Wisconsin Department of Natural Resources
Superfund Site Assessment
Site Inspection

SAMPLING PLAN

Site Name:	Keck Farm
U.S. EPA ID#:	WIN000506251
Location:	W5797 Freitag Lane, Town of Watertown, WI 53094
Directions to Site:	From Interstate 94, exit at Exit 259 in Lake Mills. Turn left (south) on County Road G. Drive 0.3 miles (beneath interstate). Turn left (east) on Tyranena Park Road. Drive 0.6 miles. Turn left (northeast) on County Road A (crossing beneath interstate again). Drive 3.0 miles. Turn left (north) on County Road Q. Drive 3.6 miles. Turn right (east) on Navan Rd. Drive 0.8 miles. Turn (left) north on West Rd. Drive 1 mile. Turn right (east) on Freitag Lane. The site is on the south side of the east end of Freitag Lane.
Dates of Investigation:	Summer 2017
Project Manager:	Jason Lowery, 101 S. Webster St., Madison, WI (608) 267-7570
Field Support Group:	see Table 5

Prepared by: _____ Date: 5/23/17

Jason Lowery, Hydrogeologist
Site Assessment Team Leader
Central Office - Madison
Remediation and Redevelopment Program
Wisconsin Department of Natural Resources

Approved by: _____ Date: 5/23/17

Nuria Muniz
NPL Coordinator, Region 5
Division of Superfund
U.S. Environmental Protection Agency

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I. Introduction

The Wisconsin Department of Natural Resources (WDNR), through a Cooperative Agreement with the United States Environmental Protection Agency (USEPA) Region 5, is tasked to conduct Site Inspections (SI) or Expanded Site Inspections (ESI) to determine if potentially contaminated sites throughout Wisconsin are eligible for placement on the National Priorities List (NPL) of Superfund sites. A Hazard Ranking System (HRS) score of 28.5 or greater determines NPL eligibility.

A. Purpose of Sampling Plan

The purpose of this sampling plan is to provide written protocols used by WDNR to ensure that data of known quality are used to determine if the Keck Farm site has an HRS score of 28.5 or greater. This sampling plan will make the Field Support Group aware of site history, potential contaminants, sampling procedures, and their roles and responsibilities during the sampling event. This sampling plan will be approved by USEPA Region 5 in advance of the sampling event so that laboratory services through the EPA's Contract Laboratory Program (CLP) may be obtained.

B. Objective of Investigation

The objective of this investigation is to collect samples of groundwater from monitoring wells and private potable wells to establish that hazardous materials or wastes, attributable to the site, have been released into the environment. Sampling strategy will support that the Groundwater Pathway poses, or potentially poses, a threat to human health and the environment.

II. Site Description and History

The total area of the Keck Farm is 120 acres, of which two general areas within approximately 1,900 feet of each other were used for disposal of drums containing solvent wastes between 1970 and 1971. Most of the drums were disposed of on the ridge of a drumlin within the farmstead. Additional drums were disposed of along the former fenceline to the east, which is also an existing tree line and the approximate boundary between Sections 15 and 16. The site area is generally used for farming. A map of the farmstead area is attached as Figure 1.

The solvent contamination wasn't discovered by WDNR until after anonymous complaints were made in 1987. The old Keck well (143 feet deep with 119 feet of casing) and other wells in the area were sampled in March and April 1988. Trichloroethylene (TCE) was detected in the Keck well at concentrations of 56,000 and 71,000 parts per billion (ppb). The well was abandoned and replaced shortly thereafter. Subsequent sampling did not reveal chlorinated solvents in the new Keck well or other wells in the area; however, significant contamination was found in groundwater samples from on-site monitoring wells. A limited soil excavation occurred in 1990. Subsequent remediation efforts included soil vapor extraction (SVE)(1995-2002), groundwater extraction (1992-2002), and air sparging

(1995-2000). Chrysler's environmental consultant (GZA GeoEnvironmental Inc.(GZA)) concluded in 2002 that the remediation efforts had only removed approximately 10 percent of the subsurface contamination, and with WDNR permission, the SVE and groundwater extraction systems were shut down in October 2002.

GZA installed biostimulation injection wells in 2004 and injected biostimulants from 2004 through 2008, when Chrysler filed for bankruptcy. The Chrystler bankruptcy also ended the sampling of monitoring wells and private wells in the area, even though TCE concentrations in on-site monitoring wells exceeded 50,000 ppb. Laboratory analytical data do not appear to indicate an overall significant reduction in TCE concentrations within the sandstone aquifer and actually indicate that TCE concentrations had increased at some locations.

TABLE 1
Historical Data

Sample Location	Media Analyzed	Analytical Parameters	Contaminants Detected	Comments
SB-21, shallow sample inside pole barn (1989)	soil	VOCs and metals	ethylbenzene, toluene, TCE, xylenes, metals	TCE = 217 ppm As = ND Pb = 33 ppm
DB-21, 14-16' deep, west edge of concrete pad (1989)	soil	VOCs	chloromethane, ethylbenzene, toluene, TCE	TCE = 152 ppm
Old Keck well, water from 119-143 feet deep (1988)	groundwater	VOCs	benzene, 1,1-dichloroethane,1,2 cis DCE, 1,1 DCE, toluene, 1,1,1 trichloroethane, TCE, vinyl chloride	TCE = 56,000 and 71,000 ppb xylenes = 200 ppb 1,2 cis DCE = 82 ppb, vinyl chloride = 2.2 ppb
New Keck well, water from 250-280 feet deep (1988-90)	groundwater	VOCs	none attributed to groundwater; ND at hydrant.	VOCs detected in pipes (from contaminated soil) but not well
Deep monitoring wells (1989-2007), > 120 feet deep in sandstone aquifer	groundwater	VOCs	several VOCs (see Table 2 of PA)	Historic high = 48,100 TCE (MW12D, 1990). Recent high = 3,500 TCE (MW-40D, 2007)
Potable wells (1989-2008), generally > 100 ft deep in sandstone aquifer, < 1 mile from Keck Farm	groundwater	VOCs	none attributed to Keck Farm (e.g. chloromethane)	N/A

III. Site Geology/Hydrogeology

Information in this section was obtained from the WDNR's Preliminary Assessment (PA) dated August 24, 2016 and its associated references.

Geological conditions at the site consist of 80 to 100 feet of very dense glacial till containing a sand and gravel matrix with varying percentages of clay and silt. A discontinuous layer of up to 23 feet of sand and gravel, identified as a "contact zone," is reported to underlie the till on the flanks of the drumlin that the Site is located on. The St. Peter Sandstone, a regional water supply aquifer, underlies the "contact zone" and consists of fine-grained, poorly cemented sandstone. The Galena-Platteville dolomite overlies the St. Peter Sandstone in areas within 1 mile of the Site (to the east). The Galena-Platteville Dolomite and St. Peter Sandstone are the primary aquifers in the Site vicinity for domestic water supplies. The St. Peter Sandstone is underlain by crystalline Precambrian rocks.

The water table has been measured at depths of 10 to 60 feet below grade in the glacial till. The Site is situated on a groundwater divide, approximately halfway between the Crawfish and Rock Rivers. Groundwater flow within the till and the St. Peter Sandstone appears to be primarily to the east-southeast but also toward the west in the western portion of the Site. The groundwater flow velocity was estimated by GZA to be approximately 50 to 75 feet per year within the St. Peter Sandstone.

Potable wells within the aquifer range from approximately 72 to 235 feet in depth. Water is produced at rates up to 1,000 gallons per minute.

LBG's August 1989 report included several Well Constructor's reports for historical wells in the area. The report for the old on-site well indicated the presence of glacial till to 108 feet below grade, sand and gravel from 108 to 119 feet below grade, and sandstone below 119 feet below grade. Sandstone was first encountered at depths ranging from 67 to 138 feet below grade in the next three closest wells to the site. The closest known well location with limestone was at N8960 Willow Road, approximately ½ mile northeast of the Site. Limestone was encountered at 58 to 80 feet below grade (above sandstone) and the well obtained water from 58 to 100 feet below grade.

IV. Description of Work to be Performed

Chlorinated solvent VOCs have been the contaminants of concern at this site. Several soil samples were analyzed for metals in 1989 and the most elevated concentrations included 123 ppm lead at soil sample SB-29 and 13 ppm arsenic at soil sample SB-42. Since the groundwater pathway is the only pathway at this site that appears to have a realistic possibility of scoring high enough for potential NPL listing, WDNR will evaluate this pathway only.

Sampling for this SI will be limited to sampling deep on-site monitoring wells that still exist at the site and obtain water from the sandstone aquifer, and private wells within 1 mile of the site. The private wells that were selected as potential targets are near and south of the

site and obtain water from the sand or sandstone aquifer, if well construction information is available for the well. Based upon existing well construction forms from the area, most wells in the area obtain water from these aquifers.

Three groundwater samples will be collected from deep monitoring wells for attribution purposes. Two of these samples will be collected from deep monitoring wells that had recently elevated TCE concentrations (310 ppb at monitoring well MW-28D and 3,500 ppb at monitoring well MW-40D), and one sample will be collected from one of the most downgradient monitoring wells that historically had an MCL exceedance (13 ppb at monitoring well MW-39D)(Figure 1).

Two groundwater samples will be collected from private wells representing anticipated background concentrations. Up to 14 groundwater samples will be collected from private wells that are potential targets. The WDNR sent cover letters and access agreements to owners of potential target wells at the 40 locations depicted in Figure 2. The WDNR has subsequently been granted permission to collect samples from the 23 residences depicted in Figure 3 and listed in Table 2 (in clockwise order starting north of the site).

The site is located on a potential groundwater divide (see Figure 6 of Reference 4 and Figure 2 of Reference 20, Preliminary Assessment), approximately halfway between the Crawfish and Rock Rivers. Groundwater at the site appears to primarily flow toward the east-southeast but some groundwater may also flow toward the west. Based upon this information and the fact that both the Crawfish and Rock Rivers generally flow toward the south, the WDNR will utilize the area north of the site for collecting the background samples. Private wells to the east, south, and west, and extremely close to the site (e.g. A. Weihert) will be utilized as target samples. In general, wells located east of the site are more likely targets than wells located west of the site.

TABLE 2
Potable Well Information

Owner / Address	Dist. from nearest source (miles)	Direction	Previously sampled	Well Const. Information	Justifiction to sample or not sample
W5796 Freitag	0.15	N	Yes	unavailable	Yes: target sample; closest well
N8984 Loam	0.57	NE	No	58' deep. Gravel 54' to 58'. Well #OT798. Source: well owner permission form.	Yes: background; NNE of site
N8998 Willow	0.76	NE	No	77' deep. Casing to 53'. Limestone 53' to 77'. Well #UP551. Source: 2015 DNR Well Data CD	No: Not an ideal target or background sample. North of site but east of Keeser well.
N8970 Willow	0.75	NE	No	unavailable	No: Not an ideal target or background sample. North of site but east of Keeser well.
N8947 Willow	0.61	NE	No	123' deep. Sandstone 98' to 123'. Well #LW211. Source: well owner permission form.	No: Not an ideal target or background sample
N8780 Willow	0.80	E	Yes	*131' deep. Casing to 121'. Sandstone 118' to 131': Source: PA Reference #4, 1989 (Appendices), well #22 (Marvin Saxby)	Yes: Directly east of the site
N8651 Willow	0.68	ESE	Yes	80' deep. Source: well owner permission form. Well #DG093 (no information provided on form)	Yes: Near site; downgradient
N8639 Willow	0.76	ESE	No	unavailable	Yes: Near site; downgradient
W5698 Navan	0.23	SE	Yes	unavailable. No electricity to well. House is vacant.	No: no electricity
W5438 Navan	0.83	SE	No	185' deep. Casing to 138'. Sandstone 138' to 185'. Source: PA Reference #4, 1989 (Appendices), well #4 (Patrick Strupp)	Yes; Near site; downgradient
W5798 Navan	0.42	S	Yes	142' deep. Casing to 96'. Limestone 96' to 117', Sandstone 117' to 142'. Well #NW811. Source: 2015 DNR Well Data CD.	Yes: Near site; downgradient
W5740 Navan	0.53	S	Yes	107' deep. Sand and gravel 101' to 107'. Well #LF046. Source: well owner permission form.	Yes: Near site; downgradient
W5731 Navan	0.61	S	No	63' deep. Casing to 60'. Sand and gravel 50' to 63'. Well #CP468. Source: 2015 DNR Well Data CD	Yes: Not previously sampled; downgradient
W5891 Navan	0.68	SSW	Yes	unavailable	Yes: potentially downgradient

N8472 West	0.80	SW	No	125’ deep. Casing to 107’. Sandstone 107’ to 125’. Well #OW088. Source: 2015 DNR Well Data CD	Yes: Not previously sampled; potentially downgradient
W6071 Navan	0.95	SW	No	unavailable	Yes: Not previously sampled; potentially downgradient
N8485 CTH Q	1.44	SW	No	unavailable	No: Distance from site
W6430 Navan	1.67	SW	No	unavailable	No: Distance from site
N8597 West	0.64	SW	Yes	unavailable	Yes: Near site
N8713 West	0.42	WSW	Yes (Walker)	unavailable	Yes: Near site
N8817 West	0.34	WNW	Yes	223’ deep. Casing to 181’. Sandstone 180’ to 223’. Well #DB220. Source: 2015 DNR Well Data CD	Yes: Near site
N8890 West	0.44	NW	Yes	unavailable	No: North of site; previously sampled
N8957 West	0.6	NW	No	*72’ deep. Casing to 67’. Sandstone 67’ to 72’. Source: PA Reference #4, 1989 (Appendices), well #11 (Thomas Gatzke Trust)	Yes: Background; sufficiently north and distant from site.

Notes:
Bold and highlighted font are proposed sampling locations
* well construction information based only upon ¼ section location and cannot be verified.

WDNR will collect samples from the 16 potable wells listed above in bold font. This includes two background samples from north of the site (N8984 Loam and N8957 West) and 14 target samples to the south, east or west. WDNR does not plan on sampling the well without electricity (W5698 Navan) and there are six wells that will not be sampled even though WDNR was granted access to sample them (N8998 Willow, N8970 Willow, N8947 Willow, N8485 CTH Q, W6430 Navan, and N8890 West). The W5698 Navan well is located in one of the most likely areas for contamination; however, the the representative for the property informed WDNR on February 2, 2017 that the home is vacant and the electricity to the well has been shut off. This well has been sampled in the past and chlorinated solvents were not detected. Nevertheless, if WDNR becomes aware that this well is operable before sampling occurs, it could be added to the list of sampling locations. The N8998, N8970, and N8947 Willow wells are potential background wells but two background wells more directly north of the site (N8984 Loam and N8957 West) have already been selected. The W6430 Navan and N8485 CTH Q wells will not be sampled because they are more than a mile southwest of the site and therefore less likely to be contaminated than several other wells. The N8890 West well is somewhat north of the site and not likely to be contaminated, but it is not as good of a candidate for a background location as the adjacent N8957 West well farther north.

The potable wells that have been selected are known to obtain water from either the sandstone or sand and gravel aquifer, or if well construction information is unavailable are presumed to obtain water from one of these water-bearing units. For HRS scoring purposes, these units are considered to be part of the same aquifer because they are in contact with each other and their hydraulic conductivities should not differ by more than two orders of magnitude.

Sampling methods and designations will be as follows:

* Groundwater samples from monitoring wells (MW-35D, MW-39D and MW-40D) will be collected using a pump for purging the monitoring wells and dedicated/disposable bailers to sample the monitoring wells.
* Potable well samples will be collected directly into laboratory containers from the outdoor spigot between the well and inside pressure tank (or the inside spigot before the pressure tank), and will be identified as potable wells PW-1 through PW-16.

A. Waste Characteristics and Pathways to be Investigated

Mr. Jerome Keck currently owns the Keck Farm, which has been in operation since at least 1970. The disposal of solvents reportedly occurred in 1970 and 1971, when the property was owned by Mr. Alton Keck. Alton Keck admitted that for 6 months from the end of 1970 to early 1971 he accepted approximately 35 barrels per week from a Chrysler plant in Hartford. The barrels contained paint scraps and used solvents, and he dumped most of the contents near his house before crushing the barrels and selling them as scrap metal. WDNR personnel visited the site in response to an anonymous complaint in November

1987 and discovered approximately 100 barrels along the former east fenceline and current treeline (Figure 1). Several of these barrels contained paint sludges and liquids.

Subsequent sampling conducted in 1989 and thereafter revealed that TCE is the primary contaminant of concern and that other VOCs have also been detected in groundwater samples at significantly lower concentrations. Since the disposal occurred almost 50 years ago, any residual VOC impacts in soil have likely evaporated, degraded, or leached to depths that are no longer soil exposure, surface water, or air pathway threats. Subsurface intrusion also does not appear to be a threat, based upon a combination of historical groundwater isoconcentration and elevation maps and limited presence of residents in the immediate vicinity of the site (including the source property), where shallow groundwater (that could produce soil vapors) would most likely be impacted. In addition, shallow soil consists primarily of dense glacial till.

B. Sampling Rationale

Sample collection is intended to refine the assessment of the groundwater migration pathway in the vicinity of the site. The sampling rationale is in Table 3 below; sample locations are shown on Figures 1 and 3.

TABLE 3
Sampling Rationale

Sample Matrix	Sample Location Description	Sample ID Numbers	Analyses	Rationale for Sampling
Groundwater (monitoring wells) – Figure 1	On-site monitoring wells	MW-35D, MW-39D, and MW-40D	VOA	Observed release, newer monitoring wells with historic detections
Groundwater (private wells) – Figure 3	Upgradient private well	PW-1, PW-2	VOA	Background for private wells, attribution
	Downgradient private wells	PW-3 thru PW-16	VOA	Observed release, contaminant migration to receptors

V. Sampling Procedures

The procedures given below will be used to collect samples at the Keck Farm site.

A. Monitoring Well Sampling

Water elevations and samples will be collected according to procedures outlined in the department's *Groundwater Sampling Field Manual*. Wells will be purged using the following equation:

EQUATION 1
Volume to be Purged from a Monitoring Well

$$\mathbf{V} = \pi \times \mathbf{R}^2 \times \mathbf{H} \times \mathbf{4} \times \mathbf{7.48} \text{ gallons/ft}^3$$

Where **V** = Total purge volume (i.e., four well volumes in gallons)
π = 3.1416
R = Inside radius of well casing (feet) = 0.0808
H = Feet of water in well (depth to well bottom minus depth to water)

A piece of 4-mil plastic (~4' x 4') will be centered around each well to reduce the introduction of contamination. Purged water will be collected in graduated 5-gallon plastic pails and transferred to a 55-gallon drum or larger container for eventual disposal, pending laboratory results. Physical features such as color, odor, and turbidity will be recorded in the field log book.

Well construction and water elevation information utilized to determine approximate purge volumes is detailed in Table 4.

TABLE 4
Monitoring Well Information

Well	Installed	Screen Depth (from top of protop)	Depth to water (from top of protop)	Geology	Estimated Purge Volume (0.6142 g/ft * ft water column)
MW-35D	Dec 2002	141.5-151.5	42-46.5	sandstone	66
MW-39D	Dec 2002	121.9-131.9	35-39	sandstone	58
MW-40D	Aug 2004	129.5-139.5	44-45	sandstone	58

-measurements are in feet or gallons

Based upon the large volume of water required to adequately purge the monitoring wells, the monitoring wells will be purged using a submersible pump that will be decontaminated before and between purging each well. The submersible pump will run off of a vehicle battery. If WDNR is unable to access monitoring well MW-39D with a vehicle due to rough terrain that monitoring well will be purged with a disposable bailer.

Monitoring wells will be sampled using either the submersible pump (with flow rate decreased to approximately 10 mL/min) or disposable bailers. Reusable bailers (e.g., stainless steel), if used, will be decontaminated between wells using the procedures in Section VIII. If bailers are utilized, one-time-use nylon rope will be used to lower the bailers. Some of the bailers are provided with specially designed bottom-emptying devices which will be inserted into the bottom to transfer the groundwater to containers, thus minimizing loss of volatile contaminants.

See **Appendix B** for appropriate sample containers, volumes, preservation, and holding times.

VOC Groundwater Samples for CLP

The vials for VOC analysis have hydrochloric acid added in advance. The vials will be filled slowly and with caution to avoid loss of volatile contaminants. Containers will be filled completely, without headspace. Once capped, the vials will be inverted to check for trapped air bubbles. Samples will be kept at 4^{o} C until they arrive at the laboratory.

B. Private Well Sampling

Private well groundwater sampling will comply with Chapter 3 of the department's Groundwater Sampling Field Manual PUBL DG-038-96. Permission from the owner of the well to be sampled will be confirmed, along with the sampling date and time, prior to sampling. On the day of sampling, the owner will be met to provide access, the location of the well, and the appropriate tap from which to sample will be determined. Or, these arrangements will be made prior to sampling with owners who will not be home.

The sample will be taken as close to the pump as possible and before any water softener, water heater, or pressure tank, if possible. The sample will be collected from an inside faucet only if absolutely necessary. Any aerators, filters, hoses, or other devices will be removed from the tap before sampling. If the sample is obtained on the well side of the tank, it will be run a minimum of two minutes prior to collection; if it is obtained on the plumbing side of the tank, the water will be allowed to run a minimum of ten to fifteen minutes to flush the pressure tank.

When collecting the VOC sample, water flow will be reduced to a thin, bubbleless stream to prevent the loss of volatile organic compounds. Pre-preserved sample containers for VOCs will be used. See **Appendix B** for appropriate sample containers, volumes, preservation, and holding times. All private well samples for organic analyses will be kept at 4^{o} C until they arrive at the laboratory.

C. Quality Control Samples

All field and designated laboratory QC samples should be properly noted on the SCRIBE Traffic Reports/Chain of Custody Forms.

Each cooler will contain a temperature blank consisting of a sample container with water and labeled "Temperature Blank." The container may be a 40-ml VOC vial (without acid) or any other convenient glass or plastic container that will accommodate a thermometer. Recording the temperature blank on the Traffic Report/Chain of Custody Form and attaching a custody tag is not required.

A summary of field and laboratory quality control sample requirements may be found in **Appendix B**. All sample containers will be purchased from commercial suppliers and will come certified as clean to EPA's highest standards. A certificate of analysis that substantiates the absence of contamination will accompany shipments of new/unused containers. These certificates will be retained as part of the final project files.

Field rinsate blanks, trip blanks, and field duplicates will get *unique* sample numbers. All organic portions of the matrix spike/matrix spike duplicate will receive the *same* organic sample numbers, respectively.

1. Monitoring Well Samples

One field duplicate per ten water (monitoring wells plus private wells) samples, or fewer, will be collected. The field duplicate will be collected, containerized, and preserved at the same time and in the same manner as the parent sample. All field duplicates will be analyzed for the entire suite of parameters as the parent sample.

A trip blank of reagent-free, preserved water will be prepared and shipped at a frequency of 1/cooler with all groundwater for VOC analysis.

As mentioned earlier, the same pump will be utilized to purge at least two of the monitoring wells and a reuseable stainless steel bailer(s) may be used for sample collection. Therefore, a field rinsate blank prepared from reagent free water using all pertinent field equipment and preservation for groundwater sampling will be prepared at a frequency of at least one per 20 groundwater samples, or once per day if fewer than 20 groundwater samples are collected. Rinsate blanks will be analyzed for the full suite of parameters.

2. Private Well Sampling

A matrix spike/matrix spike duplicate (MS/MSD) will be designated on the CLP Organic and Inorganic Traffic Report/Chain of Custody Record at a frequency of one per twenty field samples, or fewer. Extra volume (three times the volume for organic analyses) is required for aqueous MS/MSDs.

Because private well samples are collected directly into the sample container, a rinsate blank is not required.

VI. Documentation and Custody Procedures

Chain of custody procedures and documentation protocol as outlined in Section 5 of the WDNR QAPP and its most current amendment will be strictly adhered to. All appropriate information such as field measurements, sample numbers, persons obtaining and handling samples, etc., will be recorded on preprinted field recording sheets and/or preprinted and bound sampling field log books. The date and time of sampling will be recorded on each sample container. If errors occur on any field documentation, a single line will be drawn through the error, signed and dated. No erasures, write-overs, or correction liquids are permitted. Photographs will be taken to document conditions during sample collection.

VII. Sample Packaging and Shipping

The sample custodian is responsible for packaging samples and preparing coolers for shipping. The sample custodian will follow protocol specified in Section 5 of the WDNR QAPP and this sampling plan. Samples to CLP laboratories will be shipped overnight via Federal Express for next-morning delivery. For samples arriving at the CLP laboratories on Monday through Friday mornings, shipping information must be given to the Contract Laboratory Support System Sample Management Office (SMO) by 8:00 a.m. Central Time the day of arrival, via the SMO Portal. For samples being shipped Friday for a Saturday morning delivery, shipping information must be provided to SMO by 11:00 a.m. Friday, Central Time.

VIII. Decontamination and Investigative Waste

Disposable sampling equipment such as bailers will not be cleaned by WDNR before use in the field. Dedicated, non-disposable sampling equipment will be cleaned before the sampling event and before each monitoring well in the following manner:

1. Equipment will be washed with a non-phosphate detergent (Alconox or equivalent) and warm tap water. If possible, a brush will be used to loosen any residual contamination.
2. Sampling equipment will be rinsed with tap water first, followed by a copious de-ionized, reagent-free water rinse.
3. Sampling equipment will be allowed to air dry in a clean environment and then stored in sealed plastic containers until used for sampling.

If sampling equipment (such as the submersible pump) is reused in the field, the procedure given above will be followed between sampling locations as closely as practical.

Discarded items such as Tyvek suits, gloves, paper towels, and disposable sampling equipment, etc., will be placed in plastic trash bags, removed from the site, and disposed of at the WDNR regional office. Other investigative wastes such as decontamination waters and purge waters from wells will be stored in sealed pails or drums on site. The regional

WDNR office will arrange for the pick up and disposal of investigative wastes by a contractor according to state requirements.

IX. Field Support Group Assignments

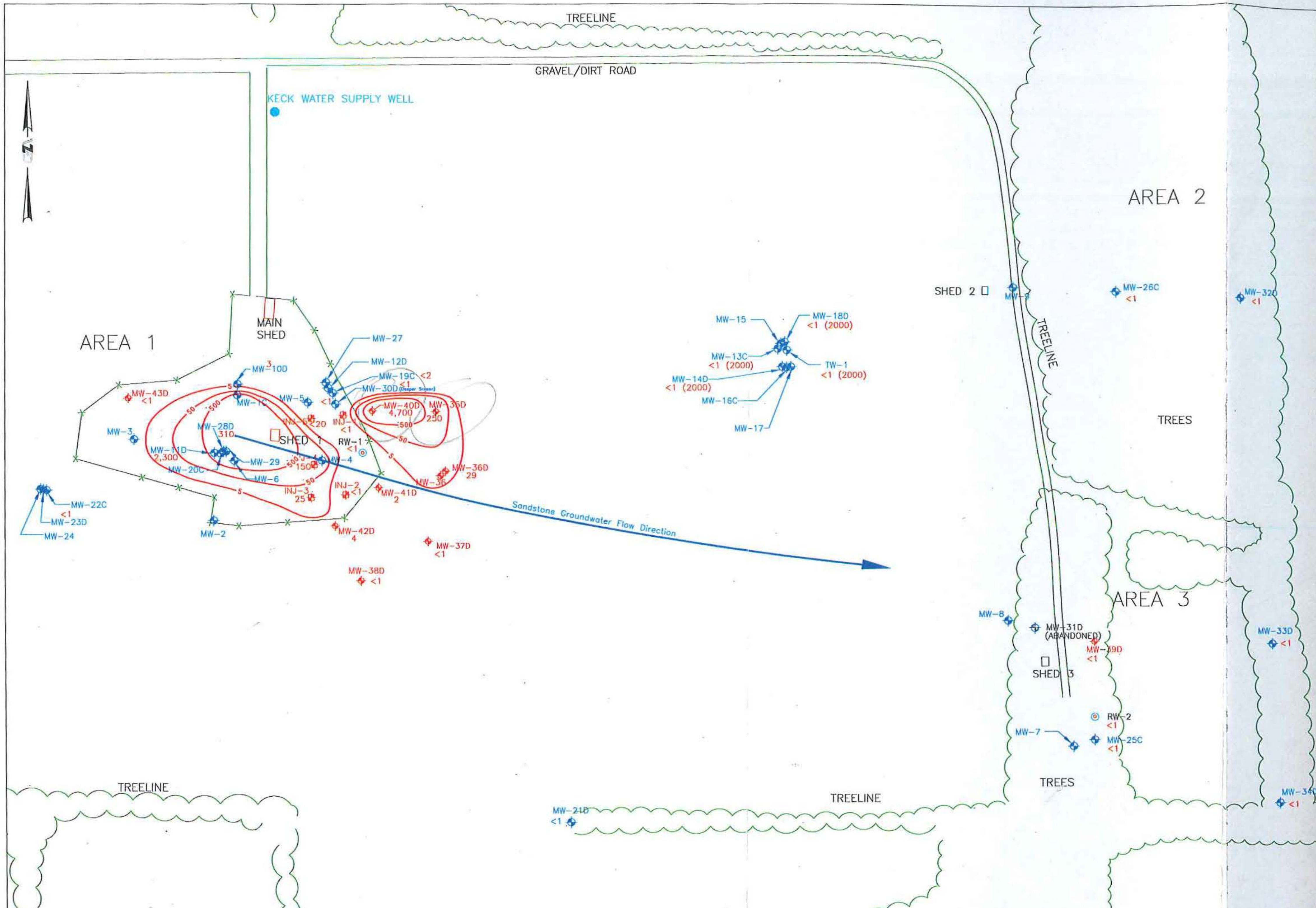
TABLE 5
Work Assignments

Name	Media	Duties
Jason Lowery	Monitoring wells/private wells	Sample custodian, documentation, sample packaging
Steve Mueller	Monitoring wells/private wells	Sample and supply transport, decontamination, general support
Regional staff Buddy ↓	Monitoring wells	Purging, sample collection
Wendel Wojner Buddy ↑	Monitoring wells	Purging, documentation, photos
Regional staff Buddy ↓	Private wells	Purging, sample collection
Larry Lester Buddy ↑	Private wells	Documentation, photos
Jeff Ackerman Buddy ↓	Private wells	Purging, sample collection
Jon Heberer Buddy ↑	Private wells	Documentation, photos

-personnel subject to change based upon availability

X. Sampling Report

A sampling report will be prepared and will include a means of matching the traffic report numbers with the field identification numbers and their corresponding locations so that data received may be accurately assessed. In addition, the report will include any deviations from the sampling plan, particularly noting how these deviations might affect data quality and usability.



NOTES

1. BASE MAP WITH SITE FEATURES AND MONITORING WELLS OBTAINED FROM LEGGETTE, BRASHEARS, & GRAHAM, INC. (LBG).
2. MONITORING WELLS MW-35D THROUGH MW-39D INSTALLED BY GZA GEOENVIRONMENTAL, INC. DURING NOVEMBER AND DECEMBER 2002.
3. MONITORING WELLS WITH NO LETTER DESIGNATION ARE SCREENED IN THE TILL.
4. MONITORING WELLS WITH LETTER DESIGNATION "C" ARE SCREENED IN A SAND AND GRAVEL "CONTACT ZONE" BETWEEN THE TILL AND SANDSTONE.
5. MONITORING WELLS WITH LETTER DESIGNATION "D" ARE SCREENED IN THE SANDSTONE AQUIFER.

LEGEND

MW-2	MONITORING WELL (INSTALLED BY LBG DURING 1989–1990)
MW-35D	MONITORING WELL (INSTALLED BY GZA DURING 2002 – 2004) TCE CONCENTRATIONS IN ug/L
RW-1	RECOVERY WELL (INSTALLED BY LBG IN 1991)
INJ-2	INJECTION WELL (INSTALLED BY GZA IN 2004)
500	TCE CONCENTRATION CONTOUR LINE (LOGRITHMIC SCALE)

KECK FARM
WATERTOWN, WISCONSIN

TCE CONCENTRATIONS IN THE SANDSTONE AQUIFER
NOVEMBER 2006/MARCH 2007

REV. NO.	DESCRIPTION	BY	DATE

PROJ. MGR.: BGF
DESIGNED BY: BGF
REVIEWED BY: JCO
OPERATOR: CLK
DATE: 4/18/07

GZA GeoEnvironmental, Inc.

1" = 120'
0 60' 120' 240'
APPROXIMATE SCALE

JOB NO.
150549.35

FIGURE NO.
1

Figure 2: Requests Sent to Potable Well Owners

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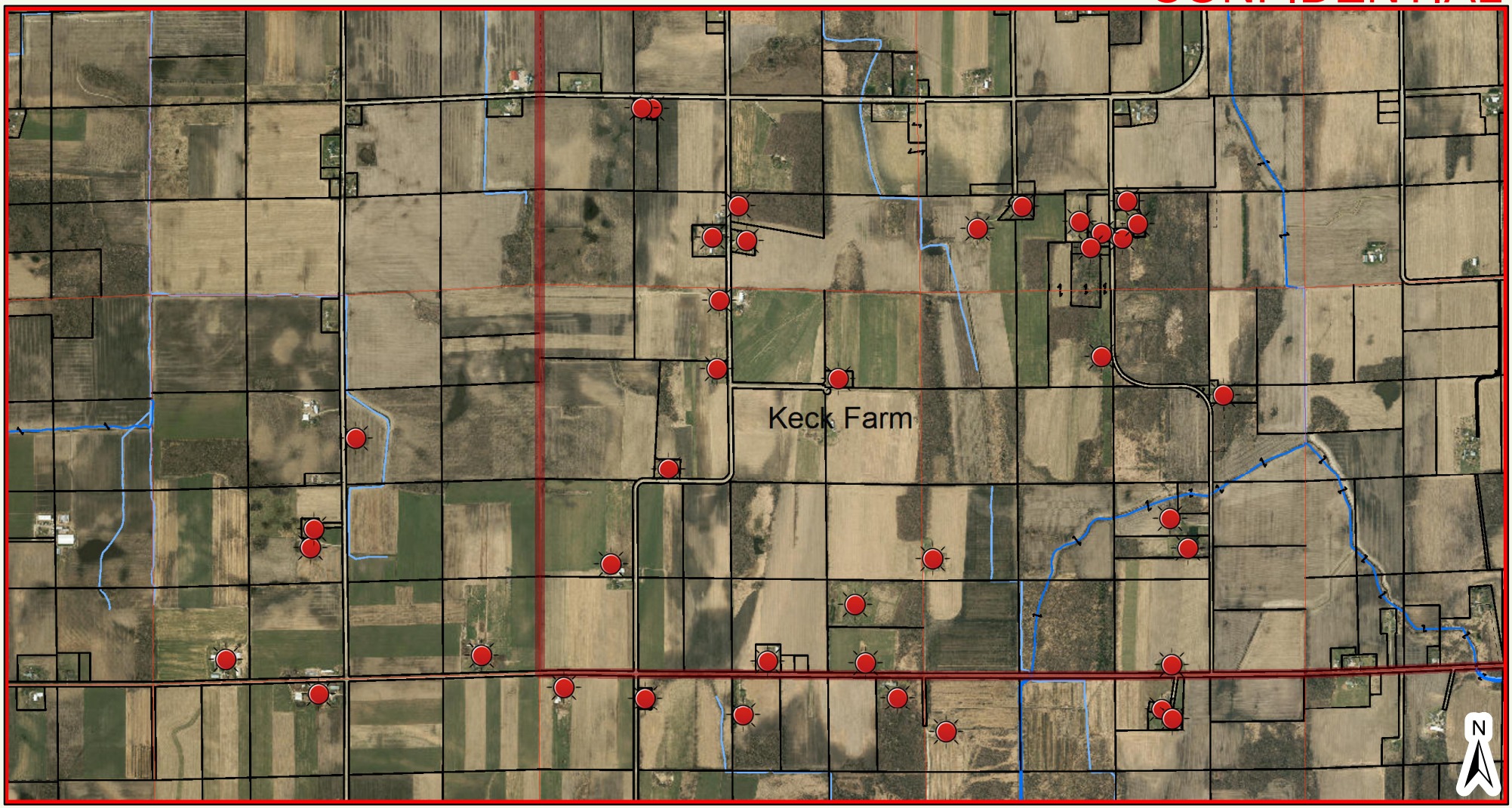

Municipal Boundaries
Property Boundary
Old Lot/Meander Lines
Rail Right of Ways
Road Right of Ways
Section Lines
Surface Water
Map Hooks
Tax Parcels
Streams and Ditches
Red: Band_1
Green: Band_2
Blue: Band_3

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Jefferson County Geographic Information System

1,600 800 0 1,600 Feet

1 inch = 2,000 feet

Printed on: February 7, 2017

Author: Public User

Figure 3: Potable Well Sample Locations

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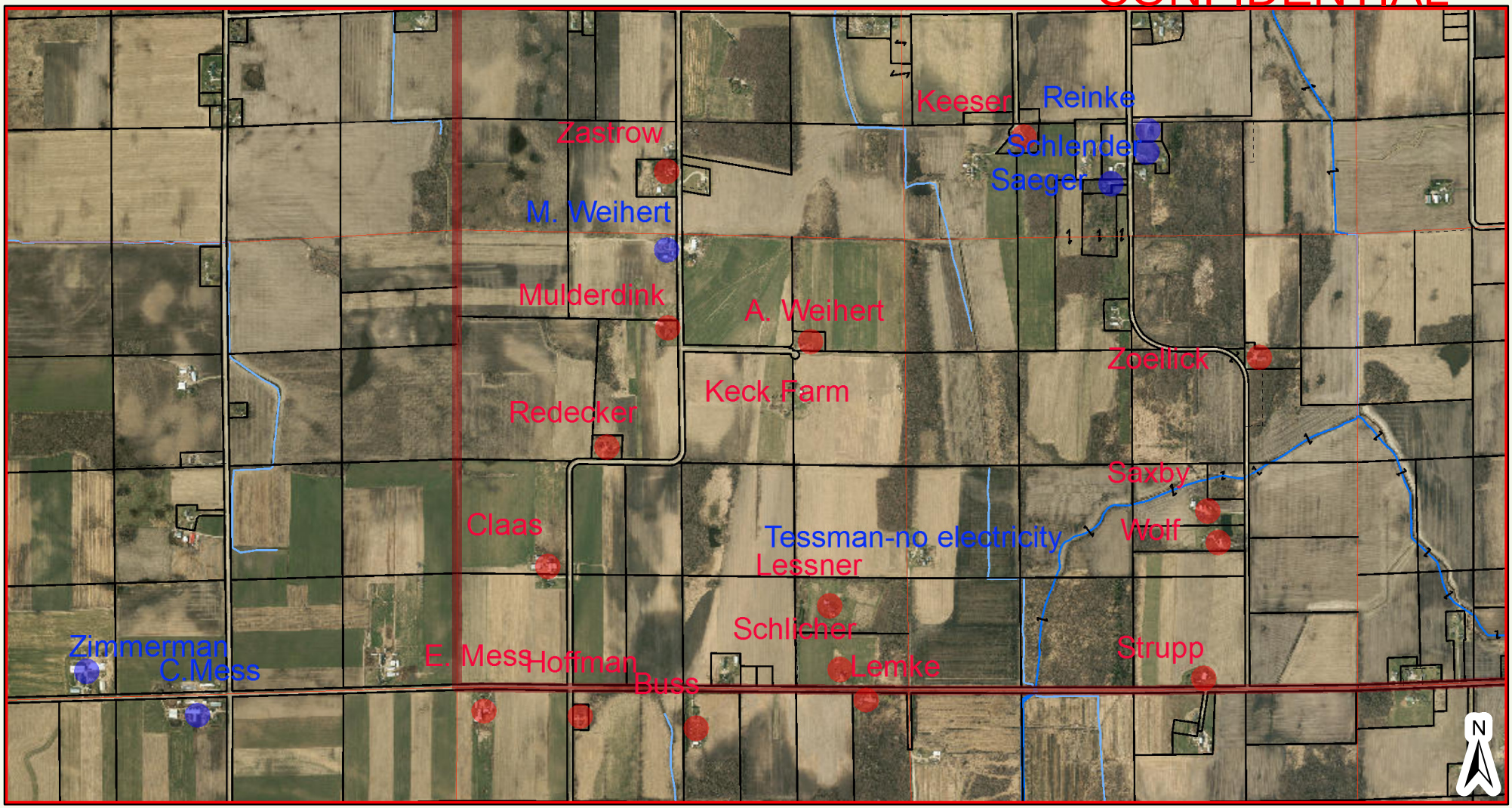

- Municipal Boundaries
- Property Boundary
- Old Lot/Meander Lines
- Rail Right of Ways
- Road Right of Ways
- Section Lines
- Surface Water
- Map Hooks
- Tax Parcels
- Streams and Ditches

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Jefferson County Geographic Information System

1,400 700 0 1,400 Feet

1 inch = 1,700 feet

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Author: Public User

Appendix B: SAMPLING, ANALYSIS, CONTAINERS, PRESERVATION, HOLDING TIME, FIELD/LAB QC SUMMARY
MONITORING WELLS AND PRIVATE WELLS

MATRIX	NUMBER OF FIELD SAMPLES	LABORATORY ANALYSIS	CONTAINERS	VOLUME	FIELD FILTER	PRESERVATION	HOLDING TIME		FIELD/LAB QC	FREQUENCY	VOLUME	LAB ANALYSIS
Monitoring Wells + Potable (Private/ Municipal Wells)	**19 (3+16)**	**VOCs**	Three 40-ml vials glass w/PTFE septa	no headspace	no	1:1 HCl, pH<2 iced to 4°C	14 days		trip blank 1	1/cooler of VOC samples (unique sample #)	same as field samples prior to field	**VOAs only**
	0	~~SVOCs~~	Two 1-liter amber round glass w/ PTFE lined lid	full	no	iced to 4° C	7 days until extraction		rinsate blank 1	1/20 samples if re-using purging or sampling equipment	same as field samples	(all)
	0	~~PCB~~	Two 1-liter amber round glass w/ PTFE lined lid	full	no	iced to 4° C	7 days until extraction		field blank 0	1/per day of sampling if atmospheric contam. suspected (unique sample #)	same as field samples	all
	0	~~Pesticides~~	Two 1-liter amber round glass w/ PTFE lined lid	full	no	iced to 4° C	7 days until extraction		field duplicate 2	1/10 samples or fewer (unique sample #)	same as field samples	all
	0	~~Metals~~	One 1-liter HDPE w/polyethylene lined lid	full	no	5 mls 1:1 HNO_3 pH<2 iced to 4° C	Hg 28 days 6 mo. Others		MS/MSD 1	1/20 samples or fewer (designate a sample as MS/MSD and use same sample #)	total 3X	organics
	0	~~Cyanide~~	One 1-liter HDPE w/polyethylene lined lid	full	no	NaOH pH>12 iced to 4°C	14 days				total 2X	inorganics

Note: 19 (3+16) = 3 on-site monitoring wells and 16 nearby potable wells