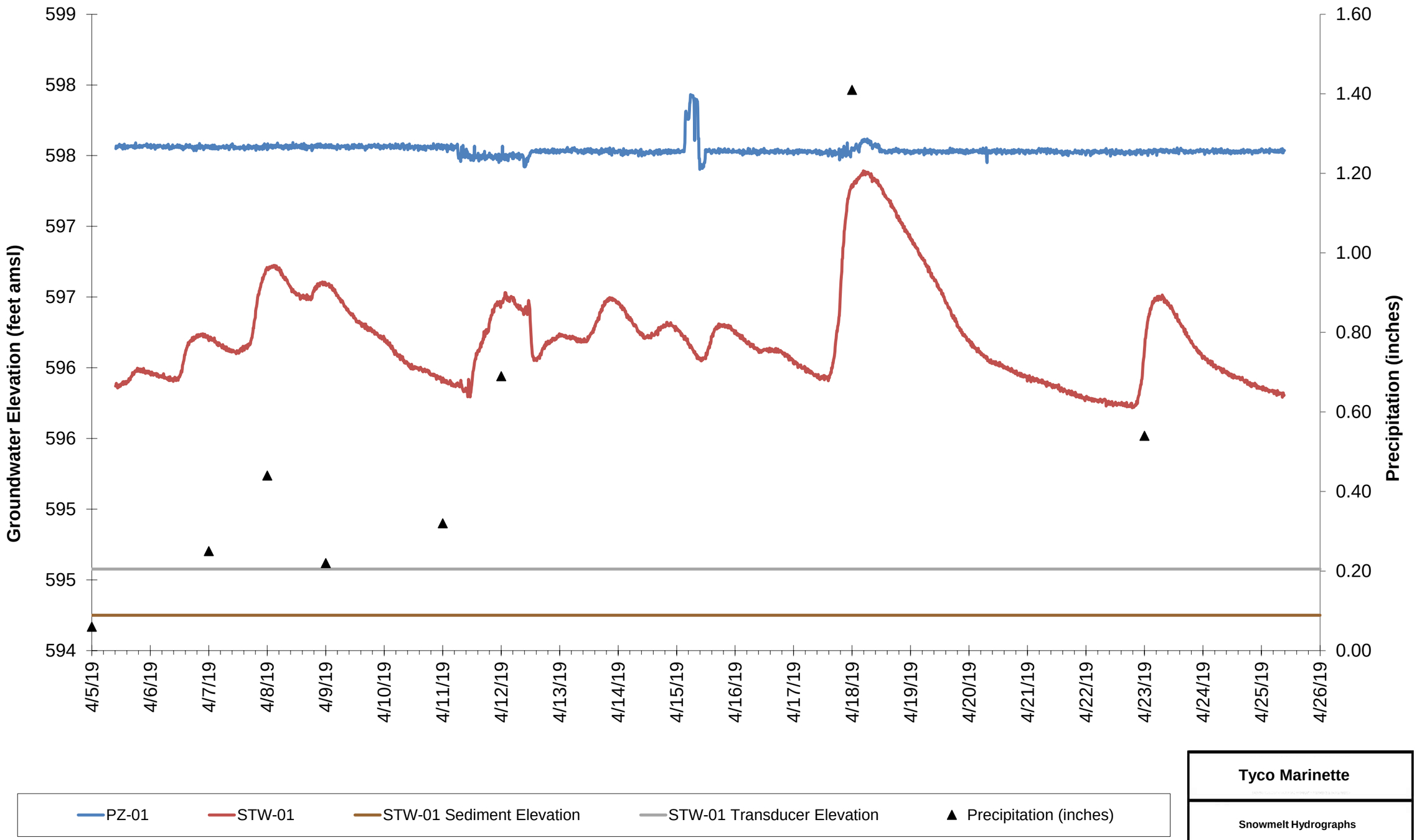



**Tyco Marinette**

**October 2018 Hydrographs**

ARCADIS FIGURE 18

# Snowmelt 2019 Hydrographs

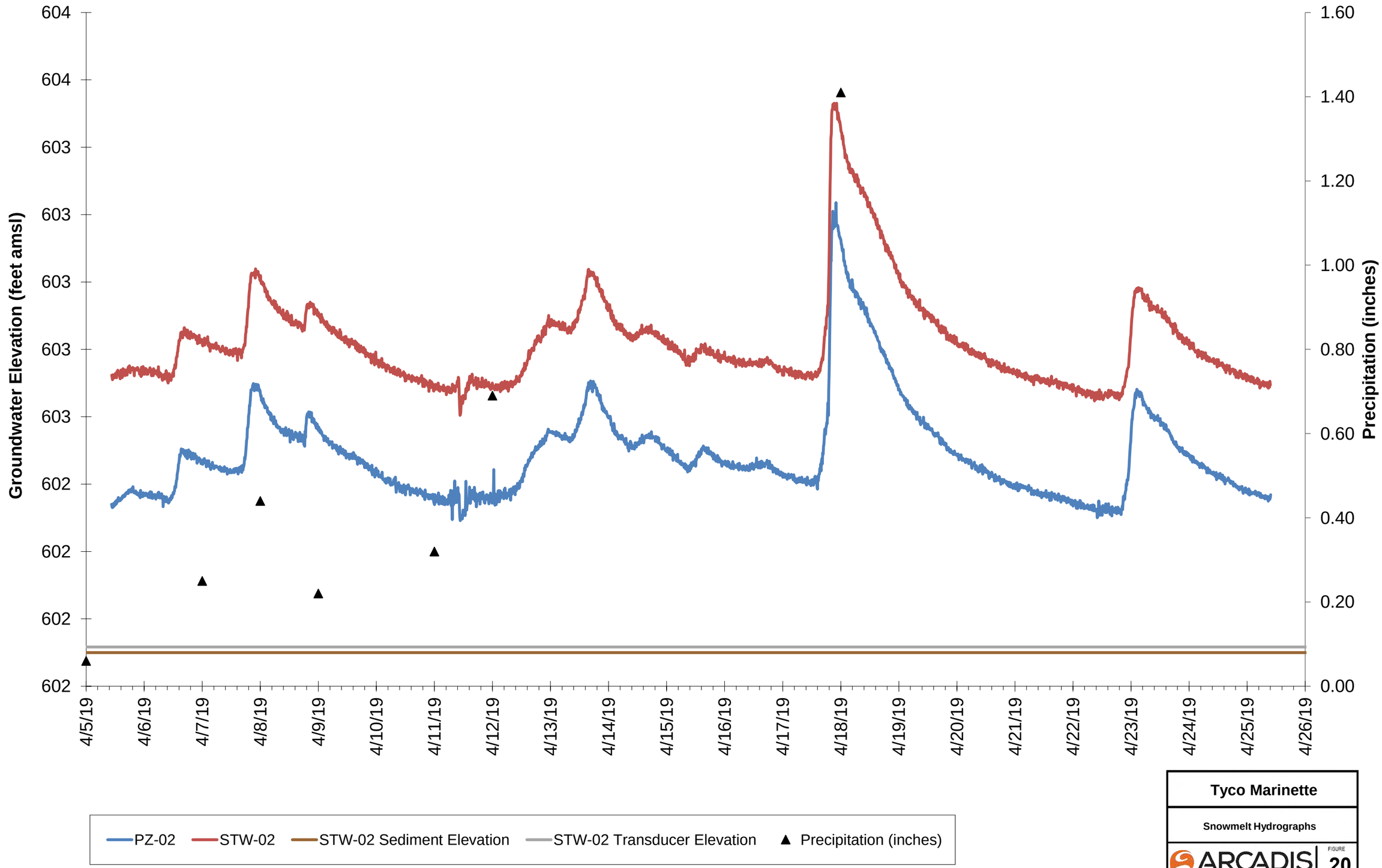



**Tyco Marinette**

**Snowmelt Hydrographs**

ARCADIS

FIGURE 19

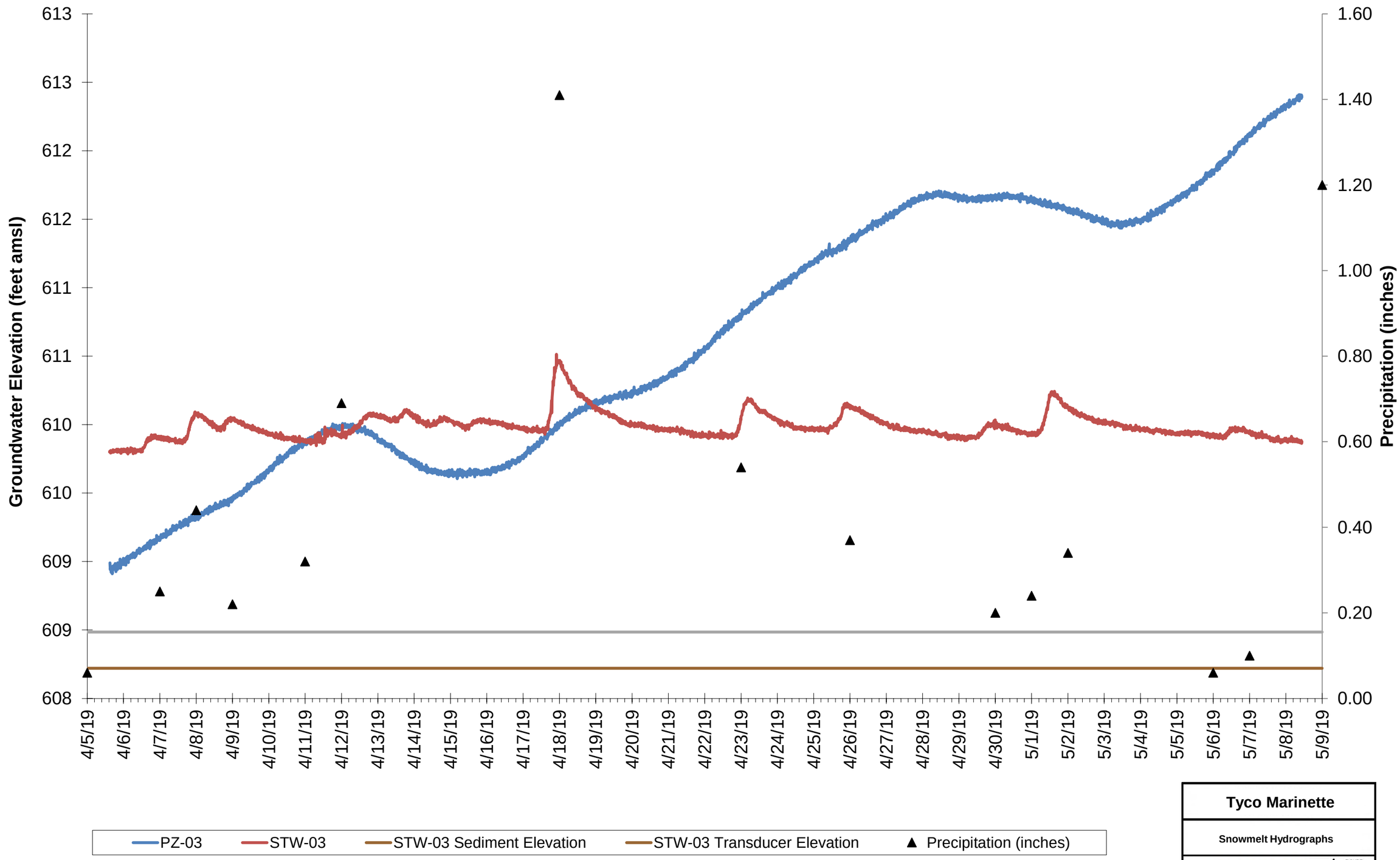



**Tyco Marinette**

**Snowmelt Hydrographs**

ARCADIS

FIGURE 20

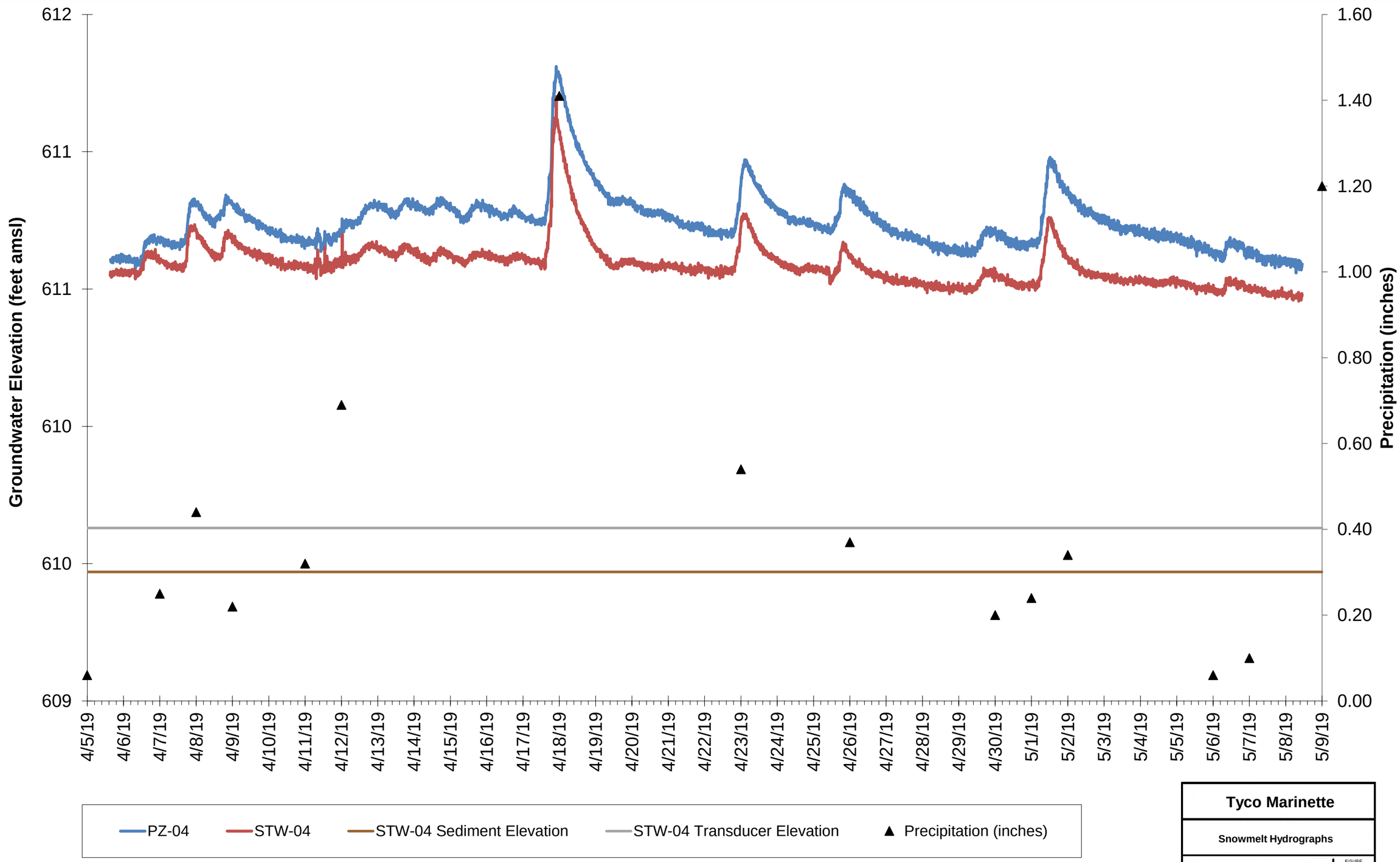



**Tyco Marinette**

**Snowmelt Hydrographs**

ARCADIS

FIGURE 21

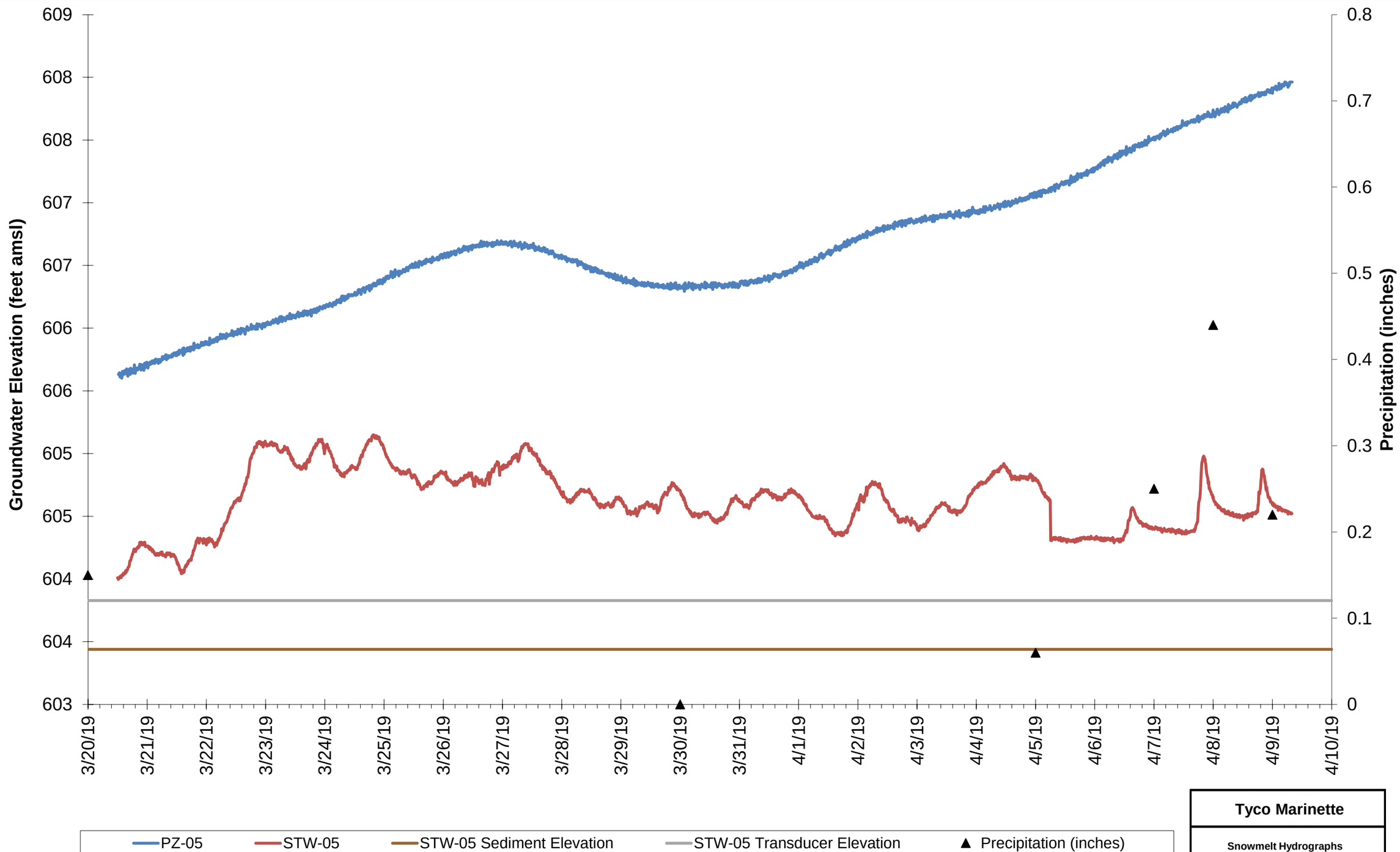



**Tyco Marinette**

**Snowmelt Hydrographs**

ARCADIS

FIGURE 22

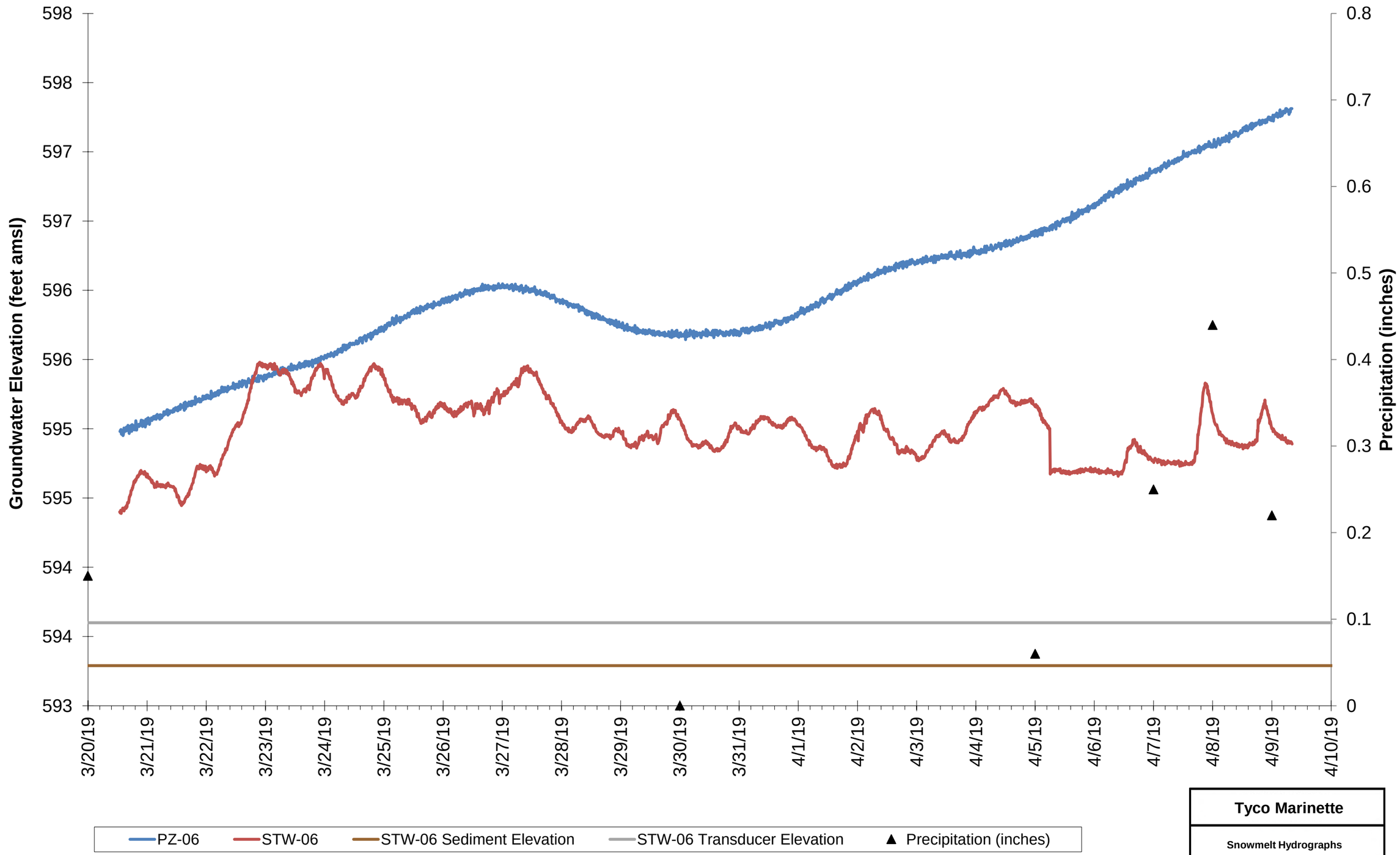



**Tyco Marinette**

**Snowmelt Hydrographs**

ARCADIS

FIGURE 23

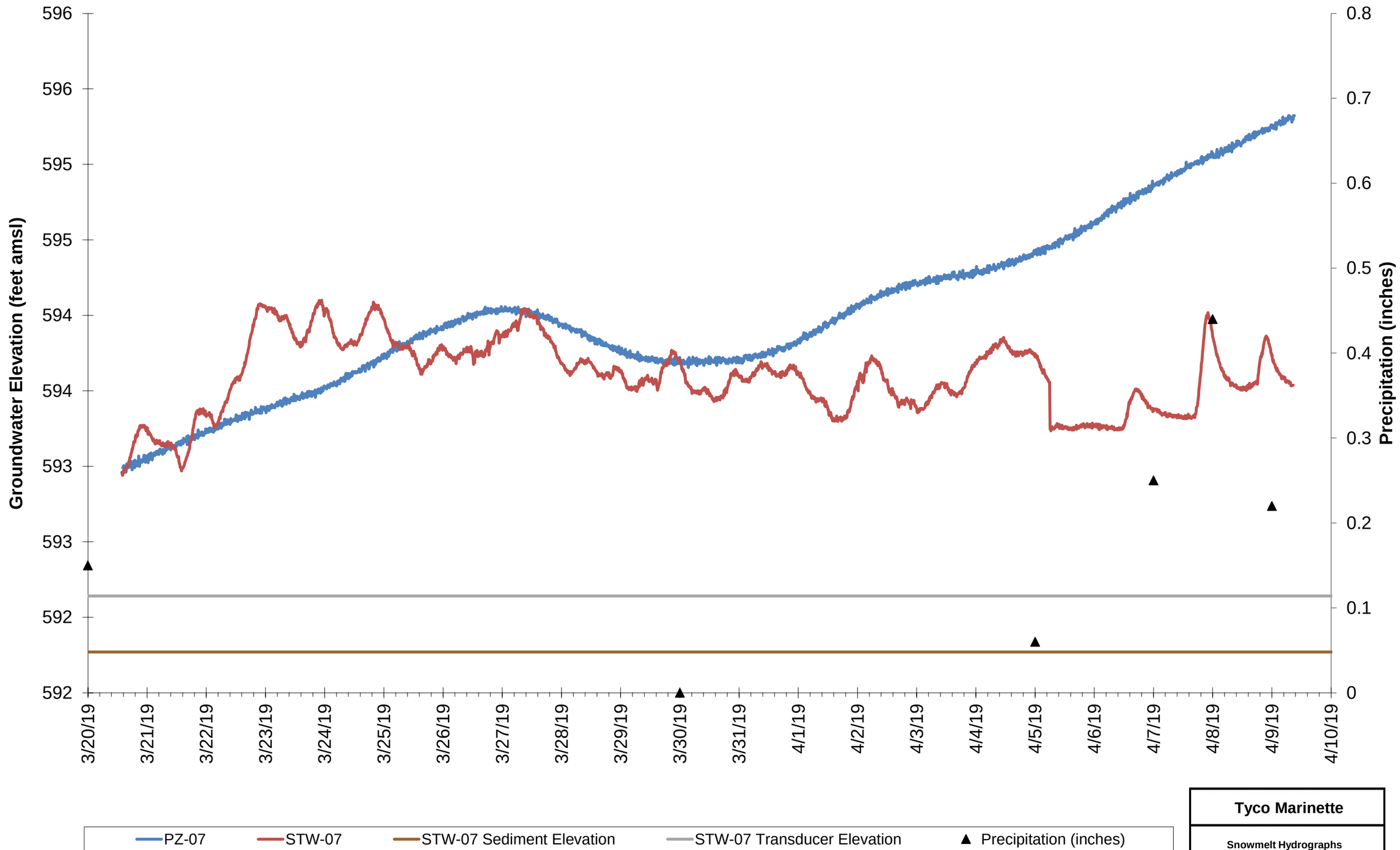



**Tyco Marinette**

**Snowmelt Hydrographs**

ARCADIS

FIGURE 24

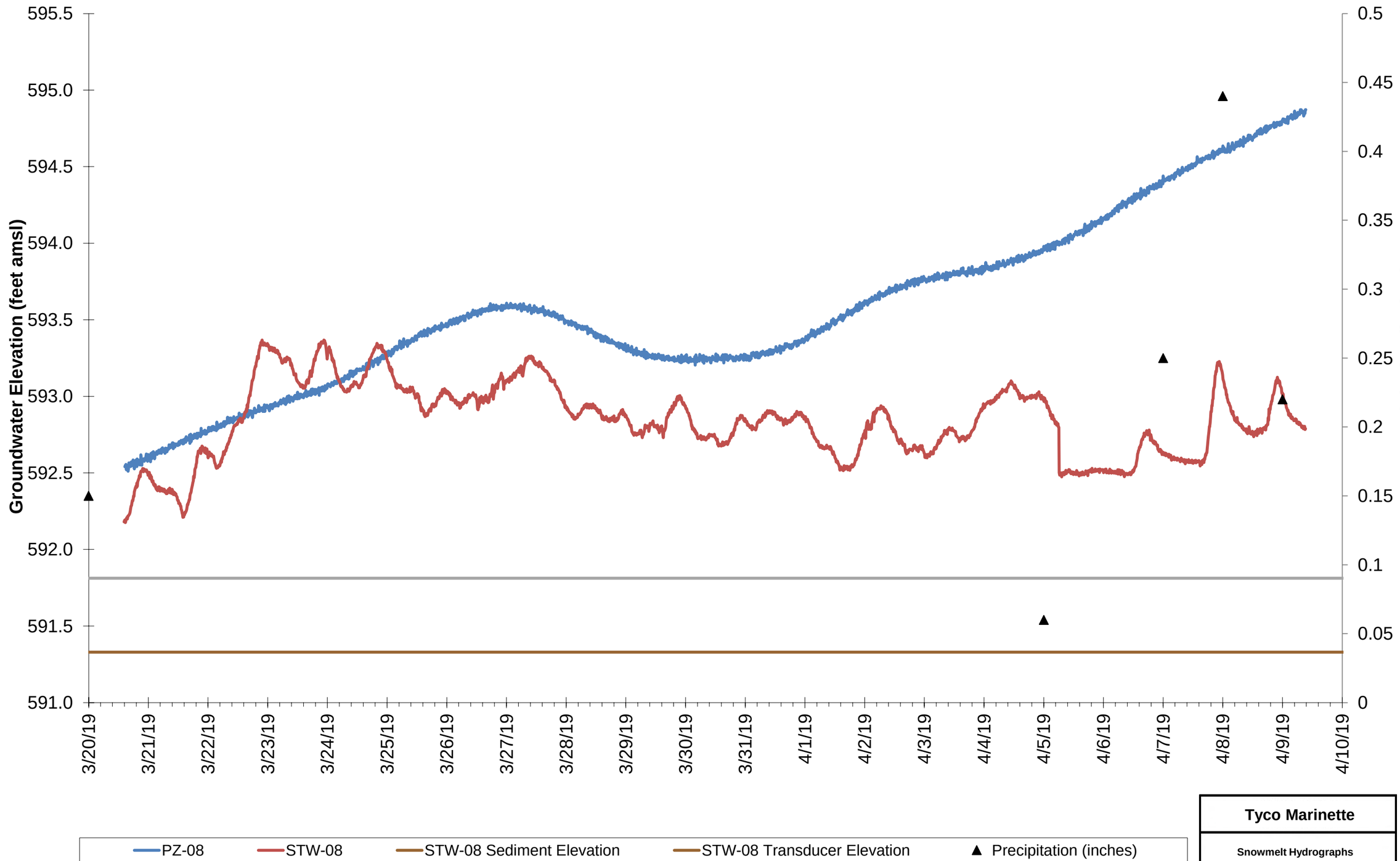



**Tyco Marinette**

**Snowmelt Hydrographs**

ARCADIS

FIGURE 25

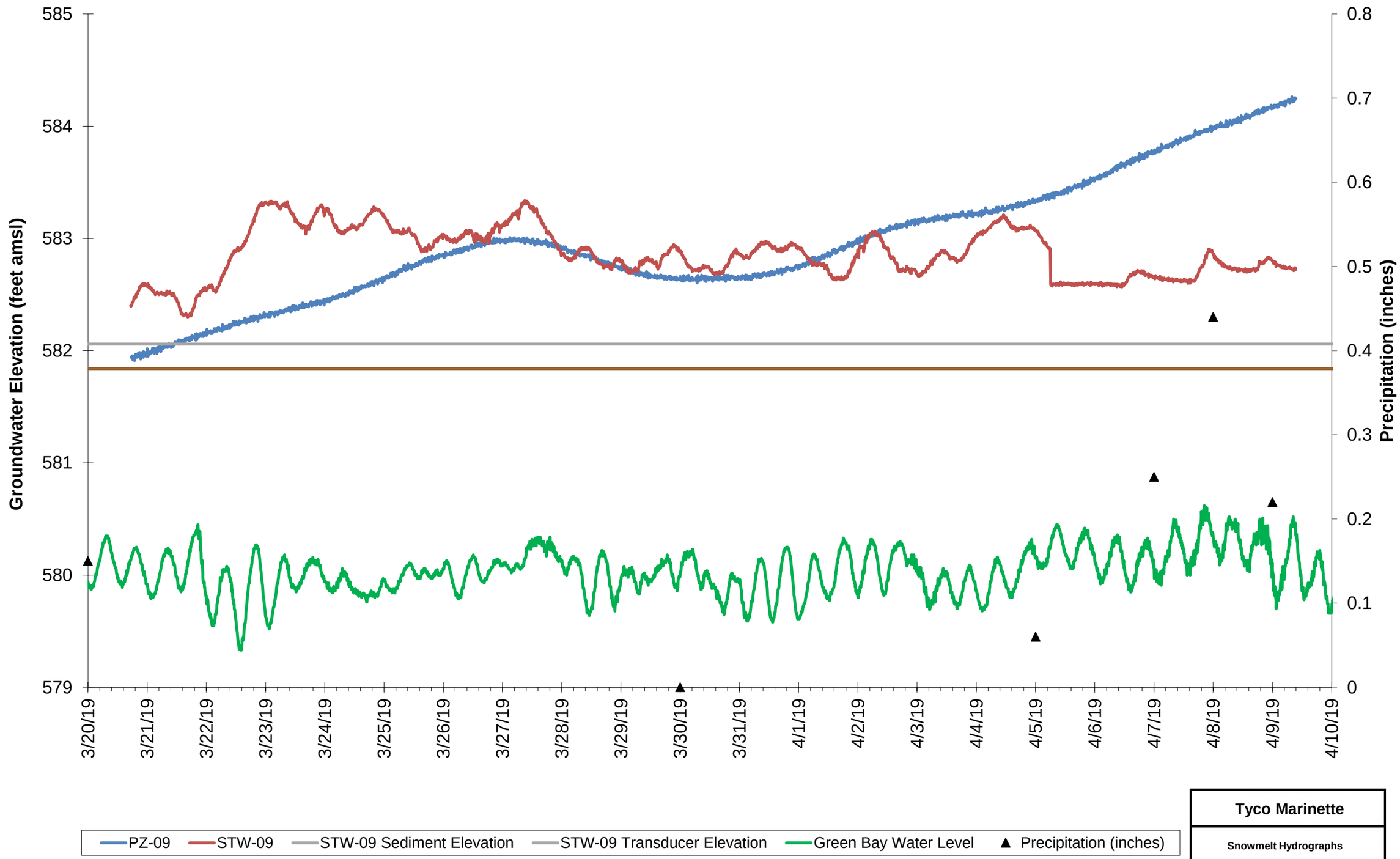



**Tyco Marinette**

**Snowmelt Hydrographs**

ARCADIS

FIGURE 26



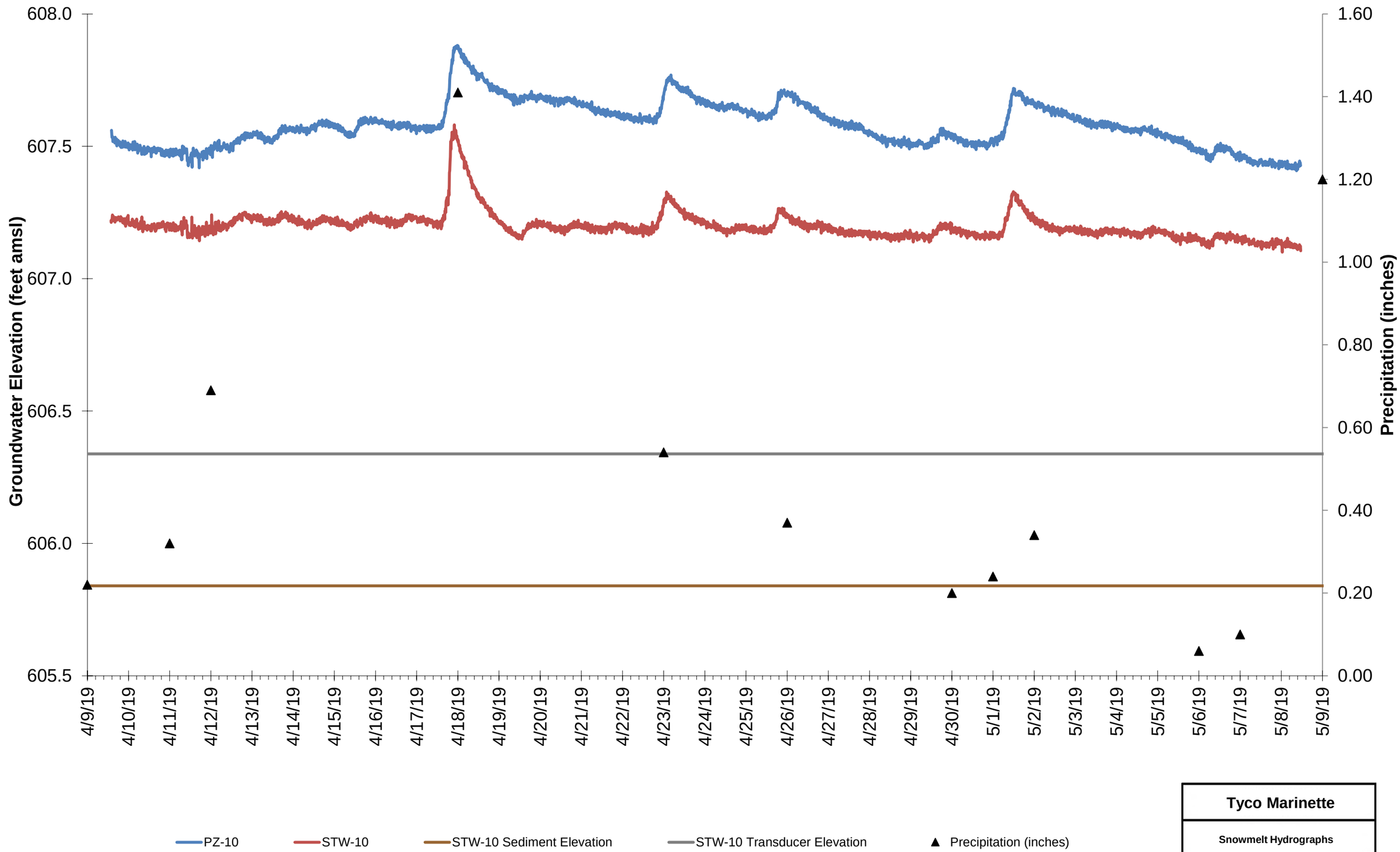

**Tyco Marinette**

**Snowmelt Hydrographs**

ARCADIS

FIGURE 27

# June 2019 Hydrographs

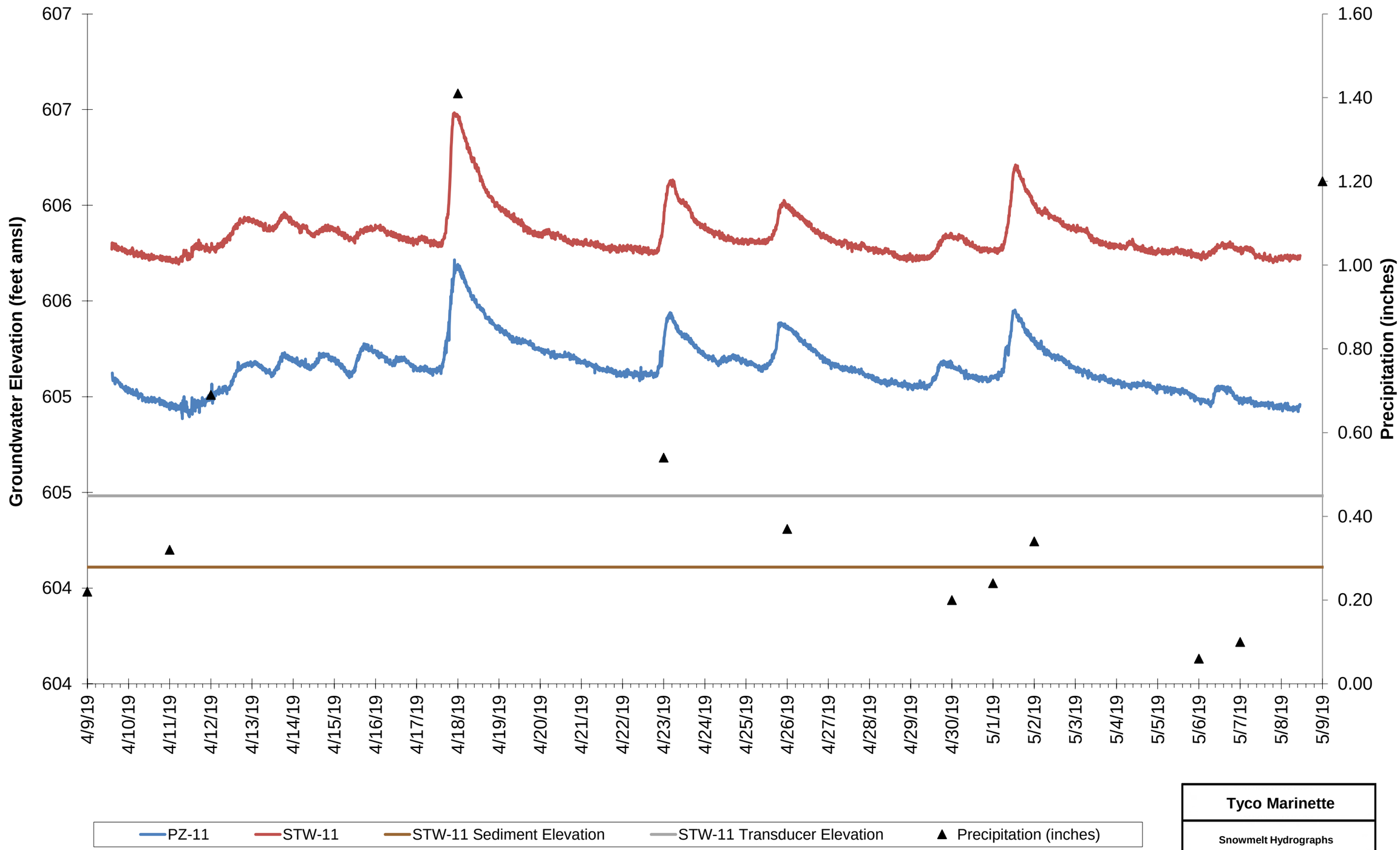



**Tyco Marinette**

**Snowmelt Hydrographs**

ARCADIS

FIGURE 28

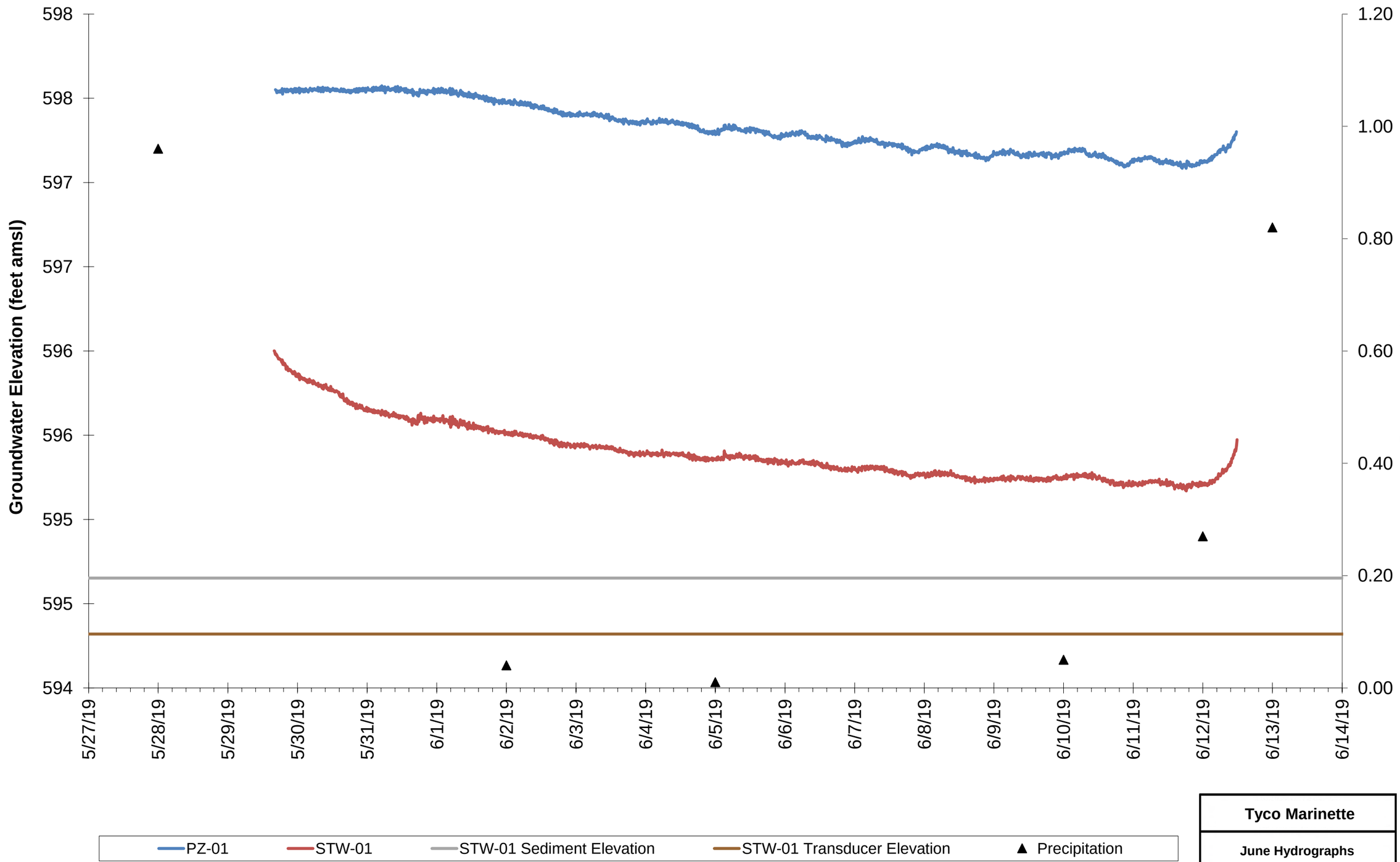



**Tyco Marinette**

**Snowmelt Hydrographs**

ARCADIS

FIGURE 29

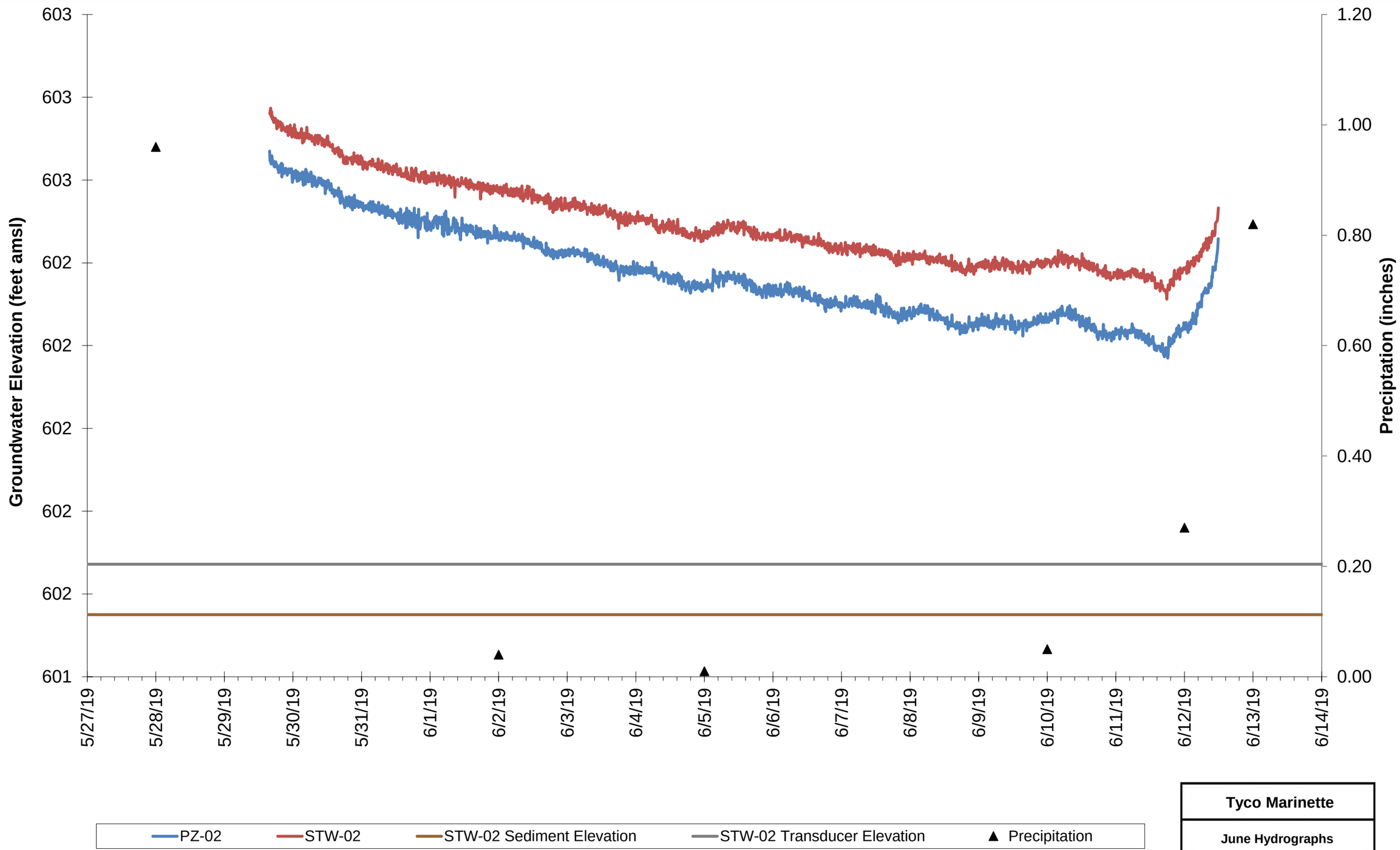



**Tyco Marinette**

**June Hydrographs**

ARCADIS

FIGURE 30

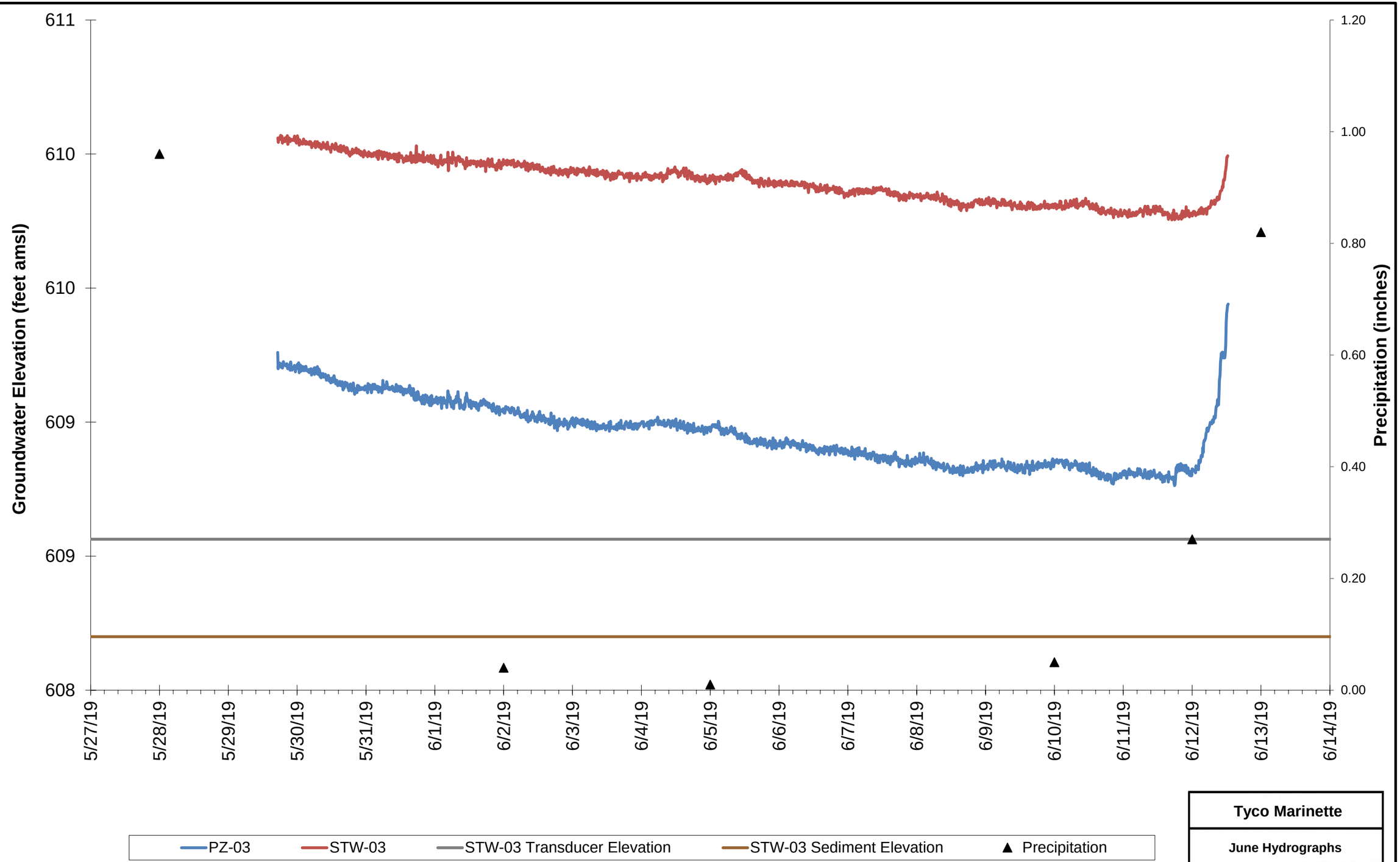



**Tyco Marinette**

**June Hydrographs**

ARCADIS

FIGURE 31

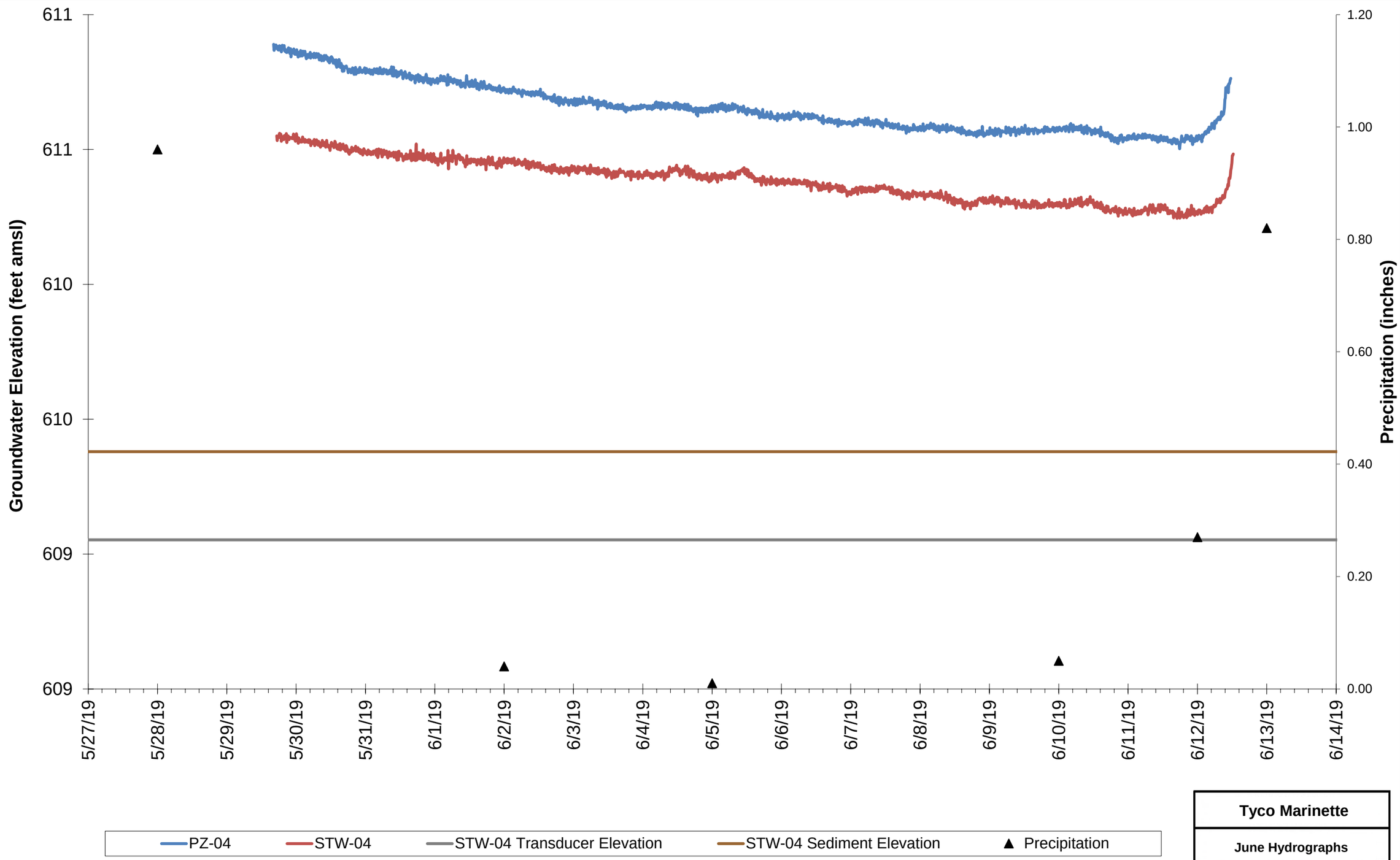



**Tyco Marinette**

**June Hydrographs**

ARCADIS

FIGURE 32

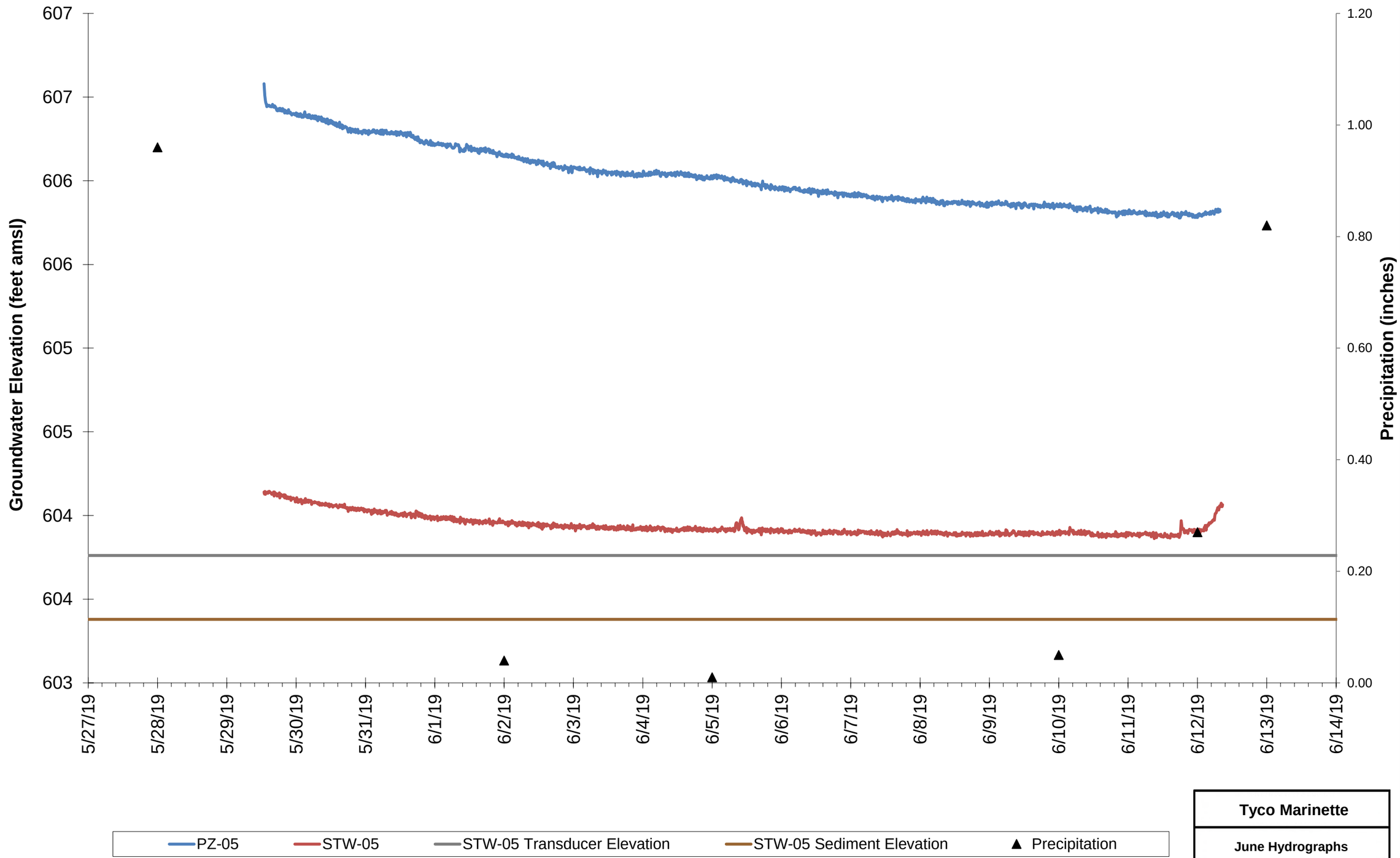



**Tyco Marinette**

**June Hydrographs**

ARCADIS

FIGURE 33

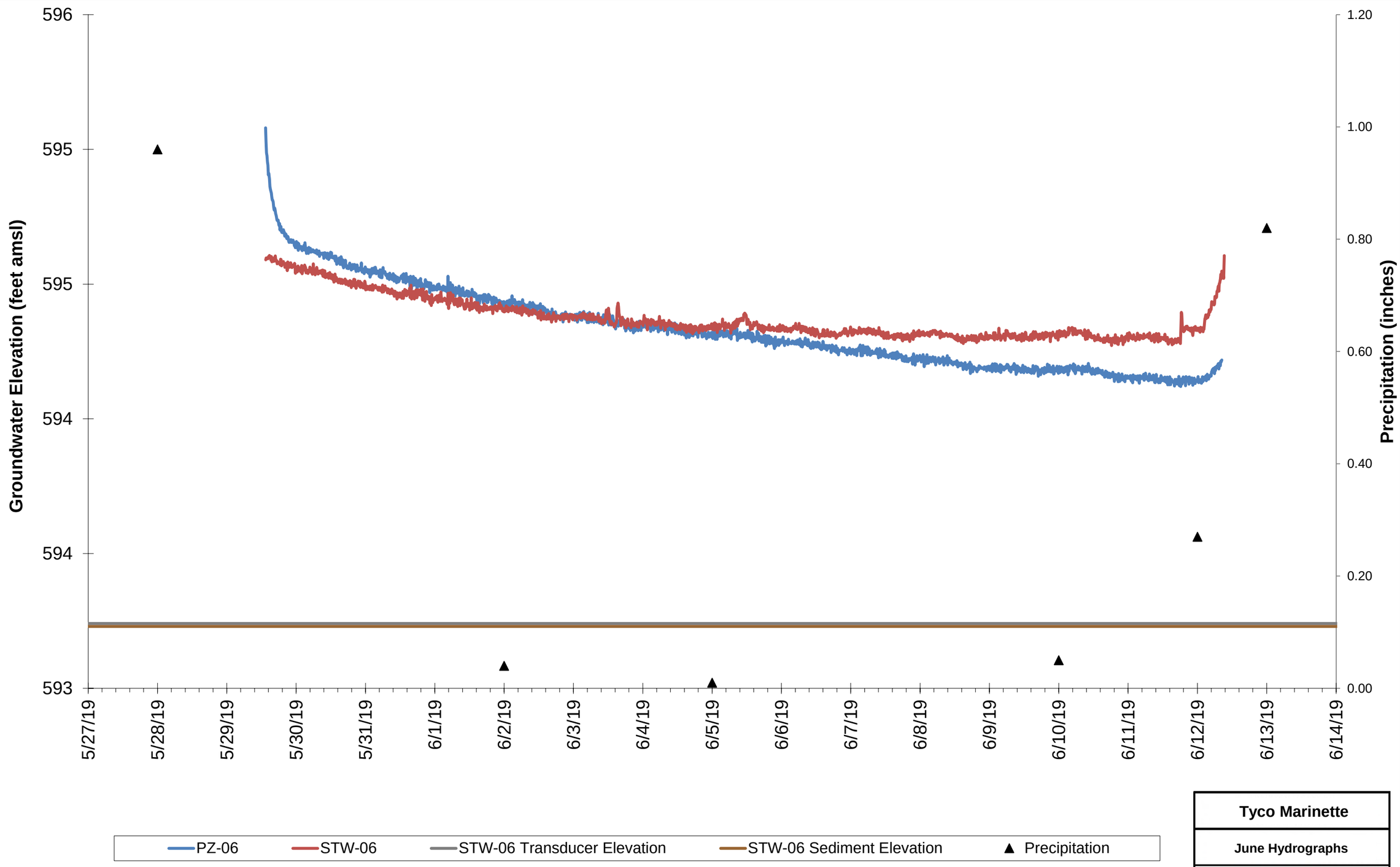



**Tyco Marinette**

**June Hydrographs**

ARCADIS

FIGURE 34

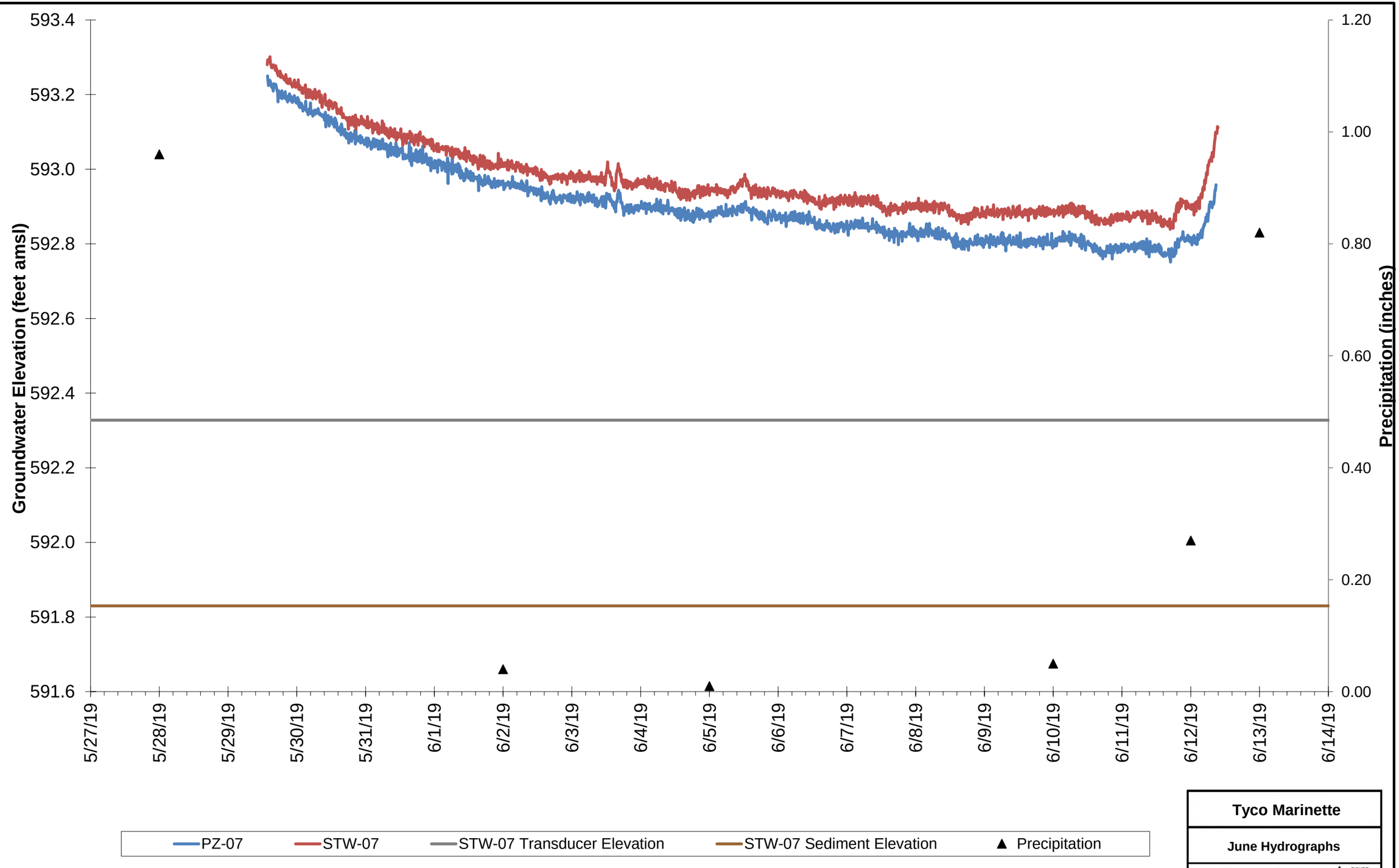



**Tyco Marinette**

**June Hydrographs**

ARCADIS

FIGURE 35

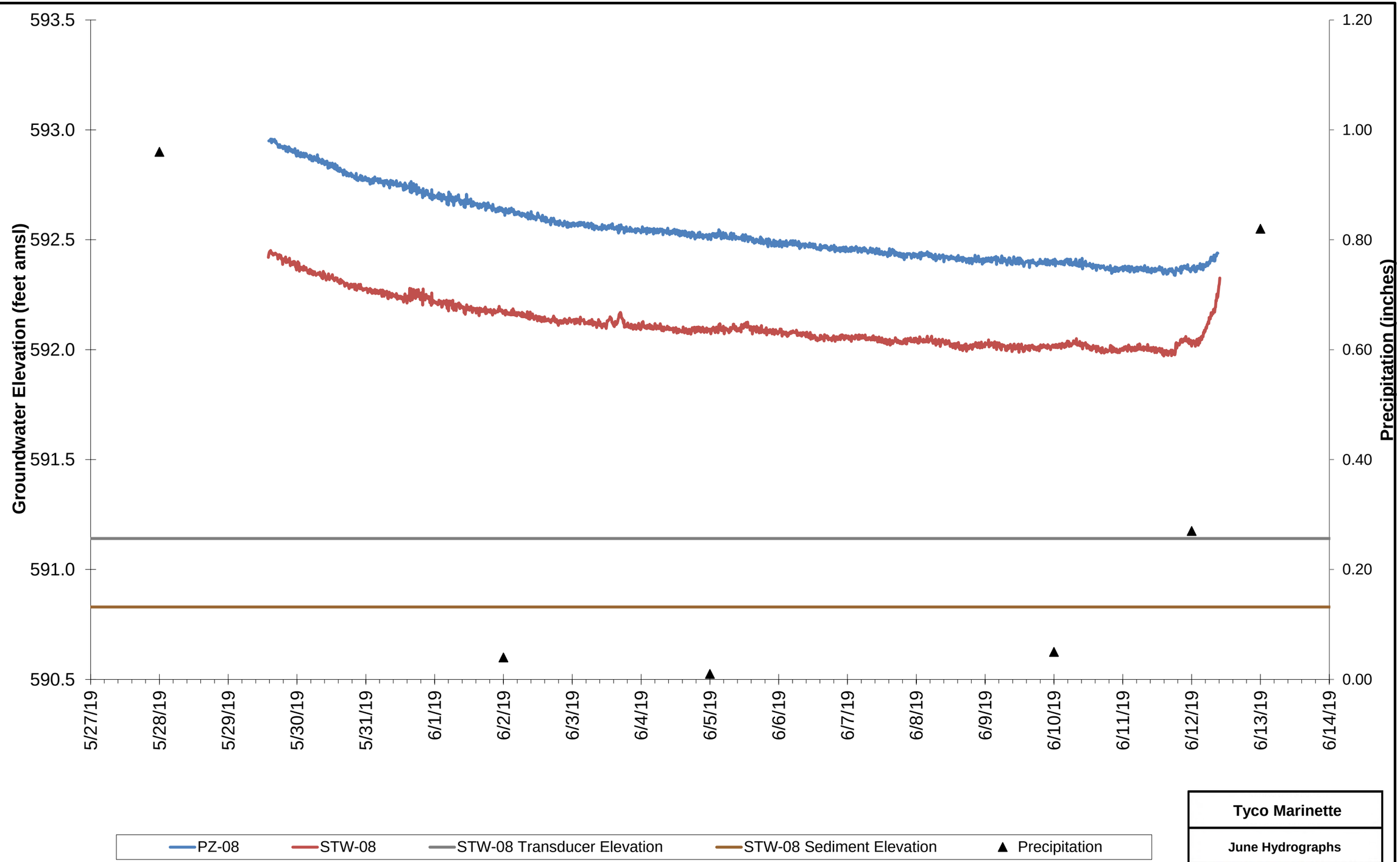



**Tyco Marinette**

**June Hydrographs**

ARCADIS

FIGURE 36

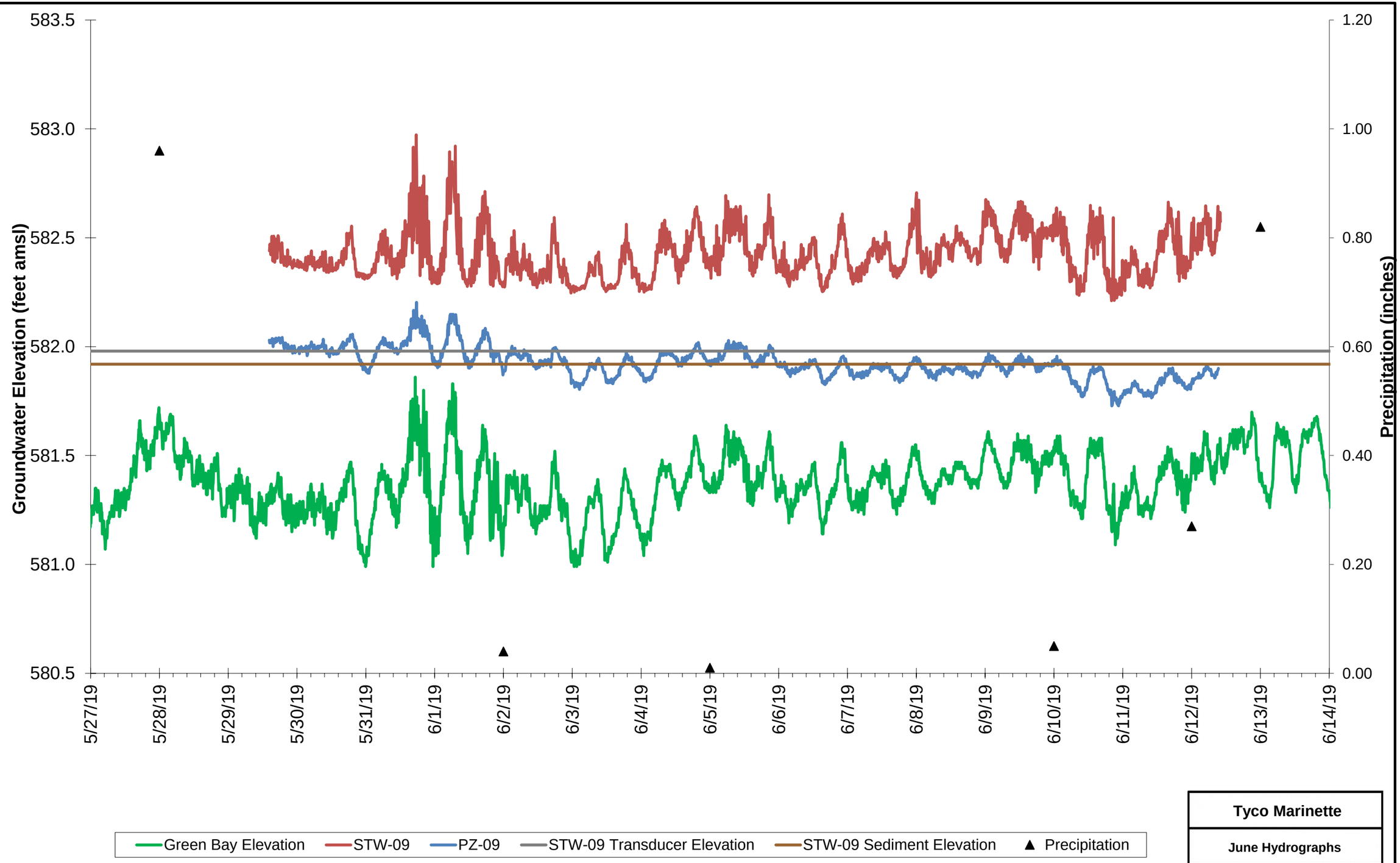



**Tyco Marinette**

**June Hydrographs**

ARCADIS

FIGURE 37

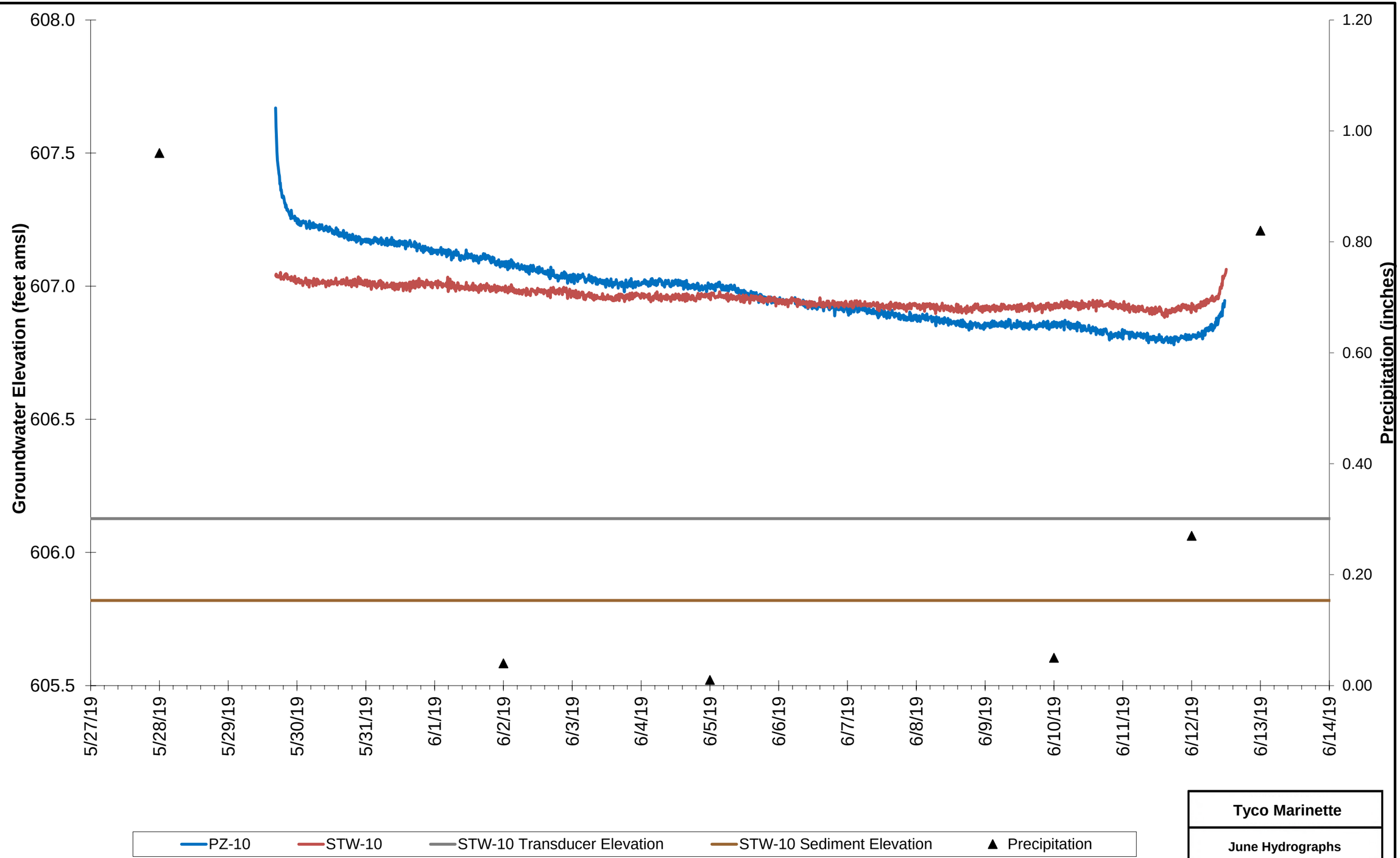



**Tyco Marinette**

**June Hydrographs**

ARCADIS

FIGURE 38

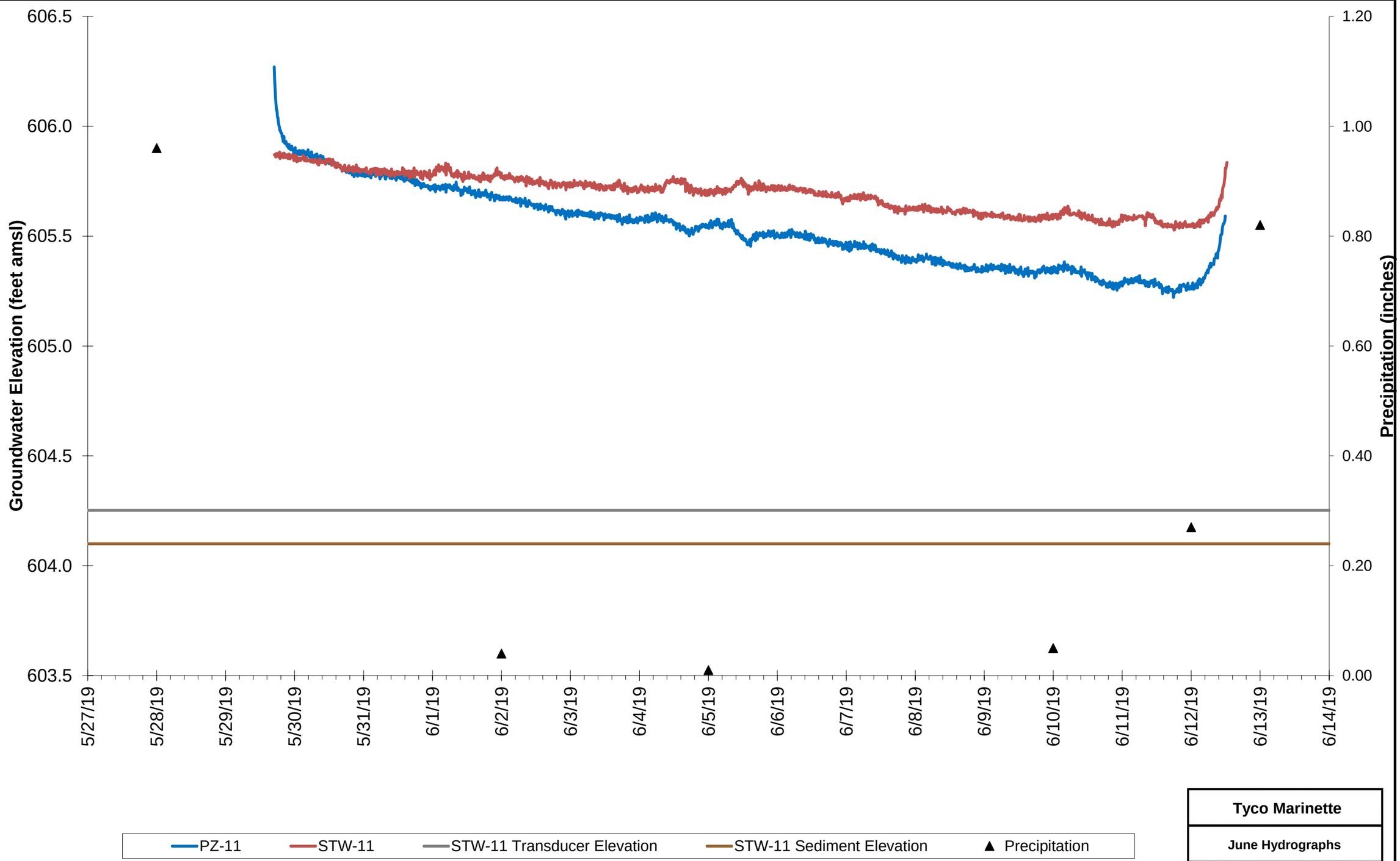



**Tyco Marinette**

**June Hydrographs**

ARCADIS

FIGURE X




**Tyco Marinette**

**June Hydrographs**

ARCADIS

FIGURE X

# APPENDIX I

## Surface Water Velocity Measurements

| Location | Date | Stream Width (ft) | Flow Direction | Calculated Flow (gpm) | Stream Depth (ft) | Left-Center Velocity (ft/s) | Midpoint Velocity (ft/s) | Right-Center Velocity (ft/s) | Segment 1 | | | Segment 2 | | | Segment 3 | | | Segment 4 | | | Segment 5 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | v1 (ft/sec) | d1 (ft) | b1 (ft) | v2 (ft/sec) | d2 (ft) | b2 (ft) | v3 (ft/sec) | d3 (ft) | b3 (ft) | v4 (ft/sec) | d4 (ft) | b4 (ft) | v5 (ft/sec) | d5 (ft) | b5 (ft) |
| SW-10 | 5/29/2018 | 5.75 | - | - | 0.58 | 0.65 | 0.12 | 0.26 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 7/13/2018 | 5.00 | - | 85 | - | - | - | - | 0.00 | 0.00 | 0.00 | 0.06 | 0.29 | 0.50 | 0.16 | 0.50 | 1.00 | 0.21 | 0.33 | 1.50 | 0.42 | 0.50 | 2.00 |
| | 10/17/2018 | 5.5 | N to S | 639 | - | - | - | - | 0 | 0 | 0 | 0.1 | 0.35 | 0.5 | 0.42 | 0.7 | 1 | 0.4 | 0.85 | 1.5 | 0.46 | 0.95 | 2 |
| | 4/2/2019 | 6.0 | - | 1362 | - | - | - | - | 0.00 | 0.00 | 0.00 | 0.03 | 1.13 | 0.50 | 0.50 | 1.00 | 1.00 | 0.66 | 1.00 | 1.50 | 0.70 | 1.00 | 2.00 |
| | 5/22/2019 | 7.0 | - | - | - | - | - | - | NR | 0.00 | 0.00 | NR | 0.83 | 0.50 | NR | 1.50 | 1.00 | NR | 1.83 | 1.50 | NR | 1.83 | 2.00 |
| SW-11 | 5/29/2018 | 1.04 | - | - | 0.04 | NM | 0.02 | NM | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 10/17/2018 | 1.5 | W to E | 18 | - | - | - | - | 0 | 0 | 0 | 0.44 | 0.1 | 0.5 | 0.92 | 0.1 | 0.75 | 0.03 | 0.1 | 1 | 0 | 0 | 1.5 |
| | 4/2/2019 | 2.0 | - | 282 | - | - | - | - | 0.00 | 0.00 | 0.00 | 0.45 | 0.33 | 0.50 | 1.65 | 0.46 | 1.00 | 1.53 | 0.46 | 1.50 | - | - | - |
| | 5/21/2019 | 2.0 | - | 480 | - | - | - | - | 0.00 | 0.00 | 0.00 | 0.89 | 0.75 | 0.50 | 1.42 | 0.75 | 1.00 | 1.22 | 0.67 | 1.50 | - | - | - |
| SW-12 | 5/29/2018 | 4.33 | - | - | 1.33 | 0.01 | 0.01 | 0.01 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 10/17/2018 | 8 | N to S | 32 | - | - | - | - | 0 | 0 | 0 | 0.03 | 0.2 | 0.5 | 0.03 | 0.3 | 1 | 0.04 | 0.04 | 1.5 | 0.02 | 0.45 | 2 |
| | 4/2/2019 | 9.0 | - | 252 | - | - | - | - | 0.00 | 0.00 | 0.00 | 0.03 | 0.50 | 0.50 | 0.07 | 0.63 | 1.00 | 0.11 | 0.75 | 1.50 | 0.12 | 0.83 | 2.00 |
| | 5/22/2019 | 8.0 | - | 688 | - | - | - | - | 0.00 | 0.00 | 0.00 | 0.05 | 0.66 | 0.50 | 0.16 | 0.83 | 1.00 | 0.26 | 1.00 | 1.50 | 0.30 | 1.00 | 2.00 |
| | 8/21/2019 | NR | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| SW-13 | 5/29/2018 | 3.25 | - | - | 0.03 | 0.63 | 0.5 | 0.48 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 10/17/2018 | 5.5 | N to S | 595 | - | - | - | - | 0 | 0 | 0 | 0.09 | 0.4 | 0.5 | 0.06 | 0.4 | 1 | 0.17 | 0.45 | 1.5 | 0.46 | 0.55 | 2 |
| | 4/2/2019 | 6.0 | - | 1010 | - | - | - | - | 0.00 | 0.00 | 0.00 | 0.29 | 0.33 | 0.50 | 0.60 | 0.42 | 1.00 | 0.72 | 0.46 | 1.50 | 0.53 | 0.58 | 2.00 |
| | 5/22/2019 | 7.5 | - | 2974 | - | - | - | - | 0.00 | 0.00 | 0.00 | 0.70 | 0.83 | 0.50 | 0.98 | 0.92 | 1.00 | 0.94 | 0.92 | 1.50 | 1.18 | 1.00 | 2.00 |
| SW-15 | 5/30/2018 | 7.66 | - | - | 0.50 | NM | 1.66 | 2.39 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 7/11/2018 | 6.50 | - | 428 | - | - | - | - | 0.00 | 0.00 | 0.00 | 0.48 | 0.25 | 1.00 | 0.80 | 0.25 | 2.00 | 0.88 | 0.33 | 3.00 | 0.91 | 0.38 | 4.00 |
| | 8/9/2018 | 7.00 | - | 477 | - | - | - | - | 0.00 | 0.00 | 0.00 | 0.47 | 0.29 | 0.50 | 0.95 | 0.33 | 1.00 | 0.85 | 0.27 | 1.50 | 0.78 | 0.25 | 2.00 |
| | 10/16/2018 | 7 | W to E | 2101 | - | - | - | - | 0 | 0.3 | 0 | 1.03 | 0.3 | 0.5 | 0.94 | 0.4 | 1 | 1.46 | 0.35 | 1.5 | 1.78 | 0.35 | 2 |
| | 3/19/2019 | 6.50 | - | 2765 | - | - | - | - | 0.00 | 0.30 | 0.00 | 2.20 | 0.54 | 0.50 | 2.25 | 0.79 | 1.00 | 2.20 | 0.67 | 1.50 | 2.40 | 0.58 | 2.00 |
| | 5/21/2019 | 7.00 | - | 3471 | - | - | - | - | 0.00 | 0.00 | 0.00 | 1.02 | 0.50 | 0.50 | 1.15 | 0.67 | 1.00 | 1.82 | 0.75 | 1.50 | 1.85 | 0.75 | 2.00 |
| SW-16 | 5/30/2018 | 8.33 | - | - | 1.00 | 0.28 | 0.39 | 0.25 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 7/12/2018 | 14.00 | - | 1608 | - | - | - | - | 0.00 | 0.00 | 0.00 | 0.28 | 0.67 | 2.00 | 0.63 | 0.96 | 4.00 | 0.61 | 0.92 | 6.00 | 0.53 | 0.83 | 8.00 |
| | 8/9/2018 | 10.50 | - | 587 | - | - | - | - | 0.00 | 0.00 | 0.00 | 0.00 | 0.29 | 0.50 | 0.09 | 0.46 | 1.00 | 0.30 | 0.69 | 1.50 | 0.38 | 1.00 | 2.00 |
| | 10/16/2018 | 15 | W to E | 1830 | - | - | - | - | 0 | 0 | 0 | 0.01 | 0.5 | 0.5 | 0.01 | 0.65 | 1 | 0.02 | 0.7 | 1.5 | 0.02 | 0.8 | 2 |
| | 3/19/2019 | 5.50 | - | 1905 | - | - | - | - | 0.00 | 0.00 | 0.00 | 1.30 | 0.42 | 0.50 | 1.70 | 0.63 | 1.00 | 1.60 | 0.67 | 1.50 | 1.50 | 0.63 | 2.00 |
| | 5/21/2019 | 8.50 | - | 2722 | - | - | - | - | 0.00 | 0.00 | 0.00 | 0.01 | 0.58 | 0.50 | 0.06 | 0.83 | 1.00 | 0.21 | 0.92 | 1.50 | 0.23 | 1.25 | 2.00 |
| SW-17 | 5/30/2018 | 9.92 | - | - | 0.42 | 0.77 | 1.00 | 0.49 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 7/12/2018 | 10.00 | - | 384 | - | - | - | - | 0.00 | 0.00 | 0.00 | 0.36 | 0.33 | 1.00 | 0.45 | 0.42 | 2.00 | 0.57 | 0.50 | 3.00 | 0.63 | 0.42 | 4.00 |
| | 8/9/2018 | 11.00 | - | 348 | - | - | - | - | 0.00 | 0.00 | 0.00 | 0.00 | 0.13 | 0.50 | 0.00 | 0.21 | 1.00 | 0.01 | 0.25 | 1.50 | 0.01 | 0.25 | 2.00 |
| | 10/16/2018 | 10.00 | N to S | 1591 | - | - | - | - | 0 | 0 | 0 | 0.02 | 0.2 | 0.5 | 0.15 | 0.3 | 1 | 0.43 | 0.6 | 1.5 | 0.61 | 0.65 | 2 |
| | 3/19/2019 | 12.5 | - | 2785 | - | - | - | - | 0.00 | 0.00 | 0.00 | 0.01 | 0.33 | 0.50 | 0.00 | 0.42 | 1.00 | 0.11 | 0.42 | 1.50 | 0.33 | 0.54 | 2.00 |
| | 5/21/2019 | 12.5 | - | 2677 | - | - | - | - | 0.00 | 0.00 | 0.00 | 0.03 | 0.25 | 0.50 | 0.03 | 0.42 | 1.00 | 0.10 | 0.50 | 1.50 | 0.48 | 0.75 | 2.00 |
| SW-18 | 5/30/2018 | 11.16 | - | - | 0.38 | 0.81 | 0.51 | 0.12 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 7/12/2018 | 5.00 | - | 148 | - | - | - | - | 0.00 | 0.00 | 0.00 | 0.06 | 0.33 | 0.50 | 0.28 | 0.58 | 1.00 | 0.32 | 0.67 | 1.50 | 0.35 | 0.75 | 2.00 |
| | 10/17/2018 | 5 | W to E | 984 | - | - | - | - | 0 | 0 | 0 | 0.16 | 0.45 | 0.5 | 0.52 | 0.6 | 1 | 0.76 | 0.75 | 1.5 | 0.93 | 0.85 | 2 |
| | 3/19/2019 | 3.00 | - | 1153 | - | - | - | - | 0.00 | 0.00 | 0.00 | 1.25 | 0.79 | 0.50 | 1.50 | 0.79 | 1.00 | 1.50 | 0.79 | 1.50 | 1.50 | 0.83 | 2.00 |
| | 5/21/2019 | 4.00 | - | 1887 | - | - | - | - | 0.00 | 0.00 | 0.00 | 0.98 | 0.50 | 0.50 | 1.56 | 0.75 | 1.00 | 1.85 | 0.83 | 1.50 | 1.94 | 0.92 | 2.00 |

Notes on Page 3.

| Location | Date | Stream Width (ft) | Flow Direction | Calculated Flow (gpm) | Stream Depth (ft) | Left-Center Velocity (ft/s) | Midpoint Velocity (ft/s) | Right-Center Velocity (ft/s) | Segment 1 | | | Segment 2 | | | Segment 3 | | | Segment 4 | | | Segment 5 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | v1 (ft/sec) | d1 (ft) | b1 (ft) | v2 (ft/sec) | d2 (ft) | b2 (ft) | v3 (ft/sec) | d3 (ft) | b3 (ft) | v4 (ft/sec) | d4 (ft) | b4 (ft) | v5 (ft/sec) | d5 (ft) | b5 (ft) |
| SW-20 | 5/30/2018 | 3.67 | - | - | 5.42 | 0.24 | 0.73 | 0.27 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 7/12/2018 | 6.00 | - | 1235 | - | - | - | - | 0.00 | 0.00 | 0.00 | 0.74 | 0.75 | 1.50 | 0.86 | 0.92 | 3.00 | 0.59 | 0.83 | 4.50 | 0.00 | 0.00 | 6.00 |
| | 10/18/2018 | 5 | W to E | 732 | - | - | - | - | 5 | 0 | 0 | 0 | 0.56 | 0.5 | 0.5 | 1.3 | 0.5 | 1 | 1.05 | 0.5 | 1.5 | 1.14 | 0.45 |
| | 3/19/2019 | 6.0 | - | 1153 | - | - | - | - | 0.00 | 0.00 | 0.00 | 0.40 | 0.17 | 0.50 | 0.80 | 0.25 | 1.00 | 1.25 | 0.38 | 1.50 | 1.00 | 0.50 | 2.00 |
| | 5/21/2019 | 4.5 | - | 1735 | - | - | - | - | 0.00 | 0.00 | 0.00 | 1.58 | 0.67 | 0.50 | 1.71 | 0.75 | 1.00 | 1.60 | 0.75 | 1.50 | 1.97 | 0.50 | 2.00 |
| SW-21 | 5/30/2018 | 2.83-7.08 | - | - | 0.21-0.42 | 0.17 | 0.58 | 0.66 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 10/18/2018 | 2.5 | W to E | 790 | - | - | - | - | 0 | 0 | 0 | 1.88 | 0.8 | 0.5 | 1.3 | 0.7 | 1 | 1.52 | 0.7 | 1.5 | 0.08 | 0.55 | 2 |
| | 3/19/2019 | 3.5 | - | 949 | - | - | - | - | 0.00 | 0.00 | 0.00 | 1.50 | 0.42 | 0.50 | 2.00 | 0.58 | 1.00 | 2.00 | 0.42 | 1.50 | 1.75 | 0.42 | 2.00 |
| | 5/21/2019 | 2.5 | - | 2102 | - | - | - | - | 0.00 | 0.00 | 0.00 | 1.22 | 0.92 | 0.50 | 3.24 | 1.08 | 1.00 | 3.23 | 1.08 | 1.50 | 2.52 | 1.00 | 2.00 |
| SW-22 | 10/18/2018 | - | No Flow | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 4/4/2019 | 8.0 | - | 33 | - | - | - | - | 0.00 | 0.00 | 0.00 | 0.00 | 0.08 | 0.50 | 0.01 | 0.25 | 1.00 | 0.01 | 0.38 | 1.50 | 0.02 | 0.42 | 2.00 |
| | 5/22/2019 | 9.0 | - | 161 | - | - | - | - | 0.00 | 0.00 | 0.00 | -0.02 | 0.16 | 0.50 | 0.01 | 0.33 | 1.00 | 0.04 | 0.58 | 1.50 | 0.03 | 0.58 | 2.00 |
| | 8/21/2019 | 7.0 | - | 0 | - | - | - | - | 0.00 | 0.00 | 0.00 | 0.00 | 0.35 | 0.50 | 0.00 | 0.45 | 1.00 | 0.00 | 0.65 | 1.50 | 0.00 | 0.75 | 2.00 |
| SW-24 | 5/31/2018 | 13.33 | - | - | 0.67 | No measurable flow | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 8/9/2018 | 9.50 | - | 0 | - | - | - | - | 0.00 | 0.00 | 0.00 | 0.00 | 0.15 | 0.50 | 0.00 | 0.50 | 1.00 | 0.00 | 0.33 | 1.50 | 0.00 | 0.46 | 2.00 |
| | 10/18/2018 | - | No Flow | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 4/4/2019 | 14.0 | - | 53 | - | - | - | - | 0.00 | 0.00 | 0.00 | 0.00 | 0.08 | 0.50 | 0.00 | 0.50 | 1.00 | 0.00 | 0.58 | 1.50 | 0.00 | 0.63 | 2.00 |
| | 5/22/2019 | 13.5 | - | 227 | - | - | - | - | 0.00 | 0.00 | 0.00 | 0.01 | 0.33 | 0.50 | 0.02 | 0.33 | 1.00 | 0.01 | 0.50 | 1.50 | 0.02 | 0.67 | 2.00 |
| | 8/21/2019 | 10.0 | - | 0 | - | - | - | - | 0.00 | 0.00 | 0.00 | 0.00 | 0.25 | 0.50 | 0.00 | 0.20 | 1.00 | 0.00 | 0.20 | 1.50 | 0.00 | 0.50 | 2.00 |
| SW-25 | 5/31/2018 | 2.83 | - | - | 0.25 | NM | 0.20 | NM | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 10/18/2018 | 3 | N to S | 16 | - | - | - | - | 0 | 0 | 0 | 0.06 | 0.05 | 0.5 | 0.09 | 0.1 | 1 | 0.3 | 0.15 | 1.5 | 0.07 | 0.15 | 2 |
| | 4/4/2019 | 9.0 | - | 76 | - | - | - | - | 0.00 | 0.00 | 0.00 | 0.00 | 0.08 | 0.50 | 0.05 | 0.08 | 1.00 | 0.05 | 0.08 | 1.50 | 0.06 | 0.17 | 2.00 |
| | 5/22/2019 | 7.5 | - | 341 | - | - | - | - | 0.00 | 0.00 | 0.00 | 0.04 | 0.17 | 0.50 | 0.01 | 0.25 | 1.00 | 0.03 | 0.33 | 1.50 | 0.02 | 0.41 | 2.00 |
| | 8/21/2019 | 4.0 | - | 10 | - | - | - | - | 0.00 | 0.00 | 0.00 | 0.00 | 0.15 | 0.50 | 0.04 | 0.15 | 1.00 | 0.05 | 0.20 | 1.50 | 0.05 | 0.35 | 2.00 |
| SW-26 | 5/31/2018 | 10.00 | - | - | 0.83 | No measurable flow | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 10/17/2018 | - | No Flow | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 4/4/2019 | 9.0 | - | 217 | - | - | - | - | 0.00 | 0.00 | 0.00 | 0.02 | 0.67 | 0.50 | 0.01 | 0.71 | 1.00 | 0.04 | 0.96 | 1.50 | 0.02 | 1.33 | 2.00 |
| | 5/22/2019 | 12.0 | - | 476 | - | - | - | - | 0.00 | 0.00 | 0.00 | 0.01 | 0.41 | 0.50 | 0.02 | 0.50 | 1.00 | 0.01 | 0.75 | 1.50 | 0.02 | 0.75 | 2.00 |
| | 8/21/2019 | 9.0 | - | 0 | - | - | - | - | 0.00 | 0.00 | 0.00 | 0.00 | 0.40 | 0.50 | 0.00 | 0.50 | 1.00 | 0.00 | 0.75 | 1.50 | 0.00 | 1.00 | 2.00 |
| SW-27 | 5/31/2018 | 9.00 | - | - | 0.67 | No measurable flow | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 8/9/2018 | NM | - | - | Dry | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 10/17/2018 | - | N to S | 79 | - | - | - | - | 0 | 0 | 0 | 0.02 | 0.35 | 0.5 | 0.03 | 0.55 | 1 | 0.04 | 0.6 | 1.5 | 0.03 | 0.8 | 2 |
| | 4/4/2019 | 13.0 | - | 50 | - | - | - | - | 0.00 | 0.00 | 0.00 | 0.00 | 0.67 | 0.50 | 0.00 | 0.92 | 1.00 | -0.01 | 1.29 | 1.50 | 0.00 | 1.29 | 2.00 |
| | 5/22/2019 | 13.5 | - | 535 | - | - | - | - | 0.00 | 0.00 | 0.00 | -0.01 | 0.41 | 0.50 | 0.02 | 0.66 | 1.00 | 0.06 | 1.00 | 1.50 | 0.04 | 1.08 | 2.00 |
| | 8/21/2019 | 12.0 | - | 93 | - | - | - | - | 0.00 | 0.00 | 0.00 | 0.00 | 0.25 | 0.50 | 0.00 | 0.45 | 1.00 | 0.00 | 0.65 | 1.50 | 0.00 | 0.65 | 2.00 |
| SW-28 | 10/16/2018 | 3 | E to W | 14 | - | - | - | - | 0 | 0 | 0 | 0.03 | 0.4 | 0.5 | 0.04 | 0.4 | 1 | 0.03 | 0.45 | 1.5 | 0.03 | 0.4 | 2 |
| | 4/2/2019 | 5.5 | - | 14 | - | - | - | - | 0.00 | 0.00 | 0.00 | 0.00 | 0.25 | 0.50 | 0.01 | 0.46 | 1.00 | 0.01 | 0.58 | 1.50 | 0.02 | 0.67 | 2.00 |
| | 5/22/2019 | 10.5 | - | 694 | - | - | - | - | 0.00 | 0.00 | 0.00 | 0.02 | 0.83 | 0.50 | 0.02 | 1.33 | 1.00 | 0.02 | 1.50 | 1.50 | 0.03 | 1.83 | 2.00 |
| SW-29 | 7/11/2018 | 3.92 | - | 54 | - | - | - | - | 0.00 | 0.00 | 0.00 | 0.06 | 0.25 | 0.98 | 0.30 | 0.33 | 1.96 | 0.05 | 0.17 | 2.94 | 0.00 | 0.00 | 3.92 |
| | 10/16/2018 | 4 | W to E | 117 | - | - | - | - | 0 | 0 | 0 | 0.03 | 0.25 | 0.5 | 0.41 | 0.34 | 1 | 0.53 | 0.35 | 1.5 | 0.49 | 0.4 | 2 |
| | 4/2/2019 | 5.5 | - | 125 | - | - | - | - | 0.00 | 0.00 | 0.00 | 0.06 | 0.08 | 0.50 | 0.03 | 0.17 | 1.00 | 0.14 | 0.21 | 1.50 | 0.20 | 0.25 | 2.00 |
| | 5/22/2019 | 5.0 | - | 303 | - | - | - | - | 0.00 | 0.00 | 0.00 | 0.08 | 0.08 | 0.50 | 0.26 | 0.25 | 1.00 | 0.57 | 0.41 | 1.50 | 0.73 | 0.33 | 2.00 |

Notes on Page 3.

| Location | Date | Stream Width (ft) | Flow Direction | Calculated Flow (gpm) | Stream Depth (ft) | Left-Center Velocity (ft/s) | Midpoint Velocity (ft/s) | Right-Center Velocity (ft/s) | Segment 1 | | | Segment 2 | | | Segment 3 | | | Segment 4 | | | Segment 5 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | v1 (ft/sec) | d1 (ft) | b1 (ft) | v2 (ft/sec) | d2 (ft) | b2 (ft) | v3 (ft/sec) | d3 (ft) | b3 (ft) | v4 (ft/sec) | d4 (ft) | b4 (ft) | v5 (ft/sec) | d5 (ft) | b5 (ft) |
| SW-30 | 7/11/2018 | 20.00 | - | 54 | - | - | - | - | 0.00 | 0.00 | 0.00 | 0.00 | 1.30 | 1.00 | 0.00 | 1.50 | 2.00 | 0.00 | 1.70 | 3.00 | 0.06 | 2.00 | 4.00 |
| | 10/16/2018 | 17.5 | W to E | -556 | - | - | - | - | 0 | 0 | 0 | 0.03 | 0.4 | 0.5 | 0.04 | 1.15 | 1 | 0.06 | 1.2 | 1.5 | 0.07 | 1.4 | 2 |
| | 4/2/2019 | 18.5 | - | 1035 | - | - | - | - | 0.00 | 0.00 | 0.00 | 0.01 | 1.17 | 0.50 | 0.01 | 1.25 | 1.00 | 0.04 | 1.33 | 1.50 | 0.04 | 1.38 | 2.00 |
| | 5/22/2019 | NR | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| SW-31 | 7/11/2018 | 7.50 | - | 173 | - | - | - | - | 0.00 | 0.00 | 0.00 | 0.06 | 0.21 | 1.00 | 0.27 | 0.46 | 2.00 | 0.28 | 0.33 | 3.00 | 0.31 | 0.50 | 4.00 |
| | 10/16/2018 | 3.5 | W to E | 97 | - | - | - | - | 0 | 0 | 0 | 0.02 | 0.6 | 0.5 | 0.01 | 0.9 | 1 | 0.22 | 0.95 | 1.5 | 0.2 | 0.9 | 2 |
| | 4/2/2019 | 5.0 | - | 2 | - | - | - | - | 0.00 | 0.00 | 0.00 | 0.00 | 0.33 | 0.50 | 0.00 | 0.58 | 1.00 | 0.00 | 0.50 | 1.50 | 0.01 | 1.00 | 2.00 |
| | 5/22/2019 | 10.0 | - | 3882 | - | - | - | - | 0.00 | 0.00 | 0.00 | -0.08 | 0.33 | 0.50 | -0.03 | 0.50 | 1.00 | 0.19 | 0.58 | 1.50 | 0.63 | 0.83 | 2.00 |
| SW-32 | 7/12/2018 | 3.00 | - | 28 | - | - | - | - | 0.00 | 0.00 | 0.00 | 0.01 | 0.17 | 0.50 | 0.03 | 0.25 | 1.00 | 0.12 | 0.29 | 1.50 | 0.27 | 0.29 | 2.00 |
| | 10/17/2018 | 3.5 | W to E | 163 | - | - | - | - | 0 | 0 | 0 | 0.03 | 0.25 | 0.5 | 0.11 | 0.5 | 1 | 0.27 | 0.65 | 1.5 | 0.39 | 0.6 | 2 |
| | 4/2/2019 | 4.0 | - | 260 | - | - | - | - | 0.00 | 0.00 | 0.00 | 0.01 | 0.33 | 0.50 | 0.08 | 0.42 | 1.00 | 0.21 | 0.58 | 1.50 | 0.97 | 0.67 | 2.00 |
| | 5/21/2019 | 3.0 | - | 316 | - | - | - | - | 0.00 | 0.00 | 0.00 | 0.15 | 0.33 | 0.50 | 0.89 | 0.50 | 1.00 | 1.01 | 0.50 | 1.50 | 0.79 | 0.50 | 2.00 |
| SW-33 | 7/13/2018 | 3.50 | - | 46 | - | - | - | - | 0.00 | 0.00 | 0.00 | 0.04 | 0.42 | 0.50 | 0.06 | 0.46 | 1.00 | 0.13 | 0.63 | 1.50 | 0.13 | 0.63 | 2.00 |
| | 10/17/2018 | 3 | W to E | 178 | - | - | - | - | 0 | 0 | 0 | 0.09 | 0.3 | 0.5 | 0.26 | 0.5 | 1 | 0.36 | 0.6 | 1.5 | 0.35 | 0.6 | 2 |
| | 4/2/2019 | 3.0 | - | 934 | - | - | - | - | 0.00 | 0.00 | 0.00 | 0.82 | 0.83 | 0.50 | 1.07 | 0.83 | 1.00 | 1.23 | 0.92 | 1.50 | 1.22 | 0.92 | 2.00 |
| | 5/21/2019 | 3.5 | - | 754 | - | - | - | - | 0.00 | 0.00 | 0.00 | 0.51 | 0.92 | 0.50 | 0.90 | 1.00 | 1.00 | 0.95 | 1.08 | 1.50 | 0.65 | 1.00 | 2.00 |
| SW-34 | 7/16/2018 | 6.00 | - | 79 | - | - | - | - | 0.00 | 0.00 | 0.00 | 0.13 | 0.08 | 1.00 | 0.11 | 0.23 | 2.00 | 0.36 | 0.23 | 3.00 | 0.28 | 0.21 | 4.00 |
| | 10/16/2018 | 7.5 | N to S | 793 | - | - | - | - | 0 | 0 | 0 | 0 | 0.3 | 0.5 | 0.32 | 0.45 | 1 | 0.62 | 0.7 | 1.5 | 0.68 | 0.65 | 2 |
| | 4/2/2019 | 8.0 | - | 1884 | - | - | - | - | 0.00 | 0.00 | 0.00 | -0.04 | 0.63 | 0.50 | -0.04 | 0.83 | 1.00 | 0.08 | 0.92 | 1.50 | 0.52 | 1.00 | 2.00 |
| | 5/22/2019 | 13.5 | - | 5932 | - | - | - | - | 0.00 | 0.00 | 0.00 | 0.49 | 0.50 | 0.50 | 0.68 | 0.58 | 1.00 | 0.73 | 0.66 | 1.50 | 0.70 | 0.75 | 2.00 |
| SW-35 | 10/17/2018 | 5 | W to E | 61 | - | - | - | - | 0 | 0 | 0 | 0 | 0.2 | 0.5 | 0.02 | 0.3 | 1 | 0.06 | 0.35 | 1.5 | 0.07 | 0.35 | 2 |
| | 4/2/2019 | 5.5 | - | 163 | - | - | - | - | 0.00 | 0.00 | 0.00 | 0.03 | 0.25 | 0.50 | 0.09 | 0.25 | 1.00 | 0.20 | 0.38 | 1.50 | 0.33 | 0.33 | 2.00 |
| | 5/21/2019 | 5.0 | - | 312 | - | - | - | - | 0.00 | 0.00 | 0.00 | 0.80 | 0.17 | 0.50 | 0.19 | 0.33 | 1.00 | 0.40 | 0.42 | 1.50 | 0.33 | 0.42 | 2.00 |
| SW-36 | 10/16/2018 | 4 | N to S | 62 | - | - | - | - | 0 | 0 | 0 | 0.01 | 0.4 | 0.5 | 0.04 | 0.6 | 1 | 0.09 | 0.7 | 1.5 | 0.13 | 0.6 | 2 |
| | 4/2/2019 | 4.5 | - | 327 | - | - | - | - | 0.00 | 0.00 | 0.00 | 0.21 | 0.21 | 0.50 | 0.19 | 0.38 | 1.00 | 0.23 | 0.50 | 1.50 | 0.45 | 0.58 | 2.00 |
| | 5/22/2019 | 5.5 | - | 661 | - | - | - | - | 0.00 | 0.00 | 0.00 | 0.00 | 0.33 | 0.50 | 0.03 | 0.58 | 1.00 | 0.26 | 0.91 | 1.50 | 0.56 | 1.00 | 2.00 |

**Notes:**
b = distance from bank recorded in nth segment (ft)
d = depth of water recorded in nth segment (ft)
NM = Not Measured, ft,ft/s
NR = Not Recorded
v = velocity (ft/sec)

| Location | Date | Segment 6 | | | Segment 7 | | | Segment 8 | | | Segment 9 | | | Segment 10 | | | Segment 11 | | | Segment 12 | | | Segment 13 | | | Segment 14 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | v6 (ft/sec) | d6 (ft) | b6 (ft) | v7 (ft/sec) | d7 (ft) | b7 (ft) | v8 (ft/sec) | d8 (ft) | b8 (ft) | v9 (ft/sec) | d9 (ft) | b9 (ft) | v10 (ft/sec) | d10 (ft) | b10 (ft) | v11 (ft/sec) | d11 (ft) | b11 (ft) | v12 (ft/sec) | d12 (ft) | b12 (ft) | v13 (ft/sec) | d13 (ft) | b13 (ft) | v14 (ft/sec) | d14 (ft) | b14 (ft) |
| SW-10 | 5/29/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 7/13/2018 | 0.29 | 0.46 | 2.50 | 0.44 | 0.42 | 3.00 | 0.34 | 0.33 | 3.50 | 0.32 | 0.33 | 4.00 | 0.02 | 0.17 | 4.50 | 0.00 | 0.00 | 5.00 | - | - | - | - | - | - | - | - | - |
| | 10/17/2018 | 0.49 | 0.95 | 2.5 | 0.56 | 1 | 3 | 0.46 | 0.8 | 3.5 | 0.34 | 0.75 | 4 | 0.07 | 0.75 | 4.5 | 0.07 | 0.6 | 5 | 0 | 0 | 5.5 | - | - | - | - | - | - |
| | 4/2/2019 | 0.73 | 1.33 | 2.50 | 0.56 | 1.17 | 3.00 | 0.68 | 1.08 | 3.50 | 0.75 | 1.00 | 4.00 | 0.60 | 0.83 | 4.50 | 0.42 | 0.92 | 5.00 | 0.35 | 1.00 | 5.50 | - | - | - | - | - | - |
| | 5/22/2019 | NR | 1.75 | 2.50 | NR | 2.00 | 3.00 | NR | 2.17 | 3.50 | NR | 2.08 | 4.00 | NR | 2.08 | 4.50 | NR | 2.00 | 5.00 | NR | 2.00 | 5.50 | | 0.83 | 6.00 | | 0.17 | 6.50 |
| SW-11 | 5/29/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 10/17/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 4/2/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 5/21/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| SW-12 | 5/29/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 10/17/2018 | 0.03 | 0.5 | 2.5 | 0.02 | 0.55 | 3 | 0.02 | 0.6 | 3.5 | 0.03 | 0.7 | 4 | 0.02 | 0.7 | 4.5 | 0.01 | 0.7 | 5 | 0.03 | 0.65 | 5.5 | 0.03 | 0.55 | 6 | 0.02 | 0.5 | 6.5 |
| | 4/2/2019 | 0.12 | 0.96 | 2.50 | 0.13 | 0.96 | 3.00 | 0.09 | 1.00 | 3.50 | 0.08 | 1.00 | 4.00 | 0.08 | 1.04 | 4.50 | 0.08 | 1.00 | 5.00 | 0.09 | 1.00 | 5.50 | 0.09 | 0.96 | 6.00 | 0.08 | 0.83 | 6.50 |
| | 5/22/2019 | 0.32 | 1.16 | 2.50 | 0.26 | 1.25 | 3.00 | 0.24 | 1.16 | 3.50 | 0.26 | 1.16 | 4.00 | 0.29 | 1.08 | 4.50 | 0.28 | 1.00 | 5.00 | 0.25 | 0.91 | 5.50 | 0.18 | 0.83 | 6.00 | 0.10 | 0.75 | 6.50 |
| | 8/21/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| SW-13 | 5/29/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 10/17/2018 | 0.5 | 0.7 | 2.5 | 0.52 | 0.8 | 3 | 0.48 | 0.95 | 3.5 | 0.51 | 1 | 4 | 0.36 | 1.05 | 4.5 | 0.15 | 1 | 5 | 0 | 0 | 5.5 | - | - | - | - | - | - |
| | 4/2/2019 | 0.54 | 0.83 | 2.50 | 0.72 | 1.00 | 3.00 | 0.74 | 1.08 | 3.50 | 0.65 | 1.08 | 4.00 | 0.54 | 1.08 | 4.50 | 0.27 | 0.92 | 5.00 | 0.02 | 0.58 | 5.50 | - | - | - | - | - | - |
| | 5/22/2019 | 0.82 | 1.08 | 2.50 | 0.85 | 1.25 | 3.00 | 0.92 | 1.50 | 3.50 | 0.80 | 1.58 | 4.00 | 0.88 | 1.58 | 4.50 | 0.87 | 1.66 | 5.00 | 0.91 | 1.58 | 5.50 | 0.58 | 1.41 | 6.00 | 0.08 | 0.58 | 6.50 |
| SW-15 | 5/30/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 7/11/2018 | 0.63 | 0.42 | 5.00 | 0.45 | 0.29 | 6.00 | 0.00 | 0.00 | 6.50 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 8/9/2018 | 0.94 | 0.38 | 2.50 | 0.58 | 0.21 | 3.00 | 0.43 | 0.29 | 3.50 | 0.75 | 0.29 | 4.00 | 0.71 | 0.17 | 4.50 | 0.76 | 0.23 | 5.00 | 0.43 | 0.17 | 5.50 | 0.59 | 0.08 | 6.00 | 0.20 | 0.08 | 6.50 |
| | 10/16/2018 | 1.94 | 0.4 | 2.5 | 2.14 | 0.5 | 3 | 1.99 | 0.5 | 3.5 | 1.79 | 0.55 | 4 | 1.86 | 0.55 | 4.5 | 1.73 | 0.45 | 5 | 1.55 | 0.45 | 5.5 | 1.38 | 0.4 | 6 | 1.33 | 0.5 | 6.5 |
| | 3/19/2019 | 2.00 | 0.58 | 2.50 | 2.10 | 0.42 | 3.00 | 2.10 | 0.58 | 3.50 | 1.50 | 0.50 | 4.00 | 2.20 | 0.38 | 4.50 | 2.00 | 0.42 | 5.00 | 1.60 | 0.38 | 5.50 | 1.10 | 0.38 | 6.00 | - | - | - |
| | 5/21/2019 | 1.82 | 0.83 | 2.50 | 2.09 | 0.75 | 3.00 | 2.17 | 0.67 | 3.50 | 2.26 | 0.75 | 4.00 | 2.25 | 0.75 | 4.50 | 2.12 | 0.67 | 5.00 | 1.39 | 0.67 | 5.50 | 1.39 | 0.58 | 6.00 | 1.49 | 0.50 | 6.50 |
| SW-16 | 5/30/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 7/12/2018 | 0.43 | 1.00 | 10.00 | 0.07 | 0.83 | 12.00 | 0.00 | 0.00 | 14.00 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 8/9/2018 | 0.36 | 0.88 | 2.50 | 0.31 | 1.38 | 3.00 | 0.26 | 1.69 | 3.50 | 0.19 | 1.63 | 4.00 | 0.10 | 1.79 | 4.50 | 0.09 | 1.73 | 5.00 | 0.10 | 1.65 | 5.50 | 0.00 | 1.56 | 6.00 | 0.00 | 1.46 | 6.50 |
| | 10/16/2018 | 0.06 | 0.8 | 2.5 | 0.16 | 0.9 | 3 | 0.19 | 0.95 | 3.5 | 0.38 | 0.85 | 4 | 0.42 | 0.8 | 4.5 | 0.48 | 0.8 | 5 | 0.48 | 0.8 | 5.5 | 0.5 | 0.8 | 6 | 0.48 | 0.8 | 6.5 |
| | 3/19/2019 | 1.50 | 0.79 | 2.50 | 1.50 | 0.54 | 3.00 | 1.40 | 0.75 | 3.50 | 1.30 | 0.75 | 4.00 | 1.10 | 0.63 | 4.50 | 0.50 | 0.67 | 5.00 | - | - | - | - | - | - | - | - | - |
| | 5/21/2019 | 0.25 | 1.50 | 2.50 | 0.56 | 1.58 | 3.00 | 0.79 | 1.67 | 3.50 | 0.79 | 1.58 | 4.00 | 0.86 | 1.67 | 4.50 | 0.86 | 1.67 | 5.00 | 0.87 | 1.50 | 5.50 | 0.76 | 1.58 | 6.00 | 0.65 | 1.58 | 6.50 |
| SW-17 | 5/30/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 7/12/2018 | 1.22 | 0.50 | 5.00 | 1.04 | 0.71 | 6.00 | 0.65 | 0.50 | 7.00 | 0.46 | 0.58 | 8.00 | 0.33 | 0.46 | 9.00 | 0.00 | 0.00 | 10.00 | - | - | - | - | - | - | - | - | - |
| | 8/9/2018 | 0.05 | 0.27 | 2.50 | 0.07 | 0.29 | 3.00 | 0.35 | 0.46 | 3.50 | 0.32 | 0.50 | 4.00 | 0.81 | 0.29 | 4.50 | 0.90 | 0.33 | 5.00 | 0.81 | 0.31 | 5.50 | 0.83 | 0.33 | 6.00 | 0.29 | 0.23 | 6.50 |
| | 10/16/2018 | 0.7 | 0.75 | 2.5 | 0.78 | 0.7 | 3 | 0.73 | 0.7 | 3.5 | 0.74 | 0.75 | 4 | 0.7 | 0.7 | 4.5 | 0.68 | 0.7 | 5 | 0.65 | 0.7 | 5.5 | 0.6 | 0.75 | 6 | 0.6 | 0.75 | 6.5 |
| | 3/19/2019 | 0.46 | 0.54 | 2.50 | 0.66 | 0.63 | 3.00 | 0.61 | 0.54 | 3.50 | 0.66 | 0.58 | 4.00 | 0.75 | 0.50 | 4.50 | 0.81 | 0.54 | 5.00 | 0.77 | 0.50 | 5.50 | 0.79 | 0.50 | 6.00 | 0.84 | 0.54 | 6.50 |
| | 5/21/2019 | 0.58 | 0.75 | 2.50 | 0.80 | 0.75 | 3.00 | 0.91 | 0.75 | 3.50 | 0.88 | 0.67 | 4.00 | 0.84 | 0.58 | 4.50 | 0.71 | 0.67 | 5.00 | 0.76 | 0.67 | 5.50 | 0.88 | 0.67 | 6.00 | 1.08 | 0.58 | 6.50 |
| SW-18 | 5/30/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 7/12/2018 | 0.41 | 0.75 | 2.50 | 0.35 | 0.67 | 3.00 | 0.27 | 0.58 | 3.50 | 0.25 | 0.50 | 4.00 | 0.06 | 0.33 | 4.50 | 0.00 | 0.00 | 5.00 | - | - | - | - | - | - | - | - | - |
| | 10/17/2018 | 0.83 | 0.9 | 2.5 | 0.74 | 0.95 | 3 | 0.73 | 0.8 | 3.5 | 0.64 | 0.8 | 4 | 0.19 | 0.5 | 4.5 | 0 | 0 | 5 | - | - | - | - | - | - | - | - | - |
| | 3/19/2019 | 1.25 | 0.83 | 2.50 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 5/21/2019 | 1.62 | 1.08 | 2.50 | 1.67 | 0.75 | 3.00 | 1.26 | 0.67 | 3.50 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

Notes on Page 6.

| Location | Date | Segment 6 | | | Segment 7 | | | Segment 8 | | | Segment 9 | | | Segment 10 | | | Segment 11 | | | Segment 12 | | | Segment 13 | | | Segment 14 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | v6 (ft/sec) | d6 (ft) | b6 (ft) | v7 (ft/sec) | d7 (ft) | b7 (ft) | v8 (ft/sec) | d8 (ft) | b8 (ft) | v9 (ft/sec) | d9 (ft) | b9 (ft) | v10 (ft/sec) | d10 (ft) | b10 (ft) | v11 (ft/sec) | d11 (ft) | b11 (ft) | v12 (ft/sec) | d12 (ft) | b12 (ft) | v13 (ft/sec) | d13 (ft) | b13 (ft) | v14 (ft/sec) | d14 (ft) | b14 (ft) |
| SW-20 | 5/30/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 7/12/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 10/18/2018 | 2 | 1.68 | 0.35 | 2.5 | 1 | 0.3 | 3 | 0.57 | 0.35 | 3.5 | 0.52 | 0.3 | 4 | 0.17 | 0.3 | 4.5 | 0 | 0 | 5 | - | - | - | - | - | - | - | - |
| | 3/19/2019 | 1.25 | 0.38 | 2.50 | 1.00 | 0.42 | 3.00 | 0.90 | 0.63 | 3.50 | 1.60 | 0.75 | 4.00 | 1.40 | 0.71 | 4.50 | 0.50 | 0.50 | 5.00 | 0.05 | 0.46 | 5.50 | - | - | - | - | - | - |
| | 5/21/2019 | 1.83 | 0.50 | 2.50 | 1.96 | 0.50 | 3.00 | 1.82 | 0.50 | 3.50 | 1.39 | 0.58 | 4.00 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| SW-21 | 5/30/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 10/18/2018 | 0 | 0 | 2.5 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 3/19/2019 | 1.55 | 0.38 | 2.50 | 1.40 | 0.42 | 3.00 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 5/21/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| SW-22 | 10/18/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 4/4/2019 | 0.01 | 0.54 | 2.50 | 0.01 | 0.75 | 3.00 | 0.02 | 0.79 | 3.50 | 0.03 | 0.88 | 4.00 | 0.02 | 0.92 | 4.50 | 0.02 | 0.92 | 5.00 | 0.02 | 0.92 | 5.50 | 0.01 | 0.79 | 6.00 | 0.01 | 0.71 | 6.50 |
| | 5/22/2019 | 0.05 | 0.75 | 2.50 | 0.06 | 0.83 | 3.00 | 0.05 | 1.00 | 3.50 | 0.04 | 1.00 | 4.00 | 0.08 | 1.16 | 4.50 | 0.07 | 1.25 | 5.00 | 0.06 | 1.41 | 5.50 | 0.06 | 1.25 | 6.00 | 0.06 | 1.16 | 6.50 |
| | 8/21/2019 | 0.00 | 0.80 | 2.50 | 0.00 | 0.90 | 3.00 | 0.00 | 1.00 | 3.50 | 0.00 | 1.05 | 4.00 | 0.00 | 1.05 | 4.50 | 0.00 | 1.10 | 5.00 | 0.00 | 1.10 | 5.50 | 0.00 | 0.60 | 6.00 | 0.00 | 0.35 | 6.50 |
| SW-24 | 5/31/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 8/9/2018 | 0.00 | 0.42 | 2.50 | 0.00 | 0.50 | 3.00 | 0.00 | 0.50 | 3.50 | 0.00 | 0.44 | 4.00 | 0.00 | 0.46 | 4.50 | 0.00 | 0.54 | 5.00 | 0.00 | 0.67 | 5.50 | 0.00 | 0.50 | 6.00 | 0.00 | 0.33 | 6.50 |
| | 10/18/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 4/4/2019 | 0.00 | 0.83 | 2.50 | 0.00 | 0.83 | 3.00 | 0.03 | 0.88 | 3.50 | 0.03 | 1.00 | 4.00 | 0.01 | 0.96 | 4.50 | 0.02 | 0.92 | 5.00 | 0.03 | 0.96 | 5.50 | 0.02 | 1.25 | 6.00 | 0.00 | 0.88 | 6.50 |
| | 5/22/2019 | 0.02 | 0.83 | 2.50 | 0.02 | 0.92 | 3.00 | 0.02 | 1.17 | 3.50 | 0.01 | 1.17 | 4.00 | 0.02 | 1.25 | 4.50 | 0.02 | 1.25 | 5.00 | 0.01 | 1.33 | 5.50 | 0.03 | 1.42 | 6.00 | 0.06 | 1.50 | 6.50 |
| | 8/21/2019 | 0.00 | 0.50 | 2.50 | 0.00 | 0.75 | 3.00 | 0.00 | 0.80 | 3.50 | 0.00 | 0.85 | 4.00 | 0.00 | 1.00 | 4.50 | 0.00 | 0.75 | 5.00 | 0.00 | 0.80 | 5.50 | 0.00 | 1.00 | 6.00 | 0.00 | 1.00 | 6.50 |
| SW-25 | 5/31/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 10/18/2018 | 0.03 | 0.1 | 2.5 | 0 | 0 | 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 4/4/2019 | 0.05 | 0.17 | 2.50 | 0.05 | 0.17 | 3.00 | 0.04 | 0.17 | 3.50 | 0.02 | 0.17 | 4.00 | 0.06 | 0.17 | 4.50 | 0.03 | 0.17 | 5.00 | 0.14 | 0.21 | 5.50 | 0.53 | 0.29 | 6.00 | 0.24 | 0.25 | 6.50 |
| | 5/22/2019 | 0.17 | 0.41 | 2.50 | 0.34 | 0.50 | 3.00 | 0.65 | 0.50 | 3.50 | 0.74 | 0.50 | 4.00 | 0.47 | 0.50 | 4.50 | 0.30 | 0.41 | 5.00 | 0.30 | 0.33 | 5.50 | 0.27 | 0.33 | 6.00 | 0.03 | 0.33 | 6.50 |
| | 8/21/2019 | 0.26 | 0.05 | 2.50 | 0.00 | 0.05 | 3.00 | 0.00 | 0.05 | 3.50 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| SW-26 | 5/31/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 10/17/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 4/4/2019 | 0.03 | 1.17 | 2.50 | 0.04 | 1.04 | 3.00 | 0.15 | 1.00 | 3.50 | 0.20 | 1.17 | 4.00 | 0.14 | 1.00 | 4.50 | 0.10 | 1.00 | 5.00 | 0.06 | 1.13 | 5.50 | 0.05 | 1.08 | 6.00 | 0.03 | 1.08 | 6.50 |
| | 5/22/2019 | 0.02 | 0.91 | 2.50 | 0.03 | 1.00 | 3.00 | 0.02 | 1.16 | 3.50 | 0.02 | 0.91 | 4.00 | 0.04 | 1.41 | 4.50 | 0.04 | 1.41 | 5.00 | 0.10 | 1.25 | 5.50 | 0.18 | 1.25 | 6.00 | 0.29 | 1.41 | 6.50 |
| | 8/21/2019 | 0.00 | 0.75 | 2.50 | 0.00 | 1.00 | 3.00 | 0.00 | 1.00 | 3.50 | 0.00 | 0.75 | 4.00 | 0.00 | 1.00 | 4.50 | 0.00 | 0.75 | 5.00 | 0.00 | 1.00 | 5.50 | 0.00 | 0.75 | 6.00 | 0.00 | 0.75 | 6.50 |
| SW-27 | 5/31/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 8/9/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 10/17/2018 | 0.02 | 0.95 | 2.5 | 0.02 | 1.05 | 3 | 0.02 | 1.15 | 3.5 | 0.02 | 1.3 | 4 | 0.02 | 1.15 | 4.5 | 0.02 | 1.25 | 5 | 0.02 | 1.15 | 5.5 | 0.02 | 1.25 | 6 | 0.01 | 1.2 | 6.5 |
| | 4/4/2019 | 0.00 | 1.29 | 2.50 | 0.02 | 1.29 | 3.00 | 0.01 | 1.25 | 3.50 | 0.02 | 1.21 | 4.00 | 0.02 | 1.25 | 4.50 | 0.01 | 1.25 | 5.00 | 0.01 | 1.33 | 5.50 | 0.01 | 1.50 | 6.00 | 0.00 | 1.50 | 6.50 |
| | 5/22/2019 | 0.06 | 1.25 | 2.50 | 0.07 | 1.33 | 3.00 | 0.06 | 1.50 | 3.50 | 0.06 | 1.58 | 4.00 | 0.06 | 1.75 | 4.50 | 0.07 | 1.75 | 5.00 | 0.08 | 1.75 | 5.50 | 0.07 | 1.75 | 6.00 | 0.08 | 1.75 | 6.50 |
| | 8/21/2019 | 0.00 | 1.00 | 2.50 | 0.00 | 1.10 | 3.00 | 0.00 | 1.00 | 3.50 | 0.00 | 1.15 | 4.00 | 0.00 | 1.30 | 4.50 | 0.03 | 1.30 | 5.00 | 0.02 | 1.20 | 5.50 | 0.02 | 1.05 | 6.00 | 0.03 | 1.05 | 6.50 |
| SW-28 | 10/16/2018 | 0.03 | 0.3 | 2.5 | 0 | 0 | 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 4/2/2019 | 0.02 | 0.67 | 2.50 | 0.02 | 0.67 | 3.00 | 0.01 | 0.50 | 3.50 | 0.01 | 0.46 | 4.00 | 0.01 | 0.33 | 4.50 | 0.00 | 0.17 | 5.00 | - | - | - | - | - | - | - | - | - |
| | 5/22/2019 | 0.04 | 1.83 | 2.50 | 0.06 | 2.00 | 3.00 | 0.08 | 2.16 | 3.50 | 0.11 | 2.25 | 4.00 | 0.13 | 2.41 | 4.50 | 0.14 | 2.41 | 5.00 | 0.16 | 2.58 | 5.50 | 0.16 | 2.25 | 6.00 | 0.15 | 2.16 | 6.50 |
| SW-29 | 7/11/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 10/16/2018 | 0.41 | 0.4 | 2.5 | 0.05 | 0.3 | 3 | 0 | 0.2 | 3.5 | 0 | 0 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 4/2/2019 | 0.39 | 0.29 | 2.50 | 0.51 | 0.33 | 3.00 | 0.50 | 0.38 | 3.50 | 0.41 | 0.33 | 4.00 | 0.06 | 0.33 | 4.50 | 0.11 | 0.13 | 5.00 | - | - | - | - | - | - | - | - | - |
| | 5/22/2019 | 0.93 | 0.41 | 2.50 | 0.84 | 0.50 | 3.00 | 0.83 | 0.41 | 3.50 | 0.51 | 0.33 | 4.00 | 0.10 | 0.33 | 4.50 | - | - | - | - | - | - | - | - | - | - | - | - |

Notes on Page 6.

| Location | Date | Segment 6 | | | Segment 7 | | | Segment 8 | | | Segment 9 | | | Segment 10 | | | Segment 11 | | | Segment 12 | | | Segment 13 | | | Segment 14 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | v6 (ft/sec) | d6 (ft) | b6 (ft) | v7 (ft/sec) | d7 (ft) | b7 (ft) | v8 (ft/sec) | d8 (ft) | b8 (ft) | v9 (ft/sec) | d9 (ft) | b9 (ft) | v10 (ft/sec) | d10 (ft) | b10 (ft) | v11 (ft/sec) | d11 (ft) | b11 (ft) | v12 (ft/sec) | d12 (ft) | b12 (ft) | v13 (ft/sec) | d13 (ft) | b13 (ft) | v14 (ft/sec) | d14 (ft) | b14 (ft) |
| SW-30 | 7/11/2018 | 0.05 | 2.25 | 5.00 | 0.07 | 2.50 | 7.00 | 0.10 | 3.00 | 8.00 | 0.10 | 2.50 | 9.00 | 0.11 | 2.90 | 10.00 | 0.11 | 2.70 | 11.00 | 0.10 | 2.60 | 12.00 | 0.05 | 2.50 | 13.00 | 0.12 | 2.30 | 14.00 |
| | 10/16/2018 | 0.07 | 1.5 | 2.5 | 0.12 | 1.55 | 3 | 0.13 | 1.7 | 3.5 | 0.2 | 1.7 | 4 | 0.19 | 1.9 | 4.5 | 0.2 | 1.9 | 5 | 0.32 | 2.1 | 5.5 | 0.26 | 2.1 | 6 | -0.05 | 2 | 6.5 |
| | 4/2/2019 | 0.07 | 1.58 | 2.50 | 0.07 | 1.67 | 3.00 | 0.11 | 1.92 | 3.50 | 0.15 | 2.08 | 4.00 | 0.18 | 2.29 | 4.50 | 0.18 | 2.42 | 5.00 | 0.17 | 2.50 | 5.50 | 0.15 | 2.54 | 6.00 | 0.14 | 2.54 | 6.50 |
| | 5/22/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| SW-31 | 7/11/2018 | 0.09 | 0.42 | 5.00 | 0.01 | 0.17 | 6.00 | 0.00 | 0.00 | 7.50 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 10/16/2018 | 0.01 | 0.85 | 2.5 | 0.02 | 0.75 | 3 | 0 | 0 | 3.5 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 4/2/2019 | 0.00 | 1.00 | 2.50 | 0.00 | 0.83 | 3.00 | 0.00 | 0.75 | 3.50 | 0.00 | 0.54 | 4.00 | 0.00 | 0.42 | 4.50 | - | - | - | - | - | - | - | - | - | - | - | - |
| | 5/22/2019 | 0.67 | 1.08 | 2.50 | 0.65 | 1.33 | 3.00 | 0.74 | 1.75 | 3.50 | 0.93 | 2.16 | 4.00 | 0.92 | 2.00 | 4.50 | 0.92 | 1.66 | 5.00 | 0.88 | 1.66 | 5.50 | 0.73 | 2.00 | 6.00 | 0.71 | 2.16 | 6.50 |
| SW-32 | 7/12/2018 | 0.06 | 0.25 | 2.50 | 0.00 | 0.00 | 3.00 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 10/17/2018 | 0.36 | 0.6 | 2.5 | 0.08 | 0.5 | 3 | 0 | 0 | 3.5 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 4/2/2019 | 0.50 | 0.58 | 2.50 | 0.15 | 0.38 | 3.00 | 0.03 | 0.25 | 3.50 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 5/21/2019 | 0.07 | 0.33 | 2.50 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| SW-33 | 7/13/2018 | 0.12 | 0.63 | 2.50 | 0.01 | 0.50 | 3.00 | 0.00 | 0.00 | 3.50 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 10/17/2018 | 0.38 | 0.55 | 2.5 | 0 | 0 | 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 4/2/2019 | 0.91 | 0.75 | 2.50 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 5/21/2019 | 0.60 | 0.83 | 2.50 | 0.30 | 0.42 | 3.00 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| SW-34 | 7/16/2018 | 0.31 | 0.18 | 5.00 | 0.00 | 0.00 | 6.00 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 10/16/2018 | 0.41 | 0.7 | 2.5 | 0.68 | 0.8 | 3 | 0.65 | 0.75 | 3.5 | 0.6 | 0.7 | 4 | 0.43 | 0.7 | 4.5 | 0.45 | 0.7 | 5 | 0.55 | 0.7 | 5.5 | 0.55 | 0.7 | 6 | 0.07 | 0.65 | 6.5 |
| | 4/2/2019 | 0.68 | 1.04 | 2.50 | 0.75 | 1.00 | 3.00 | 0.70 | 0.88 | 3.50 | 0.88 | 0.79 | 4.00 | 0.92 | 0.83 | 4.50 | 0.90 | 0.92 | 5.00 | 1.02 | 0.96 | 5.50 | 0.96 | 1.00 | 6.00 | 1.00 | 0.92 | 6.50 |
| | 5/22/2019 | 0.78 | 0.91 | 2.50 | 0.91 | 1.08 | 3.00 | 0.93 | 1.16 | 3.50 | 0.99 | 1.25 | 4.00 | 1.04 | 1.33 | 4.50 | 1.00 | 1.33 | 5.00 | 0.15 | 1.25 | 5.50 | 0.04 | 1.08 | 6.00 | 0.03 | 1.25 | 6.50 |
| SW-35 | 10/17/2018 | 0.16 | 0.4 | 2.5 | 0.27 | 0.35 | 3 | 0.03 | 0.35 | 3.5 | 0.1 | 0.35 | 4 | 0.08 | 0.2 | 4.5 | 0 | 0 | 5 | - | - | - | - | - | - | - | - | - |
| | 4/2/2019 | 0.32 | 0.42 | 2.50 | 0.34 | 0.50 | 3.00 | 0.29 | 0.46 | 3.50 | 0.20 | 0.33 | 4.00 | 0.04 | 0.25 | 4.50 | 0.00 | 0.17 | 5.00 | - | - | - | - | - | - | - | - | - |
| | 5/21/2019 | 0.36 | 0.25 | 2.50 | 0.61 | 0.42 | 3.00 | 0.53 | 0.50 | 3.50 | 0.52 | 0.42 | 4.00 | 0.38 | 0.33 | 4.50 | - | - | - | - | - | - | - | - | - | - | - | - |
| SW-36 | 10/16/2018 | 0.12 | 0.55 | 2.5 | 0.07 | 0.4 | 3 | 0.05 | 0.3 | 3.5 | 0 | 0 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 4/2/2019 | 0.55 | 0.63 | 2.50 | 0.42 | 0.75 | 3.00 | 0.33 | 0.79 | 3.50 | 0.15 | 0.58 | 4.00 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 5/22/2019 | 0.58 | 1.08 | 2.50 | 0.74 | 1.00 | 3.00 | 0.70 | 0.91 | 3.50 | 0.15 | 0.75 | 4.00 | 0.03 | 0.50 | 4.50 | 0.01 | 0.16 | 5.00 | - | - | - | - | - | - | - | - | - |

**Notes:**
b = distance from bank recorded in nth segment (ft)
d = depth of water recorded in nth segment (ft)
NM = Not Measured, ft,ft/s
NR = Not Recorded
v = velocity (ft/sec)

| Location | Date | Segment 15 | | | Segment 16 | | | Segment 17 | | | Segment 18 | | | Segment 19 | | | Segment 20 | | | Segment 21 | | | Segment 22 | | | Segment 23 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | v15 (ft/sec) | d15 (ft) | b15 (ft) | v16 (ft/sec) | d16 (ft) | b16 (ft) | v17 (ft/sec) | d17 (ft) | b17 (ft) | v18 (ft/sec) | d18 (ft) | b18 (ft) | v19 (ft/sec) | d19 (ft) | b19 (ft) | v20 (ft/sec) | d20 (ft) | b20 (ft) | v21 (ft/sec) | d21 (ft) | b21 (ft) | v22(ft/sec) | d22(ft) | b22 (ft) | v23 (ft/sec) | d23 (ft) | b23 (ft) |
| SW-10 | 5/29/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 7/13/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 10/17/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 4/2/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 5/22/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| SW-11 | 5/29/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 10/17/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 4/2/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 5/21/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| SW-12 | 5/29/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 10/17/2018 | 0 | 0.4 | 7 | 0 | 0.3 | 7.5 | 0 | 0 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 4/2/2019 | 0.03 | 0.75 | 7.00 | 0.03 | 0.67 | 7.50 | 0.04 | 0.50 | 8.00 | 0.02 | 0.33 | 8.50 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 5/22/2019 | 0.04 | 0.41 | 7.00 | 0.01 | 0.25 | 7.50 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 8/21/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| SW-13 | 5/29/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 10/17/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 4/2/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 5/22/2019 | 0.02 | 0.33 | 7.00 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| SW-15 | 5/30/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 7/11/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 8/9/2018 | 0.00 | 0.00 | 7.00 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 10/16/2018 | 0 | 0 | 7 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 3/19/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 5/21/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| SW-16 | 5/30/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 7/12/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 8/9/2018 | 0.00 | 1.21 | 7.00 | 0.00 | 1.21 | 7.50 | 0.00 | 0.79 | 8.00 | 0.00 | 0.75 | 8.50 | 0.00 | 0.35 | 9.00 | 0.00 | 0.25 | 9.50 | 0.00 | 0.17 | 10.00 | 0.00 | 0.00 | 10.50 | - | - | - |
| | 10/16/2018 | 0.38 | 0.85 | 7 | 0.5 | 0.9 | 7.5 | 0.53 | 0.85 | 8 | 0.58 | 0.85 | 8.5 | 0.52 | 0.85 | 9 | 0.52 | 0.85 | 9.5 | 0.53 | 0.9 | 10 | 0.52 | 0.8 | 10.5 | 0.57 | 0.85 | 11 |
| | 3/19/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 5/21/2019 | 0.55 | 1.33 | 7.00 | 0.39 | 1.33 | 7.50 | 0.25 | 0.83 | 8.00 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| SW-17 | 5/30/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 7/12/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 8/9/2018 | 0.16 | 0.17 | 7.00 | 0.11 | 0.13 | 7.50 | 0.05 | 0.06 | 8.00 | 0.00 | 0.02 | 8.50 | 0.00 | 0.04 | 9.00 | 0.02 | 0.08 | 9.50 | 0.06 | 0.13 | 10.00 | 0.06 | 0.08 | 10.50 | 0.00 | 0.00 | 11.00 |
| | 10/16/2018 | 0.61 | 0.75 | 7 | 0.51 | 0.8 | 7.5 | 0.57 | 0.85 | 8 | 0.4 | 0.8 | 8.5 | 0.32 | 0.75 | 9 | 0.07 | 0.45 | 9.5 | - | - | - | - | - | - | - | - | - |
| | 3/19/2019 | 0.71 | 0.54 | 7.00 | 0.76 | 0.58 | 7.50 | 0.63 | 0.67 | 8.00 | 0.71 | 0.63 | 8.50 | 0.76 | 0.67 | 9.00 | 0.66 | 0.67 | 9.50 | 0.68 | 0.75 | 10.00 | 0.63 | 0.83 | 10.50 | 0.39 | 0.71 | 11.00 |
| | 5/21/2019 | 0.98 | 0.67 | 7.00 | 0.94 | 0.67 | 7.50 | 0.98 | 0.67 | 8.00 | 0.99 | 0.67 | 8.50 | 0.90 | 0.75 | 9.00 | 0.94 | 0.83 | 9.50 | 0.90 | 1.00 | 10.00 | 0.92 | 1.00 | 10.50 | 0.95 | 0.75 | 11.00 |
| SW-18 | 5/30/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 7/12/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 10/17/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 3/19/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 5/21/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

Notes on Page 9.

| Location | Date | Segment 15 | | | Segment 16 | | | Segment 17 | | | Segment 18 | | | Segment 19 | | | Segment 20 | | | Segment 21 | | | Segment 22 | | | Segment 23 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | v15 (ft/sec) | d15 (ft) | b15 (ft) | v16 (ft/sec) | d16 (ft) | b16 (ft) | v17 (ft/sec) | d17 (ft) | b17 (ft) | v18 (ft/sec) | d18 (ft) | b18 (ft) | v19 (ft/sec) | d19 (ft) | b19 (ft) | v20 (ft/sec) | d20 (ft) | b20 (ft) | v21 (ft/sec) | d21 (ft) | b21 (ft) | v22(ft/sec) | d22(ft) | b22 (ft) | v23 (ft/sec) | d23 (ft) | b23 (ft) |
| SW-20 | 5/30/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 7/12/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 10/18/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 3/19/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 5/21/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| SW-21 | 5/30/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 10/18/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 3/19/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 5/21/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| SW-22 | 10/18/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 4/4/2019 | 0.01 | 0.58 | 7.00 | 0.00 | 0.38 | 7.50 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 5/22/2019 | 0.07 | 0.83 | 7.00 | 0.03 | 0.75 | 7.50 | 0.01 | 0.66 | 8.00 | 0.01 | 0.41 | 8.50 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 8/21/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| SW-24 | 5/31/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 8/9/2018 | 0.00 | 0.33 | 7.00 | 0.00 | 0.54 | 7.50 | 0.00 | 0.40 | 8.00 | 0.00 | 0.25 | 8.50 | 0.00 | 0.15 | 9.00 | 0.00 | 0.15 | 9.50 | - | - | - | - | - | - | - | - | - |
| | 10/18/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 4/4/2019 | 0.01 | 0.83 | 7.00 | 0.02 | 1.00 | 7.50 | 0.02 | 0.96 | 8.00 | 0.01 | 1.00 | 8.50 | 0.01 | 0.92 | 9.00 | 0.02 | 1.04 | 9.50 | 0.00 | 1.00 | 10.00 | 0.01 | 1.04 | 10.50 | 0.00 | 1.08 | 11.00 |
| | 5/22/2019 | 0.03 | 1.50 | 7.00 | 0.03 | 1.50 | 7.50 | 0.03 | 1.42 | 8.00 | 0.06 | 1.42 | 8.50 | 0.06 | 1.50 | 9.00 | 0.09 | 1.42 | 9.50 | 0.10 | 1.25 | 10.00 | 0.08 | 1.08 | 10.50 | 0.04 | 0.83 | 11.00 |
| | 8/21/2019 | 0.00 | 0.75 | 7.00 | 0.00 | 0.65 | 7.50 | 0.00 | 0.20 | 8.00 | 0.00 | 0.40 | 8.50 | 0.00 | 0.45 | 9.00 | 0.00 | 0.10 | 9.50 | - | - | - | - | - | - | - | - | - |
| SW-25 | 5/31/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 10/18/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 4/4/2019 | 0.07 | 0.25 | 7.00 | 0.07 | 0.21 | 7.50 | 0.02 | 0.13 | 8.00 | 0.00 | 0.04 | 8.50 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 5/22/2019 | 0.01 | 0.08 | 7.00 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 8/21/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| SW-26 | 5/31/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 10/17/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 4/4/2019 | 0.02 | 0.83 | 7.00 | 0.02 | 0.63 | 7.50 | 0.00 | 0.50 | 8.00 | 0.00 | 0.42 | 8.50 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 5/22/2019 | 0.32 | 1.58 | 7.00 | 0.07 | 1.58 | 7.50 | 0.10 | 1.41 | 8.00 | 0.09 | 1.25 | 8.50 | 0.08 | 1.08 | 9.00 | 0.08 | 1.08 | 9.50 | 0.06 | 0.91 | 10.00 | 0.02 | 0.83 | 10.50 | 0.01 | 0.66 | 11.00 |
| | 8/21/2019 | 0.00 | 0.75 | 7.00 | 0.00 | 0.80 | 7.50 | 0.00 | 0.80 | 8.00 | 0.00 | 0.50 | 8.50 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| SW-27 | 5/31/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 8/9/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 10/17/2018 | 0.02 | 1.2 | 7 | 0.01 | 1.25 | 7.5 | 0.01 | 1.3 | 8 | 0.01 | 1.25 | 8.5 | 0.01 | 1.1 | 9 | 0.01 | 0.9 | 9.5 | 0 | 0.85 | 10 | 0 | 0.6 | 10.5 | 0 | 0 | 11 |
| | 4/4/2019 | 0.00 | 1.50 | 7.00 | 0.01 | 1.58 | 7.50 | 0.01 | 1.63 | 8.00 | 0.02 | 1.54 | 8.50 | 0.02 | 1.50 | 9.00 | 0.01 | 1.33 | 9.50 | 0.00 | 1.29 | 10.00 | 0.00 | 1.13 | 10.50 | 0.00 | 1.00 | 11.00 |
| | 5/22/2019 | 0.09 | 1.75 | 7.00 | 0.09 | 1.83 | 7.50 | 0.09 | 1.91 | 8.00 | 0.09 | 1.91 | 8.50 | 0.08 | 2.00 | 9.00 | 0.07 | 1.91 | 9.50 | 0.07 | 1.75 | 10.00 | 0.06 | 1.75 | 10.50 | 0.04 | 1.58 | 11.00 |
| | 8/21/2019 | 0.04 | 1.00 | 7.00 | 0.04 | 0.90 | 7.50 | 0.05 | 0.90 | 8.00 | 0.03 | 0.85 | 8.50 | 0.04 | 0.85 | 9.00 | 0.04 | 1.00 | 9.50 | 0.03 | 0.90 | 10.00 | 0.03 | 0.80 | 10.50 | 0.04 | 0.70 | 11.00 |
| SW-28 | 10/16/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 4/2/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 5/22/2019 | 0.13 | 1.91 | 7.00 | 0.08 | 2.00 | 7.50 | 0.04 | 1.75 | 8.00 | 0.04 | 1.33 | 8.50 | 0.03 | 1.50 | 9.00 | 0.02 | 1.16 | 9.50 | 0.01 | 0.83 | 10.00 | - | - | - | - | - | - |
| SW-29 | 7/11/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 10/16/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 4/2/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 5/22/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

Notes on Page 9.

| Location | Date | Segment 15 | | | Segment 16 | | | Segment 17 | | | Segment 18 | | | Segment 19 | | | Segment 20 | | | Segment 21 | | | Segment 22 | | | Segment 23 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | v15 (ft/sec) | d15 (ft) | b15 (ft) | v16 (ft/sec) | d16 (ft) | b16 (ft) | v17 (ft/sec) | d17 (ft) | b17 (ft) | v18 (ft/sec) | d18 (ft) | b18 (ft) | v19 (ft/sec) | d19 (ft) | b19 (ft) | v20 (ft/sec) | d20 (ft) | b20 (ft) | v21 (ft/sec) | d21 (ft) | b21 (ft) | v22(ft/sec) | d22(ft) | b22 (ft) | v23 (ft/sec) | d23 (ft) | b23 (ft) |
| SW-30 | 7/11/2018 | 0.07 | 2.10 | 15.00 | 0.02 | 1.70 | 17.00 | 0.02 | 1.25 | 18.00 | 0.00 | 0.30 | 19.00 | 0.00 | 0.00 | 20.00 | - | - | - | - | - | - | - | - | - | - | - | - |
| | 10/16/2018 | -0.07 | 2 | 7 | -0.1 | 2.4 | 7.5 | -0.08 | 2.6 | 8 | -0.06 | 2.75 | 8.5 | -0.04 | 2.65 | 9 | -0.22 | 2.8 | 9.5 | -0.36 | 2.3 | 10 | -0.09 | 2.4 | 10.5 | -0.13 | 2.4 | 11 |
| | 4/2/2019 | 0.10 | 2.67 | 7.00 | 0.09 | 2.58 | 7.50 | 0.06 | 2.67 | 8.00 | 0.07 | 2.58 | 8.50 | 0.07 | 2.67 | 9.00 | 0.05 | 2.50 | 9.50 | 0.05 | 2.58 | 10.00 | 0.06 | 2.75 | 10.50 | 0.08 | 2.67 | 11.00 |
| | 5/22/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| SW-31 | 7/11/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 10/16/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 4/2/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 5/22/2019 | 0.77 | 2.08 | 7.00 | 0.65 | 1.50 | 7.50 | 0.62 | 1.41 | 8.00 | 0.48 | 0.91 | 8.50 | 0.31 | 0.25 | 9.00 | 0.15 | 0.33 | 9.50 | - | - | - | - | - | - | - | - | - |
| SW-32 | 7/12/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 10/17/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 4/2/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 5/21/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| SW-33 | 7/13/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 10/17/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 4/2/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 5/21/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| SW-34 | 7/16/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 10/16/2018 | 0 | 0.5 | 7 | 0 | 0 | 7.5 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 4/2/2019 | 1.00 | 1.00 | 7.00 | 0.05 | 0.92 | 7.50 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 5/22/2019 | 0.02 | 1.33 | 7.00 | 0.83 | 1.50 | 7.50 | 0.98 | 1.50 | 8.00 | 0.97 | 1.58 | 8.50 | 0.91 | 1.67 | 9.00 | 0.95 | 1.67 | 9.50 | 0.96 | 1.67 | 10.00 | 1.03 | 1.91 | 10.50 | 1.17 | 1.91 | 11.00 |
| SW-35 | 10/17/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 4/2/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 5/21/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| SW-36 | 10/16/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 4/2/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 5/22/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

**Notes:**
b = distance from bank recorded in nth segment (ft)
d = depth of water recorded in nth segment (ft)
NM = Not Measured, ft,ft/s
NR = Not Recorded
v = velocity (ft/sec)

| Location | Date | Segment 24 | | | Segment 25 | | | Segment 26 | | | Segment 27 | | | Segment 28 | | | Segment 29 | | | Segment 30 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | v24 (ft/sec) | d24 (ft) | b24 (ft) | v25 (ft/sec) | d25 (ft) | b25 (ft) | v26 (ft/sec) | d26 (ft) | b26 (ft) | v27 (ft/sec) | d27 (ft) | b27 (ft) | v28 (ft/sec) | d28 (ft) | b28 (ft) | v29 (ft/sec) | d29 (ft) | b29 (ft) | v30 (ft/sec) | d30 (ft) | b30 (ft) |
| SW-10 | 5/29/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 7/13/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 10/17/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 4/2/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 5/22/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| SW-11 | 5/29/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 10/17/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 4/2/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 5/21/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| SW-12 | 5/29/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 10/17/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 4/2/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 5/22/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 8/21/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| SW-13 | 5/29/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 10/17/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 4/2/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 5/22/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| SW-15 | 5/30/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 7/11/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 8/9/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 10/16/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 3/19/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 5/21/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| SW-16 | 5/30/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 7/12/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 8/9/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 10/16/2018 | 0.57 | 0.85 | 11.5 | 0.41 | 0.8 | 12 | 0.43 | 0.8 | 12.5 | 0.3 | 0.7 | 13 | 0.19 | 0.6 | 13.5 | 0.14 | 0.45 | 14 | 0.04 | 0.15 | 14.5 |
| | 3/19/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 5/21/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| SW-17 | 5/30/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 7/12/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 8/9/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 10/16/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 3/19/2019 | 0.32 | 0.54 | 11.50 | 0.09 | 0.17 | 12.00 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 5/21/2019 | 0.51 | 0.58 | 11.50 | 0.16 | 0.25 | 12.00 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| SW-18 | 5/30/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 7/12/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 10/17/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 3/19/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 5/21/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

Notes on Page 12.

| Location | Date | Segment 24 | | | Segment 25 | | | Segment 26 | | | Segment 27 | | | Segment 28 | | | Segment 29 | | | Segment 30 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | v24 (ft/sec) | d24 (ft) | b24 (ft) | v25 (ft/sec) | d25 (ft) | b25 (ft) | v26 (ft/sec) | d26 (ft) | b26 (ft) | v27 (ft/sec) | d27 (ft) | b27 (ft) | v28 (ft/sec) | d28 (ft) | b28 (ft) | v29 (ft/sec) | d29 (ft) | b29 (ft) | v30 (ft/sec) | d30 (ft) | b30 (ft) |
| SW-20 | 5/30/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 7/12/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 10/18/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 3/19/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 5/21/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| SW-21 | 5/30/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 10/18/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 3/19/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 5/21/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| SW-22 | 10/18/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 4/4/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 5/22/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 8/21/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| SW-24 | 5/31/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 8/9/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 10/18/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 4/4/2019 | 0.00 | 1.00 | 11.50 | 0.00 | 0.83 | 12.00 | 0.00 | 0.54 | 12.50 | 0.00 | 0.42 | 13.00 | 0.00 | 0.25 | 13.50 | - | - | - | - | - | - |
| | 5/22/2019 | 0.04 | 0.58 | 11.50 | 0.02 | 0.42 | 12.00 | 0.01 | 0.33 | 12.50 | 0.01 | 0.25 | 13.00 | - | - | - | - | - | - | - | - | - |
| | 8/21/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| SW-25 | 5/31/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 10/18/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 4/4/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 5/22/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 8/21/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| SW-26 | 5/31/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 10/17/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 4/4/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 5/22/2019 | 0.01 | 0.50 | 11.50 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 8/21/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| SW-27 | 5/31/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 8/9/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 10/17/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 4/4/2019 | 0.00 | 0.92 | 11.50 | 0.00 | 0.75 | 12.00 | 0.00 | 0.46 | 12.50 | - | - | - | - | - | - | - | - | - | - | - | - |
| | 5/22/2019 | 0.01 | 1.41 | 11.50 | 0.01 | 1.16 | 12.00 | 0.01 | 1.00 | 12.50 | 0.01 | 0.58 | 13.00 | - | - | - | - | - | - | - | - | - |
| | 8/21/2019 | 0.00 | 0.70 | 11.50 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| SW-28 | 10/16/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 4/2/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 5/22/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| SW-29 | 7/11/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 10/16/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 4/2/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 5/22/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

Notes on Page 12.

| Location | Date | Segment 24 | | | Segment 25 | | | Segment 26 | | | Segment 27 | | | Segment 28 | | | Segment 29 | | | Segment 30 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | v24 (ft/sec) | d24 (ft) | b24 (ft) | v25 (ft/sec) | d25 (ft) | b25 (ft) | v26 (ft/sec) | d26 (ft) | b26 (ft) | v27 (ft/sec) | d27 (ft) | b27 (ft) | v28 (ft/sec) | d28 (ft) | b28 (ft) | v29 (ft/sec) | d29 (ft) | b29 (ft) | v30 (ft/sec) | d30 (ft) | b30 (ft) |
| SW-30 | 7/11/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 10/16/2018 | -0.17 | 2.55 | 11.5 | -0.27 | 2.4 | 12 | -0.24 | 2.3 | 12.5 | -0.18 | 1.9 | 13 | -0.13 | 1.65 | 13.5 | 0.04 | 1.55 | 14 | 0.05 | 1.3 | 14.5 |
| | 4/2/2019 | 0.07 | 2.75 | 11.50 | 0.05 | 2.58 | 12.00 | 0.05 | 2.50 | 12.50 | 0.02 | 2.50 | 13.00 | 0.00 | 2.67 | 13.50 | -0.02 | 2.25 | 14.00 | -0.03 | 2.25 | 14.50 |
| | 5/22/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| SW-31 | 7/11/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 10/16/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 4/2/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 5/22/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| SW-32 | 7/12/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 10/17/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 4/2/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 5/21/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| SW-33 | 7/13/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 10/17/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 4/2/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 5/21/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| SW-34 | 7/16/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 10/16/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 4/2/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 5/22/2019 | 1.23 | 2.00 | 11.50 | 1.14 | 1.91 | 12.00 | 0.27 | 1.75 | 12.50 | -0.01 | 1.50 | 13.00 | - | - | - | - | - | - | - | - | - |
| SW-35 | 10/17/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 4/2/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 5/21/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| SW-36 | 10/16/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 4/2/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 5/22/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

**Notes:**
b = distance from bank recorded in nth segment (ft)
d = depth of water recorded in nth segment (ft)
NM = Not Measured, ft,ft/s
NR = Not Recorded
v = velocity (ft/sec)

| Location | Date | Segment 31 | | | Segment 32 | | | Segment 33 | | | Segment 34 | | | Segment 35 | | | Segment 36 | | | Segment 37 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | v31 (ft/sec) | d31 (ft) | b31 (ft) | v32 (ft/sec) | d32 (ft) | b32 (ft) | v33 (ft/sec) | d33 (ft) | b33 (ft) | v31 (ft/sec) | d34 (ft) | b34 (ft) | v35 (ft/sec) | d35 (ft) | b35 (ft) | v36 (ft/sec) | d36 (ft) | b36 (ft) | v37 (ft/sec) | d37 (ft) | b37 (ft) |
| SW-10 | 5/29/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 7/13/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 10/17/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 4/2/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 5/22/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| SW-11 | 5/29/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 10/17/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 4/2/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 5/21/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| SW-12 | 5/29/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 10/17/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 4/2/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 5/22/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 8/21/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| SW-13 | 5/29/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 10/17/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 4/2/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 5/22/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| SW-15 | 5/30/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 7/11/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 8/9/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 10/16/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 3/19/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 5/21/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| SW-16 | 5/30/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 7/12/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 8/9/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 10/16/2018 | 0.01 | 0.05 | 15 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 3/19/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 5/21/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| SW-17 | 5/30/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 7/12/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 8/9/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 10/16/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 3/19/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 5/21/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| SW-18 | 5/30/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 7/12/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 10/17/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 3/19/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 5/21/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

Notes on Page 15.

| Location | Date | Segment 31 | | | Segment 32 | | | Segment 33 | | | Segment 34 | | | Segment 35 | | | Segment 36 | | | Segment 37 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | v31 (ft/sec) | d31 (ft) | b31 (ft) | v32 (ft/sec) | d32 (ft) | b32 (ft) | v33 (ft/sec) | d33 (ft) | b33 (ft) | v31 (ft/sec) | d34 (ft) | b34 (ft) | v35 (ft/sec) | d35 (ft) | b35 (ft) | v36 (ft/sec) | d36 (ft) | b36 (ft) | v37 (ft/sec) | d37 (ft) | b37 (ft) |
| SW-20 | 5/30/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 7/12/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 10/18/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 3/19/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 5/21/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| SW-21 | 5/30/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 10/18/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 3/19/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 5/21/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| SW-22 | 10/18/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 4/4/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 5/22/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 8/21/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| SW-24 | 5/31/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 8/9/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 10/18/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 4/4/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 5/22/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 8/21/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| SW-25 | 5/31/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 10/18/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 4/4/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 5/22/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 8/21/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| SW-26 | 5/31/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 10/17/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 4/4/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 5/22/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 8/21/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| SW-27 | 5/31/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 8/9/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 10/17/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 4/4/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 5/22/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 8/21/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| SW-28 | 10/16/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 4/2/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 5/22/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| SW-29 | 7/11/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 10/16/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 4/2/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 5/22/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

Notes on Page 15.

| Location | Date | Segment 31 | | | Segment 32 | | | Segment 33 | | | Segment 34 | | | Segment 35 | | | Segment 36 | | | Segment 37 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | v31 (ft/sec) | d31 (ft) | b31 (ft) | v32 (ft/sec) | d32 (ft) | b32 (ft) | v33 (ft/sec) | d33 (ft) | b33 (ft) | v31 (ft/sec) | d34 (ft) | b34 (ft) | v35 (ft/sec) | d35 (ft) | b35 (ft) | v36 (ft/sec) | d36 (ft) | b36 (ft) | v37 (ft/sec) | d37 (ft) | b37 (ft) |
| SW-30 | 7/11/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 10/16/2018 | -0.05 | 1.1 | 15 | -0.07 | 0.9 | 15.5 | -0.07 | 0.75 | 16 | -0.03 | 0.5 | 16.5 | 0.02 | 0.25 | 17 | 0 | 0 | 17 | - | - | - |
| | 4/2/2019 | -0.02 | 2.00 | 15.00 | -0.04 | 1.92 | 15.50 | -0.02 | 1.75 | 16.00 | -0.04 | 1.67 | 16.50 | -0.04 | 1.67 | 17.00 | -0.03 | 1.25 | 17.50 | -0.02 | 0.75 | 18.00 |
| | 5/22/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| SW-31 | 7/11/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 10/16/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 4/2/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 5/22/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| SW-32 | 7/12/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 10/17/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 4/2/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 5/21/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| SW-33 | 7/13/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 10/17/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 4/2/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 5/21/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| SW-34 | 7/16/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 10/16/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 4/2/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 5/22/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| SW-35 | 10/17/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 4/2/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 5/21/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| SW-36 | 10/16/2018 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 4/2/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 5/22/2019 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

**Notes:**
b = distance from bank recorded in nth segment (ft)
d = depth of water recorded in nth segment (ft)
NM = Not Measured, ft,ft/s
NR = Not Recorded
v = velocity (ft/sec)

# APPENDIX J

## Soil Physical Parameter Results

# ANALYTICAL REPORT

Job Number: 200-44940-1

Job Description: Marinette, WI  WI001605.0009.00004

For:
ARCADIS U.S., Inc.
126 North Jefferson Street
Suite 400
Milwaukee, WI  53202

Attention:  Lisa Rutkowski

Approved for release.
Sandie J Fredrick
Project Manager II
9/4/2018 2:48 PM

Sandie J Fredrick, Project Manager II
2417 Bond Street, University Park, IL, 60484
(920)261-1660
sandie.fredrick@testamericainc.com
09/04/2018

All questions regarding this test report should be directed to the TestAmerica Project Manager whose signature appears on this report. All pages of this report are integral parts of the analytical data. Therefore, this report should be reproduced only in its entirety.

Reporting limits are adjusted for sample size used, dilutions and moisture content if applicable.

# Table of Contents


Cover Title Page . . . . . 1

Data Summaries . . . . . 3

- Definitions . . . . . 3
- Case Narrative . . . . . 4
- Client Sample Results . . . . . 5
- QC Association . . . . . 51
- Chronicle . . . . . 52
- Certification Summary . . . . . 55
- Method Summary . . . . . 56
- Sample Summary . . . . . 57

Inorganic Sample Data . . . . . 58

- Geotechnical Data . . . . . 58
  - Geo Cover Page . . . . . 58
  - Geo Sample Data . . . . . 59
  - Geo Prep Data . . . . . 75

Shipping and Receiving Documents . . . . . 76

- Client Chain of Custody . . . . . 77
- Sample Receipt Checklist . . . . . 80

## Glossary

| Abbreviation | These commonly used abbreviations may or may not be present in this report. |
|---|---|
| ¤ | Listed under the "D" column to designate that the result is reported on a dry weight basis |
| %R | Percent Recovery |
| CFL | Contains Free Liquid |
| CNF | Contains No Free Liquid |
| DER | Duplicate Error Ratio (normalized absolute difference) |
| Dil Fac | Dilution Factor |
| DL | Detection Limit (DoD/DOE) |
| DL, RA, RE, IN | Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample |
| DLC | Decision Level Concentration (Radiochemistry) |
| EDL | Estimated Detection Limit (Dioxin) |
| LOD | Limit of Detection (DoD/DOE) |
| LOQ | Limit of Quantitation (DoD/DOE) |
| MDA | Minimum Detectable Activity (Radiochemistry) |
| MDC | Minimum Detectable Concentration (Radiochemistry) |
| MDL | Method Detection Limit |
| ML | Minimum Level (Dioxin) |
| NC | Not Calculated |
| ND | Not Detected at the reporting limit (or MDL or EDL if shown) |
| PQL | Practical Quantitation Limit |
| QC | Quality Control |
| RER | Relative Error Ratio (Radiochemistry) |
| RL | Reporting Limit or Requested Limit (Radiochemistry) |
| RPD | Relative Percent Difference, a measure of the relative difference between two points |
| TEF | Toxicity Equivalent Factor (Dioxin) |
| TEQ | Toxicity Equivalent Quotient (Dioxin) |

**Comments**
No additional comments.

**Receipt**
The samples were received on 8/23/2018 10:30 AM; the samples arrived in good condition, properly preserved and, where required, on ice.

**Geotechnical**
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

## Client Sample ID: VAP-26 (78)

**Lab Sample ID: 200-44940-1**
**Date Collected: 06/12/18 00:00**
**Matrix: Solid**
**Date Received: 08/23/18 10:30**

### Method: D422 - Grain Size

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Gravel | 14.2 | | | | % | | | 08/27/18 20:36 | 1 |
| Sieve Size 3 inch - Percent Finer | 100.0 | | | | % Passing | | | 08/27/18 20:36 | 1 |
| Sand | 34.7 | | | | % | | | 08/27/18 20:36 | 1 |
| Sieve Size 2 inch - Percent Finer | 100.0 | | | | % Passing | | | 08/27/18 20:36 | 1 |
| Coarse Sand | 6.2 | | | | % | | | 08/27/18 20:36 | 1 |
| Sieve Size 1.5 inch - Percent Finer | 100.0 | | | | % Passing | | | 08/27/18 20:36 | 1 |
| Medium Sand | 7.0 | | | | % | | | 08/27/18 20:36 | 1 |
| Sieve Size 1 inch - Percent Finer | 100.0 | | | | % Passing | | | 08/27/18 20:36 | 1 |
| Fine Sand | 21.5 | | | | % | | | 08/27/18 20:36 | 1 |
| Sieve Size 0.75 inch - Percent Finer | 100.0 | | | | % Passing | | | 08/27/18 20:36 | 1 |
| Sieve Size 0.375 inch - Percent Finer | 93.9 | | | | % Passing | | | 08/27/18 20:36 | 1 |
| Silt | 30.6 | | | | % | | | 08/27/18 20:36 | 1 |
| Clay | 20.5 | | | | % | | | 08/27/18 20:36 | 1 |
| Sieve Size #4 - Percent Finer | 85.8 | | | | % Passing | | | 08/27/18 20:36 | 1 |
| Sieve Size #10 - Percent Finer | 79.6 | | | | % Passing | | | 08/27/18 20:36 | 1 |
| Sieve Size #20 - Percent Finer | 76.2 | | | | % Passing | | | 08/27/18 20:36 | 1 |
| Sieve Size #40 - Percent Finer | 72.6 | | | | % Passing | | | 08/27/18 20:36 | 1 |
| Sieve Size #60 - Percent Finer | 66.1 | | | | % Passing | | | 08/27/18 20:36 | 1 |
| Sieve Size #80 - Percent Finer | 62.1 | | | | % Passing | | | 08/27/18 20:36 | 1 |
| Sieve Size #100 - Percent Finer | 58.5 | | | | % Passing | | | 08/27/18 20:36 | 1 |
| Sieve Size #200 - Percent Finer | 51.1 | | | | % Passing | | | 08/27/18 20:36 | 1 |
| Hydrometer Reading 1 - Percent Finer | 34.8 | | | | % Passing | | | 08/27/18 20:36 | 1 |
| Hydrometer Reading 2 - Percent Finer | 30.3 | | | | % Passing | | | 08/27/18 20:36 | 1 |
| Hydrometer Reading 3 - Percent Finer | 25.0 | | | | % Passing | | | 08/27/18 20:36 | 1 |
| Hydrometer Reading 4 - Percent Finer | 22.3 | | | | % Passing | | | 08/27/18 20:36 | 1 |
| Hydrometer Reading 5 - Percent Finer | 20.5 | | | | % Passing | | | 08/27/18 20:36 | 1 |
| Hydrometer Reading 6 - Percent Finer | 16.1 | | | | % Passing | | | 08/27/18 20:36 | 1 |
| Hydrometer Reading 7 - Percent Finer | 12.5 | | | | % Passing | | | 08/27/18 20:36 | 1 |

## Client Sample ID: VAP-26 (72-75)

**Lab Sample ID: 200-44940-2**
**Date Collected: 06/12/18 00:00**
**Matrix: Solid**
**Date Received: 08/23/18 10:30**

### Method: D422 - Grain Size

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Gravel | 0.0 | | | | % | | | 08/27/18 20:41 | 1 |
| Sieve Size 3 inch - Percent Finer | 100.0 | | | | % Passing | | | 08/27/18 20:41 | 1 |
| Sand | 57.3 | | | | % | | | 08/27/18 20:41 | 1 |
| Sieve Size 2 inch - Percent Finer | 100.0 | | | | % Passing | | | 08/27/18 20:41 | 1 |
| Coarse Sand | 0.0 | | | | % | | | 08/27/18 20:41 | 1 |
| Sieve Size 1.5 inch - Percent Finer | 100.0 | | | | % Passing | | | 08/27/18 20:41 | 1 |
| Medium Sand | 0.2 | | | | % | | | 08/27/18 20:41 | 1 |
| Sieve Size 1 inch - Percent Finer | 100.0 | | | | % Passing | | | 08/27/18 20:41 | 1 |

## Client Sample ID: VAP-26 (72-75)

**Lab Sample ID: 200-44940-2**

**Date Collected: 06/12/18 00:00**

**Matrix: Solid**

**Date Received: 08/23/18 10:30**

### Method: D422 - Grain Size (Continued)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Fine Sand | 57.1 | | | | % | | | 08/27/18 20:41 | 1 |
| Sieve Size 0.75 inch - Percent Finer | 100.0 | | | | % Passing | | | 08/27/18 20:41 | 1 |
| Sieve Size 0.375 inch - Percent Finer | 100.0 | | | | % Passing | | | 08/27/18 20:41 | 1 |
| Silt | 38.1 | | | | % | | | 08/27/18 20:41 | 1 |
| Clay | 4.7 | | | | % | | | 08/27/18 20:41 | 1 |
| Sieve Size #4 - Percent Finer | 100.0 | | | | % Passing | | | 08/27/18 20:41 | 1 |
| Sieve Size #10 - Percent Finer | 100.0 | | | | % Passing | | | 08/27/18 20:41 | 1 |
| Sieve Size #20 - Percent Finer | 99.9 | | | | % Passing | | | 08/27/18 20:41 | 1 |
| Sieve Size #40 - Percent Finer | 99.8 | | | | % Passing | | | 08/27/18 20:41 | 1 |
| Sieve Size #60 - Percent Finer | 99.7 | | | | % Passing | | | 08/27/18 20:41 | 1 |
| Sieve Size #80 - Percent Finer | 99.6 | | | | % Passing | | | 08/27/18 20:41 | 1 |
| Sieve Size #100 - Percent Finer | 98.5 | | | | % Passing | | | 08/27/18 20:41 | 1 |
| Sieve Size #200 - Percent Finer | 42.7 | | | | % Passing | | | 08/27/18 20:41 | 1 |
| Hydrometer Reading 1 - Percent Finer | 19.9 | | | | % Passing | | | 08/27/18 20:41 | 1 |
| Hydrometer Reading 2 - Percent Finer | 12.6 | | | | % Passing | | | 08/27/18 20:41 | 1 |
| Hydrometer Reading 3 - Percent Finer | 6.6 | | | | % Passing | | | 08/27/18 20:41 | 1 |
| Hydrometer Reading 4 - Percent Finer | 5.3 | | | | % Passing | | | 08/27/18 20:41 | 1 |
| Hydrometer Reading 5 - Percent Finer | 4.7 | | | | % Passing | | | 08/27/18 20:41 | 1 |
| Hydrometer Reading 6 - Percent Finer | 3.3 | | | | % Passing | | | 08/27/18 20:41 | 1 |
| Hydrometer Reading 7 - Percent Finer | 2.7 | | | | % Passing | | | 08/27/18 20:41 | 1 |

## Client Sample ID: VAP-26 (84)

**Lab Sample ID: 200-44940-3**

**Date Collected: 06/12/18 00:00**

**Matrix: Solid**

**Date Received: 08/23/18 10:30**

### Method: D422 - Grain Size

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Gravel | 21.5 | | | | % | | | 08/27/18 20:43 | 1 |
| Sieve Size 3 inch - Percent Finer | 100.0 | | | | % Passing | | | 08/27/18 20:43 | 1 |
| Sand | 52.4 | | | | % | | | 08/27/18 20:43 | 1 |
| Sieve Size 2 inch - Percent Finer | 100.0 | | | | % Passing | | | 08/27/18 20:43 | 1 |
| Coarse Sand | 5.6 | | | | % | | | 08/27/18 20:43 | 1 |
| Sieve Size 1.5 inch - Percent Finer | 100.0 | | | | % Passing | | | 08/27/18 20:43 | 1 |
| Medium Sand | 11.1 | | | | % | | | 08/27/18 20:43 | 1 |
| Sieve Size 1 inch - Percent Finer | 100.0 | | | | % Passing | | | 08/27/18 20:43 | 1 |
| Fine Sand | 35.7 | | | | % | | | 08/27/18 20:43 | 1 |
| Sieve Size 0.75 inch - Percent Finer | 91.0 | | | | % Passing | | | 08/27/18 20:43 | 1 |
| Sieve Size 0.375 inch - Percent Finer | 85.1 | | | | % Passing | | | 08/27/18 20:43 | 1 |
| Silt | 17.2 | | | | % | | | 08/27/18 20:43 | 1 |
| Clay | 8.9 | | | | % | | | 08/27/18 20:43 | 1 |
| Sieve Size #4 - Percent Finer | 78.5 | | | | % Passing | | | 08/27/18 20:43 | 1 |

## Client Sample ID: VAP-26 (84)

**Lab Sample ID: 200-44940-3**

**Date Collected: 06/12/18 00:00**

**Matrix: Solid**

**Date Received: 08/23/18 10:30**

### Method: D422 - Grain Size (Continued)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Sieve Size #10 - Percent Finer | 72.9 | | | | % Passing | | | 08/27/18 20:43 | 1 |
| Sieve Size #20 - Percent Finer | 68.2 | | | | % Passing | | | 08/27/18 20:43 | 1 |
| Sieve Size #40 - Percent Finer | 61.8 | | | | % Passing | | | 08/27/18 20:43 | 1 |
| Sieve Size #60 - Percent Finer | 49.0 | | | | % Passing | | | 08/27/18 20:43 | 1 |
| Sieve Size #80 - Percent Finer | 40.7 | | | | % Passing | | | 08/27/18 20:43 | 1 |
| Sieve Size #100 - Percent Finer | 35.9 | | | | % Passing | | | 08/27/18 20:43 | 1 |
| Sieve Size #200 - Percent Finer | 26.1 | | | | % Passing | | | 08/27/18 20:43 | 1 |
| Hydrometer Reading 1 - Percent Finer | 16.2 | | | | % Passing | | | 08/27/18 20:43 | 1 |
| Hydrometer Reading 2 - Percent Finer | 14.2 | | | | % Passing | | | 08/27/18 20:43 | 1 |
| Hydrometer Reading 3 - Percent Finer | 11.4 | | | | % Passing | | | 08/27/18 20:43 | 1 |
| Hydrometer Reading 4 - Percent Finer | 10.1 | | | | % Passing | | | 08/27/18 20:43 | 1 |
| Hydrometer Reading 5 - Percent Finer | 8.9 | | | | % Passing | | | 08/27/18 20:43 | 1 |
| Hydrometer Reading 6 - Percent Finer | 6.9 | | | | % Passing | | | 08/27/18 20:43 | 1 |
| Hydrometer Reading 7 - Percent Finer | 5.3 | | | | % Passing | | | 08/27/18 20:43 | 1 |

## Client Sample ID: VAP-27 (79)

**Lab Sample ID: 200-44940-4**

**Date Collected: 06/22/18 00:00**

**Matrix: Solid**

**Date Received: 08/23/18 10:30**

### Method: D422 - Grain Size

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Gravel | 0.0 | | | | % | | | 08/27/18 20:45 | 1 |
| Sieve Size 3 inch - Percent Finer | 100.0 | | | | % Passing | | | 08/27/18 20:45 | 1 |
| Sand | 41.8 | | | | % | | | 08/27/18 20:45 | 1 |
| Sieve Size 2 inch - Percent Finer | 100.0 | | | | % Passing | | | 08/27/18 20:45 | 1 |
| Coarse Sand | 0.0 | | | | % | | | 08/27/18 20:45 | 1 |
| Sieve Size 1.5 inch - Percent Finer | 100.0 | | | | % Passing | | | 08/27/18 20:45 | 1 |
| Medium Sand | 0.3 | | | | % | | | 08/27/18 20:45 | 1 |
| Sieve Size 1 inch - Percent Finer | 100.0 | | | | % Passing | | | 08/27/18 20:45 | 1 |
| Fine Sand | 41.5 | | | | % | | | 08/27/18 20:45 | 1 |
| Sieve Size 0.75 inch - Percent Finer | 100.0 | | | | % Passing | | | 08/27/18 20:45 | 1 |
| Sieve Size 0.375 inch - Percent Finer | 100.0 | | | | % Passing | | | 08/27/18 20:45 | 1 |
| Silt | 51.9 | | | | % | | | 08/27/18 20:45 | 1 |
| Clay | 6.3 | | | | % | | | 08/27/18 20:45 | 1 |
| Sieve Size #4 - Percent Finer | 100.0 | | | | % Passing | | | 08/27/18 20:45 | 1 |
| Sieve Size #10 - Percent Finer | 100.0 | | | | % Passing | | | 08/27/18 20:45 | 1 |
| Sieve Size #20 - Percent Finer | 99.8 | | | | % Passing | | | 08/27/18 20:45 | 1 |
| Sieve Size #40 - Percent Finer | 99.7 | | | | % Passing | | | 08/27/18 20:45 | 1 |
| Sieve Size #60 - Percent Finer | 99.5 | | | | % Passing | | | 08/27/18 20:45 | 1 |
| Sieve Size #80 - Percent Finer | 99.3 | | | | % Passing | | | 08/27/18 20:45 | 1 |
| Sieve Size #100 - Percent Finer | 98.9 | | | | % Passing | | | 08/27/18 20:45 | 1 |
| Sieve Size #200 - Percent Finer | 58.2 | | | | % Passing | | | 08/27/18 20:45 | 1 |

## Client Sample ID: VAP-27 (79)

**Lab Sample ID: 200-44940-4**

**Date Collected: 06/22/18 00:00**
**Matrix: Solid**
**Date Received: 08/23/18 10:30**

### Method: D422 - Grain Size (Continued)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Hydrometer Reading 1 - Percent Finer | 26.8 | | | | % Passing | | | 08/27/18 20:45 | 1 |
| Hydrometer Reading 2 - Percent Finer | 19.4 | | | | % Passing | | | 08/27/18 20:45 | 1 |
| Hydrometer Reading 3 - Percent Finer | 9.7 | | | | % Passing | | | 08/27/18 20:45 | 1 |
| Hydrometer Reading 4 - Percent Finer | 8.0 | | | | % Passing | | | 08/27/18 20:45 | 1 |
| Hydrometer Reading 5 - Percent Finer | 6.3 | | | | % Passing | | | 08/27/18 20:45 | 1 |
| Hydrometer Reading 6 - Percent Finer | 5.1 | | | | % Passing | | | 08/27/18 20:45 | 1 |
| Hydrometer Reading 7 - Percent Finer | 4.0 | | | | % Passing | | | 08/27/18 20:45 | 1 |

## Client Sample ID: VAP-27 (83)

**Lab Sample ID: 200-44940-5**

**Date Collected: 06/22/18 00:00**
**Matrix: Solid**
**Date Received: 08/23/18 10:30**

### Method: D422 - Grain Size

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Gravel | 0.0 | | | | % | | | 08/27/18 20:47 | 1 |
| Sieve Size 3 inch - Percent Finer | 100.0 | | | | % Passing | | | 08/27/18 20:47 | 1 |
| Sand | 2.3 | | | | % | | | 08/27/18 20:47 | 1 |
| Sieve Size 2 inch - Percent Finer | 100.0 | | | | % Passing | | | 08/27/18 20:47 | 1 |
| Coarse Sand | 0.0 | | | | % | | | 08/27/18 20:47 | 1 |
| Sieve Size 1.5 inch - Percent Finer | 100.0 | | | | % Passing | | | 08/27/18 20:47 | 1 |
| Medium Sand | 0.3 | | | | % | | | 08/27/18 20:47 | 1 |
| Sieve Size 1 inch - Percent Finer | 100.0 | | | | % Passing | | | 08/27/18 20:47 | 1 |
| Fine Sand | 2.0 | | | | % | | | 08/27/18 20:47 | 1 |
| Sieve Size 0.75 inch - Percent Finer | 100.0 | | | | % Passing | | | 08/27/18 20:47 | 1 |
| Sieve Size 0.375 inch - Percent Finer | 100.0 | | | | % Passing | | | 08/27/18 20:47 | 1 |
| Silt | 42.7 | | | | % | | | 08/27/18 20:47 | 1 |
| Clay | 55.0 | | | | % | | | 08/27/18 20:47 | 1 |
| Sieve Size #4 - Percent Finer | 100.0 | | | | % Passing | | | 08/27/18 20:47 | 1 |
| Sieve Size #10 - Percent Finer | 100.0 | | | | % Passing | | | 08/27/18 20:47 | 1 |
| Sieve Size #20 - Percent Finer | 99.9 | | | | % Passing | | | 08/27/18 20:47 | 1 |
| Sieve Size #40 - Percent Finer | 99.7 | | | | % Passing | | | 08/27/18 20:47 | 1 |
| Sieve Size #60 - Percent Finer | 99.3 | | | | % Passing | | | 08/27/18 20:47 | 1 |
| Sieve Size #80 - Percent Finer | 99.1 | | | | % Passing | | | 08/27/18 20:47 | 1 |
| Sieve Size #100 - Percent Finer | 98.7 | | | | % Passing | | | 08/27/18 20:47 | 1 |
| Sieve Size #200 - Percent Finer | 97.7 | | | | % Passing | | | 08/27/18 20:47 | 1 |
| Hydrometer Reading 1 - Percent Finer | 81.8 | | | | % Passing | | | 08/27/18 20:47 | 1 |
| Hydrometer Reading 2 - Percent Finer | 75.8 | | | | % Passing | | | 08/27/18 20:47 | 1 |
| Hydrometer Reading 3 - Percent Finer | 68.4 | | | | % Passing | | | 08/27/18 20:47 | 1 |
| Hydrometer Reading 4 - Percent Finer | 62.5 | | | | % Passing | | | 08/27/18 20:47 | 1 |

## Client Sample ID: VAP-27 (83)

**Lab Sample ID: 200-44940-5**

**Date Collected: 06/22/18 00:00**
**Matrix: Solid**
**Date Received: 08/23/18 10:30**

### Method: D422 - Grain Size (Continued)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Hydrometer Reading 5 - Percent Finer | 55.0 | | | | % Passing | | | 08/27/18 20:47 | 1 |
| Hydrometer Reading 6 - Percent Finer | 44.6 | | | | % Passing | | | 08/27/18 20:47 | 1 |
| Hydrometer Reading 7 - Percent Finer | 32.7 | | | | % Passing | | | 08/27/18 20:47 | 1 |

## Client Sample ID: VAP-29 (27)

**Lab Sample ID: 200-44940-6**

**Date Collected: 06/26/18 00:00**
**Matrix: Solid**
**Date Received: 08/23/18 10:30**

### Method: D422 - Grain Size

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Gravel | 0.0 | | | | % | | | 08/27/18 20:50 | 1 |
| Sieve Size 3 inch - Percent Finer | 100.0 | | | | % Passing | | | 08/27/18 20:50 | 1 |
| Sand | 77.5 | | | | % | | | 08/27/18 20:50 | 1 |
| Sieve Size 2 inch - Percent Finer | 100.0 | | | | % Passing | | | 08/27/18 20:50 | 1 |
| Coarse Sand | 0.0 | | | | % | | | 08/27/18 20:50 | 1 |
| Sieve Size 1.5 inch - Percent Finer | 100.0 | | | | % Passing | | | 08/27/18 20:50 | 1 |
| Medium Sand | 0.1 | | | | % | | | 08/27/18 20:50 | 1 |
| Sieve Size 1 inch - Percent Finer | 100.0 | | | | % Passing | | | 08/27/18 20:50 | 1 |
| Fine Sand | 77.4 | | | | % | | | 08/27/18 20:50 | 1 |
| Sieve Size 0.75 inch - Percent Finer | 100.0 | | | | % Passing | | | 08/27/18 20:50 | 1 |
| Sieve Size 0.375 inch - Percent Finer | 100.0 | | | | % Passing | | | 08/27/18 20:50 | 1 |
| Silt | 19.3 | | | | % | | | 08/27/18 20:50 | 1 |
| Clay | 3.2 | | | | % | | | 08/27/18 20:50 | 1 |
| Sieve Size #4 - Percent Finer | 100.0 | | | | % Passing | | | 08/27/18 20:50 | 1 |
| Sieve Size #10 - Percent Finer | 100.0 | | | | % Passing | | | 08/27/18 20:50 | 1 |
| Sieve Size #20 - Percent Finer | 100.0 | | | | % Passing | | | 08/27/18 20:50 | 1 |
| Sieve Size #40 - Percent Finer | 99.9 | | | | % Passing | | | 08/27/18 20:50 | 1 |
| Sieve Size #60 - Percent Finer | 97.3 | | | | % Passing | | | 08/27/18 20:50 | 1 |
| Sieve Size #80 - Percent Finer | 85.8 | | | | % Passing | | | 08/27/18 20:50 | 1 |
| Sieve Size #100 - Percent Finer | 73.4 | | | | % Passing | | | 08/27/18 20:50 | 1 |
| Sieve Size #200 - Percent Finer | 22.5 | | | | % Passing | | | 08/27/18 20:50 | 1 |
| Hydrometer Reading 1 - Percent Finer | 7.7 | | | | % Passing | | | 08/27/18 20:50 | 1 |
| Hydrometer Reading 2 - Percent Finer | 5.9 | | | | % Passing | | | 08/27/18 20:50 | 1 |
| Hydrometer Reading 3 - Percent Finer | 4.5 | | | | % Passing | | | 08/27/18 20:50 | 1 |
| Hydrometer Reading 4 - Percent Finer | 3.6 | | | | % Passing | | | 08/27/18 20:50 | 1 |
| Hydrometer Reading 5 - Percent Finer | 3.2 | | | | % Passing | | | 08/27/18 20:50 | 1 |
| Hydrometer Reading 6 - Percent Finer | 2.3 | | | | % Passing | | | 08/27/18 20:50 | 1 |
| Hydrometer Reading 7 - Percent Finer | 1.4 | | | | % Passing | | | 08/27/18 20:50 | 1 |

## Client Sample ID: VAP-29 (53)

**Lab Sample ID: 200-44940-7**

**Date Collected: 06/27/18 00:00**

**Matrix: Solid**

**Date Received: 08/23/18 10:30**

### Method: D422 - Grain Size

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Gravel | 9.2 | | | | % | | | 08/27/18 20:52 | 1 |
| Sieve Size 3 inch - Percent Finer | 100.0 | | | | % Passing | | | 08/27/18 20:52 | 1 |
| Sand | 32.8 | | | | % | | | 08/27/18 20:52 | 1 |
| Sieve Size 2 inch - Percent Finer | 100.0 | | | | % Passing | | | 08/27/18 20:52 | 1 |
| Coarse Sand | 5.0 | | | | % | | | 08/27/18 20:52 | 1 |
| Sieve Size 1.5 inch - Percent Finer | 100.0 | | | | % Passing | | | 08/27/18 20:52 | 1 |
| Medium Sand | 6.2 | | | | % | | | 08/27/18 20:52 | 1 |
| Sieve Size 1 inch - Percent Finer | 100.0 | | | | % Passing | | | 08/27/18 20:52 | 1 |
| Fine Sand | 21.6 | | | | % | | | 08/27/18 20:52 | 1 |
| Sieve Size 0.75 inch - Percent Finer | 100.0 | | | | % Passing | | | 08/27/18 20:52 | 1 |
| Sieve Size 0.375 inch - Percent Finer | 95.8 | | | | % Passing | | | 08/27/18 20:52 | 1 |
| Silt | 43.9 | | | | % | | | 08/27/18 20:52 | 1 |
| Clay | 14.1 | | | | % | | | 08/27/18 20:52 | 1 |
| Sieve Size #4 - Percent Finer | 90.8 | | | | % Passing | | | 08/27/18 20:52 | 1 |
| Sieve Size #10 - Percent Finer | 85.8 | | | | % Passing | | | 08/27/18 20:52 | 1 |
| Sieve Size #20 - Percent Finer | 82.6 | | | | % Passing | | | 08/27/18 20:52 | 1 |
| Sieve Size #40 - Percent Finer | 79.6 | | | | % Passing | | | 08/27/18 20:52 | 1 |
| Sieve Size #60 - Percent Finer | 74.4 | | | | % Passing | | | 08/27/18 20:52 | 1 |
| Sieve Size #80 - Percent Finer | 70.4 | | | | % Passing | | | 08/27/18 20:52 | 1 |
| Sieve Size #100 - Percent Finer | 67.3 | | | | % Passing | | | 08/27/18 20:52 | 1 |
| Sieve Size #200 - Percent Finer | 58.0 | | | | % Passing | | | 08/27/18 20:52 | 1 |
| Hydrometer Reading 1 - Percent Finer | 33.1 | | | | % Passing | | | 08/27/18 20:52 | 1 |
| Hydrometer Reading 2 - Percent Finer | 26.3 | | | | % Passing | | | 08/27/18 20:52 | 1 |
| Hydrometer Reading 3 - Percent Finer | 20.4 | | | | % Passing | | | 08/27/18 20:52 | 1 |
| Hydrometer Reading 4 - Percent Finer | 15.6 | | | | % Passing | | | 08/27/18 20:52 | 1 |
| Hydrometer Reading 5 - Percent Finer | 14.1 | | | | % Passing | | | 08/27/18 20:52 | 1 |
| Hydrometer Reading 6 - Percent Finer | 9.7 | | | | % Passing | | | 08/27/18 20:52 | 1 |
| Hydrometer Reading 7 - Percent Finer | 6.8 | | | | % Passing | | | 08/27/18 20:52 | 1 |

## Client Sample ID: VAP-29 (74)

**Lab Sample ID: 200-44940-8**

**Date Collected: 06/27/18 00:00**

**Matrix: Solid**

**Date Received: 08/23/18 10:30**

### Method: D422 - Grain Size

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Gravel | 0.0 | | | | % | | | 08/28/18 17:22 | 1 |
| Sieve Size 3 inch - Percent Finer | 100.0 | | | | % Passing | | | 08/28/18 17:22 | 1 |
| Sand | 54.7 | | | | % | | | 08/28/18 17:22 | 1 |
| Sieve Size 2 inch - Percent Finer | 100.0 | | | | % Passing | | | 08/28/18 17:22 | 1 |
| Coarse Sand | 0.5 | | | | % | | | 08/28/18 17:22 | 1 |
| Sieve Size 1.5 inch - Percent Finer | 100.0 | | | | % Passing | | | 08/28/18 17:22 | 1 |
| Medium Sand | 9.6 | | | | % | | | 08/28/18 17:22 | 1 |
| Sieve Size 1 inch - Percent Finer | 100.0 | | | | % Passing | | | 08/28/18 17:22 | 1 |

## Client Sample ID: VAP-29 (74)

**Lab Sample ID: 200-44940-8**

**Date Collected: 06/27/18 00:00**

**Matrix: Solid**

**Date Received: 08/23/18 10:30**

### Method: D422 - Grain Size (Continued)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Fine Sand | 44.6 | | | | % | | | 08/28/18 17:22 | 1 |
| Sieve Size 0.75 inch - Percent Finer | 100.0 | | | | % Passing | | | 08/28/18 17:22 | 1 |
| Sieve Size 0.375 inch - Percent Finer | 100.0 | | | | % Passing | | | 08/28/18 17:22 | 1 |
| Silt | 27.8 | | | | % | | | 08/28/18 17:22 | 1 |
| Clay | 17.5 | | | | % | | | 08/28/18 17:22 | 1 |
| Sieve Size #4 - Percent Finer | 100.0 | | | | % Passing | | | 08/28/18 17:22 | 1 |
| Sieve Size #10 - Percent Finer | 99.5 | | | | % Passing | | | 08/28/18 17:22 | 1 |
| Sieve Size #20 - Percent Finer | 95.9 | | | | % Passing | | | 08/28/18 17:22 | 1 |
| Sieve Size #40 - Percent Finer | 89.9 | | | | % Passing | | | 08/28/18 17:22 | 1 |
| Sieve Size #60 - Percent Finer | 78.3 | | | | % Passing | | | 08/28/18 17:22 | 1 |
| Sieve Size #80 - Percent Finer | 67.5 | | | | % Passing | | | 08/28/18 17:22 | 1 |
| Sieve Size #100 - Percent Finer | 61.6 | | | | % Passing | | | 08/28/18 17:22 | 1 |
| Sieve Size #200 - Percent Finer | 45.3 | | | | % Passing | | | 08/28/18 17:22 | 1 |
| Hydrometer Reading 1 - Percent Finer | 30.0 | | | | % Passing | | | 08/28/18 17:22 | 1 |
| Hydrometer Reading 2 - Percent Finer | 26.5 | | | | % Passing | | | 08/28/18 17:22 | 1 |
| Hydrometer Reading 3 - Percent Finer | 22.3 | | | | % Passing | | | 08/28/18 17:22 | 1 |
| Hydrometer Reading 4 - Percent Finer | 19.6 | | | | % Passing | | | 08/28/18 17:22 | 1 |
| Hydrometer Reading 5 - Percent Finer | 17.5 | | | | % Passing | | | 08/28/18 17:22 | 1 |
| Hydrometer Reading 6 - Percent Finer | 13.3 | | | | % Passing | | | 08/28/18 17:22 | 1 |
| Hydrometer Reading 7 - Percent Finer | 9.8 | | | | % Passing | | | 08/28/18 17:22 | 1 |

## Client Sample ID: VAP-28 (44)

**Lab Sample ID: 200-44940-9**

**Date Collected: 08/15/18 00:00**

**Matrix: Solid**

**Date Received: 08/23/18 10:30**

### Method: D422 - Grain Size

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Gravel | 0.0 | | | | % | | | 08/28/18 17:25 | 1 |
| Sieve Size 3 inch - Percent Finer | 100.0 | | | | % Passing | | | 08/28/18 17:25 | 1 |
| Sand | 7.9 | | | | % | | | 08/28/18 17:25 | 1 |
| Sieve Size 2 inch - Percent Finer | 100.0 | | | | % Passing | | | 08/28/18 17:25 | 1 |
| Coarse Sand | 0.0 | | | | % | | | 08/28/18 17:25 | 1 |
| Sieve Size 1.5 inch - Percent Finer | 100.0 | | | | % Passing | | | 08/28/18 17:25 | 1 |
| Medium Sand | 2.4 | | | | % | | | 08/28/18 17:25 | 1 |
| Sieve Size 1 inch - Percent Finer | 100.0 | | | | % Passing | | | 08/28/18 17:25 | 1 |
| Fine Sand | 5.5 | | | | % | | | 08/28/18 17:25 | 1 |
| Sieve Size 0.75 inch - Percent Finer | 100.0 | | | | % Passing | | | 08/28/18 17:25 | 1 |
| Sieve Size 0.375 inch - Percent Finer | 100.0 | | | | % Passing | | | 08/28/18 17:25 | 1 |
| Silt | 75.6 | | | | % | | | 08/28/18 17:25 | 1 |
| Clay | 16.5 | | | | % | | | 08/28/18 17:25 | 1 |
| Sieve Size #4 - Percent Finer | 100.0 | | | | % Passing | | | 08/28/18 17:25 | 1 |

## Client Sample ID: VAP-28 (44)

**Lab Sample ID: 200-44940-9**

**Date Collected: 08/15/18 00:00**

**Matrix: Solid**

**Date Received: 08/23/18 10:30**

### Method: D422 - Grain Size (Continued)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Sieve Size #10 - Percent Finer | 100.0 | | | | % Passing | | | 08/28/18 17:25 | 1 |
| Sieve Size #20 - Percent Finer | 99.5 | | | | % Passing | | | 08/28/18 17:25 | 1 |
| Sieve Size #40 - Percent Finer | 97.6 | | | | % Passing | | | 08/28/18 17:25 | 1 |
| Sieve Size #60 - Percent Finer | 96.4 | | | | % Passing | | | 08/28/18 17:25 | 1 |
| Sieve Size #80 - Percent Finer | 96.3 | | | | % Passing | | | 08/28/18 17:25 | 1 |
| Sieve Size #100 - Percent Finer | 96.2 | | | | % Passing | | | 08/28/18 17:25 | 1 |
| Sieve Size #200 - Percent Finer | 92.1 | | | | % Passing | | | 08/28/18 17:25 | 1 |
| Hydrometer Reading 1 - Percent Finer | 53.3 | | | | % Passing | | | 08/28/18 17:25 | 1 |
| Hydrometer Reading 2 - Percent Finer | 46.6 | | | | % Passing | | | 08/28/18 17:25 | 1 |
| Hydrometer Reading 3 - Percent Finer | 32.0 | | | | % Passing | | | 08/28/18 17:25 | 1 |
| Hydrometer Reading 4 - Percent Finer | 23.3 | | | | % Passing | | | 08/28/18 17:25 | 1 |
| Hydrometer Reading 5 - Percent Finer | 16.5 | | | | % Passing | | | 08/28/18 17:25 | 1 |
| Hydrometer Reading 6 - Percent Finer | 10.7 | | | | % Passing | | | 08/28/18 17:25 | 1 |
| Hydrometer Reading 7 - Percent Finer | 6.8 | | | | % Passing | | | 08/28/18 17:25 | 1 |

## Client Sample ID: VAP-28 (68)

**Lab Sample ID: 200-44940-10**

**Date Collected: 08/15/18 00:00**

**Matrix: Solid**

**Date Received: 08/23/18 10:30**

### Method: D422 - Grain Size

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Gravel | 1.1 | | | | % | | | 08/28/18 17:28 | 1 |
| Sieve Size 3 inch - Percent Finer | 100.0 | | | | % Passing | | | 08/28/18 17:28 | 1 |
| Sand | 6.9 | | | | % | | | 08/28/18 17:28 | 1 |
| Sieve Size 2 inch - Percent Finer | 100.0 | | | | % Passing | | | 08/28/18 17:28 | 1 |
| Coarse Sand | 0.1 | | | | % | | | 08/28/18 17:28 | 1 |
| Sieve Size 1.5 inch - Percent Finer | 100.0 | | | | % Passing | | | 08/28/18 17:28 | 1 |
| Medium Sand | 2.9 | | | | % | | | 08/28/18 17:28 | 1 |
| Sieve Size 1 inch - Percent Finer | 100.0 | | | | % Passing | | | 08/28/18 17:28 | 1 |
| Fine Sand | 3.9 | | | | % | | | 08/28/18 17:28 | 1 |
| Sieve Size 0.75 inch - Percent Finer | 100.0 | | | | % Passing | | | 08/28/18 17:28 | 1 |
| Sieve Size 0.375 inch - Percent Finer | 100.0 | | | | % Passing | | | 08/28/18 17:28 | 1 |
| Silt | 67.5 | | | | % | | | 08/28/18 17:28 | 1 |
| Clay | 24.5 | | | | % | | | 08/28/18 17:28 | 1 |
| Sieve Size #4 - Percent Finer | 98.9 | | | | % Passing | | | 08/28/18 17:28 | 1 |
| Sieve Size #10 - Percent Finer | 98.8 | | | | % Passing | | | 08/28/18 17:28 | 1 |
| Sieve Size #20 - Percent Finer | 97.1 | | | | % Passing | | | 08/28/18 17:28 | 1 |
| Sieve Size #40 - Percent Finer | 95.9 | | | | % Passing | | | 08/28/18 17:28 | 1 |
| Sieve Size #60 - Percent Finer | 94.5 | | | | % Passing | | | 08/28/18 17:28 | 1 |
| Sieve Size #80 - Percent Finer | 93.7 | | | | % Passing | | | 08/28/18 17:28 | 1 |
| Sieve Size #100 - Percent Finer | 93.4 | | | | % Passing | | | 08/28/18 17:28 | 1 |
| Sieve Size #200 - Percent Finer | 92.0 | | | | % Passing | | | 08/28/18 17:28 | 1 |

## Client Sample ID: VAP-28 (68) Lab Sample ID: 200-44940-10

**Date Collected: 08/15/18 00:00** **Matrix: Solid**
**Date Received: 08/23/18 10:30**

### Method: D422 - Grain Size (Continued)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Hydrometer Reading 1 - Percent Finer | 69.3 | | | | % Passing | | | 08/28/18 17:28 | 1 |
| Hydrometer Reading 2 - Percent Finer | 58.4 | | | | % Passing | | | 08/28/18 17:28 | 1 |
| Hydrometer Reading 3 - Percent Finer | 43.5 | | | | % Passing | | | 08/28/18 17:28 | 1 |
| Hydrometer Reading 4 - Percent Finer | 32.6 | | | | % Passing | | | 08/28/18 17:28 | 1 |
| Hydrometer Reading 5 - Percent Finer | 24.5 | | | | % Passing | | | 08/28/18 17:28 | 1 |
| Hydrometer Reading 6 - Percent Finer | 17.7 | | | | % Passing | | | 08/28/18 17:28 | 1 |
| Hydrometer Reading 7 - Percent Finer | 9.5 | | | | % Passing | | | 08/28/18 17:28 | 1 |

## Client Sample ID: VAP-28 (88) Lab Sample ID: 200-44940-11

**Date Collected: 08/16/18 00:00** **Matrix: Solid**
**Date Received: 08/23/18 10:30**

### Method: D422 - Grain Size

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Gravel | 1.8 | | | | % | | | 08/28/18 18:04 | 1 |
| Sieve Size 3 inch - Percent Finer | 100.0 | | | | % Passing | | | 08/28/18 18:04 | 1 |
| Sand | 93.0 | | | | % | | | 08/28/18 18:04 | 1 |
| Sieve Size 2 inch - Percent Finer | 100.0 | | | | % Passing | | | 08/28/18 18:04 | 1 |
| Coarse Sand | 2.3 | | | | % | | | 08/28/18 18:04 | 1 |
| Sieve Size 1.5 inch - Percent Finer | 100.0 | | | | % Passing | | | 08/28/18 18:04 | 1 |
| Medium Sand | 62.4 | | | | % | | | 08/28/18 18:04 | 1 |
| Sieve Size 1 inch - Percent Finer | 100.0 | | | | % Passing | | | 08/28/18 18:04 | 1 |
| Fine Sand | 28.3 | | | | % | | | 08/28/18 18:04 | 1 |
| Sieve Size 0.75 inch - Percent Finer | 100.0 | | | | % Passing | | | 08/28/18 18:04 | 1 |
| Sieve Size 0.375 inch - Percent Finer | 100.0 | | | | % Passing | | | 08/28/18 18:04 | 1 |
| Silt | 2.8 | | | | % | | | 08/28/18 18:04 | 1 |
| Clay | 2.4 | | | | % | | | 08/28/18 18:04 | 1 |
| Sieve Size #4 - Percent Finer | 98.2 | | | | % Passing | | | 08/28/18 18:04 | 1 |
| Sieve Size #10 - Percent Finer | 95.9 | | | | % Passing | | | 08/28/18 18:04 | 1 |
| Sieve Size #20 - Percent Finer | 90.2 | | | | % Passing | | | 08/28/18 18:04 | 1 |
| Sieve Size #40 - Percent Finer | 33.5 | | | | % Passing | | | 08/28/18 18:04 | 1 |
| Sieve Size #60 - Percent Finer | 9.0 | | | | % Passing | | | 08/28/18 18:04 | 1 |
| Sieve Size #80 - Percent Finer | 7.4 | | | | % Passing | | | 08/28/18 18:04 | 1 |
| Sieve Size #100 - Percent Finer | 6.7 | | | | % Passing | | | 08/28/18 18:04 | 1 |
| Sieve Size #200 - Percent Finer | 5.2 | | | | % Passing | | | 08/28/18 18:04 | 1 |
| Hydrometer Reading 1 - Percent Finer | 4.3 | | | | % Passing | | | 08/28/18 18:04 | 1 |
| Hydrometer Reading 2 - Percent Finer | 3.8 | | | | % Passing | | | 08/28/18 18:04 | 1 |
| Hydrometer Reading 3 - Percent Finer | 3.3 | | | | % Passing | | | 08/28/18 18:04 | 1 |
| Hydrometer Reading 4 - Percent Finer | 2.8 | | | | % Passing | | | 08/28/18 18:04 | 1 |

## Client Sample ID: VAP-28 (88) Lab Sample ID: 200-44940-11

**Date Collected: 08/16/18 00:00** **Matrix: Solid**
**Date Received: 08/23/18 10:30**

### Method: D422 - Grain Size (Continued)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Hydrometer Reading 5 - Percent Finer | 2.4 | | | | % Passing | | | 08/28/18 18:04 | 1 |
| Hydrometer Reading 6 - Percent Finer | 1.9 | | | | % Passing | | | 08/28/18 18:04 | 1 |
| Hydrometer Reading 7 - Percent Finer | 0.9 | | | | % Passing | | | 08/28/18 18:04 | 1 |

## Client Sample ID: VAP-28 (95) Lab Sample ID: 200-44940-12

**Date Collected: 08/16/18 00:00** **Matrix: Solid**
**Date Received: 08/23/18 10:30**

### Method: D422 - Grain Size

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Gravel | 3.9 | | | | % | | | 08/28/18 18:07 | 1 |
| Sieve Size 3 inch - Percent Finer | 100.0 | | | | % Passing | | | 08/28/18 18:07 | 1 |
| Sand | 51.3 | | | | % | | | 08/28/18 18:07 | 1 |
| Sieve Size 2 inch - Percent Finer | 100.0 | | | | % Passing | | | 08/28/18 18:07 | 1 |
| Coarse Sand | 7.7 | | | | % | | | 08/28/18 18:07 | 1 |
| Sieve Size 1.5 inch - Percent Finer | 100.0 | | | | % Passing | | | 08/28/18 18:07 | 1 |
| Medium Sand | 12.7 | | | | % | | | 08/28/18 18:07 | 1 |
| Sieve Size 1 inch - Percent Finer | 100.0 | | | | % Passing | | | 08/28/18 18:07 | 1 |
| Fine Sand | 30.9 | | | | % | | | 08/28/18 18:07 | 1 |
| Sieve Size 0.75 inch - Percent Finer | 100.0 | | | | % Passing | | | 08/28/18 18:07 | 1 |
| Sieve Size 0.375 inch - Percent Finer | 100.0 | | | | % Passing | | | 08/28/18 18:07 | 1 |
| Silt | 26.7 | | | | % | | | 08/28/18 18:07 | 1 |
| Clay | 18.1 | | | | % | | | 08/28/18 18:07 | 1 |
| Sieve Size #4 - Percent Finer | 96.1 | | | | % Passing | | | 08/28/18 18:07 | 1 |
| Sieve Size #10 - Percent Finer | 88.4 | | | | % Passing | | | 08/28/18 18:07 | 1 |
| Sieve Size #20 - Percent Finer | 81.0 | | | | % Passing | | | 08/28/18 18:07 | 1 |
| Sieve Size #40 - Percent Finer | 75.7 | | | | % Passing | | | 08/28/18 18:07 | 1 |
| Sieve Size #60 - Percent Finer | 68.0 | | | | % Passing | | | 08/28/18 18:07 | 1 |
| Sieve Size #80 - Percent Finer | 61.4 | | | | % Passing | | | 08/28/18 18:07 | 1 |
| Sieve Size #100 - Percent Finer | 57.3 | | | | % Passing | | | 08/28/18 18:07 | 1 |
| Sieve Size #200 - Percent Finer | 44.8 | | | | % Passing | | | 08/28/18 18:07 | 1 |
| Hydrometer Reading 1 - Percent Finer | 30.9 | | | | % Passing | | | 08/28/18 18:07 | 1 |
| Hydrometer Reading 2 - Percent Finer | 28.1 | | | | % Passing | | | 08/28/18 18:07 | 1 |
| Hydrometer Reading 3 - Percent Finer | 22.7 | | | | % Passing | | | 08/28/18 18:07 | 1 |
| Hydrometer Reading 4 - Percent Finer | 20.9 | | | | % Passing | | | 08/28/18 18:07 | 1 |
| Hydrometer Reading 5 - Percent Finer | 18.1 | | | | % Passing | | | 08/28/18 18:07 | 1 |
| Hydrometer Reading 6 - Percent Finer | 15.4 | | | | % Passing | | | 08/28/18 18:07 | 1 |
| Hydrometer Reading 7 - Percent Finer | 10.9 | | | | % Passing | | | 08/28/18 18:07 | 1 |

## Client Sample ID: MW-100B (58-60)

**Lab Sample ID: 200-44940-13**

**Date Collected: 08/07/18 00:00**

**Matrix: Solid**

**Date Received: 08/23/18 10:30**

### Method: D422 - Grain Size

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Gravel | 0.0 | | | | % | | | 08/28/18 18:10 | 1 |
| Sieve Size 3 inch - Percent Finer | 100.0 | | | | % Passing | | | 08/28/18 18:10 | 1 |
| Sand | 98.1 | | | | % | | | 08/28/18 18:10 | 1 |
| Sieve Size 2 inch - Percent Finer | 100.0 | | | | % Passing | | | 08/28/18 18:10 | 1 |
| Coarse Sand | 0.0 | | | | % | | | 08/28/18 18:10 | 1 |
| Sieve Size 1.5 inch - Percent Finer | 100.0 | | | | % Passing | | | 08/28/18 18:10 | 1 |
| Medium Sand | 2.3 | | | | % | | | 08/28/18 18:10 | 1 |
| Sieve Size 1 inch - Percent Finer | 100.0 | | | | % Passing | | | 08/28/18 18:10 | 1 |
| Fine Sand | 95.8 | | | | % | | | 08/28/18 18:10 | 1 |
| Sieve Size 0.75 inch - Percent Finer | 100.0 | | | | % Passing | | | 08/28/18 18:10 | 1 |
| Sieve Size 0.375 inch - Percent Finer | 100.0 | | | | % Passing | | | 08/28/18 18:10 | 1 |
| Silt | 0.5 | | | | % | | | 08/28/18 18:10 | 1 |
| Clay | 1.4 | | | | % | | | 08/28/18 18:10 | 1 |
| Sieve Size #4 - Percent Finer | 100.0 | | | | % Passing | | | 08/28/18 18:10 | 1 |
| Sieve Size #10 - Percent Finer | 100.0 | | | | % Passing | | | 08/28/18 18:10 | 1 |
| Sieve Size #20 - Percent Finer | 99.6 | | | | % Passing | | | 08/28/18 18:10 | 1 |
| Sieve Size #40 - Percent Finer | 97.7 | | | | % Passing | | | 08/28/18 18:10 | 1 |
| Sieve Size #60 - Percent Finer | 50.2 | | | | % Passing | | | 08/28/18 18:10 | 1 |
| Sieve Size #80 - Percent Finer | 18.9 | | | | % Passing | | | 08/28/18 18:10 | 1 |
| Sieve Size #100 - Percent Finer | 8.2 | | | | % Passing | | | 08/28/18 18:10 | 1 |
| Sieve Size #200 - Percent Finer | 1.9 | | | | % Passing | | | 08/28/18 18:10 | 1 |
| Hydrometer Reading 1 - Percent Finer | 1.9 | | | | % Passing | | | 08/28/18 18:10 | 1 |
| Hydrometer Reading 2 - Percent Finer | 1.4 | | | | % Passing | | | 08/28/18 18:10 | 1 |
| Hydrometer Reading 3 - Percent Finer | 1.4 | | | | % Passing | | | 08/28/18 18:10 | 1 |
| Hydrometer Reading 4 - Percent Finer | 1.4 | | | | % Passing | | | 08/28/18 18:10 | 1 |
| Hydrometer Reading 5 - Percent Finer | 1.4 | | | | % Passing | | | 08/28/18 18:10 | 1 |
| Hydrometer Reading 6 - Percent Finer | 0.9 | | | | % Passing | | | 08/28/18 18:10 | 1 |
| Hydrometer Reading 7 - Percent Finer | 0.9 | | | | % Passing | | | 08/28/18 18:10 | 1 |

## Client Sample ID: MW-100B (69)

**Lab Sample ID: 200-44940-14**

**Date Collected: 08/07/18 00:00**

**Matrix: Solid**

**Date Received: 08/23/18 10:30**

### Method: D422 - Grain Size

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Gravel | 0.0 | | | | % | | | 08/28/18 18:12 | 1 |
| Sieve Size 3 inch - Percent Finer | 100.0 | | | | % Passing | | | 08/28/18 18:12 | 1 |
| Sand | 6.6 | | | | % | | | 08/28/18 18:12 | 1 |
| Sieve Size 2 inch - Percent Finer | 100.0 | | | | % Passing | | | 08/28/18 18:12 | 1 |
| Coarse Sand | 0.0 | | | | % | | | 08/28/18 18:12 | 1 |
| Sieve Size 1.5 inch - Percent Finer | 100.0 | | | | % Passing | | | 08/28/18 18:12 | 1 |
| Medium Sand | 2.3 | | | | % | | | 08/28/18 18:12 | 1 |
| Sieve Size 1 inch - Percent Finer | 100.0 | | | | % Passing | | | 08/28/18 18:12 | 1 |

## Client Sample ID: MW-100B (69) Lab Sample ID: 200-44940-14

**Date Collected: 08/07/18 00:00** **Matrix: Solid**
**Date Received: 08/23/18 10:30**

### Method: D422 - Grain Size (Continued)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Fine Sand | 4.3 | | | | % | | | 08/28/18 18:12 | 1 |
| Sieve Size 0.75 inch - Percent Finer | 100.0 | | | | % Passing | | | 08/28/18 18:12 | 1 |
| Sieve Size 0.375 inch - Percent Finer | 100.0 | | | | % Passing | | | 08/28/18 18:12 | 1 |
| Silt | 66.3 | | | | % | | | 08/28/18 18:12 | 1 |
| Clay | 27.1 | | | | % | | | 08/28/18 18:12 | 1 |
| Sieve Size #4 - Percent Finer | 100.0 | | | | % Passing | | | 08/28/18 18:12 | 1 |
| Sieve Size #10 - Percent Finer | 100.0 | | | | % Passing | | | 08/28/18 18:12 | 1 |
| Sieve Size #20 - Percent Finer | 98.6 | | | | % Passing | | | 08/28/18 18:12 | 1 |
| Sieve Size #40 - Percent Finer | 97.7 | | | | % Passing | | | 08/28/18 18:12 | 1 |
| Sieve Size #60 - Percent Finer | 96.3 | | | | % Passing | | | 08/28/18 18:12 | 1 |
| Sieve Size #80 - Percent Finer | 95.1 | | | | % Passing | | | 08/28/18 18:12 | 1 |
| Sieve Size #100 - Percent Finer | 94.7 | | | | % Passing | | | 08/28/18 18:12 | 1 |
| Sieve Size #200 - Percent Finer | 93.4 | | | | % Passing | | | 08/28/18 18:12 | 1 |
| Hydrometer Reading 1 - Percent Finer | 62.5 | | | | % Passing | | | 08/28/18 18:12 | 1 |
| Hydrometer Reading 2 - Percent Finer | 56.6 | | | | % Passing | | | 08/28/18 18:12 | 1 |
| Hydrometer Reading 3 - Percent Finer | 43.6 | | | | % Passing | | | 08/28/18 18:12 | 1 |
| Hydrometer Reading 4 - Percent Finer | 34.2 | | | | % Passing | | | 08/28/18 18:12 | 1 |
| Hydrometer Reading 5 - Percent Finer | 27.1 | | | | % Passing | | | 08/28/18 18:12 | 1 |
| Hydrometer Reading 6 - Percent Finer | 18.9 | | | | % Passing | | | 08/28/18 18:12 | 1 |
| Hydrometer Reading 7 - Percent Finer | 13.0 | | | | % Passing | | | 08/28/18 18:12 | 1 |

## Client Sample ID: MW-100B (74) Lab Sample ID: 200-44940-15

**Date Collected: 08/08/18 00:00** **Matrix: Solid**
**Date Received: 08/23/18 10:30**

### Method: D422 - Grain Size

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Gravel | 8.8 | | | | % | | | 08/28/18 18:17 | 1 |
| Sieve Size 3 inch - Percent Finer | 100.0 | | | | % Passing | | | 08/28/18 18:17 | 1 |
| Sand | 51.4 | | | | % | | | 08/28/18 18:17 | 1 |
| Sieve Size 2 inch - Percent Finer | 100.0 | | | | % Passing | | | 08/28/18 18:17 | 1 |
| Coarse Sand | 4.5 | | | | % | | | 08/28/18 18:17 | 1 |
| Sieve Size 1.5 inch - Percent Finer | 100.0 | | | | % Passing | | | 08/28/18 18:17 | 1 |
| Medium Sand | 9.5 | | | | % | | | 08/28/18 18:17 | 1 |
| Sieve Size 1 inch - Percent Finer | 100.0 | | | | % Passing | | | 08/28/18 18:17 | 1 |
| Fine Sand | 37.4 | | | | % | | | 08/28/18 18:17 | 1 |
| Sieve Size 0.75 inch - Percent Finer | 100.0 | | | | % Passing | | | 08/28/18 18:17 | 1 |
| Sieve Size 0.375 inch - Percent Finer | 95.5 | | | | % Passing | | | 08/28/18 18:17 | 1 |
| Silt | 24.0 | | | | % | | | 08/28/18 18:17 | 1 |
| Clay | 15.8 | | | | % | | | 08/28/18 18:17 | 1 |
| Sieve Size #4 - Percent Finer | 91.2 | | | | % Passing | | | 08/28/18 18:17 | 1 |

## Client Sample ID: MW-100B (74)

**Lab Sample ID: 200-44940-15**

**Date Collected: 08/08/18 00:00**
**Matrix: Solid**
**Date Received: 08/23/18 10:30**

### Method: D422 - Grain Size (Continued)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Sieve Size #10 - Percent Finer | 86.7 | | | | % Passing | | | 08/28/18 18:17 | 1 |
| Sieve Size #20 - Percent Finer | 83.2 | | | | % Passing | | | 08/28/18 18:17 | 1 |
| Sieve Size #40 - Percent Finer | 77.2 | | | | % Passing | | | 08/28/18 18:17 | 1 |
| Sieve Size #60 - Percent Finer | 65.5 | | | | % Passing | | | 08/28/18 18:17 | 1 |
| Sieve Size #80 - Percent Finer | 57.7 | | | | % Passing | | | 08/28/18 18:17 | 1 |
| Sieve Size #100 - Percent Finer | 52.3 | | | | % Passing | | | 08/28/18 18:17 | 1 |
| Sieve Size #200 - Percent Finer | 39.8 | | | | % Passing | | | 08/28/18 18:17 | 1 |
| Hydrometer Reading 1 - Percent Finer | 27.5 | | | | % Passing | | | 08/28/18 18:17 | 1 |
| Hydrometer Reading 2 - Percent Finer | 22.0 | | | | % Passing | | | 08/28/18 18:17 | 1 |
| Hydrometer Reading 3 - Percent Finer | 19.9 | | | | % Passing | | | 08/28/18 18:17 | 1 |
| Hydrometer Reading 4 - Percent Finer | 17.2 | | | | % Passing | | | 08/28/18 18:17 | 1 |
| Hydrometer Reading 5 - Percent Finer | 15.8 | | | | % Passing | | | 08/28/18 18:17 | 1 |
| Hydrometer Reading 6 - Percent Finer | 13.0 | | | | % Passing | | | 08/28/18 18:17 | 1 |
| Hydrometer Reading 7 - Percent Finer | 9.6 | | | | % Passing | | | 08/28/18 18:17 | 1 |

## Client Sample ID: MW-100B (80)

**Lab Sample ID: 200-44940-16**

**Date Collected: 08/08/18 00:00**
**Matrix: Solid**
**Date Received: 08/23/18 10:30**

### Method: D422 - Grain Size

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Gravel | 17.9 | | | | % | | | 08/28/18 18:23 | 1 |
| Sieve Size 3 inch - Percent Finer | 100.0 | | | | % Passing | | | 08/28/18 18:23 | 1 |
| Sand | 59.1 | | | | % | | | 08/28/18 18:23 | 1 |
| Sieve Size 2 inch - Percent Finer | 100.0 | | | | % Passing | | | 08/28/18 18:23 | 1 |
| Coarse Sand | 8.2 | | | | % | | | 08/28/18 18:23 | 1 |
| Sieve Size 1.5 inch - Percent Finer | 100.0 | | | | % Passing | | | 08/28/18 18:23 | 1 |
| Medium Sand | 13.5 | | | | % | | | 08/28/18 18:23 | 1 |
| Sieve Size 1 inch - Percent Finer | 100.0 | | | | % Passing | | | 08/28/18 18:23 | 1 |
| Fine Sand | 37.4 | | | | % | | | 08/28/18 18:23 | 1 |
| Sieve Size 0.75 inch - Percent Finer | 100.0 | | | | % Passing | | | 08/28/18 18:23 | 1 |
| Sieve Size 0.375 inch - Percent Finer | 92.3 | | | | % Passing | | | 08/28/18 18:23 | 1 |
| Silt | 14.3 | | | | % | | | 08/28/18 18:23 | 1 |
| Clay | 8.7 | | | | % | | | 08/28/18 18:23 | 1 |
| Sieve Size #4 - Percent Finer | 82.1 | | | | % Passing | | | 08/28/18 18:23 | 1 |
| Sieve Size #10 - Percent Finer | 73.9 | | | | % Passing | | | 08/28/18 18:23 | 1 |
| Sieve Size #20 - Percent Finer | 67.9 | | | | % Passing | | | 08/28/18 18:23 | 1 |
| Sieve Size #40 - Percent Finer | 60.4 | | | | % Passing | | | 08/28/18 18:23 | 1 |
| Sieve Size #60 - Percent Finer | 45.8 | | | | % Passing | | | 08/28/18 18:23 | 1 |
| Sieve Size #80 - Percent Finer | 35.6 | | | | % Passing | | | 08/28/18 18:23 | 1 |
| Sieve Size #100 - Percent Finer | 31.3 | | | | % Passing | | | 08/28/18 18:23 | 1 |
| Sieve Size #200 - Percent Finer | 23.0 | | | | % Passing | | | 08/28/18 18:23 | 1 |

## Client Sample ID: MW-100B (80)

**Lab Sample ID: 200-44940-16**

**Date Collected: 08/08/18 00:00**

**Matrix: Solid**

**Date Received: 08/23/18 10:30**

### Method: D422 - Grain Size (Continued)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Hydrometer Reading 1 - Percent Finer | 15.7 | | | | % Passing | | | 08/28/18 18:23 | 1 |
| Hydrometer Reading 2 - Percent Finer | 14.0 | | | | % Passing | | | 08/28/18 18:23 | 1 |
| Hydrometer Reading 3 - Percent Finer | 10.9 | | | | % Passing | | | 08/28/18 18:23 | 1 |
| Hydrometer Reading 4 - Percent Finer | 10.0 | | | | % Passing | | | 08/28/18 18:23 | 1 |
| Hydrometer Reading 5 - Percent Finer | 8.7 | | | | % Passing | | | 08/28/18 18:23 | 1 |
| Hydrometer Reading 6 - Percent Finer | 7.0 | | | | % Passing | | | 08/28/18 18:23 | 1 |
| Hydrometer Reading 7 - Percent Finer | 4.4 | | | | % Passing | | | 08/28/18 18:23 | 1 |

# Particle Size of Soils by ASTM D422

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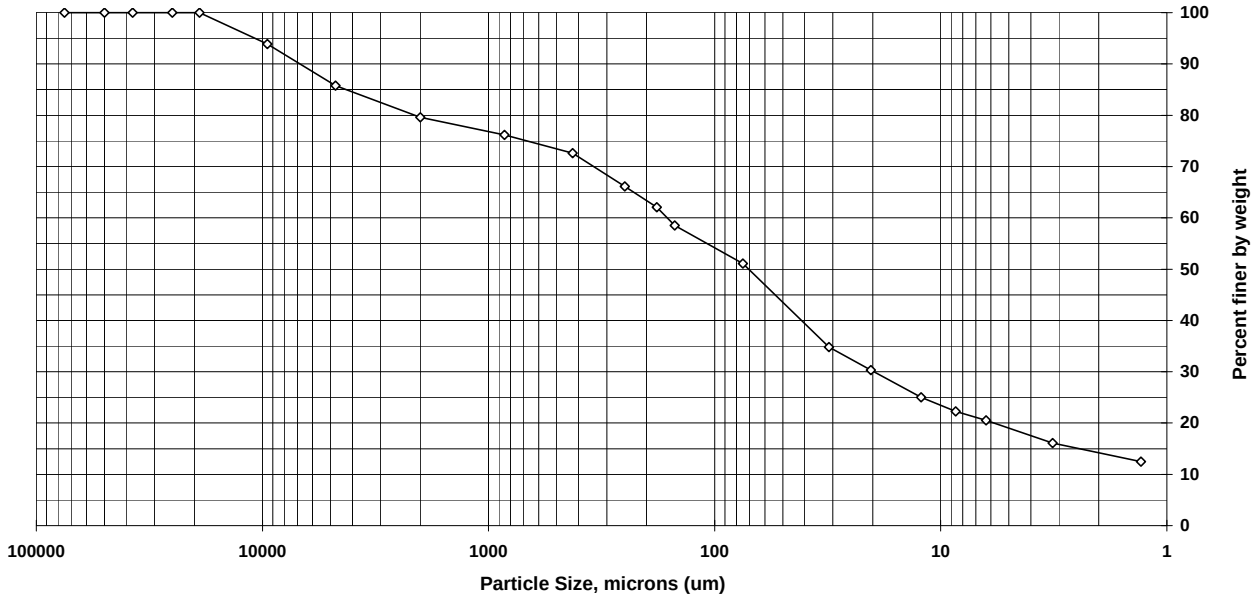
|---|---|---|---|---|---|
| | | | | **Date Received:** | 8/23/2018 |
| **Sample ID:** | VAP-26 (78) | **Percent Solids:** | 93.9% | **Start Date:** | 8/27/2018 |
| **Lab ID:** | 200-44940-A-1 | **Specific Gravity:** | 2.650 | **End Date:** | 8/31/2018 |

**Shape (> #10):** subangular

**Non-soil material:** na

**Hardness (> #10):** hard




| Sieve size | Particle size, um | Percent finer | Incremental percent |
|---|---|---|---|
| 3 inch | 75000 | 100.0 | 0.0 |
| 2 inch | 50000 | 100.0 | 0.0 |
| 1.5 inch | 37500 | 100.0 | 0.0 |
| 1 inch | 25000 | 100.0 | 0.0 |
| 3/4 inch | 19000 | 100.0 | 0.0 |
| 3/8 inch | 9500 | 93.9 | 6.1 |
| #4 | 4750 | 85.8 | 8.1 |
| #10 | 2000 | 79.6 | 6.2 |
| #20 | 850 | 76.2 | 3.4 |
| #40 | 425 | 72.6 | 3.6 |
| #60 | 250 | 66.1 | 6.5 |
| #80 | 180 | 62.1 | 4.0 |
| #100 | 150 | 58.5 | 3.6 |
| #200 | 75 | 51.1 | 7.4 |
| Hyd1 | 31.2 | 34.8 | 16.3 |
| Hyd2 | 20.4 | 30.3 | 4.5 |
| Hyd3 | 12.2 | 25.0 | 5.3 |
| Hyd4 | 8.6 | 22.3 | 2.7 |
| Hyd5 | 6.3 | 20.5 | 1.8 |
| Hyd6 | 3.2 | 16.1 | 4.4 |
| Hyd7 | 1.3 | 12.5 | 3.6 |
| | | | |

| Soil Classification | Percent of sample |
|---|---|
| Gravel | 14.2 |
| Sand | 34.7 |
| Coarse Sand | 6.2 |
| Medium Sand | 7.0 |
| Fine Sand | 21.5 |
| Silt | 30.6 |
| Clay | 20.5 |
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# Particle Size of Soils by ASTM D422

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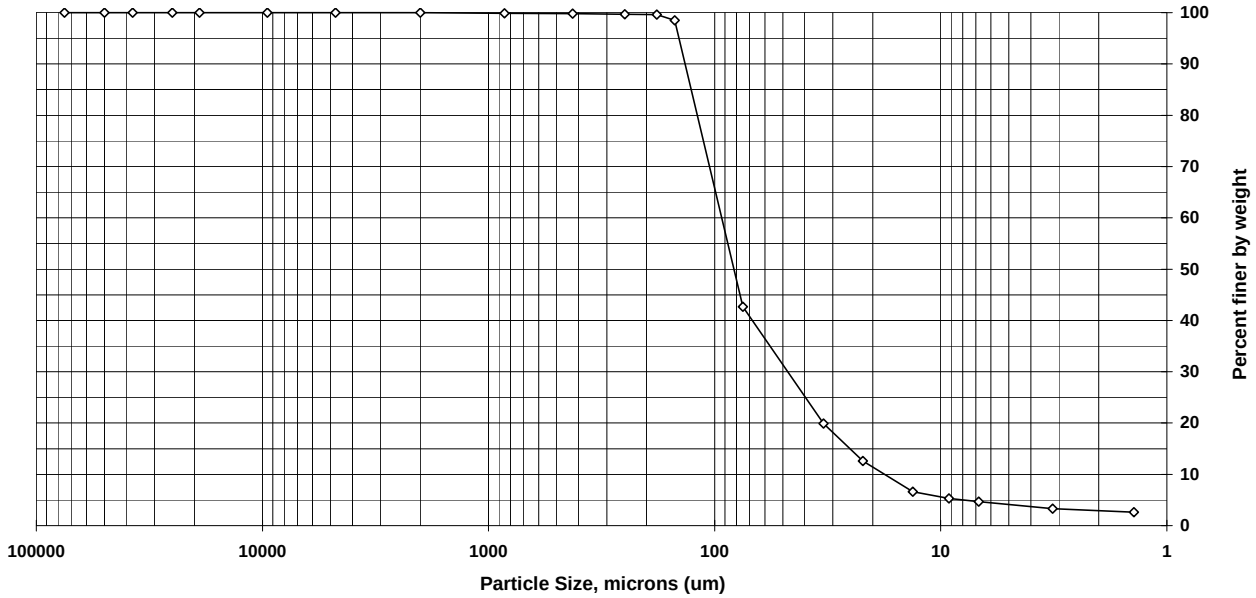
|---|---|---|---|---|---|
| | | | | **Date Received:** | 8/23/2018 |
| **Sample ID:** | VAP-26 (72-75) | **Percent Solids:** | 83.1% | **Start Date:** | 8/27/2018 |
| **Lab ID:** | 200-44940-A-2 | **Specific Gravity:** | 2.650 | **End Date:** | 8/31/2018 |

**Shape (> #10):** na

**Non-soil material:** na

**Hardness (> #10):** na




| Sieve size | Particle size, um | Percent finer | Incremental percent |
|---|---|---|---|
| 3 inch | 75000 | 100.0 | 0.0 |
| 2 inch | 50000 | 100.0 | 0.0 |
| 1.5 inch | 37500 | 100.0 | 0.0 |
| 1 inch | 25000 | 100.0 | 0.0 |
| 3/4 inch | 19000 | 100.0 | 0.0 |
| 3/8 inch | 9500 | 100.0 | 0.0 |
| #4 | 4750 | 100.0 | 0.0 |
| #10 | 2000 | 100.0 | 0.0 |
| #20 | 850 | 99.9 | 0.1 |
| #40 | 425 | 99.8 | 0.1 |
| #60 | 250 | 99.7 | 0.1 |
| #80 | 180 | 99.6 | 0.1 |
| #100 | 150 | 98.5 | 1.1 |
| #200 | 75 | 42.7 | 55.8 |
| Hyd1 | 33 | 19.9 | 22.8 |
| Hyd2 | 22.1 | 12.6 | 7.3 |
| Hyd3 | 13.3 | 6.6 | 6.0 |
| Hyd4 | 9.2 | 5.3 | 1.3 |
| Hyd5 | 6.8 | 4.7 | 0.7 |
| Hyd6 | 3.2 | 3.3 | 1.3 |
| Hyd7 | 1.4 | 2.7 | 0.7 |
| | | | |

| Soil Classification | Percent of sample |
|---|---|
| Gravel | 0.0 |
| Sand | 57.3 |
| Coarse Sand | 0.0 |
| Medium Sand | 0.2 |
| Fine Sand | 57.1 |
| Silt | 38.1 |
| Clay | 4.7 |
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# Particle Size of Soils by ASTM D422

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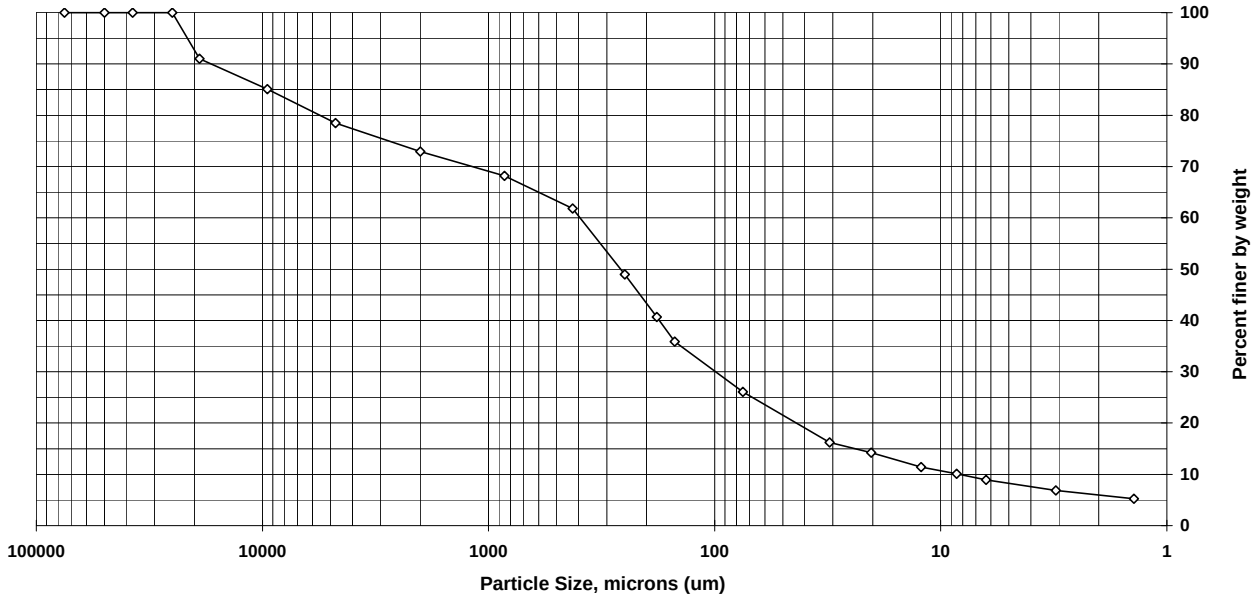
|---|---|---|---|---|---|
| | | | | **Date Received:** | 8/23/2018 |
| **Sample ID:** | VAP-26 (84) | **Percent Solids:** | 90.8% | **Start Date:** | 8/27/2018 |
| **Lab ID:** | 200-44940-A-3 | **Specific Gravity:** | 2.650 | **End Date:** | 8/31/2018 |

**Shape (> #10):** angular

**Non-soil material:** na

**Hardness (> #10):** hard




| Sieve size | Particle size, um | Percent finer | Incremental percent |
|---|---|---|---|
| 3 inch | 75000 | 100.0 | 0.0 |
| 2 inch | 50000 | 100.0 | 0.0 |
| 1.5 inch | 37500 | 100.0 | 0.0 |
| 1 inch | 25000 | 100.0 | 0.0 |
| 3/4 inch | 19000 | 91.0 | 9.0 |
| 3/8 inch | 9500 | 85.1 | 5.9 |
| #4 | 4750 | 78.5 | 6.6 |
| #10 | 2000 | 72.9 | 5.6 |
| #20 | 850 | 68.2 | 4.7 |
| #40 | 425 | 61.8 | 6.4 |
| #60 | 250 | 49.0 | 12.8 |
| #80 | 180 | 40.7 | 8.3 |
| #100 | 150 | 35.9 | 4.8 |
| #200 | 75 | 26.1 | 9.8 |
| Hyd1 | 31 | 16.2 | 9.9 |
| Hyd2 | 20.3 | 14.2 | 2.0 |
| Hyd3 | 12.2 | 11.4 | 2.8 |
| Hyd4 | 8.5 | 10.1 | 1.3 |
| Hyd5 | 6.3 | 8.9 | 1.2 |
| Hyd6 | 3.1 | 6.9 | 2.0 |
| Hyd7 | 1.4 | 5.3 | 1.6 |
| | | | |

| Soil Classification | Percent of sample |
|---|---|
| Gravel | 21.5 |
| Sand | 52.4 |
| Coarse Sand | 5.6 |
| Medium Sand | 11.1 |
| Fine Sand | 35.7 |
| Silt | 17.2 |
| Clay | 8.9 |
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# Particle Size of Soils by ASTM D422

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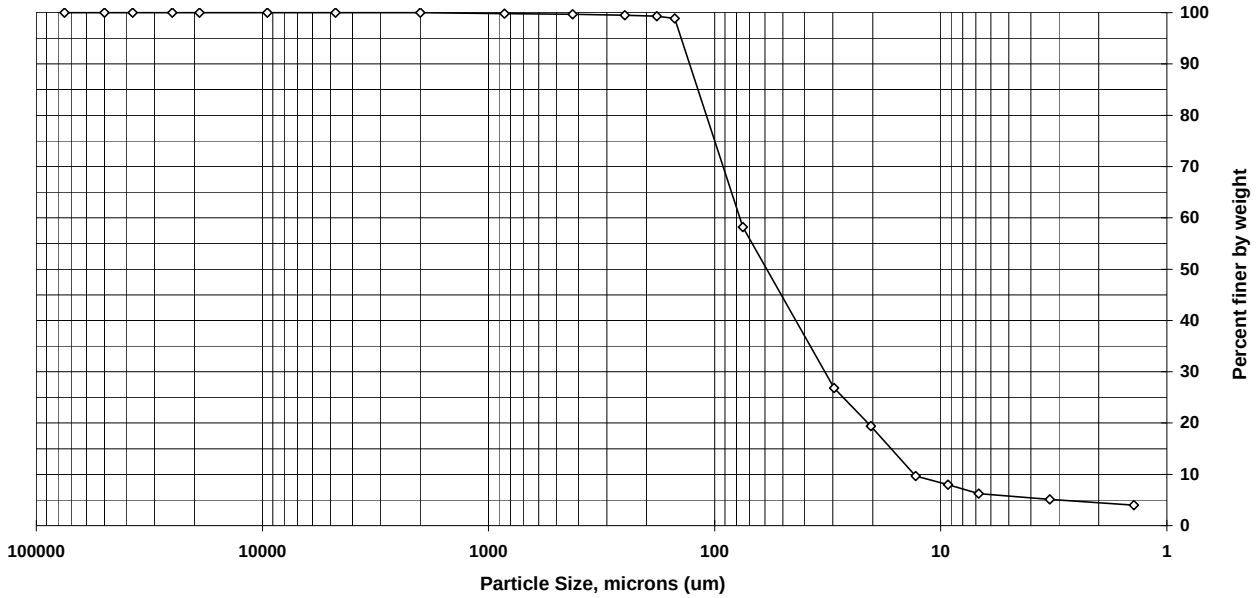
|---|---|---|---|---|---|
| | | | | **Date Received:** | 8/23/2018 |
| **Sample ID:** | VAP-27 (79) | **Percent Solids:** | 85.8% | **Start Date:** | 8/27/2018 |
| **Lab ID:** | 200-44940-A-4 | **Specific Gravity:** | 2.650 | **End Date:** | 8/31/2018 |

**Shape (> #10):** na

**Non-soil material:** na

**Hardness (> #10):** na




| Sieve size | Particle size, um | Percent finer | Incremental percent |
|---|---|---|---|
| 3 inch | 75000 | 100.0 | 0.0 |
| 2 inch | 50000 | 100.0 | 0.0 |
| 1.5 inch | 37500 | 100.0 | 0.0 |
| 1 inch | 25000 | 100.0 | 0.0 |
| 3/4 inch | 19000 | 100.0 | 0.0 |
| 3/8 inch | 9500 | 100.0 | 0.0 |
| #4 | 4750 | 100.0 | 0.0 |
| #10 | 2000 | 100.0 | 0.0 |
| #20 | 850 | 99.8 | 0.2 |
| #40 | 425 | 99.7 | 0.1 |
| #60 | 250 | 99.5 | 0.2 |
| #80 | 180 | 99.3 | 0.2 |
| #100 | 150 | 98.9 | 0.4 |
| #200 | 75 | 58.2 | 40.7 |
| Hyd1 | 29.6 | 26.8 | 31.4 |
| Hyd2 | 20.4 | 19.4 | 7.4 |
| Hyd3 | 12.9 | 9.7 | 9.7 |
| Hyd4 | 9.3 | 8.0 | 1.7 |
| Hyd5 | 6.8 | 6.3 | 1.7 |
| Hyd6 | 3.3 | 5.1 | 1.1 |
| Hyd7 | 1.4 | 4.0 | 1.1 |
| | | | |

| Soil Classification | Percent of sample |
|---|---|
| Gravel | 0.0 |
| Sand | 41.8 |
| Coarse Sand | 0.0 |
| Medium Sand | 0.3 |
| Fine Sand | 41.5 |
| Silt | 51.9 |
| Clay | 6.3 |
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# Particle Size of Soils by ASTM D422

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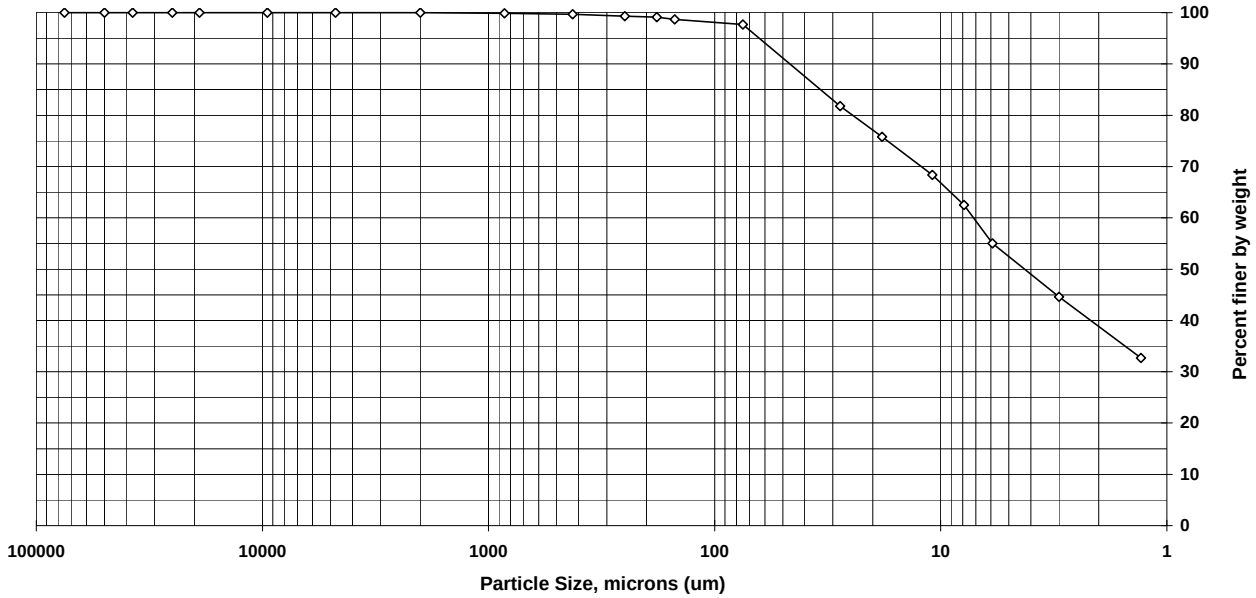
|---|---|---|---|---|---|
| | | | | **Date Received:** | 8/23/2018 |
| **Sample ID:** | VAP-27 (83) | **Percent Solids:** | 84.5% | **Start Date:** | 8/27/2018 |
| **Lab ID:** | 200-44940-A-5 | **Specific Gravity:** | 2.650 | **End Date:** | 8/31/2018 |

**Shape (> #10):** na

**Non-soil material:** na

**Hardness (> #10):** na




| Sieve size | Particle size, um | Percent finer | Incremental percent |
|---|---|---|---|
| 3 inch | 75000 | 100.0 | 0.0 |
| 2 inch | 50000 | 100.0 | 0.0 |
| 1.5 inch | 37500 | 100.0 | 0.0 |
| 1 inch | 25000 | 100.0 | 0.0 |
| 3/4 inch | 19000 | 100.0 | 0.0 |
| 3/8 inch | 9500 | 100.0 | 0.0 |
| #4 | 4750 | 100.0 | 0.0 |
| #10 | 2000 | 100.0 | 0.0 |
| #20 | 850 | 99.9 | 0.1 |
| #40 | 425 | 99.7 | 0.2 |
| #60 | 250 | 99.3 | 0.4 |
| #80 | 180 | 99.1 | 0.2 |
| #100 | 150 | 98.7 | 0.4 |
| #200 | 75 | 97.7 | 1.0 |
| Hyd1 | 27.9 | 81.8 | 15.9 |
| Hyd2 | 18.2 | 75.8 | 6.0 |
| Hyd3 | 10.9 | 68.4 | 7.4 |
| Hyd4 | 7.9 | 62.5 | 5.9 |
| Hyd5 | 5.9 | 55.0 | 7.5 |
| Hyd6 | 3 | 44.6 | 10.4 |
| Hyd7 | 1.3 | 32.7 | 11.9 |
| | | | |

| Soil Classification | Percent of sample |
|---|---|
| Gravel | 0.0 |
| Sand | 2.3 |
| Coarse Sand | 0.0 |
| Medium Sand | 0.3 |
| Fine Sand | 2.0 |
| Silt | 42.7 |
| Clay | 55.0 |
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# Particle Size of Soils by ASTM D422

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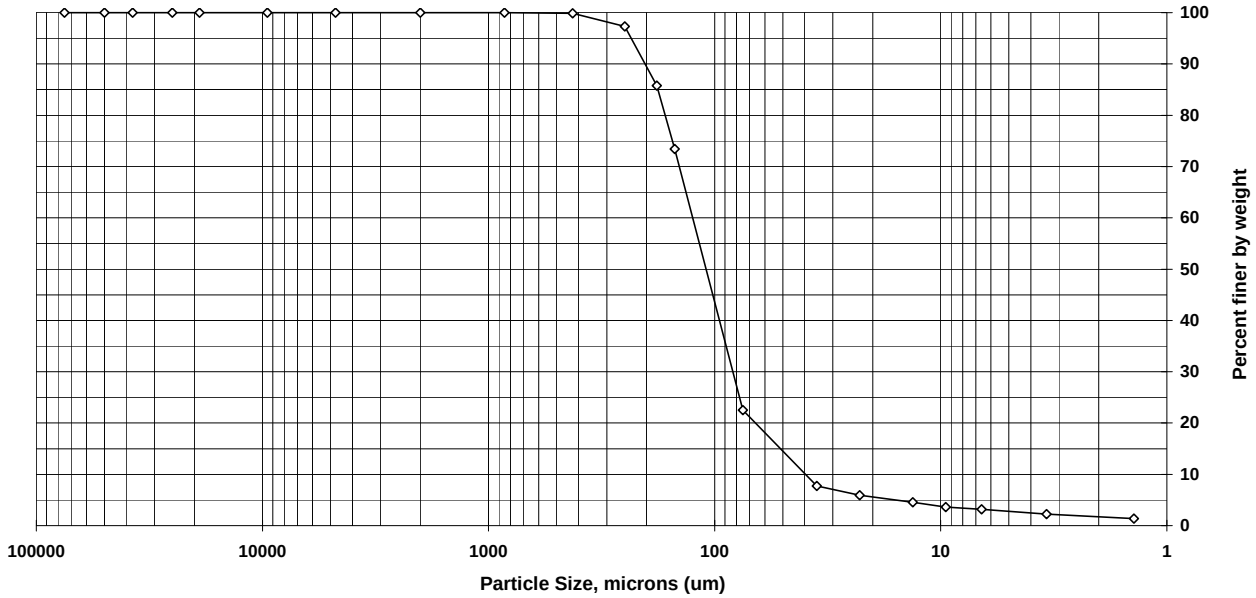
|---|---|---|---|---|---|
| | | | | **Date Received:** | 8/23/2018 |
| **Sample ID:** | VAP-29 (27) | **Percent Solids:** | 85.3% | **Start Date:** | 8/27/2018 |
| **Lab ID:** | 200-44940-A-6 | **Specific Gravity:** | 2.650 | **End Date:** | 8/31/2018 |

**Shape (> #10):** na

**Non-soil material:** na

**Hardness (> #10):** na




| Sieve size | Particle size, um | Percent finer | Incremental percent |
|---|---|---|---|
| 3 inch | 75000 | 100.0 | 0.0 |
| 2 inch | 50000 | 100.0 | 0.0 |
| 1.5 inch | 37500 | 100.0 | 0.0 |
| 1 inch | 25000 | 100.0 | 0.0 |
| 3/4 inch | 19000 | 100.0 | 0.0 |
| 3/8 inch | 9500 | 100.0 | 0.0 |
| #4 | 4750 | 100.0 | 0.0 |
| #10 | 2000 | 100.0 | 0.0 |
| #20 | 850 | 100.0 | 0.0 |
| #40 | 425 | 99.9 | 0.1 |
| #60 | 250 | 97.3 | 2.6 |
| #80 | 180 | 85.8 | 11.5 |
| #100 | 150 | 73.4 | 12.4 |
| #200 | 75 | 22.5 | 50.9 |
| Hyd1 | 35.3 | 7.7 | 14.8 |
| Hyd2 | 22.8 | 5.9 | 1.8 |
| Hyd3 | 13.3 | 4.5 | 1.4 |
| Hyd4 | 9.5 | 3.6 | 0.9 |
| Hyd5 | 6.6 | 3.2 | 0.4 |
| Hyd6 | 3.4 | 2.3 | 0.9 |
| Hyd7 | 1.4 | 1.4 | 0.9 |
| | | | |

| Soil Classification | Percent of sample |
|---|---|
| Gravel | 0.0 |
| Sand | 77.5 |
| Coarse Sand | 0.0 |
| Medium Sand | 0.1 |
| Fine Sand | 77.4 |
| Silt | 19.3 |
| Clay | 3.2 |
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# Particle Size of Soils by ASTM D422

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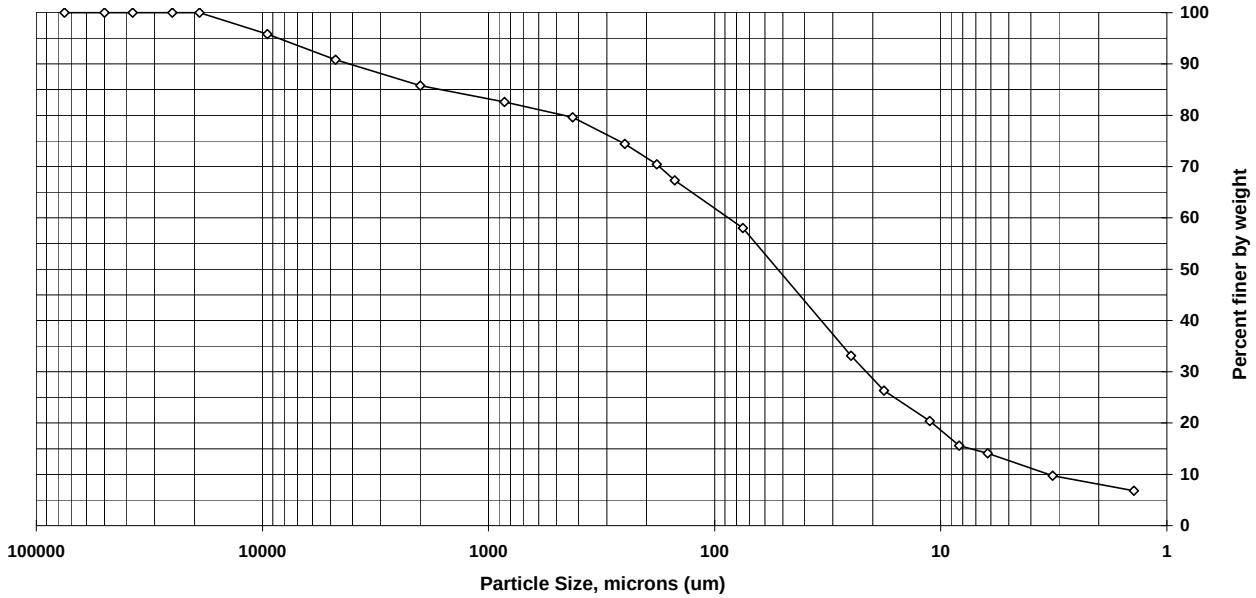
|---|---|---|---|---|---|
| | | | | **Date Received:** | 8/23/2018 |
| **Sample ID:** | VAP-29 (53) | **Percent Solids:** | 92.1% | **Start Date:** | 8/27/2018 |
| **Lab ID:** | 200-44940-A-7 | **Specific Gravity:** | 2.650 | **End Date:** | 8/31/2018 |

**Shape (> #10):** subangular

**Non-soil material:** na

**Hardness (> #10):** hard




| Sieve size | Particle size, um | Percent finer | Incremental percent |
|---|---|---|---|
| 3 inch | 75000 | 100.0 | 0.0 |
| 2 inch | 50000 | 100.0 | 0.0 |
| 1.5 inch | 37500 | 100.0 | 0.0 |
| 1 inch | 25000 | 100.0 | 0.0 |
| 3/4 inch | 19000 | 100.0 | 0.0 |
| 3/8 inch | 9500 | 95.8 | 4.2 |
| #4 | 4750 | 90.8 | 5.0 |
| #10 | 2000 | 85.8 | 5.0 |
| #20 | 850 | 82.6 | 3.2 |
| #40 | 425 | 79.6 | 3.0 |
| #60 | 250 | 74.4 | 5.2 |
| #80 | 180 | 70.4 | 4.0 |
| #100 | 150 | 67.3 | 3.1 |
| #200 | 75 | 58.0 | 9.3 |
| Hyd1 | 24.9 | 33.1 | 24.9 |
| Hyd2 | 17.8 | 26.3 | 6.8 |
| Hyd3 | 11.2 | 20.4 | 5.9 |
| Hyd4 | 8.3 | 15.6 | 4.8 |
| Hyd5 | 6.2 | 14.1 | 1.5 |
| Hyd6 | 3.2 | 9.7 | 4.4 |
| Hyd7 | 1.4 | 6.8 | 2.9 |
| | | | |

| Soil Classification | Percent of sample |
|---|---|
| Gravel | 9.2 |
| Sand | 32.8 |
| Coarse Sand | 5.0 |
| Medium Sand | 6.2 |
| Fine Sand | 21.6 |
| Silt | 43.9 |
| Clay | 14.1 |
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# Particle Size of Soils by ASTM D422

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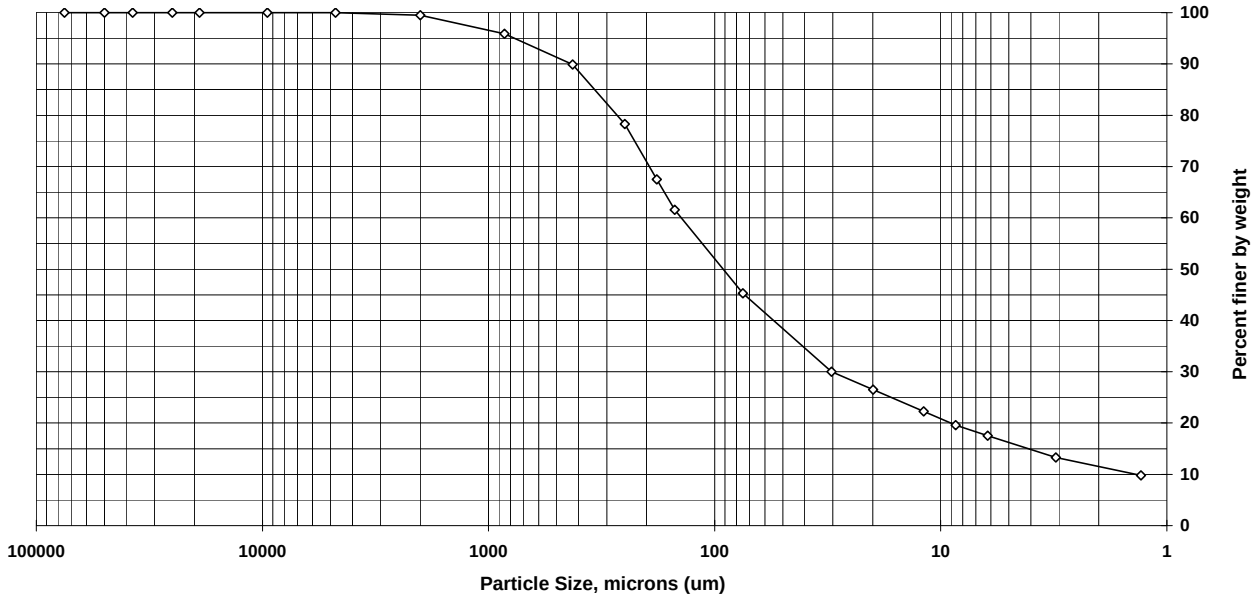
|---|---|---|---|---|---|
| | | | | **Date Received:** | 8/23/2018 |
| **Sample ID:** | VAP-29 (74) | **Percent Solids:** | 93.6% | **Start Date:** | 8/28/2018 |
| **Lab ID:** | 200-44940-A-8 | **Specific Gravity:** | 2.650 | **End Date:** | 9/4/2018 |

**Shape (> #10):** angular

**Non-soil material:** na

**Hardness (> #10):** hard




| Sieve size | Particle size, um | Percent finer | Incremental percent |
|---|---|---|---|
| 3 inch | 75000 | 100.0 | 0.0 |
| 2 inch | 50000 | 100.0 | 0.0 |
| 1.5 inch | 37500 | 100.0 | 0.0 |
| 1 inch | 25000 | 100.0 | 0.0 |
| 3/4 inch | 19000 | 100.0 | 0.0 |
| 3/8 inch | 9500 | 100.0 | 0.0 |
| #4 | 4750 | 100.0 | 0.0 |
| #10 | 2000 | 99.5 | 0.5 |
| #20 | 850 | 95.9 | 3.6 |
| #40 | 425 | 89.9 | 6.0 |
| #60 | 250 | 78.3 | 11.6 |
| #80 | 180 | 67.5 | 10.8 |
| #100 | 150 | 61.6 | 5.9 |
| #200 | 75 | 45.3 | 16.3 |
| Hyd1 | 30.4 | 30.0 | 15.3 |
| Hyd2 | 19.9 | 26.5 | 3.5 |
| Hyd3 | 11.9 | 22.3 | 4.2 |
| Hyd4 | 8.6 | 19.6 | 2.7 |
| Hyd5 | 6.2 | 17.5 | 2.1 |
| Hyd6 | 3.1 | 13.3 | 4.2 |
| Hyd7 | 1.3 | 9.8 | 3.5 |
| | | | |

| Soil Classification | Percent of sample |
|---|---|
| Gravel | 0.0 |
| Sand | 54.7 |
| Coarse Sand | 0.5 |
| Medium Sand | 9.6 |
| Fine Sand | 44.6 |
| Silt | 27.8 |
| Clay | 17.5 |
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# Particle Size of Soils by ASTM D422

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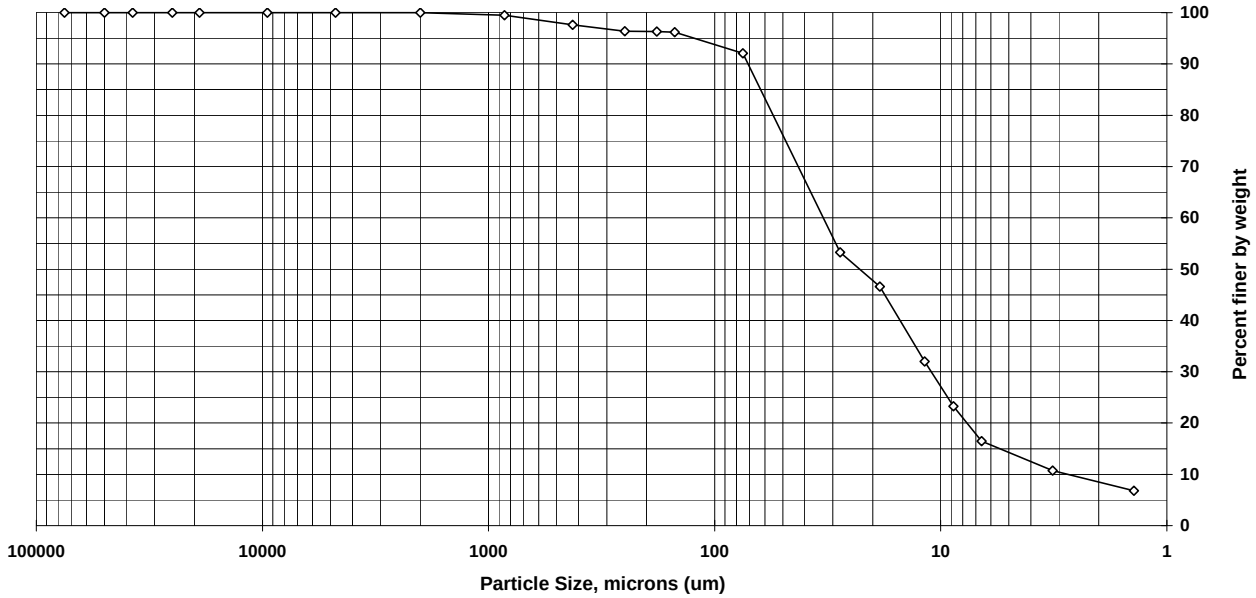
|---|---|---|---|---|---|
| | | | | **Date Received:** | 8/23/2018 |
| **Sample ID:** | VAP-28 (44) | **Percent Solids:** | 89.9% | **Start Date:** | 8/28/2018 |
| **Lab ID:** | 200-44940-A-9 | **Specific Gravity:** | 2.650 | **End Date:** | 9/4/2018 |

**Shape (> #10):** na

**Non-soil material:** na

**Hardness (> #10):** na




| Sieve size | Particle size, um | Percent finer | Incremental percent |
|---|---|---|---|
| 3 inch | 75000 | 100.0 | 0.0 |
| 2 inch | 50000 | 100.0 | 0.0 |
| 1.5 inch | 37500 | 100.0 | 0.0 |
| 1 inch | 25000 | 100.0 | 0.0 |
| 3/4 inch | 19000 | 100.0 | 0.0 |
| 3/8 inch | 9500 | 100.0 | 0.0 |
| #4 | 4750 | 100.0 | 0.0 |
| #10 | 2000 | 100.0 | 0.0 |
| #20 | 850 | 99.5 | 0.5 |
| #40 | 425 | 97.6 | 1.9 |
| #60 | 250 | 96.4 | 1.2 |
| #80 | 180 | 96.3 | 0.1 |
| #100 | 150 | 96.2 | 0.1 |
| #200 | 75 | 92.1 | 4.1 |
| Hyd1 | 27.9 | 53.3 | 38.8 |
| Hyd2 | 18.6 | 46.6 | 6.7 |
| Hyd3 | 11.8 | 32.0 | 14.6 |
| Hyd4 | 8.8 | 23.3 | 8.7 |
| Hyd5 | 6.6 | 16.5 | 6.8 |
| Hyd6 | 3.2 | 10.7 | 5.8 |
| Hyd7 | 1.4 | 6.8 | 3.9 |
| | | | |

| Soil Classification | Percent of sample |
|---|---|
| Gravel | 0.0 |
| Sand | 7.9 |
| Coarse Sand | 0.0 |
| Medium Sand | 2.4 |
| Fine Sand | 5.5 |
| Silt | 75.6 |
| Clay | 16.5 |
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# Particle Size of Soils by ASTM D422

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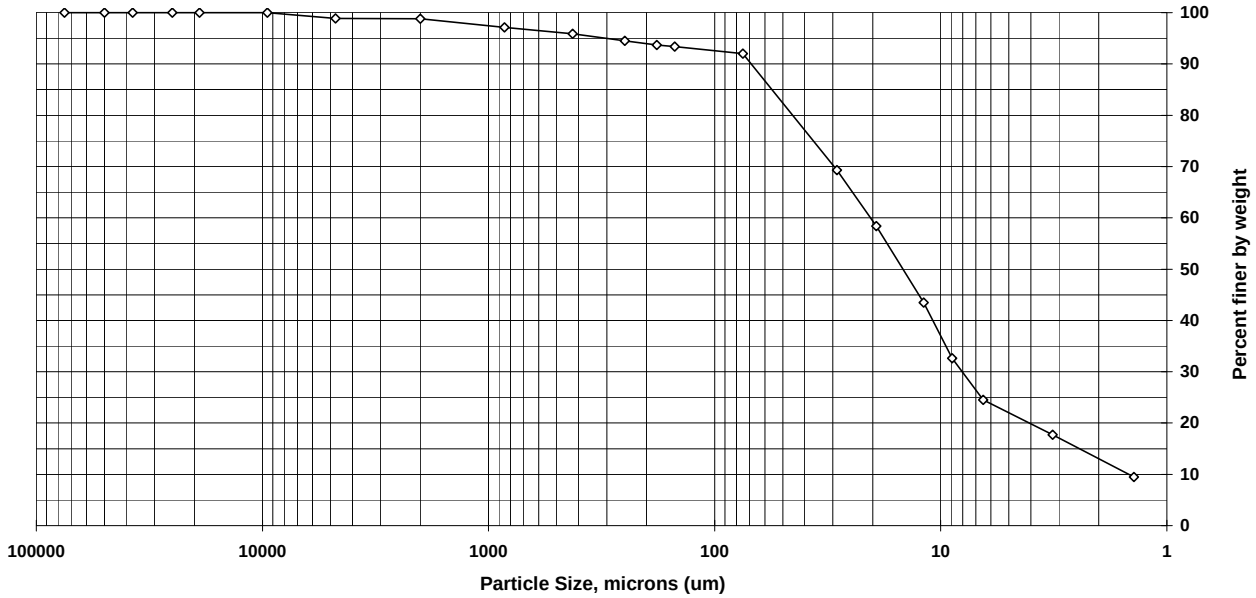
|---|---|---|---|---|---|
| | | | | **Date Received:** | 8/23/2018 |
| **Sample ID:** | VAP-28 (68) | **Percent Solids:** | 84.2% | **Start Date:** | 8/28/2018 |
| **Lab ID:** | 200-44940-A-10 | **Specific Gravity:** | 2.650 | **End Date:** | 9/4/2018 |

**Shape (> #10):** angular

**Non-soil material:** na

**Hardness (> #10):** hard




| Sieve size | Particle size, um | Percent finer | Incremental percent |
|---|---|---|---|
| 3 inch | 75000 | 100.0 | 0.0 |
| 2 inch | 50000 | 100.0 | 0.0 |
| 1.5 inch | 37500 | 100.0 | 0.0 |
| 1 inch | 25000 | 100.0 | 0.0 |
| 3/4 inch | 19000 | 100.0 | 0.0 |
| 3/8 inch | 9500 | 100.0 | 0.0 |
| #4 | 4750 | 98.9 | 1.1 |
| #10 | 2000 | 98.8 | 0.1 |
| #20 | 850 | 97.1 | 1.7 |
| #40 | 425 | 95.9 | 1.2 |
| #60 | 250 | 94.5 | 1.4 |
| #80 | 180 | 93.7 | 0.8 |
| #100 | 150 | 93.4 | 0.3 |
| #200 | 75 | 92.0 | 1.4 |
| Hyd1 | 28.8 | 69.3 | 22.7 |
| Hyd2 | 19.3 | 58.4 | 10.9 |
| Hyd3 | 11.9 | 43.5 | 14.9 |
| Hyd4 | 8.9 | 32.6 | 10.9 |
| Hyd5 | 6.5 | 24.5 | 8.1 |
| Hyd6 | 3.2 | 17.7 | 6.8 |
| Hyd7 | 1.4 | 9.5 | 8.2 |
| | | | |

| Soil Classification | Percent of sample |
|---|---|
| Gravel | 1.1 |
| Sand | 6.9 |
| Coarse Sand | 0.1 |
| Medium Sand | 2.9 |
| Fine Sand | 3.9 |
| Silt | 67.5 |
| Clay | 24.5 |
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# Particle Size of Soils by ASTM D422

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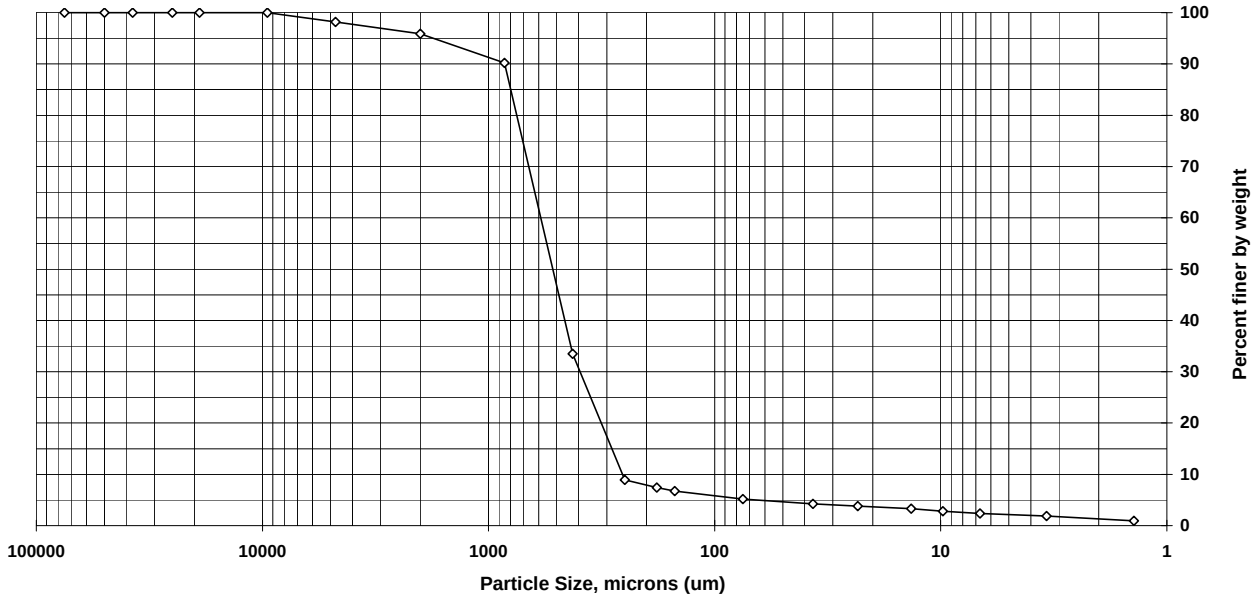
|---|---|---|---|---|---|
| | | | | **Date Received:** | 8/23/2018 |
| **Sample ID:** | VAP-28 (88) | **Percent Solids:** | 92.8% | **Start Date:** | 8/28/2018 |
| **Lab ID:** | 200-44940-A-11 | **Specific Gravity:** | 2.650 | **End Date:** | 9/4/2018 |

**Shape (> #10):** angular

**Non-soil material:** na

**Hardness (> #10):** hard




| Sieve size | Particle size, um | Percent finer | Incremental percent |
|---|---|---|---|
| 3 inch | 75000 | 100.0 | 0.0 |
| 2 inch | 50000 | 100.0 | 0.0 |
| 1.5 inch | 37500 | 100.0 | 0.0 |
| 1 inch | 25000 | 100.0 | 0.0 |
| 3/4 inch | 19000 | 100.0 | 0.0 |
| 3/8 inch | 9500 | 100.0 | 0.0 |
| #4 | 4750 | 98.2 | 1.8 |
| #10 | 2000 | 95.9 | 2.3 |
| #20 | 850 | 90.2 | 5.7 |
| #40 | 425 | 33.5 | 56.7 |
| #60 | 250 | 9.0 | 24.6 |
| #80 | 180 | 7.4 | 1.6 |
| #100 | 150 | 6.7 | 0.7 |
| #200 | 75 | 5.2 | 1.5 |
| Hyd1 | 36.7 | 4.3 | 1.0 |
| Hyd2 | 23.3 | 3.8 | 0.5 |
| Hyd3 | 13.5 | 3.3 | 0.5 |
| Hyd4 | 9.8 | 2.8 | 0.5 |
| Hyd5 | 6.7 | 2.4 | 0.5 |
| Hyd6 | 3.4 | 1.9 | 0.5 |
| Hyd7 | 1.4 | 0.9 | 0.9 |
| | | | |

| Soil Classification | Percent of sample |
|---|---|
| Gravel | 1.8 |
| Sand | 93.0 |
| Coarse Sand | 2.3 |
| Medium Sand | 62.4 |
| Fine Sand | 28.3 |
| Silt | 2.8 |
| Clay | 2.4 |
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# Particle Size of Soils by ASTM D422

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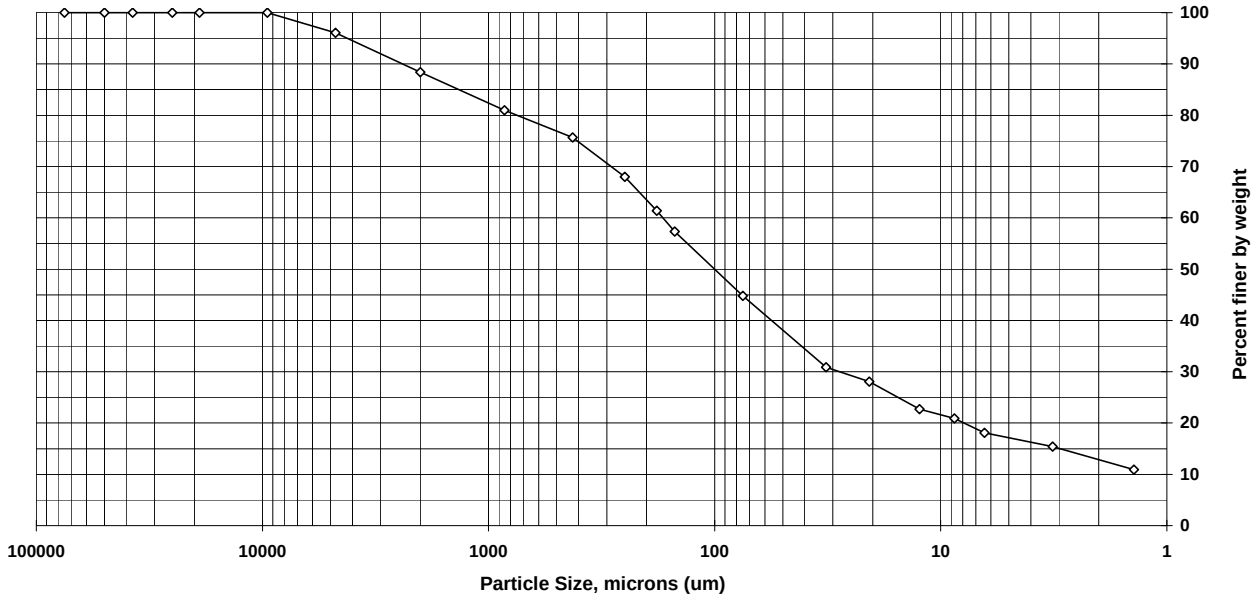
|---|---|---|---|---|---|
| | | | | **Date Received:** | 8/23/2018 |
| **Sample ID:** | VAP-28 (95) | **Percent Solids:** | 92.4% | **Start Date:** | 8/28/2018 |
| **Lab ID:** | 200-44940-A-12 | **Specific Gravity:** | 2.650 | **End Date:** | 9/4/2018 |

**Shape (> #10):** angular

**Non-soil material:** na

**Hardness (> #10):** hard




| Sieve size | Particle size, um | Percent finer | Incremental percent |
|---|---|---|---|
| 3 inch | 75000 | 100.0 | 0.0 |
| 2 inch | 50000 | 100.0 | 0.0 |
| 1.5 inch | 37500 | 100.0 | 0.0 |
| 1 inch | 25000 | 100.0 | 0.0 |
| 3/4 inch | 19000 | 100.0 | 0.0 |
| 3/8 inch | 9500 | 100.0 | 0.0 |
| #4 | 4750 | 96.1 | 3.9 |
| #10 | 2000 | 88.4 | 7.7 |
| #20 | 850 | 81.0 | 7.4 |
| #40 | 425 | 75.7 | 5.3 |
| #60 | 250 | 68.0 | 7.7 |
| #80 | 180 | 61.4 | 6.6 |
| #100 | 150 | 57.3 | 4.1 |
| #200 | 75 | 44.8 | 12.5 |
| Hyd1 | 32.2 | 30.9 | 13.9 |
| Hyd2 | 20.7 | 28.1 | 2.8 |
| Hyd3 | 12.4 | 22.7 | 5.4 |
| Hyd4 | 8.7 | 20.9 | 1.8 |
| Hyd5 | 6.4 | 18.1 | 2.8 |
| Hyd6 | 3.2 | 15.4 | 2.7 |
| Hyd7 | 1.4 | 10.9 | 4.5 |
| | | | |

| Soil Classification | Percent of sample |
|---|---|
| Gravel | 3.9 |
| Sand | 51.3 |
| Coarse Sand | 7.7 |
| Medium Sand | 12.7 |
| Fine Sand | 30.9 |
| Silt | 26.7 |
| Clay | 18.1 |
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# Particle Size of Soils by ASTM D422

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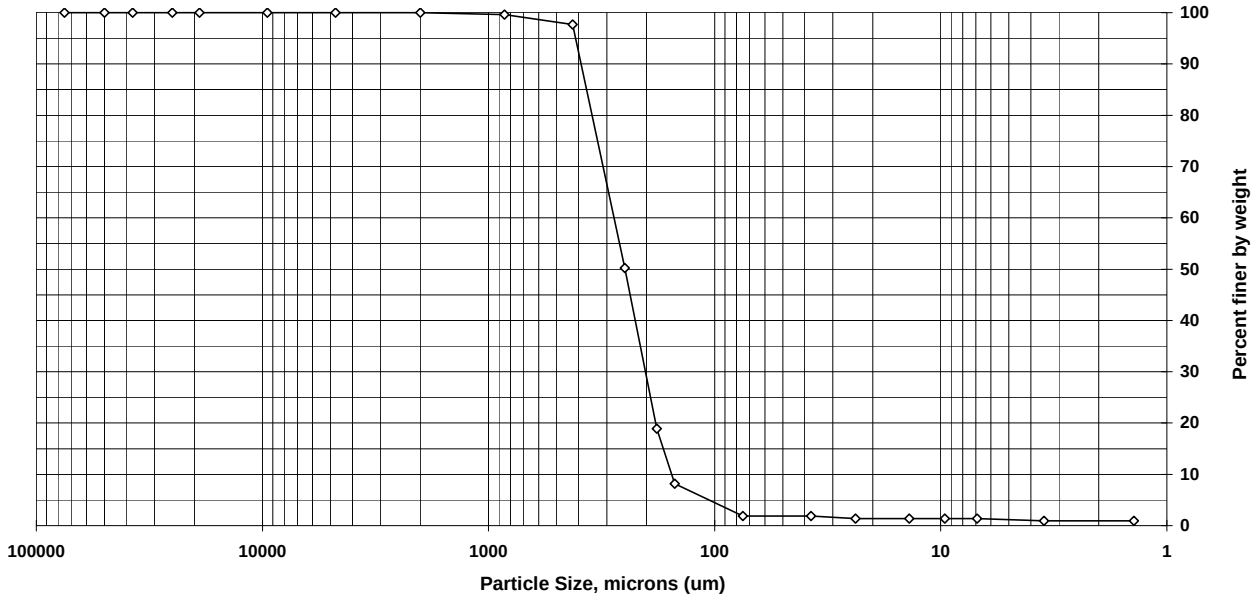
|---|---|---|---|---|---|
| | | | | **Date Received:** | 8/23/2018 |
| **Sample ID:** | MW-100B (58-60) | **Percent Solids:** | 84.4% | **Start Date:** | 8/28/2018 |
| **Lab ID:** | 200-44940-A-13 | **Specific Gravity:** | 2.650 | **End Date:** | 9/4/2018 |

**Shape (> #10):** na

**Non-soil material:** na

**Hardness (> #10):** na




| Sieve size | Particle size, um | Percent finer | Incremental percent |
|---|---|---|---|
| 3 inch | 75000 | 100.0 | 0.0 |
| 2 inch | 50000 | 100.0 | 0.0 |
| 1.5 inch | 37500 | 100.0 | 0.0 |
| 1 inch | 25000 | 100.0 | 0.0 |
| 3/4 inch | 19000 | 100.0 | 0.0 |
| 3/8 inch | 9500 | 100.0 | 0.0 |
| #4 | 4750 | 100.0 | 0.0 |
| #10 | 2000 | 100.0 | 0.0 |
| #20 | 850 | 99.6 | 0.4 |
| #40 | 425 | 97.7 | 1.9 |
| #60 | 250 | 50.2 | 47.5 |
| #80 | 180 | 18.9 | 31.3 |
| #100 | 150 | 8.2 | 10.7 |
| #200 | 75 | 1.9 | 6.3 |
| Hyd1 | 37.5 | 1.9 | 0.0 |
| Hyd2 | 23.8 | 1.4 | 0.5 |
| Hyd3 | 13.8 | 1.4 | 0.0 |
| Hyd4 | 9.6 | 1.4 | 0.0 |
| Hyd5 | 6.9 | 1.4 | 0.0 |
| Hyd6 | 3.5 | 0.9 | 0.5 |
| Hyd7 | 1.4 | 0.9 | 0.0 |
| | | | |

| Soil Classification | Percent of sample |
|---|---|
| Gravel | 0.0 |
| Sand | 98.1 |
| Coarse Sand | 0.0 |
| Medium Sand | 2.3 |
| Fine Sand | 95.8 |
| Silt | 0.5 |
| Clay | 1.4 |
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# Particle Size of Soils by ASTM D422

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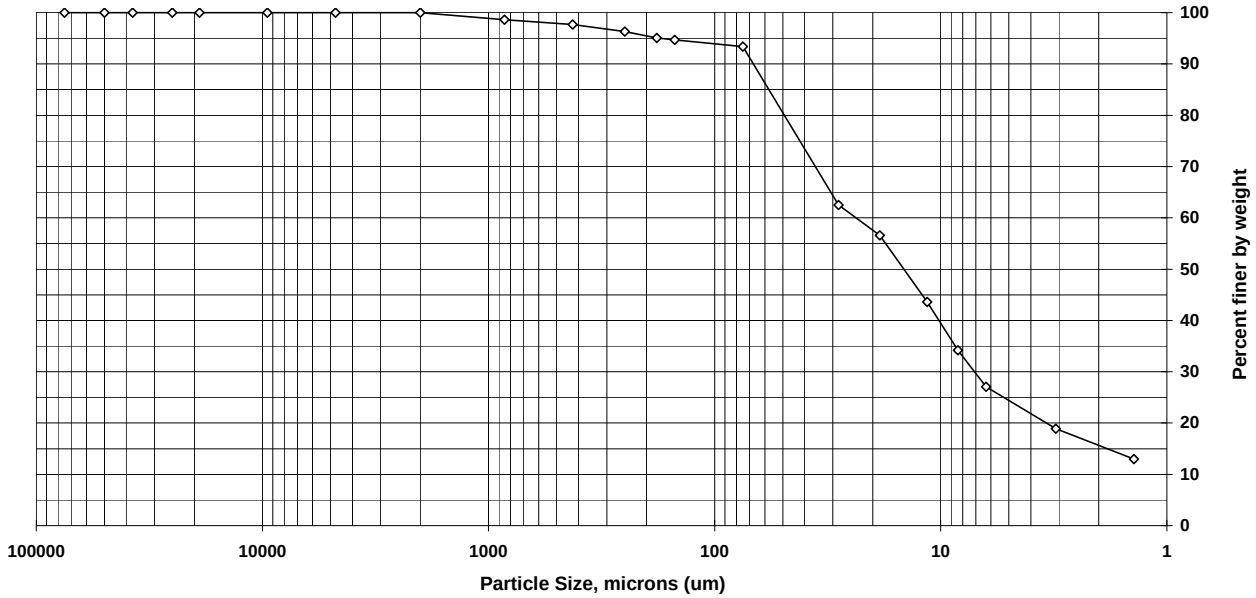
|---|---|---|---|---|---|
| | | | | **Date Received:** | 8/23/2018 |
| **Sample ID:** | MW-100B (69) | **Percent Solids:** | 88.3% | **Start Date:** | 8/28/2018 |
| **Lab ID:** | 200-44940-A-14 | **Specific Gravity:** | 2.650 | **End Date:** | 9/4/2018 |

**Shape (> #10):** na

**Non-soil material:** na

**Hardness (> #10):** na




| Sieve size | Particle size, um | Percent finer | Incremental percent |
|---|---|---|---|
| 3 inch | 75000 | 100.0 | 0.0 |
| 2 inch | 50000 | 100.0 | 0.0 |
| 1.5 inch | 37500 | 100.0 | 0.0 |
| 1 inch | 25000 | 100.0 | 0.0 |
| 3/4 inch | 19000 | 100.0 | 0.0 |
| 3/8 inch | 9500 | 100.0 | 0.0 |
| #4 | 4750 | 100.0 | 0.0 |
| #10 | 2000 | 100.0 | 0.0 |
| #20 | 850 | 98.6 | 1.4 |
| #40 | 425 | 97.7 | 0.9 |
| #60 | 250 | 96.3 | 1.4 |
| #80 | 180 | 95.1 | 1.2 |
| #100 | 150 | 94.7 | 0.4 |
| #200 | 75 | 93.4 | 1.3 |
| Hyd1 | 28.3 | 62.5 | 30.9 |
| Hyd2 | 18.6 | 56.6 | 5.9 |
| Hyd3 | 11.5 | 43.6 | 13.0 |
| Hyd4 | 8.4 | 34.2 | 9.4 |
| Hyd5 | 6.3 | 27.1 | 7.1 |
| Hyd6 | 3.1 | 18.9 | 8.2 |
| Hyd7 | 1.4 | 13.0 | 5.9 |
| | | | |

| Soil Classification | Percent of sample |
|---|---|
| Gravel | 0.0 |
| Sand | 6.6 |
| Coarse Sand | 0.0 |
| Medium Sand | 2.3 |
| Fine Sand | 4.3 |
| Silt | 66.3 |
| Clay | 27.1 |
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# Particle Size of Soils by ASTM D422

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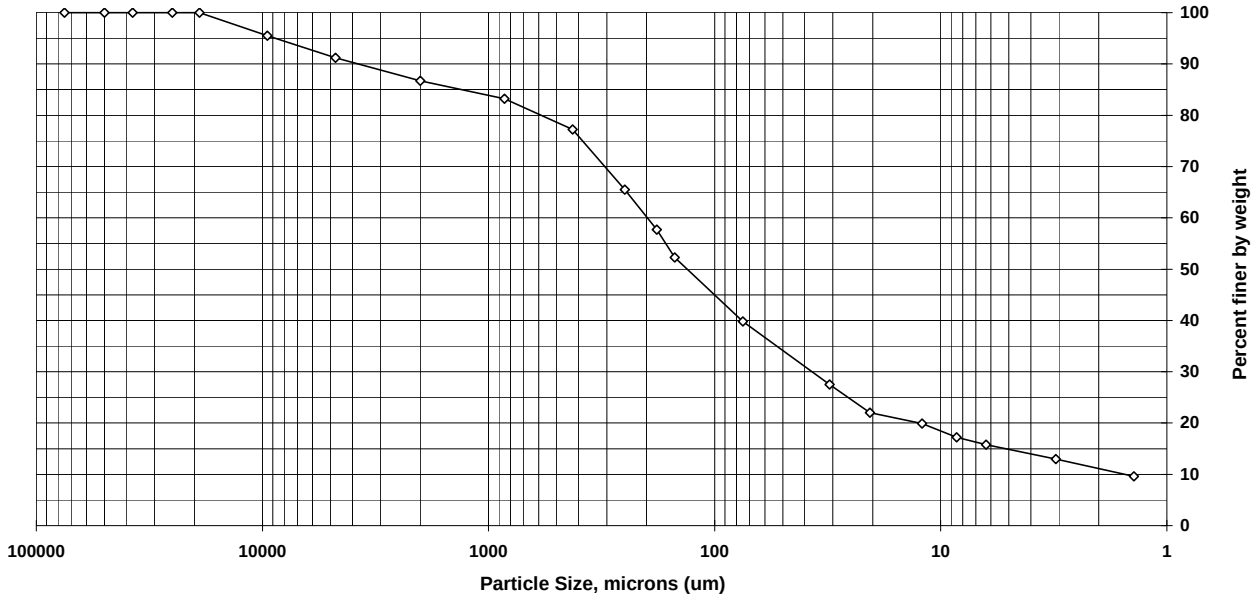
|---|---|---|---|---|---|
| | | | | **Date Received:** | 8/23/2018 |
| **Sample ID:** | MW-100B (74) | **Percent Solids:** | 93.5% | **Start Date:** | 8/28/2018 |
| **Lab ID:** | 200-44940-A-15 | **Specific Gravity:** | 2.650 | **End Date:** | 9/4/2018 |

**Shape (> #10):** subangular

**Non-soil material:** na

**Hardness (> #10):** hard




| Sieve size | Particle size, um | Percent finer | Incremental percent |
|---|---|---|---|
| 3 inch | 75000 | 100.0 | 0.0 |
| 2 inch | 50000 | 100.0 | 0.0 |
| 1.5 inch | 37500 | 100.0 | 0.0 |
| 1 inch | 25000 | 100.0 | 0.0 |
| 3/4 inch | 19000 | 100.0 | 0.0 |
| 3/8 inch | 9500 | 95.5 | 4.5 |
| #4 | 4750 | 91.2 | 4.3 |
| #10 | 2000 | 86.7 | 4.5 |
| #20 | 850 | 83.2 | 3.5 |
| #40 | 425 | 77.2 | 6.0 |
| #60 | 250 | 65.5 | 11.7 |
| #80 | 180 | 57.7 | 7.8 |
| #100 | 150 | 52.3 | 5.4 |
| #200 | 75 | 39.8 | 12.5 |
| Hyd1 | 31 | 27.5 | 12.3 |
| Hyd2 | 20.6 | 22.0 | 5.5 |
| Hyd3 | 12.1 | 19.9 | 2.1 |
| Hyd4 | 8.5 | 17.2 | 2.7 |
| Hyd5 | 6.3 | 15.8 | 1.4 |
| Hyd6 | 3.1 | 13.0 | 2.8 |
| Hyd7 | 1.4 | 9.6 | 3.4 |
| | | | |

| Soil Classification | Percent of sample |
|---|---|
| Gravel | 8.8 |
| Sand | 51.4 |
| Coarse Sand | 4.5 |
| Medium Sand | 9.5 |
| Fine Sand | 37.4 |
| Silt | 24.0 |
| Clay | 15.8 |
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# Particle Size of Soils by ASTM D422

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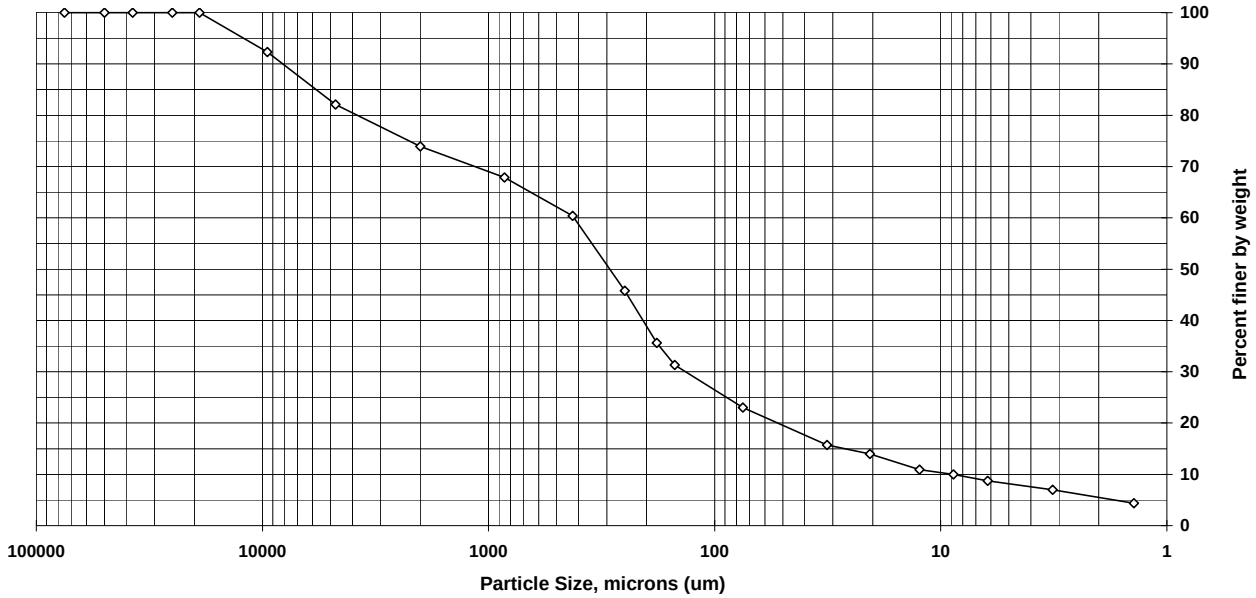
|---|---|---|---|---|---|
| | | | | **Date Received:** | 8/23/2018 |
| **Sample ID:** | MW-100B (80) | **Percent Solids:** | 91.5% | **Start Date:** | 8/28/2018 |
| **Lab ID:** | 200-44940-A-16 | **Specific Gravity:** | 2.650 | **End Date:** | 9/4/2018 |

**Shape (> #10):** angular

**Non-soil material:** na

**Hardness (> #10):** hard




| Sieve size | Particle size, um | Percent finer | Incremental percent |
|---|---|---|---|
| 3 inch | 75000 | 100.0 | 0.0 |
| 2 inch | 50000 | 100.0 | 0.0 |
| 1.5 inch | 37500 | 100.0 | 0.0 |
| 1 inch | 25000 | 100.0 | 0.0 |
| 3/4 inch | 19000 | 100.0 | 0.0 |
| 3/8 inch | 9500 | 92.3 | 7.7 |
| #4 | 4750 | 82.1 | 10.2 |
| #10 | 2000 | 73.9 | 8.2 |
| #20 | 850 | 67.9 | 6.0 |
| #40 | 425 | 60.4 | 7.5 |
| #60 | 250 | 45.8 | 14.6 |
| #80 | 180 | 35.6 | 10.2 |
| #100 | 150 | 31.3 | 4.3 |
| #200 | 75 | 23.0 | 8.3 |
| Hyd1 | 31.8 | 15.7 | 7.3 |
| Hyd2 | 20.6 | 14.0 | 1.7 |
| Hyd3 | 12.4 | 10.9 | 3.1 |
| Hyd4 | 8.8 | 10.0 | 0.9 |
| Hyd5 | 6.2 | 8.7 | 1.3 |
| Hyd6 | 3.2 | 7.0 | 1.8 |
| Hyd7 | 1.4 | 4.4 | 2.6 |
| | | | |

| Soil Classification | Percent of sample |
|---|---|
| Gravel | 17.9 |
| Sand | 59.1 |
| Coarse Sand | 8.2 |
| Medium Sand | 13.5 |
| Fine Sand | 37.4 |
| Silt | 14.3 |
| Clay | 8.7 |
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# TestAmerica Burlington

**Sediment Grain Size - D422**

| | |
|---|---|
| Client | |
| Client Sample ID | VAP-26 (78) |
| Lab Sample ID | 200-44940-A-1 |

| | |
|---|---|
| Date Received | 8/23/2018 |
| Start Date | 08/27/2018 20:36 |
| End Date | 08/31/2018 11:33 |

**Dry Weight Determination**

| | | |
|---|---|---|
| Tin Weight | 1.02 | g |
| Wet Sample + Tin | 24.07 | g |
| Dry Sample + Tin | 22.66 | g |
| % Moisture | 6.12 | % |

| | |
|---|---|
| Non-soil material: | na |
| Shape (> #10): | subangular |
| Hardness (> #10): | hard |

| | |
|---|---|
| Date/Time in oven | 08/27/2018 20:39 |
| Date/Time out of oven | 08/28/2018 14:28 |

| **Sample Weights** | Tare (g) | Pan+Samp (g) | Samp (g) |
|---|---|---|---|
| Sample Weight (Wet) | 44.04 | 139.89 | 95.85 |
| Sample Weight (Oven Dried) | | | 90 |

| **Sample Split (oven dried)** | Tare (g) | Pan+Samp (g) | Samp (g) |
|---|---|---|---|
| Sample >=#10 | | | 18.3 |
| Sample <#10 | | | 71.7 |
| % Passing #10 | | | 74.8 |

**Hydrometer Data**

| | |
|---|---|
| Serial Number | 542325 |
| Calib. Date (mm/dd/yyyy) | 01/03/2018 |
| Low Temp (C) | 17.0 |
| Reading at Low Temp | 1.0030 |
| High Temp (C) | 23.0 |
| Reading at High Temp | 1.0020 |
| Hydrometer Cal Slope | -0.000166667 |
| Hydrometer Cal Intercept | 1.005833333 |
| Default Soil Gravity | 2.6500 |

**Gravel/Sand Fraction (Sieves)**

| Sample Fraction | Size (um) | Pan Tare (g) | Pan+Sample (g) | Sample | | % Finer | Classification | Sub Class |
|---|---|---|---|---|---|---|---|---|
| 3 inch | 75000 | | | 0.00 | g | 100.0 | Gravel | |
| 2 inch | 50000 | | | 0.00 | g | 100.0 | Gravel | |
| 1.5 inch | 37500 | | | 0.00 | g | 100.0 | Gravel | |
| 1 inch | 25000 | | | 0.00 | g | 100.0 | Gravel | |
| 3/4 inch | 19000 | | | 0.00 | g | 100.0 | Gravel | |
| 3/8 inch | 9500 | 447.31 | 452.82 | 5.51 | g | 93.9 | Gravel | |
| #4 | 4750 | 488.09 | 495.37 | 7.28 | g | 85.8 | Gravel | |
| #10 | 2000 | 462.74 | 468.28 | 5.54 | g | 79.6 | Sand | Coarse |
| #20 | 850 | 374.68 | 377.74 | 3.06 | g | 76.2 | Sand | Medium |
| #40 | 425 | 363.18 | 366.43 | 3.25 | g | 72.6 | Sand | Medium |
| #60 | 250 | 353.76 | 359.65 | 5.89 | g | 66.1 | Sand | Fine |
| #80 | 180 | 319.93 | 323.57 | 3.64 | g | 62.1 | Sand | Fine |
| #100 | 150 | 329.59 | 332.85 | 3.26 | g | 58.5 | Sand | Fine |
| #200 | 75 | 314.80 | 321.42 | 6.62 | g | 51.1 | Sand | Fine |
| | | | | 0.00 | g | 51.1 | | |

**Adjusted Hydrometer Sample Mass**

| | |
|---|---|
| Hydrometer Sample Mass (g) | 90 |

**Silt/Clay Fraction (Hydrometer Test)**

| Hydrometer Test Time (min) | Actual | Spec. Gravity | Temp C | Particle Size (Micron) | % Finer | Classification | Sub Class |
|---|---|---|---|---|---|---|---|
| 2 | 2 | 1.0220 | 20.0 | 31.2 | 34.8 | Silt | |
| 5 | 5 | 1.0195 | 20.0 | 20.4 | 30.3 | Silt | |
| 15 | 15 | 1.0165 | 20.0 | 12.2 | 25 | Silt | |
| 30 | 31 | 1.0150 | 20.0 | 8.6 | 22.3 | Silt | |
| 60 | 59 | 1.0140 | 20.0 | 6.3 | 20.5 | Silt | |
| 250 | 234 | 1.0115 | 20.0 | 3.2 | 16.1 | Clay | |
| 1440 | 1418 | 1.0095 | 20.0 | 1.3 | 12.5 | Clay | |

# TestAmerica Burlington

**Sediment Grain Size - D422**

| | |
|---|---|
| Client | |
| Client Sample ID | VAP-26 (72-75) |
| Lab Sample ID | 200-44940-A-2 |

| | |
|---|---|
| Date Received | 8/23/2018 |
| Start Date | 08/27/2018 20:41 |
| End Date | 08/31/2018 11:40 |

**Dry Weight Determination**

| | | |
|---|---|---|
| Tin Weight | 1.03 | g |
| Wet Sample + Tin | 21.48 | g |
| Dry Sample + Tin | 18.02 | g |
| % Moisture | 16.92 | % |

| | |
|---|---|
| Non-soil material: | na |
| Shape (> #10): | na |
| Hardness (> #10): | na |

| | |
|---|---|
| Date/Time in oven | 08/27/2018 20:43 |
| Date/Time out of oven | 08/28/2018 14:28 |

| **Sample Weights** | Tare (g) | Pan+Samp (g) | Samp (g) |
|---|---|---|---|
| Sample Weight (Wet) | 44.03 | 189.58 | 145.55 |
| Sample Weight (Oven Dried) | | | 121 |

| **Sample Split (oven dried)** | Tare (g) | Pan+Samp (g) | Samp (g) |
|---|---|---|---|
| Sample >=#10 | | | 0 |
| Sample <#10 | | | 121 |
| % Passing #10 | | | 83.1 |

**Hydrometer Data**

| | |
|---|---|
| Serial Number | 542325 |
| Calib. Date (mm/dd/yyyy) | 01/03/2018 |
| Low Temp (C) | 17.0 |
| Reading at Low Temp | 1.0030 |
| High Temp (C) | 23.0 |
| Reading at High Temp | 1.0020 |
| Hydrometer Cal Slope | -0.000166667 |
| Hydrometer Cal Intercept | 1.005833333 |
| Default Soil Gravity | 2.6500 |

**Gravel/Sand Fraction (Sieves)**

| Sample Fraction | Size (um) | Pan Tare (g) | Pan+Sample (g) | Sample | | % Finer | Classification | Sub Class |
|---|---|---|---|---|---|---|---|---|
| 3 inch | 75000 | | | 0.00 | g | 100.0 | Gravel | |
| 2 inch | 50000 | | | 0.00 | g | 100.0 | Gravel | |
| 1.5 inch | 37500 | | | 0.00 | g | 100.0 | Gravel | |
| 1 inch | 25000 | | | 0.00 | g | 100.0 | Gravel | |
| 3/4 inch | 19000 | | | 0.00 | g | 100.0 | Gravel | |
| 3/8 inch | 9500 | | | 0.00 | g | 100.0 | Gravel | |
| #4 | 4750 | | | 0.00 | g | 100.0 | Gravel | |
| #10 | 2000 | | | 0.00 | g | 100.0 | Sand | Coarse |
| #20 | 850 | 378.93 | 379.04 | 0.11 | g | 99.9 | Sand | Medium |
| #40 | 425 | 353.01 | 353.14 | 0.13 | g | 99.8 | Sand | Medium |
| #60 | 250 | 348.97 | 349.13 | 0.16 | g | 99.7 | Sand | Fine |
| #80 | 180 | 338.57 | 338.75 | 0.18 | g | 99.6 | Sand | Fine |
| #100 | 150 | 328.87 | 330.17 | 1.30 | g | 98.5 | Sand | Fine |
| #200 | 75 | 325.40 | 392.93 | 67.53 | g | 42.7 | Sand | Fine |
| | | | | 0.00 | g | 42.7 | | |

**Adjusted Hydrometer Sample Mass**

| | |
|---|---|
| Hydrometer Sample Mass (g) | 121 |

**Silt/Clay Fraction (Hydrometer Test)**

| Hydrometer Test Time (min) | Actual | Spec. Gravity | Temp C | Particle Size (Micron) | % Finer | Classification | Sub Class |
|---|---|---|---|---|---|---|---|
| 2 | 2 | 1.0175 | 20.0 | 33 | 19.9 | Silt | |
| 5 | 5 | 1.0120 | 20.0 | 22.1 | 12.6 | Silt | |
| 15 | 15 | 1.0075 | 20.0 | 13.3 | 6.64 | Silt | |
| 30 | 32 | 1.0065 | 20.0 | 9.2 | 5.31 | Silt | |
| 60 | 60 | 1.0060 | 20.0 | 6.8 | 4.65 | Silt | |
| 250 | 265 | 1.0050 | 20.0 | 3.2 | 3.32 | Clay | |
| 1440 | 1412 | 1.0045 | 20.0 | 1.4 | 2.65 | Clay | |

# TestAmerica Burlington

**Sediment Grain Size - D422**

| | |
|---|---|
| Client | |
| Client Sample ID | VAP-26 (84) |
| Lab Sample ID | 200-44940-A-3 |

| | |
|---|---|
| Date Received | 8/23/2018 |
| Start Date | 08/27/2018 20:43 |
| End Date | 08/31/2018 11:52 |

**Dry Weight Determination**

| | | |
|---|---|---|
| Tin Weight | 1.01 | g |
| Wet Sample + Tin | 34.57 | g |
| Dry Sample + Tin | 31.49 | g |
| % Moisture | 9.18 | % |

| | |
|---|---|
| Non-soil material: | na |
| Shape (> #10): | angular |
| Hardness (> #10): | hard |

| | |
|---|---|
| Date/Time in oven | 08/27/2018 20:45 |
| Date/Time out of oven | 08/28/2018 14:29 |

| **Sample Weights** | Tare (g) | Pan+Samp (g) | Samp (g) |
|---|---|---|---|
| Sample Weight (Wet) | 44.06 | 262.22 | 218.16 |
| Sample Weight (Oven Dried) | | | 198 |

| **Sample Split (oven dried)** | Tare (g) | Pan+Samp (g) | Samp (g) |
|---|---|---|---|
| Sample >=#10 | | | 53.8 |
| Sample <#10 | | | 144 |
| % Passing #10 | | | 66 |

| **Hydrometer Data** | |
|---|---|
| Serial Number | 542325 |
| Calib. Date (mm/dd/yyyy) | 01/03/2018 |
| Low Temp (C) | 17.0 |
| Reading at Low Temp | 1.0030 |
| High Temp (C) | 23.0 |
| Reading at High Temp | 1.0020 |
| Hydrometer Cal Slope | -0.000166667 |
| Hydrometer Cal Intercept | 1.005833333 |
| Default Soil Gravity | 2.6500 |

**Gravel/Sand Fraction (Sieves)**

| Sample Fraction | Size (um) | Pan Tare (g) | Pan+Sample (g) | Sample | | % Finer | Classification | Sub Class |
|---|---|---|---|---|---|---|---|---|
| 3 inch | 75000 | | | 0.00 | g | 100.0 | Gravel | |
| 2 inch | 50000 | | | 0.00 | g | 100.0 | Gravel | |
| 1.5 inch | 37500 | | | 0.00 | g | 100.0 | Gravel | |
| 1 inch | 25000 | | | 0.00 | g | 100.0 | Gravel | |
| 3/4 inch | 19000 | 457.74 | 475.52 | 17.78 | g | 91.0 | Gravel | |
| 3/8 inch | 9500 | 447.31 | 459.07 | 11.76 | g | 85.1 | Gravel | |
| #4 | 4750 | 488.09 | 501.21 | 13.12 | g | 78.5 | Gravel | |
| #10 | 2000 | 462.74 | 473.86 | 11.12 | g | 72.9 | Sand | Coarse |
| #20 | 850 | 374.68 | 383.98 | 9.30 | g | 68.2 | Sand | Medium |
| #40 | 425 | 363.18 | 375.86 | 12.68 | g | 61.8 | Sand | Medium |
| #60 | 250 | 353.76 | 379.03 | 25.27 | g | 49.0 | Sand | Fine |
| #80 | 180 | 319.93 | 336.32 | 16.39 | g | 40.7 | Sand | Fine |
| #100 | 150 | 329.59 | 339.13 | 9.54 | g | 35.9 | Sand | Fine |
| #200 | 75 | 314.80 | 334.26 | 19.46 | g | 26.1 | Sand | Fine |
| | | | | 0.00 | g | 26.1 | | |

**Adjusted Hydrometer Sample Mass**

| | |
|---|---|
| Hydrometer Sample Mass (g) | 198 |

**Silt/Clay Fraction (Hydrometer Test)**

| Hydrometer Test Time (min) | Actual | Spec. Gravity | Temp C | Particle Size (Micron) | % Finer | Classification | Sub Class |
|---|---|---|---|---|---|---|---|
| 2 | 2 | 1.0225 | 20.0 | 31 | 16.2 | Silt | |
| 5 | 5 | 1.0200 | 20.0 | 20.3 | 14.2 | Silt | |
| 15 | 15 | 1.0165 | 20.0 | 12.2 | 11.4 | Silt | |
| 30 | 32 | 1.0150 | 20.0 | 8.5 | 10.1 | Silt | |
| 60 | 60 | 1.0135 | 20.0 | 6.3 | 8.92 | Silt | |
| 250 | 259 | 1.0110 | 20.0 | 3.1 | 6.89 | Clay | |
| 1440 | 1406 | 1.0090 | 20.0 | 1.4 | 5.27 | Clay | |

# TestAmerica Burlington

**Sediment Grain Size - D422**

| | |
|---|---|
| Client | |
| Client Sample ID | VAP-27 (79) |
| Lab Sample ID | 200-44940-A-4 |

| | |
|---|---|
| Date Received | 8/23/2018 |
| Start Date | 08/27/2018 20:45 |
| End Date | 08/31/2018 11:54 |

**Dry Weight Determination**

| | | |
|---|---|---|
| Tin Weight | 1.03 | g |
| Wet Sample + Tin | 29.77 | g |
| Dry Sample + Tin | 25.68 | g |
| % Moisture | 14.23 | % |

| | |
|---|---|
| Non-soil material: | na |
| Shape (> #10): | na |
| Hardness (> #10): | na |

| | |
|---|---|
| Date/Time in oven | 08/27/2018 20:47 |
| Date/Time out of oven | 08/28/2018 14:29 |

| **Sample Weights** | Tare (g) | Pan+Samp (g) | Samp (g) |
|---|---|---|---|
| Sample Weight (Wet) | 44.65 | 208.77 | 164.12 |
| Sample Weight (Oven Dried) | | | 141 |

| **Sample Split (oven dried)** | Tare (g) | Pan+Samp (g) | Samp (g) |
|---|---|---|---|
| Sample >=#10 | | | 0 |
| Sample <#10 | | | 141 |
| % Passing #10 | | | 85.9 |

**Hydrometer Data**

| | |
|---|---|
| Serial Number | 542325 |
| Calib. Date (mm/dd/yyyy) | 01/03/2018 |
| Low Temp (C) | 17.0 |
| Reading at Low Temp | 1.0030 |
| High Temp (C) | 23.0 |
| Reading at High Temp | 1.0020 |
| Hydrometer Cal Slope | -0.000166667 |
| Hydrometer Cal Intercept | 1.005833333 |
| Default Soil Gravity | 2.6500 |

**Gravel/Sand Fraction (Sieves)**

| Sample Fraction | Size (um) | Pan Tare (g) | Pan+Sample (g) | Sample | | % Finer | Classification | Sub Class |
|---|---|---|---|---|---|---|---|---|
| 3 inch | 75000 | | | 0.00 | g | 100.0 | Gravel | |
| 2 inch | 50000 | | | 0.00 | g | 100.0 | Gravel | |
| 1.5 inch | 37500 | | | 0.00 | g | 100.0 | Gravel | |
| 1 inch | 25000 | | | 0.00 | g | 100.0 | Gravel | |
| 3/4 inch | 19000 | | | 0.00 | g | 100.0 | Gravel | |
| 3/8 inch | 9500 | | | 0.00 | g | 100.0 | Gravel | |
| #4 | 4750 | | | 0.00 | g | 100.0 | Gravel | |
| #10 | 2000 | | | 0.00 | g | 100.0 | Sand | Coarse |
| #20 | 850 | 378.93 | 379.21 | 0.28 | g | 99.8 | Sand | Medium |
| #40 | 425 | 353.01 | 353.15 | 0.14 | g | 99.7 | Sand | Medium |
| #60 | 250 | 348.97 | 349.26 | 0.29 | g | 99.5 | Sand | Fine |
| #80 | 180 | 338.57 | 338.84 | 0.27 | g | 99.3 | Sand | Fine |
| #100 | 150 | 328.87 | 329.37 | 0.50 | g | 98.9 | Sand | Fine |
| #200 | 75 | 325.40 | 382.72 | 57.32 | g | 58.2 | Sand | Fine |
| | | | | 0.00 | g | 58.2 | | |

**Adjusted Hydrometer Sample Mass**

| | |
|---|---|
| Hydrometer Sample Mass (g) | 141 |

**Silt/Clay Fraction (Hydrometer Test)**

| Hydrometer Test Time (min) | Actual | Spec. Gravity | Temp C | Particle Size (Micron) | % Finer | Classification | Sub Class |
|---|---|---|---|---|---|---|---|
| 2 | 2 | 1.0260 | 20.0 | 29.6 | 26.8 | Silt | |
| 5 | 5 | 1.0195 | 20.0 | 20.4 | 19.4 | Silt | |
| 15 | 15 | 1.0110 | 20.0 | 12.9 | 9.68 | Silt | |
| 30 | 30 | 1.0095 | 20.0 | 9.3 | 7.97 | Silt | |
| 60 | 57 | 1.0080 | 20.0 | 6.8 | 6.26 | Silt | |
| 250 | 253 | 1.0070 | 20.0 | 3.3 | 5.13 | Clay | |
| 1440 | 1400 | 1.0060 | 20.0 | 1.4 | 3.99 | Clay | |

# TestAmerica Burlington

**Sediment Grain Size - D422**

| | | | |
|---|---|---|---|
| Client | | Date Received | 8/23/2018 |
| Client Sample ID | VAP-27 (83) | Start Date | 08/27/2018 20:47 |
| Lab Sample ID | 200-44940-A-5 | End Date | 08/31/2018 12:37 |

**Dry Weight Determination**

| | | |
|---|---|---|
| Tin Weight | 1.03 | g |
| Wet Sample + Tin | 30.23 | g |
| Dry Sample + Tin | 25.70 | g |
| % Moisture | 15.51 | % |

| | |
|---|---|
| Non-soil material: | na |
| Shape (> #10): | na |
| Hardness (> #10): | na |
| Date/Time in oven | 08/27/2018 20:50 |
| Date/Time out of oven | 08/28/2018 14:29 |

| Sample Weights | Tare (g) | Pan+Samp (g) | Samp (g) |
|---|---|---|---|
| Sample Weight (Wet) | 44.09 | 107.95 | 63.86 |
| Sample Weight (Oven Dried) | | | 54 |

| Sample Split (oven dried) | Tare (g) | Pan+Samp (g) | Samp (g) |
|---|---|---|---|
| Sample >=#10 | | | 0 |
| Sample <#10 | | | 54 |
| % Passing #10 | | | 84.6 |

**Hydrometer Data**

| | |
|---|---|
| Serial Number | 542325 |
| Calib. Date (mm/dd/yyyy) | 01/03/2018 |
| Low Temp (C) | 17.0 |
| Reading at Low Temp | 1.0030 |
| High Temp (C) | 23.0 |
| Reading at High Temp | 1.0020 |
| Hydrometer Cal Slope | -0.000166667 |
| Hydrometer Cal Intercept | 1.005833333 |
| Default Soil Gravity | 2.6500 |

**Gravel/Sand Fraction (Sieves)**

| Sample Fraction | Size (um) | Pan Tare (g) | Pan+Sample (g) | Sample | | % Finer | Classification | Sub Class |
|---|---|---|---|---|---|---|---|---|
| 3 inch | 75000 | | | 0.00 | g | 100.0 | Gravel | |
| 2 inch | 50000 | | | 0.00 | g | 100.0 | Gravel | |
| 1.5 inch | 37500 | | | 0.00 | g | 100.0 | Gravel | |
| 1 inch | 25000 | | | 0.00 | g | 100.0 | Gravel | |
| 3/4 inch | 19000 | | | 0.00 | g | 100.0 | Gravel | |
| 3/8 inch | 9500 | | | 0.00 | g | 100.0 | Gravel | |
| #4 | 4750 | | | 0.00 | g | 100.0 | Gravel | |
| #10 | 2000 | | | 0.00 | g | 100.0 | Sand | Coarse |
| #20 | 850 | 374.68 | 374.73 | 0.05 | g | 99.9 | Sand | Medium |
| #40 | 425 | 363.18 | 363.29 | 0.11 | g | 99.7 | Sand | Medium |
| #60 | 250 | 353.76 | 353.95 | 0.19 | g | 99.3 | Sand | Fine |
| #80 | 180 | 319.93 | 320.05 | 0.12 | g | 99.1 | Sand | Fine |
| #100 | 150 | 329.59 | 329.80 | 0.21 | g | 98.7 | Sand | Fine |
| #200 | 75 | 314.80 | 315.32 | 0.52 | g | 97.7 | Sand | Fine |
| | | | | 0.00 | g | 97.7 | | |

**Adjusted Hydrometer Sample Mass**

| | |
|---|---|
| Hydrometer Sample Mass (g) | 54 |

**Silt/Clay Fraction (Hydrometer Test)**

| Hydrometer Test Time (min) | Actual | Spec. Gravity | Temp C | Particle Size (Micron) | % Finer | Classification | Sub Class |
|---|---|---|---|---|---|---|---|
| 2 | 2 | 1.0300 | 20.0 | 27.9 | 81.8 | Silt | |
| 5 | 5 | 1.0280 | 20.0 | 18.2 | 75.8 | Silt | |
| 15 | 15 | 1.0255 | 20.0 | 10.9 | 68.4 | Silt | |
| 30 | 30 | 1.0235 | 20.0 | 7.9 | 62.5 | Silt | |
| 60 | 57 | 1.0210 | 20.0 | 5.9 | 55 | Silt | |
| 250 | 247 | 1.0175 | 20.0 | 3 | 44.6 | Clay | |
| 1440 | 1394 | 1.0135 | 20.0 | 1.3 | 32.7 | Clay | |

# TestAmerica Burlington

**Sediment Grain Size - D422**

| | |
|---|---|
| Client | |
| Client Sample ID | VAP-29 (27) |
| Lab Sample ID | 200-44940-A-6 |

| | |
|---|---|
| Date Received | 8/23/2018 |
| Start Date | 08/27/2018 20:50 |
| End Date | 08/31/2018 12:40 |

**Dry Weight Determination**

| | | |
|---|---|---|
| Tin Weight | 1.03 | g |
| Wet Sample + Tin | 29.87 | g |
| Dry Sample + Tin | 25.63 | g |
| % Moisture | 14.70 | % |

| | |
|---|---|
| Non-soil material: | na |
| Shape (> #10): | na |
| Hardness (> #10): | na |

| | |
|---|---|
| Date/Time in oven | 08/27/2018 20:52 |
| Date/Time out of oven | 08/28/2018 14:30 |

| **Sample Weights** | Tare (g) | Pan+Samp (g) | Samp (g) |
|---|---|---|---|
| Sample Weight (Wet) | 44.13 | 251.12 | 206.99 |
| Sample Weight (Oven Dried) | | | 177 |

| **Sample Split (oven dried)** | Tare (g) | Pan+Samp (g) | Samp (g) |
|---|---|---|---|
| Sample >=#10 | | | 0 |
| Sample <#10 | | | 177 |
| % Passing #10 | | | 85.5 |

**Hydrometer Data**

| | |
|---|---|
| Serial Number | 542325 |
| Calib. Date (mm/dd/yyyy) | 01/03/2018 |
| Low Temp (C) | 17.0 |
| Reading at Low Temp | 1.0030 |
| High Temp (C) | 23.0 |
| Reading at High Temp | 1.0020 |
| Hydrometer Cal Slope | -0.000166667 |
| Hydrometer Cal Intercept | 1.005833333 |
| Default Soil Gravity | 2.6500 |

**Gravel/Sand Fraction (Sieves)**

| Sample Fraction | Size (um) | Pan Tare (g) | Pan+Sample (g) | Sample | | % Finer | Classification | Sub Class |
|---|---|---|---|---|---|---|---|---|
| 3 inch | 75000 | | | 0.00 | g | 100.0 | Gravel | |
| 2 inch | 50000 | | | 0.00 | g | 100.0 | Gravel | |
| 1.5 inch | 37500 | | | 0.00 | g | 100.0 | Gravel | |
| 1 inch | 25000 | | | 0.00 | g | 100.0 | Gravel | |
| 3/4 inch | 19000 | | | 0.00 | g | 100.0 | Gravel | |
| 3/8 inch | 9500 | | | 0.00 | g | 100.0 | Gravel | |
| #4 | 4750 | | | 0.00 | g | 100.0 | Gravel | |
| #10 | 2000 | | | 0.00 | g | 100.0 | Sand | Coarse |
| #20 | 850 | 378.93 | 379.01 | 0.08 | g | 100.0 | Sand | Medium |
| #40 | 425 | 353.01 | 353.24 | 0.23 | g | 99.9 | Sand | Medium |
| #60 | 250 | 348.97 | 353.57 | 4.60 | g | 97.3 | Sand | Fine |
| #80 | 180 | 338.57 | 359.01 | 20.44 | g | 85.8 | Sand | Fine |
| #100 | 150 | 328.87 | 350.86 | 21.99 | g | 73.4 | Sand | Fine |
| #200 | 75 | 325.40 | 415.41 | 90.01 | g | 22.5 | Sand | Fine |
| | | | | 0.00 | g | 22.5 | | |

**Adjusted Hydrometer Sample Mass**

| | |
|---|---|
| Hydrometer Sample Mass (g) | 177 |

**Silt/Clay Fraction (Hydrometer Test)**

| Hydrometer Test Time (min) | Actual | Spec. Gravity | Temp C | Particle Size (Micron) | % Finer | Classification | Sub Class |
|---|---|---|---|---|---|---|---|
| 2 | 2 | 1.0110 | 20.0 | 35.3 | 7.71 | Silt | |
| 5 | 5 | 1.0090 | 20.0 | 22.8 | 5.9 | Silt | |
| 15 | 15 | 1.0075 | 20.0 | 13.3 | 4.54 | Silt | |
| 30 | 30 | 1.0065 | 20.0 | 9.5 | 3.63 | Silt | |
| 60 | 63 | 1.0060 | 20.0 | 6.6 | 3.18 | Silt | |
| 250 | 241 | 1.0050 | 20.0 | 3.4 | 2.27 | Clay | |
| 1440 | 1388 | 1.0040 | 20.0 | 1.4 | 1.36 | Clay | |

# TestAmerica Burlington

**Sediment Grain Size - D422**

| | |
|---|---|
| Client | |
| Client Sample ID | VAP-29 (53) |
| Lab Sample ID | 200-44940-A-7 |

| | |
|---|---|
| Date Received | 8/23/2018 |
| Start Date | 08/27/2018 20:52 |
| End Date | 08/31/2018 12:46 |

**Dry Weight Determination**

| | | |
|---|---|---|
| Tin Weight | 1.02 | g |
| Wet Sample + Tin | 30.08 | g |
| Dry Sample + Tin | 27.79 | g |
| % Moisture | 7.88 | % |

| | |
|---|---|
| Non-soil material: | na |
| Shape (> #10): | subangular |
| Hardness (> #10): | hard |

| | |
|---|---|
| Date/Time in oven | 08/27/2018 20:54 |
| Date/Time out of oven | 08/28/2018 14:30 |

| **Sample Weights** | Tare (g) | Pan+Samp (g) | Samp (g) |
|---|---|---|---|
| Sample Weight (Wet) | 44.08 | 223.32 | 179.24 |
| Sample Weight (Oven Dried) | | | 165 |

| **Sample Split (oven dried)** | Tare (g) | Pan+Samp (g) | Samp (g) |
|---|---|---|---|
| Sample >=#10 | | | 23.3 |
| Sample <#10 | | | 142 |
| % Passing #10 | | | 79.2 |

**Hydrometer Data**

| | |
|---|---|
| Serial Number | 542325 |
| Calib. Date (mm/dd/yyyy) | 01/03/2018 |
| Low Temp (C) | 17.0 |
| Reading at Low Temp | 1.0030 |
| High Temp (C) | 23.0 |
| Reading at High Temp | 1.0020 |
| Hydrometer Cal Slope | -0.000166667 |
| Hydrometer Cal Intercept | 1.005833333 |
| Default Soil Gravity | 2.6500 |

**Gravel/Sand Fraction (Sieves)**

| Sample Fraction | Size (um) | Pan Tare (g) | Pan+Sample (g) | Sample | | % Finer | Classification | Sub Class |
|---|---|---|---|---|---|---|---|---|
| 3 inch | 75000 | | | 0.00 | g | 100.0 | Gravel | |
| 2 inch | 50000 | | | 0.00 | g | 100.0 | Gravel | |
| 1.5 inch | 37500 | | | 0.00 | g | 100.0 | Gravel | |
| 1 inch | 25000 | | | 0.00 | g | 100.0 | Gravel | |
| 3/4 inch | 19000 | | | 0.00 | g | 100.0 | Gravel | |
| 3/8 inch | 9500 | 447.31 | 454.27 | 6.96 | g | 95.8 | Gravel | |
| #4 | 4750 | 488.09 | 496.29 | 8.20 | g | 90.8 | Gravel | |
| #10 | 2000 | 462.74 | 470.91 | 8.17 | g | 85.8 | Sand | Coarse |
| #20 | 850 | 374.68 | 379.96 | 5.28 | g | 82.6 | Sand | Medium |
| #40 | 425 | 363.18 | 368.18 | 5.00 | g | 79.6 | Sand | Medium |
| #60 | 250 | 353.76 | 362.32 | 8.56 | g | 74.4 | Sand | Fine |
| #80 | 180 | 319.93 | 326.59 | 6.66 | g | 70.4 | Sand | Fine |
| #100 | 150 | 329.59 | 334.77 | 5.18 | g | 67.3 | Sand | Fine |
| #200 | 75 | 314.80 | 330.11 | 15.31 | g | 58.0 | Sand | Fine |
| | | | | 0.00 | g | 58.0 | | |

**Adjusted Hydrometer Sample Mass**

| | |
|---|---|
| Hydrometer Sample Mass (g) | 165 |

**Silt/Clay Fraction (Hydrometer Test)**

| Hydrometer Test Time (min) | Actual | Spec. Gravity | Temp C | Particle Size (Micron) | % Finer | Classification | Sub Class |
|---|---|---|---|---|---|---|---|
| 2 | 2 | 1.0365 | 20.0 | 24.9 | 33.1 | Silt | |
| 5 | 5 | 1.0295 | 20.0 | 17.8 | 26.3 | Silt | |
| 15 | 15 | 1.0235 | 20.0 | 11.2 | 20.4 | Silt | |
| 30 | 31 | 1.0185 | 20.0 | 8.3 | 15.6 | Silt | |
| 60 | 57 | 1.0170 | 20.0 | 6.2 | 14.1 | Silt | |
| 250 | 235 | 1.0125 | 20.0 | 3.2 | 9.73 | Clay | |
| 1440 | 1382 | 1.0095 | 20.0 | 1.4 | 6.81 | Clay | |

# TestAmerica Burlington

**Sediment Grain Size - D422**

| | |
|---|---|
| Client | |
| Client Sample ID | VAP-29 (74) |
| Lab Sample ID | 200-44940-A-8 |

| | |
|---|---|
| Date Received | 8/23/2018 |
| Start Date | 08/28/2018 17:22 |
| End Date | 09/04/2018 10:49 |

**Dry Weight Determination**

| | | |
|---|---|---|
| Tin Weight | 1.01 | g |
| Wet Sample + Tin | 20.60 | g |
| Dry Sample + Tin | 19.34 | g |
| % Moisture | 6.43 | % |

| | |
|---|---|
| Non-soil material: | na |
| Shape (> #10): | angular |
| Hardness (> #10): | hard |

| | |
|---|---|
| Date/Time in oven | 08/28/2018 17:24 |
| Date/Time out of oven | 08/29/2018 14:53 |

| **Sample Weights** | Tare (g) | Pan+Samp (g) | Samp (g) |
|---|---|---|---|
| Sample Weight (Wet) | 44.11 | 167.30 | 123.19 |
| Sample Weight (Oven Dried) | | | 115 |

| **Sample Split (oven dried)** | Tare (g) | Pan+Samp (g) | Samp (g) |
|---|---|---|---|
| Sample >=#10 | | | 0.55 |
| Sample <#10 | | | 114 |
| % Passing #10 | | | 92.5 |

**Hydrometer Data**

| | |
|---|---|
| Serial Number | 542325 |
| Calib. Date (mm/dd/yyyy) | 01/03/2018 |
| Low Temp (C) | 17.0 |
| Reading at Low Temp | 1.0030 |
| High Temp (C) | 23.0 |
| Reading at High Temp | 1.0020 |
| Hydrometer Cal Slope | -0.000166667 |
| Hydrometer Cal Intercept | 1.005833333 |
| Default Soil Gravity | 2.6500 |

**Gravel/Sand Fraction (Sieves)**

| Sample Fraction | Size (um) | Pan Tare (g) | Pan+Sample (g) | Sample | | % Finer | Classification | Sub Class |
|---|---|---|---|---|---|---|---|---|
| 3 inch | 75000 | | | 0.00 | g | 100.0 | Gravel | |
| 2 inch | 50000 | | | 0.00 | g | 100.0 | Gravel | |
| 1.5 inch | 37500 | | | 0.00 | g | 100.0 | Gravel | |
| 1 inch | 25000 | | | 0.00 | g | 100.0 | Gravel | |
| 3/4 inch | 19000 | | | 0.00 | g | 100.0 | Gravel | |
| 3/8 inch | 9500 | | | 0.00 | g | 100.0 | Gravel | |
| #4 | 4750 | | | 0.00 | g | 100.0 | Gravel | |
| #10 | 2000 | 462.75 | 463.30 | 0.55 | g | 99.5 | Sand | Coarse |
| #20 | 850 | 378.95 | 383.06 | 4.11 | g | 95.9 | Sand | Medium |
| #40 | 425 | 352.97 | 359.92 | 6.95 | g | 89.9 | Sand | Medium |
| #60 | 250 | 348.64 | 362.03 | 13.39 | g | 78.3 | Sand | Fine |
| #80 | 180 | 338.35 | 350.74 | 12.39 | g | 67.5 | Sand | Fine |
| #100 | 150 | 328.81 | 335.62 | 6.81 | g | 61.6 | Sand | Fine |
| #200 | 75 | 325.41 | 344.16 | 18.75 | g | 45.3 | Sand | Fine |
| | | | | 0.00 | g | 45.3 | | |

**Adjusted Hydrometer Sample Mass**

| | |
|---|---|
| Hydrometer Sample Mass (g) | 115 |

**Silt/Clay Fraction (Hydrometer Test)**

| Hydrometer Test Time (min) | Actual | Spec. Gravity | Temp C | Particle Size (Micron) | % Finer | Classification | Sub Class |
|---|---|---|---|---|---|---|---|
| 2 | 2 | 1.0240 | 20.0 | 30.4 | 30 | Silt | |
| 5 | 5 | 1.0215 | 20.0 | 19.9 | 26.5 | Silt | |
| 15 | 15 | 1.0185 | 20.0 | 11.9 | 22.3 | Silt | |
| 30 | 30 | 1.0165 | 20.0 | 8.6 | 19.6 | Silt | |
| 60 | 59 | 1.0150 | 20.0 | 6.2 | 17.5 | Silt | |
| 250 | 256 | 1.0120 | 20.0 | 3.1 | 13.3 | Clay | |
| 1440 | 1440 | 1.0095 | 20.0 | 1.3 | 9.78 | Clay | |

# TestAmerica Burlington

**Sediment Grain Size - D422**

| | |
|---|---|
| Client | |
| Client Sample ID | VAP-28 (44) |
| Lab Sample ID | 200-44940-A-9 |

| | |
|---|---|
| Date Received | 8/23/2018 |
| Start Date | 08/28/2018 17:25 |
| End Date | 09/04/2018 10:53 |

**Dry Weight Determination**

| | | |
|---|---|---|
| Tin Weight | 1.06 | g |
| Wet Sample + Tin | 29.22 | g |
| Dry Sample + Tin | 26.37 | g |
| % Moisture | 10.12 | % |

| | |
|---|---|
| Non-soil material: | na |
| Shape (> #10): | na |
| Hardness (> #10): | na |

| | |
|---|---|
| Date/Time in oven | 08/28/2018 17:27 |
| Date/Time out of oven | 08/29/2018 14:53 |

| **Sample Weights** | Tare (g) | Pan+Samp (g) | Samp (g) |
|---|---|---|---|
| Sample Weight (Wet) | 44.69 | 136.78 | 92.09 |
| Sample Weight (Oven Dried) | | | 82.8 |

| **Sample Split (oven dried)** | Tare (g) | Pan+Samp (g) | Samp (g) |
|---|---|---|---|
| Sample >=#10 | | | 0 |
| Sample <#10 | | | 82.8 |
| % Passing #10 | | | 89.9 |

**Hydrometer Data**

| | |
|---|---|
| Serial Number | 542325 |
| Calib. Date (mm/dd/yyyy) | 01/03/2018 |
| Low Temp (C) | 17.0 |
| Reading at Low Temp | 1.0030 |
| High Temp (C) | 23.0 |
| Reading at High Temp | 1.0020 |
| Hydrometer Cal Slope | -0.000166667 |
| Hydrometer Cal Intercept | 1.005833333 |
| Default Soil Gravity | 2.6500 |

**Gravel/Sand Fraction (Sieves)**

| Sample Fraction | Size (um) | Pan Tare (g) | Pan+Sample (g) | Sample | | % Finer | Classification | Sub Class |
|---|---|---|---|---|---|---|---|---|
| 3 inch | 75000 | | | 0.00 | g | 100.0 | Gravel | |
| 2 inch | 50000 | | | 0.00 | g | 100.0 | Gravel | |
| 1.5 inch | 37500 | | | 0.00 | g | 100.0 | Gravel | |
| 1 inch | 25000 | | | 0.00 | g | 100.0 | Gravel | |
| 3/4 inch | 19000 | | | 0.00 | g | 100.0 | Gravel | |
| 3/8 inch | 9500 | | | 0.00 | g | 100.0 | Gravel | |
| #4 | 4750 | | | 0.00 | g | 100.0 | Gravel | |
| #10 | 2000 | | | 0.00 | g | 100.0 | Sand | Coarse |
| #20 | 850 | 374.70 | 375.14 | 0.44 | g | 99.5 | Sand | Medium |
| #40 | 425 | 363.09 | 364.70 | 1.61 | g | 97.6 | Sand | Medium |
| #60 | 250 | 353.60 | 354.56 | 0.96 | g | 96.4 | Sand | Fine |
| #80 | 180 | 319.78 | 319.90 | 0.12 | g | 96.3 | Sand | Fine |
| #100 | 150 | 329.53 | 329.65 | 0.12 | g | 96.2 | Sand | Fine |
| #200 | 75 | 314.78 | 318.17 | 3.39 | g | 92.1 | Sand | Fine |
| | | | | 0.00 | g | 92.1 | | |

**Adjusted Hydrometer Sample Mass**

| | |
|---|---|
| Hydrometer Sample Mass (g) | 82.8 |

**Silt/Clay Fraction (Hydrometer Test)**

| Hydrometer Test Time (min) | Actual | Spec. Gravity | Temp C | Particle Size (Micron) | % Finer | Classification | Sub Class |
|---|---|---|---|---|---|---|---|
| 2 | 2 | 1.0300 | 20.0 | 27.9 | 53.3 | Silt | |
| 5 | 5 | 1.0265 | 20.0 | 18.6 | 46.6 | Silt | |
| 15 | 15 | 1.0190 | 20.0 | 11.8 | 32 | Silt | |
| 30 | 30 | 1.0145 | 20.0 | 8.8 | 23.3 | Silt | |
| 60 | 58 | 1.0110 | 20.0 | 6.6 | 16.5 | Silt | |
| 250 | 256 | 1.0080 | 20.0 | 3.2 | 10.7 | Clay | |
| 1440 | 1440 | 1.0060 | 20.0 | 1.4 | 6.79 | Clay | |

# TestAmerica Burlington

**Sediment Grain Size - D422**

| | | | |
|---|---|---|---|
| Client | | Date Received | 8/23/2018 |
| Client Sample ID | VAP-28 (68) | Start Date | 08/28/2018 17:28 |
| Lab Sample ID | 200-44940-A-10 | End Date | 09/04/2018 11:00 |

**Dry Weight Determination**

| | | |
|---|---|---|
| Tin Weight | 1.05 | g |
| Wet Sample + Tin | 27.14 | g |
| Dry Sample + Tin | 23.01 | g |
| % Moisture | 15.83 | % |

| | |
|---|---|
| Non-soil material: | na |
| Shape (> #10): | angular |
| Hardness (> #10): | hard |
| Date/Time in oven | 08/28/2018 17:29 |
| Date/Time out of oven | 08/29/2018 14:53 |

| **Sample Weights** | Tare (g) | Pan+Samp (g) | Samp (g) |
|---|---|---|---|
| Sample Weight (Wet) | 44.04 | 114.24 | 70.2 |
| Sample Weight (Oven Dried) | | | 59.1 |

| **Sample Split (oven dried)** | Tare (g) | Pan+Samp (g) | Samp (g) |
|---|---|---|---|
| Sample >=#10 | | | 0.69 |
| Sample <#10 | | | 58.4 |
| % Passing #10 | | | 83.2 |

**Hydrometer Data**

| | |
|---|---|
| Serial Number | 542325 |
| Calib. Date (mm/dd/yyyy) | 01/03/2018 |
| Low Temp (C) | 17.0 |
| Reading at Low Temp | 1.0030 |
| High Temp (C) | 23.0 |
| Reading at High Temp | 1.0020 |
| Hydrometer Cal Slope | -0.000166667 |
| Hydrometer Cal Intercept | 1.005833333 |
| Default Soil Gravity | 2.6500 |

**Gravel/Sand Fraction (Sieves)**

| Sample Fraction | Size (um) | Pan Tare (g) | Pan+Sample (g) | Sample | | % Finer | Classification | Sub Class |
|---|---|---|---|---|---|---|---|---|
| 3 inch | 75000 | | | 0.00 | g | 100.0 | Gravel | |
| 2 inch | 50000 | | | 0.00 | g | 100.0 | Gravel | |
| 1.5 inch | 37500 | | | 0.00 | g | 100.0 | Gravel | |
| 1 inch | 25000 | | | 0.00 | g | 100.0 | Gravel | |
| 3/4 inch | 19000 | | | 0.00 | g | 100.0 | Gravel | |
| 3/8 inch | 9500 | | | 0.00 | g | 100.0 | Gravel | |
| #4 | 4750 | 488.13 | 488.79 | 0.66 | g | 98.9 | Gravel | |
| #10 | 2000 | 462.75 | 462.78 | 0.03 | g | 98.8 | Sand | Coarse |
| #20 | 850 | 378.95 | 379.98 | 1.03 | g | 97.1 | Sand | Medium |
| #40 | 425 | 352.97 | 353.69 | 0.72 | g | 95.9 | Sand | Medium |
| #60 | 250 | 348.64 | 349.45 | 0.81 | g | 94.5 | Sand | Fine |
| #80 | 180 | 338.35 | 338.81 | 0.46 | g | 93.7 | Sand | Fine |
| #100 | 150 | 328.81 | 328.96 | 0.15 | g | 93.4 | Sand | Fine |
| #200 | 75 | 325.41 | 326.24 | 0.83 | g | 92.0 | Sand | Fine |
| | | | | 0.00 | g | 92.0 | | |

**Adjusted Hydrometer Sample Mass**

| | |
|---|---|
| Hydrometer Sample Mass (g) | 59.1 |

**Silt/Clay Fraction (Hydrometer Test)**

| Hydrometer Test Time (min) | Actual | Spec. Gravity | Temp C | Particle Size (Micron) | % Finer | Classification | Sub Class |
|---|---|---|---|---|---|---|---|
| 2 | 2 | 1.0280 | 20.0 | 28.8 | 69.3 | Silt | |
| 5 | 5 | 1.0240 | 20.0 | 19.3 | 58.4 | Silt | |
| 15 | 15 | 1.0185 | 20.0 | 11.9 | 43.5 | Silt | |
| 30 | 29 | 1.0145 | 20.0 | 8.9 | 32.6 | Silt | |
| 60 | 58 | 1.0115 | 20.0 | 6.5 | 24.5 | Silt | |
| 250 | 250 | 1.0090 | 20.0 | 3.2 | 17.7 | Clay | |
| 1440 | 1434 | 1.0060 | 20.0 | 1.4 | 9.51 | Clay | |

# TestAmerica Burlington

**Sediment Grain Size - D422**

| | |
|---|---|
| Client | |
| Client Sample ID | VAP-28 (88) |
| Lab Sample ID | 200-44940-A-11 |

| | |
|---|---|
| Date Received | 8/23/2018 |
| Start Date | 08/28/2018 18:04 |
| End Date | 09/04/2018 11:04 |

**Dry Weight Determination**

| | | |
|---|---|---|
| Tin Weight | 1.05 | g |
| Wet Sample + Tin | 20.29 | g |
| Dry Sample + Tin | 18.91 | g |
| % Moisture | 7.17 | % |

| | |
|---|---|
| Non-soil material: | na |
| Shape (> #10): | angular |
| Hardness (> #10): | hard |

| | |
|---|---|
| Date/Time in oven | 08/28/2018 18:06 |
| Date/Time out of oven | 08/29/2018 14:54 |

| **Sample Weights** | Tare (g) | Pan+Samp (g) | Samp (g) |
|---|---|---|---|
| Sample Weight (Wet) | 44.06 | 227.67 | 183.61 |
| Sample Weight (Oven Dried) | | | 170 |

| **Sample Split (oven dried)** | Tare (g) | Pan+Samp (g) | Samp (g) |
|---|---|---|---|
| Sample >=#10 | | | 6.97 |
| Sample <#10 | | | 163 |
| % Passing #10 | | | 88.8 |

| **Hydrometer Data** | |
|---|---|
| Serial Number | 542325 |
| Calib. Date (mm/dd/yyyy) | 01/03/2018 |
| Low Temp (C) | 17.0 |
| Reading at Low Temp | 1.0030 |
| High Temp (C) | 23.0 |
| Reading at High Temp | 1.0020 |
| Hydrometer Cal Slope | -0.000166667 |
| Hydrometer Cal Intercept | 1.005833333 |
| Default Soil Gravity | 2.6500 |

**Gravel/Sand Fraction (Sieves)**

| Sample Fraction | Size (um) | Pan Tare (g) | Pan+Sample (g) | Sample | | % Finer | Classification | Sub Class |
|---|---|---|---|---|---|---|---|---|
| 3 inch | 75000 | | | 0.00 | g | 100.0 | Gravel | |
| 2 inch | 50000 | | | 0.00 | g | 100.0 | Gravel | |
| 1.5 inch | 37500 | | | 0.00 | g | 100.0 | Gravel | |
| 1 inch | 25000 | | | 0.00 | g | 100.0 | Gravel | |
| 3/4 inch | 19000 | | | 0.00 | g | 100.0 | Gravel | |
| 3/8 inch | 9500 | | | 0.00 | g | 100.0 | Gravel | |
| #4 | 4750 | 488.13 | 491.22 | 3.09 | g | 98.2 | Gravel | |
| #10 | 2000 | 462.75 | 466.63 | 3.88 | g | 95.9 | Sand | Coarse |
| #20 | 850 | 374.70 | 384.43 | 9.73 | g | 90.2 | Sand | Medium |
| #40 | 425 | 363.09 | 459.46 | 96.37 | g | 33.5 | Sand | Medium |
| #60 | 250 | 353.60 | 395.33 | 41.73 | g | 9.0 | Sand | Fine |
| #80 | 180 | 319.78 | 322.41 | 2.63 | g | 7.4 | Sand | Fine |
| #100 | 150 | 329.53 | 330.69 | 1.16 | g | 6.7 | Sand | Fine |
| #200 | 75 | 314.78 | 317.36 | 2.58 | g | 5.2 | Sand | Fine |
| | | | | 0.00 | g | 5.2 | | |

**Adjusted Hydrometer Sample Mass**

| | |
|---|---|
| Hydrometer Sample Mass (g) | 170 |

**Silt/Clay Fraction (Hydrometer Test)**

| Hydrometer Test Time (min) | Actual | Spec. Gravity | Temp C | Particle Size (Micron) | % Finer | Classification | Sub Class |
|---|---|---|---|---|---|---|---|
| 2 | 2 | 1.0070 | 20.0 | 36.7 | 4.25 | Silt | |
| 5 | 5 | 1.0065 | 20.0 | 23.3 | 3.78 | Silt | |
| 15 | 15 | 1.0060 | 20.0 | 13.5 | 3.31 | Silt | |
| 30 | 29 | 1.0055 | 20.0 | 9.8 | 2.83 | Silt | |
| 60 | 63 | 1.0050 | 20.0 | 6.7 | 2.36 | Silt | |
| 250 | 250 | 1.0045 | 20.0 | 3.4 | 1.89 | Clay | |
| 1440 | 1434 | 1.0035 | 20.0 | 1.4 | 0.945 | Clay | |

# TestAmerica Burlington

**Sediment Grain Size - D422**

| | |
|---|---|
| Client | |
| Client Sample ID | VAP-28 (95) |
| Lab Sample ID | 200-44940-A-12 |

| | |
|---|---|
| Date Received | 8/23/2018 |
| Start Date | 08/28/2018 18:07 |
| End Date | 09/04/2018 11:10 |

**Dry Weight Determination**

| | | |
|---|---|---|
| Tin Weight | 1.07 | g |
| Wet Sample + Tin | 27.37 | g |
| Dry Sample + Tin | 25.36 | g |
| % Moisture | 7.64 | % |

| | |
|---|---|
| Non-soil material: | na |
| Shape (> #10): | angular |
| Hardness (> #10): | hard |

| | |
|---|---|
| Date/Time in oven | 08/28/2018 18:09 |
| Date/Time out of oven | 08/29/2018 14:54 |

| **Sample Weights** | Tare (g) | Pan+Samp (g) | Samp (g) |
|---|---|---|---|
| Sample Weight (Wet) | 44.07 | 139.85 | 95.78 |
| Sample Weight (Oven Dried) | | | 88.5 |

| **Sample Split (oven dried)** | Tare (g) | Pan+Samp (g) | Samp (g) |
|---|---|---|---|
| Sample >=#10 | | | 10.2 |
| Sample <#10 | | | 78.3 |
| % Passing #10 | | | 81.7 |

| **Hydrometer Data** | |
|---|---|
| Serial Number | 542325 |
| Calib. Date (mm/dd/yyyy) | 01/03/2018 |
| Low Temp (C) | 17.0 |
| Reading at Low Temp | 1.0030 |
| High Temp (C) | 23.0 |
| Reading at High Temp | 1.0020 |
| Hydrometer Cal Slope | -0.000166667 |
| Hydrometer Cal Intercept | 1.005833333 |
| Default Soil Gravity | 2.6500 |

**Gravel/Sand Fraction (Sieves)**

| Sample Fraction | Size (um) | Pan Tare (g) | Pan+Sample (g) | Sample | | % Finer | Classification | Sub Class |
|---|---|---|---|---|---|---|---|---|
| 3 inch | 75000 | | | 0.00 | g | 100.0 | Gravel | |
| 2 inch | 50000 | | | 0.00 | g | 100.0 | Gravel | |
| 1.5 inch | 37500 | | | 0.00 | g | 100.0 | Gravel | |
| 1 inch | 25000 | | | 0.00 | g | 100.0 | Gravel | |
| 3/4 inch | 19000 | | | 0.00 | g | 100.0 | Gravel | |
| 3/8 inch | 9500 | | | 0.00 | g | 100.0 | Gravel | |
| #4 | 4750 | 488.13 | 491.54 | 3.41 | g | 96.1 | Gravel | |
| #10 | 2000 | 462.75 | 469.58 | 6.83 | g | 88.4 | Sand | Coarse |
| #20 | 850 | 378.95 | 385.46 | 6.51 | g | 81.0 | Sand | Medium |
| #40 | 425 | 352.97 | 357.69 | 4.72 | g | 75.7 | Sand | Medium |
| #60 | 250 | 348.64 | 355.47 | 6.83 | g | 68.0 | Sand | Fine |
| #80 | 180 | 338.35 | 344.20 | 5.85 | g | 61.4 | Sand | Fine |
| #100 | 150 | 328.81 | 332.44 | 3.63 | g | 57.3 | Sand | Fine |
| #200 | 75 | 325.41 | 336.50 | 11.09 | g | 44.8 | Sand | Fine |
| | | | | 0.00 | g | 44.8 | | |

**Adjusted Hydrometer Sample Mass**

| | |
|---|---|
| Hydrometer Sample Mass (g) | 88.5 |

**Silt/Clay Fraction (Hydrometer Test)**

| Hydrometer Test Time (min) | Actual | Spec. Gravity | Temp C | Particle Size (Micron) | % Finer | Classification | Sub Class |
|---|---|---|---|---|---|---|---|
| 2 | 2 | 1.0195 | 20.0 | 32.2 | 30.9 | Silt | |
| 5 | 5 | 1.0180 | 20.0 | 20.7 | 28.1 | Silt | |
| 15 | 15 | 1.0150 | 20.0 | 12.4 | 22.7 | Silt | |
| 30 | 31 | 1.0140 | 20.0 | 8.7 | 20.9 | Silt | |
| 60 | 60 | 1.0125 | 20.0 | 6.4 | 18.1 | Silt | |
| 250 | 240 | 1.0110 | 20.0 | 3.2 | 15.4 | Clay | |
| 1440 | 1424 | 1.0085 | 20.0 | 1.4 | 10.9 | Clay | |

# TestAmerica Burlington

**Sediment Grain Size - D422**

| | |
|---|---|
| Client | |
| Client Sample ID | MW-100B (58-60) |
| Lab Sample ID | 200-44940-A-13 |

| | |
|---|---|
| Date Received | 8/23/2018 |
| Start Date | 08/28/2018 18:10 |
| End Date | 09/04/2018 11:14 |

**Dry Weight Determination**

| | | |
|---|---|---|
| Tin Weight | 1.04 | g |
| Wet Sample + Tin | 23.11 | g |
| Dry Sample + Tin | 19.67 | g |
| % Moisture | 15.59 | % |

| | |
|---|---|
| Non-soil material: | na |
| Shape (> #10): | na |
| Hardness (> #10): | na |

| | |
|---|---|
| Date/Time in oven | 08/28/2018 18:11 |
| Date/Time out of oven | 08/29/2018 14:54 |

| **Sample Weights** | Tare (g) | Pan+Samp (g) | Samp (g) |
|---|---|---|---|
| Sample Weight (Wet) | 44.78 | 250.61 | 205.83 |
| Sample Weight (Oven Dried) | | | 174 |

| **Sample Split (oven dried)** | Tare (g) | Pan+Samp (g) | Samp (g) |
|---|---|---|---|
| Sample >=#10 | | | 0 |
| Sample <#10 | | | 174 |
| % Passing #10 | | | 84.5 |

**Hydrometer Data**

| | |
|---|---|
| Serial Number | 542325 |
| Calib. Date (mm/dd/yyyy) | 01/03/2018 |
| Low Temp (C) | 17.0 |
| Reading at Low Temp | 1.0030 |
| High Temp (C) | 23.0 |
| Reading at High Temp | 1.0020 |
| Hydrometer Cal Slope | -0.000166667 |
| Hydrometer Cal Intercept | 1.005833333 |
| Default Soil Gravity | 2.6500 |

**Gravel/Sand Fraction (Sieves)**

| Sample Fraction | Size (um) | Pan Tare (g) | Pan+Sample (g) | Sample | | % Finer | Classification | Sub Class |
|---|---|---|---|---|---|---|---|---|
| 3 inch | 75000 | | | 0.00 | g | 100.0 | Gravel | |
| 2 inch | 50000 | | | 0.00 | g | 100.0 | Gravel | |
| 1.5 inch | 37500 | | | 0.00 | g | 100.0 | Gravel | |
| 1 inch | 25000 | | | 0.00 | g | 100.0 | Gravel | |
| 3/4 inch | 19000 | | | 0.00 | g | 100.0 | Gravel | |
| 3/8 inch | 9500 | | | 0.00 | g | 100.0 | Gravel | |
| #4 | 4750 | | | 0.00 | g | 100.0 | Gravel | |
| #10 | 2000 | | | 0.00 | g | 100.0 | Sand | Coarse |
| #20 | 850 | 374.70 | 375.40 | 0.70 | g | 99.6 | Sand | Medium |
| #40 | 425 | 363.09 | 366.43 | 3.34 | g | 97.7 | Sand | Medium |
| #60 | 250 | 353.60 | 436.26 | 82.66 | g | 50.2 | Sand | Fine |
| #80 | 180 | 319.78 | 374.26 | 54.48 | g | 18.9 | Sand | Fine |
| #100 | 150 | 329.53 | 348.19 | 18.66 | g | 8.2 | Sand | Fine |
| #200 | 75 | 314.78 | 325.78 | 11.00 | g | 1.9 | Sand | Fine |
| | | | | 0.00 | g | 1.9 | | |

**Adjusted Hydrometer Sample Mass**

| | |
|---|---|
| Hydrometer Sample Mass (g) | 174 |

**Silt/Clay Fraction (Hydrometer Test)**

| Hydrometer Test Time (min) | Actual | Spec. Gravity | Temp C | Particle Size (Micron) | % Finer | Classification | Sub Class |
|---|---|---|---|---|---|---|---|
| 2 | 2 | 1.0045 | 20.0 | 37.5 | 1.85 | Silt | |
| 5 | 5 | 1.0040 | 20.0 | 23.8 | 1.38 | Silt | |
| 15 | 15 | 1.0040 | 20.0 | 13.8 | 1.38 | Silt | |
| 30 | 31 | 1.0040 | 20.0 | 9.6 | 1.38 | Silt | |
| 60 | 59 | 1.0040 | 20.0 | 6.9 | 1.38 | Silt | |
| 250 | 234 | 1.0035 | 20.0 | 3.5 | 0.923 | Clay | |
| 1440 | 1412 | 1.0035 | 20.0 | 1.4 | 0.923 | Clay | |

# TestAmerica Burlington

**Sediment Grain Size - D422**

| | | | |
|---|---|---|---|
| Client | | Date Received | 8/23/2018 |
| Client Sample ID | MW-100B (69) | Start Date | 08/28/2018 18:12 |
| Lab Sample ID | 200-44940-A-14 | End Date | 09/04/2018 11:20 |

**Dry Weight Determination**

| | | |
|---|---|---|
| Tin Weight | 1.03 | g |
| Wet Sample + Tin | 25.29 | g |
| Dry Sample + Tin | 22.44 | g |
| % Moisture | 11.75 | % |

| | |
|---|---|
| Non-soil material: | na |
| Shape (> #10): | na |
| Hardness (> #10): | na |
| Date/Time in oven | 08/28/2018 18:16 |
| Date/Time out of oven | 08/29/2018 14:55 |

| **Sample Weights** | Tare (g) | Pan+Samp (g) | Samp (g) |
|---|---|---|---|
| Sample Weight (Wet) | 44.10 | 121.30 | 77.2 |
| Sample Weight (Oven Dried) | | | 68.1 |

| **Sample Split (oven dried)** | Tare (g) | Pan+Samp (g) | Samp (g) |
|---|---|---|---|
| Sample >=#10 | | | 0 |
| Sample <#10 | | | 68.1 |
| % Passing #10 | | | 88.2 |

| **Hydrometer Data** | |
|---|---|
| Serial Number | 542325 |
| Calib. Date (mm/dd/yyyy) | 01/03/2018 |
| Low Temp (C) | 17.0 |
| Reading at Low Temp | 1.0030 |
| High Temp (C) | 23.0 |
| Reading at High Temp | 1.0020 |
| Hydrometer Cal Slope | -0.000166667 |
| Hydrometer Cal Intercept | 1.005833333 |
| Default Soil Gravity | 2.6500 |

**Gravel/Sand Fraction (Sieves)**

| Sample Fraction | Size (um) | Pan Tare (g) | Pan+Sample (g) | Sample | | % Finer | Classification | Sub Class |
|---|---|---|---|---|---|---|---|---|
| 3 inch | 75000 | | | 0.00 | g | 100.0 | Gravel | |
| 2 inch | 50000 | | | 0.00 | g | 100.0 | Gravel | |
| 1.5 inch | 37500 | | | 0.00 | g | 100.0 | Gravel | |
| 1 inch | 25000 | | | 0.00 | g | 100.0 | Gravel | |
| 3/4 inch | 19000 | | | 0.00 | g | 100.0 | Gravel | |
| 3/8 inch | 9500 | | | 0.00 | g | 100.0 | Gravel | |
| #4 | 4750 | | | 0.00 | g | 100.0 | Gravel | |
| #10 | 2000 | | | 0.00 | g | 100.0 | Sand | Coarse |
| #20 | 850 | 378.95 | 379.90 | 0.95 | g | 98.6 | Sand | Medium |
| #40 | 425 | 352.97 | 353.55 | 0.58 | g | 97.7 | Sand | Medium |
| #60 | 250 | 348.64 | 349.57 | 0.93 | g | 96.3 | Sand | Fine |
| #80 | 180 | 338.35 | 339.19 | 0.84 | g | 95.1 | Sand | Fine |
| #100 | 150 | 328.81 | 329.06 | 0.25 | g | 94.7 | Sand | Fine |
| #200 | 75 | 325.41 | 326.32 | 0.91 | g | 93.4 | Sand | Fine |
| | | | | 0.00 | g | 93.4 | | |

**Adjusted Hydrometer Sample Mass**

| | |
|---|---|
| Hydrometer Sample Mass (g) | 68.1 |

**Silt/Clay Fraction (Hydrometer Test)**

| Hydrometer Test Time (min) | Actual | Spec. Gravity | Temp C | Particle Size (Micron) | % Finer | Classification | Sub Class |
|---|---|---|---|---|---|---|---|
| 2 | 2 | 1.0290 | 20.0 | 28.3 | 62.5 | Silt | |
| 5 | 5 | 1.0265 | 20.0 | 18.6 | 56.6 | Silt | |
| 15 | 15 | 1.0210 | 20.0 | 11.5 | 43.6 | Silt | |
| 30 | 31 | 1.0170 | 20.0 | 8.4 | 34.2 | Silt | |
| 60 | 59 | 1.0140 | 20.0 | 6.3 | 27.1 | Silt | |
| 250 | 265 | 1.0105 | 20.0 | 3.1 | 18.9 | Clay | |
| 1440 | 1412 | 1.0080 | 20.0 | 1.4 | 13 | Clay | |

# TestAmerica Burlington

**Sediment Grain Size - D422**

| | |
|---|---|
| Client | |
| Client Sample ID | MW-100B (74) |
| Lab Sample ID | 200-44940-A-15 |

| | |
|---|---|
| Date Received | 8/23/2018 |
| Start Date | 08/28/2018 18:17 |
| End Date | 09/04/2018 11:26 |

**Dry Weight Determination**

| | | |
|---|---|---|
| Tin Weight | 1.05 | g |
| Wet Sample + Tin | 34.30 | g |
| Dry Sample + Tin | 32.15 | g |
| % Moisture | 6.47 | % |

| | |
|---|---|
| Non-soil material: | na |
| Shape (> #10): | subangular |
| Hardness (> #10): | hard |

| | |
|---|---|
| Date/Time in oven | 08/28/2018 18:23 |
| Date/Time out of oven | 08/29/2018 14:55 |

| **Sample Weights** | Tare (g) | Pan+Samp (g) | Samp (g) |
|---|---|---|---|
| Sample Weight (Wet) | 44.38 | 169.59 | 125.21 |
| Sample Weight (Oven Dried) | | | 117 |

| **Sample Split (oven dried)** | Tare (g) | Pan+Samp (g) | Samp (g) |
|---|---|---|---|
| Sample >=#10 | | | 15.6 |
| Sample <#10 | | | 101 |
| % Passing #10 | | | 80.7 |

| **Hydrometer Data** | |
|---|---|
| Serial Number | 542325 |
| Calib. Date (mm/dd/yyyy) | 01/03/2018 |
| Low Temp (C) | 17.0 |
| Reading at Low Temp | 1.0030 |
| High Temp (C) | 23.0 |
| Reading at High Temp | 1.0020 |
| Hydrometer Cal Slope | -0.000166667 |
| Hydrometer Cal Intercept | 1.005833333 |
| Default Soil Gravity | 2.6500 |

**Gravel/Sand Fraction (Sieves)**

| Sample Fraction | Size (um) | Pan Tare (g) | Pan+Sample (g) | Sample | | % Finer | Classification | Sub Class |
|---|---|---|---|---|---|---|---|---|
| 3 inch | 75000 | | | 0.00 | g | 100.0 | Gravel | |
| 2 inch | 50000 | | | 0.00 | g | 100.0 | Gravel | |
| 1.5 inch | 37500 | | | 0.00 | g | 100.0 | Gravel | |
| 1 inch | 25000 | | | 0.00 | g | 100.0 | Gravel | |
| 3/4 inch | 19000 | | | 0.00 | g | 100.0 | Gravel | |
| 3/8 inch | 9500 | 447.33 | 452.63 | 5.30 | g | 95.5 | Gravel | |
| #4 | 4750 | 488.13 | 493.15 | 5.02 | g | 91.2 | Gravel | |
| #10 | 2000 | 462.75 | 468.07 | 5.32 | g | 86.7 | Sand | Coarse |
| #20 | 850 | 374.70 | 378.81 | 4.11 | g | 83.2 | Sand | Medium |
| #40 | 425 | 363.09 | 370.10 | 7.01 | g | 77.2 | Sand | Medium |
| #60 | 250 | 353.60 | 367.24 | 13.64 | g | 65.5 | Sand | Fine |
| #80 | 180 | 319.78 | 328.89 | 9.11 | g | 57.7 | Sand | Fine |
| #100 | 150 | 329.53 | 335.79 | 6.26 | g | 52.3 | Sand | Fine |
| #200 | 75 | 314.78 | 329.45 | 14.67 | g | 39.8 | Sand | Fine |
| | | | | 0.00 | g | 39.8 | | |

**Adjusted Hydrometer Sample Mass**

| | |
|---|---|
| Hydrometer Sample Mass (g) | 117 |

**Silt/Clay Fraction (Hydrometer Test)**

| Hydrometer Test Time (min) | Actual | Spec. Gravity | Temp C | Particle Size (Micron) | % Finer | Classification | Sub Class |
|---|---|---|---|---|---|---|---|
| 2 | 2 | 1.0225 | 20.0 | 31 | 27.5 | Silt | |
| 5 | 5 | 1.0185 | 20.0 | 20.6 | 22 | Silt | |
| 15 | 15 | 1.0170 | 20.0 | 12.1 | 19.9 | Silt | |
| 30 | 32 | 1.0150 | 20.0 | 8.5 | 17.2 | Silt | |
| 60 | 60 | 1.0140 | 20.0 | 6.3 | 15.8 | Silt | |
| 250 | 259 | 1.0120 | 20.0 | 3.1 | 13 | Clay | |
| 1440 | 1406 | 1.0095 | 20.0 | 1.4 | 9.61 | Clay | |

# TestAmerica Burlington

**Sediment Grain Size - D422**

| | | | |
|---|---|---|---|
| Client | | Date Received | 8/23/2018 |
| Client Sample ID | MW-100B (80) | Start Date | 08/28/2018 18:23 |
| Lab Sample ID | 200-44940-A-16 | End Date | 09/04/2018 11:32 |

**Dry Weight Determination**

| | | |
|---|---|---|
| Tin Weight | 1.00 | g |
| Wet Sample + Tin | 33.89 | g |
| Dry Sample + Tin | 31.10 | g |
| % Moisture | 8.48 | % |

| | |
|---|---|
| Non-soil material: | na |
| Shape (> #10): | angular |
| Hardness (> #10): | hard |
| Date/Time in oven | 08/28/2018 18:25 |
| Date/Time out of oven | 08/29/2018 14:55 |

| **Sample Weights** | Tare (g) | Pan+Samp (g) | Samp (g) |
|---|---|---|---|
| Sample Weight (Wet) | 44.08 | 245.19 | 201.11 |
| Sample Weight (Oven Dried) | | | 184 |

| **Sample Split (oven dried)** | Tare (g) | Pan+Samp (g) | Samp (g) |
|---|---|---|---|
| Sample >=#10 | | | 47.9 |
| Sample <#10 | | | 136 |
| % Passing #10 | | | 67.6 |

| **Hydrometer Data** | |
|---|---|
| Serial Number | 542325 |
| Calib. Date (mm/dd/yyyy) | 01/03/2018 |
| Low Temp (C) | 17.0 |
| Reading at Low Temp | 1.0030 |
| High Temp (C) | 23.0 |
| Reading at High Temp | 1.0020 |
| Hydrometer Cal Slope | -0.000166667 |
| Hydrometer Cal Intercept | 1.005833333 |
| Default Soil Gravity | 2.6500 |

**Gravel/Sand Fraction (Sieves)**

| Sample Fraction | Size (um) | Pan Tare (g) | Pan+Sample (g) | Sample | | % Finer | Classification | Sub Class |
|---|---|---|---|---|---|---|---|---|
| 3 inch | 75000 | | | 0.00 | g | 100.0 | Gravel | |
| 2 inch | 50000 | | | 0.00 | g | 100.0 | Gravel | |
| 1.5 inch | 37500 | | | 0.00 | g | 100.0 | Gravel | |
| 1 inch | 25000 | | | 0.00 | g | 100.0 | Gravel | |
| 3/4 inch | 19000 | | | 0.00 | g | 100.0 | Gravel | |
| 3/8 inch | 9500 | 447.33 | 461.49 | 14.16 | g | 92.3 | Gravel | |
| #4 | 4750 | 488.13 | 506.83 | 18.70 | g | 82.1 | Gravel | |
| #10 | 2000 | 462.75 | 477.77 | 15.02 | g | 73.9 | Sand | Coarse |
| #20 | 850 | 378.95 | 390.06 | 11.11 | g | 67.9 | Sand | Medium |
| #40 | 425 | 352.97 | 366.74 | 13.77 | g | 60.4 | Sand | Medium |
| #60 | 250 | 348.64 | 375.52 | 26.88 | g | 45.8 | Sand | Fine |
| #80 | 180 | 338.35 | 357.17 | 18.82 | g | 35.6 | Sand | Fine |
| #100 | 150 | 328.81 | 336.78 | 7.97 | g | 31.3 | Sand | Fine |
| #200 | 75 | 325.41 | 340.76 | 15.35 | g | 23.0 | Sand | Fine |
| | | | | 0.00 | g | 23.0 | | |

**Adjusted Hydrometer Sample Mass**

| | |
|---|---|
| Hydrometer Sample Mass (g) | 184 |

**Silt/Clay Fraction (Hydrometer Test)**

| Hydrometer Test Time (min) | Actual | Spec. Gravity | Temp C | Particle Size (Micron) | % Finer | Classification | Sub Class |
|---|---|---|---|---|---|---|---|
| 2 | 2 | 1.0205 | 20.0 | 31.8 | 15.7 | Silt | |
| 5 | 5 | 1.0185 | 20.0 | 20.6 | 14 | Silt | |
| 15 | 15 | 1.0150 | 20.0 | 12.4 | 10.9 | Silt | |
| 30 | 30 | 1.0140 | 20.0 | 8.8 | 10 | Silt | |
| 60 | 63 | 1.0125 | 20.0 | 6.2 | 8.73 | Silt | |
| 250 | 253 | 1.0105 | 20.0 | 3.2 | 6.98 | Clay | |
| 1440 | 1400 | 1.0075 | 20.0 | 1.4 | 4.36 | Clay | |

# QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI WI001605.0009.00004

TestAmerica Job ID: 200-44940-1

## Geotechnical

### Analysis Batch: 133569

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 200-44940-1 | VAP-26 (78) | Total/NA | Solid | D422 | |
| 200-44940-2 | VAP-26 (72-75) | Total/NA | Solid | D422 | |
| 200-44940-3 | VAP-26 (84) | Total/NA | Solid | D422 | |
| 200-44940-4 | VAP-27 (79) | Total/NA | Solid | D422 | |
| 200-44940-5 | VAP-27 (83) | Total/NA | Solid | D422 | |
| 200-44940-6 | VAP-29 (27) | Total/NA | Solid | D422 | |
| 200-44940-7 | VAP-29 (53) | Total/NA | Solid | D422 | |
| 200-44940-8 | VAP-29 (74) | Total/NA | Solid | D422 | |
| 200-44940-9 | VAP-28 (44) | Total/NA | Solid | D422 | |
| 200-44940-10 | VAP-28 (68) | Total/NA | Solid | D422 | |
| 200-44940-11 | VAP-28 (88) | Total/NA | Solid | D422 | |
| 200-44940-12 | VAP-28 (95) | Total/NA | Solid | D422 | |
| 200-44940-13 | MW-100B (58-60) | Total/NA | Solid | D422 | |
| 200-44940-14 | MW-100B (69) | Total/NA | Solid | D422 | |
| 200-44940-15 | MW-100B (74) | Total/NA | Solid | D422 | |
| 200-44940-16 | MW-100B (80) | Total/NA | Solid | D422 | |

# Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI WI001605.0009.00004

TestAmerica Job ID: 200-44940-1

## Client Sample ID: VAP-26 (78)
## Lab Sample ID: 200-44940-1

**Date Collected: 06/12/18 00:00**
**Date Received: 08/23/18 10:30**
**Matrix: Solid**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | D422 | | 1 | 133569 | 08/27/18 20:36 | CPF | TAL BUR |

## Client Sample ID: VAP-26 (72-75)
## Lab Sample ID: 200-44940-2

**Date Collected: 06/12/18 00:00**
**Date Received: 08/23/18 10:30**
**Matrix: Solid**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | D422 | | 1 | 133569 | 08/27/18 20:41 | CPF | TAL BUR |

## Client Sample ID: VAP-26 (84)
## Lab Sample ID: 200-44940-3

**Date Collected: 06/12/18 00:00**
**Date Received: 08/23/18 10:30**
**Matrix: Solid**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | D422 | | 1 | 133569 | 08/27/18 20:43 | CPF | TAL BUR |

## Client Sample ID: VAP-27 (79)
## Lab Sample ID: 200-44940-4

**Date Collected: 06/22/18 00:00**
**Date Received: 08/23/18 10:30**
**Matrix: Solid**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | D422 | | 1 | 133569 | 08/27/18 20:45 | CPF | TAL BUR |

## Client Sample ID: VAP-27 (83)
## Lab Sample ID: 200-44940-5

**Date Collected: 06/22/18 00:00**
**Date Received: 08/23/18 10:30**
**Matrix: Solid**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | D422 | | 1 | 133569 | 08/27/18 20:47 | CPF | TAL BUR |

## Client Sample ID: VAP-29 (27)
## Lab Sample ID: 200-44940-6

**Date Collected: 06/26/18 00:00**
**Date Received: 08/23/18 10:30**
**Matrix: Solid**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | D422 | | 1 | 133569 | 08/27/18 20:50 | CPF | TAL BUR |

## Client Sample ID: VAP-29 (53)
## Lab Sample ID: 200-44940-7

**Date Collected: 06/27/18 00:00**
**Matrix: Solid**
**Date Received: 08/23/18 10:30**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | D422 | | 1 | 133569 | 08/27/18 20:52 | CPF | TAL BUR |

## Client Sample ID: VAP-29 (74)
## Lab Sample ID: 200-44940-8

**Date Collected: 06/27/18 00:00**
**Matrix: Solid**
**Date Received: 08/23/18 10:30**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | D422 | | 1 | 133569 | 08/28/18 17:22 | CPF | TAL BUR |

## Client Sample ID: VAP-28 (44)
## Lab Sample ID: 200-44940-9

**Date Collected: 08/15/18 00:00**
**Matrix: Solid**
**Date Received: 08/23/18 10:30**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | D422 | | 1 | 133569 | 08/28/18 17:25 | CPF | TAL BUR |

## Client Sample ID: VAP-28 (68)
## Lab Sample ID: 200-44940-10

**Date Collected: 08/15/18 00:00**
**Matrix: Solid**
**Date Received: 08/23/18 10:30**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | D422 | | 1 | 133569 | 08/28/18 17:28 | CPF | TAL BUR |

## Client Sample ID: VAP-28 (88)
## Lab Sample ID: 200-44940-11

**Date Collected: 08/16/18 00:00**
**Matrix: Solid**
**Date Received: 08/23/18 10:30**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | D422 | | 1 | 133569 | 08/28/18 18:04 | CPF | TAL BUR |

## Client Sample ID: VAP-28 (95)
## Lab Sample ID: 200-44940-12

**Date Collected: 08/16/18 00:00**
**Matrix: Solid**
**Date Received: 08/23/18 10:30**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | D422 | | 1 | 133569 | 08/28/18 18:07 | CPF | TAL BUR |

# Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI WI001605.0009.00004

TestAmerica Job ID: 200-44940-1

## Client Sample ID: MW-100B (58-60)

**Lab Sample ID: 200-44940-13**
**Date Collected: 08/07/18 00:00**
**Matrix: Solid**
**Date Received: 08/23/18 10:30**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | D422 | | 1 | 133569 | 08/28/18 18:10 | CPF | TAL BUR |

## Client Sample ID: MW-100B (69)

**Lab Sample ID: 200-44940-14**
**Date Collected: 08/07/18 00:00**
**Matrix: Solid**
**Date Received: 08/23/18 10:30**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | D422 | | 1 | 133569 | 08/28/18 18:12 | CPF | TAL BUR |

## Client Sample ID: MW-100B (74)

**Lab Sample ID: 200-44940-15**
**Date Collected: 08/08/18 00:00**
**Matrix: Solid**
**Date Received: 08/23/18 10:30**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | D422 | | 1 | 133569 | 08/28/18 18:17 | CPF | TAL BUR |

## Client Sample ID: MW-100B (80)

**Lab Sample ID: 200-44940-16**
**Date Collected: 08/08/18 00:00**
**Matrix: Solid**
**Date Received: 08/23/18 10:30**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | D422 | | 1 | 133569 | 08/28/18 18:23 | CPF | TAL BUR |

**Laboratory References:**

TAL BUR = TestAmerica Burlington, 30 Community Drive, Suite 11, South Burlington, VT 05403, TEL (802)660-1990

# Accreditation/Certification Summary

Client: ARCADIS U.S., Inc. TestAmerica Job ID: 200-44940-1
Project/Site: Marinette, WI WI001605.0009.00004

## Laboratory: TestAmerica Burlington

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

| Authority | Program | EPA Region | Identification Number | Expiration Date |
|---|---|---|---|---|
| ANAB | DoD ELAP | | L2336 | 02-25-20 |
| Connecticut | State Program | 1 | PH-0751 | 09-30-19 |
| DE Haz. Subst. Cleanup Act (HSCA) | State Program | 3 | NA | 02-01-19 |
| Maine | State Program | 1 | VT00008 | 04-17-19 |
| Minnesota | NELAP | 5 | 050-999-436 | 12-31-18 |
| New Hampshire | NELAP | 1 | 2006 | 12-18-18 |
| New Jersey | NELAP | 2 | VT972 | 06-30-19 |
| New York | NELAP | 2 | 10391 | 04-01-19 |
| Pennsylvania | NELAP | 3 | 68-00489 | 04-30-19 |
| Rhode Island | State Program | 1 | LAO00298 | 12-30-18 |
| US Fish & Wildlife | Federal | | LE-058448-0 | 07-31-19 |
| USDA | Federal | | P330-11-00093 | 07-24-20 |
| Vermont | State Program | 1 | VT-4000 | 12-31-18 |
| Virginia | NELAP | 3 | 460209 | 12-14-18 |

## Laboratory: TestAmerica Chicago

The accreditations/certifications listed below are applicable to this report.

| Authority | Program | EPA Region | Identification Number | Expiration Date |
|---|---|---|---|---|
| Wisconsin | State Program | 5 | 999580010 | 08-31-19 |

# Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI  WI001605.0009.00004

TestAmerica Job ID: 200-44940-1

| Method | Method Description | Protocol | Laboratory |
|---|---|---|---|
| D422 | Grain Size | ASTM | TAL BUR |

**Protocol References:**

ASTM = ASTM International

**Laboratory References:**

TAL BUR = TestAmerica Burlington, 30 Community Drive, Suite 11, South Burlington, VT 05403, TEL (802)660-1990

# Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI WI001605.0009.00004

TestAmerica Job ID: 200-44940-1

| Lab Sample ID | Client Sample ID | Matrix | Collected | Received |
|---|---|---|---|---|
| 200-44940-1 | VAP-26 (78) | Solid | 06/12/18 00:00 | 08/23/18 10:30 |
| 200-44940-2 | VAP-26 (72-75) | Solid | 06/12/18 00:00 | 08/23/18 10:30 |
| 200-44940-3 | VAP-26 (84) | Solid | 06/12/18 00:00 | 08/23/18 10:30 |
| 200-44940-4 | VAP-27 (79) | Solid | 06/22/18 00:00 | 08/23/18 10:30 |
| 200-44940-5 | VAP-27 (83) | Solid | 06/22/18 00:00 | 08/23/18 10:30 |
| 200-44940-6 | VAP-29 (27) | Solid | 06/26/18 00:00 | 08/23/18 10:30 |
| 200-44940-7 | VAP-29 (53) | Solid | 06/27/18 00:00 | 08/23/18 10:30 |
| 200-44940-8 | VAP-29 (74) | Solid | 06/27/18 00:00 | 08/23/18 10:30 |
| 200-44940-9 | VAP-28 (44) | Solid | 08/15/18 00:00 | 08/23/18 10:30 |
| 200-44940-10 | VAP-28 (68) | Solid | 08/15/18 00:00 | 08/23/18 10:30 |
| 200-44940-11 | VAP-28 (88) | Solid | 08/16/18 00:00 | 08/23/18 10:30 |
| 200-44940-12 | VAP-28 (95) | Solid | 08/16/18 00:00 | 08/23/18 10:30 |
| 200-44940-13 | MW-100B (58-60) | Solid | 08/07/18 00:00 | 08/23/18 10:30 |
| 200-44940-14 | MW-100B (69) | Solid | 08/07/18 00:00 | 08/23/18 10:30 |
| 200-44940-15 | MW-100B (74) | Solid | 08/08/18 00:00 | 08/23/18 10:30 |
| 200-44940-16 | MW-100B (80) | Solid | 08/08/18 00:00 | 08/23/18 10:30 |

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GEOTECHNICAL

Lab Name: TestAmerica Burlington Job Number: 200-44940-1

SDG No.:

Project: Marinette, WI WI001605.0009.00004

| Client Sample ID | Lab Sample ID |
|---|---|
| VAP-26 (78) | 200-44940-1 |
| VAP-26 (72-75) | 200-44940-2 |
| VAP-26 (84) | 200-44940-3 |
| VAP-27 (79) | 200-44940-4 |
| VAP-27 (83) | 200-44940-5 |
| VAP-29 (27) | 200-44940-6 |
| VAP-29 (53) | 200-44940-7 |
| VAP-29 (74) | 200-44940-8 |
| VAP-28 (44) | 200-44940-9 |
| VAP-28 (68) | 200-44940-10 |
| VAP-28 (88) | 200-44940-11 |
| VAP-28 (95) | 200-44940-12 |
| MW-100B (58-60) | 200-44940-13 |
| MW-100B (69) | 200-44940-14 |
| MW-100B (74) | 200-44940-15 |
| MW-100B (80) | 200-44940-16 |

Comments:

1B-IN
INORGANIC ANALYSIS DATA SHEET
GEOTECHNICAL

Client Sample ID: VAP-26 (78)
Lab Sample ID: 200-44940-1
Lab Name: TestAmerica Burlington
Job No.: 200-44940-1
SDG ID.:
Matrix: Solid
Date Sampled: 06/12/2018 00:00
Reporting Basis: WET
Date Received: 08/23/2018 10:30

| CAS No. | Analyte | Result | RL | MDL | Units | C | Q | DIL | Method |
|---|---|---|---|---|---|---|---|---|---|
| | Gravel | 14.2 | | | % | | | 1 | D422 |
| | Sieve Size 3 inch - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Sand | 34.7 | | | % | | | 1 | D422 |
| | Sieve Size 2 inch - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Coarse Sand | 6.2 | | | % | | | 1 | D422 |
| | Sieve Size 1.5 inch - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Medium Sand | 7.0 | | | % | | | 1 | D422 |
| | Sieve Size 1 inch - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Fine Sand | 21.5 | | | % | | | 1 | D422 |
| | Sieve Size 0.75 inch - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Sieve Size 0.375 inch - Percent Finer | 93.9 | | | % Passing | | | 1 | D422 |
| | Silt | 30.6 | | | % | | | 1 | D422 |
| | Clay | 20.5 | | | % | | | 1 | D422 |
| | Sieve Size #4 - Percent Finer | 85.8 | | | % Passing | | | 1 | D422 |
| | Sieve Size #10 - Percent Finer | 79.6 | | | % Passing | | | 1 | D422 |
| | Sieve Size #20 - Percent Finer | 76.2 | | | % Passing | | | 1 | D422 |
| | Sieve Size #40 - Percent Finer | 72.6 | | | % Passing | | | 1 | D422 |
| | Sieve Size #60 - Percent Finer | 66.1 | | | % Passing | | | 1 | D422 |
| | Sieve Size #80 - Percent Finer | 62.1 | | | % Passing | | | 1 | D422 |
| | Sieve Size #100 - Percent Finer | 58.5 | | | % Passing | | | 1 | D422 |
| | Sieve Size #200 - Percent Finer | 51.1 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 1 - Percent Finer | 34.8 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 2 - Percent Finer | 30.3 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 3 - Percent Finer | 25.0 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 4 - Percent Finer | 22.3 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 5 - Percent Finer | 20.5 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 6 - Percent Finer | 16.1 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 7 - Percent Finer | 12.5 | | | % Passing | | | 1 | D422 |

1B-IN
INORGANIC ANALYSIS DATA SHEET
GEOTECHNICAL

Client Sample ID: VAP-26 (72-75)
Lab Sample ID: 200-44940-2
Lab Name: TestAmerica Burlington
Job No.: 200-44940-1
SDG ID.:
Matrix: Solid
Date Sampled: 06/12/2018 00:00
Reporting Basis: WET
Date Received: 08/23/2018 10:30

| CAS No. | Analyte | Result | RL | MDL | Units | C | Q | DIL | Method |
|---|---|---|---|---|---|---|---|---|---|
| | Gravel | 0.0 | | | % | | | 1 | D422 |
| | Sieve Size 3 inch - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Sand | 57.3 | | | % | | | 1 | D422 |
| | Sieve Size 2 inch - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Coarse Sand | 0.0 | | | % | | | 1 | D422 |
| | Sieve Size 1.5 inch - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Medium Sand | 0.2 | | | % | | | 1 | D422 |
| | Sieve Size 1 inch - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Fine Sand | 57.1 | | | % | | | 1 | D422 |
| | Sieve Size 0.75 inch - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Sieve Size 0.375 inch - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Silt | 38.1 | | | % | | | 1 | D422 |
| | Clay | 4.7 | | | % | | | 1 | D422 |
| | Sieve Size #4 - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Sieve Size #10 - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Sieve Size #20 - Percent Finer | 99.9 | | | % Passing | | | 1 | D422 |
| | Sieve Size #40 - Percent Finer | 99.8 | | | % Passing | | | 1 | D422 |
| | Sieve Size #60 - Percent Finer | 99.7 | | | % Passing | | | 1 | D422 |
| | Sieve Size #80 - Percent Finer | 99.6 | | | % Passing | | | 1 | D422 |
| | Sieve Size #100 - Percent Finer | 98.5 | | | % Passing | | | 1 | D422 |
| | Sieve Size #200 - Percent Finer | 42.7 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 1 - Percent Finer | 19.9 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 2 - Percent Finer | 12.6 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 3 - Percent Finer | 6.6 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 4 - Percent Finer | 5.3 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 5 - Percent Finer | 4.7 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 6 - Percent Finer | 3.3 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 7 - Percent Finer | 2.7 | | | % Passing | | | 1 | D422 |

1B-IN
INORGANIC ANALYSIS DATA SHEET
GEOTECHNICAL

Client Sample ID: VAP-26 (84)
Lab Sample ID: 200-44940-3
Lab Name: TestAmerica Burlington
Job No.: 200-44940-1
SDG ID.:
Matrix: Solid
Date Sampled: 06/12/2018 00:00
Reporting Basis: WET
Date Received: 08/23/2018 10:30

| CAS No. | Analyte | Result | RL | MDL | Units | C | Q | DIL | Method |
|---|---|---|---|---|---|---|---|---|---|
| | Gravel | 21.5 | | | % | | | 1 | D422 |
| | Sieve Size 3 inch - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Sand | 52.4 | | | % | | | 1 | D422 |
| | Sieve Size 2 inch - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Coarse Sand | 5.6 | | | % | | | 1 | D422 |
| | Sieve Size 1.5 inch - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Medium Sand | 11.1 | | | % | | | 1 | D422 |
| | Sieve Size 1 inch - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Fine Sand | 35.7 | | | % | | | 1 | D422 |
| | Sieve Size 0.75 inch - Percent Finer | 91.0 | | | % Passing | | | 1 | D422 |
| | Sieve Size 0.375 inch - Percent Finer | 85.1 | | | % Passing | | | 1 | D422 |
| | Silt | 17.2 | | | % | | | 1 | D422 |
| | Clay | 8.9 | | | % | | | 1 | D422 |
| | Sieve Size #4 - Percent Finer | 78.5 | | | % Passing | | | 1 | D422 |
| | Sieve Size #10 - Percent Finer | 72.9 | | | % Passing | | | 1 | D422 |
| | Sieve Size #20 - Percent Finer | 68.2 | | | % Passing | | | 1 | D422 |
| | Sieve Size #40 - Percent Finer | 61.8 | | | % Passing | | | 1 | D422 |
| | Sieve Size #60 - Percent Finer | 49.0 | | | % Passing | | | 1 | D422 |
| | Sieve Size #80 - Percent Finer | 40.7 | | | % Passing | | | 1 | D422 |
| | Sieve Size #100 - Percent Finer | 35.9 | | | % Passing | | | 1 | D422 |
| | Sieve Size #200 - Percent Finer | 26.1 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 1 - Percent Finer | 16.2 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 2 - Percent Finer | 14.2 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 3 - Percent Finer | 11.4 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 4 - Percent Finer | 10.1 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 5 - Percent Finer | 8.9 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 6 - Percent Finer | 6.9 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 7 - Percent Finer | 5.3 | | | % Passing | | | 1 | D422 |

1B-IN
INORGANIC ANALYSIS DATA SHEET
GEOTECHNICAL

Client Sample ID: VAP-27 (79)
Lab Sample ID: 200-44940-4
Lab Name: TestAmerica Burlington
Job No.: 200-44940-1
SDG ID.:
Matrix: Solid
Date Sampled: 06/22/2018 00:00
Reporting Basis: WET
Date Received: 08/23/2018 10:30

| CAS No. | Analyte | Result | RL | MDL | Units | C | Q | DIL | Method |
|---|---|---|---|---|---|---|---|---|---|
| | Gravel | 0.0 | | | % | | | 1 | D422 |
| | Sieve Size 3 inch - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Sand | 41.8 | | | % | | | 1 | D422 |
| | Sieve Size 2 inch - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Coarse Sand | 0.0 | | | % | | | 1 | D422 |
| | Sieve Size 1.5 inch - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Medium Sand | 0.3 | | | % | | | 1 | D422 |
| | Sieve Size 1 inch - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Fine Sand | 41.5 | | | % | | | 1 | D422 |
| | Sieve Size 0.75 inch - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Sieve Size 0.375 inch - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Silt | 51.9 | | | % | | | 1 | D422 |
| | Clay | 6.3 | | | % | | | 1 | D422 |
| | Sieve Size #4 - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Sieve Size #10 - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Sieve Size #20 - Percent Finer | 99.8 | | | % Passing | | | 1 | D422 |
| | Sieve Size #40 - Percent Finer | 99.7 | | | % Passing | | | 1 | D422 |
| | Sieve Size #60 - Percent Finer | 99.5 | | | % Passing | | | 1 | D422 |
| | Sieve Size #80 - Percent Finer | 99.3 | | | % Passing | | | 1 | D422 |
| | Sieve Size #100 - Percent Finer | 98.9 | | | % Passing | | | 1 | D422 |
| | Sieve Size #200 - Percent Finer | 58.2 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 1 - Percent Finer | 26.8 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 2 - Percent Finer | 19.4 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 3 - Percent Finer | 9.7 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 4 - Percent Finer | 8.0 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 5 - Percent Finer | 6.3 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 6 - Percent Finer | 5.1 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 7 - Percent Finer | 4.0 | | | % Passing | | | 1 | D422 |

1B-IN
INORGANIC ANALYSIS DATA SHEET
GEOTECHNICAL

Client Sample ID: VAP-27 (83)
Lab Sample ID: 200-44940-5
Lab Name: TestAmerica Burlington
Job No.: 200-44940-1
SDG ID.:
Matrix: Solid
Date Sampled: 06/22/2018 00:00
Reporting Basis: WET
Date Received: 08/23/2018 10:30

| CAS No. | Analyte | Result | RL | MDL | Units | C | Q | DIL | Method |
|---|---|---|---|---|---|---|---|---|---|
| | Gravel | 0.0 | | | % | | | 1 | D422 |
| | Sieve Size 3 inch - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Sand | 2.3 | | | % | | | 1 | D422 |
| | Sieve Size 2 inch - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Coarse Sand | 0.0 | | | % | | | 1 | D422 |
| | Sieve Size 1.5 inch - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Medium Sand | 0.3 | | | % | | | 1 | D422 |
| | Sieve Size 1 inch - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Fine Sand | 2.0 | | | % | | | 1 | D422 |
| | Sieve Size 0.75 inch - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Sieve Size 0.375 inch - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Silt | 42.7 | | | % | | | 1 | D422 |
| | Clay | 55.0 | | | % | | | 1 | D422 |
| | Sieve Size #4 - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Sieve Size #10 - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Sieve Size #20 - Percent Finer | 99.9 | | | % Passing | | | 1 | D422 |
| | Sieve Size #40 - Percent Finer | 99.7 | | | % Passing | | | 1 | D422 |
| | Sieve Size #60 - Percent Finer | 99.3 | | | % Passing | | | 1 | D422 |
| | Sieve Size #80 - Percent Finer | 99.1 | | | % Passing | | | 1 | D422 |
| | Sieve Size #100 - Percent Finer | 98.7 | | | % Passing | | | 1 | D422 |
| | Sieve Size #200 - Percent Finer | 97.7 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 1 - Percent Finer | 81.8 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 2 - Percent Finer | 75.8 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 3 - Percent Finer | 68.4 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 4 - Percent Finer | 62.5 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 5 - Percent Finer | 55.0 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 6 - Percent Finer | 44.6 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 7 - Percent Finer | 32.7 | | | % Passing | | | 1 | D422 |

1B-IN
INORGANIC ANALYSIS DATA SHEET
GEOTECHNICAL

Client Sample ID: VAP-29 (27)
Lab Sample ID: 200-44940-6
Lab Name: TestAmerica Burlington
Job No.: 200-44940-1
SDG ID.:
Matrix: Solid
Date Sampled: 06/26/2018 00:00
Reporting Basis: WET
Date Received: 08/23/2018 10:30

| CAS No. | Analyte | Result | RL | MDL | Units | C | Q | DIL | Method |
|---|---|---|---|---|---|---|---|---|---|
| | Gravel | 0.0 | | | % | | | 1 | D422 |
| | Sieve Size 3 inch - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Sand | 77.5 | | | % | | | 1 | D422 |
| | Sieve Size 2 inch - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Coarse Sand | 0.0 | | | % | | | 1 | D422 |
| | Sieve Size 1.5 inch - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Medium Sand | 0.1 | | | % | | | 1 | D422 |
| | Sieve Size 1 inch - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Fine Sand | 77.4 | | | % | | | 1 | D422 |
| | Sieve Size 0.75 inch - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Sieve Size 0.375 inch - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Silt | 19.3 | | | % | | | 1 | D422 |
| | Clay | 3.2 | | | % | | | 1 | D422 |
| | Sieve Size #4 - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Sieve Size #10 - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Sieve Size #20 - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Sieve Size #40 - Percent Finer | 99.9 | | | % Passing | | | 1 | D422 |
| | Sieve Size #60 - Percent Finer | 97.3 | | | % Passing | | | 1 | D422 |
| | Sieve Size #80 - Percent Finer | 85.8 | | | % Passing | | | 1 | D422 |
| | Sieve Size #100 - Percent Finer | 73.4 | | | % Passing | | | 1 | D422 |
| | Sieve Size #200 - Percent Finer | 22.5 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 1 - Percent Finer | 7.7 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 2 - Percent Finer | 5.9 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 3 - Percent Finer | 4.5 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 4 - Percent Finer | 3.6 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 5 - Percent Finer | 3.2 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 6 - Percent Finer | 2.3 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 7 - Percent Finer | 1.4 | | | % Passing | | | 1 | D422 |

1B-IN
INORGANIC ANALYSIS DATA SHEET
GEOTECHNICAL

Client Sample ID: VAP-29 (53)
Lab Sample ID: 200-44940-7
Lab Name: TestAmerica Burlington
Job No.: 200-44940-1
SDG ID.:
Matrix: Solid
Date Sampled: 06/27/2018 00:00
Reporting Basis: WET
Date Received: 08/23/2018 10:30

| CAS No. | Analyte | Result | RL | MDL | Units | C | Q | DIL | Method |
|---|---|---|---|---|---|---|---|---|---|
| | Gravel | 9.2 | | | % | | | 1 | D422 |
| | Sieve Size 3 inch - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Sand | 32.8 | | | % | | | 1 | D422 |
| | Sieve Size 2 inch - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Coarse Sand | 5.0 | | | % | | | 1 | D422 |
| | Sieve Size 1.5 inch - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Medium Sand | 6.2 | | | % | | | 1 | D422 |
| | Sieve Size 1 inch - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Fine Sand | 21.6 | | | % | | | 1 | D422 |
| | Sieve Size 0.75 inch - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Sieve Size 0.375 inch - Percent Finer | 95.8 | | | % Passing | | | 1 | D422 |
| | Silt | 43.9 | | | % | | | 1 | D422 |
| | Clay | 14.1 | | | % | | | 1 | D422 |
| | Sieve Size #4 - Percent Finer | 90.8 | | | % Passing | | | 1 | D422 |
| | Sieve Size #10 - Percent Finer | 85.8 | | | % Passing | | | 1 | D422 |
| | Sieve Size #20 - Percent Finer | 82.6 | | | % Passing | | | 1 | D422 |
| | Sieve Size #40 - Percent Finer | 79.6 | | | % Passing | | | 1 | D422 |
| | Sieve Size #60 - Percent Finer | 74.4 | | | % Passing | | | 1 | D422 |
| | Sieve Size #80 - Percent Finer | 70.4 | | | % Passing | | | 1 | D422 |
| | Sieve Size #100 - Percent Finer | 67.3 | | | % Passing | | | 1 | D422 |
| | Sieve Size #200 - Percent Finer | 58.0 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 1 - Percent Finer | 33.1 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 2 - Percent Finer | 26.3 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 3 - Percent Finer | 20.4 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 4 - Percent Finer | 15.6 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 5 - Percent Finer | 14.1 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 6 - Percent Finer | 9.7 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 7 - Percent Finer | 6.8 | | | % Passing | | | 1 | D422 |

1B-IN
INORGANIC ANALYSIS DATA SHEET
GEOTECHNICAL

Client Sample ID: VAP-29 (74)
Lab Sample ID: 200-44940-8
Lab Name: TestAmerica Burlington
Job No.: 200-44940-1
SDG ID.:
Matrix: Solid
Date Sampled: 06/27/2018 00:00
Reporting Basis: WET
Date Received: 08/23/2018 10:30

| CAS No. | Analyte | Result | RL | MDL | Units | C | Q | DIL | Method |
|---|---|---|---|---|---|---|---|---|---|
| | Gravel | 0.0 | | | % | | | 1 | D422 |
| | Sieve Size 3 inch - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Sand | 54.7 | | | % | | | 1 | D422 |
| | Sieve Size 2 inch - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Coarse Sand | 0.5 | | | % | | | 1 | D422 |
| | Sieve Size 1.5 inch - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Medium Sand | 9.6 | | | % | | | 1 | D422 |
| | Sieve Size 1 inch - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Fine Sand | 44.6 | | | % | | | 1 | D422 |
| | Sieve Size 0.75 inch - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Sieve Size 0.375 inch - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Silt | 27.8 | | | % | | | 1 | D422 |
| | Clay | 17.5 | | | % | | | 1 | D422 |
| | Sieve Size #4 - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Sieve Size #10 - Percent Finer | 99.5 | | | % Passing | | | 1 | D422 |
| | Sieve Size #20 - Percent Finer | 95.9 | | | % Passing | | | 1 | D422 |
| | Sieve Size #40 - Percent Finer | 89.9 | | | % Passing | | | 1 | D422 |
| | Sieve Size #60 - Percent Finer | 78.3 | | | % Passing | | | 1 | D422 |
| | Sieve Size #80 - Percent Finer | 67.5 | | | % Passing | | | 1 | D422 |
| | Sieve Size #100 - Percent Finer | 61.6 | | | % Passing | | | 1 | D422 |
| | Sieve Size #200 - Percent Finer | 45.3 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 1 - Percent Finer | 30.0 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 2 - Percent Finer | 26.5 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 3 - Percent Finer | 22.3 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 4 - Percent Finer | 19.6 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 5 - Percent Finer | 17.5 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 6 - Percent Finer | 13.3 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 7 - Percent Finer | 9.8 | | | % Passing | | | 1 | D422 |

1B-IN
INORGANIC ANALYSIS DATA SHEET
GEOTECHNICAL

Client Sample ID: VAP-28 (44)
Lab Sample ID: 200-44940-9
Lab Name: TestAmerica Burlington
Job No.: 200-44940-1
SDG ID.:
Matrix: Solid
Date Sampled: 08/15/2018 00:00
Reporting Basis: WET
Date Received: 08/23/2018 10:30

| CAS No. | Analyte | Result | RL | MDL | Units | C | Q | DIL | Method |
|---|---|---|---|---|---|---|---|---|---|
| | Gravel | 0.0 | | | % | | | 1 | D422 |
| | Sieve Size 3 inch - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Sand | 7.9 | | | % | | | 1 | D422 |
| | Sieve Size 2 inch - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Coarse Sand | 0.0 | | | % | | | 1 | D422 |
| | Sieve Size 1.5 inch - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Medium Sand | 2.4 | | | % | | | 1 | D422 |
| | Sieve Size 1 inch - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Fine Sand | 5.5 | | | % | | | 1 | D422 |
| | Sieve Size 0.75 inch - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Sieve Size 0.375 inch - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Silt | 75.6 | | | % | | | 1 | D422 |
| | Clay | 16.5 | | | % | | | 1 | D422 |
| | Sieve Size #4 - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Sieve Size #10 - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Sieve Size #20 - Percent Finer | 99.5 | | | % Passing | | | 1 | D422 |
| | Sieve Size #40 - Percent Finer | 97.6 | | | % Passing | | | 1 | D422 |
| | Sieve Size #60 - Percent Finer | 96.4 | | | % Passing | | | 1 | D422 |
| | Sieve Size #80 - Percent Finer | 96.3 | | | % Passing | | | 1 | D422 |
| | Sieve Size #100 - Percent Finer | 96.2 | | | % Passing | | | 1 | D422 |
| | Sieve Size #200 - Percent Finer | 92.1 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 1 - Percent Finer | 53.3 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 2 - Percent Finer | 46.6 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 3 - Percent Finer | 32.0 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 4 - Percent Finer | 23.3 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 5 - Percent Finer | 16.5 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 6 - Percent Finer | 10.7 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 7 - Percent Finer | 6.8 | | | % Passing | | | 1 | D422 |

1B-IN
INORGANIC ANALYSIS DATA SHEET
GEOTECHNICAL

Client Sample ID: VAP-28 (68)
Lab Sample ID: 200-44940-10
Lab Name: TestAmerica Burlington
Job No.: 200-44940-1
SDG ID.:
Matrix: Solid
Date Sampled: 08/15/2018 00:00
Reporting Basis: WET
Date Received: 08/23/2018 10:30

| CAS No. | Analyte | Result | RL | MDL | Units | C | Q | DIL | Method |
|---|---|---|---|---|---|---|---|---|---|
| | Gravel | 1.1 | | | % | | | 1 | D422 |
| | Sieve Size 3 inch - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Sand | 6.9 | | | % | | | 1 | D422 |
| | Sieve Size 2 inch - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Coarse Sand | 0.1 | | | % | | | 1 | D422 |
| | Sieve Size 1.5 inch - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Medium Sand | 2.9 | | | % | | | 1 | D422 |
| | Sieve Size 1 inch - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Fine Sand | 3.9 | | | % | | | 1 | D422 |
| | Sieve Size 0.75 inch - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Sieve Size 0.375 inch - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Silt | 67.5 | | | % | | | 1 | D422 |
| | Clay | 24.5 | | | % | | | 1 | D422 |
| | Sieve Size #4 - Percent Finer | 98.9 | | | % Passing | | | 1 | D422 |
| | Sieve Size #10 - Percent Finer | 98.8 | | | % Passing | | | 1 | D422 |
| | Sieve Size #20 - Percent Finer | 97.1 | | | % Passing | | | 1 | D422 |
| | Sieve Size #40 - Percent Finer | 95.9 | | | % Passing | | | 1 | D422 |
| | Sieve Size #60 - Percent Finer | 94.5 | | | % Passing | | | 1 | D422 |
| | Sieve Size #80 - Percent Finer | 93.7 | | | % Passing | | | 1 | D422 |
| | Sieve Size #100 - Percent Finer | 93.4 | | | % Passing | | | 1 | D422 |
| | Sieve Size #200 - Percent Finer | 92.0 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 1 - Percent Finer | 69.3 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 2 - Percent Finer | 58.4 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 3 - Percent Finer | 43.5 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 4 - Percent Finer | 32.6 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 5 - Percent Finer | 24.5 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 6 - Percent Finer | 17.7 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 7 - Percent Finer | 9.5 | | | % Passing | | | 1 | D422 |

1B-IN
INORGANIC ANALYSIS DATA SHEET
GEOTECHNICAL

Client Sample ID: VAP-28 (88)
Lab Sample ID: 200-44940-11
Lab Name: TestAmerica Burlington
Job No.: 200-44940-1
SDG ID.:
Matrix: Solid
Date Sampled: 08/16/2018 00:00
Reporting Basis: WET
Date Received: 08/23/2018 10:30

| CAS No. | Analyte | Result | RL | MDL | Units | C | Q | DIL | Method |
|---|---|---|---|---|---|---|---|---|---|
| | Gravel | 1.8 | | | % | | | 1 | D422 |
| | Sieve Size 3 inch - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Sand | 93.0 | | | % | | | 1 | D422 |
| | Sieve Size 2 inch - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Coarse Sand | 2.3 | | | % | | | 1 | D422 |
| | Sieve Size 1.5 inch - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Medium Sand | 62.4 | | | % | | | 1 | D422 |
| | Sieve Size 1 inch - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Fine Sand | 28.3 | | | % | | | 1 | D422 |
| | Sieve Size 0.75 inch - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Sieve Size 0.375 inch - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Silt | 2.8 | | | % | | | 1 | D422 |
| | Clay | 2.4 | | | % | | | 1 | D422 |
| | Sieve Size #4 - Percent Finer | 98.2 | | | % Passing | | | 1 | D422 |
| | Sieve Size #10 - Percent Finer | 95.9 | | | % Passing | | | 1 | D422 |
| | Sieve Size #20 - Percent Finer | 90.2 | | | % Passing | | | 1 | D422 |
| | Sieve Size #40 - Percent Finer | 33.5 | | | % Passing | | | 1 | D422 |
| | Sieve Size #60 - Percent Finer | 9.0 | | | % Passing | | | 1 | D422 |
| | Sieve Size #80 - Percent Finer | 7.4 | | | % Passing | | | 1 | D422 |
| | Sieve Size #100 - Percent Finer | 6.7 | | | % Passing | | | 1 | D422 |
| | Sieve Size #200 - Percent Finer | 5.2 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 1 - Percent Finer | 4.3 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 2 - Percent Finer | 3.8 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 3 - Percent Finer | 3.3 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 4 - Percent Finer | 2.8 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 5 - Percent Finer | 2.4 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 6 - Percent Finer | 1.9 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 7 - Percent Finer | 0.9 | | | % Passing | | | 1 | D422 |

1B-IN
INORGANIC ANALYSIS DATA SHEET
GEOTECHNICAL

Client Sample ID: VAP-28 (95)
Lab Sample ID: 200-44940-12
Lab Name: TestAmerica Burlington
Job No.: 200-44940-1
SDG ID.:
Matrix: Solid
Date Sampled: 08/16/2018 00:00
Reporting Basis: WET
Date Received: 08/23/2018 10:30

| CAS No. | Analyte | Result | RL | MDL | Units | C | Q | DIL | Method |
|---|---|---|---|---|---|---|---|---|---|
| | Gravel | 3.9 | | | % | | | 1 | D422 |
| | Sieve Size 3 inch - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Sand | 51.3 | | | % | | | 1 | D422 |
| | Sieve Size 2 inch - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Coarse Sand | 7.7 | | | % | | | 1 | D422 |
| | Sieve Size 1.5 inch - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Medium Sand | 12.7 | | | % | | | 1 | D422 |
| | Sieve Size 1 inch - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Fine Sand | 30.9 | | | % | | | 1 | D422 |
| | Sieve Size 0.75 inch - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Sieve Size 0.375 inch - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Silt | 26.7 | | | % | | | 1 | D422 |
| | Clay | 18.1 | | | % | | | 1 | D422 |
| | Sieve Size #4 - Percent Finer | 96.1 | | | % Passing | | | 1 | D422 |
| | Sieve Size #10 - Percent Finer | 88.4 | | | % Passing | | | 1 | D422 |
| | Sieve Size #20 - Percent Finer | 81.0 | | | % Passing | | | 1 | D422 |
| | Sieve Size #40 - Percent Finer | 75.7 | | | % Passing | | | 1 | D422 |
| | Sieve Size #60 - Percent Finer | 68.0 | | | % Passing | | | 1 | D422 |
| | Sieve Size #80 - Percent Finer | 61.4 | | | % Passing | | | 1 | D422 |
| | Sieve Size #100 - Percent Finer | 57.3 | | | % Passing | | | 1 | D422 |
| | Sieve Size #200 - Percent Finer | 44.8 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 1 - Percent Finer | 30.9 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 2 - Percent Finer | 28.1 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 3 - Percent Finer | 22.7 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 4 - Percent Finer | 20.9 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 5 - Percent Finer | 18.1 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 6 - Percent Finer | 15.4 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 7 - Percent Finer | 10.9 | | | % Passing | | | 1 | D422 |

1B-IN
INORGANIC ANALYSIS DATA SHEET
GEOTECHNICAL

Client Sample ID: MW-100B (58-60)
Lab Sample ID: 200-44940-13
Lab Name: TestAmerica Burlington
Job No.: 200-44940-1
SDG ID.:
Matrix: Solid
Date Sampled: 08/07/2018 00:00
Reporting Basis: WET
Date Received: 08/23/2018 10:30

| CAS No. | Analyte | Result | RL | MDL | Units | C | Q | DIL | Method |
|---|---|---|---|---|---|---|---|---|---|
| | Gravel | 0.0 | | | % | | | 1 | D422 |
| | Sieve Size 3 inch - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Sand | 98.1 | | | % | | | 1 | D422 |
| | Sieve Size 2 inch - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Coarse Sand | 0.0 | | | % | | | 1 | D422 |
| | Sieve Size 1.5 inch - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Medium Sand | 2.3 | | | % | | | 1 | D422 |
| | Sieve Size 1 inch - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Fine Sand | 95.8 | | | % | | | 1 | D422 |
| | Sieve Size 0.75 inch - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Sieve Size 0.375 inch - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Silt | 0.5 | | | % | | | 1 | D422 |
| | Clay | 1.4 | | | % | | | 1 | D422 |
| | Sieve Size #4 - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Sieve Size #10 - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Sieve Size #20 - Percent Finer | 99.6 | | | % Passing | | | 1 | D422 |
| | Sieve Size #40 - Percent Finer | 97.7 | | | % Passing | | | 1 | D422 |
| | Sieve Size #60 - Percent Finer | 50.2 | | | % Passing | | | 1 | D422 |
| | Sieve Size #80 - Percent Finer | 18.9 | | | % Passing | | | 1 | D422 |
| | Sieve Size #100 - Percent Finer | 8.2 | | | % Passing | | | 1 | D422 |
| | Sieve Size #200 - Percent Finer | 1.9 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 1 - Percent Finer | 1.9 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 2 - Percent Finer | 1.4 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 3 - Percent Finer | 1.4 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 4 - Percent Finer | 1.4 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 5 - Percent Finer | 1.4 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 6 - Percent Finer | 0.9 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 7 - Percent Finer | 0.9 | | | % Passing | | | 1 | D422 |

1B-IN
INORGANIC ANALYSIS DATA SHEET
GEOTECHNICAL

Client Sample ID: MW-100B (69)
Lab Sample ID: 200-44940-14
Lab Name: TestAmerica Burlington
Job No.: 200-44940-1
SDG ID.:
Matrix: Solid
Date Sampled: 08/07/2018 00:00
Reporting Basis: WET
Date Received: 08/23/2018 10:30

| CAS No. | Analyte | Result | RL | MDL | Units | C | Q | DIL | Method |
|---|---|---|---|---|---|---|---|---|---|
| | Gravel | 0.0 | | | % | | | 1 | D422 |
| | Sieve Size 3 inch - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Sand | 6.6 | | | % | | | 1 | D422 |
| | Sieve Size 2 inch - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Coarse Sand | 0.0 | | | % | | | 1 | D422 |
| | Sieve Size 1.5 inch - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Medium Sand | 2.3 | | | % | | | 1 | D422 |
| | Sieve Size 1 inch - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Fine Sand | 4.3 | | | % | | | 1 | D422 |
| | Sieve Size 0.75 inch - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Sieve Size 0.375 inch - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Silt | 66.3 | | | % | | | 1 | D422 |
| | Clay | 27.1 | | | % | | | 1 | D422 |
| | Sieve Size #4 - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Sieve Size #10 - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Sieve Size #20 - Percent Finer | 98.6 | | | % Passing | | | 1 | D422 |
| | Sieve Size #40 - Percent Finer | 97.7 | | | % Passing | | | 1 | D422 |
| | Sieve Size #60 - Percent Finer | 96.3 | | | % Passing | | | 1 | D422 |
| | Sieve Size #80 - Percent Finer | 95.1 | | | % Passing | | | 1 | D422 |
| | Sieve Size #100 - Percent Finer | 94.7 | | | % Passing | | | 1 | D422 |
| | Sieve Size #200 - Percent Finer | 93.4 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 1 - Percent Finer | 62.5 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 2 - Percent Finer | 56.6 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 3 - Percent Finer | 43.6 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 4 - Percent Finer | 34.2 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 5 - Percent Finer | 27.1 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 6 - Percent Finer | 18.9 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 7 - Percent Finer | 13.0 | | | % Passing | | | 1 | D422 |

1B-IN
INORGANIC ANALYSIS DATA SHEET
GEOTECHNICAL

Client Sample ID: MW-100B (74)
Lab Sample ID: 200-44940-15
Lab Name: TestAmerica Burlington
Job No.: 200-44940-1
SDG ID.:
Matrix: Solid
Date Sampled: 08/08/2018 00:00
Reporting Basis: WET
Date Received: 08/23/2018 10:30

| CAS No. | Analyte | Result | RL | MDL | Units | C | Q | DIL | Method |
|---|---|---|---|---|---|---|---|---|---|
| | Gravel | 8.8 | | | % | | | 1 | D422 |
| | Sieve Size 3 inch - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Sand | 51.4 | | | % | | | 1 | D422 |
| | Sieve Size 2 inch - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Coarse Sand | 4.5 | | | % | | | 1 | D422 |
| | Sieve Size 1.5 inch - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Medium Sand | 9.5 | | | % | | | 1 | D422 |
| | Sieve Size 1 inch - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Fine Sand | 37.4 | | | % | | | 1 | D422 |
| | Sieve Size 0.75 inch - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Sieve Size 0.375 inch - Percent Finer | 95.5 | | | % Passing | | | 1 | D422 |
| | Silt | 24.0 | | | % | | | 1 | D422 |
| | Clay | 15.8 | | | % | | | 1 | D422 |
| | Sieve Size #4 - Percent Finer | 91.2 | | | % Passing | | | 1 | D422 |
| | Sieve Size #10 - Percent Finer | 86.7 | | | % Passing | | | 1 | D422 |
| | Sieve Size #20 - Percent Finer | 83.2 | | | % Passing | | | 1 | D422 |
| | Sieve Size #40 - Percent Finer | 77.2 | | | % Passing | | | 1 | D422 |
| | Sieve Size #60 - Percent Finer | 65.5 | | | % Passing | | | 1 | D422 |
| | Sieve Size #80 - Percent Finer | 57.7 | | | % Passing | | | 1 | D422 |
| | Sieve Size #100 - Percent Finer | 52.3 | | | % Passing | | | 1 | D422 |
| | Sieve Size #200 - Percent Finer | 39.8 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 1 - Percent Finer | 27.5 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 2 - Percent Finer | 22.0 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 3 - Percent Finer | 19.9 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 4 - Percent Finer | 17.2 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 5 - Percent Finer | 15.8 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 6 - Percent Finer | 13.0 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 7 - Percent Finer | 9.6 | | | % Passing | | | 1 | D422 |

1B-IN
INORGANIC ANALYSIS DATA SHEET
GEOTECHNICAL

Client Sample ID: MW-100B (80)
Lab Sample ID: 200-44940-16
Lab Name: TestAmerica Burlington
Job No.: 200-44940-1
SDG ID.:
Matrix: Solid
Date Sampled: 08/08/2018 00:00
Reporting Basis: WET
Date Received: 08/23/2018 10:30

| CAS No. | Analyte | Result | RL | MDL | Units | C | Q | DIL | Method |
|---|---|---|---|---|---|---|---|---|---|
| | Gravel | 17.9 | | | % | | | 1 | D422 |
| | Sieve Size 3 inch - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Sand | 59.1 | | | % | | | 1 | D422 |
| | Sieve Size 2 inch - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Coarse Sand | 8.2 | | | % | | | 1 | D422 |
| | Sieve Size 1.5 inch - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Medium Sand | 13.5 | | | % | | | 1 | D422 |
| | Sieve Size 1 inch - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Fine Sand | 37.4 | | | % | | | 1 | D422 |
| | Sieve Size 0.75 inch - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Sieve Size 0.375 inch - Percent Finer | 92.3 | | | % Passing | | | 1 | D422 |
| | Silt | 14.3 | | | % | | | 1 | D422 |
| | Clay | 8.7 | | | % | | | 1 | D422 |
| | Sieve Size #4 - Percent Finer | 82.1 | | | % Passing | | | 1 | D422 |
| | Sieve Size #10 - Percent Finer | 73.9 | | | % Passing | | | 1 | D422 |
| | Sieve Size #20 - Percent Finer | 67.9 | | | % Passing | | | 1 | D422 |
| | Sieve Size #40 - Percent Finer | 60.4 | | | % Passing | | | 1 | D422 |
| | Sieve Size #60 - Percent Finer | 45.8 | | | % Passing | | | 1 | D422 |
| | Sieve Size #80 - Percent Finer | 35.6 | | | % Passing | | | 1 | D422 |
| | Sieve Size #100 - Percent Finer | 31.3 | | | % Passing | | | 1 | D422 |
| | Sieve Size #200 - Percent Finer | 23.0 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 1 - Percent Finer | 15.7 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 2 - Percent Finer | 14.0 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 3 - Percent Finer | 10.9 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 4 - Percent Finer | 10.0 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 5 - Percent Finer | 8.7 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 6 - Percent Finer | 7.0 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 7 - Percent Finer | 4.4 | | | % Passing | | | 1 | D422 |

# GEOTECHNICAL BATCH WORKSHEET

Lab Name: TestAmerica Burlington  Job No.: 200-44940-1

SDG No.:

Batch Number: 133569  Batch Start Date: 08/27/18 20:36  Batch Analyst: Cota, Fred P

Batch Method: D422  Batch End Date: 09/04/18 14:30

| Lab Sample ID | Client Sample ID | Method Chain | Basis | InitialAmount | AnalysisComment | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 200-44940-A-1 | VAP-26 (78) | D422 | T | 95.85 g | SEE-SAMPLE-DATA SHEETS | | | | |
| 200-44940-A-2 | VAP-26 (72-75) | D422 | T | 145.55 g | SEE-SAMPLE-DATA SHEETS | | | | |
| 200-44940-A-3 | VAP-26 (84) | D422 | T | 218.16 g | SEE-SAMPLE-DATA SHEETS | | | | |
| 200-44940-A-4 | VAP-27 (79) | D422 | T | 164.12 g | SEE-SAMPLE-DATA SHEETS | | | | |
| 200-44940-A-5 | VAP-27 (83) | D422 | T | 63.86 g | SEE-SAMPLE-DATA SHEETS | | | | |
| 200-44940-A-6 | VAP-29 (27) | D422 | T | 206.99 g | SEE-SAMPLE-DATA SHEETS | | | | |
| 200-44940-A-7 | VAP-29 (53) | D422 | T | 179.24 g | SEE-SAMPLE-DATA SHEETS | | | | |
| 200-44940-A-8 | VAP-29 (74) | D422 | T | 123.19 g | SEE-SAMPLE-DATA SHEETS | | | | |
| 200-44940-A-9 | VAP-28 (44) | D422 | T | 92.09 g | SEE-SAMPLE-DATA SHEETS | | | | |
| 200-44940-A-10 | VAP-28 (68) | D422 | T | 70.2 g | SEE-SAMPLE-DATA SHEETS | | | | |
| 200-44940-A-11 | VAP-28 (88) | D422 | T | 183.61 g | SEE-SAMPLE-DATA SHEETS | | | | |
| 200-44940-A-12 | VAP-28 (95) | D422 | T | 95.78 g | SEE-SAMPLE-DATA SHEETS | | | | |
| 200-44940-A-13 | MW-100B (58-60) | D422 | T | 205.83 g | SEE-SAMPLE-DATA SHEETS | | | | |
| 200-44940-A-14 | MW-100B (69) | D422 | T | 77.2 g | SEE-SAMPLE-DATA SHEETS | | | | |
| 200-44940-A-15 | MW-100B (74) | D422 | T | 125.21 g | SEE-SAMPLE-DATA SHEETS | | | | |
| 200-44940-A-16 | MW-100B (80) | D422 | T | 201.11 g | SEE-SAMPLE-DATA SHEETS | | | | |

| Batch Notes | |
|---|---|
| | |

| Basis | Basis Description |
|---|---|
| T | Total/NA |

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

# Shipping and Receiving Documents

ARCADIS

ID#:

# CHAIN OF CUSTODY & LABORATORY ANALYSIS REQUEST FORM

Page 1 of 2

Lab Work Order #

**Send Results to:**

Contact & Company Name: Lisa Rytkowski ARCADIS

Telephone: 414-276-7742

Address: 126 N Jefferson, Ste 400

Fax: 414-276-7603

City: Milwaukee State: WI Zip: 53202

E-mail Address:

Project Name/Location (City, State): Marinette/Marinette, WI

Project #: WI001605.0009.00004

Sampler's Printed Name: Bruce Evans

Sampler's Signature:

| Preservative | E | | | | | | |
|---|---|---|---|---|---|---|---|
| Filtered (✓) | | | | | | | |
| # of Containers | 1 | | | | | | |
| Container Information | 8 | | | | | | |

**PARAMETER ANALYSIS & METHOD**

| Sample ID | Collection Date | Collection Time | Type (✓) Comp | Type (✓) Grab | Matrix | Grain Size | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| VAP-26(78) | 6/12/18 | — | | X | SO | X | | | | | | | |
| VAP-26(72-75) | 6/12/18 | — | | X | SO | X | | | | | | | |
| VAP-26(84) | 6/12/18 | — | | X | SO | X | | | | | | | |
| VAP-27(79) | 6/22/18 | — | | X | SO | X | | | | | | | |
| VAP-27(83) | 6/22/18 | — | | X | SO | X | | | | | | | |
| VAP-29(27) | 6/26/18 | — | | X | SO | X | | | | | | | |
| VAP-29(53) | 6/27/18 | — | | X | SO | X | | | | | | | |
| VAP-29(74) | 6/27/18 | — | | X | SO | X | | | | | | | |
| VAP-28(44) | 8/15/18 | — | | X | SO | X | | | | | | | |
| VAP-28(68) | 8/15/18 | — | | X | SO | X | | | | | | | |
| VAP-28(88) | 8/16/18 | — | | X | SO | X | | | | | | | |
| VAP-28(95) | 8/16/18 | — | | X | SO | X | | | | | | | |
| MW-100B(58-60) | 8/7/18 | — | | X | SO | X | | | | | | | |
| MW-100B(69) | 8/7/18 | — | | X | SO | X | | | | | | | |

**Keys**

**Preservation Key:**
A. $H_2SO_4$
B. HCL
C. $HNO_3$
D. NaOH
E. None
F. Other: _____
G. Other: _____
H. Other: _____

**Container Information Key:**
1. 40 ml Vial
2. 1 L Amber
3. 250 ml Plastic
4. 500 ml Plastic
5. Encore
6. 2 oz. Glass
7. 4 oz. Glass
8. 8 oz. Glass
9. Other: _____
10. Other: _____

**Matrix Key:**
SO - Soil
SE - Sediment
NL - NAPL/Oil
W - Water
SL - Sludge
SW - Sample Wipe
T - Tissue
A - Air
Other: _____

**REMARKS**

Grain Size

CAll Sandie Fredrick (TestAmerica) pm for Instructions

200-44940 Chain of Custody

**Special Instructions/Comments:**

1- cooler / CAll Sandie Fredrick (TestAm PM) for Instructions 920-216-1660

☐ Special QA/QC Instructions(✓):

| Laboratory Information and Receipt | | Relinquished By | Received By | Relinquished By | Laboratory Received By |
|---|---|---|---|---|---|
| Lab Name: Test America | Cooler Custody Seal (✓) | Printed Name: Bruce Evans | Printed Name: Sam Hall | Printed Name: | Printed Name: |
| ☐ Cooler packed with ice (✓) | ☐ Intact ☐ Not Intact | Signature: | Signature: Sam Hall | Signature: | Signature: |
| Specify Turnaround Requirements: Standard | Sample Receipt: | Firm: Arcadis | Firm/Courier: TA | Firm/Courier: | Firm: |
| Shipping Tracking #: | Condition/Cooler Temp: _____ | Date/Time: 8/22/18 - 1700 | Date/Time: 8/23/18 10:30 | Date/Time: | Date/Time: |

20730826 CofC AR Form 08.27.2015

Distribution: WHITE – Laboratory returns with results YELLOW – Lab copy PINK – Retained by Arcadis

ARCADIS

ID#:

# CHAIN OF CUSTODY & LABORATORY ANALYSIS REQUEST FORM



Lab Work Order #

**Send Results to:**

Contact & Company Name:

Telephone:

Address: see page 1

Fax:

City State Zip

E-mail Address:

Project Name/Location (City, State): Marinette

Project #:

Sampler's Printed Name:

Sampler's Signature:

| Preservative | E | | | | | | |
|---|---|---|---|---|---|---|---|
| Filtered (✓) | | | | | | | |
| # of Containers | 1 | | | | | | |
| Container Information | B | | | | | | |

**PARAMETER ANALYSIS & METHOD**

| Sample ID | Collection Date | Collection Time | Type (✓) Comp | Type (✓) Grab | Matrix | Grain Size | | | | | | | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MW-100B (74) | 8/8/18 | – | | X | SO | X | | | | | | | Grain Size |
| MW-100B (80) | 8/8/18 | – | | X | SO | X | | | | | | | |

**Keys**

**Preservation Key:**
A. $H_2SO_4$
B. HCL
C. $HNO_3$
D. NaOH
E. None
F. Other: _____
G. Other: _____
H. Other: _____

**Container Information Key:**
1. 40 ml Vial
2. 1 L Amber
3. 250 ml Plastic
4. 500 ml Plastic
5. Encore
6. 2 oz. Glass
7. 4 oz. Glass
8. 8 oz. Glass
9. Other: _____
10. Other: _____

**Matrix Key:**
SO - Soil
W - Water
T - Tissue
SE - Sediment
SL - Sludge
A - Air
NL - NAPL/Oil
SW - Sample Wipe
Other: _____

CAN Sandie Fredrick (Testmarks) pm for Instructions

**Special Instructions/Comments:** see pg1

☐ Special QA/QC Instructions(✓):

| Laboratory Information and Receipt | | Relinquished By | Received By | Relinquished By | Laboratory Received By |
|---|---|---|---|---|---|
| Lab Name: | Cooler Custody Seal (✓) | Printed Name: Bance Evans | Printed Name: Sam Hall | Printed Name: | Printed Name: |
| ☐ Cooler packed with ice: see pg1 | ☐ Intact ☐ Not Intact | Signature: [signature] | Signature: Sam Hall | Signature: | Signature: |
| Specify Turnaround Requirements: | Sample Receipt: | Firm: Arcadis | Firm/Courier: TA | Firm/Courier: | Firm: |
| Shipping Tracking #: | Condition/Cooler Temp: _____ | Date/Time: 8/22/18 - 1700 | Date/Time: 8/23/18 10:30 | Date/Time: | Date/Time: |

20730826 CofC AR Form 08.27.2015

Distribution: WHITE – Laboratory returns with results YELLOW – Lab copy PINK – Retained by Arcadis

ORIGIN ID:MKEA (414) 276-7742
BRUCE EVANS
ARCADIS
126 N. JEFFERSON STREET
SUITE 400
MILWAUKEE, WI 53202
UNITED STATES US

SHIP DATE: 22AUG18
ACTWGT: 30.00 LB
CAD: 1381005/INET4040

BILL SENDER

TO SAMPLERECEIVING
TEST AMERICA - BURLINGTON
30 COMMUNITY DR
STE 11
SOUTH BURLINGTON VT 05403
(802) 660-1990 REF: WI001605.0009.00004
INV:
PO: DEPT:

552J/13309/DCA5

FedEx Express

THU - 23 AUG 3:00P
STANDARD OVERNIGHT

TRK# 0201 7730 4064 5088

NC BTVA

VT-US 05403 BTV

# Login Sample Receipt Checklist

Client: ARCADIS U.S., Inc.

Job Number: 200-44940-1

**Login Number: 44940**
**List Number: 1**
**Creator: Lavigne, Scott M**

**List Source: TestAmerica Burlington**

| Question | Answer | Comment |
|---|---|---|
| Radioactivity wasn't checked or is </= background as measured by a survey meter. | True | Lab does not accept radioactive samples. |
| The cooler's custody seal, if present, is intact. | True | Seal present with no number. |
| Sample custody seals, if present, are intact. | True | |
| The cooler or samples do not appear to have been compromised or tampered with. | True | |
| Samples were received on ice. | N/A | Thermal preservation not required. |
| Cooler Temperature is acceptable. | True | |
| Cooler Temperature is recorded. | N/A | Thermal preservation not required. |
| COC is present. | True | |
| COC is filled out in ink and legible. | True | |
| COC is filled out with all pertinent information. | True | |
| Is the Field Sampler's name present on COC? | True | |
| There are no discrepancies between the containers received and the COC. | True | |
| Samples are received within Holding Time (excluding tests with immediate HTs) | True | |
| Sample containers have legible labels. | True | |
| Containers are not broken or leaking. | True | |
| Sample collection date/times are provided. | True | |
| Appropriate sample containers are used. | True | |
| Sample bottles are completely filled. | N/A | |
| Sample Preservation Verified. | True | |
| There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs | True | |
| Containers requiring zero headspace have no headspace or bubble is <6mm (1/4"). | True | |
| Multiphasic samples are not present. | True | |
| Samples do not require splitting or compositing. | True | |
| Residual Chlorine Checked. | N/A | |

# ANALYTICAL REPORT

Job Number: 500-148459-1

Job Description: Marinette, WI  WI001605.0009.00004

For:
ARCADIS U.S., Inc.
126 North Jefferson Street
Suite 400
Milwaukee, WI  53202

Attention:  Lisa Rutkowski

Approved for release.
Sandie J Fredrick
Project Manager II
7/26/2018 8:59 PM

Sandie J Fredrick, Project Manager II
2417 Bond Street, University Park, IL, 60484
(920)261-1660
sandie.fredrick@testamericainc.com
07/26/2018

All questions regarding this test report should be directed to the TestAmerica Project Manager whose signature appears on this report. All pages of this report are integral parts of the analytical data. Therefore, this report should be reproduced only in its entirety.

Reporting limits are adjusted for sample size used, dilutions and moisture content if applicable.

# Table of Contents


Cover Title Page . . . . . 1

Data Summaries . . . . . 3

- Definitions . . . . . 3
- Case Narrative . . . . . 4
- Client Sample Results . . . . . 5
- QC Association . . . . . 17
- Chronicle . . . . . 18
- Certification Summary . . . . . 19
- Method Summary . . . . . 20
- Sample Summary . . . . . 21

Inorganic Sample Data . . . . . 22

- Geotechnical Data . . . . . 22
  - Geo Cover Page . . . . . 22
  - Geo Sample Data . . . . . 23
  - Geo Prep Data . . . . . 27

Subcontracted Data . . . . . 28

Shipping and Receiving Documents . . . . . 29

- Client Chain of Custody . . . . . 30
- Sample Receipt Checklist . . . . . 33

## Glossary

| Abbreviation | These commonly used abbreviations may or may not be present in this report. |
|---|---|
| ¤ | Listed under the "D" column to designate that the result is reported on a dry weight basis |
| %R | Percent Recovery |
| CFL | Contains Free Liquid |
| CNF | Contains No Free Liquid |
| DER | Duplicate Error Ratio (normalized absolute difference) |
| Dil Fac | Dilution Factor |
| DL | Detection Limit (DoD/DOE) |
| DL, RA, RE, IN | Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample |
| DLC | Decision Level Concentration (Radiochemistry) |
| EDL | Estimated Detection Limit (Dioxin) |
| LOD | Limit of Detection (DoD/DOE) |
| LOQ | Limit of Quantitation (DoD/DOE) |
| MDA | Minimum Detectable Activity (Radiochemistry) |
| MDC | Minimum Detectable Concentration (Radiochemistry) |
| MDL | Method Detection Limit |
| ML | Minimum Level (Dioxin) |
| NC | Not Calculated |
| ND | Not Detected at the reporting limit (or MDL or EDL if shown) |
| PQL | Practical Quantitation Limit |
| QC | Quality Control |
| RER | Relative Error Ratio (Radiochemistry) |
| RL | Reporting Limit or Requested Limit (Radiochemistry) |
| RPD | Relative Percent Difference, a measure of the relative difference between two points |
| TEF | Toxicity Equivalent Factor (Dioxin) |
| TEQ | Toxicity Equivalent Quotient (Dioxin) |

**Comments**
No additional comments.

**Receipt**
The samples were received on 7/16/2018 9:15 AM; the samples arrived in good condition, properly preserved and, where required, on ice.

**Geotechnical**
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

# Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI WI001605.0009.00004

TestAmerica Job ID: 500-148459-1

## Client Sample ID: MW-102B (57)

**Date Collected: 06/05/18 11:25**
**Date Received: 07/16/18 09:15**

## Lab Sample ID: 500-148459-1

**Matrix: Solid**

### Method: D422 - Grain Size

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Gravel | 14.2 | | | | % | | | 07/21/18 15:16 | 1 |
| Sieve Size 3 inch - Percent Finer | 100.0 | | | | % Passing | | | 07/21/18 15:16 | 1 |
| Sand | 41.7 | | | | % | | | 07/21/18 15:16 | 1 |
| Sieve Size 2 inch - Percent Finer | 100.0 | | | | % Passing | | | 07/21/18 15:16 | 1 |
| Coarse Sand | 7.6 | | | | % | | | 07/21/18 15:16 | 1 |
| Sieve Size 1.5 inch - Percent Finer | 100.0 | | | | % Passing | | | 07/21/18 15:16 | 1 |
| Medium Sand | 9.3 | | | | % | | | 07/21/18 15:16 | 1 |
| Sieve Size 1 inch - Percent Finer | 100.0 | | | | % Passing | | | 07/21/18 15:16 | 1 |
| Fine Sand | 24.8 | | | | % | | | 07/21/18 15:16 | 1 |
| Sieve Size 0.75 inch - Percent Finer | 100.0 | | | | % Passing | | | 07/21/18 15:16 | 1 |
| Sieve Size 0.375 inch - Percent Finer | 100.0 | | | | % Passing | | | 07/21/18 15:16 | 1 |
| Silt | 28.2 | | | | % | | | 07/21/18 15:16 | 1 |
| Clay | 15.9 | | | | % | | | 07/21/18 15:16 | 1 |
| Sieve Size #4 - Percent Finer | 85.8 | | | | % Passing | | | 07/21/18 15:16 | 1 |
| Sieve Size #10 - Percent Finer | 78.2 | | | | % Passing | | | 07/21/18 15:16 | 1 |
| Sieve Size #20 - Percent Finer | 73.2 | | | | % Passing | | | 07/21/18 15:16 | 1 |
| Sieve Size #40 - Percent Finer | 68.9 | | | | % Passing | | | 07/21/18 15:16 | 1 |
| Sieve Size #60 - Percent Finer | 62.5 | | | | % Passing | | | 07/21/18 15:16 | 1 |
| Sieve Size #80 - Percent Finer | 57.6 | | | | % Passing | | | 07/21/18 15:16 | 1 |
| Sieve Size #100 - Percent Finer | 53.7 | | | | % Passing | | | 07/21/18 15:16 | 1 |
| Sieve Size #200 - Percent Finer | 44.1 | | | | % Passing | | | 07/21/18 15:16 | 1 |
| Hydrometer Reading 1 - Percent Finer | 35.4 | | | | % Passing | | | 07/21/18 15:16 | 1 |
| Hydrometer Reading 2 - Percent Finer | 27.0 | | | | % Passing | | | 07/21/18 15:16 | 1 |
| Hydrometer Reading 3 - Percent Finer | 21.5 | | | | % Passing | | | 07/21/18 15:16 | 1 |
| Hydrometer Reading 4 - Percent Finer | 18.7 | | | | % Passing | | | 07/21/18 15:16 | 1 |
| Hydrometer Reading 5 - Percent Finer | 15.9 | | | | % Passing | | | 07/21/18 15:16 | 1 |
| Hydrometer Reading 6 - Percent Finer | 12.8 | | | | % Passing | | | 07/21/18 15:16 | 1 |
| Hydrometer Reading 7 - Percent Finer | 8.7 | | | | % Passing | | | 07/21/18 15:16 | 1 |

# Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI WI001605.0009.00004

TestAmerica Job ID: 500-148459-1

## Client Sample ID: MW-102B (34)

**Date Collected: 06/05/18 08:30**
**Date Received: 07/16/18 09:15**

## Lab Sample ID: 500-148459-2

**Matrix: Solid**

### Method: D422 - Grain Size

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Gravel | 22.0 | | | | % | | | 07/21/18 15:18 | 1 |
| Sieve Size 3 inch - Percent Finer | 100.0 | | | | % Passing | | | 07/21/18 15:18 | 1 |
| Sand | 39.8 | | | | % | | | 07/21/18 15:18 | 1 |
| Sieve Size 2 inch - Percent Finer | 100.0 | | | | % Passing | | | 07/21/18 15:18 | 1 |
| Coarse Sand | 5.8 | | | | % | | | 07/21/18 15:18 | 1 |
| Sieve Size 1.5 inch - Percent Finer | 100.0 | | | | % Passing | | | 07/21/18 15:18 | 1 |
| Medium Sand | 7.2 | | | | % | | | 07/21/18 15:18 | 1 |
| Sieve Size 1 inch - Percent Finer | 100.0 | | | | % Passing | | | 07/21/18 15:18 | 1 |
| Fine Sand | 26.8 | | | | % | | | 07/21/18 15:18 | 1 |
| Sieve Size 0.75 inch - Percent Finer | 100.0 | | | | % Passing | | | 07/21/18 15:18 | 1 |
| Sieve Size 0.375 inch - Percent Finer | 100.0 | | | | % Passing | | | 07/21/18 15:18 | 1 |
| Silt | 25.1 | | | | % | | | 07/21/18 15:18 | 1 |
| Clay | 13.1 | | | | % | | | 07/21/18 15:18 | 1 |
| Sieve Size #4 - Percent Finer | 78.0 | | | | % Passing | | | 07/21/18 15:18 | 1 |
| Sieve Size #10 - Percent Finer | 72.2 | | | | % Passing | | | 07/21/18 15:18 | 1 |
| Sieve Size #20 - Percent Finer | 68.7 | | | | % Passing | | | 07/21/18 15:18 | 1 |
| Sieve Size #40 - Percent Finer | 65.0 | | | | % Passing | | | 07/21/18 15:18 | 1 |
| Sieve Size #60 - Percent Finer | 57.8 | | | | % Passing | | | 07/21/18 15:18 | 1 |
| Sieve Size #80 - Percent Finer | 51.7 | | | | % Passing | | | 07/21/18 15:18 | 1 |
| Sieve Size #100 - Percent Finer | 48.1 | | | | % Passing | | | 07/21/18 15:18 | 1 |
| Sieve Size #200 - Percent Finer | 38.2 | | | | % Passing | | | 07/21/18 15:18 | 1 |
| Hydrometer Reading 1 - Percent Finer | 25.7 | | | | % Passing | | | 07/21/18 15:18 | 1 |
| Hydrometer Reading 2 - Percent Finer | 22.5 | | | | % Passing | | | 07/21/18 15:18 | 1 |
| Hydrometer Reading 3 - Percent Finer | 18.3 | | | | % Passing | | | 07/21/18 15:18 | 1 |
| Hydrometer Reading 4 - Percent Finer | 16.2 | | | | % Passing | | | 07/21/18 15:18 | 1 |
| Hydrometer Reading 5 - Percent Finer | 13.1 | | | | % Passing | | | 07/21/18 15:18 | 1 |
| Hydrometer Reading 6 - Percent Finer | 9.7 | | | | % Passing | | | 07/21/18 15:18 | 1 |
| Hydrometer Reading 7 - Percent Finer | 7.6 | | | | % Passing | | | 07/21/18 15:18 | 1 |

# Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI WI001605.0009.00004

TestAmerica Job ID: 500-148459-1

## Client Sample ID: MW-102B (50)

**Date Collected: 06/05/18 11:20**
**Date Received: 07/16/18 09:15**

## Lab Sample ID: 500-148459-3

**Matrix: Solid**

### Method: D422 - Grain Size

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Gravel | 0.0 | | | | % | | | 07/21/18 15:21 | 1 |
| Sieve Size 3 inch - Percent Finer | 100.0 | | | | % Passing | | | 07/21/18 15:21 | 1 |
| Sand | 12.2 | | | | % | | | 07/21/18 15:21 | 1 |
| Sieve Size 2 inch - Percent Finer | 100.0 | | | | % Passing | | | 07/21/18 15:21 | 1 |
| Coarse Sand | 0.0 | | | | % | | | 07/21/18 15:21 | 1 |
| Sieve Size 1.5 inch - Percent Finer | 100.0 | | | | % Passing | | | 07/21/18 15:21 | 1 |
| Medium Sand | 0.6 | | | | % | | | 07/21/18 15:21 | 1 |
| Sieve Size 1 inch - Percent Finer | 100.0 | | | | % Passing | | | 07/21/18 15:21 | 1 |
| Fine Sand | 11.6 | | | | % | | | 07/21/18 15:21 | 1 |
| Sieve Size 0.75 inch - Percent Finer | 100.0 | | | | % Passing | | | 07/21/18 15:21 | 1 |
| Sieve Size 0.375 inch - Percent Finer | 100.0 | | | | % Passing | | | 07/21/18 15:21 | 1 |
| Silt | 39.4 | | | | % | | | 07/21/18 15:21 | 1 |
| Clay | 48.4 | | | | % | | | 07/21/18 15:21 | 1 |
| Sieve Size #4 - Percent Finer | 100.0 | | | | % Passing | | | 07/21/18 15:21 | 1 |
| Sieve Size #10 - Percent Finer | 100.0 | | | | % Passing | | | 07/21/18 15:21 | 1 |
| Sieve Size #20 - Percent Finer | 100.0 | | | | % Passing | | | 07/21/18 15:21 | 1 |
| Sieve Size #40 - Percent Finer | 99.4 | | | | % Passing | | | 07/21/18 15:21 | 1 |
| Sieve Size #60 - Percent Finer | 98.0 | | | | % Passing | | | 07/21/18 15:21 | 1 |
| Sieve Size #80 - Percent Finer | 96.8 | | | | % Passing | | | 07/21/18 15:21 | 1 |
| Sieve Size #100 - Percent Finer | 95.3 | | | | % Passing | | | 07/21/18 15:21 | 1 |
| Sieve Size #200 - Percent Finer | 87.8 | | | | % Passing | | | 07/21/18 15:21 | 1 |
| Hydrometer Reading 1 - Percent Finer | 78.6 | | | | % Passing | | | 07/21/18 15:21 | 1 |
| Hydrometer Reading 2 - Percent Finer | 72.2 | | | | % Passing | | | 07/21/18 15:21 | 1 |
| Hydrometer Reading 3 - Percent Finer | 64.3 | | | | % Passing | | | 07/21/18 15:21 | 1 |
| Hydrometer Reading 4 - Percent Finer | 56.3 | | | | % Passing | | | 07/21/18 15:21 | 1 |
| Hydrometer Reading 5 - Percent Finer | 48.4 | | | | % Passing | | | 07/21/18 15:21 | 1 |
| Hydrometer Reading 6 - Percent Finer | 33.7 | | | | % Passing | | | 07/21/18 15:21 | 1 |
| Hydrometer Reading 7 - Percent Finer | 24.2 | | | | % Passing | | | 07/21/18 15:21 | 1 |

# Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI WI001605.0009.00004

TestAmerica Job ID: 500-148459-1

## Client Sample ID: MW-102B (43)

**Date Collected: 06/05/18 11:15**
**Date Received: 07/16/18 09:15**

## Lab Sample ID: 500-148459-4

**Matrix: Solid**

### Method: D422 - Grain Size

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Gravel | 2.1 | | | | % | | | 07/21/18 15:24 | 1 |
| Sieve Size 3 inch - Percent Finer | 100.0 | | | | % Passing | | | 07/21/18 15:24 | 1 |
| Sand | 25.7 | | | | % | | | 07/21/18 15:24 | 1 |
| Sieve Size 2 inch - Percent Finer | 100.0 | | | | % Passing | | | 07/21/18 15:24 | 1 |
| Coarse Sand | 3.8 | | | | % | | | 07/21/18 15:24 | 1 |
| Sieve Size 1.5 inch - Percent Finer | 100.0 | | | | % Passing | | | 07/21/18 15:24 | 1 |
| Medium Sand | 4.7 | | | | % | | | 07/21/18 15:24 | 1 |
| Sieve Size 1 inch - Percent Finer | 100.0 | | | | % Passing | | | 07/21/18 15:24 | 1 |
| Fine Sand | 17.2 | | | | % | | | 07/21/18 15:24 | 1 |
| Sieve Size 0.75 inch - Percent Finer | 100.0 | | | | % Passing | | | 07/21/18 15:24 | 1 |
| Sieve Size 0.375 inch - Percent Finer | 100.0 | | | | % Passing | | | 07/21/18 15:24 | 1 |
| Silt | 32.4 | | | | % | | | 07/21/18 15:24 | 1 |
| Clay | 39.8 | | | | % | | | 07/21/18 15:24 | 1 |
| Sieve Size #4 - Percent Finer | 97.9 | | | | % Passing | | | 07/21/18 15:24 | 1 |
| Sieve Size #10 - Percent Finer | 94.1 | | | | % Passing | | | 07/21/18 15:24 | 1 |
| Sieve Size #20 - Percent Finer | 91.9 | | | | % Passing | | | 07/21/18 15:24 | 1 |
| Sieve Size #40 - Percent Finer | 89.4 | | | | % Passing | | | 07/21/18 15:24 | 1 |
| Sieve Size #60 - Percent Finer | 84.8 | | | | % Passing | | | 07/21/18 15:24 | 1 |
| Sieve Size #80 - Percent Finer | 81.1 | | | | % Passing | | | 07/21/18 15:24 | 1 |
| Sieve Size #100 - Percent Finer | 78.8 | | | | % Passing | | | 07/21/18 15:24 | 1 |
| Sieve Size #200 - Percent Finer | 72.2 | | | | % Passing | | | 07/21/18 15:24 | 1 |
| Hydrometer Reading 1 - Percent Finer | 60.1 | | | | % Passing | | | 07/21/18 15:24 | 1 |
| Hydrometer Reading 2 - Percent Finer | 56.0 | | | | % Passing | | | 07/21/18 15:24 | 1 |
| Hydrometer Reading 3 - Percent Finer | 50.6 | | | | % Passing | | | 07/21/18 15:24 | 1 |
| Hydrometer Reading 4 - Percent Finer | 45.2 | | | | % Passing | | | 07/21/18 15:24 | 1 |
| Hydrometer Reading 5 - Percent Finer | 39.8 | | | | % Passing | | | 07/21/18 15:24 | 1 |
| Hydrometer Reading 6 - Percent Finer | 32.7 | | | | % Passing | | | 07/21/18 15:24 | 1 |
| Hydrometer Reading 7 - Percent Finer | 24.6 | | | | % Passing | | | 07/21/18 15:24 | 1 |

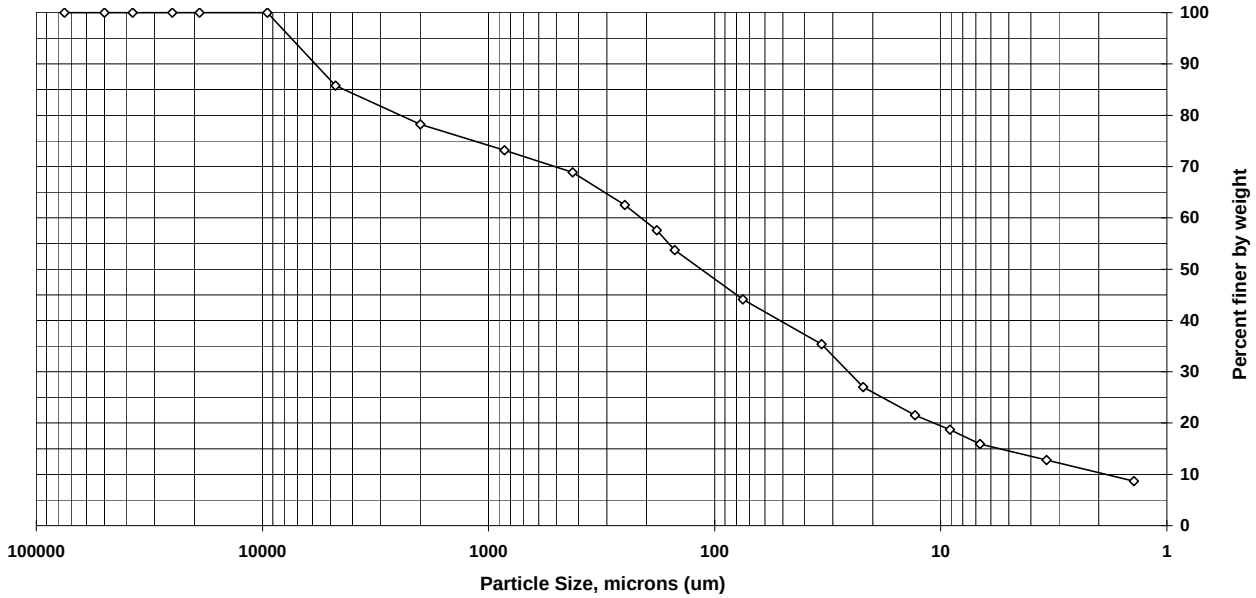
# Particle Size of Soils by ASTM D422

| | | | | | |
|---|---|---|---|---|---|
| | | | | **Date Received:** | 7/16/2018 |
| **Sample ID:** | MW-102B (57) | **Percent Solids:** | 93.2% | **Start Date:** | 7/21/2018 |
| **Lab ID:** | 500-148459-A-1 | **Specific Gravity:** | 2.650 | **End Date:** | 7/26/2018 |

**Shape (> #10):** subangular

**Non-soil material:** na

**Hardness (> #10):** hard




| Sieve size | Particle size, um | Percent finer | Incremental percent |
|---|---|---|---|
| 3 inch | 75000 | 100.0 | 0.0 |
| 2 inch | 50000 | 100.0 | 0.0 |
| 1.5 inch | 37500 | 100.0 | 0.0 |
| 1 inch | 25000 | 100.0 | 0.0 |
| 3/4 inch | 19000 | 100.0 | 0.0 |
| 3/8 inch | 9500 | 100.0 | 0.0 |
| #4 | 4750 | 85.8 | 14.2 |
| #10 | 2000 | 78.2 | 7.6 |
| #20 | 850 | 73.2 | 5.0 |
| #40 | 425 | 68.9 | 4.3 |
| #60 | 250 | 62.5 | 6.4 |
| #80 | 180 | 57.6 | 4.9 |
| #100 | 150 | 53.7 | 3.9 |
| #200 | 75 | 44.1 | 9.6 |
| Hyd1 | 33.7 | 35.4 | 8.7 |
| Hyd2 | 22 | 27.0 | 8.4 |
| Hyd3 | 13 | 21.5 | 5.5 |
| Hyd4 | 9.1 | 18.7 | 2.8 |
| Hyd5 | 6.7 | 15.9 | 2.8 |
| Hyd6 | 3.4 | 12.8 | 3.1 |
| Hyd7 | 1.4 | 8.7 | 4.1 |
| | | | |

| Soil Classification | Percent of sample |
|---|---|
| Gravel | 14.2 |
| Sand | 41.7 |
| Coarse Sand | 7.6 |
| Medium Sand | 9.3 |
| Fine Sand | 24.8 |
| Silt | 28.2 |
| Clay | 15.9 |
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# Particle Size of Soils by ASTM D422

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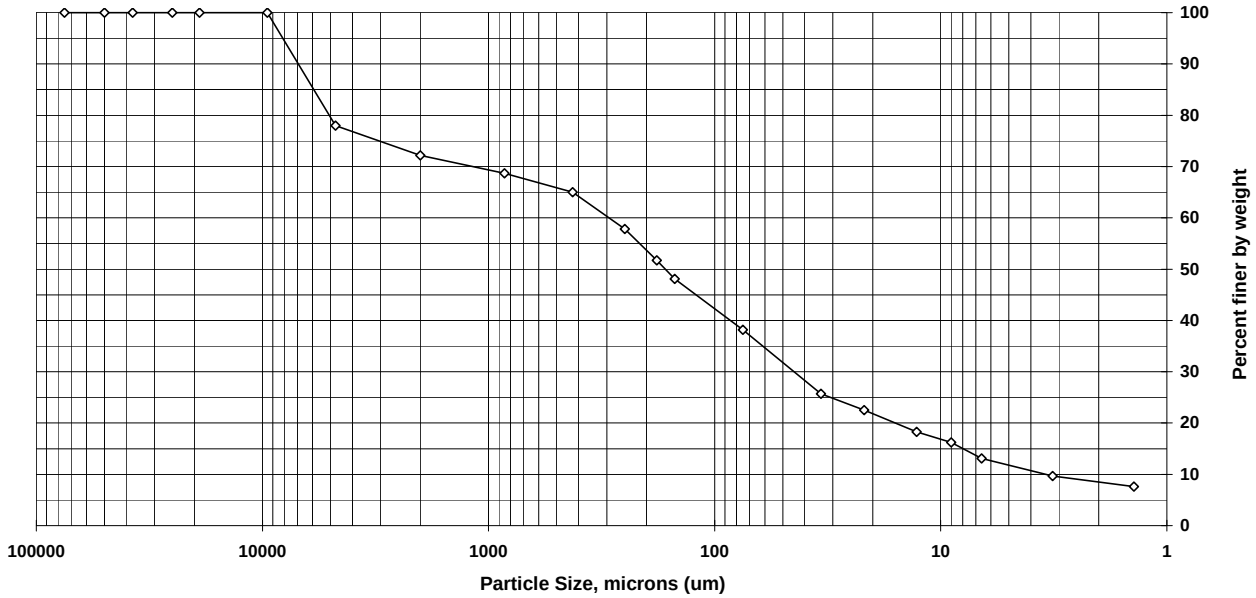
|---|---|---|---|---|---|
| | | | | **Date Received:** | 7/16/2018 |
| **Sample ID:** | MW-102B (34) | **Percent Solids:** | 94.8% | **Start Date:** | 7/21/2018 |
| **Lab ID:** | 500-148459-A-2 | **Specific Gravity:** | 2.650 | **End Date:** | 7/26/2018 |

**Shape (> #10):** subangular

**Non-soil material:** na

**Hardness (> #10):** hard




| Sieve size | Particle size, um | Percent finer | Incremental percent |
|---|---|---|---|
| 3 inch | 75000 | 100.0 | 0.0 |
| 2 inch | 50000 | 100.0 | 0.0 |
| 1.5 inch | 37500 | 100.0 | 0.0 |
| 1 inch | 25000 | 100.0 | 0.0 |
| 3/4 inch | 19000 | 100.0 | 0.0 |
| 3/8 inch | 9500 | 100.0 | 0.0 |
| #4 | 4750 | 78.0 | 22.0 |
| #10 | 2000 | 72.2 | 5.8 |
| #20 | 850 | 68.7 | 3.5 |
| #40 | 425 | 65.0 | 3.7 |
| #60 | 250 | 57.8 | 7.2 |
| #80 | 180 | 51.7 | 6.1 |
| #100 | 150 | 48.1 | 3.6 |
| #200 | 75 | 38.2 | 9.9 |
| Hyd1 | 33.9 | 25.7 | 12.5 |
| Hyd2 | 21.8 | 22.5 | 3.2 |
| Hyd3 | 12.8 | 18.3 | 4.2 |
| Hyd4 | 9 | 16.2 | 2.1 |
| Hyd5 | 6.6 | 13.1 | 3.1 |
| Hyd6 | 3.2 | 9.7 | 3.4 |
| Hyd7 | 1.4 | 7.6 | 2.1 |
| | | | |

| Soil Classification | Percent of sample |
|---|---|
| Gravel | 22.0 |
| Sand | 39.8 |
| Coarse Sand | 5.8 |
| Medium Sand | 7.2 |
| Fine Sand | 26.8 |
| Silt | 25.1 |
| Clay | 13.1 |
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# Particle Size of Soils by ASTM D422

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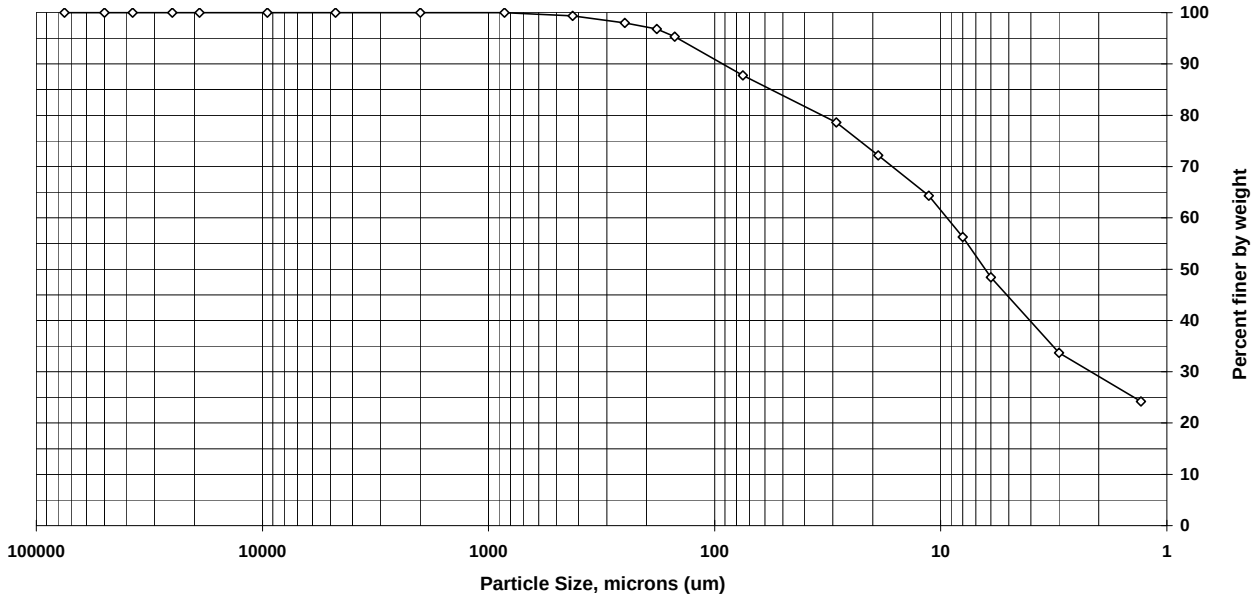
|---|---|---|---|---|---|
| | | | | **Date Received:** | 7/16/2018 |
| **Sample ID:** | MW-102B (50) | **Percent Solids:** | 83.6% | **Start Date:** | 7/21/2018 |
| **Lab ID:** | 500-148459-A-3 | **Specific Gravity:** | 2.650 | **End Date:** | 7/26/2018 |

**Shape (> #10):** na

**Non-soil material:** na

**Hardness (> #10):** na




| Sieve size | Particle size, um | Percent finer | Incremental percent |
|---|---|---|---|
| 3 inch | 75000 | 100.0 | 0.0 |
| 2 inch | 50000 | 100.0 | 0.0 |
| 1.5 inch | 37500 | 100.0 | 0.0 |
| 1 inch | 25000 | 100.0 | 0.0 |
| 3/4 inch | 19000 | 100.0 | 0.0 |
| 3/8 inch | 9500 | 100.0 | 0.0 |
| #4 | 4750 | 100.0 | 0.0 |
| #10 | 2000 | 100.0 | 0.0 |
| #20 | 850 | 100.0 | 0.0 |
| #40 | 425 | 99.4 | 0.6 |
| #60 | 250 | 98.0 | 1.4 |
| #80 | 180 | 96.8 | 1.2 |
| #100 | 150 | 95.3 | 1.5 |
| #200 | 75 | 87.8 | 7.5 |
| Hyd1 | 29 | 78.6 | 9.2 |
| Hyd2 | 18.9 | 72.2 | 6.4 |
| Hyd3 | 11.3 | 64.3 | 7.9 |
| Hyd4 | 8 | 56.3 | 8.0 |
| Hyd5 | 6 | 48.4 | 7.9 |
| Hyd6 | 3 | 33.7 | 14.7 |
| Hyd7 | 1.3 | 24.2 | 9.5 |
| | | | |

| Soil Classification | Percent of sample |
|---|---|
| Gravel | 0.0 |
| Sand | 12.2 |
| Coarse Sand | 0.0 |
| Medium Sand | 0.6 |
| Fine Sand | 11.6 |
| Silt | 39.4 |
| Clay | 48.4 |
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# Particle Size of Soils by ASTM D422

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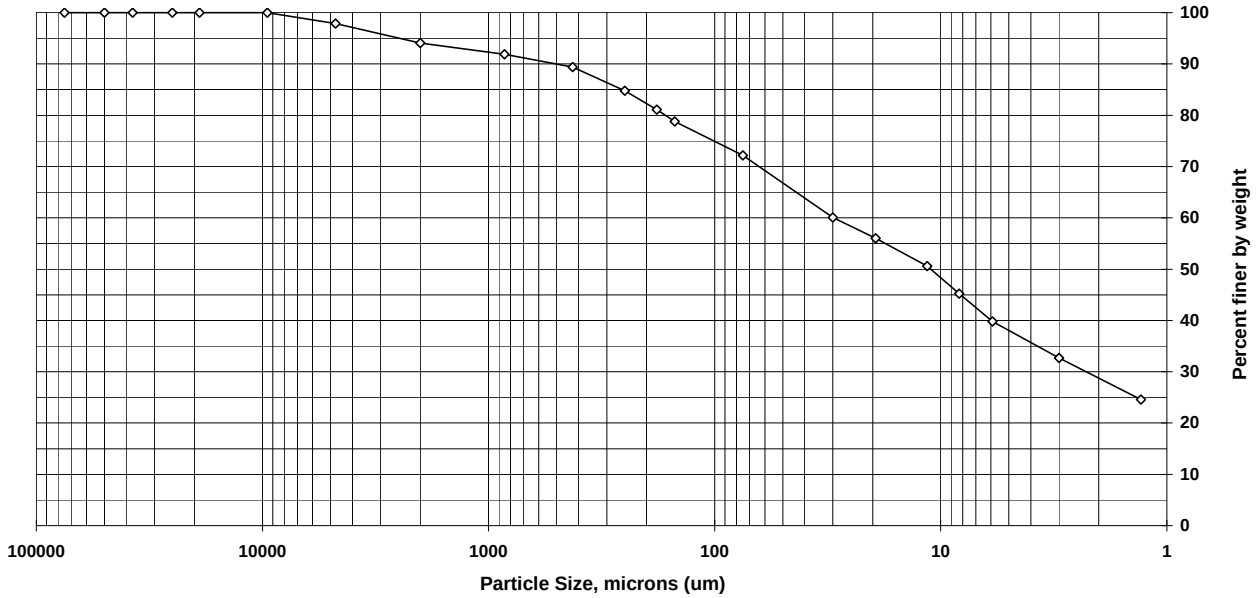
|---|---|---|---|---|---|
| | | | | **Date Received:** | 7/16/2018 |
| **Sample ID:** | MW-102B (43) | **Percent Solids:** | 90.9% | **Start Date:** | 7/21/2018 |
| **Lab ID:** | 500-148459-A-4 | **Specific Gravity:** | 2.650 | **End Date:** | 7/26/2018 |

**Shape (> #10):** subangular

**Non-soil material:** na

**Hardness (> #10):** hard




| Sieve size | Particle size, um | Percent finer | Incremental percent |
|---|---|---|---|
| 3 inch | 75000 | 100.0 | 0.0 |
| 2 inch | 50000 | 100.0 | 0.0 |
| 1.5 inch | 37500 | 100.0 | 0.0 |
| 1 inch | 25000 | 100.0 | 0.0 |
| 3/4 inch | 19000 | 100.0 | 0.0 |
| 3/8 inch | 9500 | 100.0 | 0.0 |
| #4 | 4750 | 97.9 | 2.1 |
| #10 | 2000 | 94.1 | 3.8 |
| #20 | 850 | 91.9 | 2.2 |
| #40 | 425 | 89.4 | 2.5 |
| #60 | 250 | 84.8 | 4.6 |
| #80 | 180 | 81.1 | 3.7 |
| #100 | 150 | 78.8 | 2.3 |
| #200 | 75 | 72.2 | 6.6 |
| Hyd1 | 30 | 60.1 | 12.1 |
| Hyd2 | 19.4 | 56.0 | 4.1 |
| Hyd3 | 11.5 | 50.6 | 5.4 |
| Hyd4 | 8.3 | 45.2 | 5.4 |
| Hyd5 | 5.9 | 39.8 | 5.4 |
| Hyd6 | 3 | 32.7 | 7.1 |
| Hyd7 | 1.3 | 24.6 | 8.1 |
| | | | |

| Soil Classification | Percent of sample |
|---|---|
| Gravel | 2.1 |
| Sand | 25.7 |
| Coarse Sand | 3.8 |
| Medium Sand | 4.7 |
| Fine Sand | 17.2 |
| Silt | 32.4 |
| Clay | 39.8 |
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# TestAmerica Burlington

**Sediment Grain Size - D422**

| | | | |
|---|---|---|---|
| Client | | Date Received | 7/16/2018 |
| Client Sample ID | MW-102B (57) | Start Date | 07/21/2018 15:16 |
| Lab Sample ID | 500-148459-A-1 | End Date | 07/26/2018 15:14 |

**Dry Weight Determination**

| | | |
|---|---|---|
| Tin Weight | 1.07 | g |
| Wet Sample + Tin | 24.70 | g |
| Dry Sample + Tin | 23.10 | g |
| % Moisture | 6.77 | % |

| | |
|---|---|
| Non-soil material: | na |
| Shape (> #10): | subangular |
| Hardness (> #10): | hard |

| | |
|---|---|
| Date/Time in oven | 07/21/2018 15:33 |
| Date/Time out of oven | 07/25/2018 21:24 |

| **Sample Weights** | Tare (g) | Pan+Samp (g) | Samp (g) |
|---|---|---|---|
| Sample Weight (Wet) | 44.92 | 106.99 | 62.07 |
| Sample Weight (Oven Dried) | | | 57.9 |

| **Sample Split (oven dried)** | Tare (g) | Pan+Samp (g) | Samp (g) |
|---|---|---|---|
| Sample >=#10 | | | 12.6 |
| Sample <#10 | | | 45.3 |
| % Passing #10 | | | 73 |

**Hydrometer Data**

| | |
|---|---|
| Serial Number | 542318 |
| Calib. Date (mm/dd/yyyy) | 01/03/2018 |
| Low Temp (C) | 17.0 |
| Reading at Low Temp | 1.0035 |
| High Temp (C) | 23.0 |
| Reading at High Temp | 1.0020 |
| Hydrometer Cal Slope | -0.00025 |
| Hydrometer Cal Intercept | 1.00775 |
| Default Soil Gravity | 2.6500 |

**Gravel/Sand Fraction (Sieves)**

| Sample Fraction | Size (um) | Pan Tare (g) | Pan+Sample (g) | Sample | | % Finer | Classification | Sub Class |
|---|---|---|---|---|---|---|---|---|
| 3 inch | 75000 | | | 0.00 | g | 100.0 | Gravel | |
| 2 inch | 50000 | | | 0.00 | g | 100.0 | Gravel | |
| 1.5 inch | 37500 | | | 0.00 | g | 100.0 | Gravel | |
| 1 inch | 25000 | | | 0.00 | g | 100.0 | Gravel | |
| 3/4 inch | 19000 | | | 0.00 | g | 100.0 | Gravel | |
| 3/8 inch | 9500 | | | 0.00 | g | 100.0 | Gravel | |
| #4 | 4750 | 488.09 | 496.30 | 8.21 | g | 85.8 | Gravel | |
| #10 | 2000 | 462.76 | 467.16 | 4.40 | g | 78.2 | Sand | Coarse |
| #20 | 850 | 374.75 | 377.67 | 2.92 | g | 73.2 | Sand | Medium |
| #40 | 425 | 362.90 | 365.41 | 2.51 | g | 68.9 | Sand | Medium |
| #60 | 250 | 352.99 | 356.68 | 3.69 | g | 62.5 | Sand | Fine |
| #80 | 180 | 319.42 | 322.23 | 2.81 | g | 57.6 | Sand | Fine |
| #100 | 150 | 328.66 | 330.89 | 2.23 | g | 53.7 | Sand | Fine |
| #200 | 75 | 314.71 | 320.27 | 5.56 | g | 44.1 | Sand | Fine |
| | | | | 0.00 | g | 44.1 | | |

**Adjusted Hydrometer Sample Mass**

| | |
|---|---|
| Hydrometer Sample Mass (g) | 57.9 |

**Silt/Clay Fraction (Hydrometer Test)**

| Hydrometer Test Time (min) | Actual | Spec. Gravity | Temp C | Particle Size (Micron) | % Finer | Classification | Sub Class |
|---|---|---|---|---|---|---|---|
| 2 | 2 | 1.0155 | 20.0 | 33.7 | 35.4 | Silt | |
| 5 | 5 | 1.0125 | 20.0 | 22 | 27 | Silt | |
| 15 | 15 | 1.0105 | 20.0 | 13 | 21.5 | Silt | |
| 30 | 31 | 1.0095 | 20.0 | 9.1 | 18.7 | Silt | |
| 60 | 59 | 1.0085 | 20.0 | 6.7 | 15.9 | Silt | |
| 250 | 234 | 1.0075 | 19.5 | 3.4 | 12.8 | Clay | |
| 1440 | 1418 | 1.0060 | 19.5 | 1.4 | 8.67 | Clay | |

# TestAmerica Burlington

**Sediment Grain Size - D422**

| | | | |
|---|---|---|---|
| Client | | Date Received | 7/16/2018 |
| Client Sample ID | MW-102B (34) | Start Date | 07/21/2018 15:18 |
| Lab Sample ID | 500-148459-A-2 | End Date | 07/26/2018 15:22 |

**Dry Weight Determination**

| | | |
|---|---|---|
| Tin Weight | 1.05 | g |
| Wet Sample + Tin | 20.75 | g |
| Dry Sample + Tin | 19.73 | g |
| % Moisture | 5.18 | % |

| | |
|---|---|
| Non-soil material: | na |
| Shape (> #10): | subangular |
| Hardness (> #10): | hard |

| | |
|---|---|
| Date/Time in oven | 07/21/2018 15:33 |
| Date/Time out of oven | 07/25/2018 21:24 |

| **Sample Weights** | Tare (g) | Pan+Samp (g) | Samp (g) |
|---|---|---|---|
| Sample Weight (Wet) | 44.76 | 125.53 | 80.77 |
| Sample Weight (Oven Dried) | | | 76.6 |

| **Sample Split (oven dried)** | Tare (g) | Pan+Samp (g) | Samp (g) |
|---|---|---|---|
| Sample >=#10 | | | 21.3 |
| Sample <#10 | | | 55.3 |
| % Passing #10 | | | 68.5 |

**Hydrometer Data**

| | |
|---|---|
| Serial Number | 542318 |
| Calib. Date (mm/dd/yyyy) | 01/03/2018 |
| Low Temp (C) | 17.0 |
| Reading at Low Temp | 1.0035 |
| High Temp (C) | 23.0 |
| Reading at High Temp | 1.0020 |
| Hydrometer Cal Slope | -0.00025 |
| Hydrometer Cal Intercept | 1.00775 |
| Default Soil Gravity | 2.6500 |

**Gravel/Sand Fraction (Sieves)**

| Sample Fraction | Size (um) | Pan Tare (g) | Pan+Sample (g) | Sample | | % Finer | Classification | Sub Class |
|---|---|---|---|---|---|---|---|---|
| 3 inch | 75000 | | | 0.00 | g | 100.0 | Gravel | |
| 2 inch | 50000 | | | 0.00 | g | 100.0 | Gravel | |
| 1.5 inch | 37500 | | | 0.00 | g | 100.0 | Gravel | |
| 1 inch | 25000 | | | 0.00 | g | 100.0 | Gravel | |
| 3/4 inch | 19000 | | | 0.00 | g | 100.0 | Gravel | |
| 3/8 inch | 9500 | | | 0.00 | g | 100.0 | Gravel | |
| #4 | 4750 | 488.08 | 504.90 | 16.82 | g | 78.0 | Gravel | |
| #10 | 2000 | 462.76 | 467.24 | 4.48 | g | 72.2 | Sand | Coarse |
| #20 | 850 | 379.19 | 381.84 | 2.65 | g | 68.7 | Sand | Medium |
| #40 | 425 | 353.01 | 355.87 | 2.86 | g | 65.0 | Sand | Medium |
| #60 | 250 | 348.53 | 354.08 | 5.55 | g | 57.8 | Sand | Fine |
| #80 | 180 | 338.02 | 342.70 | 4.68 | g | 51.7 | Sand | Fine |
| #100 | 150 | 328.73 | 331.50 | 2.77 | g | 48.1 | Sand | Fine |
| #200 | 75 | 325.30 | 332.87 | 7.57 | g | 38.2 | Sand | Fine |
| | | | | 0.00 | g | 38.2 | | |

**Adjusted Hydrometer Sample Mass**

| | |
|---|---|
| Hydrometer Sample Mass (g) | 76.6 |

**Silt/Clay Fraction (Hydrometer Test)**

| Hydrometer Test Time (min) | Actual | Spec. Gravity | Temp C | Particle Size (Micron) | % Finer | Classification | Sub Class |
|---|---|---|---|---|---|---|---|
| 2 | 2 | 1.0150 | 20.0 | 33.9 | 25.7 | Silt | |
| 5 | 5 | 1.0135 | 20.0 | 21.8 | 22.5 | Silt | |
| 15 | 15 | 1.0115 | 20.0 | 12.8 | 18.3 | Silt | |
| 30 | 31 | 1.0105 | 20.0 | 9 | 16.2 | Silt | |
| 60 | 59 | 1.0090 | 20.0 | 6.6 | 13.1 | Silt | |
| 250 | 265 | 1.0075 | 19.5 | 3.2 | 9.7 | Clay | |
| 1440 | 1412 | 1.0065 | 19.5 | 1.4 | 7.6 | Clay | |

# TestAmerica Burlington

**Sediment Grain Size - D422**

| | | | |
|---|---|---|---|
| Client | | Date Received | 7/16/2018 |
| Client Sample ID | MW-102B (50) | Start Date | 07/21/2018 15:21 |
| Lab Sample ID | 500-148459-A-3 | End Date | 07/26/2018 15:26 |

**Dry Weight Determination**

| | | |
|---|---|---|
| Tin Weight | 1.06 | g |
| Wet Sample + Tin | 19.54 | g |
| Dry Sample + Tin | 16.51 | g |
| % Moisture | 16.40 | % |

| | |
|---|---|
| Non-soil material: | na |
| Shape (> #10): | na |
| Hardness (> #10): | na |
| Date/Time in oven | 07/21/2018 15:33 |
| Date/Time out of oven | 07/25/2018 21:24 |

| **Sample Weights** | Tare (g) | Pan+Samp (g) | Samp (g) |
|---|---|---|---|
| Sample Weight (Wet) | 44.82 | 105.29 | 60.47 |
| Sample Weight (Oven Dried) | | | 50.6 |

| **Sample Split (oven dried)** | Tare (g) | Pan+Samp (g) | Samp (g) |
|---|---|---|---|
| Sample >=#10 | | | 0 |
| Sample <#10 | | | 50.6 |
| % Passing #10 | | | 83.7 |

| **Hydrometer Data** | |
|---|---|
| Serial Number | 542318 |
| Calib. Date (mm/dd/yyyy) | 01/03/2018 |
| Low Temp (C) | 17.0 |
| Reading at Low Temp | 1.0035 |
| High Temp (C) | 23.0 |
| Reading at High Temp | 1.0020 |
| Hydrometer Cal Slope | -0.00025 |
| Hydrometer Cal Intercept | 1.00775 |
| Default Soil Gravity | 2.6500 |

**Gravel/Sand Fraction (Sieves)**

| Sample Fraction | Size (um) | Pan Tare (g) | Pan+Sample (g) | Sample | | % Finer | Classification | Sub Class |
|---|---|---|---|---|---|---|---|---|
| 3 inch | 75000 | | | 0.00 | g | 100.0 | Gravel | |
| 2 inch | 50000 | | | 0.00 | g | 100.0 | Gravel | |
| 1.5 inch | 37500 | | | 0.00 | g | 100.0 | Gravel | |
| 1 inch | 25000 | | | 0.00 | g | 100.0 | Gravel | |
| 3/4 inch | 19000 | | | 0.00 | g | 100.0 | Gravel | |
| 3/8 inch | 9500 | | | 0.00 | g | 100.0 | Gravel | |
| #4 | 4750 | | | 0.00 | g | 100.0 | Gravel | |
| #10 | 2000 | | | 0.00 | g | 100.0 | Sand | Coarse |
| #20 | 850 | 374.75 | 374.77 | 0.02 | g | 100.0 | Sand | Medium |
| #40 | 425 | 362.90 | 363.19 | 0.29 | g | 99.4 | Sand | Medium |
| #60 | 250 | 352.99 | 353.70 | 0.71 | g | 98.0 | Sand | Fine |
| #80 | 180 | 319.42 | 320.03 | 0.61 | g | 96.8 | Sand | Fine |
| #100 | 150 | 328.66 | 329.42 | 0.76 | g | 95.3 | Sand | Fine |
| #200 | 75 | 314.71 | 318.49 | 3.78 | g | 87.8 | Sand | Fine |
| | | | | 0.00 | g | 87.8 | | |

**Adjusted Hydrometer Sample Mass**

| | |
|---|---|
| Hydrometer Sample Mass (g) | 50.6 |

**Silt/Clay Fraction (Hydrometer Test)**

| Hydrometer Test Time (min) | Actual | Spec. Gravity | Temp C | Particle Size (Micron) | % Finer | Classification | Sub Class |
|---|---|---|---|---|---|---|---|
| 2 | 2 | 1.0275 | 20.0 | 29 | 78.6 | Silt | |
| 5 | 5 | 1.0255 | 20.0 | 18.9 | 72.2 | Silt | |
| 15 | 15 | 1.0230 | 20.0 | 11.3 | 64.3 | Silt | |
| 30 | 32 | 1.0205 | 20.0 | 8 | 56.3 | Silt | |
| 60 | 60 | 1.0180 | 20.0 | 6 | 48.4 | Silt | |
| 250 | 259 | 1.0135 | 19.5 | 3 | 33.7 | Clay | |
| 1440 | 1406 | 1.0105 | 19.5 | 1.3 | 24.2 | Clay | |

# TestAmerica Burlington

**Sediment Grain Size - D422**

| | | | |
|---|---|---|---|
| Client | | Date Received | 7/16/2018 |
| Client Sample ID | MW-102B (43) | Start Date | 07/21/2018 15:24 |
| Lab Sample ID | 500-148459-A-4 | End Date | 07/26/2018 15:35 |

**Dry Weight Determination**

| | | |
|---|---|---|
| Tin Weight | 1.07 | g |
| Wet Sample + Tin | 19.55 | g |
| Dry Sample + Tin | 17.87 | g |
| % Moisture | 9.09 | % |

| | |
|---|---|
| Non-soil material: | na |
| Shape (> #10): | subangular |
| Hardness (> #10): | hard |
| Date/Time in oven | 07/21/2018 15:33 |
| Date/Time out of oven | 07/25/2018 21:24 |

| **Sample Weights** | Tare (g) | Pan+Samp (g) | Samp (g) |
|---|---|---|---|
| Sample Weight (Wet) | 52.84 | 118.29 | 65.45 |
| Sample Weight (Oven Dried) | | | 59.5 |

| **Sample Split (oven dried)** | Tare (g) | Pan+Samp (g) | Samp (g) |
|---|---|---|---|
| Sample >=#10 | | | 3.5 |
| Sample <#10 | | | 56 |
| % Passing #10 | | | 85.6 |

| **Hydrometer Data** | |
|---|---|
| Serial Number | 542318 |
| Calib. Date (mm/dd/yyyy) | 01/03/2018 |
| Low Temp (C) | 17.0 |
| Reading at Low Temp | 1.0035 |
| High Temp (C) | 23.0 |
| Reading at High Temp | 1.0020 |
| Hydrometer Cal Slope | -0.00025 |
| Hydrometer Cal Intercept | 1.00775 |
| Default Soil Gravity | 2.6500 |

**Gravel/Sand Fraction (Sieves)**

| Sample Fraction | Size (um) | Pan Tare (g) | Pan+Sample (g) | Sample | | % Finer | Classification | Sub Class |
|---|---|---|---|---|---|---|---|---|
| 3 inch | 75000 | | | 0.00 | g | 100.0 | Gravel | |
| 2 inch | 50000 | | | 0.00 | g | 100.0 | Gravel | |
| 1.5 inch | 37500 | | | 0.00 | g | 100.0 | Gravel | |
| 1 inch | 25000 | | | 0.00 | g | 100.0 | Gravel | |
| 3/4 inch | 19000 | | | 0.00 | g | 100.0 | Gravel | |
| 3/8 inch | 9500 | | | 0.00 | g | 100.0 | Gravel | |
| #4 | 4750 | 488.09 | 489.33 | 1.24 | g | 97.9 | Gravel | |
| #10 | 2000 | 462.75 | 465.01 | 2.26 | g | 94.1 | Sand | Coarse |
| #20 | 850 | 379.19 | 380.50 | 1.31 | g | 91.9 | Sand | Medium |
| #40 | 425 | 353.01 | 354.48 | 1.47 | g | 89.4 | Sand | Medium |
| #60 | 250 | 348.53 | 351.25 | 2.72 | g | 84.8 | Sand | Fine |
| #80 | 180 | 338.02 | 340.24 | 2.22 | g | 81.1 | Sand | Fine |
| #100 | 150 | 328.73 | 330.08 | 1.35 | g | 78.8 | Sand | Fine |
| #200 | 75 | 325.30 | 329.20 | 3.90 | g | 72.2 | Sand | Fine |
| | | | | 0.00 | g | 72.2 | | |

**Adjusted Hydrometer Sample Mass**

| | |
|---|---|
| Hydrometer Sample Mass (g) | 59.5 |

**Silt/Clay Fraction (Hydrometer Test)**

| Hydrometer Test Time (min) | Actual | Spec. Gravity | Temp C | Particle Size (Micron) | % Finer | Classification | Sub Class |
|---|---|---|---|---|---|---|---|
| 2 | 2 | 1.0250 | 20.0 | 30 | 60.1 | Silt | |
| 5 | 5 | 1.0235 | 20.0 | 19.4 | 56 | Silt | |
| 15 | 15 | 1.0215 | 20.0 | 11.5 | 50.6 | Silt | |
| 30 | 30 | 1.0195 | 20.0 | 8.3 | 45.2 | Silt | |
| 60 | 63 | 1.0175 | 20.0 | 5.9 | 39.8 | Silt | |
| 250 | 253 | 1.0150 | 19.5 | 3 | 32.7 | Clay | |
| 1440 | 1400 | 1.0120 | 19.5 | 1.3 | 24.6 | Clay | |

# QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI WI001605.0009.00004

TestAmerica Job ID: 500-148459-1

## Geotechnical

### Analysis Batch: 132215

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 500-148459-1 | MW-102B (57) | Total/NA | Solid | D422 | |
| 500-148459-2 | MW-102B (34) | Total/NA | Solid | D422 | |
| 500-148459-3 | MW-102B (50) | Total/NA | Solid | D422 | |
| 500-148459-4 | MW-102B (43) | Total/NA | Solid | D422 | |

# Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI WI001605.0009.00004

TestAmerica Job ID: 500-148459-1

## Client Sample ID: MW-102B (57)
**Date Collected: 06/05/18 11:25**
**Date Received: 07/16/18 09:15**

## Lab Sample ID: 500-148459-1
**Matrix: Solid**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | D422 | | 1 | 132215 | 07/21/18 15:16 | CPF | TAL BUR |

## Client Sample ID: MW-102B (34)
**Date Collected: 06/05/18 08:30**
**Date Received: 07/16/18 09:15**

## Lab Sample ID: 500-148459-2
**Matrix: Solid**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | D422 | | 1 | 132215 | 07/21/18 15:18 | CPF | TAL BUR |

## Client Sample ID: MW-102B (50)
**Date Collected: 06/05/18 11:20**
**Date Received: 07/16/18 09:15**

## Lab Sample ID: 500-148459-3
**Matrix: Solid**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | D422 | | 1 | 132215 | 07/21/18 15:21 | CPF | TAL BUR |

## Client Sample ID: MW-102B (43)
**Date Collected: 06/05/18 11:15**
**Date Received: 07/16/18 09:15**

## Lab Sample ID: 500-148459-4
**Matrix: Solid**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | D422 | | 1 | 132215 | 07/21/18 15:24 | CPF | TAL BUR |

**Laboratory References:**

TAL BUR = TestAmerica Burlington, 30 Community Drive, Suite 11, South Burlington, VT 05403, TEL (802)660-1990

# Accreditation/Certification Summary

Client: ARCADIS U.S., Inc. TestAmerica Job ID: 500-148459-1
Project/Site: Marinette, WI WI001605.0009.00004

## Laboratory: TestAmerica Chicago

The accreditations/certifications listed below are applicable to this report.

| Authority | Program | EPA Region | Identification Number | Expiration Date |
|---|---|---|---|---|
| Wisconsin | State Program | 5 | 999580010 | 08-31-18 * |

## Laboratory: TestAmerica Burlington

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

| Authority | Program | EPA Region | Identification Number | Expiration Date |
|---|---|---|---|---|
| ANAB | DoD ELAP | | L2336 | 02-25-20 |
| Connecticut | State Program | 1 | PH-0751 | 09-30-19 |
| DE Haz. Subst. Cleanup Act (HSCA) | State Program | 3 | NA | 02-01-19 |
| Maine | State Program | 1 | VT00008 | 04-17-19 |
| Minnesota | NELAP | 5 | 050-999-436 | 12-31-18 |
| New Jersey | NELAP | 2 | VT972 | 06-30-19 |
| New York | NELAP | 2 | 10391 | 04-01-19 |
| Pennsylvania | NELAP | 3 | 68-00489 | 04-30-19 |
| Rhode Island | State Program | 1 | LAO00298 | 12-30-18 |
| US Fish & Wildlife | Federal | | LE-058448-0 | 07-31-18 * |
| USDA | Federal | | P330-11-00093 | 07-24-20 |
| Vermont | State Program | 1 | VT-4000 | 12-31-18 |
| Virginia | NELAP | 3 | 460209 | 12-14-18 |

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

# Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI  WI001605.0009.00004

TestAmerica Job ID: 500-148459-1

| Method | Method Description | Protocol | Laboratory |
|---|---|---|---|
| D422 | Grain Size | ASTM | TAL BUR |

**Protocol References:**

ASTM = ASTM International

**Laboratory References:**

TAL BUR = TestAmerica Burlington, 30 Community Drive, Suite 11, South Burlington, VT 05403, TEL (802)660-1990

# Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI  WI001605.0009.00004

TestAmerica Job ID: 500-148459-1

| Lab Sample ID | Client Sample ID | Matrix | Collected | Received |
|---|---|---|---|---|
| 500-148459-1 | MW-102B (57) | Solid | 06/05/18 11:25 | 07/16/18 09:15 |
| 500-148459-2 | MW-102B (34) | Solid | 06/05/18 08:30 | 07/16/18 09:15 |
| 500-148459-3 | MW-102B (50) | Solid | 06/05/18 11:20 | 07/16/18 09:15 |
| 500-148459-4 | MW-102B (43) | Solid | 06/05/18 11:15 | 07/16/18 09:15 |

COVER PAGE
GEOTECHNICAL

Lab Name: TestAmerica Burlington Job Number: 500-148459-1

SDG No.:

Project: Marinette, WI WI001605.0009.00004

| Client Sample ID | Lab Sample ID |
|---|---|
| MW-102B (57) | 500-148459-1 |
| MW-102B (34) | 500-148459-2 |
| MW-102B (50) | 500-148459-3 |
| MW-102B (43) | 500-148459-4 |

Comments:

1B-IN
INORGANIC ANALYSIS DATA SHEET
GEOTECHNICAL

Client Sample ID: MW-102B (57)
Lab Sample ID: 500-148459-1
Lab Name: TestAmerica Burlington
Job No.: 500-148459-1
SDG ID.:
Matrix: Solid
Date Sampled: 06/05/2018 11:25
Reporting Basis: WET
Date Received: 07/16/2018 09:15

| CAS No. | Analyte | Result | RL | MDL | Units | C | Q | DIL | Method |
|---|---|---|---|---|---|---|---|---|---|
| | Gravel | 14.2 | | | % | | | 1 | D422 |
| | Sieve Size 3 inch - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Sand | 41.7 | | | % | | | 1 | D422 |
| | Sieve Size 2 inch - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Coarse Sand | 7.6 | | | % | | | 1 | D422 |
| | Sieve Size 1.5 inch - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Medium Sand | 9.3 | | | % | | | 1 | D422 |
| | Sieve Size 1 inch - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Fine Sand | 24.8 | | | % | | | 1 | D422 |
| | Sieve Size 0.75 inch - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Sieve Size 0.375 inch - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Silt | 28.2 | | | % | | | 1 | D422 |
| | Clay | 15.9 | | | % | | | 1 | D422 |
| | Sieve Size #4 - Percent Finer | 85.8 | | | % Passing | | | 1 | D422 |
| | Sieve Size #10 - Percent Finer | 78.2 | | | % Passing | | | 1 | D422 |
| | Sieve Size #20 - Percent Finer | 73.2 | | | % Passing | | | 1 | D422 |
| | Sieve Size #40 - Percent Finer | 68.9 | | | % Passing | | | 1 | D422 |
| | Sieve Size #60 - Percent Finer | 62.5 | | | % Passing | | | 1 | D422 |
| | Sieve Size #80 - Percent Finer | 57.6 | | | % Passing | | | 1 | D422 |
| | Sieve Size #100 - Percent Finer | 53.7 | | | % Passing | | | 1 | D422 |
| | Sieve Size #200 - Percent Finer | 44.1 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 1 - Percent Finer | 35.4 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 2 - Percent Finer | 27.0 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 3 - Percent Finer | 21.5 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 4 - Percent Finer | 18.7 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 5 - Percent Finer | 15.9 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 6 - Percent Finer | 12.8 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 7 - Percent Finer | 8.7 | | | % Passing | | | 1 | D422 |

1B-IN
INORGANIC ANALYSIS DATA SHEET
GEOTECHNICAL

Client Sample ID: MW-102B (34)
Lab Sample ID: 500-148459-2
Lab Name: TestAmerica Burlington
Job No.: 500-148459-1
SDG ID.:
Matrix: Solid
Date Sampled: 06/05/2018 08:30
Reporting Basis: WET
Date Received: 07/16/2018 09:15

| CAS No. | Analyte | Result | RL | MDL | Units | C | Q | DIL | Method |
|---|---|---|---|---|---|---|---|---|---|
| | Gravel | 22.0 | | | % | | | 1 | D422 |
| | Sieve Size 3 inch - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Sand | 39.8 | | | % | | | 1 | D422 |
| | Sieve Size 2 inch - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Coarse Sand | 5.8 | | | % | | | 1 | D422 |
| | Sieve Size 1.5 inch - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Medium Sand | 7.2 | | | % | | | 1 | D422 |
| | Sieve Size 1 inch - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Fine Sand | 26.8 | | | % | | | 1 | D422 |
| | Sieve Size 0.75 inch - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Sieve Size 0.375 inch - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Silt | 25.1 | | | % | | | 1 | D422 |
| | Clay | 13.1 | | | % | | | 1 | D422 |
| | Sieve Size #4 - Percent Finer | 78.0 | | | % Passing | | | 1 | D422 |
| | Sieve Size #10 - Percent Finer | 72.2 | | | % Passing | | | 1 | D422 |
| | Sieve Size #20 - Percent Finer | 68.7 | | | % Passing | | | 1 | D422 |
| | Sieve Size #40 - Percent Finer | 65.0 | | | % Passing | | | 1 | D422 |
| | Sieve Size #60 - Percent Finer | 57.8 | | | % Passing | | | 1 | D422 |
| | Sieve Size #80 - Percent Finer | 51.7 | | | % Passing | | | 1 | D422 |
| | Sieve Size #100 - Percent Finer | 48.1 | | | % Passing | | | 1 | D422 |
| | Sieve Size #200 - Percent Finer | 38.2 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 1 - Percent Finer | 25.7 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 2 - Percent Finer | 22.5 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 3 - Percent Finer | 18.3 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 4 - Percent Finer | 16.2 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 5 - Percent Finer | 13.1 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 6 - Percent Finer | 9.7 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 7 - Percent Finer | 7.6 | | | % Passing | | | 1 | D422 |

1B-IN
INORGANIC ANALYSIS DATA SHEET
GEOTECHNICAL

Client Sample ID: MW-102B (50)
Lab Sample ID: 500-148459-3
Lab Name: TestAmerica Burlington
Job No.: 500-148459-1
SDG ID.:
Matrix: Solid
Date Sampled: 06/05/2018 11:20
Reporting Basis: WET
Date Received: 07/16/2018 09:15

| CAS No. | Analyte | Result | RL | MDL | Units | C | Q | DIL | Method |
|---|---|---|---|---|---|---|---|---|---|
| | Gravel | 0.0 | | | % | | | 1 | D422 |
| | Sieve Size 3 inch - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Sand | 12.2 | | | % | | | 1 | D422 |
| | Sieve Size 2 inch - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Coarse Sand | 0.0 | | | % | | | 1 | D422 |
| | Sieve Size 1.5 inch - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Medium Sand | 0.6 | | | % | | | 1 | D422 |
| | Sieve Size 1 inch - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Fine Sand | 11.6 | | | % | | | 1 | D422 |
| | Sieve Size 0.75 inch - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Sieve Size 0.375 inch - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Silt | 39.4 | | | % | | | 1 | D422 |
| | Clay | 48.4 | | | % | | | 1 | D422 |
| | Sieve Size #4 - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Sieve Size #10 - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Sieve Size #20 - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Sieve Size #40 - Percent Finer | 99.4 | | | % Passing | | | 1 | D422 |
| | Sieve Size #60 - Percent Finer | 98.0 | | | % Passing | | | 1 | D422 |
| | Sieve Size #80 - Percent Finer | 96.8 | | | % Passing | | | 1 | D422 |
| | Sieve Size #100 - Percent Finer | 95.3 | | | % Passing | | | 1 | D422 |
| | Sieve Size #200 - Percent Finer | 87.8 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 1 - Percent Finer | 78.6 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 2 - Percent Finer | 72.2 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 3 - Percent Finer | 64.3 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 4 - Percent Finer | 56.3 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 5 - Percent Finer | 48.4 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 6 - Percent Finer | 33.7 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 7 - Percent Finer | 24.2 | | | % Passing | | | 1 | D422 |

1B-IN
INORGANIC ANALYSIS DATA SHEET
GEOTECHNICAL

Client Sample ID: MW-102B (43)
Lab Sample ID: 500-148459-4
Lab Name: TestAmerica Burlington
Job No.: 500-148459-1
SDG ID.:
Matrix: Solid
Date Sampled: 06/05/2018 11:15
Reporting Basis: WET
Date Received: 07/16/2018 09:15

| CAS No. | Analyte | Result | RL | MDL | Units | C | Q | DIL | Method |
|---|---|---|---|---|---|---|---|---|---|
| | Gravel | 2.1 | | | % | | | 1 | D422 |
| | Sieve Size 3 inch - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Sand | 25.7 | | | % | | | 1 | D422 |
| | Sieve Size 2 inch - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Coarse Sand | 3.8 | | | % | | | 1 | D422 |
| | Sieve Size 1.5 inch - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Medium Sand | 4.7 | | | % | | | 1 | D422 |
| | Sieve Size 1 inch - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Fine Sand | 17.2 | | | % | | | 1 | D422 |
| | Sieve Size 0.75 inch - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Sieve Size 0.375 inch - Percent Finer | 100.0 | | | % Passing | | | 1 | D422 |
| | Silt | 32.4 | | | % | | | 1 | D422 |
| | Clay | 39.8 | | | % | | | 1 | D422 |
| | Sieve Size #4 - Percent Finer | 97.9 | | | % Passing | | | 1 | D422 |
| | Sieve Size #10 - Percent Finer | 94.1 | | | % Passing | | | 1 | D422 |
| | Sieve Size #20 - Percent Finer | 91.9 | | | % Passing | | | 1 | D422 |
| | Sieve Size #40 - Percent Finer | 89.4 | | | % Passing | | | 1 | D422 |
| | Sieve Size #60 - Percent Finer | 84.8 | | | % Passing | | | 1 | D422 |
| | Sieve Size #80 - Percent Finer | 81.1 | | | % Passing | | | 1 | D422 |
| | Sieve Size #100 - Percent Finer | 78.8 | | | % Passing | | | 1 | D422 |
| | Sieve Size #200 - Percent Finer | 72.2 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 1 - Percent Finer | 60.1 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 2 - Percent Finer | 56.0 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 3 - Percent Finer | 50.6 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 4 - Percent Finer | 45.2 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 5 - Percent Finer | 39.8 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 6 - Percent Finer | 32.7 | | | % Passing | | | 1 | D422 |
| | Hydrometer Reading 7 - Percent Finer | 24.6 | | | % Passing | | | 1 | D422 |

# GEOTECHNICAL BATCH WORKSHEET

Lab Name: TestAmerica Burlington  Job No.: 500-148459-1

SDG No.:

Batch Number: 132215  Batch Start Date: 07/21/18 15:16  Batch Analyst: Cota, Fred P

Batch Method: D422  Batch End Date: 07/26/18 16:26

| Lab Sample ID | Client Sample ID | Method Chain | Basis | InitialAmount | AnalysisComment | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 500-148459-A-1 | MW-102B (57) | D422 | T | 62.07 g | SEE-SAMPLE-DATA SHEETS | | | | |
| 500-148459-A-2 | MW-102B (34) | D422 | T | 80.77 g | SEE-SAMPLE-DATA SHEETS | | | | |
| 500-148459-A-3 | MW-102B (50) | D422 | T | 60.47 g | SEE-SAMPLE-DATA SHEETS | | | | |
| 500-148459-A-4 | MW-102B (43) | D422 | T | 65.45 g | SEE-SAMPLE-DATA SHEETS | | | | |

| Batch Notes | |
|---|---|
| | |

| Basis | Basis Description |
|---|---|
| T | Total/NA |

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

# Subcontract Data

# Shipping and Receiving Documents

ARCADIS

ID#:

# CHAIN OF CUSTODY & LABORATORY ANALYSIS REQUEST FORM

Page 1 of 1

Lab Work Order # 500-148459

**Send Results to:**

Contact & Company Name: Lisa Rutkowski Arcadis

Telephone: 414-276-7742

Address: 126 N. Jefferson, Ste 400

Fax: 414-278-7603

City / State / Zip: Milwaukee, WI, 53202

E-mail Address: Lisa.Rutkowski@Arcadis.com

Project Name/Location (City, State): MARinette/Marinette, WI

Project #: WI00160S.0009.00004

Sampler's Printed Name: Drew Kehoe

Sampler's Signature:

| Sample ID | Collection Date | Collection Time | Type (✓) Comp | Type (✓) Grab | Matrix | Grain Size | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Preservative | | | | | | E | | | | | | | |
| Filtered (✓) | | | | | | | | | | | | | |
| # of Containers | | | | | | 1 | | | | | | | |
| Container Information | | | | | | B | | | | | | | |
| 1 MW-102B(57) | 6/5/18 | 11:25 | | X | SO | X | | | | | | | |
| 2 MW-102B(34) | 6/5/18 | 08:30 | | X | SO | X | | | | | | | |
| 3 MW-102B(50) | 6/5/18 | 11:20 | | X | SO | X | | | | | | | |
| 4 MW-102B(43) | 6/5/18 | 11:15 | | X | SO | X | | | | | | | |

PARAMETER ANALYSIS & METHOD

500-148459 COC

**Keys**

Preservation Key:
A. $H_2SO_4$
B. HCL
C. $HNO_3$
D. NaOH
E. None
F. Other: ____
G. Other: ____
H. Other: ____

Container Information Key:
1. 40 ml Vial
2. 1 L Amber
3. 250 ml Plastic
4. 500 ml Plastic
5. Encore
6. 2 oz. Glass
7. 4 oz. Glass
8. 8 oz. Glass
9. Other: ____
10. Other: ____

Matrix Key:
SO - Soil, SE - Sediment, NL - NAPL/Oil, W - Water, SL - Sludge, SW - Sample Wipe, T - Tissue, A - Air, Other: ____

**REMARKS**

Grain size

CALL Sandie Fredrick (TA) PM for instructions

Special Instructions/Comments:

1-PACKAGE / CALL Sandie Fredrick (Test Am PM) for instructions 920-216-1660.

☐ Special QA/QC Instructions(✓):

| Laboratory Information and Receipt | | Relinquished By | Received By | Relinquished By | Laboratory Received By |
|---|---|---|---|---|---|
| Lab Name: Test America | Cooler Custody Seal (✓) | Printed Name: Bonnie Evans | Printed Name: | Printed Name: | Printed Name: Scott Lavigne |
| ☐ Cooler packed with Ice (✓) | ☐ Intact ☐ Not Intact | Signature: | Signature: | Signature: | Signature: |
| Specify Turnaround Requirements: Standard | Sample Receipt: | Firm: Arcadis | Firm/Courier: | Firm/Courier: | Firm: TAGL |
| Shipping Tracking #: | Condition/Cooler Temp: ____ | Date/Time: 7/13/18 - 17:00 | Date/Time: | Date/Time: | Date/Time: 7/16/18 0915 |

20730826 CofC AR Form 08.27.2015

Distribution: WHITE – Laboratory returns with results; YELLOW – Lab copy; PINK – Retained by Arcadis

ARCADIS

ID#:

# CHAIN OF CUSTODY & LABORATORY ANALYSIS REQUEST FORM

Page 1 of 1

Lab Work Order #

**Send Results to:**

| | |
|---|---|
| Contact & Company Name: Lisa Rutkowski Arcadis | Telephone: 414-276-7742 |
| Address: 126 N. Jefferson, Ste 400 | Fax: 414-278-7603 |
| City State Zip: Milwaukee, WI, 53202 | E-mail Address: Lisa.Rutkowski@Arcadis.com |
| Project Name/Location (City, State): MARinette/Marinette, WI | Project #: WI001605.0009.00004 |
| Sampler's Printed Name: Drew Kehoe | Sampler's Signature: [signature] |

| Preservative | E | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Filtered (✓) | | | | | | | | |
| # of Containers | 1 | | | | | | | |
| Container Information | 8 | | | | | | | |

**PARAMETER ANALYSIS & METHOD**

| Sample ID | Collection Date | Collection Time | Type (✓) Comp | Type (✓) Grab | Matrix | Grain Size | | | | | | | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MW-102B(57) | 6/5/18 | 11:25 | | X | SO | X | | | | | | | Grain size |
| MW-102B(34) | 6/5/18 | 08:30 | | X | SO | X | | | | | | | |
| MW-102B(50) | 6/5/18 | 11:20 | | X | SO | X | | | | | | | |
| MW-102B(43) | 6/5/18 | 11:15 | | X | SO | X | | | | | | | |

Call Sandie Fredrick (TA) PM for instructions

500-148459 Chain of Custody

**Keys**

**Preservation Key:**
A. $H_2SO_4$
B. HCL
C. $HNO_3$
D. NaOH
E. None
F. Other: _____
G. Other: _____
H. Other: _____

**Container Information Key:**
1. 40 ml Vial
2. 1 L Amber
3. 250 ml Plastic
4. 500 ml Plastic
5. Encore
6. 2 oz. Glass
7. 4 oz. Glass
8. 8 oz. Glass
9. Other: _____
10. Other: _____

**Matrix Key:**
SO - Soil, SE - Sediment, NL - NAPL/Oil, W - Water, SL - Sludge, SW - Sample Wipe, T - Tissue, A - Air, Other: _____

**Special Instructions/Comments:**

1-Package / Call Sandie Fredrick (Test An PM) for instructions 920-216-1660

| Laboratory Information and Receipt | | Relinquished By | Received By | Relinquished By | Laboratory Received By |
|---|---|---|---|---|---|
| Lab Name: Test America | Cooler Custody Seal (✓) | Printed Name: Bonce Evans | Printed Name: | Printed Name: | Printed Name: Scott Lavigne |
| ☐ Cooler packed with ice (✓) | ☐ Intact ☐ Not Intact | Signature: [signature] | Signature: | Signature: | Signature: [signature] |
| Specify Turnaround Requirements: Standard | Sample Receipt: | Firm: Arcadis | Firm/Courier: | Firm/Courier: | Firm: TABL |
| Shipping Tracking #: | Condition/Cooler Temp: _____ | Date/Time: 7/13/18 - 17:00 | Date/Time: | Date/Time: | Date/Time: 7/16/18 0915 |

20730826 CofC AR Form 08.27.2015

Distribution: WHITE – Laboratory returns with results YELLOW – Lab copy PINK – Retained by Arcadis

ORIGIN ID:MKEA (414) 276-7742
BRUCE EVANS
ARCADIS
126 N. JEFFERSON STREET
SUITE 400
MILWAUKEE, WI 53202
UNITED STATES US

SHIP DATE: 13JUL18
ACTWGT: 6.00 LB
CAD: 1381005/INET3980

BILL SENDER

TO SAMPLERECEIVING
TEST AMERICA - BURLINGTON
30 COMMUNITY DR
STE 11
SOUTH BURLINGTON VT 05403
(802) 660-1990 REF: WI001605.0009.00004
INV:
PO: DEPT:

552J2/8532/DCA5

FedEx Express

J191119/1284/cr

MON - 16 JUL 3:00P
STANDARD OVERNIGHT

TRK# 0201 7727 0590 8244

TD BTVA

05403
VT-US BTV

# Login Sample Receipt Checklist

Client: ARCADIS U.S., Inc.

Job Number: 500-148459-1

**Login Number: 148459**
**List Number: 1**
**Creator: Scott, Sherri L**

**List Source: TestAmerica Chicago**

| Question | Answer | Comment |
|---|---|---|
| Radioactivity wasn't checked or is </= background as measured by a survey meter. | True | |
| The cooler's custody seal, if present, is intact. | True | |
| Sample custody seals, if present, are intact. | True | |
| The cooler or samples do not appear to have been compromised or tampered with. | True | |
| Samples were received on ice. | True | |
| Cooler Temperature is acceptable. | True | |
| Cooler Temperature is recorded. | True | |
| COC is present. | True | |
| COC is filled out in ink and legible. | True | |
| COC is filled out with all pertinent information. | True | |
| Is the Field Sampler's name present on COC? | True | |
| There are no discrepancies between the containers received and the COC. | True | |
| Samples are received within Holding Time (excluding tests with immediate HTs) | True | |
| Sample containers have legible labels. | True | |
| Containers are not broken or leaking. | True | |
| Sample collection date/times are provided. | True | |
| Appropriate sample containers are used. | True | |
| Sample bottles are completely filled. | True | |
| Sample Preservation Verified. | True | |
| There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs | True | |
| Containers requiring zero headspace have no headspace or bubble is <6mm (1/4"). | N/A | |
| Multiphasic samples are not present. | True | |
| Samples do not require splitting or compositing. | True | |
| Residual Chlorine Checked. | N/A | |

# Login Sample Receipt Checklist

Client: ARCADIS U.S., Inc.

Job Number: 500-148459-1

**Login Number: 148459**
**List Number: 2**
**Creator: Lavigne, Scott M**

**List Source: TestAmerica Burlington**
**List Creation: 07/16/18 11:54 AM**

| Question | Answer | Comment |
|---|---|---|
| Radioactivity wasn't checked or is </= background as measured by a survey meter. | True | Lab does not accept radioactive samples. |
| The cooler's custody seal, if present, is intact. | True | Not present |
| Sample custody seals, if present, are intact. | True | |
| The cooler or samples do not appear to have been compromised or tampered with. | True | |
| Samples were received on ice. | N/A | Thermal preservation not required. |
| Cooler Temperature is acceptable. | True | 22.8ºC |
| Cooler Temperature is recorded. | True | |
| COC is present. | True | |
| COC is filled out in ink and legible. | True | |
| COC is filled out with all pertinent information. | True | |
| Is the Field Sampler's name present on COC? | True | |
| There are no discrepancies between the containers received and the COC. | True | |
| Samples are received within Holding Time (excluding tests with immediate HTs) | True | |
| Sample containers have legible labels. | True | |
| Containers are not broken or leaking. | True | |
| Sample collection date/times are provided. | True | |
| Appropriate sample containers are used. | True | |
| Sample bottles are completely filled. | N/A | |
| Sample Preservation Verified. | True | |
| There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs | True | |
| Containers requiring zero headspace have no headspace or bubble is <6mm (1/4"). | True | |
| Multiphasic samples are not present. | True | |
| Samples do not require splitting or compositing. | True | |
| Residual Chlorine Checked. | N/A | |

**Pace Analytical Services, LLC**
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

August 09, 2019

Ben Verburg
Arcadis
126 North Jefferson Street
Suite 400
Milwaukee, WI 53202

RE: Project: WI001605,0009.00003 MARINETTE,
Pace Project No.: 40191465

Dear Ben Verburg:
Enclosed are the analytical results for sample(s) received by the laboratory on July 18, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

Some analyses have been subcontracted outside of the Pace Network. The subcontracted laboratory report has been attached.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Laurie Woelfel

Laurie Woelfel
laurie.woelfel@pacelabs.com
(920)469-2436
Project Manager

Enclosures

cc: Shauna Johnson, Arcadis



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**Pace Analytical Services, LLC**
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

## SAMPLE SUMMARY

Project: WI001605,0009.00003 MARINETTE,
Pace Project No.: 40191465

| Lab ID | Sample ID | Matrix | Date Collected | Date Received |
|---|---|---|---|---|
| **40191465001** | **SS-132A (0.75-1.0)** | Solid | 07/16/19 09:35 | 07/18/19 10:40 |
| **40191465002** | **SS-138A (0.5-1.5)** | Solid | 07/16/19 10:35 | 07/18/19 10:40 |
| **40191465003** | **SS-137A (0.5-1.2)** | Solid | 07/16/19 11:30 | 07/18/19 10:40 |
| **40191465004** | **SS-139A (0.5-1.2)** | Solid | 07/16/19 12:15 | 07/18/19 10:40 |
| **40191465005** | **SS-130A (0.5-1.5)** | Solid | 07/17/19 15:35 | 07/18/19 10:40 |
| **40191465006** | **SS-135A (0.7-1.6)** | Solid | 07/17/19 16:00 | 07/18/19 10:40 |
| **40191465007** | **SS-136A (0.6-2.0)** | Solid | 07/17/19 16:35 | 07/18/19 10:40 |
| **40191465008** | **SS-134A (0.8-1.7)** | Solid | 07/17/19 17:10 | 07/18/19 10:40 |



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40191465

# Chain of Custody Record

Page 3 of

[redacted]

Pace Analytical

(optional)

Report To
Contact: Shauna Johnson
Company: Arcadis
Address:
Address:
Phone:
Fax:
E-Mail:

(optional)

Bill To
Contact:
Company:
Address:
Address:
Phone:
Fax:
PO#/Reference#

Lab Job #:
Chain of Custody Number:
Page _____ of _____
Temperature °C of Cooler:

Client: Arcadis
Client Project #: WI001605.0009.00003
Project Name: ~~Marinette~~ Marinette, WI
Project Location/State: Marinette, WI
Lab Project #:
Sampler: [redacted] MB
Lab PM: Laurie Woodfall

Preservative Key
1. HCL, Cool to 4°
2. H2SO4, Cool to 4°
3. HNO3, Cool to 4°
4. NaOH, Cool to 4°
5. NaOH/Zn, Cool to 4°
6. NaHSO4
7. Cool to 4°
8. None
9. Other

| Lab ID | MS/MSD | Sample ID | Sampling Date | Sampling Time | # of Containers | Matrix | Spec. Gravity of Solids Calc ASTM D854 | Bulk Density ASTM D2937 | Moisture Content ASTM D2216-90 | | | | | | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Preservative | | | | | NA | NA | NA | | | | | | | MSC |
| | | Parameter | | | | | | | | | | | | | | |
| 001 | | SS-132A (0.75-1.0) | 7/16/19 | 935 | 1 | Soil | 1 | 1 | 1 | | | | | | | |
| 002 | | SS-138A (0.5-1.5) | 7/16/19 | 1035 | 1 | Soil | 1 | 1 | 1 | | | | | | | |
| 003 | | SS-137A (0.5-1.2) | 7/16/19 | 1130 | 1 | Soil | 1 | 1 | 1 | | | | | | | |
| 004 | | SS-139A (0.5-1.2) | 7/16/19 | 1215 | 1 | Soil | 1 | 1 | 1 | | | | | | | |
| 005 | | SS-130A (0.5-1.5) | 7/17/19 | 1535 | 1 | Soil | 1 | 1 | 1 | | | | | | | |
| 006 | | SS-135A (0.7-1.6) | 7/17/19 | 1600 | 1 | Soil | 1 | 1 | 1 | | | | | | | |
| 007 | | SS-136A (0.6-2.0) | 7/17/19 | 1635 | 1 | Soil | 1 | 1 | 1 | | | | | | | |
| 008 | | SS-134A (0.8-1.7) | 7/17/19 | 1740 | 1 | Soil | 1 | 1 | 1 | | | | | | | |

Turnaround Time Required (Business Days)
___ 1 Day ___ 2 Days ___ 5 Days ___ 7 Days X 10 Days ___ 15 Days _____ Other
Requested Due Date _____

Sample Disposal
☐ Return to Client ☐ Disposal by Lab ☐ Archive for _____ Months (A fee may be assessed if samples are retained longer than 1 month)

| Relinquished By | Company | Date | Time | Received By | Company | Date | Time |
|---|---|---|---|---|---|---|---|
| Matthew Bell | Arcadis | 7/18/2019 | 1040 | [signature] | Pace | 7/18/19 | 1040 |
| | | | | | | | |
| | | | | | | | |

Lab Courier
Shipped
Hand Delivered

Matrix Key
WW – Wastewater
W – Water
S – Soil
SL – Sludge
MS – Miscellaneous
OL – Oil
A – Air
SE – Sediment
SO – Soil
L – Leachate
WI – Wipe
DW – Drinking Water
O – Other

Client Comments
Shelby Tubes!
Keep upright

Lab Comments:

TAL-4124-500 (1209)

Pace Analytical Services, LLC
1241 Bellevue Street, Suite 9
Green Bay, WI 54302

# Sample Preservation Receipt Form

Client Name: Arcadis

Project # 40191965

All containers needing preservation have been checked and noted below: □Yes □No ☑N/A

Initial when completed: Date/ Time:

Lab Lot# of pH paper: Lab Std #ID of preservation (if pH adjusted):

| Pace Lab # | Glass | | | | | | | Plastic | | | | | | | Vials | | | | | | Jars | | | General | | | VOA Vials (>6mm) * | H2SO4 pH ≤2 | NaOH+Zn Act pH ≥9 | NaOH pH ≥12 | HNO3 pH ≤2 | pH after adjusted | Volume (mL) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | AG1U | AG1H | AG4S | AG4U | AG5U | AG2S | BG3U | BP1U | BP2N | BP2Z | BP3U | BP3B | BP3N | BP3S | DG9A | DG9T | VG9U | VG9H | VG9M | VG9D | JGFU | WGFU | WPFU | SP5T | ZPLC | GN | | | | | | | |
| 001 | | | | | | | | | | | | | | | | | | | | | | | | | | / | | | | | | | 2.5 / 5 / 10 |
| 002 | | | | | | | | | | | | | | | | | | | | | | | | | | / | | | | | | | 2.5 / 5 / 10 |
| 003 | | | | | | | | | | | | | | | | | | | | | | | | | | / | | | | | | | 2.5 / 5 / 10 |
| 004 | | | | | | | | | | | | | | | | | | | | | | | | | | / | | | | | | | 2.5 / 5 / 10 |
| 005 | | | | | | | | | | | | | | | | | | | | | | | | | | / | | | | | | | 2.5 / 5 / 10 |
| 006 | | | | | | | | | | | | | | | | | | | | | | | | | | / | | | | | | | 2.5 / 5 / 10 |
| 007 | | | | | | | | | | | | | | | | | | | | | | | | | | / | | | | | | | 2.5 / 5 / 10 |
| 008 | | | | | | | | | | | | | | | | | | | | | | | | | | / | | | | | | | 2.5 / 5 / 10 |
| 009 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 2.5 / 5 / 10 |
| 010 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 2.5 / 5 / 10 |
| 011 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 2.5 / 5 / 10 |
| 012 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 2.5 / 5 / 10 |
| 013 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 2.5 / 5 / 10 |
| 014 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 2.5 / 5 / 10 |
| 015 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 2.5 / 5 / 10 |
| 016 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 2.5 / 5 / 10 |
| 017 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 2.5 / 5 / 10 |
| 018 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 2.5 / 5 / 10 |
| 019 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 2.5 / 5 / 10 |
| 020 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 2.5 / 5 / 10 |

2/18/19 SN

Exceptions to preservation check: VOA, Coliform, TOC, TOX, TOH, O&G, WI DRO, Phenolics, Other: _____ Headspace in VOA Vials (>6mm) : □Yes □No ☑N/A ***If yes look in headspace column**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| AG1U | 1 liter amber glass | BP1U | 1 liter plastic unpres | DG9A | 40 mL amber ascorbic | JGFU | 4 oz amber jar unpres |
| AG1H | 1 liter amber glass HCL | BP2N | 500 mL plastic HNO3 | DG9T | 40 mL amber Na Thio | WGFU | 4 oz clear jar unpres |
| AG4S | 125 mL amber glass H2SO4 | BP2Z | 500 mL plastic NaOH, Znact | VG9U | 40 mL clear vial unpres | WPFU | 4 oz plastic jar unpres |
| AG4U | 120 mL amber glass unpres | BP3U | 250 mL plastic unpres | VG9H | 40 mL clear vial HCL | | |
| AG5U | 100 mL amber glass unpres | BP3B | 250 mL plastic NaOH | VG9M | 40 mL clear vial MeOH | SP5T | 120 mL plastic Na Thiosulfate |
| AG2S | 500 mL amber glass H2SO4 | BP3N | 250 mL plastic HNO3 | VG9D | 40 mL clear vial DI | ZPLC | ziploc bag |
| BG3U | 250 mL clear glass unpres | BP3S | 250 mL plastic H2SO4 | | | GN: | Shelby Tubes |

| Pace Analytical<br>1241 Bellevue Street, Green Bay, WI 54302 | Document Name:<br>**Sample Condition Upon Receipt (SCUR)** | Document Revised: 25Apr2018 |
|---|---|---|
| | Document No.:<br>**F-GB-C-031-Rev.07** | Issuing Authority:<br>Pace Green Bay Quality Office |

## Sample Condition Upon Receipt Form (SCUR)

Project #: WO#: 40191465

**Client Name:** Arcadis

**Courier:** ☐ CS Logistics ☐ Fed Ex ☐ Speedee ☐ UPS ☐ Waltco
☑ Client ☐ Pace Other: _____

**Tracking #:** _____

**Custody Seal on Cooler/Box Present:** ☐ yes ☑ no Seals intact: ☐ yes ☐ no

**Custody Seal on Samples Present:** ☐ yes ☑ no Seals intact: ☐ yes ☐ no

**Packing Material:** ☐ Bubble Wrap ☐ Bubble Bags ☑ None ☐ Other _____

**Thermometer Used** SR - 9 **Type of Ice:** Wet Blue Dry None ☐ Samples on ice, cooling process has begun

**Cooler Temperature** Uncorr: 21.5 /Corr: 22

**Temp Blank Present:** ☐ yes ☑ no **Biological Tissue is Frozen:** ☐ yes ☐ no

Temp should be above freezing to 6°C.
Biota Samples may be received at ≤ 0°C.

**Person examining contents:**
**Date:** 7-18-19
**Initials:** GW

| | | |
|---|---|---|
| Chain of Custody Present: | ☑Yes ☐No ☐N/A | 1. |
| Chain of Custody Filled Out: | ☐Yes ☑No ☐N/A | 2. No Bill to, pg # 7-18-19 GW |
| Chain of Custody Relinquished: | ☑Yes ☐No ☐N/A | 3. |
| Sample Name & Signature on COC: | ☐Yes ☑No ☐N/A | 4. |
| Samples Arrived within Hold Time: | ☑Yes ☐No | 5. |
| - VOA Samples frozen upon receipt | ☐Yes ☐No | Date/Time: |
| **Short Hold Time Analysis (<72hr):** | ☐Yes ☑No | 6. |
| **Rush Turn Around Time Requested:** | ☐Yes ☑No | 7. |
| Sufficient Volume: | | 8. |
| For Analysis: ☑Yes ☐No MS/MSD: | ☑Yes ☐No ☐N/A | |
| Correct Containers Used: | ☑Yes ☐No | 9. |
| -Pace Containers Used: | ☐Yes ☑No ☐N/A | |
| -Pace IR Containers Used: | ☐Yes ☐No ☑N/A | |
| Containers Intact: | ☑Yes ☐No | 10. |
| Filtered volume received for Dissolved tests | ☐Yes ☐No ☑N/A | 11. |
| Sample Labels match COC: | ☑Yes ☐No ☐N/A | 12. |
| -Includes date/time/ID/Analysis Matrix: S | | |
| Trip Blank Present: | ☐Yes ☐No ☑N/A | 13. |
| Trip Blank Custody Seals Present | ☐Yes ☐No ☑N/A | |
| Pace Trip Blank Lot # (if purchased): _____ | | |

**Client Notification/ Resolution:** If checked, see attached form for additional comments ☐

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: 2½ ft long Shelby Tubes 7-18-19 GW

**Project Manager Review:** HW **Date:** 7/22/19

# *CQM, INC.*

***Engineering - Surveying - Material Testing***

**2679 Continental Drive Green Bay, Wisconsin 54311-6627**

**Phone: (920) 465-3911 Fax: (920) 465-3913**


August 8, 2019

Ms. Laurie Woelfel
Pace Analytical Services - WI
1241 Bellevue Street, Suite 9
Green Bay, Wisconsin 54302

Dear Laurie:

We have completed the tests requested by Pace Analytical for the sample submitted to our laboratory on July 19, 2019, Pace Analytical's Project No. 40191465. A summary of the test results is as follows:

| **Sample I.D.** | **40191465-001** | **40191465-002** |
|---|---|---|
| Location: | SS-132A | SS-138A |
| Depth: | 0.75 – 1.0 | 0.5 – 1.5 |
| In-Situ Soil Density (ASTM D2937) | | |
| Wet Density (pcf): | 101.0 | 115.6 |
| Water Content (%): | 43.8 | 18.0 |
| Dry Density (pcf): | 70.2 | 97.9 |
| Specific Gravity (ASTM D854): | 2.655 | 2.655 |
| Porosity (Calculation): | 58 | 41 |

| **Sample I.D.** | **40191465-003** | **40191465-004** |
|---|---|---|
| Location: | SS-137A | SS-139A |
| Depth: | 0.5 – 1.2 | 0.5 – 1.2 |
| In-Situ Soil Density (ASTM D2937) | | |
| Wet Density (pcf): | 117.5 | 118.9 |
| Water Content (%): | 16.7 | 17.8 |
| Dry Density (pcf): | 100.6 | 100.9 |
| Specific Gravity (ASTM D854): | 2.661 | 2.637 |
| Porosity (Calculation): | 39 | 39 |

| **Sample I.D.** | **40191465-005** | **40191465-006** |
|---|---|---|
| Location: | SS-130A | SS-135A |
| Depth: | 0.5 – 1.5 | 0.7 – 1.6 |
| In-Situ Soil Density (ASTM D2937) | | |
| Wet Density (pcf): | 105.1 | 97.6 |
| Water Content (%): | 23.4 | 19.5 |
| Dry Density (pcf): | 85.1 | 81.7 |
| Specific Gravity (ASTM D854): | 2.668 | 2.735 |
| Porosity (Calculation): | 49 | 44 |

| **Sample I.D.** | **40191465-007** | **40191465-008** |
|---|---|---|
| Location: | SS-136A | SS-134A |
| Depth: | 0.6 – 2.0 | 0.8 – 1.7 |
| In-Situ Soil Density (ASTM D2937) | | |
| Wet Density (pcf): | 122.0 | 97.4 |
| Water Content (%): | 17.6 | 17.2 |
| Dry Density (pcf): | 103.8 | 83.0 |
| Specific Gravity (ASTM D854): | 2.684 | 2.635 |
| Porosity (Calculation): | 38 | 50 |

We appreciate the opportunity to provide our professional services to your firm. Should you require additional information or clarification, feel free to contact our office.

Sincerely,

CQM, INC.

Robert R Rouse

Robert R. Rouse, C.E.T.
Soils Laboratory Manager

# Chain of Custody

PASI Green Bay Laboratory

Pace Analytical®
www.pacelabs.com

**Workorder:** 40191465 **Workorder Name:** WI001605,0009.00003 MARINETTE, **Results Requested By:** 8/1/2019

**Report / Invoice To**

Laurie Woelfel
Pace Analytical Green Bay
1241 Bellevue Street
Suite 9
Green Bay, WI 54302
Phone (920)469-2436
Email: laurie.woelfel@pacelabs.com

**Subcontract To**

CQM

P.O._____

**State of Sample Origin:** WI LOD/LOQ

| Item | Sample ID | Collect Date/Time | Lab ID | Matrix | Preserved Containers: Other | | | | | | * | | | | | | | | | | | | LAB USE ONLY |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | SS-132A (0.75-1.0) | 7/16/2019 09:35 | 40191465001 | Solid | | | | | | | X | | | | | | | | | | | | |
| 2 | SS-138A (0.5-1.5) | 7/16/2019 10:35 | 40191465002 | Solid | | | | | | | X | | | | | | | | | | | | |
| 3 | SS-137A (0.5-1.2) | 7/16/2019 11:30 | 40191465003 | Solid | | | | | | | X | | | | | | | | | | | | |
| 4 | SS-139A (0.5-1.2) | 7/16/2019 12:15 | 40191465004 | Solid | | | | | | | X | | | | | | | | | | | | |
| 5 | SS-130A (0.5-1.5) | 7/17/2019 15:35 | 40191465005 | Solid | | | | | | | X | | | | | | | | | | | | |
| 6 | SS-135A (0.7-1.6) | 7/17/2019 16:00 | 40191465006 | Solid | | | | | | | X | | | | | | | | | | | | |
| 7 | SS-136A (0.6-2.0) | 7/17/2019 16:35 | 40191465007 | Solid | | | | | | | X | | | | | | | | | | | | |
| 8 | SS-134A (0.8-1.7) | 7/17/2019 17:10 | 40191465008 | Solid | | | | | | | X | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | | | | | | | | | | |
| 11 | | | | | | | | | | | | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | | | | | | | | | | | | |

| Transfers | Released By | Date/Time | Received By | Date/Time |
|---|---|---|---|---|
| 1 | [illegible] | 7-19-19 10:55 | [illegible] | 7/19/19 1055 |
| 2 | | | | |
| 3 | | | | |

**Comments**

* Specific Gravity (porosity calc D854
Bulk Density D2937
Moisture D2216-90

**Cooler Temperature on Receipt** _____ °C | **Custody Seal** Y or N | **Received on Ice** Y or N | **Samples Intact** Y or N

# APPENDIX K

## Survey Data

# Arcadis
## Tyco Marinette FTC
## 2700 Industrial Parkway Site
## Site Survey Data

### Point Number, Northing, Easting, Elevation of Soil borings and Monitoring Wells
### Survey Date: December 10, 2015 and April 29,2016
**COORINATES ARE WISCONSIN STATE PLANE NAD 1983 - WI CENTRAL 4802 ZONE**
**ELEVATION ARE REFERENCED TO NAVD 88**

| Point No. | Northing | Easting | Elevation | Description |
|---|---|---|---|---|
| 1 | 461648.525 | 2576987.333 | 613.200 | CP-106 |
| 1000 | 461258.060 | 2576956.917 | 613.680 | HMW-2-1S |
| 1001 | 461261.759 | 2576955.719 | 613.730 | HMW-2-1D |
| 1002 | 461193.387 | 2576811.439 | 611.400 | HMW-2 |
| 1003 | 461191.100 | 2576807.201 | 612.670 | HMW-3 |
| 1004 | 461191.738 | 2576805.826 | 612.820 | HMW-4 |
| 1005 | 461286.375 | 2576791.191 | 613.220 | HMW-2-2D |
| 1006 | 461289.355 | 2576790.660 | 612.980 | HMW-2-2S |
| 1007 | 461173.369 | 2576752.893 | 614.430 | HMW-2-3D |
| 1008 | 461171.525 | 2576750.203 | 613.290 | HMW-2-3S |
| 1009 | 461135.553 | 2576816.532 | 614.780 | HMW-2-4D |
| 1010 | 461132.829 | 2576817.163 | 614.700 | HMW-2-4S |
| 1011 | 461449.791 | 2576507.899 | 613.850 | HMW-5 |
| 1012 | 461680.144 | 2577246.547 | 610.450 | FTC-92 |
| 1013 | 461673.906 | 2577349.156 | 609.990 | FTC-86 |
| 1014 | 461770.755 | 2577396.520 | 612.640 | FTC-85D |
| 1015 | 461772.653 | 2577393.200 | 612.290 | FTC-85S |
| 1016 | 461899.703 | 2577410.247 | 612.760 | FTC-91 |
| 1017 | 461899.620 | 2577323.073 | 610.230 | FTC-90 |
| 1018 | 461853.142 | 2577363.214 | 610.230 | FTC-89 |
| 1019 | 461744.563 | 2577290.746 | 609.600 | FTC-87 |
| 1020 | 461790.049 | 2577262.802 | 610.110 | FTC-88 |
| 1021 | 461919.084 | 2577231.007 | 612.920 | FTC-84 |
| 1022 | 462213.260 | 2577543.958 | 612.650 | RECOVERY WELL |
| 1023 | 461635.346 | 2577362.313 | 612.910 | RVT-B8 |
| 1024 | 461592.310 | 2577307.623 | 611.330 | RVT-B7 |
| 1025 | 461510.688 | 2577258.612 | 608.450 | RVT-B6 |
| 1026 | 461512.475 | 2577212.906 | 609.090 | RVT-B3 |
| 1027 | 461498.646 | 2577171.478 | 606.450 | RVT-B4 |
| 1028 | 461581.474 | 2577071.786 | 610.780 | HMW-1 |
| 1029 | 461938.301 | 2577163.742 | 612.700 | FTC-P WELL |
| 1030 | 462118.039 | 2576669.351 | 612.200 | MF-8 |
| 1031 | 462180.746 | 2576502.902 | 612.340 | MF-7 |
| 1032 | 461983.839 | 2576566.957 | 611.470 | MF-9 |
| 1033 | 461941.596 | 2576679.871 | 611.510 | MF-5 |

# Arcadis
## Tyco Marinette FTC
## 2700 Industrial Parkway Site
## Site Survey Data

### Point Number, Northing, Easting, Elevation of Soil borings and Monitoring Wells
### Survey Date: December 10, 2015 and April 29,2016
**COORINATES ARE WISCONSIN STATE PLANE NAD 1983 - WI CENTRAL 4802 ZONE**
**ELEVATION ARE REFERENCED TO NAVD 88**

| Point No. | Northing | Easting | Elevation | Description |
|---|---|---|---|---|
| 1034 | 462022.997 | 2576768.485 | 611.530 | MF-1 |
| 1035 | 462026.354 | 2576862.839 | 610.390 | MF-2 |
| 1036 | 461935.298 | 2576846.488 | 607.270 | MF-4 |
| 1037 | 461897.474 | 2576754.630 | 610.070 | MF-3 |
| 1038 | 461748.738 | 2576700.381 | 610.540 | MF-6 |
| 1039 | 461748.764 | 2576700.391 | 610.550 | MF-6 |
| 1040 | 463920.223 | 2579191.839 | 609.130 | IW-2-1 |
| 1041 | 463893.373 | 2579211.285 | 609.570 | IW-2-2 |
| 1042 | 463871.904 | 2579233.480 | 610.060 | IW-2-3 |
| 1043 | 463862.832 | 2579241.181 | 609.770 | IW-2-4 |
| 1044 | 463854.363 | 2579248.211 | 609.190 | IW-2-5 |
| 1045 | 463845.715 | 2579255.412 | 609.040 | IW-2-6 |
| 1046 | 463879.836 | 2579254.694 | 609.870 | IW1-1 |
| 1047 | 463868.869 | 2579262.209 | 608.990 | IW-1-2 |
| 1048 | 463863.826 | 2579263.303 | 608.980 | IW1-3 |
| 1049 | 463859.329 | 2579267.075 | 608.900 | IW-1-4 |
| 1050 | 463851.220 | 2579274.419 | 608.900 | IW-1-5 |
| 1051 | 463844.023 | 2579283.012 | 609.190 | IW-1-6 |
| 1052 | 463831.123 | 2579311.484 | 609.320 | IW-1-7 |
| 1053 | 463820.852 | 2579340.532 | 609.470 | IW-1-8 |
| 1054 | 463814.809 | 2579391.170 | 608.700 | IW-1-9 |
| 1055 | 463796.944 | 2579417.034 | 608.850 | IW-1-10 |
| 1056 | 463793.930 | 2579440.318 | 608.770 | IW-1-11 |
| 1057 | 463794.049 | 2579471.410 | 608.980 | IW-1-12 |
| 1058 | 463792.496 | 2579500.568 | 608.810 | IW-1-13 |
| 1059 | 463914.405 | 2579671.415 | 608.240 | PZ-15 D |
| 1060 | 463911.011 | 2579668.816 | 608.180 | PZ-15 S |
| 1061 | 463910.130 | 2579661.849 | 608.540 | ?1 |
| 1062 | 463906.393 | 2579665.352 | 608.390 | ?2 |
| 1063 | 463901.845 | 2579670.944 | 608.320 | ?3 |
| 1064 | 463865.675 | 2579268.256 | 608.810 | PZ-6 D |
| 1065 | 463871.607 | 2579271.603 | 609.460 | PZ-6 S |
| 1066 | 463876.458 | 2579287.081 | 609.140 | PZ-17 S |
| 1067 | 463880.341 | 2579294.410 | 609.140 | PZ-17 D |
| 1068 | 463909.289 | 2579070.341 | 608.930 | PZ-16 S |

# Arcadis
## Tyco Marinette FTC
## 2700 Industrial Parkway Site
## Site Survey Data

### Point Number, Northing, Easting, Elevation of Soil borings and Monitoring Wells
### Survey Date: December 10, 2015 and April 29,2016
**COORINATES ARE WISCONSIN STATE PLANE NAD 1983 - WI CENTRAL 4802 ZONE**
**ELEVATION ARE REFERENCED TO NAVD 88**

| Point No. | Northing | Easting | Elevation | Description |
|---|---|---|---|---|
| 1069 | 463912.925 | 2579072.905 | 608.613 | PZ-16 D |
| 1070 | 462736.657 | 2577956.875 | 610.820 | PZ-14 S |
| 1071 | 462739.431 | 2577964.856 | 611.250 | PZ-14 D |
| 1072 | 462712.188 | 2577924.228 | 611.800 | PZ-14 /TP-1 |
| 1073 | 462728.336 | 2577910.099 | 611.710 | PZ-14 /TP-2 |
| 1074 | 463132.937 | 2580049.161 | 604.910 | PZ-19 |
| 1075 | 462769.626 | 2579827.147 | 605.910 | PZ-22 S |
| 1076 | 462766.500 | 2579825.886 | 605.790 | PZ-22 D |
| 1077 | 462755.901 | 2579763.337 | 609.150 | PZ-18 S |
| 1078 | 462752.539 | 2579763.330 | 609.460 | PZ-18 D |
| 1079 | 462794.934 | 2579749.660 | 606.080 | BIW-6 |
| 1080 | 462775.213 | 2579748.699 | 606.850 | BIW-5 |
| 1081 | 462753.461 | 2579746.007 | 606.040 | BIW-4 |
| 1082 | 462733.947 | 2579743.580 | 605.550 | BIW-3 |
| 1083 | 462712.275 | 2579743.915 | 605.030 | BIW-2 |
| 1084 | 462692.597 | 2579740.889 | 605.640 | BIW-1 |
| 1085 | 462714.965 | 2579528.479 | 607.430 | PZ-20 |
| 1086 | 462913.557 | 2579645.496 | 606.900 | PZ-21 |
| 1087 | 462779.976 | 2579903.505 | 609.197 | PZ-3 |
| 2 | 461815.4610 | 2577583.801 | 608.910 | CP 1 |
| 3 | 462215.3600 | 2577146.050 | 611.820 | CP 2 |
| 1088 | 462527.2360 | 2577911.470 | 611.890 | PZ-8 |
| 1089 | 461872.5550 | 2578130.962 | 611.410 | PZ-11 |
| 1090 | 462902.0420 | 2577754.441 | 610.420 | PZ-10 |
| 1091 | 463351.6200 | 2578076.498 | 611.150 | PZ-9 |
| 1092 | 463668.7360 | 2578659.147 | 610.940 | PZ-13 |
| 1093 | 462646.0400 | 2580048.462 | 608.320 | PZ-7 |
| 1094 | 462547.8230 | 2579501.327 | 611.400 | PZ-12 |

Notes:

POINTS 1, 1000-1087 WERE SHOT ON DECEMBER 10, 2015
POINTS 2-3, 1088-1094 WERE SHOT ON ARPIL 29, 2016

# Arcadis
## Tyco Marinette FTC
## 2700 Industrial Parkway Site
## Site Survey Data

**Point Number, Northing, Easting, Elevation of Soil Borings and Monitoring Wells**
**Survey Date: August 2016 and September 2016**
**COORINATES ARE WISCONSIN STATE PLANE NAD 1983 - WI CENTRAL 4802 ZONE**
**ELEVATION ARE REFERENCED TO NAVD 88**

| Point No. | Northing | Easting | Elevation | Description |
|---|---|---|---|---|
| 1 | 460032.00 | 2581211.06 | 600.20 | DP6657 |
| 2 | 465498.89 | 2574571.49 | 611.93 | QL0354 |
| 3 | 470774.51 | 2578772.79 | 597.33 | QL0292 |
| 4 | 462215.37 | 2577146.04 | 611.80 | CP CHK |
| 5 | 461815.43 | 2577583.79 | 608.92 | CP CHK |
| 100 | 462123.32 | 2577446.59 | 609.35 | SEARCH |
| 1000 | 463894.78 | 2578842.60 | 606.29 | SB-1 |
| 1001 | 462258.51 | 2580118.37 | 609.83 | SB-6 |
| 1002 | 462367.01 | 2580108.11 | 604.59 | SB-7 |
| 1003 | 462622.16 | 2580111.94 | 608.95 | SB-9 |
| 1005 | 462504.49 | 2580110.25 | 609.97 | SB-8 |
| 1006 | 462696.53 | 2580017.53 | 605.01 | SB-4 |
| 1007 | 462847.93 | 2580017.29 | 604.78 | SB-5 |
| 1008 | 463167.59 | 2580143.90 | 605.16 | SB-11 |
| 1009 | 463056.72 | 2580155.03 | 606.75 | SB-12 |
| 1010 | 463337.58 | 2580203.28 | 604.73 | SB-19 |
| 1011 | 463339.54 | 2580434.62 | 602.75 | SB-17 |
| 1012 | 463493.21 | 2580426.40 | 606.70 | SB-18 |
| 1013 | 463463.43 | 2580228.75 | 604.66 | SB-20 |
| 1014 | 463580.57 | 2580196.27 | 604.04 | SB-21 |
| 1015 | 463708.83 | 2580084.86 | 604.37 | SB-24 |
| 1016 | 464393.81 | 2579734.47 | 604.22 | SB-23 |
| 1017 | 464029.22 | 2579502.33 | 605.10 | SB-22 |
| 1018 | 463909.92 | 2579269.00 | 606.66 | SB-16 |
| 1019 | 463915.30 | 2579119.37 | 605.88 | SB-3 |
| 1020 | 463902.60 | 2578968.52 | 606.51 | SB-2 |
| 1021 | 463881.52 | 2579441.99 | 606.04 | SB-15 |
| 1022 | 463883.32 | 2579553.12 | 605.42 | SB-14 |
| 1023 | 463879.21 | 2579699.04 | 604.90 | SB-13 |
| 1024 | 463798.14 | 2579872.51 | 603.46 | SB-10 |
| 1025 | 462141.36 | 2580067.23 | 607.90 | SB-25 |
| 1026 | 462226.79 | 2577326.65 | 609.70 | FTC-13R |
| 1027 | 462282.99 | 2577340.89 | 609.91 | FTC-15R |
| 1028 | 462310.95 | 2577363.82 | 609.98 | FTC-27 |

# Arcadis
## Tyco Marinette FTC
## 2700 Industrial Parkway Site
## Site Survey Data

**Point Number, Northing, Easting, Elevation of Soil Borings and Monitoring Wells**
**Survey Date: August 2016 and September 2016**
**COORINATES ARE WISCONSIN STATE PLANE NAD 1983 - WI CENTRAL 4802 ZONE**
**ELEVATION ARE REFERENCED TO NAVD 88**

| Point No. | Northing | Easting | Elevation | Description |
|---|---|---|---|---|
| 1029 | 462182.11 | 2577515.01 | 609.29 | MW-5 |
| 1030 | 462213.03 | 2577543.87 | 609.67 | FTC-28 |
| 1031 | 462242.84 | 2577544.57 | 608.85 | FTC-66 |
| 1032 | 462365.33 | 2577543.12 | 609.71 | FTC-32S |
| 1033 | 462395.81 | 2577559.02 | 609.73 | FTC-32D |
| 1034 | 462115.21 | 2577669.04 | 608.50 | FTC-34S |
| 1035 | 462143.13 | 2577644.16 | 608.72 | FTC-34D |
| 1036 | 461808.38 | 2577590.80 | 611.30 | FTC-44 |
| 1037 | 461982.61 | 2577485.54 | 609.35 | FTC-33D |
| 1038 | 462150.03 | 2577330.15 | 610.62 | FTC-20R |
| 1039 | 462049.28 | 2577284.72 | 610.28 | FTC-31 |
| 1040 | 461913.52 | 2577182.30 | 610.30 | FTC-35 |
| 1041 | 462520.69 | 2577596.93 | 609.37 | FTC-42 |
| 1042 | 462335.23 | 2577215.50 | 611.01 | FTC-2D |
| 1043 | 462320.92 | 2577151.57 | 610.97 | FTC-2S |
| 1045 | 462779.96 | 2579903.60 | 609.20 | PZ-3 |
| 1046 | 462755.82 | 2579763.53 | 609.20 | PZ-18S |
| 1047 | 462752.51 | 2579763.36 | 609.61 | PZ-18D |
| 1048 | 462736.66 | 2577956.87 | 610.77 | PZ-14S |
| 1049 | 462739.56 | 2577964.75 | 611.15 | PZ-14D |
| 1050 | 461998.79 | 2577869.90 | 610.98 | FTC-46D |
| 1051 | 461990.89 | 2577791.04 | 612.35 | FTC-46S |
| 1052 | 461764.43 | 2577679.60 | 609.95 | FTC-45 |
| 1053 | 463476.70 | 2578732.84 | 610.31 | PZ-2 |
| 1054 | 463914.44 | 2579671.37 | 608.19 | PZ-15D |
| 1055 | 463910.96 | 2579668.78 | 608.21 | PZ-15S |
| 1056 | 463760.19 | 2579782.87 | 606.23 | PZ-1D |
| 1057 | 463759.26 | 2579849.08 | 606.36 | PZ-1S |
| 1058 | 463351.67 | 2578076.42 | 611.16 | PZ-9 |
| 1059 | 462121.02 | 2576962.79 | 611.72 | SB-43 |
| 1060 | 462436.47 | 2577174.73 | 610.17 | SB-44 |
| 1061 | 462696.64 | 2577714.95 | 611.31 | SB-45 |
| 1062 | 463856.58 | 2578213.30 | 607.40 | SB-27 |
| 1063 | 463853.12 | 2578023.72 | 606.91 | SB-26 |

# Arcadis
## Tyco Marinette FTC
## 2700 Industrial Parkway Site
## Site Survey Data

**Point Number, Northing, Easting, Elevation of Soil Borings and Monitoring Wells**
**Survey Date: August 2016 and September 2016**
**COORINATES ARE WISCONSIN STATE PLANE NAD 1983 - WI CENTRAL 4802 ZONE**
**ELEVATION ARE REFERENCED TO NAVD 88**

| Point No. | Northing | Easting | Elevation | Description |
|---|---|---|---|---|
| 1064 | 463887.55 | 2578675.58 | 608.33 | SB-29 |
| 1065 | 464484.70 | 2579673.77 | 602.90 | SB-36 |
| 1066 | 464212.89 | 2580102.97 | 603.78 | SMH@SB-37 |
| 1067 | 463907.49 | 2580625.86 | 604.00 | SB-38 |
| 1068 | 463564.54 | 2580621.41 | 603.34 | SB-39 |
| 1069 | 463283.23 | 2580654.28 | 602.36 | SB-40 |
| 1070 | 463043.63 | 2580658.24 | 603.47 | SB-41 |
| 1071 | 461689.14 | 2580732.72 | 603.10 | SB-42 |
| 1073 | 461418.30 | 2579769.41 | 611.19 | SB-35 |
| 1074 | 461498.37 | 2579974.82 | 605.50 | SB-34 |
| 1076 | 461580.65 | 2580042.96 | 617.47 | SB-33 |
| 1077 | 462009.31 | 2580029.02 | 604.96 | SB-30 |
| 1078 | 461742.48 | 2580035.51 | 607.82 | SB-32 |
| 1079 | 461886.62 | 2580031.07 | 604.97 | SB-31 |
| 1080 | 462374.53 | 2578598.11 | 605.27 | GS |
| 1082 | 461715.52 | 2577428.51 | 607.52 | SB-46 |
| 1084 | 462230.78 | 2577746.76 | 608.66 | SB-47 |
| 1086 | 463868.74 | 2578362.82 | 606.06 | SB-28 |
| 1088 | 464257.14 | 2580063.64 | 604.11 | SB-37 |
| 1115 | 462141.36 | 2580067.23 | 607.90 | SB-25 |

Notes:

POINTS 1, 2 and 3 are the offsite NGS Control Points we checked
POINTS 4 and 5 are Control Point, on the site.
POINT 100 is a point calculated from found wells to try and find the PZ that was out in the pond.

**Arcadis-Mainette, WI Coleman Engineering Survey-9-6-18**
**WISCONSIN STATE PLANE COORDINATE SYSTEM, CENTRAL ZONE, NAD 83 (2011), US SURVEY FOOT**
**ELEVATIONS BASED ON NAVD 88, US FEET**

| NAME | NORTHING | EASTING | ELEVATION (FT) |
|---|---|---|---|
| VAP-01 | 459896.48 | 2578050.12 | 606.46 |
| VAP-02 | 460112.23 | 2580757.71 | 601.55 |
| VAP-03 | 458755.79 | 2579594.01 | 609.83 |
| VAP-04 | 460204.33 | 2583332.74 | 595.26 |
| VAP-05 | 457476.05 | 2579090.19 | 603.90 |
| VAP-06 | 459521.56 | 2583497.32 | 593.37 |
| VAP-07 | 458641.03 | 2583522.53 | 593.31 |
| VAP-08 | 456355.57 | 2583350.83 | 591.77 |
| VAP-09 | 456454.64 | 2578211.55 | 600.29 |
| VAP-10 | 455697.98 | 2577002.81 | 604.05 |
| VAP-11 | 454783.13 | 2576399.97 | 607.49 |
| VAP-12 | 454965.32 | 2582999.81 | 592.95 |
| VAP-13 | 465194.77 | 2577242.69 | 607.68 |
| VAP-14 | 464567.77 | 2587684.75 | 595.35 |
| VAP-15 | 462525.80 | 2585798.38 | 586.61 |
| VAP-16 | 460020.97 | 2575980.37 | 607.20 |
| VAP-17 | 454649.51 | 2578249.75 | 598.06 |
| VAP-18 | 454878.83 | 2581125.19 | 594.59 |
| VAP-19 | 458238.55 | 2580830.52 | 597.81 |
| VAP-20 | 457321.70 | 2577475.30 | 600.78 |
| VAP-21 | 456301.28 | 2580952.43 | 593.82 |
| VAP-22 | 463805.91 | 2575551.49 | 614.19 |
| VAP-23 | 467111.72 | 2583194.58 | 594.91 |
| VAP-24 | 460967.57 | 2582615.40 | 595.81 |
| VAP-26/MW-101B | 459904.05 | 2580493.53 | 603.51 |
| VAP-27 | 458754.43 | 2579584.99 | 610.05 |
| VAP-28 | 454795.86 | 2581175.38 | 594.21 |
| VAP-29 | 464314.25 | 2584653.86 | 590.18 |
| VAP-30/MW-100B | 457303.99 | 2578839.38 | 602.16 |
| VAP-31 | 467496.78 | 2578332.58 | 606.77 |
| VAP-32 | 468074.79 | 2581205.21 | 595.43 |
| VAP-33 | 465756.08 | 2584363.77 | 594.95 |
| VAP-35 | 454240.83 | 2582822.89 | 592.68 |
| VAP-36 | 451884.06 | 2582042.31 | 589.29 |
| VAP-37 | 451821.35 | 2580243.32 | 592.07 |
| VAP-38 | 452044.24 | 2578152.75 | 591.17 |
| VAP-39 | 464881.75 | 2574260.31 | 612.56 |
| VAP-40 | 451295.90 | 2581550.34 | 589.94 |
| VAP-41 | 451335.06 | 2582116.28 | 589.76 |
| VAP-42 | 451878.86 | 2581374.60 | 591.13 |
| VAP-43 | 452746.43 | 2582337.79 | 591.33 |
| VAP-44 | 455451.01 | 2581031.38 | 594.20 |
| VAP-45 | 454843.93 | 2581975.00 | 590.13 |
| VAP-46 | 453417.23 | 2582557.75 | 592.13 |

| | | | |
|---|---|---|---|
| VAP-47 | 454748.73 | 2580435.93 | 594.58 |
| MW-102B | 463801.72 | 2579620.21 | 604.90 |

| NAME | NORTHING | EASTING | ELEVATION (FT) |
|---|---|---|---|
| SS-113 | 461709.47 | 2577394.31 | 609.20 |
| SS-114 | 461833.48 | 2577561.63 | 608.56 |
| SS-115 | 461975.28 | 2577653.98 | 608.74 |
| SS-116 | 462152.80 | 2577733.21 | 609.37 |
| SS-117 | 462251.26 | 2577786.68 | 609.12 |
| SS-118 | 462438.79 | 2577780.59 | 609.70 |
| SS-119 | 462485.12 | 2577932.90 | 608.69 |
| SS-120 | 462576.92 | 2577875.72 | 608.25 |
| SS-121 | 462706.45 | 2577773.41 | 610.90 |
| SS-122 | 462718.88 | 2577915.32 | 608.47 |
| SS-123 | 462735.94 | 2577535.20 | 610.98 |
| SS-124 | 462832.54 | 2577703.43 | 609.64 |
| SS-125 | 462838.90 | 2577590.64 | 610.23 |
| SS-126 | 462954.84 | 2577655.98 | 610.36 |
| SS-127 | 463005.67 | 2577693.41 | 610.04 |
| SS-128 | 462209.29 | 2577668.72 | 610.31 |
| SS-129 | 462139.11 | 2577359.98 | 612.18 |

| MONITORING WELL | NORTHING | EASTING | GROUND ELEVATION (FT) | TOP PVC (FT) |
|---|---|---|---|---|
| 101-16 | 459912.11 | 2580497.84 | 603.40 | 603.18 |
| 101-72 | 459907.94 | 2580496.27 | 603.49 | 603.20 |
| 100-32 | 457304.10 | 2578843.53 | 602.12 | 601.45 |
| 100-68 | 457304.33 | 2578849.01 | 602.13 | 601.83 |

| PIEZOMETER | NORTHING | EASTING | GROUND ELEVATION (FT) | TOP (FT) | TOP OF WATER |
|---|---|---|---|---|---|
| PZ-09-Metal | 460781.61 | 2585145.92 | 581.71 | 584.48 | 582.48 |
| SW-09-PVC | 460783.11 | 2585146.54 | 581.48 | 585.04 | |

| SOIL BORING | NORTHING | EASTING | GROUND ELEVATION (FT) |
|---|---|---|---|
| SB-51 | 451884.06 | 2582042.31 | 589.29 |
| SB-52 | 456299.15 | 2580951.93 | 593.67 |

Tyco - Marinette July 18, 2018
Coordinate Datum - US State Plane, Wisconsin Central Zone

| PT. NO. | NORTHING | EASTING | ELEVATION | DESCRIPTION |
|---|---|---|---|---|
| 1000 | 462166.57 | 2576927.58 | 612.15 | PZ-04 |
| ~~1001~~ | ~~462166.67~~ | ~~2576928.55~~ | ~~612.80~~ | VOID |
| 1002 | 462166.65 | 2576928.48 | 612.85 | SW-04 |
| 1003 | 464295.05 | 2577168.93 | 607.01 | PZ-05 |
| 1004 | 464294.16 | 2577169.06 | 606.67 | SW-05 |
| 1005 | 464735.72 | 2580635.64 | 595.94 | PZ-06 |
| 1006 | 464736.62 | 2580635.01 | 596.80 | SW-06 |
| 1007 | 462817.23 | 2582506.61 | 595.37 | PZ-07 |
| 1008 | 462817.21 | 2582505.88 | 595.14 | SW-07 |
| 1009 | 461729.06 | 2583374.17 | 594.54 | PZ-08 |
| 1010 | 461728.26 | 2583374.12 | 594.28 | SW-08 |
| 1011 | 454639.51 | 2577826.91 | 597.55 | PZ-01 |
| 1012 | 454641.08 | 2577827.45 | 597.22 | SW-01 |
| 1013 | 457290.11 | 2578722.48 | 605.38 | PZ-02 |
| 1014 | 457291.35 | 2578723.18 | 604.60 | SW-02 |
| 1015 | 459977.01 | 2577581.10 | 609.95 | PZ-03 |
| 1016 | 459978.45 | 2577580.75 | 611.11 | SW-03 |

**Arcadis-Marinette, WI Coleman Engineering Survey-4-10-19**
**WISCONSIN STATE PLANE COORDINATE SYSTEM, CENTRAL ZONE, NAD 83 (2011), US SURVEY FOOT**
**ELEVATIONS BASED ON NAVD 88, US FEET**
**SOIL BORINGS**

| NAME | NORTHING | EASTING | ELEVATION (FT) |
|---|---|---|---|
| SS-130 | 462261.75 | 2576978.21 | 611.23 |
| SS-130 A | 462260.58 | 2576978.56 | 611.19 |
| SS-131 | 461921.98 | 2576904.05 | 609.70 |
| SS-132 | 461689.90 | 2576995.60 | 609.14 |
| SS-132 A | 461689.87 | 2576994.60 | 609.28 |
| SS-133 | 461489.28 | 2577161.75 | 610.75 |
| SS-134 A | 461590.31 | 2577455.21 | 610.53 |
| SS-135 | 462184.39 | 2577373.66 | 609.99 |
| SS-135 A | 462184.74 | 2577374.81 | 610.14 |
| SS-136 | 462368.71 | 2577797.40 | 609.50 |
| SS-136 A | 462367.99 | 2577798.83 | 609.48 |
| SS-137 | 462686.30 | 2577767.30 | 611.01 |
| SS-137 A | 462685.83 | 2577767.85 | 611.02 |
| SS-138 | 462871.67 | 2577519.67 | 610.26 |
| SS-138 A | 462871.57 | 2577518.68 | 610.47 |
| SS-139 | 462764.09 | 2577947.65 | 608.17 |
| SS-139 A | 462763.45 | 2577947.84 | 607.99 |

**PIEZOMETERS / MONITORING WELLS**

| NAME | NORTHING | EASTING | ELEVATION (FT) |
|---|---|---|---|
| PZ-24-47 | 461565.48 | 2580738.87 | 605.46 |
| PZ-24-17 | 461570.31 | 2580738.84 | 605.27 |
| PZ-25-17 | 465263.60 | 2579969.33 | 598.74 |
| PZ-26-11 | 466609.35 | 2579203.35 | 598.13 |
| PZ-27-12 | 469460.57 | 2580178.12 | 592.99 |
| PZ-28-54 | 467123.14 | 2583168.64 | 594.81 |
| PZ-28-14 | 467124.90 | 2583162.77 | 594.76 |
| PZ-29-42 | 465386.27 | 2581729.44 | 593.94 |
| PZ-29-17 | 465386.43 | 2581734.13 | 594.02 |
| PZ-30-59 | 464121.07 | 2582528.94 | 594.64 |
| PZ-30-43 | 464123.25 | 2582525.01 | 594.72 |
| PZ-30-12 | 464125.85 | 2582520.11 | 594.75 |
| PZ-31-50 | 462491.38 | 2582374.61 | 595.79 |
| PZ-31-17 | 462494.25 | 2582369.02 | 595.74 |
| PZ-31-40 | 462490.83 | 2582364.02 | 595.75 |
| PZ-32-18 | 461901.15 | 2583990.76 | 591.73 |
| PZ-32-71 | 461908.34 | 2583990.79 | 591.73 |
| PZ-33-11 | 460123.91 | 2582902.95 | 594.79 |
| PZ-33-33 | 460123.73 | 2582897.33 | 594.77 |

| | | | |
|---|---|---|---|
| PZ-33-66 | 460123.07 | 2582892.64 | 594.79 |
| PZ-34-17 | 457159.33 | 2583554.27 | 591.34 |
| PZ-34-84 | 457164.33 | 2583555.10 | 591.29 |
| PZ-35-17 | 459497.49 | 2577182.08 | 608.21 |
| PZ-35-37 | 459501.92 | 2577178.87 | 608.19 |
| PZ-35-48 | 459506.11 | 2577175.67 | 608.22 |
| PZ-36-85 | 453113.91 | 2582376.18 | 590.34 |
| PZ-36-38 | 453114.08 | 2582371.03 | 590.45 |
| PZ-36-19 | 453114.47 | 2582364.43 | 590.42 |
| PZ-37-11 | 451323.28 | 2581905.20 | 589.21 |
| PZ-37-30 | 451323.03 | 2581899.98 | 589.35 |
| PZ-37-74 | 451322.68 | 2581895.23 | 589.28 |
| PZ-38-75 | 450587.77 | 2580683.74 | 592.29 |
| PZ-38-17 | 450592.22 | 2580685.13 | 592.24 |
| PZ-41-17 | 452089.21 | 2578723.26 | 595.39 |
| PZ-41-83 | 452088.94 | 2578718.61 | 595.33 |
| PZ-42-76 | 451825.12 | 2580454.09 | 592.35 |
| PZ-42-17 | 451824.95 | 2580449.33 | 592.64 |
| PZ-43-80 | 452648.12 | 2580928.64 | 592.45 |
| PZ-43-19 | 452660.29 | 2580933.27 | 592.76 |
| PZ-44-73 | 454734.81 | 2580183.71 | 595.06 |

**HPT BORING**

| NAME | NORTHING | EASTING | ELEVATION (FT) |
|---|---|---|---|
| HPT-22 | 467536.82 | 2578301.18 | 606.54 |
| HPT-23 | 468078.71 | 2581197.10 | 595.50 |
| HPT-24 | 467125.90 | 2583157.79 | 594.53 |
| HPT-25 | 465503.66 | 2584182.98 | 593.31 |
| HPT-26 | 465374.39 | 2581816.78 | 594.09 |
| HPT-27 | 465266.26 | 2579985.25 | 598.55 |
| HPT-28 | 465117.67 | 2577260.64 | 607.62 |
| HPT-29 | 462490.51 | 2582369.49 | 595.47 |
| HPT-30 | 461913.56 | 2583989.70 | 591.42 |
| HPT-31 | 460132.07 | 2582884.92 | 594.17 |
| HPT-32 | 457308.86 | 2583553.60 | 591.71 |
| HPT-33 | 455696.67 | 2583273.10 | 592.70 |
| HPT-34 | 454735.98 | 2580193.83 | 595.07 |
| HPT-35 | 454680.34 | 2578633.46 | 598.01 |
| HPT-36 | 458261.78 | 2580831.22 | 598.14 |
| HPT-37 | 457324.67 | 2577360.98 | 600.61 |
| HPT-38 | 459974.90 | 2575790.00 | 609.56 |

**VAP**

| NAME | NORTHING | EASTING | ELEVATION (FT) |
|---|---|---|---|
| VAP-52 | 452312.67 | 2580668.36 | 591.42 |
| VAP-53 | 452856.51 | 2581580.69 | 589.74 |

| NAME | NORTHING | EASTING | ELEVATION (FT) |
|---|---|---|---|

**PIEZOMETER / STILLING WELL LOCATIONS**

| NAME | NORTHING | EASTING | ELEVATION (FT) |
|---|---|---|---|
| PZ-10 | 461196.17 | 2577179.76 | 609.17 |
| STW-10 | 461195.23 | 2577180.03 | 609.45 |
| PZ-11 | 460200.35 | 2577492.83 | 607.89 |
| STW-11 | 460199.26 | 2577493.46 | 607.80 |
| PZ-39 | 450154.39 | 2579126.81 | 584.023 |
| STW-39 | 450153.732 | 2579126.349 | 583.719 |
| PZ-40 | 452037.492 | 2578106.335 | 589.109 |
| STW-40 | 452037.440 | 2578105.765 | 589.679 |

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