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New York State Department of Environmental Conservation
Division of Environmental Remediation
700 Delaware Avenue
Buffalo, NY 14209

DATE
8 May 2024

SUBJECT
2024 Groundwater Extraction System Shut Down Test Work Plan

REFERENCE
0709858

Dear Ms. Kuczka:

At the request of the New York State Department of Environmental Conservation (NYSDEC), ERM Consulting and Engineering, Inc. (ERM) has prepared this Groundwater Extraction System Shut Down Test Work Plan on behalf of Leica Microsystems (Leica, Inc.) for their former facility located at located at 203 Eggert Road in the Town of Cheektowaga, Erie County, New York (the Site). The Site is identified as an Inactive Hazardous Waste Disposal Site (Site Number 915156). The objective of this Work Plan is to evaluate the effect of the current groundwater extraction system (GWES) on the shallow bedrock and overburden groundwater flow system. This objective will be achieved by turning off the GWES at well MW-11A and monitoring the effects on groundwater elevation and quality in the vicinity and downgradient of this pumping well for a three-month period.

## 1. BEDROCK GROUNDWATER EXTRACTION SYSTEM OVERIEW

A bedrock GWES was installed at MW-11A in the southeast corner of the Site in December 1999 to limit contaminant migration (see Figure 1). MW-11A was originally fitted with a pneumatic pump that was replaced in 2016 with an electric pump equipped with a variable frequency drive and electronic transducer to automatically adjust and maintain constant drawdown (EnergySolutions 2016).

As specified in the Site Management Plan (ERM 2020), routine monitoring and maintenance is performed to verify that the GWES is operating as designed. Visual inspections of the control system, effluent discharge point, piping, and valves are completed during quarterly inspections.

## 2. PURPOSE AND OBJECTIVES

A remediation system optimization study (ERM 2023) demonstrated that the GWES is not effective in maintaining hydraulic control of the low-level volatile organic compound (VOC) concentrations in groundwater in the southeastern corner of the

Site. VOC concentrations in bedrock groundwater are generally stable[1], which indicates that the majority of remaining VOC mass is diffused into the bedrock matrix where it is effectively immobile. Through the process of back diffusion, VOC concentrations in the rock matrix maintain equilibrium with mobile groundwater present in bedrock fractures. The GWES is unable to treat or capture the remaining VOC mass within the bedrock matrix because it is effectively immobile and inaccessible to active treatment (ERM 2023).

# 3. SCOPE OF WORK

ERM proposes to turn off the GWES at MW-11A and monitor the effects on groundwater elevation and quality in the vicinity and downgradient of MW-11A for a three-month period. Generated data and recommendations will be provided to the NYSDEC in a letter report that will be submitted within six weeks following completion of the evaluation. The scope of the proposed GWES shut down evaluation is documented below.

## 3.1 TRANSDUCER STUDY

ERM will deploy pressure transducers in 13 wells (see Table 1 for the list of wells and Figure 1 for their locations) to record changes in water levels within MW-11A and monitoring wells in close proximity and downgradient of MW-11A. Prior to transducer deployment, water levels will be measured in each of the selected wells. Transducers will be programmed and deployed to record baseline conditions for two weeks prior to shutting down the GWES. A second manual gauging event will be completed immediately prior to shutting down the GWES. The transducers will continue to record water levels during the three-month shutdown period. At the end of the three-month period, a third manual gauging event will be completed, and the transducers will be removed from the wells.

ERM will obtain and report daily precipitation information collected from a nearby publicly available weather station (e.g., the Buffalo Niagara International Airport) during the shutdown period.

[1] A short-term spike in VOC concentrations was observed in two bedrock wells (MW-25A and MW-26A) in October 2021 and October 2022, respectively following drilling activities in the southeastern corner of the Site, which temporarily mobilized VOCs diffused into the low-permeability soil matrix.

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**Table 1**
**Transducer Deployment Locations**

| Onsite Wells | Offsite Wells |
|---|---|
| MW-5 | MW-13A |
| MW-5A | MW-14A |
| MW-6 | MW-22 |
| MW-6A | MW-22A |
| MW-7 | |
| MW-9 | MW-53 |
| MW-9A | |
| MW-11A (GWES) | |
| MW-21 | |
| MW-21A | |
| MW-50 | |

## 3.2 MONTHLY GROUNDWATER SAMPLING

ERM will conduct three monthly groundwater sampling events (see Table 2 for the list of wells and Figure 2 for their locations) beginning one month after turning off the GWES to evaluate groundwater quality at MW-11A and monitoring wells located near and downgradient of MW-11A. Groundwater samples will be collected using low flow/minimal drawdown purging and sampling techniques (USEPA 2010) and analyzed for volatile organic compounds by EPA Method 8260. Each well will be gauged prior to sampling and field geochemical parameters including dissolved oxygen, pH, oxidation-reduction potential, specific conductance, turbidity, and temperature will be measured and recorded during sampling activities. Groundwater samples will be placed in a pre-chilled cooler for transport under proper chain-of-custody procedures to the project laboratory for analysis. Sample collection and management will be in conformance with the Site-specific Quality Assurance Project Plan (QAPP) (ERM 2020) to meet data quality objectives (DQOs). Purged groundwater will be containerized, labeled, and placed in the on-Site storage area until characterized for off-Site disposal at a permitted facility.

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**Table 2**
**Groundwater Sampling Locations**

| Onsite Wells | Offsite Wells |
|---|---|
| MW-11A (GWES) | MW-48 |
| MW-49 | MW-52 |
| MW-50 | MW-53 |
| MW-7 | MW-14A |
| MW-21 | MW-25 |
| MW-21A | MW-25A |
| | MW-26 |
| | MW-26A |
| | MW-28 |
| | MW-28A |
| | MW-29 |
| | MW-29A |

## 3.3 LABORATORY ANALYSES

A New York State Department of Health approved environmental laboratory using methods consistent with the NYSDEC's Analytical Services Protocol (NYSDEC, 2010b) will analyze the groundwater samples. ERM will request reporting limits that are below applicable cleanup objectives, whenever feasible. Laboratory analytical reports will contain Analytical Services Protocol Category B deliverables and electronic data deliverables for data usability review as required by the NYSDEC. Analytical procedures and data evaluation will be in conformance with the Site-specific QAPP (ERM 2020) to meet DQOs.

## 3.4 REPORTING

A Draft GWES Shut Down Report will be prepared in a manner consistent with NYSDEC requirements contained in DER-10 Section 3.14, including a presentation of data collected, analysis of any changes in the groundwater flow system and groundwater quality as a result of turning off the GWES, conclusions, and recommendations.

# 4. REFERENCES

Energy*Solutions*. 2016. *Constant Rate Pumping Report*, Former Leica, Inc. Site.

ERM. 2020. *Site Management Plan*. 17 September 2020.

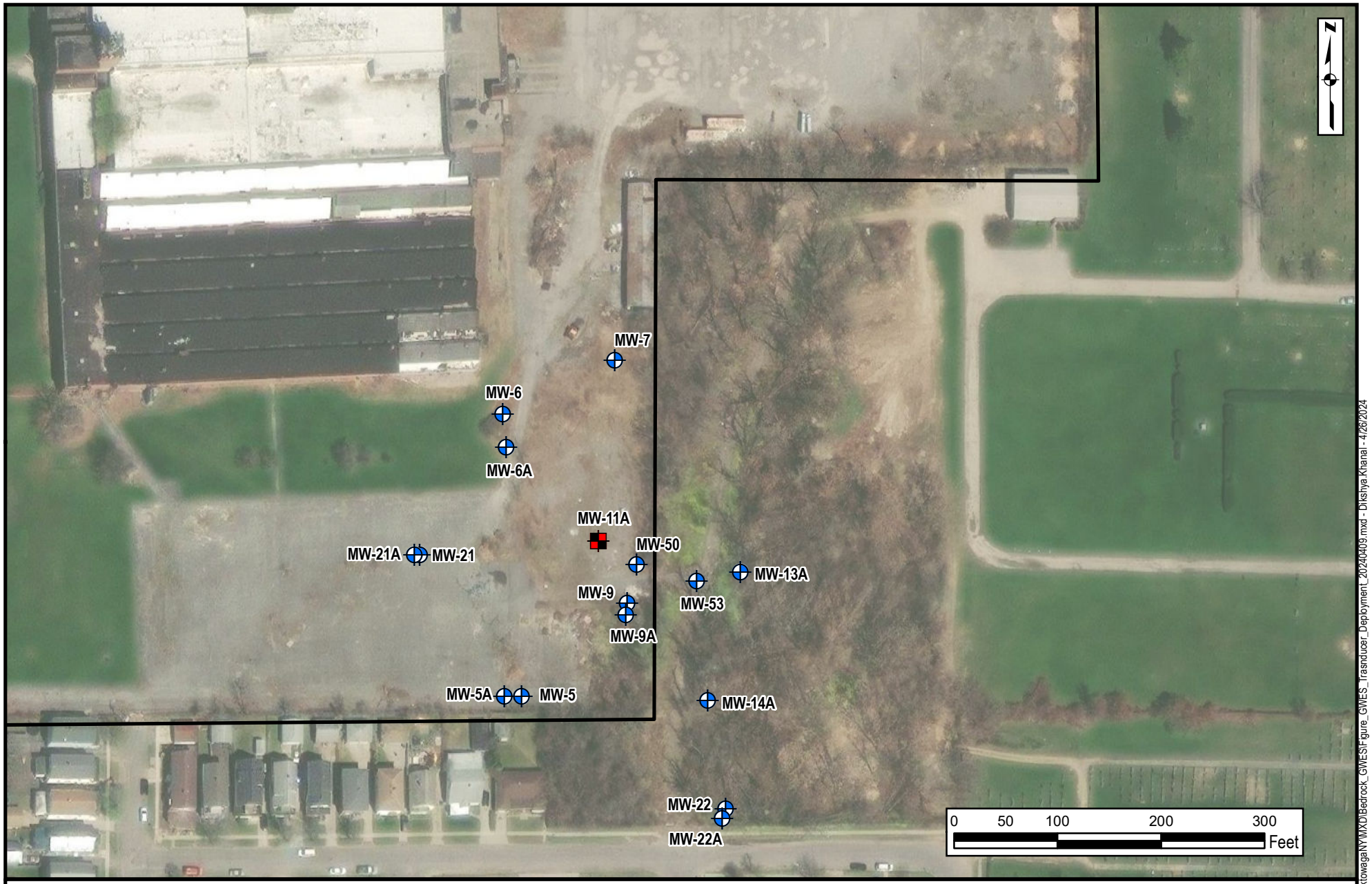
ERM. 2020. *Quality Assurance Project Plan.* 29 May 2020.

ERM. 2023. *Remediation System Optimization – Bedrock Groundwater Extraction System*. 24 March 2023.

NYSDEC, 2010a. DER-10: Technical Guidance for Site Investigation and Remediation. NYSDEC Division of Environmental Remediation, Albany, May 2010.

NYSDEC, 2010b. Analytical Services Protocol. NYSDEC Division of Environmental Remediation, Albany, May 2010.

United States Environmental Protection Agency (USEPA) 2010. Low Stress (low flow) Purging and Sampling Procedure for the Collection of Groundwater Samples from Monitoring Wells




**Legend**

- Extraction Well Location
- Proposed Transducer Location
- Site Property Boundary

**Notes:**
Aerial Imagery. ESRI World Imagery.
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**Figure 1:** Proposed Transducer Deployment Location
Former Leica, Inc. Facility 203 Eggert Road Cheektowaga, New York

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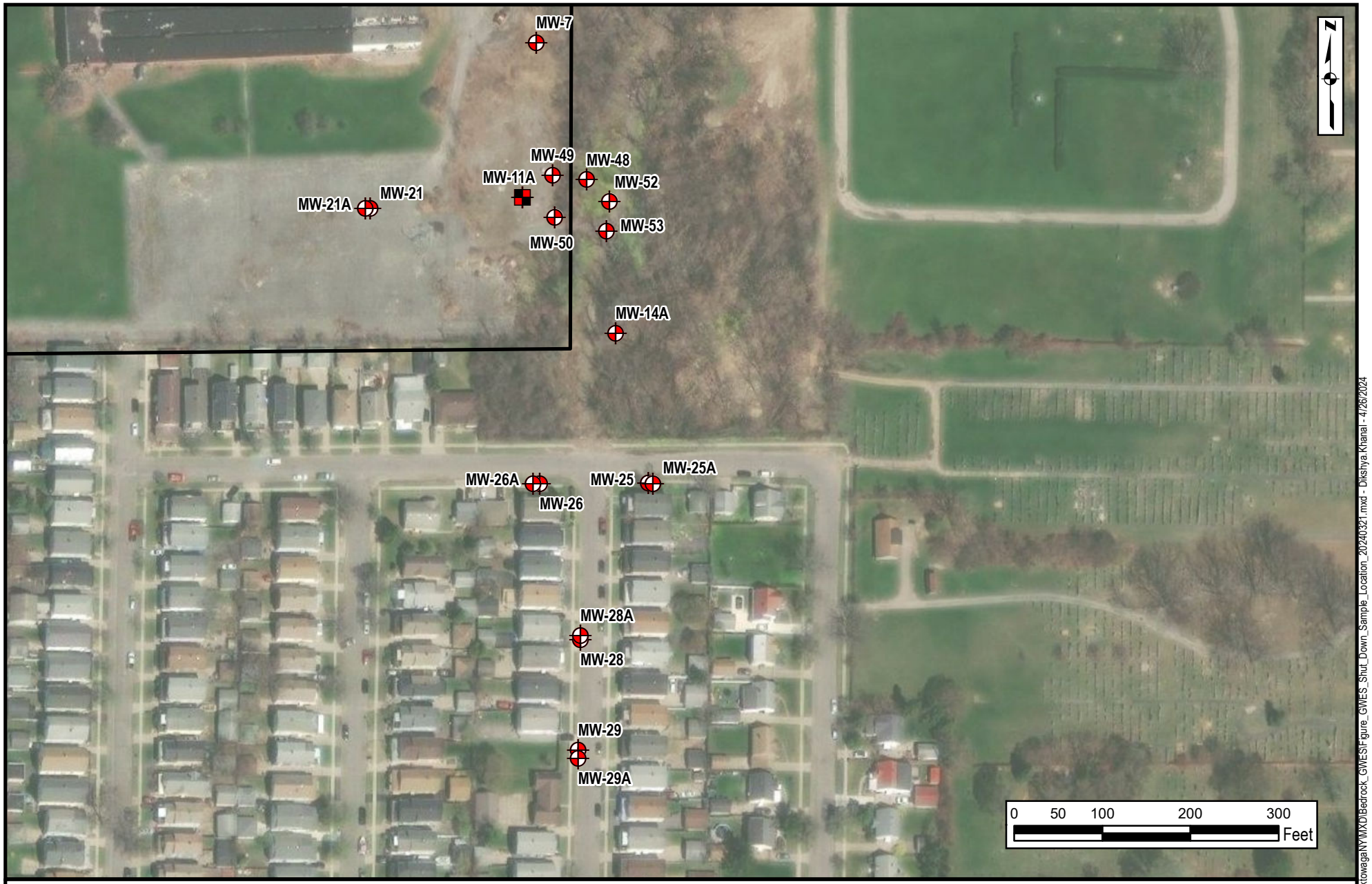


**Legend**

- Extraction Well Location
- Proposed Sample Location
- Site Property Boundary

**Notes:**
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**Figure 2:** Proposed Sampling Location
Former Leica, Inc. Facility
203 Eggert Road
Cheektowaga, New York

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