EGLE

MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY
REMEDIATION AND REDEVELOPMENT DIVISION
PO BOX 30426, LANSING, MICHIGAN 48909-7926

RECEIVED
OCT 12 2022
State of Michigan
EGLE - RRD

Request for EGLE Review of Response Activity Plan

This form is required for submittal of a request for EGLE to review a Response Activity Plan, under Section 20114b, Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended.

Section A: Type of Response Activity Plan being Submitted (Check all that apply):

Remedial Investigation	☐	20b(2)Site Specific Criteria *(modification of generic criteria)*	☐
Evaluation Plan	☐		
Feasibility Study	☐	20b(3) Site Specific Criteria or Surrogate *(no generic criteria available)*	☐
Remedial Action Plan	☐		
Interim Response Plan	☐	Section 20118(4) and (5) Request	☐
Mixing Zone Request	☐	Land or Resource Use Restrictions	☐
20e(14) De Minimus GSI Impact	☐	Other, Specify: Investigation Summary	☒

The Response Activity Plan addresses the entire facility: ☐
(entire facility as defined by Part 201, all releases, hazardous substances, and environmental media)

The Response Activity Plan does not address the entire facility: ☒
Please specify the release(s), hazardous substance(s), environmental media, and/or portions of the facility addressed by the Response Activity Plan: PFAS in groundwater

Section B: Facility/Property Subject to (Check all that apply):

Facility regulated under Part 201 Part 201 Facility ID (if known): 41002445	☒
Leaking Underground Storage Tank regulated pursuant to Part 213 Part 211/213. Facility ID, if known:	☐
Oil or gas production and development regulated pursuant to Part 615 or 625	☐
Licensed landfill regulated pursuant to Part 115	☐
Licensed hazardous waste treatment, storage, or disposal facility regulated pursuant to Part 111	☐
Consent Agreement or other legal agreement with EGLE	☐

Section C: Facility and Locational Information:

Facility Name: Former Wolverine Plant

Street Address of Property: 485 Wolverine Drive NE

City: Rockford State: MI Property Zip: 49341

Tax ID (include all applicable IDs):

Status of submitter relative to the property (check all that apply):

	Former	Current	Prospective
Owner	☒	☐	☐
Operator	☒	☐	☐

County: Kent
City/Village/Township: Township 9 North
Town: Range: 11 West Section: 36
Quarter: Quarter-Quarter: NW 1/4 of NE 1/4
Decimal Degrees Latitude: 43° 7'48.97"N
Decimal Degrees Longitude: 85°33'22.19"W

Reference point for latitude and longitude:
Center of site ☒ Main/front door ☐
Front gate/main entrance ☐ Other ☐

Collection method:
Survey ☐ GPS ☐ Interpolation ☒

Section D: Submitter Information:

Entity/person requesting review: Wolverine World Wide Inc.
Contact Person (name and title): Dave Latchana, Vice President
Submitter Address: 9341 Courtland Drive, NE
City: Rockford State: Michigan Zip: 49341
Telephone: (616) 866-5500 E-Mail: david.latchana@wwwinc.com
Relationship of contact person to the submitter: Vice President
Owner Name, if different from submitter: Company:
Address:
City: State: Zip:
Telephone: E-Mail:

Section E: Are/were the following present at the facility (Check all that apply):

	Current	Previous	Unknown
Mobile or Migrating Non-Aqueous Phase Liquids (NAPL)	☐	☐	☐
Soil contamination above any residential criteria	☐	☐	☐
Soil contamination above any non-residential criteria	☐	☐	☐
Soil aesthetic impacts	☐	☐	☐
Groundwater contamination above any residential criteria	☒	☐	☐
Groundwater contamination above any non-residential criteria	☒	☐	☐
Groundwater aesthetic impacts	☐	☐	☐
Soil Gas contamination above residential vapor intrusion (VI) screening levels	☐	☐	☐
Soil Gas contamination above non-residential VI screening levels	☐	☐	☐
Conditions immediately dangerous to life or health (IDLH)	☐	☐	☐
Fire & Explosion hazards related to releases	☐	☐	☐
Contamination existing in drinking water supply	☐	☐	☐
Imminent threat to drinking water supply	☐	☐	☐
Impact to Surface Water	☒	☐	☐
Surface Water Sediments above screening levels	☐	☐	☐

Section F: The following questions assist EGLE in evaluating this request.

Known or Suspected Contaminant(s) Type (Check all that apply):
Petroleum ☐ Volatile Organic Compounds ☐ Metals ☐ Other ☒

Current Site Status (Check all that apply):
Undergoing property transfer ☐ Active operations ☐ Inactive operation ☒

Current Property Use:
Residential ☐
Non-residential ☒

Anticipated Property Use:
Residential ☐
Non-residential ☒

Estimated Area of Contamination Addressed in Response Action Plan (Cumulative):
Currently undetermined ☐ < 0.5 acre ☐ > 0.5 acre ☒

Migration:

	Yes	No	Unknown
Has contamination migrated beyond the property **boundaries?**	☐	☐	☒
Has the Notice of Migration been submitted?	☐	☒	☐

Facility Investigation Status:
Ongoing ☒ Complete ☐

Facility Response Activity Status (Check all that apply):
None ☐ IR Implemented ☐ Response Activity Ongoing ☒ Response Activity Completed ☐

Drinking Water Supply for Facility (Check all that apply):

Municipal [X] Private Well(s) [ ] No Current Water Supply [ ] Municipal Available [ ]

On-site Well(s) (Check all that apply):

Drinking Water [ ] Industrial/Commercial Production [ ] Agricultural/Irrigation [ ] No well on-site [X]
Approximate Depth of Well(s):

Local Drinking Water Supply:

Is facility in a designated Wellhead Protection Area? Yes [ ] No [X]
Distance to nearest off-site drinking water well: Private [X] Municipal [ ] 0.26 miles

Surface Water Bodies on or Adjacent to Facility (Check all that apply):

Wetlands [ ] Ditch [ ] Stream/River [X] Lake/Pond [ ]

Local Surface Water Bodies:

Distance to nearest wetland: Ditch: on-Site Stream/River: 100 ft Lake/Pond:

Have other plans been submitted for this facility? No

Facility Name, if different than this submittal:
Date and Name of most recent submittal:

Section G: Environmental Professional Signature:

With my signature below, I certify that this plan and all related materials are true, accurate, and complete to the best of my knowledge and belief.

Signature: Date: 10/11/2022

Printed Name: Trevor Litwiller

Company of Environmental Professional: GZA GeoEnvironmental Inc.

Address: 601 5th Street NW, Suite 102

City: Grand Rapids State: MI Zip: 49504

Telephone: 616-956-6123 E-mail address: trevor.litwiller@gza.com

Section H: Submitter Signature:

With my signature below, I certify that this plan and all related materials are true, accurate, and complete to the best of my knowledge and belief and I am legally authorized to sign for the submitter.

Signature: Date: October 11, 2022

Printed name: Dave Latchana

Title/Relationship of signatory to submitter: Vice President

Address: 9341 Courtland Drive, NE

City: Rockford

State: MI Zip: 49341

Telephone: (616) 866-5500

E-Mail address: david.latchana@wwwinc.com

This form and the Response Activity Plan should be submitted to EGLE Remediation & Redevelopment Division District Office for the county in which the property is located, unless the response activity is related to a facility that is regulated by another EGLE Division. A district map is located at www.michigan.gov/EGLErrd. If regulated by another division, contact should be made with that division for information on where to submit the form and plan.

For information or assistance on this publication, please contact the (program), through EGLE Environmental Assistance Center at 800-662-9278. This publication is available in alternative formats upon request.
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This form and its contents are subject to the Freedom of Information Act and may be released to the public.

Rose & Westra
A Division of GZA

GEOTECHNICAL
ENVIRONMENTAL
ECOLOGICAL
WATER
CONSTRUCTION MANAGEMENT

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September 30, 2022
File No.: 16.0062335.20

Ms. Karen Vorce
Remediation and Redevelopment Division
Michigan Department of Environment, Great Lakes, and Energy
350 Ottawa Avenue NW, Unit 10
Grand Rapids, MI 49503-2341

Re: Investigation Summary – Wolverine World Wide, Inc.
485 Wolverine Drive NE, Rockford, Michigan

Dear Ms. Vorce:

Rose & Westra, a Division of GZA GeoEnvironmental, Inc. (R&W/GZA), is submitting this Investigation Summary on behalf of Wolverine World Wide, Inc. ("Wolverine") as a follow-up to the Work Plan dated April 18, 2022, regarding the property at 485 Wolverine Drive NE, Rockford, Michigan (Site). The purpose of this Investigation Summary is to summarize activities completed at the Site during further evaluation of per- and poly-fluoroalkyl substances (PFAS) in groundwater at the Site. Per Michigan Department of Environment, Great Lakes, and Energy's (EGLE) request, a response activity plan review request is included as **Appendix A**.

BACKGROUND

The Site has been inactive and was most recently used for storage. Historically, the Site was used for footwear assembly, repair, and distribution. A Site location map is provided as **Figure 1**. In December 2021, Wolverine and EGLE conducted groundwater sampling in five locations (EGLE-GW-01, EGLE-GW-02, EGLE-GW-04, EGLE-GW-05, and EGLE-GW-06) at the Site. Samples were analyzed for PFAS and the results identified select PFAS at concentrations in the groundwater above the EGLE Part 201 Generic Cleanup Criteria (GCC). After confirmation of the initial groundwater results, a Work Plan was established to obtain additional information regarding PFAS in groundwater at the Site.

PROJECT OBJECTIVES

The objectives of the investigation activities as summarized in the April 18, 2022; Work Plan included the following:

- *Confirm whether initial PFAS sample results were representative of actual conditions by resampling groundwater;*
- *Further evaluate groundwater quality, including the installation of permanent piezometers and wells where previous sampling occurred and at upgradient locations on-Site; and,*
- *Conduct preliminary investigation activities to look for leather scraps on the property in the areas which had more elevated PFAS concentrations in groundwater.*

FIELD ACTIVITIES

The field activities completed included piezometer, monitoring well, and staff gauge installation, groundwater sampling, and water level measurement. Test boreholes were completed to look for leather scrap at the property.

Piezometer and Monitoring Well Installations

During EGLE's December 2021 Site Assessment, EGLE installed permanent monitoring wells EGLE-GW-01 and EGLE-GW-02. Temporary piezometers were also installed by EGLE at locations EGLE-GW-04, EGLE-GW-05, and EGLE-GW-06. Following installation, these locations were sampled by EGLE and R&W/GZA. The temporary piezometers (EGLE-GW-04, EGLE-GW-05, and EGLE-GW-06) were removed by EGLE following the completion of Site Assessment activities. Permanent monitoring wells EGLE-GW-01 and EGLE-GW-02 remained at the Site. Upon approval of the activities in the April 18, 2022 Work Plan, R&W/GZA mobilized in May 2022 to replace locations of previously sampled piezometers and to install additional monitoring locations. Permanent piezometers (using the same nomenclature EGLE-GW-05 and EGLE-GW-06) were installed by R&W/GZA at corresponding locations of previously installed and removed EGLE piezometers. Two new monitoring wells (GZA-MW-03 and GZA-MW-04) were installed along the east (upgradient) side of the Site.

GZA-MW-03 and GZA-MW-04 were installed in shallow fill soil and native material and screened at a depth of 4 to 9 feet below ground surface (bgs). Groundwater was encountered during drilling at a depth of approximately 4.5 feet bgs. The piezometers (EGLE-GW-05 and EGLE-GW-06) were installed in the upper 4 feet of fill and native material. Groundwater was encountered during hand auguring at a depth of approximately 0.5 feet bgs at the piezometer locations. The monitoring well and piezometer locations are shown on **Figure 2**. Boring logs and monitoring well/permanent piezometer construction diagrams are included as **Appendix B**.

Each monitoring point was constructed of factory-slotted, 0.010-inch, 5-foot-long polyvinyl chloride (PVC) screen, and flush-threaded well casing. The annular space surrounding the screen was filled with a sand-filter pack to a level approximately 1 foot above the top of the screen. Bentonite chips were placed above the sand-filter pack to a depth of approximately 1 foot bgs. A steel flush-mounted casing was installed with a concrete pad for the monitoring well locations. The piezometers were completed with above-grade protective, steel-riser pipes. A locking expansion cap was placed in the top of the PVC casing.

Following installation, the newly installed monitoring points were developed to remove sediment from the sand-filter pack and casing. Each point was developed using a 12-volt Mini-Typhoon® submersible pump equipped with dedicated tubing. The pump was decontaminated between monitoring points using a water and Alconox® wash with a water rinse. The monitoring points were developed until the water was free of visible sediment. The purge volumes ranged from 35 to 75 gallons.

Monitoring well and piezometer locations were surveyed, by a surveyor licensed by the State of Michigan, to an accuracy of <1 foot; ground surface elevations were determined to an accuracy of 0.1 foot; and piezometer/well elevations were determined to an accuracy of 0.01 foot.

Staff Gauges

Two gauging stations (SG-SW-05 and SG-SW-06) were established in the Rogue River to collect surface water level data for assessing groundwater-surface water interaction. The gauges were constructed of 1-inch galvanized pipe and riser with slotted screen. Casing elevations for the stream gauges were included in elevation survey and used as measuring point for depth to surface water within the Rogue River. Surface water elevation gauging station locations and groundwater contours are included on **Figure 2**.

Groundwater Sampling

Groundwater sampling was conducted on June 9, 2022, for the monitoring wells installed in December 2021 by EGLE (EGLE-GW-01 and EGLE-GW-02) and for the newly installed monitoring wells and piezometers referenced above. Monitoring well sampling was completed in accordance with R&W/GZA's low-flow groundwater sampling Standard Operating Procedure (SOP). Equipment used for purging and sample collection included a GeoTech

Peristaltic Pump. Turbidity was monitored by collecting water for turbidity analysis. Additional field parameters were monitored using a Multi-Probe Water Meter YSI using a flow-through cell. Once the field parameters stabilized within the limits specified in the SOP, a groundwater sample was collected from each well for laboratory analysis. The groundwater sample was collected by disconnecting the tubing from the flow-through cell and collecting the sample directly from the tubing.

Groundwater samples were collected in laboratory-supplied sample containers labeled with the well identification, sample, time and date, and laboratory analysis. The samples were packed in coolers with ice and shipped to the laboratory under chain-of-custody control via overnight express shipping. Samples were analyzed for PFAS using DoD QSM 5.3 for PFAS by isotope-dilution methodology. The analyte list includes the 28 PFAS compounds specified by EGLE, and reporting limits are provided in Table A.7.7 of the project Quality Assurance Project Plan (QAPP).

Test Digs

In March 2022, R&W/GZA completed a Site walk to identify potential leather scrap on the ground surface at the Site. No scraps were observed at that time. On June 10, 2022, R&W/GZA completed test boreholes utilizing a power auger and shovel. Limited scrap (small individual pieces per borehole) were identified in TP-6 and TP-7, near EGLE-MW-2, at a depth of approximately 1 foot bgs. Step-out test boreholes in the area were completed which did not identify additional scrap. Additional test boreholes completed on July 21, 2022 and located across the Site did not identify leather scrap. A summary of the test boreholes is provided below. Test borehole locations are provided on **Figure 3**.

Table 1.1
Test Boreholes

I.D.	Date	Depth (Feet bgs)	Observations
TP-1	6/10/2022	3	No scrap observed
TP-2	6/10/2022	3	No scrap observed
TP-3	6/10/2022	3	No scrap observed
TP-4	6/10/2022	3	No scrap observed
TP-5	6/10/2022	3	No scrap observed
TP-6	6/10/2022	3	Scrap observed approximately 1 foot bgs, black silt material
TP-7	6/10/2022	3	Scrap observed approximately 1 foot bgs, black silt material
TP-100	7/21/2022	4	No scrap observed
TP-101	7/21/2022	4	No scrap observed
TP-102	7/21/2022	4	No scrap observed
TP-103	7/21/2022	4	No scrap observed
TP-104	7/21/2022	3.5	No scrap observed
TP-105	7/21/2022	3.5	No scrap observed
TP-106	7/21/2022	3.5	No scrap observed
TP-107	7/21/2022	3	No scrap observed
TP-108	7/21/2022	3.5	No scrap observed
TP-109	7/21/2022	3	No scrap observed
TP-110	7/21/2022	3.5	No scrap observed
TP-111	7/21/2022	3.5	No scrap observed
TP-112	7/21/2022	4	No scrap observed

GROUNDWATER SAMPLING RESULTS

The following section summarizes the groundwater analytical results collected during the investigation activities.

The data is compared to EGLE Part 201 GCC. However, residential and non-residential drinking water GCC are not applicable as there are no wells within the surrounding vicinity of the Site which is served by municipal water. The potential environmental exposure pathway for the Site is the Groundwater Surface Water Interface (GSI) pathway into the Rogue River. Perfluorooctanesulfonic acid (PFOS) and perfluoro-n-octanoic acid (PFOA) are the only two PFAS compounds with established GSI criteria.

The potential environmental exposure pathways for impacted surface water in the Rogue River and applicable Part 4 Rule 57 Water Quality Values (WV) are identified as follows:

- Human Noncancer Value exposure via non-drinking water (HNDV) exposure route – Rule 57 HNDV;
- Aquatic life exposure to impacted water in the Rogue River – Rule 57 Final Chronic Value (FCV); and
- Wildlife exposure to impacted water in the Rogue River – Rule 57 Wildlife Value (WV).

Table 1.2
Water Quality Values

Parameter	Units	HNDV	FCV	WV
PFOA	ng/L	170*	880,000	Not Applicable
PFOS	ng/L	12	140,000	Not Applicable

*-Revised July 2022
ng/L = nanograms per liter

The human health drinking water value is not applicable to this investigation. The applicable criteria for PFOS is the generic GSI criteria which is the lesser of HNDV, FCV, and WV. The GSI criteria are derived using surface-water concentrations; but for the purpose of this comparison, they will be used for the evaluation of furthering delineating the extent of PFOS in groundwater. For PFOA, the Rule 57 HNDV criteria was revised to 170 ng/L in July 2022. For comparison of PFOA, the most restrictive Rule 57 HNDV criteria will be used. There are no exceedances of the most restrictive value for PFOA at the Site.

Table 1.3
Comparison Criteria

Compound	Most Restrictive Value (µg/L)	Basis for Value
PFOA	0.17	Rule 57 HNV (nondrinking)
PFOS	0.012	GCC for GSI

Exceedances of PFOS GSI criteria were identified at the following locations during the R&W/GZA June 2022 sampling event:

Table 1.4
Groundwater Sample Results

Sample	Compound	Sample Result (µg/L)	GSI Criteria (µg/L)
EGLE-GW-01	PFOS	**0.14**	0.012
EGLE-GW-02	PFOS	**0.91**	0.012
EGLE-GW-05	PFOS	**0.61**	0.012
EGLE-GW-06	PFOS	**2.0**	0.012
GZA-MW-04	PFOS	**0.43**	0.012

These results along with those from the groundwater samples collected during EGLE's December 2021 initial sampling event are summarized on **Table 2** (attached). Results from EGLE and R&W/GZA groundwater sampling events are also shown on **Figure 4**.

PROPOSED ACTIVITIES

Groundwater test results from the June 9, 2022, sampling event indicated similar results to groundwater samples from respective monitoring wells and piezometers sampled in December 2021. Additional sampling locations are proposed to further delineate the horizontal and vertical extent of PFAS concentrations found in groundwater.

One monitoring well is proposed at the southern boundary of the Site, GZA-MW-07, which will be used to evaluate groundwater flow as well as PFAS concentrations at the Site boundary. An additional boring will be advanced at EGLE-GW-2 for vertical delineation. The deep boring will be drilled using hollow-stem auger methods and will be drilled to the top of bedrock or upon refusal. Vertical aquifer profiling samples will be collected for PFAS analysis from water-bearing and permeable formation(s) at an interval of 10 feet bgs. Vertical aquifer profiling (VAP) will be completed in accordance with SOP A25, Vertical Aquifer Profiling, included in the QAPP. R&W/GZA will determine the depth(s) of wells to be installed based upon VAP samples, encountered geology, and profiling data. The monitoring wells will be developed in accordance with SOP A13, Well Development in the QAPP. **Figure 5** presents proposed boring and monitoring well locations to be installed.

A survey of the location and elevation of ground surface at each of the monitoring well locations will be completed by a surveyor licensed by the State of Michigan. R&W/GZA will collect groundwater samples following the "Low Stress (low flow) Purging and Sampling Procedure" outlined in the QAPP. Soil cuttings generated during well installation will be spread on-Site. Purge water will be discharged to the ground surface per guidelines in EGLE *Operational Memorandum GEN-10* dated May 14, 1999.

Following installation of the new monitoring locations, R&W/GZA will complete a full year of quarterly groundwater elevation measurements and sampling of the well network. The first quarterly sampling event will be following installation of GZA-MW-07 and additional wells as described above. Following the year of sampling, R&W/GZA will evaluate the data in consultation with EGLE and determine the appropriate next steps, if any.

Very truly yours,

GZA GEOENVIRONMENTAL, INC.

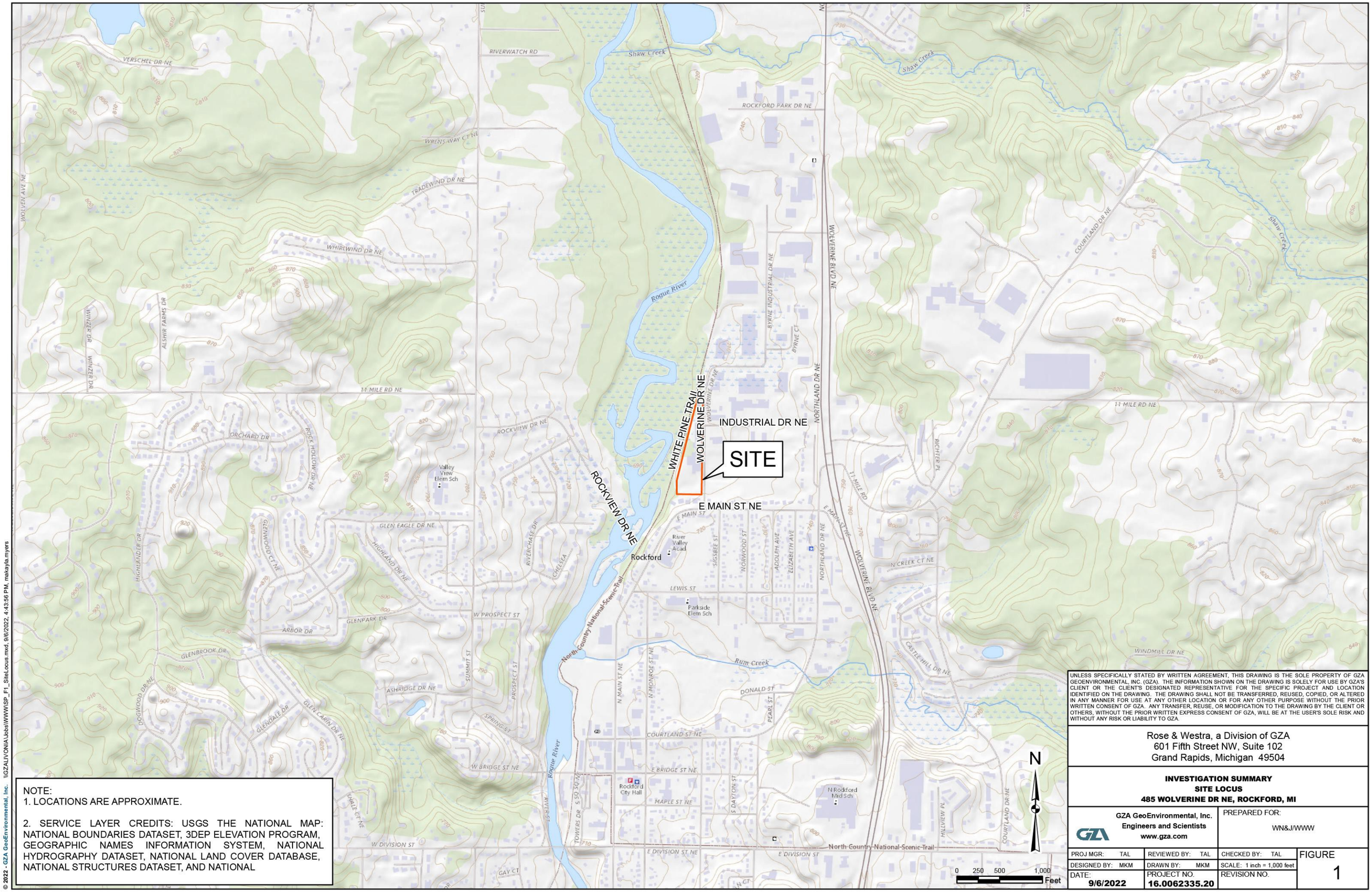
Trevor Litwiller, CHMM
Project Manager

Loretta J. Powers, CHMM
Associate Principal

Mark A. Westra
Principal

Enclosures: Figures 1-5
Table 2
Appendix A – EGLE Response Activity Plan Review Request
Appendix B – Boring Logs

FIGURES



NOTE:
1. LOCATIONS ARE APPROXIMATE.

2. SERVICE LAYER CREDITS: USGS THE NATIONAL MAP: NATIONAL BOUNDARIES DATASET, 3DEP ELEVATION PROGRAM, GEOGRAPHIC NAMES INFORMATION SYSTEM, NATIONAL HYDROGRAPHY DATASET, NATIONAL LAND COVER DATABASE, NATIONAL STRUCTURES DATASET, AND NATIONAL

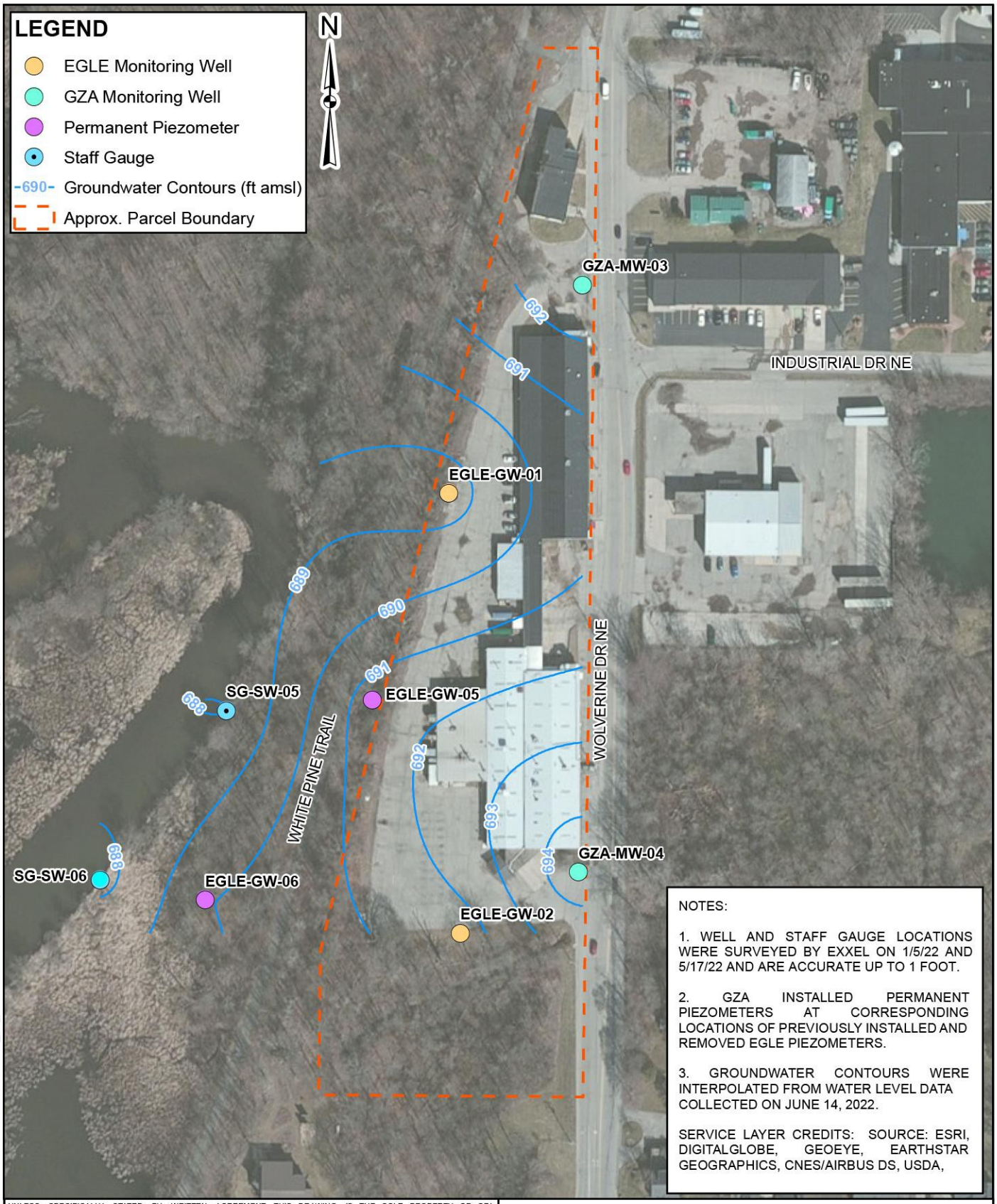
Rose & Westra, a Division of GZA
601 Fifth Street NW, Suite 102
Grand Rapids, Michigan 49504

INVESTIGATION SUMMARY
SITE LOCUS
485 WOLVERINE DR NE, ROCKFORD, MI

GZA GeoEnvironmental, Inc.
Engineers and Scientists
www.gza.com

PREPARED FOR: WN&J/WWW

PROJ MGR: TAL	REVIEWED BY: TAL	CHECKED BY: TAL	FIGURE 1
DESIGNED BY: MKM	DRAWN BY: MKM	SCALE: 1 inch = 1,000 feet	
DATE: **9/6/2022**	PROJECT NO. **16.0062335.20**	REVISION NO.	



NOTES:

1. WELL AND STAFF GAUGE LOCATIONS WERE SURVEYED BY EXXEL ON 1/5/22 AND 5/17/22 AND ARE ACCURATE UP TO 1 FOOT.

2. GZA INSTALLED PERMANENT PIEZOMETERS AT CORRESPONDING LOCATIONS OF PREVIOUSLY INSTALLED AND REMOVED EGLE PIEZOMETERS.

3. GROUNDWATER CONTOURS WERE INTERPOLATED FROM WATER LEVEL DATA COLLECTED ON JUNE 14, 2022.

SERVICE LAYER CREDITS: SOURCE: ESRI, DIGITALGLOBE, GEOEYE, EARTHSTAR GEOGRAPHICS, CNES/AIRBUS DS, USDA,

0 75 150 300
SCALE IN FEET

8.5X11

485 WOLVERINE DR NE
ROCKFORD, MI

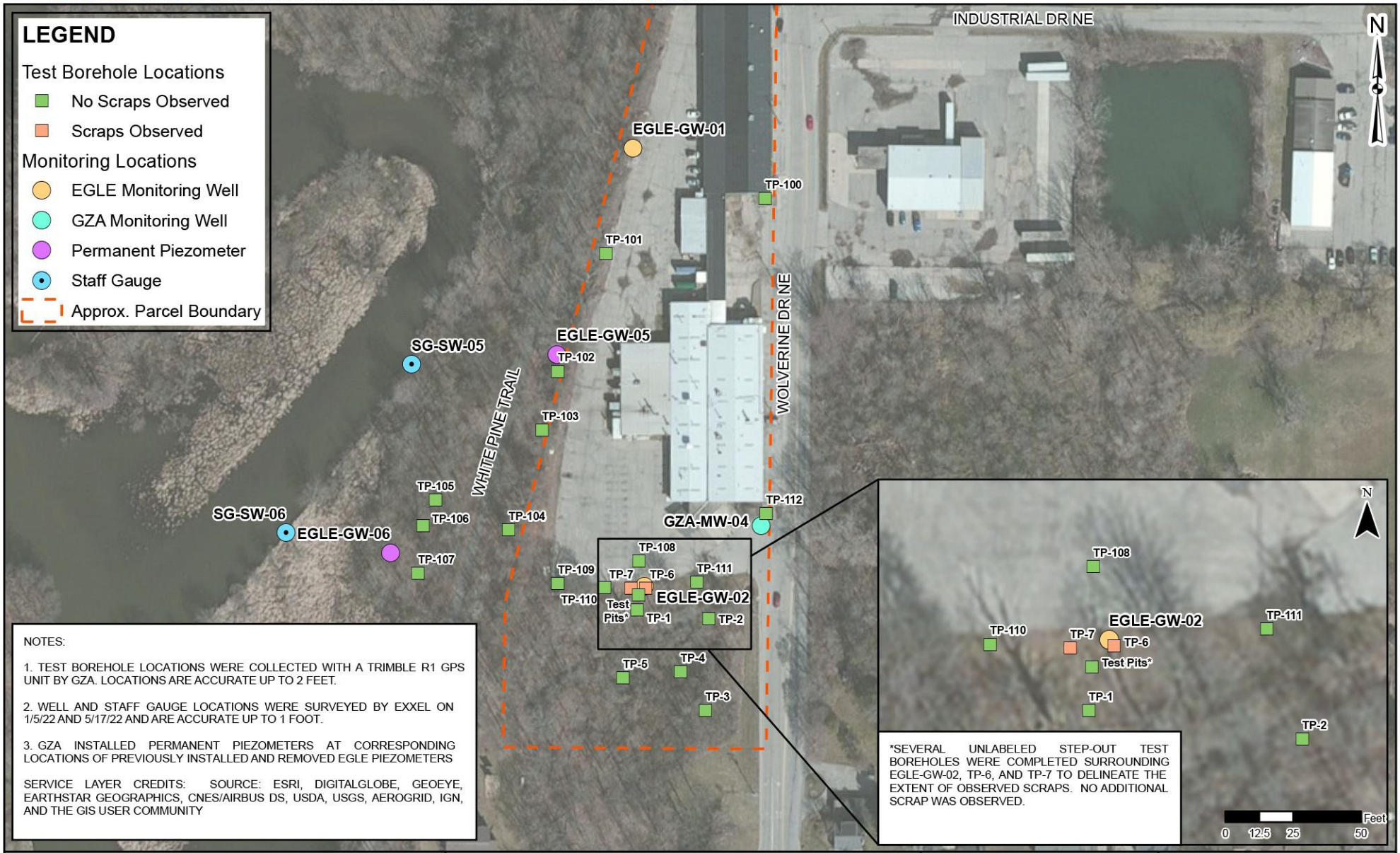
PREPARED BY:
Rose & Westra, a Division of GZA
Engineers and Scientists
www.gza.com

PREPARED FOR:
WN&J/WWW

INVESTIGATION SUMMARY
MONITORING WELL & PIEZOMETER LOCATIONS

PROJ MGR:	TAL	REVIEWED BY:	MAW	CHECKED BY:	TAL
DESIGNED BY:	MKM	DRAWN BY:	MKM	SCALE:	1 in = 150 ft
DATE:	09/16/2022	PROJECT NO:	16.0062335.20	REVISION NO:	REVISION NO

FIG 2
SHEET NO:



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SCALE IN FEET 8.5x11

485 WOLVERINE DR NE
ROCKFORD, MI

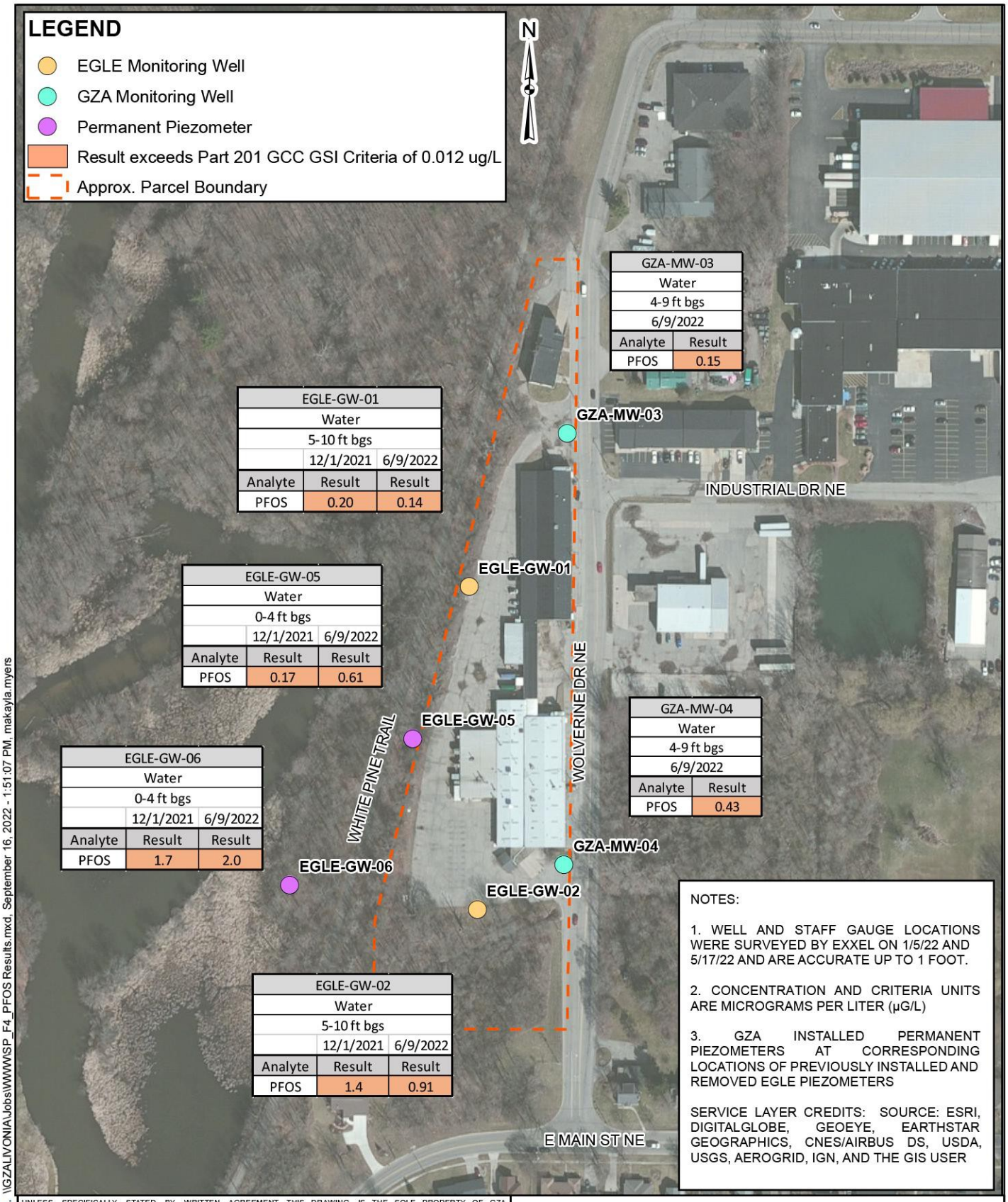
INVESTIGATION SUMMARY
TEST BOREHOLES

PREPARED BY:
Rose & Westra, a Division of GZA Engineers and Scientists
www.gza.com

PREPARED FOR:
WN&J/WWW

PROJ MGR:	TAL	REVIEWED BY:	MAW	CHECKED BY:	TAL
DESIGNED BY:	MKM	DRAWN BY:	MKM	SCALE:	1 in = 150 ft
DATE:	09/16/2022	PROJECT NO:	16.0062335.20	REVISION NO:	

FIG 3



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SCALE IN FEET

485 WOLVERINE DR NE
ROCKFORD, MI

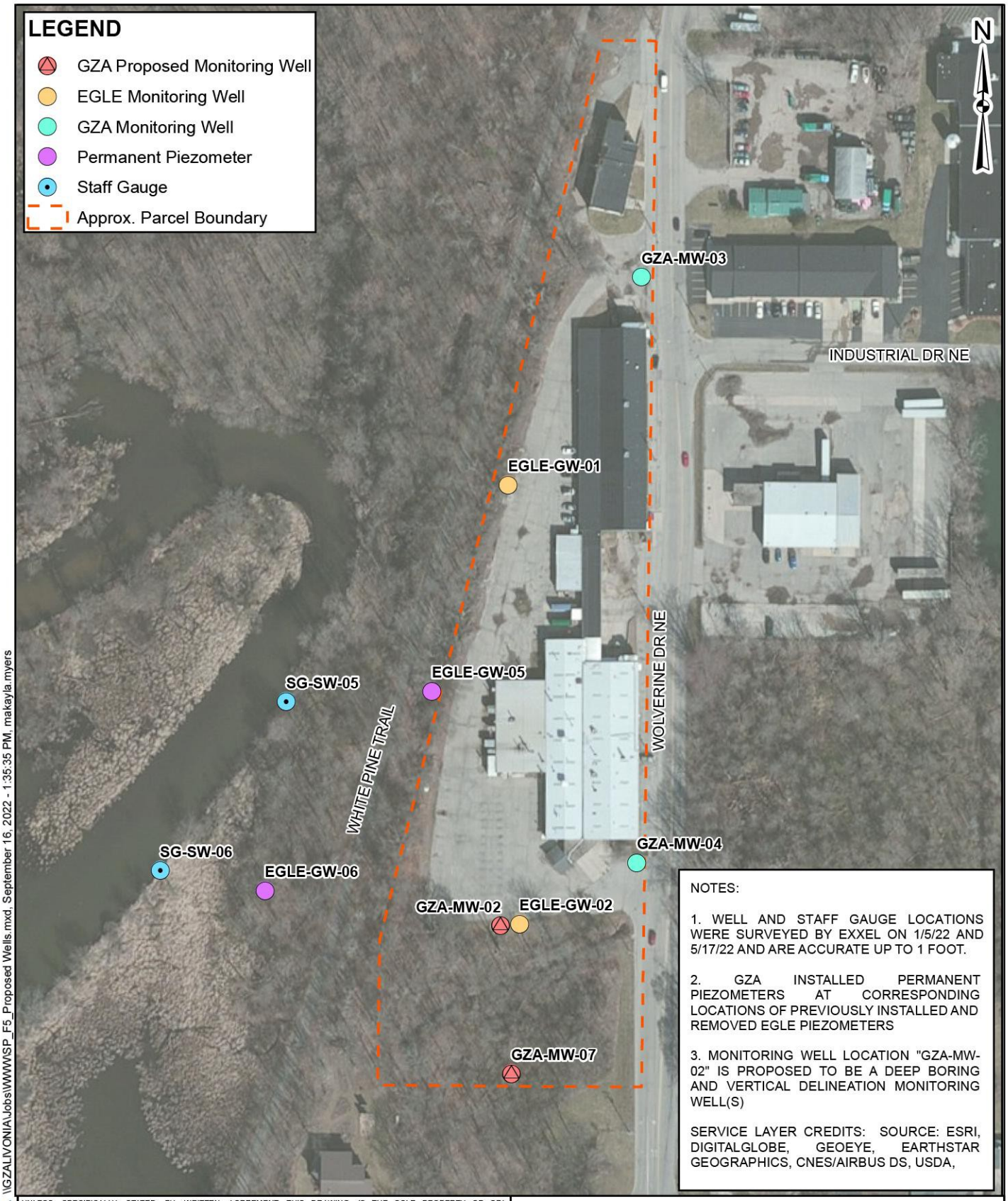
INVESTIGATION SUMMARY
WELL LOCATIONS WITH
PFOS SAMPLING RESULTS

PREPARED BY:
Rose & Westra, a Division of GZA
Engineers and Scientists
www.gza.com

PREPARED FOR:
WN&J/WWW

PROJ MGR:	TAL	REVIEWED BY:	MAW	CHECKED BY:	TAL
DESIGNED BY:	MKM	DRAWN BY:	MKM	SCALE:	1 in = 204 ft
DATE:	09/16/2022	PROJECT NO:	16.0062335.20	REVISION NO:	REVISION NO

FIG 4
SHEET NO:



NOTES:

1. WELL AND STAFF GAUGE LOCATIONS WERE SURVEYED BY EXXEL ON 1/5/22 AND 5/17/22 AND ARE ACCURATE UP TO 1 FOOT.

2. GZA INSTALLED PERMANENT PIEZOMETERS AT CORRESPONDING LOCATIONS OF PREVIOUSLY INSTALLED AND REMOVED EGLE PIEZOMETERS

3. MONITORING WELL LOCATION "GZA-MW-02" IS PROPOSED TO BE A DEEP BORING AND VERTICAL DELINEATION MONITORING WELL(S)

SERVICE LAYER CREDITS: SOURCE: ESRI, DIGITALGLOBE, GEOEYE, EARTHSTAR GEOGRAPHICS, CNES/AIRBUS DS, USDA,

0 75 150 300

SCALE IN FEET

8.5X11

485 WOLVERINE DR NE
ROCKFORD, MI

INVESTIGATION SUMMARY
PROPOSED MONITORING WELL LOCATIONS

PREPARED BY:
Rose & Westra, a Division of GZA
Engineers and Scientists
www.gza.com

PREPARED FOR:
WN&J/WWW

PROJ MGR:	TAL	REVIEWED BY:	MAW	CHECKED BY:	TAL
DESIGNED BY:	MKM	DRAWN BY:	MKM	SCALE:	1 in = 150 ft
DATE:	09/16/2022	PROJECT NO:	16.0062335.20	REVISION NO:	REVISION NO

FIG 5
SHEET NO:

TABLE

TABLE 2
SUMMARY OF GROUNDWATER SAMPLE ANALYSIS - PFAS
485 Wolverine Dr NE
Rockford, MI

See After Table 2 For Notes

Location	Part 201 Generic Residential Groundwater Cleanup Criteria - Drinking Water[2]	Part 201 Generic Groundwater Cleanup Criteria - Groundwater Surface Water Interface[2]	EGLE-GW-01	EGLE-GW-01	EGLE-GW-02	EGLE-GW-02	EGLE-GW-04	EGLE-GW-05	EGLE-GW-05
Sample Name			EGLE-GW-01	EGLE-GW-01	EGLE-GW-02	EGLE-GW-02	EGLE-GW-04	EGLE-GW-05	EGLE-GW-05
Laboratory Sample ID			WL03030-001	XF13004-004	WL03030-002	XF13004-002	WL03030-005	WL03030-003	XF13004-005
Date			12/01/2021	06/09/2022	12/01/2021	06/09/2022	12/02/2021	12/01/2021	06/09/2022
Parameter (µg/L)									
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11CL-PF3OUdS)	NCL	NCL	< 0.0072	< 0.0073	< 0.0074	< 0.0074	< 0.0095	< 0.0074	< 0.0072
1H,1H,2H,2H-perfluorohexane sulfonate (4:2 FTS)	NCL	NCL	< 0.0072	< 0.0073	< 0.0074	< 0.0074	< 0.0095	< 0.0074	< 0.0072
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	NCL	NCL	< 0.0072	< 0.0073	< 0.0074	< 0.0074	< 0.0095	< 0.0074	< 0.0072
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	NCL	NCL	< 0.0072	< 0.0073	< 0.0074	< 0.0074	< 0.0095	< 0.0074	< 0.0072
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NCL	NCL	< 0.0072	< 0.0073	< 0.0074	< 0.0074	< 0.0095	< 0.0074	< 0.0072
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	NCL	NCL	< 0.0072	< 0.0073	< 0.0074	< 0.0074	< 0.0095	< 0.0074	< 0.0072
Tetrafluoro-2-(heptafluoropropoxy)propanoic acid (GenX)	0.37 (A)	NA	< 0.0072	< 0.0073	< 0.0074	< 0.0074	< 0.0095	< 0.0074	< 0.0072
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	NCL	NCL	< 0.0072	< 0.0073	0.016	0.016	< 0.0095	0.0075	< 0.0072
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	NCL	NCL	< 0.0072	< 0.0073	< 0.0074	< 0.0074	< 0.0095	< 0.0074	< 0.0072
Perfluorononane sulfonic acid (PFNS)	NCL	NCL	< 0.0036	< 0.0036	< 0.0037	< 0.0037	< 0.0047	< 0.0037	< 0.0036
Perfluorooctane sulfonamide (FOSA)	NCL	NCL	< 0.0036	< 0.0036	0.01	0.0083	< 0.0047	0.0045	< 0.0036
Perfluoropentane sulfonic acid (PFPeS)	NCL	NCL	0.0049	0.0041	0.005	0.0062	0.0086	< 0.0037	0.0037
Perfluorobutane sulfonic acid (PFBS)	0.42 (A)	NA	0.0073	0.0078	0.0097	0.013	0.069	0.012	0.026
Perfluorobutanoic acid (PFBA)	NCL	NCL	0.0061	< 0.0036	0.0038	0.0039	0.019	0.004	0.012
Perfluorodecane sulfonic acid (PFDS)	NCL	NCL	< 0.0036	< 0.0036	< 0.0037	< 0.0037	< 0.0047	< 0.0037	< 0.0036
Perfluorodecanoic acid (PFDA)	NCL	NCL	< 0.0036	< 0.0036	< 0.0037	< 0.0037	< 0.0047	< 0.0037	< 0.0036
Perfluorododecanoic acid (PFDoDA)	NCL	NCL	< 0.0036	< 0.0036	< 0.0037	< 0.0037	< 0.0047	< 0.0037	< 0.0036
Perfluoroheptane sulfonic acid (PFHpS)	NCL	NCL	0.025	0.017	0.021	0.018	< 0.0047	0.0044	0.016
Perfluoroheptanoic acid (PFHpA)	NCL	NCL	0.011	0.0059	0.0054	0.0058	0.0049	0.0057	0.014
Perfluorohexane sulfonic acid (PFHxS)	0.051 (A)	NA	0.04	0.03	0.023	0.025	0.01	0.019	0.02
Perfluorohexanoic acid (PFHxA)	400 (A)	NA	0.0087	< 0.0036	0.0043	0.0051	0.012	< 0.0037	0.017
Perfluorononanoic acid (PFNA)	0.006 (A)	NA	< 0.0036	< 0.0036	0.0052	0.004	< 0.0047	< 0.0037	0.0047
Perfluorooctanoic acid (PFOA)	0.008 (A)	12	***0.15***	***0.1***	***0.07***	***0.081***	***0.046***	***0.053***	***0.12***
Perfluorooctane sulfonic acid (PFOS)	0.016 (A)	0.012	***0.2***	***0.14***	***1.4***	***0.91***	***0.039***	***0.17***	***0.61***
PFOA + PFOS (Calculated)	NCL	NCL	0.35	0.24	1.5	0.99	0.085	0.22	0.73
Perfluoropentanoic acid (PFPeA)	NCL	NCL	0.007	< 0.0036	< 0.0037	< 0.0037	0.0064	< 0.0037	0.01
Perfluorotetradecanoic acid (PFTeDA)	NCL	NCL	< 0.0036	< 0.0036	< 0.0037	< 0.0037	< 0.0047	< 0.0037	< 0.0036
Perfluorotridecanoic acid (PFTrDA)	NCL	NCL	< 0.0036	< 0.0036	< 0.0037	< 0.0037	< 0.0047	< 0.0037	< 0.0036
Perfluoroundecanoic acid (PFUnDA)	NCL	NCL	< 0.0036	< 0.0036	< 0.0037	< 0.0037	< 0.0047	< 0.0037	< 0.0036
Total PFAS (Calculated)	NCL	NCL	0.46	0.30	1.6	1.1	0.21	0.28	0.85

TABLE 2
SUMMARY OF GROUNDWATER SAMPLE ANALYSIS - PFAS
485 Wolverine Dr NE
Rockford, MI

Location	Part 201 Generic Residential Groundwater Cleanup Criteria - Drinking Water[2]	Part 201 Generic Groundwater Cleanup Criteria - Groundwater Surface Water Interface[2]	EGLE-GW-06	EGLE-GW-06	GZA-MW-03	GZA-MW-04
Sample Name			EGLE-GW-06	EGLE-GW-06	GZA-MW-03	GZA-MW-04
Laboratory Sample ID			WL03030-004	XF13004-006	XF13004-003	XF13004-001
Date			12/01/2021	06/09/2022	06/09/2022	06/09/2022
Parameter (µg/L)						
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11CL-PF3OUdS)	NCL	NCL	< 0.009	< 0.0071	< 0.0071	< 0.0072
1H,1H,2H,2H-perfluorohexane sulfonate (4:2 FTS)	NCL	NCL	< 0.009	< 0.0071	< 0.0071	< 0.0072
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	NCL	NCL	< 0.009	< 0.0071	< 0.0071	< 0.0072
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	NCL	NCL	< 0.009	< 0.0071	< 0.0071	< 0.0072
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NCL	NCL	< 0.009	< 0.0071	< 0.0071	< 0.0072
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	NCL	NCL	< 0.009	< 0.0071	< 0.0071	< 0.0072
Tetrafluoro-2-(heptafluoropropoxy)propanoic acid (GenX)	0.37 (A)	NA	< 0.009	< 0.0071	< 0.0071	< 0.0072
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	NCL	NCL	< 0.009	< 0.0071	< 0.0071	0.019
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	NCL	NCL	< 0.009	< 0.0071	< 0.0071	< 0.0072
Perfluorononane sulfonic acid (PFNS)	NCL	NCL	< 0.0045	< 0.0035	< 0.0036	< 0.0036
Perfluorooctane sulfonamide (FOSA)	NCL	NCL	< 0.0045	< 0.0035	< 0.0036	< 0.0036
Perfluoropentane sulfonic acid (PFPeS)	NCL	NCL	0.0063	0.0092	< 0.0036	0.0064
Perfluorobutane sulfonic acid (PFBS)	0.42 (A)	NA	0.026	0.024	0.01	0.018
Perfluorobutanoic acid (PFBA)	NCL	NCL	0.018	0.0087	0.0058	0.0068
Perfluorodecane sulfonic acid (PFDS)	NCL	NCL	< 0.0045	< 0.0035	< 0.0036	< 0.0036
Perfluorodecanoic acid (PFDA)	NCL	NCL	< 0.0045	< 0.0035	< 0.0036	< 0.0036
Perfluorododecanoic acid (PFDoDA)	NCL	NCL	< 0.0045	< 0.0035	< 0.0036	< 0.0036
Perfluoroheptane sulfonic acid (PFHpS)	NCL	NCL	0.028	0.027	< 0.0036	0.0083
Perfluoroheptanoic acid (PFHpA)	NCL	NCL	0.015	0.014	0.0039	0.0075
Perfluorohexane sulfonic acid (PFHxS)	0.051 (A)	NA	0.036	0.037	0.011	0.027
Perfluorohexanoic acid (PFHxA)	400 (A)	NA	0.023	0.016	0.0081	0.0088
Perfluorononanoic acid (PFNA)	0.006 (A)	NA	***0.012***	***0.0094***	< 0.0036	< 0.0036
Perfluorooctanoic acid (PFOA)	0.008 (A)	12	***0.15***	***0.14***	***0.044***	***0.1***
Perfluorooctane sulfonic acid (PFOS)	0.016 (A)	0.012	***1.7***	***2***	***0.15***	***0.43***
PFOA + PFOS (Calculated)	NCL	NCL	1.9	2.1	0.19	0.53
Perfluoropentanoic acid (PFPeA)	NCL	NCL	0.014	0.0071	0.0055	0.005
Perfluorotetradecanoic acid (PFTeDA)	NCL	NCL	< 0.0045	< 0.0035	< 0.0036	< 0.0036
Perfluorotridecanoic acid (PFTrDA)	NCL	NCL	< 0.0045	< 0.0035	< 0.0036	< 0.0036
Perfluoroundecanoic acid (PFUnDA)	NCL	NCL	< 0.0045	< 0.0035	< 0.0036	< 0.0036
Total PFAS (Calculated)	NCL	NCL	2.0	2.3	0.24	0.64

TABLE 2 NOTES
485 Wolverine Dr NE
Rockford, MI

NOTES:

1. Concentration and criteria units are micrograms per Liter (µg/L) or parts per billion (ppb). Calculated concentrations are rounded to two significant digits.
2. Michigan Part 201 Groundwater Cleanup Criteria are based on "Table 1, Groundwater: Residential and Nonresidential Part 201 Generic Cleanup Criteria and Screening Levels/Part 213 Tier I Risk Based Screening Levels," Michigan Administrative Code, Cleanup Criteria Requirements for Response Activity, Rules 299.44 and 299.49, effective December 30, 2013; last updated December 21, 2020.
   Abbreviations Include:
   "NCL" indicates no criterion listed in EGLE Table 1.
   "NA" indicates not available.
   Footnotes Include:
   (A) - The criterion is the State of Michigan drinking water standard.
3. Bold, italic number with thick line border or italic parameter name indicates that parameter was detected above the Michigan Part 201 Groundwater Cleanup Criteria listed.
4. Abbreviations include:
   "< LOQ" indicates the parameter was analyzed for but not detected above the limit of quantitation (LOQ).

APPENDIX A – RESPONSE ACTIVITY PLAN REVIEW REQUEST (HARDCOPY SUBMITTAL)

APPENDIX B – BORING LOGS

GZA
GeoEnvironmental, Inc.
Engineers and Scientists

Wolverine World Wide
485 Wolverine Dr. NE
Rockford, Michigan

Boring No.: EGLE-GW-05
Page: 1 of 1
File No.: 16.0062335.20
Check: T. Litwiller

Contractor: GZA GeoEnvironmental, Inc.
Foreman: J. Huntoon
Logged by: C. Melby
Date Start/Finish: 5-4-22 / 5-4-22
Boring Location: 596,237.0436 N; 12,805,681.5422 E
GS Elev.: 696.97' **Datum:** NAD83/NAVD88

	Auger/ Casing	Sampler
Type:	Hand Auger	NA
O.D. / I.D.:	NA	NA
Hammer Wt.:	NA	NA
Hammer Fall:	NA	NA
TOC Elev.:	699.84'	NA

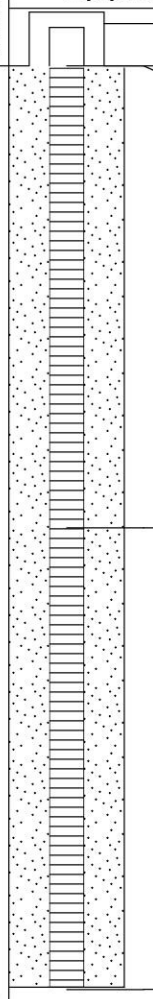
GROUNDWATER READINGS

Date	Time	Depth	Casing	Stab
6/9/2022		4.97	PVC	36 days

Surveyed By: Exxel **Survey Date:** 5/17/2022

Depth	Sample Information: No.	Pen./ Rec. (in.)	Depth (Ft.)	Blows (/6")	Test Data	Sample Description & Classification	Stratum Desc.	Remarks
4						Bottom of Borehole at 4.0 Feet		2

Equipment Installed



REMARKS

1. Groundwater was encountered at approximately <0.5 feet below ground surface.
2. Monitoring well was installed in borehole upon completion. Well screen set from approximately 0.0 to 4.0 feet below ground surface.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

GZA
GeoEnvironmental, Inc.
Engineers and Scientists

Wolverine World Wide
485 Wolverine Dr. NE
Rockford, Michigan

Boring No.: EGLE-GW-06
Page: 1 of 1
File No.: 16.0062335.20
Check: T. Litwiller

Contractor: GZA GeoEnvironmental, Inc.
Foreman: J. Huntoon
Logged by: C. Melby
Date Start/Finish: 5-4-22 / 5-4-22
Boring Location: 596,034.0907 N; 12,805,512.9593 E
GS Elev.: 692.02' **Datum:** NAD83/NAVD88

	Auger/ Casing	Sampler
Type:	Hand Auger	NA
O.D. / I.D.:	NA	NA
Hammer Wt.:	NA	NA
Hammer Fall:	NA	NA
TOC Elev.:	694.74'	NA

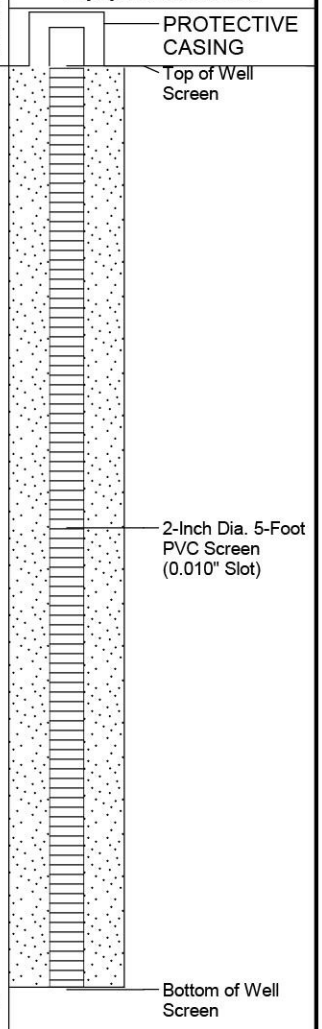
GROUNDWATER READINGS

Date	Time	Depth	Casing	Stab
6/9/2022		3.84	PVC	36 days

Surveyed By: Exxel **Survey Date:** 5/17/2022

Depth	Sample Information: No.	Pen./ Rec. (in.)	Depth (Ft.)	Blows (/6")	Test Data	Sample Description & Classification	Stratum Desc.	Remarks
4						Bottom of Borehole at 4.0 Feet		2

Equipment Installed



REMARKS

1. Groundwater was encountered at approximately <0.5 feet below ground surface.
2. Monitoring well was installed in borehole upon completion. Well screen set from approximately 0.0 to 4.0 feet below ground surface.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

GZA
GeoEnvironmental, Inc.
Engineers and Scientists

Wolverine World Wide, Inc.
485 Wolverine Dr. NE
Rockford, Michigan

Boring No.: GZA-MW-03
Page: 1 of 1
File No.: 16.0062335.20
Check: T. Litwiller

Contractor: Stearns Drilling Company
Foreman: J. Huntoon
Logged by: C. Melby
Date Start/Finish: 5-4-22 / 5-4-22
Boring Location: 596,692.1302 N; 12,805,915.5874 E
GS Elev.: 708.41' **Datum:** NAD83/NAVD88

	Auger/ Casing	Sampler
Type:	Hollow Stem Auger	Split Spoon
O.D. / I.D.:	8.0" / 4.25"	2.0" / 1 3/8"
Hammer Wt.:	140lbs	NA
Hammer Fall:	30.0"	NA
TOC Elev.:	697.08'	NA

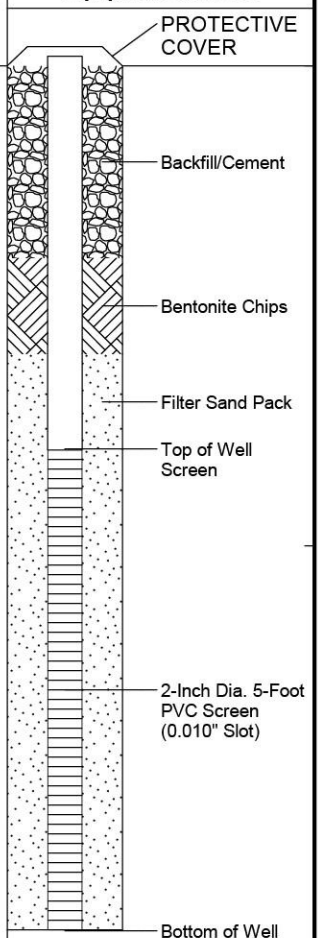
GROUNDWATER READINGS

Date	Time	Depth	Casing	Stab
6/9/2022		4.11'	PVC	36 days

Surveyed By: Exxel **Survey Date:** 5/17/2022

Depth	Sample Information: No.	Pen./ Rec. (in.)	Depth (Ft.)	Blows (/6")	Test Data	Sample Description & Classification	Stratum Desc.	Remarks
0	1	60/60	0-5			Brown, fine to medium SAND, little Gravel, trace Silt, dry.	SAND	1
5	2	48/48	5-9			Brown, fine to medium SAND, little Gravel, trace Silt, wet.		2
9						Bottom of Borehole at 9.0 Feet	9'	3

Equipment Installed



REMARKS

1. Soil descriptions based on auger cuttings.
2. Groundwater was encountered at approximately 4.5 feet below ground surface.
3. Monitoring well was installed in borehole upon completion. Well screen set from approximately 4.0 to 9.0 feet below ground surface.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

GZA
GeoEnvironmental, Inc.
Engineers and Scientists

Wolverine World Wide, Inc.
485 Wolverine Dr. NE
Rockford, Michigan

Boring No.: GZA-MW-04
Page: 1 of 1
File No.: 16.0062335.20
Check: T. Litwiller

Contractor: Stearns Drilling Company
Foreman: J. Huntoon
Logged by: C. Melby
Date Start/Finish: 5-4-22 / 5-4-22
Boring Location: 596,051.3358 N; 12,805,897.5178 E
GS Elev.: 703.98' **Datum:** NAD83/NAVD88

	Auger/ Casing	Sampler
Type:	Hollow Stem Auger	Split Spoon
O.D. / I.D.:	8.0" / 4.25"	2.0" / 1 3/8"
Hammer Wt.:	140lbs	NA
Hammer Fall:	30.0"	NA
TOC Elev.:	697.30'	NA

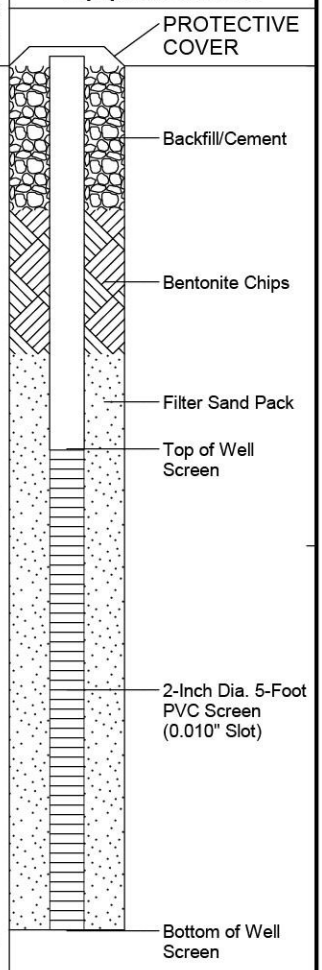
GROUNDWATER READINGS

Date	Time	Depth	Casing	Stab
6/9/2022		2.64'	PVC	36 days

Surveyed By: Exxel **Survey Date:** 5/17/2022

Depth	Sample Information: No.	Pen./ Rec. (in.)	Depth (Ft.)	Blows (/6")	Test Data	Sample Description & Classification	Stratum Desc.	Remarks
0	1	60/60	0-5			ASPHALT. Changing at 0.4 feet to: FILL: Brown, fine to coarse SAND, some Gravel, dry. Changing at 4.5 feet to: Brown, GRAVEL, wet.	ASPHALT 0.4' SAND	1
5	2	48/48	5-9			Brown, GRAVEL, wet. Changing at 8.0 feet to: Gray, SILT and Sand, wet.	4.5' GRAVEL	2
9						Bottom of Borehole at 9.0 Feet	8' SILT 9'	3

Equipment Installed



REMARKS

1. Soil descriptions based on auger cuttings.
2. Groundwater was encountered at approximately 4.5 feet below ground surface.
3. Monitoring well was installed in borehole upon completion. Well screen set from approximately 4.0 to 9.0 feet below ground surface.

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