

March 23, 2015

Jennifer Borski
Remediation and Redevelopment Program
Wisconsin Department of Natural Resources
625 E. County Road Y, STE. 700
Oshkosh, Wisconsin 54901-9731

**Subject: Work Plan for a Further Site Investigation of Environmental Impacts at the
Keystone Consolidated Industries, Inc. site, Located at 111 N. Douglas St.,
Hortonville, Outagamie Co., Wisconsin – BRRS No. 02-45-560221
AECOM Project No. 60301459**

Dear Ms. Borski,

AECOM Technical Services, Inc. (AECOM) is pleased to provide this Work Plan to conduct additional site investigation at the Keystone Consolidated Industries, Inc. site, Located at 111 N. Douglas St., Hortonville, Outagamie Co., Wisconsin. The following paragraphs provide a project background, proposed scope of services, and proposed schedule.

Please contact me if you have any questions or comments regarding the scope of services or procedures presented in this plan.

Yours sincerely,

AECOM Technical Services, Inc.


Robert J. Mottl
Project Geologist
Robert.mottl@aecom.com


Steve R. Schubring
Operations Manager
steve.schubring@aecom.com

Attachments:

- Figure 1: Site Location
- Figure 2: Site Diagram & Monitoring Well Location Map
- Figure 3 Proposed Investigation Locations
- Cross-section (previous report)
- Wisconsin Well Constructors Report

CC: David Kilpatrick, Associate General Counsel, Keystone Consolidated Inc.
Chad Erdmann, Manager, Environmental Engineering, Keystone Steel & Wire

1.0 Introduction

1.1 Site Location and General Description

The subject property is located at 111 N. Douglas Street in the Village of Hortonville. The parcel is present within the Northwest 1/4 of the Southwest 1/4 of Section 35, Township- 22 North, Range 15 East of Outagamie County. The Wisconsin Transverse Mercator coordinates are 627452 (X) and 430245 (Y) (See Figure 1-Site Location Map). The property has been owned by Keystone Consolidated Industries Inc. (Keystone) since 1986 and who operated the facility to 2001.

The site is 6.64 acres in size and is zoned industrial. The parcel is currently occupied by a single story building, without a basement, approximately seventy three thousand two hundred (73,200) square feet in plan dimensions. The structure is constructed of a structural steel frame with masonry, block. The floor surface is concrete. An out building, about three thousand five hundred (3500) square feet in plan dimensions is located immediately west of the main site structure. The out building is constructed of a wood frame with a concrete floor. A garage is located east of the main site structure and is approximately nine hundred (900) square feet in plan dimension. The remainder of the surface of the property is covered with asphaltic concrete, concrete, gravel, and landscaped areas (See Figures 2 & 3).

1.2 Investigation Participants

The following parties are participants in this site investigation.

- **Responsible Party (Owner):**
Keystone Consolidated Industries (Keystone)
Three Lincoln Center
5430 Lyndon B. Johnson FWY Street 1740
Dallas, Texas 75240-2601
Contact: Attorney David Kilpatrick
dkilpatrick@valhi.net
- **Current Site Operator:**
Fox Valley Steel & Wire Company
111 N. Douglas Street
Hortonville, Wisconsin 54944
920-779-4544
- **Regulatory Agency:**
Wisconsin Department of Natural Resources
625 E. County Road Y, STE. 700
Oshkosh, Wisconsin 54901-9731
Contact: Ms. Jennifer Borski
920-424-7887
- **Consultant:**
AECOM
1035 Kepler Drive
Green Bay, Wisconsin 54311
Contact: Mr. Steve Schubring
920-406-3145

- **Analytical Laboratory:**
Pace Analytical Inc.
1795 Industrial Drive
Green Bay, Wisconsin 54302
Contact: Chris Hyska
920-321-9407

1.3 Site Background

Since 1948, the property has been used as a manufacturing facility for various steel and wire products including hand driven and galvanized nails. Keystone installed the galvanizing process in 1987 and operated it until 2001. At that time, the equipment and operations were purchased by Fox Valley Steel & Wire (FVSW). Galvanizing operations were continued by FVSW from 2001 to 2009. FVSW currently produces non-galvanized nails and other wire products at the site.

Between 2009 and 2013 United Engineering Consultants (United) on behalf of FVSW conducted a site investigation of the property. Some of the information contained in this section of the report was obtained from an United report. The site investigation was prompted by a June 5, 2009 letter from Wisconsin Department of Natural Resources (WDNR) indicating that "visible disposal of uncontained sludge" was noted. During the site investigation between 2009 and 2013, approximately 50 direct push borings were advanced with soil and water analysis. In addition, 13 groundwater monitoring wells were installed and sampled 3 to 4 times over that period along with an on-site supply well located along the south edge of the property near the wood structure.

Concentrations of selected VOCs including trichloroethylene (TCE) exceeded Wisconsin Administrative Code chapter NR 140 enforcement standards (ES) and/or preventive action limits (PALs) in some of the monitoring wells along with the on-site supply well. In correspondence between United and WDNR it was suggested that VOC and PAH impacts in soils and groundwater were the responsibility of Keystone to address. The WDNR concurred and issued an April 10, 2013 responsible party (RP) letter to Keystone asking them to implement further soil and groundwater investigation for VOCs and PAHs along with a possible, VOC vapor analysis. In a July 18, 2013 Phase II assessment report, United on behalf of FVSW, requested closure of the project case for inorganics including metals and cyanide.

In addition to the wire manufacturing, readily available records indicate that up to four underground storage tanks (USTs) may have been on site over the course of site operations. A 10,000 gallon diesel UST was located along the west side of the garage and removed in 1989. A 7,000 gallon fuel oil UST was reportedly located of the south side of the main building and removed in 1989. A 550 gallon unleaded gasoline UST was also reported on the site and may be double reported in the Wisconsin UST database.

One other potential source of impact could include the former American Toy & Furniture Company (now CNC Enterprises, Inc.) located south (up-gradient) of the project site. Previous investigation work has shown a detection of TCE and other VOCs near the CNC north property line.

The purpose of this work plan is to further address VOC and PAH impacts that may be related to former Keystone operations.

1.4 Site Setting

Hydrogeologic Setting

Published geologic and hydrogeologic information was reviewed to assess soil and bedrock types in the area, regional groundwater flow direction, and groundwater sources. The United States Geological Survey (USGS) 7.5-minute quadrangle map was used to identify general land features in the area of the subject property to evaluate the local topography and estimate shallow groundwater flow direction.

The United States Department of the Interior Geologic Survey 7.5-minute series topographic map (Hortonville Quadrangle dated 1975) shows that the subject property and neighboring land generally slopes from the southwest to northeast toward the nearby Black Otter Creek and is at approximately 810 feet above mean sea level. The shallow (5-10 feet below ground surface) groundwater beneath the subject property has been shown by United to flow to the north-northeast. However, natural and man-made features and underground utilities, such as sanitary/storm sewer piping systems, may influence the direction of local groundwater flow.

Review of the "Wisconsin Geologic and Natural History Survey Publication, Geology and Groundwater Resources of Outagamie county, Wisconsin Water Supply Paper 142, by E.F. LeRoux, 1957," indicated that the bedrock beneath the subject property consists of undifferentiated Cambrian sandstones of the Trempealeau Formation.

The Wisconsin Natural history Survey provided a copy of the Wisconsin Well Constructor's Report (WCR) for the on-site production well located just south of the out building (copy attached). The WCR indicates that the 180 foot deep well was installed in 1963. The well is constructed of 6-inch steel casing to 81 feet and open borehole to 180 feet below ground surface (BGS). The WCR indicates that the well drillers described the drill cuttings as:

- Hardpan and sand (0 to 18 feet BGS),
- Clay (18 to 45 feet BGS),
- Hardpan (45 to 51 feet BGS), and
- Sandstone (51 to 180 feet BGS).

Soil borings and a cross-section from United's site investigation depict approximately 6 to 8 feet of sand soil overlying clay across south and western portions of the site. A copy of a cross-section prepared by the previous consultant is attached depicting soil strata at Monitoring Well Locations MW-4, MW-8, and MW-10.

1.5 Potential Migration Pathways and Potential Receptors

Exposures to receptors from contamination, if present, include the potential for direct contact with soil, the potential for soil impacts to extend to and migrate within the groundwater system, the potential for vapor intrusion, and the potential for water impacts to migrate into the on-site supply well as well as an off-site well to the north of the subject site. Given that some VOC impacts have already been identified, including TCE which is a dense non-aqueous liquid (DNAPL), AECOM will work with WDNR, the property operator, and the property owner to minimize perforation of shallow aquitards, including the clay layer identified beneath the surficial sand layer at the site to reduce the potential for vertical migration of suspected VOCs deeper into the groundwater system.

2.0 Site Investigation

2.1 Site Health and Safety

AECOM will prepare a site-specific Health and Safety Plan for the site investigation activities. AECOM will review the Site Health and Safety Plan with all field personnel prior to commencing the field activities.

2.2 Utility Clearance/Permits

AECOM will contact Digger's Hotline for the location of public utilities in the area of the investigation prior to commencing subsurface investigation drilling. AECOM will subcontract a private utility locator to mark private buried utilities on the property.

2.3 Work Plan Scope - General

The primarily goals of the proposed VOC/PAH focused site investigation are:

- To determine if there are VOC/PAH impacts in the subsurface in the far south eastern area of the facility where one or more former underground storage tanks (USTs) may have been present in the past.
- To determine the distribution of VOC contaminate mass (1) so that a source area can be identified and if needed, mitigated, and (2) to evaluate if natural attenuation will adequately address residual VOC impacts across the site or if some other remedial action is appropriate.
- To reduce uncontrolled perforation of aquitards within a source zone and limit the potential for creating a vertical migration conduit.
- To determine if VOC impacts in the production well are localized immediately around the supply well.

To achieve these goals, AECOM proposes conducting a phased approach to the site investigation.

The first phase of investigation will be comprised of a series of direct push borings to the clay interface immediately below the surficial sand (approximately 8 feet BGS) in the proposed investigation areas identified on Figure 3. Two to three soil samples from each boring at discrete depths will be submitted for chemical analysis of VOCs to help understand contaminant mass distribution. In the localized area near the suspected former USTs, samples will be analyzed for PAH samples in addition to VOCs. Samples collected in the Vadose Zone will represent soil quality while saturated samples below the water table will be representative of groundwater quality. Due to the size of the project site and uncertainty on source areas, an initial 100 foot grid sampling pattern is proposed along the north side of the building. Additional step-in locations may be collected as warranted by in-field evaluation but the intention of the initial investigation is to provide coarse base data to evaluate where additional sample locations are needed. Because of the relatively small area, only 2 or 3 borings will be completed in the area of the suspected former USTs. Review of data from the previous consultant indicates that soil samples have been collected from near surface and at depths of about 5 feet below surface, the apparent groundwater table contact, west and south of the building, but not at the sand-clay interface at 8 feet. Therefore, AECOM also proposes to advance one to two Geoprobes in selected localized areas to assess VOC contaminant mass concentrations at the sand-clay interface:

1. Just west of Monitoring Well MW-9
2. West of the building between Monitoring Wells MW-6 and MW-8
3. South between the south edge of the building and railroad track near Monitoring Wells MW-1, MW-2, and MW-12
4. East and west of the production well.

Groundwater samples will also be collected from the existing monitoring wells, the on-site production well, and the offsite private well north of the project site. Updated off-site access will be required in order to obtain the sample from the private residence. If access cannot be acquired in a timely manner, the on-site investigation will proceed.

A summary report will be prepared and submitted to the WDNR following completion of the initial investigation describing the work completed, rational for any deviations, figures, summary data tables, and boring logs.

A more detailed description of the proposed site activities and laboratory analyses follows.

2.4 Work Plan Scope – Specific for Initial Phase

2.4.1 Direct Push Sampling

The soil and saturated materials sampling will be completed using a Geoprobe® rig to collect continuous soil samples. The soil samples will be collected directly from a disposable polyethylene liner that is contained inside the drive cylinder. The soil samples will be subdivided by depth into 2-foot increments, depending on the sample recovery and textural character. The soil probes will extend one or two feet at the most into the clay approximately 8 feet BGS in order to avoid penetrating a potential confining unit.

Soil samples will be evaluated and visually classified in the field. The soil samples will be described in the field with respect to the soil type, grain size distribution, and color (or discoloration), odor, and moisture content. Visual observations of the recovered material will also be documented in accordance with ASTM Method D-2488-93. Field observations from the boring will be recorded on soil boring logs for submittal to WDNR. AECOM will complete soil boring log forms (WDNR Form No. 4400-122) and borehole abandonment forms (WDNR Form No.3300-005) for each of the soil borings completed. The boring locations will be surveyed with a hand held GPS for horizontal location.

Samples will be screened in the field with a photo-ionization detector (PID). The PID will be calibrated in the field according to manufacturer's instructions, using 100 parts per million (ppm) isobutylene span gas and air (zero gas), and checked between each screening event for proper response.

At least two soil samples per soil boring location will be submitted for laboratory analysis. One sample will be collected from the direct contact zone, within the top four feet from the ground surface. The second sample will be collected from a depth of the highest PID reading or, if none, then from the base of the shallow sand- clay contact. As mentioned above, samples from each boring will be analyzed for VOCs. Samples from the suspected UST area will be analyzed for VOCs and PAHs.

2.4.2 Groundwater Sampling

Groundwater samples will be collected from existing monitoring wells. Depth to water will be measured at each well location and if sufficient water is present, the well will be purged using a peristaltic pump at a low-flow setting, until approximately three well volumes have been removed from the well, or until the well pumps dry. A groundwater sample will be collected using low-flow sampling methods. Groundwater samples will be analyzed for VOCs. In addition, AECOM will collect a sample from the on-site production well and if permission is granted, from off-site monitoring well MW-11 on the adjoining property to the north.

2.4.3 Laboratory Analytical Parameters and Methods

The following analyses are proposed:

- VOCs by method SW-846 8260B
- PAHs by method SW-846 8270B

In addition, one groundwater duplicate sample and 1 trip blank per cooler will be analyzed for VOCs.

2.4.4 Investigative Waste Management

Soil cuttings generated during the advancement of the soil borings will be placed into 55-gallon drums that will be temporarily staged within the site building until the analytical results from testing are available and the proper disposal methods are determined. Likewise, water generated from well development and purging will also be placed in a 55-gallon drum until proper disposal methods are determined. AECOM will coordinate disposal of the investigative wastes provided the property owner approves the disposal location and signs the appropriate waste profile and manifest forms prior to completion of the final report for this project.

3.0 Reporting and Schedule

3.1 Data Analysis/Reporting

As mentioned above, following receipt of analytical results, a summary report will be prepared to present the findings of the investigation. The information obtained from the field exploration program and analytical testing will be compiled into tables, boring logs and figures, as appropriate to allow for evaluation of site conditions. Laboratory results of soil samples will be compared to WAC Ch. NR 720 RCLs. Laboratory results of groundwater samples will be compared to WAC Ch. NR 140 PAL and ES. Saturated material results will be used in conjunction with the soil results to depict approximate contaminant mass. The report will include a summary of field and laboratory procedures, tabulated analytical data and a discussion of the findings of the investigation. A draft report will be provided to Keystone for comment, and once approved, final copies of the report will be provided to WDNR and current property owner.

3.2 Schedule

AECOM will begin project coordination within one week of receiving authorization to proceed from the WDNR. Field work will be scheduled upon receipt of approval of this work plan and will be dependent on the availability of the direct push subcontractor and ground conditions. We anticipate

approximately 3 to 4 days for direct push sampling and one to two days for groundwater well sampling. We anticipate that laboratory turnaround time is two to four weeks after the samples are received by the laboratory. A draft report would be submitted approximately four to eight weeks after receipt of the groundwater samples to Keystone for review. A final report would be provided following Keystone's review and approval.

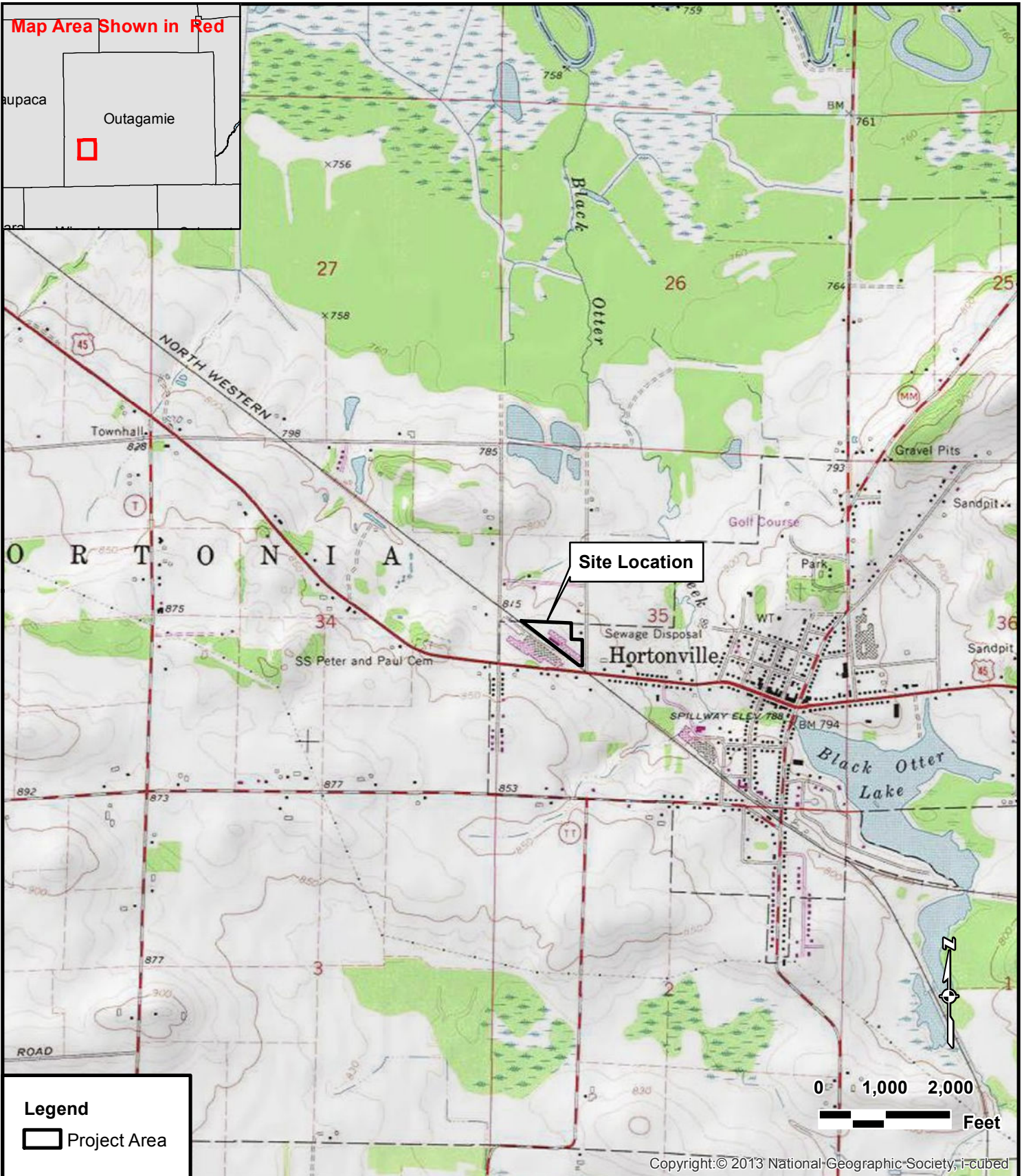
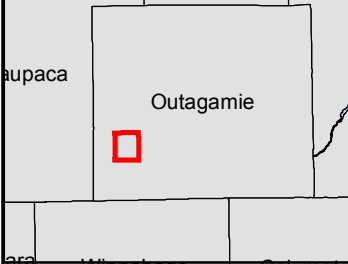
4.0 References

United Engineering Consultants (UEC), *Phase II Environmental Site Investigation Report, Fox Valley Steel & Wire Company, 111 N. Douglas Street, Hortonville, Wisconsin*, July 18, 2013.

The United States Department of the Interior Geologic Survey *7.5-minute series topographic map (Hortonville Quadrangle) dated 1975*. Scale=1:24,000.

Wisconsin Geologic and Natural History Survey Publication, Geology and Groundwater Resources of Outagamie County, Wisconsin Water Supply Paper 142, by E.F. LeRoux, 1957,

Map Area Shown in Red



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1035 Kepler Drive
Green Bay, WI 54311
www.aecom.com

SITE LOCATION

Fox Valley Steel & Wire
111 N. Douglas Street, Hortonville, WI

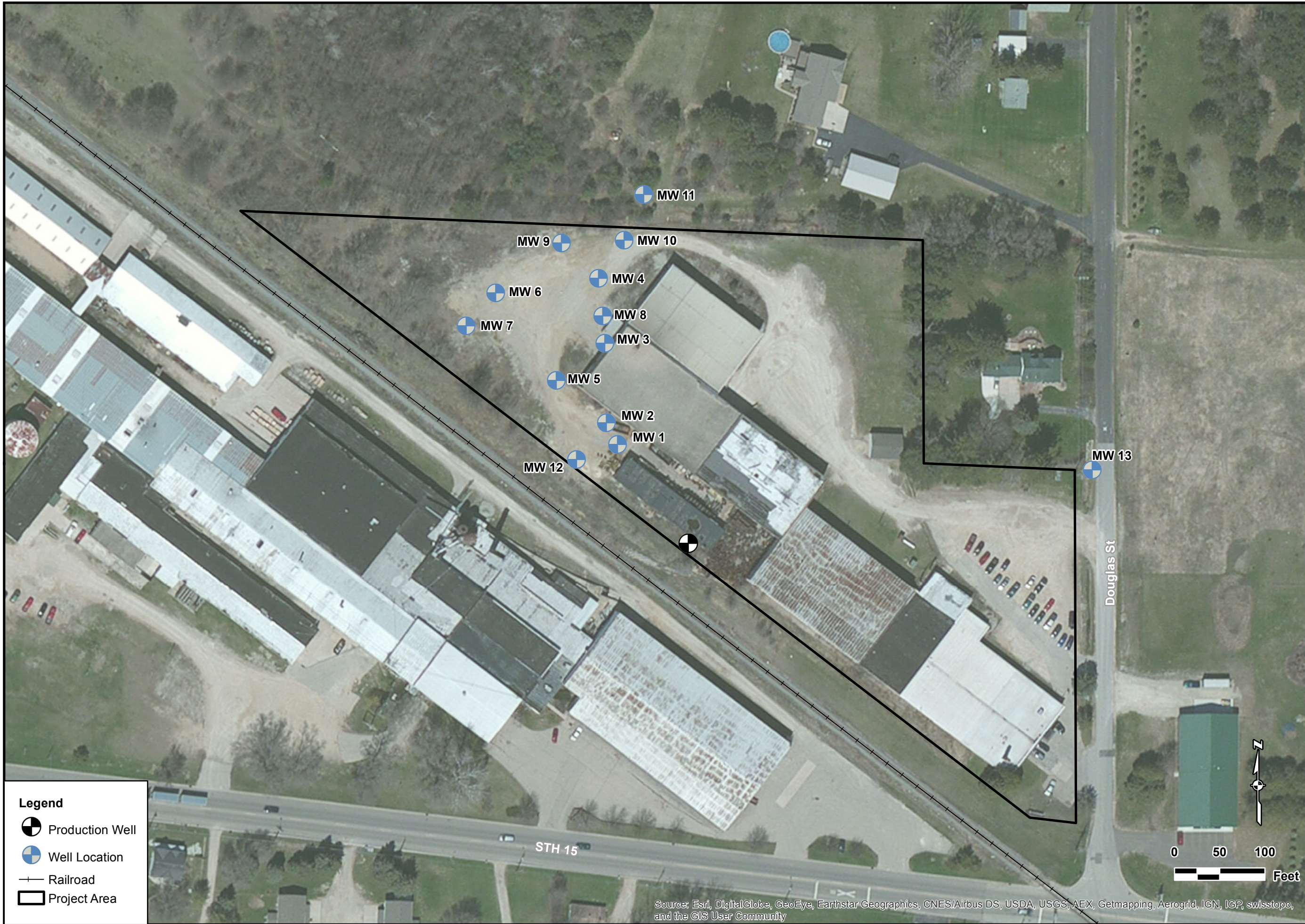
Drawn: K. UNKE 3/4/2015

Approved: R. MOTT 3/4/2015

Scale: AS SHOWN

PROJECT NUMBER 60301459

FIGURE NUMBER 1



SITE DIAGRAM & MONITORING WELL LOCATIONS

**Fox Valley Steel & Wire
111 N. Douglas Street, Hortonville, WI**

Legend

-  Production Well
-  Well Location
-  Railroad
-  Project Area

Drawn: K. UNKE 3/4/2015

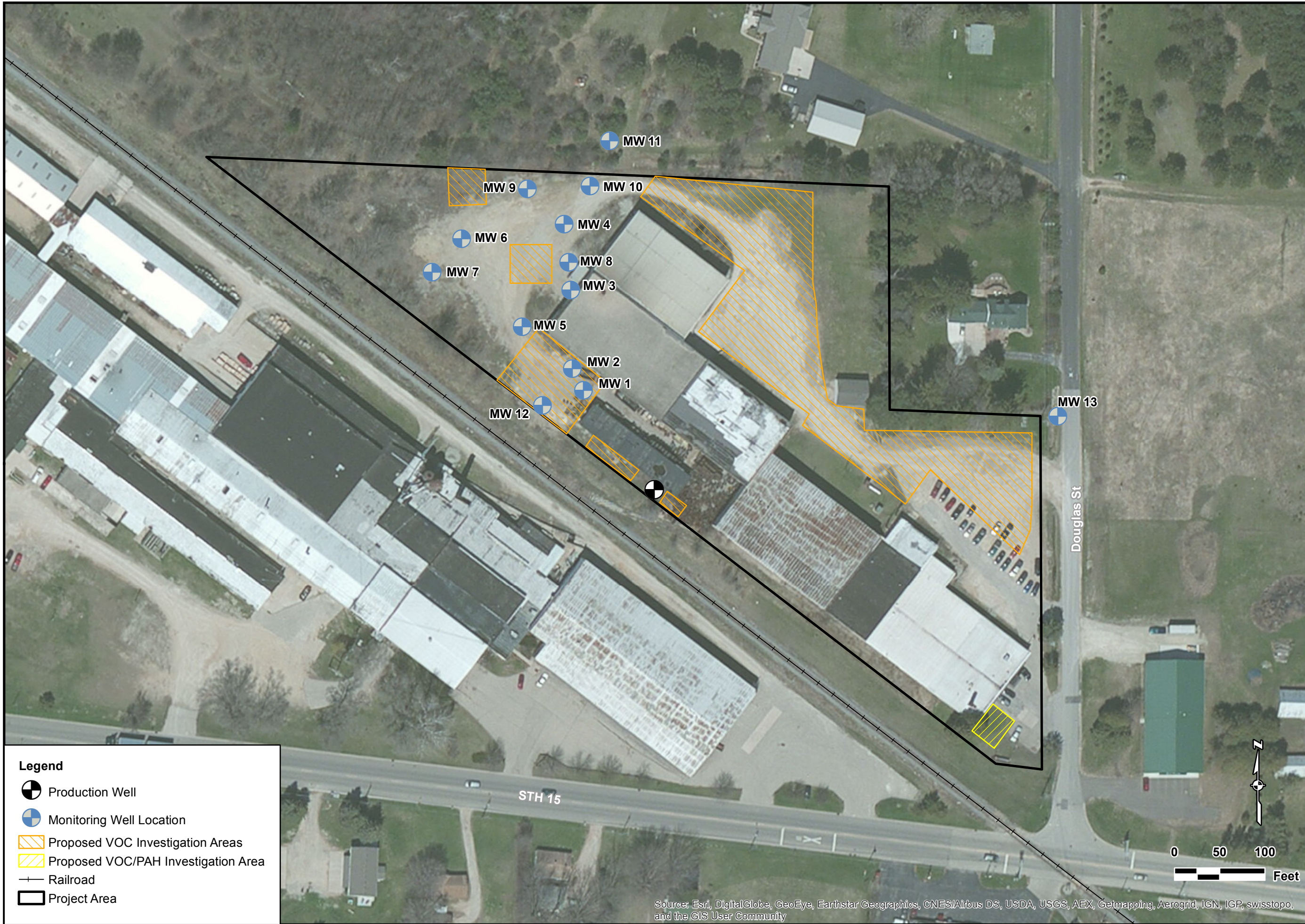
Approved: R. MOTTL 3/4/2015

Scale: AS SHOWN

PROJECT NUMBER 60301459

FIGURE NUMBER 2

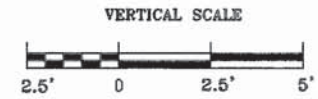
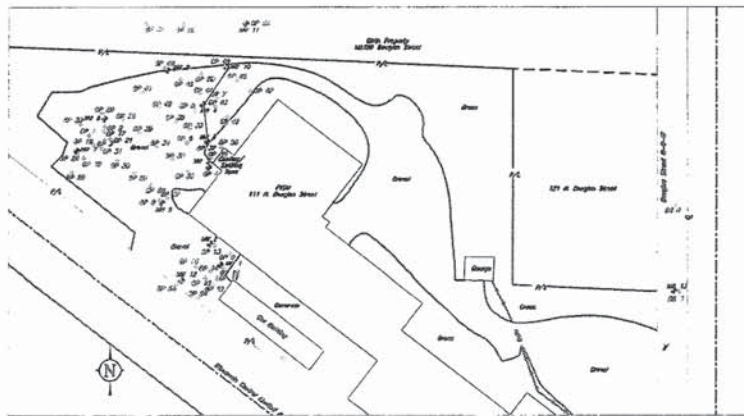
PROPOSED INVESTIGATION AREAS
Fox Valley Steel & Wire
111 N. Douglas Street, Hortonville, WI



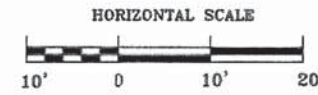
- Legend**
- Production Well
 - Monitoring Well Location
 - Proposed VOC Investigation Areas
 - Proposed VOC/PAH Investigation Area
 - Railroad
 - Project Area

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Drawn:	K. UNKE	3/4/2015
Approved:	R. MOTTL	3/4/2015
Scale:	AS SHOWN	
PROJECT NUMBER	60301459	
FIGURE NUMBER	3	



SCALE: 1" = 5'



SCALE: 1" = 20'

ALL LOCATIONS ARE APPROXIMATE

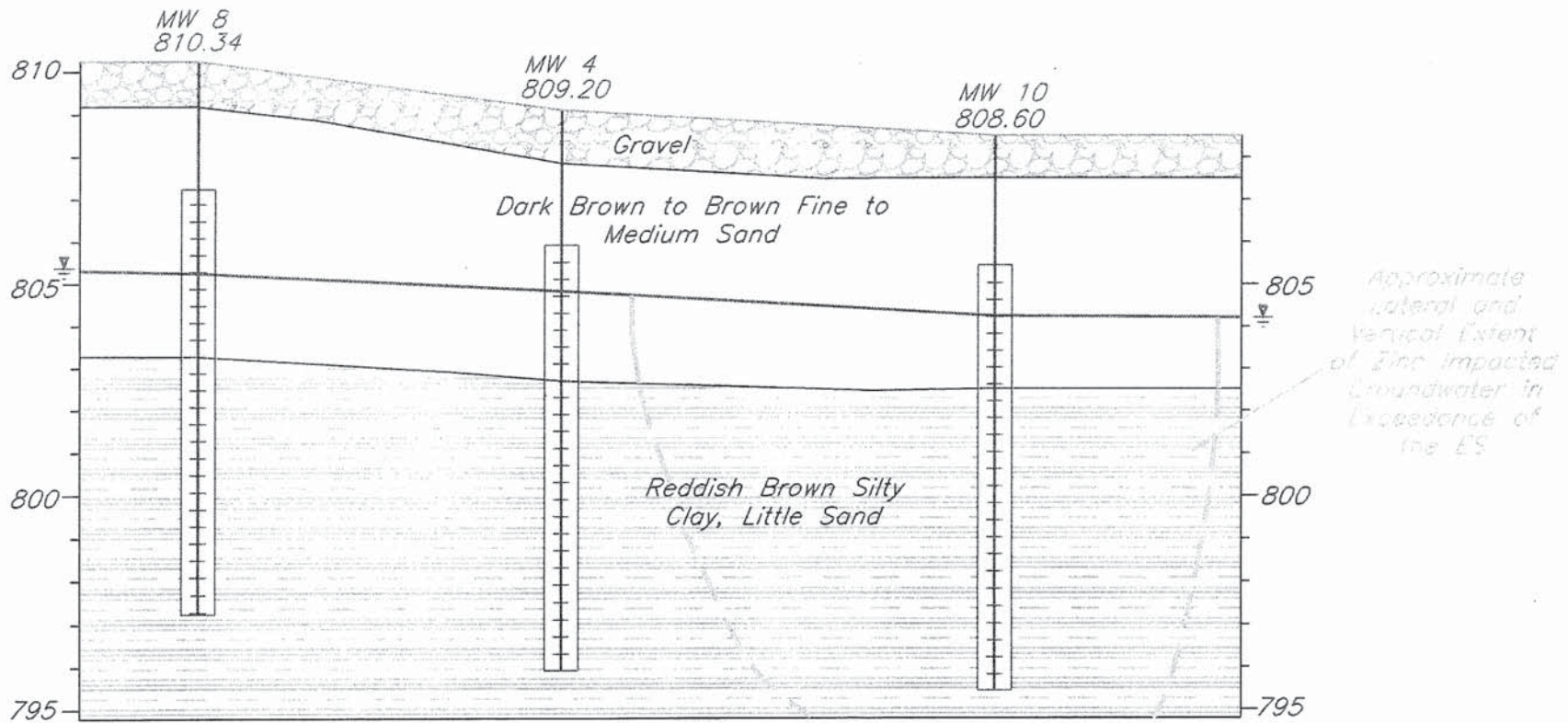


Figure 10: Geologic Cross Section

United Engineering
Consultants, Inc.

16237 W. Ryerson Road
New Berlin, WI 53151
Tel. (262) 785-1447 * FAX (262) 706-4400

09014
DRAWN BY: MLD
DATE: 2/12
ID#: 09014plot1

Phase II Environmental Site Assessment
Fox Valley Steel & Wire
111 N. Douglas Street Hortonville WI 54944

WELL CONSTRUCTOR'S REPORT TO WISCONSIN STATE BOARD OF HEALTH ^{Vol 6}

See Instructions on Reverse Side

RECEIVED

1. County Outagamie Town Hortonville
 Village Hortonville
 City Check one and give name
2. Location 111 Douglas Street SW, Sec. 35 T22N R15E
 Name of street and number of premise or Section, Town and Range numbers
3. Owner or Agent Wire Products, Inc.
 Name of individual, partnership or firm
4. Mail Address 111 Douglas Street Hortonville, Wisconsin
 Complete address required
5. From well to nearest: Building 9'6" ft; sewer 31 ft; drain 31 ft; septic tank None ft;
 dry well or filter bed None ft; abandoned well None ft.
6. Well is intended to supply water for: General Use.

OCT 31 1963
 SANITARY ENGINEERING

7. DRILLHOLE:

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
8	0	81	6	81	180

8. CASING AND LINER PIPE OR CURBING:

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
6	Steel	0	81

9. GROUT:

Kind	From (ft.)	To (ft.)
Puddled clay	0	81

11. MISCELLANEOUS DATA:

Yield test: 1 Hrs. at 48 GPM.
 Depth from surface to water-level: 18 ft.
 Water-level when pumping: 22 ft.
 Water sample was sent to the state laboratory at:
Madison on 10-24 1963
 City

10. FORMATIONS:

Kind	From (ft.)	To (ft.)
Hardpan & sand	0	18
Clay	18	45
Hardpan	45	51
Sandstone	51	180
<u>ROTARY JOB</u>		

Construction of the well was completed on:
August 21 1962

The well is terminated 10 inches
 above, below the permanent ground surface.
 Was the well disinfected upon completion?
 Yes No
 Was the well sealed watertight upon completion?
 Yes No

Signature R. J. SCHAFER & SONS, INC. Fremont, Wisconsin
 Registered Well Driller Complete Mail Address

Rec'd OCT 24 1963 No. 47016 Please do not write in space below

Ans'd _____

Interpretation SAFE—BACTERIOLOGICALLY

OCT 29 1963

Gas—24 hrs. _____
 48 hrs. _____
 Confirm _____
 B. Coli 0 _____
 Examiner _____