

# **OPERATIONS AND MONITORING PLAN FOR ANNUAL OFFSITE GROUNDWATER MONITORING**

**FORMER GRIFFIN TECHNOLOGY  
FACILITY  
FARMINGTON, NEW YORK**

Prepared for  
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## Section 1.0 INTRODUCTION

This Operations and Monitoring Plan was prepared to address annual groundwater sampling in offsite monitoring wells in the vicinity of the former Griffin Technology Inc. (GTI) facility (Site) located at 6132 Victor-Manchester Road in the Town of Farmington, Ontario County, New York (Figure 1-1). The former Griffin Technology Facility site is currently owned by S & W Redevelopment of North America, LLC (SWRNA). Since SWRNA acquired the property in 2007, they have implemented an in-situ chemical oxidation (ISCO) groundwater remediation strategy that included the injection of potassium permanganate into the groundwater, which breaks down and extinguishes chlorinated solvent contamination. SWRNA's groundwater remediation was successful in remediating the groundwater at and in the vicinity of the source and was completed in approximately six months. SWRNA received a Certificate of Completion under New York State's Brownfield Cleanup Program for the site in 2009. The New York State Department of Environmental Conservation (NYSDEC) is evaluating the effectiveness of the on-site remedy and on-site groundwater is being monitored on a quarterly basis. If the NYSDEC determines that the remedy is not effective, there are provisions in the on-site management plan for additional in-situ chemical oxidation injections.

Under the terms of the Order on Consent Index # B8-0315-90-01, Diebold, Inc. is obligated for off-site groundwater monitoring and off-site soil vapor monitoring. On behalf of Diebold, Inc., URS Corporation (URS) completed the off-site soil vapor monitoring fieldwork in August 2009 and submitted the final report in July 2010 (URS, 2010). Based upon New York State Department of Environmental Conservation requirements under the terms of the Order on Consent Index # B8-0315-90-01, Diebold, Inc. has agreed to conduct annual groundwater monitoring in nine (9) off-site monitoring wells.

### 1.1 SITE DESCRIPTION AND BACKGROUND

The Site is approximately 3.74 acres. A general Site location map is included as Figure 1. The manufacturing/office building (approximately 19,000 square feet) was constructed around 1970 and purchased by GTI from a pool manufacturer in 1975. An approximately 2,400-square foot warehouse building was situated north of the manufacturing building and previously used for storage and equipment painting was razed by S&W. The Site area is currently zoned commercial.

The surrounding areas are zoned general business. The property immediately west of the Site is an automotive servicing business; the property south-southwest of the Site is a grocery store. Residential areas are located south beyond Beaver Creek and west on the other side of Mertensia Road (Figure 2).

At the Site, GTI manufactured plastic photo-identification and data cards used for electronic scanning devices in a two-step process consisting of a photo-developing step followed by a finishing process. Wastewater generated by these processes was reportedly dumped outside the western building door and on to the then-gravel driveway. This practice was discontinued in 1986.

The Site is located in the Central Lowland physiographic province, which is characterized by low surface relief, unconsolidated overburden derived from glacial deposition, and bedrock consisting of east-west striking, gently southerly dipping Ordovician to Upper Devonian sedimentary rocks.

The soil is typically silty at the surface with a silty-clay substratum with generally low permeability. The overburden materials at the Site are generally heterogeneous, consisting of varying amounts of brown silt, sand, and clay. Silt was typically the main soil component.

The bedrock consists of Upper Silurian dolomites that are generally light gray, massive, crystalline, vuggy, mottled and locally gypsiferous. Structurally the units are relatively undeformed and dip consistently and gently to the south, but they also exhibit open folds, minor faults, steeply dipping joints, and other minor fractures of varying orientation. Fractures were observed in the core samples from all bedrock coreholes drilled during previous Site investigations. The joints and fractures provide secondary porosity and are likely the principal pathways for groundwater flow through rock.

Groundwater flow in the shallow water-bearing zone appears to be from the Site to the south-southwest, across Route 96 and the grocery store property. The hydraulic conductivity in the sand and gravel overburden is on the order of  $1\text{E-}03$  cm/sec; the values reported for the bedrock range from approximately  $1\text{E-}03$  to  $2\text{E-}02$  cm/sec (Basland et al., 1991). The variation likely reflects the irregular distribution of fractures.

Surface drainage is to the south-southeast toward Beaver Creek, which is approximately 100 feet south of the grocery store. Beaver Creek is a tributary of Mud Creek, which flows west into Ganargua Creek, which drains northward into the Erie Canal. It is not clear whether Beaver Creek is a locally gaining or losing stream.

Soil and groundwater sampling during subsurface investigations from the early 1990s to 1996 have confirmed the presence of volatile organic compounds (VOCs) at the Site, including trichloroethene (TCE), trichloroethane (TCA), cis-1,2-dichloroethene (DCE), acetone, and vinyl chloride.

The most recent groundwater sampling event took place on August 3, 2009. URS collected a round of groundwater samples from nine existing off-site monitoring wells (MW-06S, MW-06D, MW-07S, MW-07D, MW-09S, MW-09D, MW-10S, MW-10D, and MW-11D) plus QA/QC samples (i.e., duplicate samples and matrix spike/matrix spike duplicate). The groundwater samples collected were transported under COC control to Columbia, for the analysis of TCL VOCs by USEPA Method 8260B. The groundwater flow in the overburden wells was determined to be to the south to southwest towards Beaver Creek. This is consistent with past groundwater flow direction in the overburden wells. The groundwater flow in the bedrock wells is to the west to northwest. This is consistent with past groundwater flow direction in the bedrock wells. The 2009 groundwater sampling results are summarized below:

- Two compounds, trichloroethene (TCE) and (cis) 1,2-dichloroethene (c-DCE) were detected at concentrations exceeding Class GA groundwater criteria in the groundwater samples collected.
- TCE was detected in the samples collected from MW-06S, MW-06D, MW-07S, MW-07D and MW-10D at concentrations ranging from 5.6 to 77 micrograms per Liter ( $\mu\text{g/L}$ ). The highest concentration was found at MW-07S ( $77\text{ }\mu\text{g/L}$ ).
- c-DCE was only detected in the sample collected from MW-07D at a concentration of  $24\text{ }\mu\text{g/L}$ .

The detected concentrations of the chlorinated VOCs in the groundwater samples are generally lower to approximately similar to the concentrations detected in the respective wells during the July 2005 sampling event. In monitoring wells nearest to the former Griffin Technology Facility (i.e., MW-06S, MW-07S, and MW-07D), based upon the 2009 groundwater sampling results, the detected concentrations of TCE have decreased from 60 ppb to 26 ppb in MW-06S; from 120 ppb to 77 ppb in MW-07S, and 120 ppb to 74 ppb in MW-07D compared to the July 2005 groundwater sampling results.

## 1.2 OBJECTIVE OF THIS OPERATIONS & MONITORING PLAN

The objective of this Operations and Monitoring (O&M) Plan is to describe the annual groundwater monitoring program and reporting requirements. The annual groundwater sampling frequency is subject to modification in the future based upon the sampling results (i.e., decrease or increase in frequency) in accordance with the provisions in *DER-10, Technical Guidance for Site Investigation and Remediation*, New York State Department of Environmental Investigation, May 2010.

## **Section 2.0      Sampling and Analysis Plan**

This portion of the Operations and Monitoring Plan describes the two major elements for obtaining the necessary data identified in Section 2.0. In the Field Sampling Plan, the methodologies and procedures for collecting the data are described; in the Quality Assurance Project Plan (QAPP), the procedures for assuring the quality of the analytical data generated by the collected groundwater samples are outlined.

### **2.1      FIELD SAMPLING PLAN**

This field sampling plan describes the procedures to be followed for the collection of groundwater samples from nine (9) off-site monitoring wells. The monitoring well locations are shown on Figure 2. The sampling frequency will be scheduled annually unless otherwise requested by the NYSDEC. The sampling schedule will be coordinated with the NYSDEC and affected property owners will receive at least 30 days written notice prior to sampling. The wells are listed in Table 1. Procedures for groundwater sampling activities are discussed in the following subsections.

#### **2.1.1      Hydraulic Monitoring**

Prior to the annual groundwater sampling event, a synoptic round of groundwater levels will be obtained from the wells listed in Table 1. The ground water measurements will assist in determining the direction(s) of ground water flow. Groundwater levels measurements will be obtained using an electronic water level indicator using the following procedure:

Procedure:

1. Clean the water level probe and the lower portion of cable following standard decontamination procedures and test water level meter to ensure that the batteries are charged.
2. Lower the probe slowly into the monitoring well until the audible alarm indicates water.
3. Read the depth to the nearest hundredth of a foot from the graduated cable using the V-notch on the riser pipe as a reference.
4. Repeat the measurement for confirmation and record the water level.
5. Remove the probe from the well slowly, drying the cable and probe with a clean "Chem Wipe" or paper towel.
6. Replace the well cap and lock protective cap in place.
7. Decontaminate the water level meter if additional measurements are to be taken.

### 2.1.2 Groundwater Sampling

Groundwater samples will be collected from the wells listed in Table 1 using low flow sampling techniques. Purge water will be allowed to infiltrate into ground surface up gradient of the well location being sampled. Purging will require the removal of one to three volumes of standing water by pumping at a rate of less than one (1) liter per minute. Drawdown must not exceed ten percent of the standing water column. Sampling should commence immediately after purging. Monitoring well purging will be completed using the low-flow purging technique as follows:

1. The well cover will be unlocked and carefully removed to avoid having any foreign material enter the well. The interior of the riser pipe will be monitored for organic vapors using PID. If a reading of greater than 5 ppm is recorded, the well will be vented until levels are below 5 ppm before purging begins.
2. Using an electronic interface probe/water level detector, the water level below top of casing will be measured. The depth of the well will be measured to determine the volume of water in the well. The end of the probe will be decontaminated between wells.
3. Calibrate field instruments (e.g., pH, specific conductance, PID, turbidity).
4. Purge the required water volume (i.e., until stabilization of pH, temperature, specific conductivity, and turbidity) using a low-flow pump and dedicated HDPE tubing. New dedicated tubing will be used for each well.
5. Purge the well until the water quality parameters have stabilized. The stabilization criteria are: specific conductivity - 3% full-scale range; pH - 0.10 pH unit; dissolved oxygen - 10%, Turbidity - 10% and oxidation/reduction (redox) potential - +/- 10 units.
6. Purging of three well volumes is not necessary if the indicator parameters are stable. However, at least one (1) well volume must be purged before sampling can begin. During purging, it is permissible to by-pass the flow cell until the groundwater has cleared.
7. Indicator parameters of pH, conductivity, dissolved oxygen, oxidation/reduction (redox) potential, turbidity, and temperature must be measured continuously using the flow cell.
8. Well purging data are to be recorded in the field notebook and on the Low Flow Purge Log (Appendix A).

Groundwater samples collected will be analyzed by a New York State Department of Health Environmental Laboratory Approval Program (ELAP) Certified laboratory for the parameters listed in Table 2. The volume of sample, bottle type, and preservation required for the product samples is provided in Table 3. All samples will be recorded on a chain-of-custody (COC) and preserved appropriately. An example of the COC may be found in Appendix A.

### 2.1.3 Field Quality Control

Quality control of field sampling will include the collection of field duplicates, trip blanks, and matrix spike/matrix spike duplicate samples. Field quality control samples will be collected at a rate of one per 10 investigative samples (Table 2).

### 2.1.4 Decontamination Activities

Dedicated/disposable sampling equipment will be utilized for the collection of the groundwater samples. The water level indicator will be decontaminated between each well location using a solution of Alconox and water and wiped dry using paper towel.

### 2.1.5 Health and Safety

The health and safety plan currently used for the IRM sampling (URS, 2003b.) will be used for the collection of groundwater samples.

## 2.2 QUALITY ASSURANCE PROJECT PLAN

The objective of the QAPP is to produce reliable data generated by the field investigation by:

- Ensuring the validity and integrity of the data,
- Ensuring and providing mechanisms for on-going control of data quality,
- Evaluating data in terms of quality objectives, and
- Providing useable, quantitative data for analysis, assessment, and decision making to meet project DQOs.

The sampling locations are depicted in Figure 2 and the analytical parameters include the following VOCs: Trichloroethene, 1,1,1-Trichloroethane, cis-1,2-Dichloroethene, trans-1,2-Dichloroethene, Methylene Chloride, and Vinyl Chloride only. The analytical parameters have been established by the NYSDEC during the soil vapor investigation.

The field QC samples were also described in a previous section.

The analytical program will be in general compliance with the most recent version of NYSDEC's Analytical Services Protocol (NYSDEC, 2005). The QAPP included in the IRM Work Plan (Woodward-Clyde, 1996) will be followed for this data collection effort with additions or clarifications described in the following sections.

### 2.2.1 Project Organization

The project organization for this effort is as follows:

- Project Director: Dave Rinehart of Diebold, Inc.
- URS Project Manager: Mr. Mike Gutmann
- URS Quality Assurance Officer: Mr. Don Hunt
- URS Health and Safety Officer: Mr. Sheldon Nozik

The analytical laboratory and other subcontractors have not yet been selected. Field personnel will not be assigned until O&M Plan approval is received.

### 2.2.2 Measurement Quality Assurance Objectives

Measurement DQOs for this project will be addressed in terms of precision, accuracy, representativeness, completeness, comparability, and sensitivity. These objectives are discussed in the 1996 QAPP and are adopted for the field investigation proposed in this O&M Plan.



Precision is the degree of agreement among repeated measurements of the same parameter under the same or similar conditions. Field precision will be assessed through the collection and analysis of duplicate samples. Laboratory precision will be based upon the relative percent difference between the MS/MSD analyses and laboratory replicates where required.

Accuracy is the extent of agreement between a measured value and the accepted or true value of the parameter being measured. The percent recovery of the laboratory control sample (LCS) and MS/MSD sample will be utilized to evaluate laboratory accuracy.

Representativeness is a qualitative term that describes the extent to which the sampling design adequately reflects the environmental conditions. At this Site, this refers to the ability of the selected sampling locations to reflect actual Site conditions. Representativeness of soil and groundwater samples will be assured by the collection of a sufficient number of these samples to reduce the uncertainty in determining the extent of contamination. In addition, the field testing for stabilization parameters during purging will assure that representative groundwater samples are collected. Representativeness of laboratory data will also be assessed by evaluating adherence to prescribed analytical methods and procedures, including holding times, blanks, and duplicates. Trip blanks will be analyzed during the investigation in order to assess potential problems as they might occur during sample handling. A trip blank (laboratory-prepared sample of reagent-grade water) will accompany each cooler and be subjected to the same handling procedures as the groundwater samples. Since dedicated disposable sampling equipment will be used, field blanks, or equipment blanks, will not be necessary, unless the proposed sampling procedures change.

Completeness is the measure of the valid data obtained compared to the quantity expected. Both field completeness (i.e., collecting all the necessary samples and getting them to the laboratory) and laboratory completeness (i.e., all samples analyzed and all data considered useable) are critical parameters.

Comparability refers to the confidence with which one data set can be compared to another. Consistency in field sampling and analytical protocols will be used to ensure comparability. In the laboratory, data are comparable when the analysis is done with the same standard method and reporting limits. Once a laboratory is selected, their standard operating procedures will be appended to this O&M Plan.

The sensitivity objective refers to the ability of the laboratory to achieve quantitation limits that are lower than the cleanup levels established for the Site. The selection of the analytical laboratory will be based, in part, on their demonstration that these limits can be routinely achieved.

### 2.2.3 Laboratory Quality Control Requirements

The laboratory will be required to maintain accuracy and precision in accordance with this Work Plan. Once the laboratory is selected, the laboratory will provide precision and accuracy control limits for the designated analytes. These control limits, once received, will be appended to this O&M Plan.

The chemicals to be analyzed in groundwater are listed in Table 3. The table also includes the selected analytical method, container, preservation, and holding time requirements.

**2.2.4 Data Assessment and Evaluation**

All sampling, handling, and fixed laboratory data will be reviewed by a URS chemist. The review procedure will include verification of all quality control measures used in both the field and the laboratory. The review will include the following topics:

- Sample receipt and handling according to method requirements,
- An analysis of holding time criteria,
- An evaluation of blank data (trip blanks, laboratory method blanks),
- An evaluation of accuracy using the laboratory control sample (LCS), surrogate recoveries, and the MS/MSD samples,
- An evaluation of precision using field and laboratory duplicate samples, and
- An evaluation of sensitivity with respect to required quantitation limits.
- The most current applicable USEPA Region II validation guidelines will be used for data qualification.

A data usability summary report (DUSR) will be generated for each annual sampling event. If any data are not useable to support the required decision, the data review will address resolution of this problem and the potential need for resampling.

## Section 3.0 Reporting

The data collected during the implementation of this O&M Plan will be described and evaluated in an Annual Groundwater Sampling Report.

### 3.1 RECORDS MANAGEMENT

Standardized forms shall be used to record the results of monitoring activities that are described in Section 2.0. These forms are included in Appendix A.

### 3.2 ANNUAL REPORTS

The Annual Groundwater Sampling Report shall summarize analytical results from the annual sampling event, conclusions and recommendations of the annual project evaluation. A copy of the laboratory data shall be included in the appendix of the report. The Annual Groundwater Sampling Report will also include the following:

- The site name, municipality, county that the site is located in, and date of the report should appear on the cover.
- Text detailing the site activities completed over the given calendar year.
- Tables with groundwater elevation data and detected analytes in groundwater with applicable criteria.
- A Data Usability Summary Report.
- A Location map.
- A Site map showing sampling and well locations.
- A map showing the shallow groundwater potentiometric surface.
- A map showing the deep groundwater potentiometric surface.
- A map showing detected analytes in groundwater with applicable criteria.
- Completed sampling forms.
- Comments, conclusions and recommendations based on an evaluation and resolution of problems identified.
- Photographs.

### 3.3 SUBMITTAL REQUIREMENTS

Annual reports shall be submitted within 60 days of the final sampling event of the year. Two copies of all reports shall be submitted to the NYSDEC. All reports shall be bound reports or in an equivalent acceptable electronic format. Sample results will be provided to the property owners within 30 days after data validation is completed.

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## References

- Basland, Bouck, and Lee. 1991. Blasland & Bouck Engineers, P.C. Phase II Investigation. Griffin Technology, Inc. Victor, New York. July, 1991.
- NYSDEC. 2005. New York State Department of Environmental Conservation. Analytical Services Protocol. Revised July, 2005.
- NYSDEC, May 2010. DER-10. Technical Guidance For Site Investigation and Remediation.
- URS, 2010. Soil Vapor Intrusion Study/ Groundwater Sampling Letter Report. Former Griffin Technology Facility. Town of Farmington. Ontario County, New York. July, 2010. Project No. 13813319.00000
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- Woodward-Clyde. 1996. Interim Remedial Measure Work Plan. Griffin Technology, Inc. Site. Prepared for Griffin Technology, Inc. Victor, New York. July 1996. Project No.: 4E06282

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## TABLES

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**TABLE 1**  
**LIST OF WELLS FOR ANNUAL SAMPLING**

(See Figure 2 for Well Locations)

Wells

MW – 06S

MW – 06D

MW – 07S

MW – 07D

MW – 09S

MW – 09D

MW – 10S

MW – 10D

MW – 11D

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**TABLE 2**  
**SUMMARY OF SAMPLES TO BE COLLECTED AND ANALYTICAL PARAMETERS**  
**FORMER GRIFFIN TECHNOLOGY FACILITY**  
**SITE NO. 8-35-008**

Parameter	Method Number/ References <sup>1</sup>	Number of Samples	QA/QC Samples				Total No. of Samples
			Field Duplicates	Equipment Blank	Trip Blanks	MS/MSD	
<b>GROUND WATER (Monitoring Well)</b>							
<b>Baseline Event</b>							
TCL VOCs [Trichloroethene, 1,1,1-Trichloroethane, cis-1,2-Dichloroethene, trans-1,2-Dichloroethene, Methylene Chloride, and Vinyl Chloride only]	8260B	9	1	0	2	1/1	14

**NOTES:**

1. NYSDEC Analytical Services Protocol (ASP), July 2005 Edition.

MS/MSD - Matrix Spike/Matrix Spike Duplicate

TCL - Target compound list, as listed in USEPA CLP Statement of Work OLM04.2.

VOCs - Volatile Organic Compounds

**TABLE 3**  
**SAMPLE CONTAINER, PRESERVATION, AND HOLDING TIME REQUIREMENTS**  
**FORMER GRIFFIN TECHNOLOGY FACILITY**  
**SITE NO. 8-35-008**

Analytical Method/Parameter	Container Size/Type	Number of Containers To Be Collected	Preservation	Maximum Holding Time (from VTSR)
<b>Groundwater/ Surface Water Samples</b>				
8260B VOCs	40 mL septum seal vial	3	4° C, HCl	Analysis: 10 days

NOTES:

VSTR - Validated time of sample receipt (at the laboratory)



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# FIGURES

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Source:  
- National Geographic TOPO! via ArcGIS online data services.

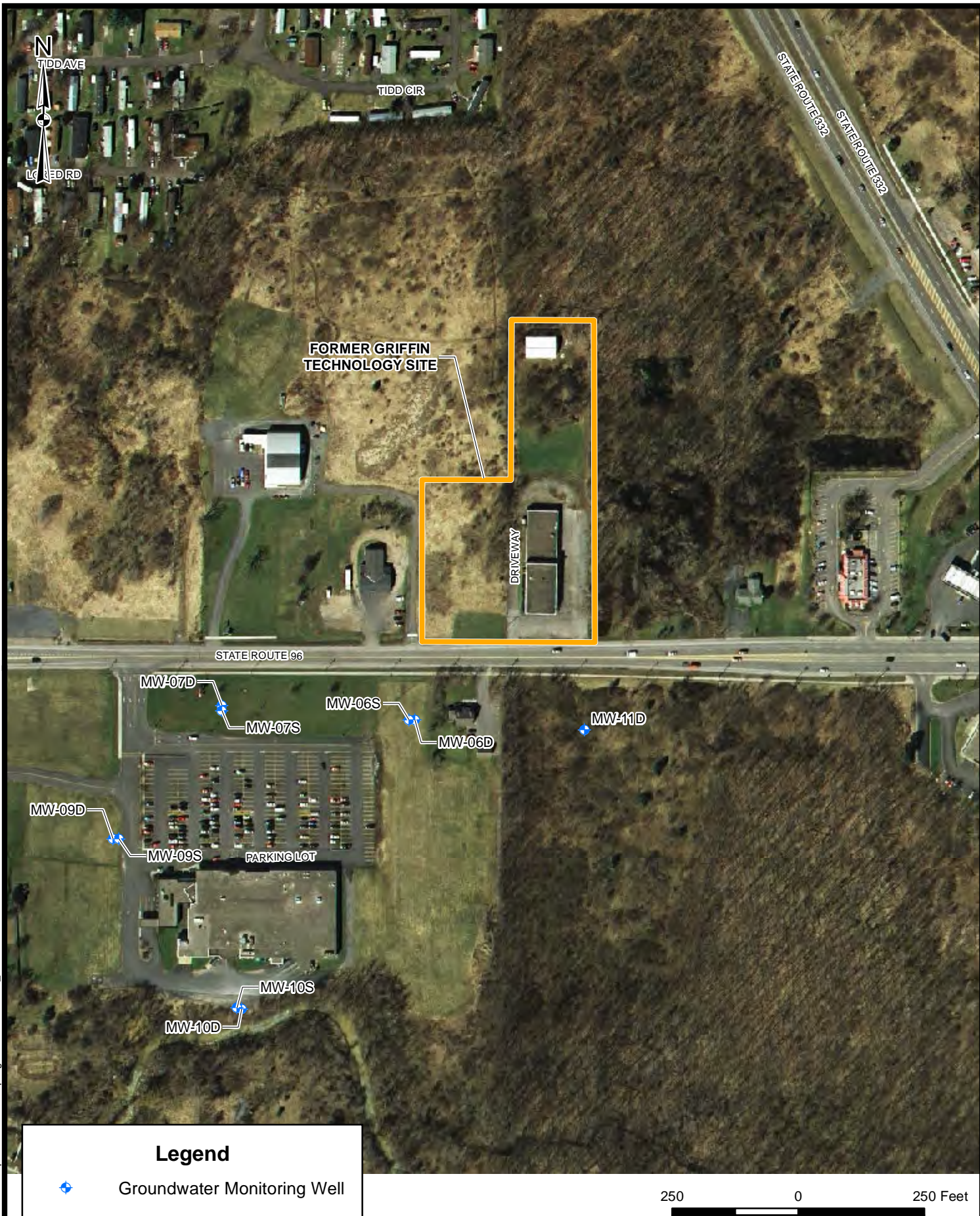
2,000 0 2,000 Feet



FORMER GRIFFIN TECHNOLOGY, INC.  
FARMINGTON, NEW YORK  
PROJECT SITE

FIGURE 1





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# **APPENDIX A**

## **SAMPLE FORMS**

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## LOW FLOW GROUNDWATER PURGING/SAMPLING LOG

Project: \_\_\_\_\_ Site: \_\_\_\_\_ Well I.D.: \_\_\_\_\_

Date: \_\_\_\_\_ Sampling Personnel: \_\_\_\_\_ Company: URS Corporation

Purging/  
Sampling  
Device: \_\_\_\_\_ Tubing Type: \_\_\_\_\_ Pump/Tubing  
Inlet  
Location: \_\_\_\_\_ Screen midpoint

Measuring Point:            Below Top of Riser            Initial Depth to Water:            Depth to Well Bottom:            Well Diameter:            Screen Length:           

Casing Type: \_\_\_\_\_ Volume in 1 Well Casing (liters): \_\_\_\_\_ Estimated Purge Volume (liters): \_\_\_\_\_

Sample ID: \_\_\_\_\_ Sample Time: \_\_\_\_\_ QA/QC: \_\_\_\_\_

Sample Parameters: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

## PURGE PARAMETERS

[illegible]

**Information:** WATER VOLUMES—0.75 inch diameter well = 87 ml/ft; 1 inch diameter well = 154 ml/ft; 2 inch diameter well = 617 ml/ft;  
4 inch diameter well = 2470 ml/ft ( $vol_{cy} = \pi r^2 h$ )

**Remarks:**

[illegible]