RAMBOLL

ENVIRONMENT
& HEALTH

Mr. John Feeney
Wisconsin Department of Natural Resources
Plymouth Service Center
1155 N. Pilgrim Road
Plymouth, WI 53072

NR 716 SITE INVESTIGATION WORK PLAN FOR ADDITIONAL GROUNDWATER TCE DELINEATION, FORMER HVC SITE, 600 SOUTH MILWAUKEE STREET, FREDONIA, WISCONSIN (BRRTS NO. 02-46-248387)

Dear Mr. Feeney:

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Ramboll US Consulting, Inc. (Ramboll), on behalf of Phillips Medisize LLC (Phillips), is submitting this Site Investigation Work Plan (the "Work Plan") to conduct additional groundwater investigation activities relating to the former HVC property located at 600 South Milwaukee Street in Fredonia, Wisconsin (the "Site"), specifically to define the extent of groundwater trichloroethene (TCE) impacts to the south and west of monitoring well MW-31 located at the southern end of treatment barrier PB3 in the Stoney Creek Meadow Subdivision (the "Subdivision").

This Work Plan presents a brief summary of the investigations and remediation activities conducted from 2017 through 2021, additional investigation approach, and the associated scope of work and field methodology in conformance with Wisconsin Administrative Code (WAC) NR 716.

SUMMARY OF INVESTIGATION AND REMEDIATION ACTIVITES FROM 2017 TO 2021

In November 2017 and April 2018, a total of 41 temporary hydropunch borings were completed and related groundwater sampling activities were performed along South Milwaukee Street, downgradient of the former HVC, Inc. within the Fredonia Industrial Park, along the south side of the Forest Glen subdivision and on Pine Street, within the Subdivision, and in the lowland area west of the Subdivision. The hydropunch work was performed as generally described in the previously submitted Work Plan. The results of the investigation work documented that TCE-impacted groundwater on the former HVC, Inc. property has migrated off-site through a saturated sand stratum into the downgradient industrial park and the Subdivision. Horizontally, the downgradient extent of groundwater impacts is defined to the west of a man-made pond located in the Subdivision. TCE is the primary contaminant of concern at the Site.

During Summer 2019, groundwater remediation activities were completed at and downgradient of the Site for treatment of the TCE plume utilizing PlumeStop™ and AquaZVI™ remediation materials, which were injected into the subsurface. Approximately 2,700 gallons of AquaZVI™ were applied across six source area treatment barriers (AB1 through AB6). Approximately 39,100 gallons of PlumeStop™ and 5,600 gallons of AquaZVI™ were applied at three downgradient injection barriers

(PB1 through PB3). All nine injection barriers were constructed across the groundwater column within the sand stratum creating barriers perpendicular to groundwater flow in accordance with the design detailed in the *Groundwater RAO and Design Report* (Ramboll, May 2019). These barrier locations are shown as part of the Site Layout on **Figure 1**.

The initial post-construction groundwater sampling occurred in November 2019 following implementation of the PlumeStop™ and AquaZVI™ treatment barriers and was performed in accordance with the monitoring program presented in the *Groundwater RAO and Design Report* (Ramboll, May 2019). Initial sample results documented that monitoring wells in the immediate vicinity of the treatment barriers had significant decreases in TCE concentration. Concentrations of TCE in monitoring wells at farther distances downgradient from the treatment barriers were observed to be stable and will require additional time to see a continued reduction of the TCE groundwater concentrations. The initial post-construction groundwater remediation and confirmation sampling activities were documented in the December 2019 *Groundwater RACR* (Ramboll, 2019).

Based on the initial groundwater results and comments received from the Wisconsin Department of Natural Resources (WDNR) in December 2019, four groundwater table wells (MW-28, MW-29, MW-30, and MW-31) and three deep monitoring wells (MW-11D, MW-28D, and MW-29D) were installed between November 2 through 5, 2020. Following well installation and development, groundwater samples were collected from these new monitoring wells during the subsequent groundwater monitoring event completed in November 2020. All monitoring well locations associated with the Site are shown on **Figure 1**.

TCE was detected above the WAC NR 140 groundwater Enforcement Standard (ES) at MW-31 during the November 2020, May 2021, and November 2021 groundwater monitoring events. Since the PB3 barrier terminates approximately 50 feet north of the location of MW-31, the extent of the impacts around this well require further delineation. The estimated extent of groundwater impacts is illustrated on **Figure 2**.

ADDITIONAL INVESTIGATION APPROACH

The objective for the additional groundwater investigation is to further delineate the horizontal extent of the TCE impacts to groundwater in the vicinity of existing monitoring well MW-31 in accordance with WAC NR 716. Up to eight additional geoprobe/hydropunch borings will be advanced at select locations radially outward from MW-31 to the north, south and west, as shown on **Figure 2**.

SCOPE OF WORK AND METHODOLOGY

The following sections outline the scope of work and methodology that will be utilized during the additional site investigation activities.

Surveying

The locations for each of the eight additional hydropunch samples have been selected to further delineate the inferred extent of TCE impacts above the ES based on groundwater sampling performed to date. Prior to the initiation of sampling activities, Ramboll will contract with a surveyor to stake out the location of each of the eight proposed hydropunch borings to ensure that samples are collected in the desired locations. The coordinates of each hydropunch boring will aid in the evaluation of the site geology and hydrogeology and extent of the TCE impacts in this area.

Utility Clearance

Prior to conducting intrusive activities, utility mark-outs will be coordinated through Diggers Hotline. To identify subsurface utilities and confirm their location prior to initiating any intrusive work, Ramboll will contract with a private utility locator to complete geophysical surveys (e.g., using ground-penetrating radar) of the areas where subsurface investigation activities will occur. Proposed sampling locations may be modified to avoid subsurface utilities or other obstructions, as appropriate.

Hydropunch Groundwater Investigation/Sampling

Up to eight additional geoprobe/hydropunch borings will be advanced at select locations radially outward from MW-31, as shown on **Figure 2**. Ramboll will coordinate access with Lundman Development Corporation, the private property owner on which these hydropunch borings are to be advanced prior to performance of the work. It is anticipated that one groundwater sample will be collected from each location from the center of the saturated interval. If greater than 10 feet of saturated thickness is encountered above the silt confining unit, two water samples will be collected: one at the water table surface and one at the bottom of the sand stratum/ top of confining silt layer to define the extent of impacts in these areas.

Two borings will be advanced at each location. Initially, a geoprobe boring will be advanced for the purposes of logging subsurface geology, determination of groundwater elevation, and positive identification of the confining silt layer beneath the saturated sand stratum. Soil samples will be continuously collected from the geoprobe borings for visual observation and field screening. Soil samples will be screened in the field with an 11.7 electron volt (eV) photoionization detector (PID) for the presence of chlorinated volatile organic compounds (CVOCs). Soil characteristics (e.g., texture, color), PID readings, and visual and/or olfactory evidence of impacts will be recorded on soil boring logs. Laboratory analysis of soil samples is not planned at this time.

A second boring (hydropunch) will be advanced immediately adjacent to the Geoprobe boring for the collection of groundwater samples. Upon encountering the groundwater, a temporary sampling screen will be inserted into the boring and the rods retracted to expose the screen to the natural formation at the desired sampling depth. The temporary well screen will be purged with a peristaltic pump or inertial sampling apparatus. Following purging activities, a water sample will be collected with the pump or inertial sampling apparatus for laboratory analysis by Pace Analytical Services, Inc. (Pace), a Wisconsin Certified Laboratory. All groundwater samples will be analyzed by the laboratory for target CVOC analysis including: TCE, cis 1,2-dichloroethene (cis 1,2-DCE), trans-1,2-dichloroethene (trans 1,2-DCE), tetrachloroethene (PCE), vinyl chloride, 1,1-dichloroethene (1,1-DCE), 1,1,1-trichloroethane (1,1,1-TCA), 1,1,2-trichloroethane, 1,1-dichloroethane, and 1,2-dichloroethane using United States Environmental Protection Agency (USEPA) Method 8260B. The results will be used to assist in determining the extent of the TCE impacts and for identifying locations for permanent monitoring wells to be installed if necessary. A standard 10-day turnaround time will be requested for the laboratory analysis of the hydropunch groundwater samples.

Investigative Waste Management

Excess soil generated during the hydropunch investigation will be placed into 55-gallon steel drums to be temporarily staged on the former HVC Site until appropriate disposal methods are determined. For waste characterization purposes, Ramboll will collect one composite soil sample to be submitted for analysis for VOCs and Resource Conservation and Recovery Act (RCRA) metals by toxicity characteristic leaching procedure (TCLP). Following receipt of the laboratory analytical results and acceptance of the waste profile

by an approved disposal facility, the drums will be collected by a waste hauler and transported to the pre-approved disposal facility for off-site disposal. Purge water generated during the hydropunch sampling will be containerized in 55-gallon steel drums and staged on the former HVC Site. For waste characterization purposes, Ramboll will collect one composite water sample to be submitted for analysis for VOCs and RCRA metals. Depending on the concentrations, the purge water will either be discharged to the Village of Fredonia sanitary sewer system under the approved waste water discharge permit from the Village of Fredonia Department of Public Works or will be transported off-site to a pre-approved disposal facility.

Reporting

The groundwater sampling results from the hydropunch borings will be tabulated, validated, and provided to the WDNR, off-site property owners, and the Village of Fredonia, where applicable, within 10 days following receipt of the laboratory analytical reports as specified in WAC NR 716.04. The results of the additional site investigation activities described above to delineate the extent of the off-site groundwater impacts will be evaluated and presented to the WDNR, as applicable, in a comprehensive site investigation report for the Site.

SCHEDULE

Street opening permits with the Village of Fredonia and access from private property owners will be secured prior to performance of the additional hydropunch investigation, as appropriate. It is anticipated that the field activities will commence during late March or early April 2022. The data notification package will be submitted to the WDNR within 10 days after receipt of the analytical data. The comprehensive site investigation report will be submitted within 60 days of completing the WAC NR 716 investigation activities at the Site.

If you have any questions concerning the information contained in this Work Plan, please feel free to contact us.

Yours sincerely,

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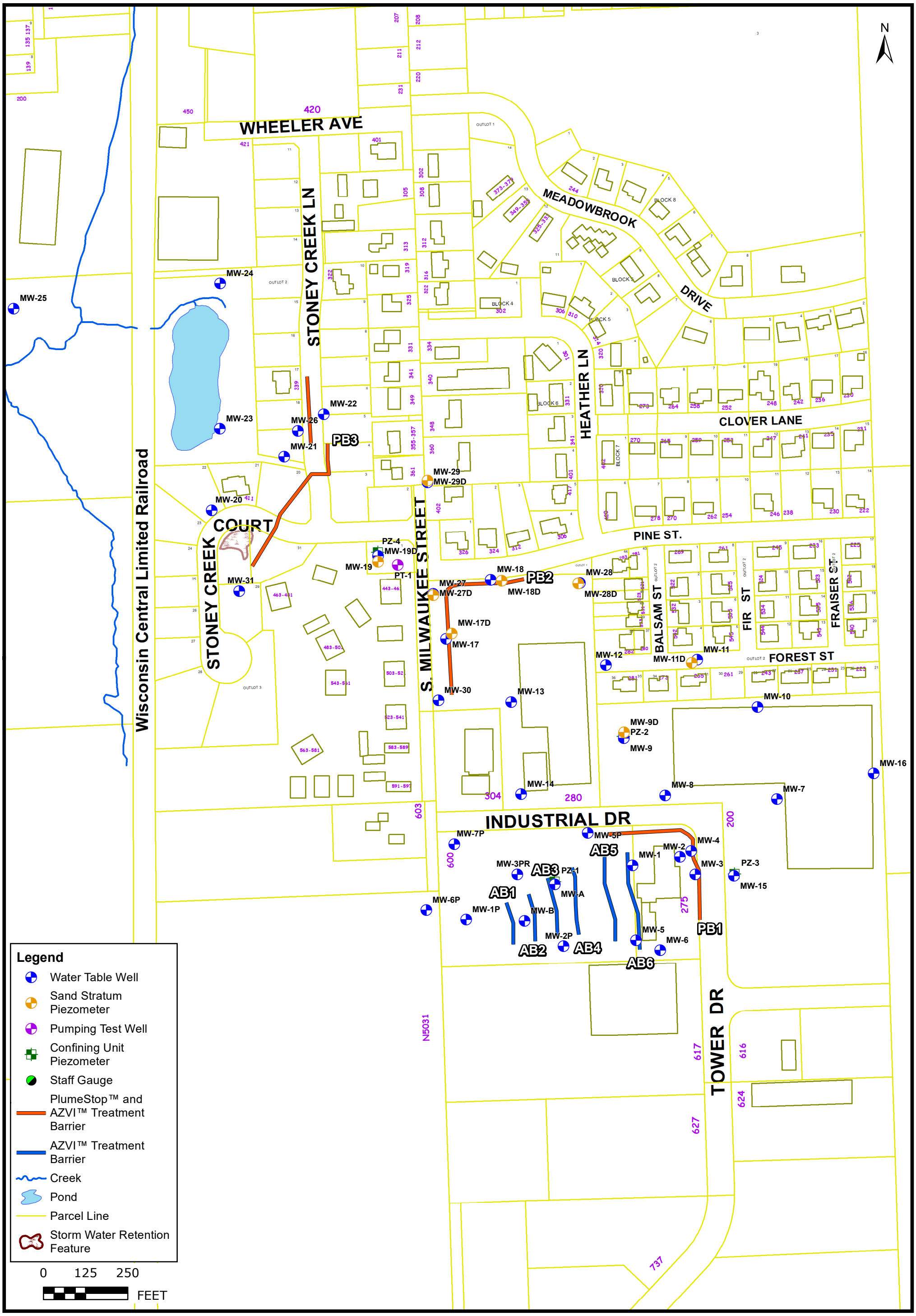
ENCLOSURES

Figure 1: Site Layout
Figure 2: Extent of Groundwater Impacts and Proposed Hydropunch Locations

FIGURES



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DRAFTED BY: MJL

DATE: 2/28/2022

SITE LAYOUT

FORMER HVC, INC.

FREDONIA, WISCONSIN

FIGURE

1

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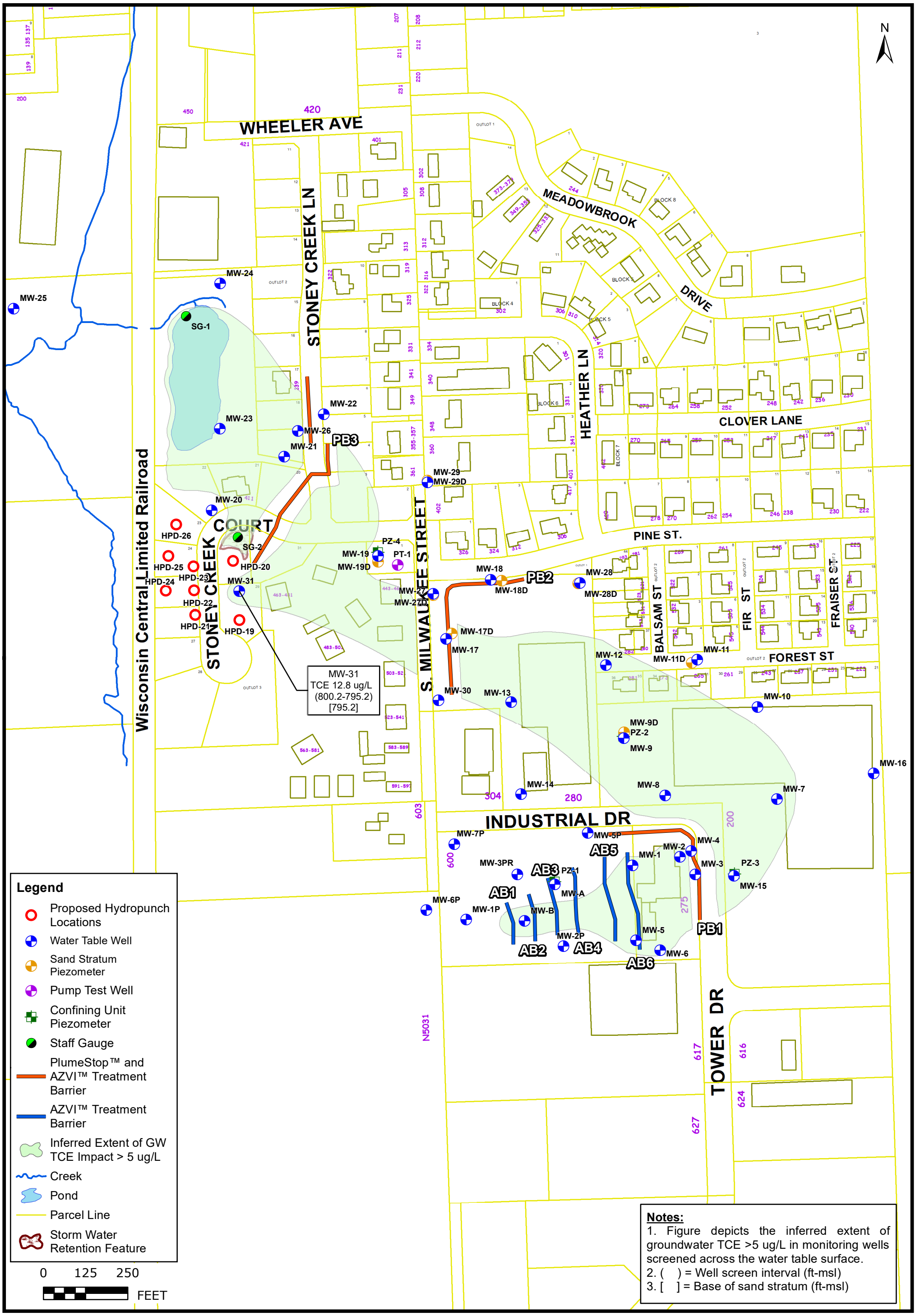

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DRAFTED BY: MJL

DATE: 2/25/2022

EXTENT OF TCE IMPACTS AND PROPOSED HYDROPUNCH LOCATIONS

FORMER HVC, INC.

FREDONIA, WISCONSIN

FIGURE **2**

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