

**SUBJECT**

RACER Trust Pontiac North Campus  
2023 Revised Fiero Temporary Monitoring Plan

**TO**

Peter Ramanauskas  
U.S. Environmental Protection Agency  
Region 5  
77 West Jackson Boulevard LU-9J  
Chicago, Illinois 60604-3590

**DATE**

April 4, 2023

**PROJECT NUMBER**

30167840

**DEPARTMENT**

Resilience

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This memorandum describes the approach for temporary groundwater monitoring at the former Fiero property of the Revitalizing Auto Communities Environmental Response Trust (RACER) Pontiac North Campus properties (Site) located in Pontiac, Michigan (**Figure 1**) and has been updated based on comments provided by the United States Environmental Protection Agency (USEPA) on February 27, 2023. The Fiero Temporary Monitoring Plan (FTMP) supplements the Pontiac North Campus Site Groundwater Monitoring Plan (GMP) that was presented as part of the Environmental Indicators (EI) CA 750 determination (ENVIRON 2002) as modified in 2009 and 2018. The objectives of the FTMP are to collect data over the next four calendar quarters to further evaluate the stability of the chlorinated volatile organic compound (cVOC) at the Fiero property and assess the performance of the pilot study zero valent iron (ZVI) barrier completed in January 2023 to address cVOC migration. Analytical figures summarizing the 2022 FTMP monitoring results are provided as **Attachment 1**. With regard to **Attachment 1** utilities, Arcadis is working with Green For Life (GFL) (current Fiero property owner) to obtain updated site plan drawings of existing and/or proposed utilities. The existing on-site utilities may pass through the source areas; however, the utilities are above the water table and do not provide a preferential pathway for groundwater impacts. In addition, select on-site storm sewers were bulkheaded in 2020 to prevent flow from the Fiero Assembly (AOI F-16) portion of the property to the Powerhouse portion of the property. The subsurface utilities are further discussed and a CSM is presented in the 2021 – 2022 Fiero Site Investigation Summary revised and submitted to EPA on February 21, 2023 and in the RCRA Corrective Action Summary Report submitted to USEPA on February 10, 2023. Based on the above, the Vapor Intrusion CSM report (September 2021) does not need to be updated.

The FTMP includes sampling of historical monitoring wells, recently installed monitoring wells, and soil vapor monitoring points (SVMPs) installed at the perimeter of the former Fiero facility. The proposed monitoring locations, monitoring frequency and analytical parameters are summarized on **Table 1** and illustrated on **Figure 1**. The FTMP will be completed in parallel with the overall Site GMP and **Table 1** includes the Fiero wells and parameters already specified in the GMP.

Groundwater gauging and sampling methodology of the FTMP will be consistent with the GMP, which utilizes the USEPA Low-Stress (or Low-Flow) Purging and Sampling Procedure (USEPA 2017). Site-wide gauging will be completed semi-annually using an electronic water level meter accurate to 0.01-foot. During sampling, purge water will be monitored for dissolved oxygen (DO), temperature, specific conductivity, turbidity, oxygen reduction potential (ORP), and pH. These water quality measurements will be used to determine groundwater sample

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stability prior to collection of the groundwater samples. All samples will be submitted for laboratory analysis of volatile organic compounds (VOCs) via USEPA Method 8260. Additional compounds, including 1,4-dioxane and select metals, will continue to be sampled and analyzed annually consistent with the GMP. ZVI performance wells will be sampled quarterly for VOCs only.

In addition to groundwater monitoring, soil vapor monitoring will be sampled as part of the FTMP. The methodology for collecting soil vapor samples will include completing a helium leak test to verify the seal of the sampling point and a “shut-in” test will be completed on the sampling train to verify that a closed system is in place prior to sampling. Following a passed helium leak test and shut-in test, a SUMMA® canister, with attached pre-set flow regulator, will be used to collect the sample for laboratory analysis of the Fiero site-specific VOCs in accordance with the USEPA Method TO-15. Following sampling, an additional three volumes of air will be purged into a Tedlar® bag. Oxygen, carbon dioxide, and methane readings will be collected from the Tedlar® bag containing purged air at the sample point.

This FTMP will be executed for four quarters at which time an assessment will be completed to determine appropriate changes or modifications for 2024. A data package will be submitted to USEPA after each quarterly event for 2023. Following completion of the 2023 FTMP a summary report will be provided to USEPA and include:

- Written summary of field activities
- Figures and tables summarizing the analytical results.
- Groundwater elevation contour maps for the semi-annual gauging events
- cVOC trend graphs and a summary of Mann-Kendall stability analysis for wells with exceedances of site-specific vapor intrusion screening levels. The Mann-Kendall analysis can be utilized when the following criteria:
  - Include data collected after 2017, when sampling frequency increased and following a spike in concentrations observed at certain monitoring wells due to deteriorating concrete slab conditions.
  - At least 5 data samples collected after 2017.
  - Of the samples collected after 2017, at least 50% of the samples have detections.
- Based on the above criteria for Mann-Kendall, some wells do not have sufficient data to perform the Mann-Kendall analysis. For those wells a concentration over time graph will be developed.
- The following wells are either not included in the sampling plan because the location of the well is not relevant, or the well has been damaged or destroyed during Green for Life, Inc (GFL) construction activities. These wells do not meet the criteria for Mann-Kendall for the following reasons:
  - MWF16-01: Destroyed. Includes one sampling event (06/2021) within the proposed dataset and was non-detect (ND) for trichloroethylene (TCE), tetrachloroethylene (PCE), and cis-1,2-dichloroethylene (cis-DCE). Previous sampling events in 2004 and 2006 reported J-flag values for PCE and ND for TCE and cis-DCE. Soil data at this location includes samples from 0-2, 8-10 and 14-16 ft below ground surface (bgs) with J-flag values for PCE at 8-10 and 14-16 ft bgs.
  - MWF16-02: Destroyed. Includes two sampling events in 2004 and 2006. In 2004, the sample was ND for TCE, PCE, and cis-DCE. In 2006, the sample had a J-flag result for TCE and was ND for PCE and cis-DCE. Soil data at this location includes samples from 0-2, 8-10, and 12.5-14.5 ft bgs (11 ug/kg PCE at 0-2 and 6.3 ug/kg PCE at 12.5-14.5 ft bgs).
  - MWF16-03: Destroyed. Includes two sampling events in 2004 and 2006 with ND results for TCE, PCE, and cis-DCE for both events. Soil data at this location includes samples from 0-2, 8-10, and 21-23 ft bgs (9.8 ug/kg for PCE at 8-10 ft bgs).

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- MWF16-09: Damaged. Includes two sampling events in 2005 and 2006 with a below criteria result of 1.5 ug/L in 2005 for PCE and ND for PCE in 2006. TCE and cis-DCE were ND for both sampling events. No soil sample data for this location.
- MWF16-19: Buried/Damaged. Includes three sampling events from 2017 to 2022; all results for TCE, PCE, and cis-DCE were ND. No soil sample data for this location.
- MW-11-22: Currently exists. Includes two sampling events from 2017 to 2022 and both were ND for TCE, PCE, and cis-DCE.
- MWF16-24: Currently exists. Includes two sampling events from 2017 to 2022 and both were ND for TCE, PCE, and cis-DCE.
- MWF16-26: Currently exists. Includes one sampling event from 2020 within the dataset and was ND for TCE, PCE, and cis-DCE.
- MWF2: Currently exists. Includes two sampling events in 2001 and 2002 and both were ND for TCE, PCE, and cis-DCE.
- MWF7-03: Currently exists. Includes five sampling events from 2017 to 2022; however, all results were ND for TCE, PCE, and cis-DCE

The first 2023 FTMP quarterly event was conducted on March 6<sup>th</sup> through 10<sup>th</sup>, 2023. Due to laboratory equipment availability the SVMPs were sampled on March 20<sup>th</sup>, 2023. Semi-annual events will be completed during the 2<sup>nd</sup> and 4<sup>th</sup> quarter events.

## References

Arcadis of Michigan, LLC (Arcadis). 2021. Vapor Intrusion Conceptual Site Model (CSM), RACER Trust, Pontiac North Campus – Former Fiero Properties, Pontiac, Michigan. September 8.

Arcadis of Michigan, LLC (Arcadis). 2023. RCRA Corrective Action Summary Report, RACER Trust, Pontiac North Campus Facility, Pontiac, Michigan. February 10.

Arcadis of Michigan, LLC (Arcadis). 2023. 2021 – 2022 Fiero Site Investigation Summary, RACER Trust, Pontiac North Campus Facility, Pontiac, Michigan. February 21.

ENVIRON International Corporation (ENVIRON). 2002. Resource Conservation and Recovery Act Environmental Indicators Report, General Motors Corporation, Pontiac North Campus Facility, Pontiac, Michigan. July.

U.S. Environmental Protection Agency (USEPA; Region I). 2017. Low-Stress (Low-Flow) Purging and Sampling Procedure for the Collection of Groundwater Samples from Monitoring Wells – Revision 4. July 30, 1996; Revised September 19, 2017.

## Enclosures

Table 1 – Fiero Temporary Monitoring Plan Matrix

Figure 1 – 2023 Fiero Temporary Monitoring Plan Locations

Attachment 1 – Summary of 2022 Fiero Temporary Monitoring Plan Results

# Table

**Table 1**  
**Fiero Temporary Groundwater Monitoring Plan Summary**  
**April 2023**  
**RACER Trust Pontiac North, Pontiac, Michigan**



Well	Gauging	Analyte			Primary Function
		VOCs	1,4-Dioxane	Select Metals**	
MW-02-17	SA	SA	A*		SW perimeter well to monitor for downgradient migration of CVOC impacts, also annual GMP Sampling
MW-05-18	SA	SA	A*		SW perimeter well to monitor for downgradient migration of CVOC impacts, also annual GMP Sampling
MW-06-20	SA	Q			SW perimeter well to monitor for downgradient migration of CVOC impacts
MW-07-20	SA	SA			SW perimeter well to monitor for downgradient migration of CVOC impacts
MW-08-21	SA	Q			SW perimeter well to monitor for downgradient migration of CVOC impacts
MW-09-22	SA	Q			Monitoring well to monitor the concentration and stability of the CVOC plume core
MW-11-22	SA				Gauging only to assist with GW elevation contour
MW-13-22	SA	Q			Performance monitoring of the ZVI barrier
MW-14-22	SA	Q			Performance monitoring of the ZVI barrier
MW-15-22	SA	Q			Performance monitoring of the ZVI barrier
MW-16-22	SA	Q			Performance monitoring of the ZVI barrier
MWF12-01R	SA		A*	A*	Gauging only to assist with GW elevation contour, also annual GMP Sampling
MWF12-02R	SA			A*	Gauging only to assist with GW elevation contour, also annual GMP Sampling
MWF15-01	SA	SA			Monitoring well to monitor area of historic elevated soil concentrations
MWF16-01	NM	NM	NM	NM	Well destroyed as part of new construction. Well associated with AOI- F-6 (a SWMU) where little to no impacts were identified and groundwater plume boundary is well understood and well is not needed for delineation. Reinstallation not recommended.
MWF16-02	NM	NM	NM	NM	Well destroyed as part of new construction. Well associated with AOI- F-6 (a SWMU) where little to no impacts were identified and groundwater plume boundary is well understood and well is not needed for delineation. Reinstallation not recommended.
MWF16-03	NM	NM	NM	NM	Well destroyed as part of new construction. Groundwater plume boundary is well understood and well is not needed for delineation. Reinstallation not recommended.
MWF16-05	SA	Q			Monitoring well to monitor the concentration and stability of the CVOC plume core
MWF16-06	SA	SA	A*		Monitoring well to monitor the concentration and stability of the CVOC plume source area (GMP Well)
MWF16-07	SA	SA			Delineation well to monitor and define the southern plume boundary
MWF16-09	NM	NM	NM	NM	Well destroyed as part of new construction. Groundwater plume boundary is well understood, MWF8-01 can be used as upgradient well, and well is not needed for delineation. Reinstallation not recommended.

**Table 1**  
**Fiero Temporary Groundwater Monitoring Plan Summary**  
**April 2023**  
**RACER Trust Pontiac North, Pontiac, Michigan**



Well	Gauging	Analyte			Primary Function
		VOCs	1,4-Dioxane	Select Metals**	
MWF16-10	SA (following construction activities)	SA (following construction activities)			Well destroyed as part of new construction. Well to be used for delineation of the groundwater plume to the north. Reinstallation and monitoring recommended following construction activities
MWF16-11	SA (following construction activities)	SA (following construction activities)			Well destroyed as part of new construction. Well to be used for delineation of the groundwater plume to the north. Reinstallation and monitoring recommended following construction activities
MWF16-12	SA	SA			Delineation well to monitor and define the upgradient plume boundary
MWF16-15	SA	SA			Delineation well to monitor and define the plume boundary
MWF16-16	SA	Q			Performance monitoring of the ZVI barrier
MWF16-17	SA	SA			Delineation well to monitor and define the plume northern boundary
MWF16-18	SA	Q			Monitoring well to monitor the concentration and stability of the CVOC plume core
MWF16-19	NM	NM	NM	NM	Well has occasionally been inaccessible due to construction activities. Well will be assessed once construction activities are complete but groundwater plume boundary is well understood, well is not needed for delineation, and nearby MWF16-20 can be used as upgradient well. Reinstallation not recommended.
MWF16-20	SA (following construction activities)	SA (following construction activities)			Well damaged as part of new construction. To be abandoned and reinstallation and monitoring recommended following construction activities
MWF16-22	SA	SA			Monitoring well to monitor the concentration and stability of the CVOC plume core
MWF16-23	SA	Q	A*		SW perimeter well to monitor for downgradient migration of CVOC impacts (GMP Well)
MWF16-24	SA				Gauging only to assist with GW elevation contour
MWF16-25	SA	SA	A*		perimeter well to monitor for migration of CVOC impacts (GMP Well)
MWF16-26	SA				Gauging only to assist with GW elevation contour
MWF2	SA				Gauging only to assist with GW elevation contour
MWF7-02	SA	SA	A*		Monitoring well to monitor the concentration and migration of the CVOC plume core (GMP Well)
MWF7-03	SA				Gauging only to assist with GW elevation contour
MWF8-01	SA	A*			perimeter/upgradient well to monitor for migration of CVOC impacts (GMP well)
MWOS-08	SA	Q			Offsite well to monitor for downgradient migration of CVOC impacts
MWOS-09R	SA	Q			Offsite well to monitor for downgradient migration of CVOC impacts
MWOS-10	SA	Q			Offsite well to monitor for downgradient migration of CVOC impacts
PZF17-01	NM	NM	NM	NM	Not monitored
PZF17-02	SA				Gauging only to assist with GW elevation contour
PZF17-03	NM	NM	NM	NM	Not monitored

Well	Gauging	Analyte			Primary Function
		VOCs	1,4-Dioxane	Select Metals**	
PZF17-04	SA				Gauging only to assist with GW elevation contour
PZF17-05	SA				Gauging only to assist with GW elevation contour
TW-12-22	SA	SA			Monitoring well to monitor the concentration and migration of the CVOC plume core
Unknown-01	SA	SA			Delineation well to monitor and define the plume boundary
SV-01-21		Q			SW perimeter - soil vapor monitoring
SV-02-21		Q			SW perimeter - soil vapor monitoring
SV-03-21		Q			SW perimeter - soil vapor monitoring
SV-04-21		Q			SW perimeter - soil vapor monitoring
SV-05-21		Q			SW perimeter - soil vapor monitoring
SV-06-21		Q			SW perimeter - soil vapor monitoring

**Notes:**

SV locations will be monitored for soil vapor only.

\* Well included in the Site Groundwater Monitoring Plan (GMP) and will include noted parameters annually.

\*\* Select metals includes arsenic, nickel, lead, vanadium, chromium, and copper.

Semi-annual wells will alternate monitoring between second quarter (2Q) and fourth quarter (4Q).

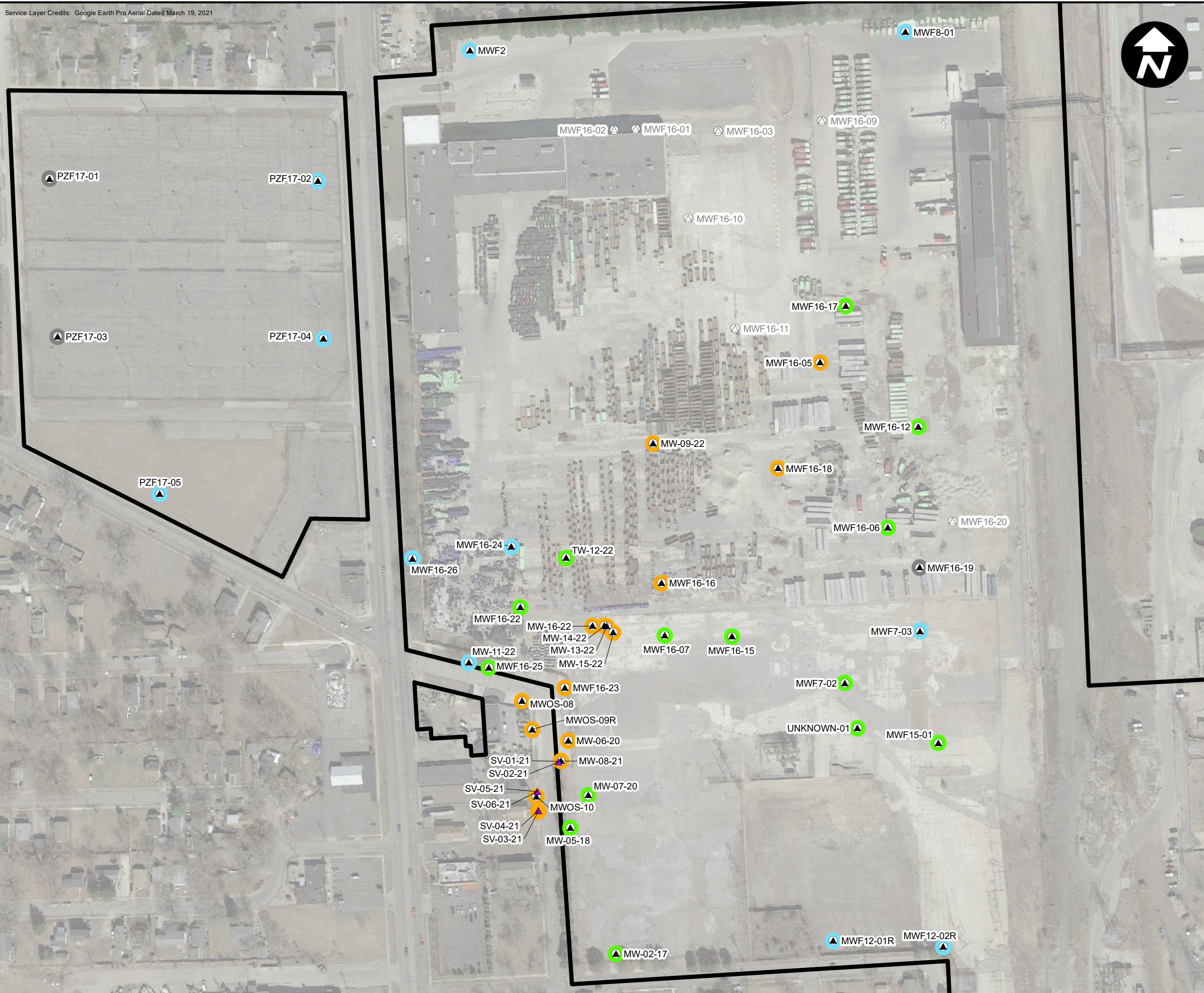
Q = Quarterly

SA = Semi-annual (2Q and 4Q)

A = Annual

NM = Not Monitored

**Figure**



**LEGEND**

- EXISTING MONITORING WELL
- SOIL VAPOR MONITORING POINT
- MONITORING WELL (DAMAGED OR DESTROYED)
- SEMI-ANNUAL GAUGING ONLY
- SEMI-ANNUAL GW SAMPLING
- QUARTERLY GW SAMPLING
- NOT MONITORED
- CURRENT OR FORMER RACER PROPERTY

0 200 400  
SCALE IN FEET

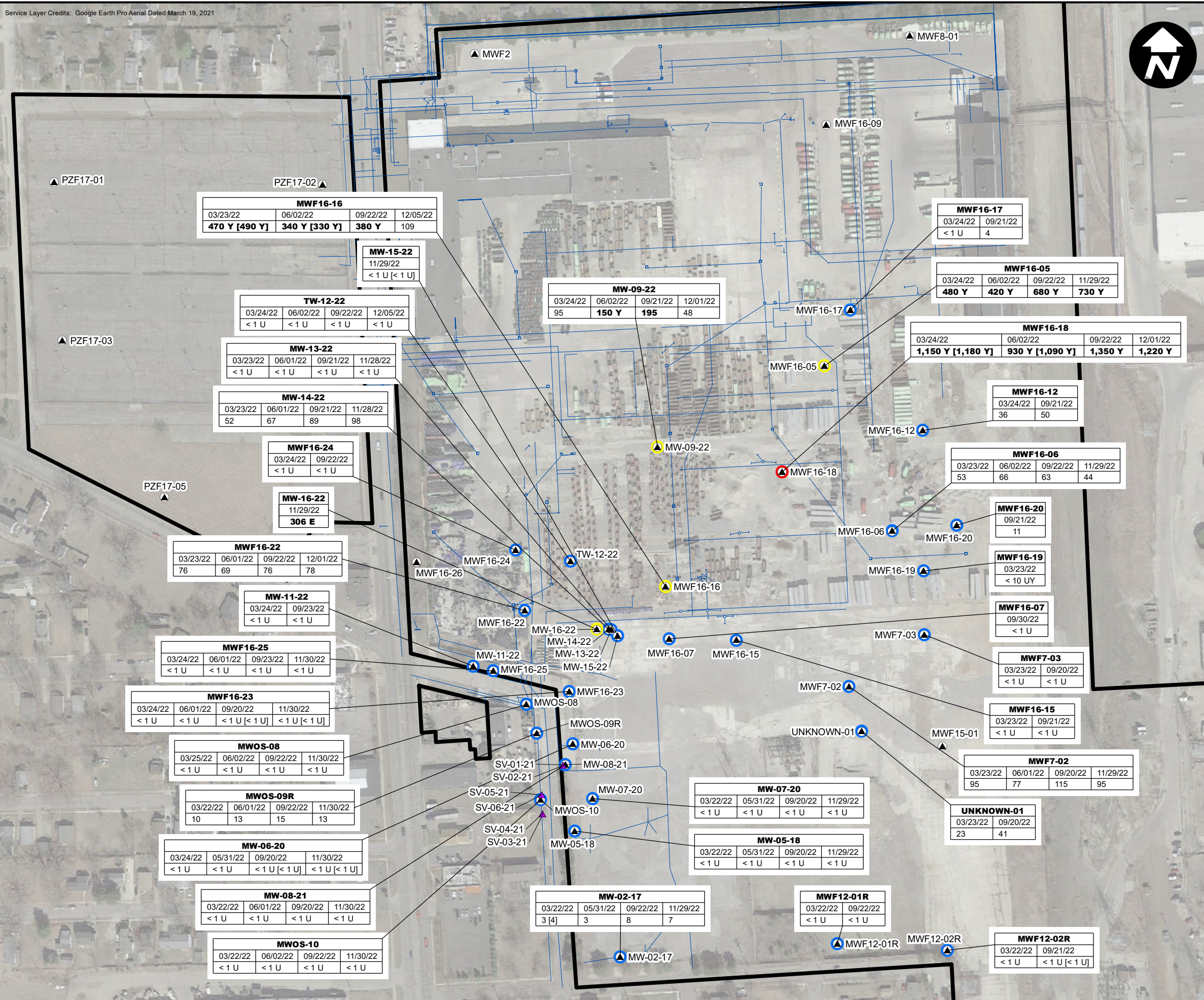
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**2023 TEMPORARY MONITORING  
PLAN LOCATIONS**

FIGURE  
**1**

# Attachment 1

**Summary of 2022 Fiero Temporary Monitoring Plan Results**



**LEGEND**

- ▲ EXISTING MONITORING WELL
- ▲ SOIL VAPOR MONITORING POINT
- EXISTING UTILITY
- ▭ CURRENT OR FORMER RACER PROPERTY

**CONCENTRATION OF PCE IN GROUNDWATER**

- < 130 µg/L
- 130 - 1,300 µg/L
- > 1,300 µg/L

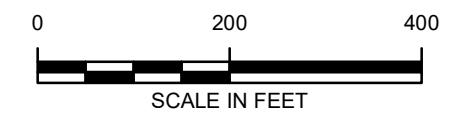
Res Fiero SSVIAC SOG	Res Fiero SSVIAC BASE	NR Fiero SSVIAC <50k SOG
250	130	3,400

- PCE TETRACHLOROETHENE
- BASE BASEMENT SCENARIO
- NR NON-RESIDENTIAL
- Res RESIDENTIAL
- SOG SLAB-ON-GRADE SCENARIO
- SSVIAC SITE-SPECIFIC VOLATILIZATION TO INDOOR AIR CRITERIA
- U COMPOUND WAS ANALYZED FOR BUT NOT DETECTED. THE ASSOCIATED VALUE IS THE COMPOUND QUANTITATION LIMIT.
- Y ELEVATED REPORTING LIMIT DUE TO HIGH TARGET CONCENTRATION.
- <50k LESS THAN 50,000 SQUARE FEET
- < NOT DETECTED ABOVE THE LABORATORY REPORTING LIMIT

ALL GROUNDWATER CONCENTRATIONS ARE PRESENTED IN MICROGRAMS PER LITER (µg/L)

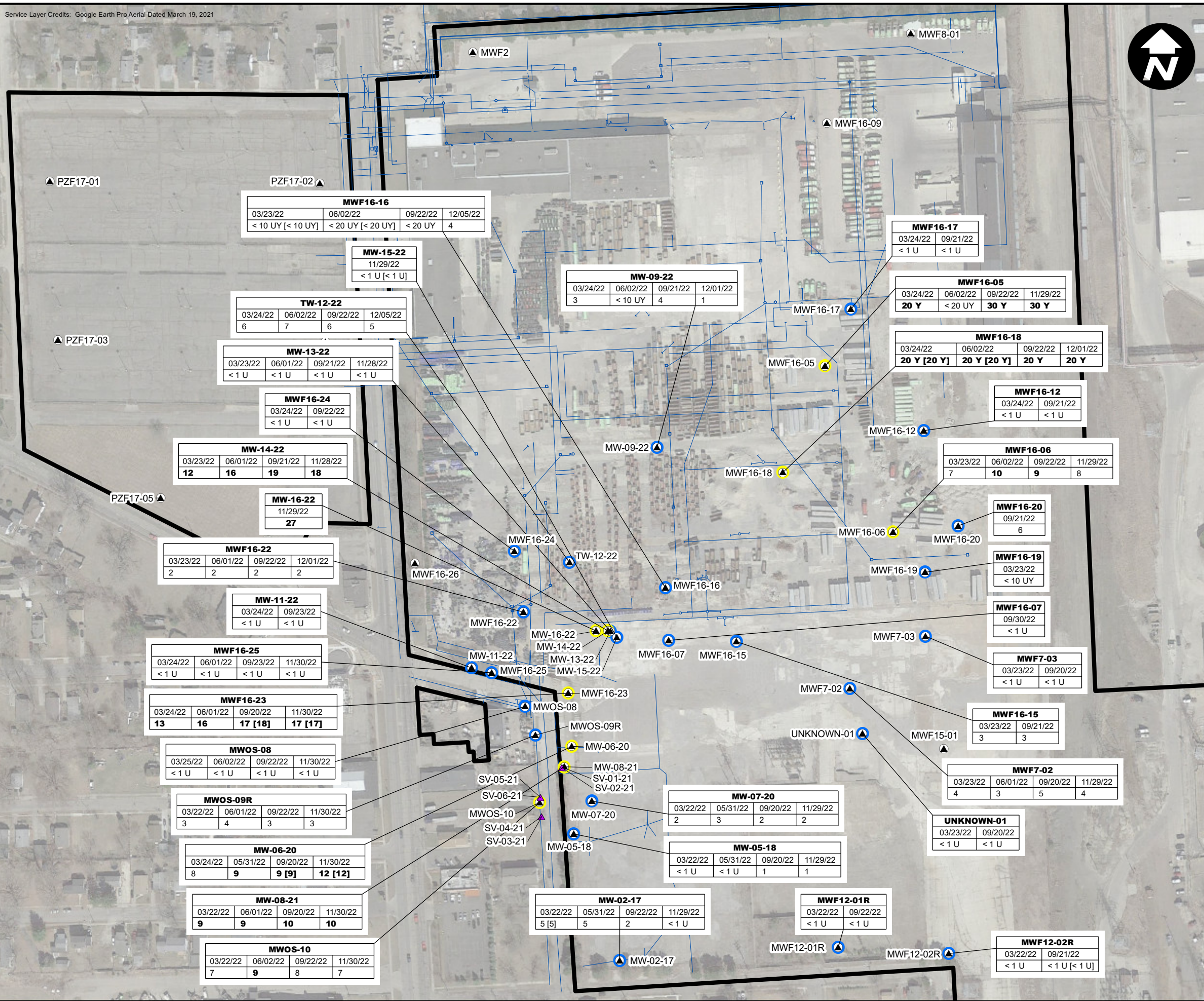
DUPLICATE ANALYSES ARE PRESENTED IN BRACKETS.

CRITERIA LISTED ARE FROM THE EGLE FORMER FIERO ASSEMBLY SITE-SPECIFIC CRITERIA EVALUATION DATED APRIL 21, 2020.



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**CONCENTRATION OF TETRACHLOROETHENE IN GROUNDWATER**



**LEGEND**

- ▲ EXISTING MONITORING WELL
- ▲ SOIL VAPOR MONITORING POINT
- EXISTING UTILITY
- ▭ CURRENT OR FORMER RACER PROPERTY

**CONCENTRATION OF TCE IN GROUNDWATER**

- < 8.1 µg/L
- 8.1 - 81 µg/L
- > 81 µg/L

Res Fiero SSVIAC SOG	Res Fiero SSVIAC BASE	NR Fiero SSVIAC <50k SOG
15	8.1	210

- TCE TRICHLOROETHENE
- BASE BASEMENT SCENARIO.
- NR NON-RESIDENTIAL
- Res RESIDENTIAL
- SOG SLAB-ON-GRADE SCENARIO
- SSVIAC SITE-SPECIFIC VOLATILIZATION TO INDOOR AIR CRITERIA
- U COMPOUND WAS ANALYZED FOR BUT NOT DETECTED. THE ASSOCIATED VALUE IS THE COMPOUND QUANTITATION LIMIT.
- Y ELEVATED REPORTING LIMIT DUE TO HIGH TARGET CONCENTRATION.
- <50k LESS THAN 50,000 SQUARE FEET
- < NOT DETECTED ABOVE THE LABORATORY REPORTING LIMIT

ALL GROUNDWATER CONCENTRATIONS ARE PRESENTED IN MICROGRAMS PER LITER (µg/L)

DUPLICATE ANALYSES ARE PRESENTED IN BRACKETS.

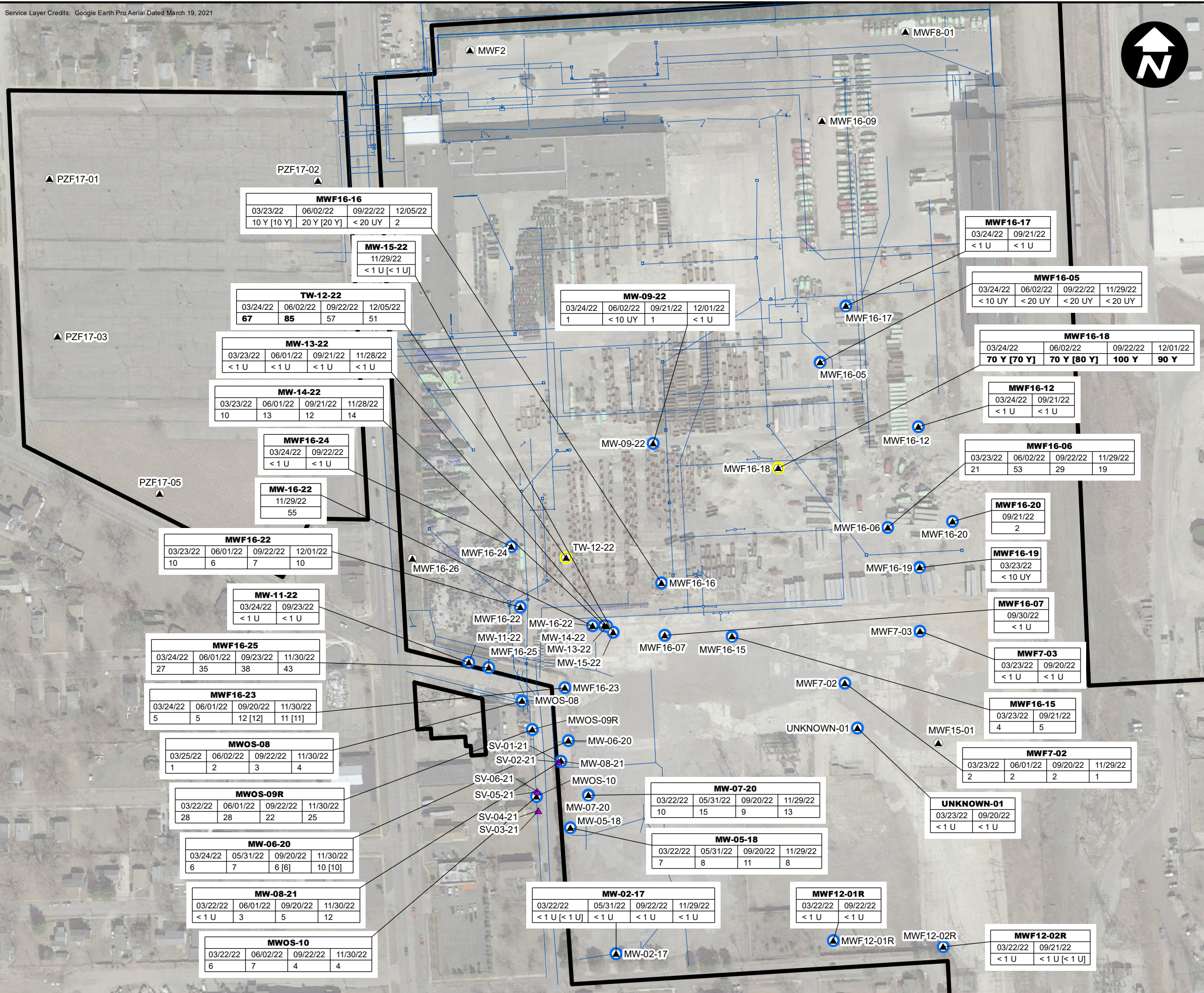
CRITERIA LISTED ARE FROM THE EGLE FORMER FIERO ASSEMBLY SITE-SPECIFIC CRITERIA EVALUATION DATED APRIL 21, 2020.



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**CONCENTRATION OF TRICHLOROETHENE IN GROUNDWATER**





**LEGEND**

- ▲ EXISTING MONITORING WELL
- ▲ SOIL VAPOR MONITORING POINT
- EXISTING UTILITY
- ▭ CURRENT OR FORMER RACER PROPERTY

**CONCENTRATION OF DCE IN GROUNDWATER**

- < 62 µg/L
- 62 - 620 µg/L
- > 620 µg/L

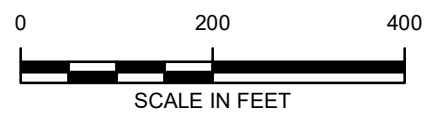
Res Fiero SSVIAC SOG	Res Fiero SSVIAC BASE	NR Fiero SSVIAC <50k SOG
110	62	2,300

- DCE cis-1,2-DICHLOROETHENE
- BASE BASEMENT SCENARIO.
- NR NON-RESIDENTIAL
- Res RESIDENTIAL
- SOG SLAB-ON-GRADE SCENARIO
- SSVIAC SITE-SPECIFIC VOLATILIZATION TO INDOOR AIR CRITERIA
- U COMPOUND WAS ANALYZED FOR BUT NOT DETECTED. THE ASSOCIATED VALUE IS THE COMPOUND QUANTITATION LIMIT.
- Y ELEVATED REPORTING LIMIT DUE TO HIGH TARGET CONCENTRATION.
- <50k LESS THAN 50,000 SQUARE FEET
- < NOT DETECTED ABOVE THE LABORATORY REPORTING LIMIT

ALL GROUNDWATER CONCENTRATIONS ARE PRESENTED IN MICROGRAMS PER LITER (µg/L)

DUPLICATE ANALYSES ARE PRESENTED IN BRACKETS.

CRITERIA LISTED ARE FROM THE EGLE FORMER FIERO ASSEMBLY SITE-SPECIFIC CRITERIA EVALUATION DATED APRIL 21, 2020.



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**CONCENTRATION OF CIS-1,2-DICHLOROETHENE IN GROUNDWATER**

