



July 27, 2020

Mr. Matthew W. Rahn, Project Manager
WDNR – Remediation & Redevelopment Program
223 East Steinfest Road
Antigo, WI 54409

Subject: Project Status Report for WDNR PCE Contamination Investigation
Three Lakes, WI
Mi-Tech #10982
WDNR BRRTS #02-44-000267

Dear Mr. Rahn:

In accordance with the proposed scope of work outlined in our proposal submittal, Mi-Tech Services, Inc. submits this *Project Status Report* for the WDNR PCE Contamination Investigation project in Three Lakes, Wisconsin. This document provides background information regarding the project, and summarizes the work performed to date, results of the findings, and recommendations.

BACKGROUND

In December 2019, the Wisconsin Department of Natural Resources (WDNR) retained Mi-Tech Services (Mi-Tech) to conduct the first phase of the site investigation for the historic release of several chlorinated compounds in an area near downtown Three Lakes, in Oneida County, Wisconsin. Elevated levels of Tetrachloroethylene (PCE), Trichloroethylene (TCE), and Ethylene Dibromide (EDB), were detected in various private wells and groundwater monitoring wells during the 1990's in conjunction with two separate petroleum contamination investigations at historic gasoline stations.

Extensive petroleum contamination, attributed to the historic tank systems (Former Three Lakes Amoco Station at 1752 Superior Street and the Former Draeger Oil Station at 1742 Superior Street), had impacted the soil and groundwater. Detections of chlorinated compounds above the WDNR Enforcement Standards (ES) were common during groundwater sampling events for both projects. The highest concentrations of chlorinated compounds, were detected on the (Former) Draeger Oil Station property and in a private well located north of the station.

The investigation limits for both projects involved an area of roughly one block including parcels near the intersection of Superior Street (Highway 45) and Anderson Street (Highway 32), north along Huffman Street toward Maple Lake, and east toward Nelson Street (*see Figure 1 for Site Location Map and Figure 2 for the Project Location Map*). The area includes several small commercial businesses, residential homes, and rental cottages. By 2001, both petroleum contamination projects had achieved site closure and groundwater monitoring wells abandoned. The Amoco Station site was granted closure with continuing obligations for residual soil and groundwater contamination both on and off-site. The Draeger Oil site was closed with no restrictions.



Although the petroleum contamination projects had been investigated and remediated to the satisfaction of the WDNR, neither the source(s) of the non-petroleum (chlorinated) compounds, nor the degree and extent of the contamination plume was ever identified.

Previous documents prepared by other environmental consulting firms have suggested that the Three Lakes Laundry business may be the source of the chlorinated compound(s) since the facility had provided limited dry cleaning services from their location at 1743 Superior Street in the past. However, soil and groundwater sampling at the Three Lakes Laundry facility, was completed in August 2007 and confirmed that no regulatory exceedances for any chlorinated compounds were detected, with the exception of one PAL exceedance for PCE along the northern portion of the parcel. No additional sampling with regard to the chlorinated compounds has been completed since that time.

PURPOSE OF INVESTIGATION

The WDNR seeks to evaluate the current environmental conditions and characteristics of any residual soil and/or groundwater contamination with regards to the historic release of chlorinated compounds, and to identify the source and/or sources of the contaminants to the extent practicable.

SCOPE OF WORK COMPLETED

To date, Mi-Tech has completed the following tasks:

- Conducted a Limited Phase I ESA of the investigative area (identifying Three Lakes Laundry as the "Target Property")
- Submitted a Site Investigation Work Plan to the Department
- Obtained Access Agreements from Property Owners and Town of Three Lakes for the proposed drilling and monitoring well installation activities
- Coordinated an on-site utility meet to locate public and private utilities and confirm well locations
- Supervised the drilling of 9 soil borings
- Collected soil samples from the borings for field and laboratory analyses (VOCs)
- Inspected the construction/installation of 9 NR 141 compliant groundwater monitoring wells (7 water table wells and 2 deeper piezometers)
- Completed professional survey services for the new wells and project area
- Measured water elevations in each of the wells for the collection of hydrogeologic data
- Purged, developed, and contained water from the newly constructed wells (into poly tank)
- Sampled each of the wells for field parameters and VOC lab analyses
- Prepared GIS and groundwater contour/flow direction maps
- Summarized the soil and groundwater results on data tables
- Coordinated the disposal of the groundwater purge/development water (approximately 210 gal.)
- Prepared this Status Report for submittal to the Department



A summary of the tasks outlined above, is provided in the following sections.

In January 2020, Mi-Tech conducted a limited Phase I Environmental Site Assessment (ESA) of the investigative area. That work included a review of (1) historic WDNR files from the BRRTS website and Antigo WDNR office, (2) pertinent documents at the Three Lakes Historical Society, (3) property records available from on-line resources, and (4) documents obtained from ERIS (a provider of available database records and documents for the project area). Shortly thereafter, requirements regarding the CoVID-19 Pandemic were implemented by the Governor, resulting in a hold of most project-related activities for several months.

By early June 2020, the placement of the proposed boring/well locations was determined based on the available data from the limited Phase I ESA, and with concurrence from Mr. Matthew Rahn, WDNR Project Manager. Mi-Tech subsequently prepared and submitted the Site Investigation Work Plan to the WDNR. Access Agreements from property owners and the Town of Three Lakes were obtained for the drilling and installation of the wells. Mi-Tech coordinated an on-site utility meet to confirm that there would be no conflicts with the proposed well locations.

During the week of June 16-18, 2020, Mi-Tech and GDC, Inc., completed the drilling activities of 9 soil borings; 7 of the soil borings were converted to shallow water table wells and 2 were converted to deeper piezometer wells. Two well “nests” were constructed in an effort to evaluate the shallow and deeper aquifers. The drilling work was completed with a truck-mounted drill rig using 4-1/4” Hollow Stem Augers (HSA).

Soil samples were collected continuously from about 2-feet below surface, to the water table, with the exception of the two shallow borings of the well nests (MW-1/MW-1P and MW-7/MW-7P). The shallow wells were blind drilled (no soil sampling). Soil samples were obtained from split-spoon samplers and contained in zip lock bags for field analyses using a hand-held photoionization detector (PID). A minimum of two representative soil samples per boring were submitted to CT Laboratories in Baraboo, WI for chemical analysis of VOCs.

The soil cuttings were contained in 55-gallon drums during drilling and then emptied onto plastic sheeting at an off-site location (owned and authorized by the Town). Approximately 4 cubic yards of soil were stockpiled and covered with plastic pending laboratory analysis.

On June 25, 2020, Mi-Tech’s Professional Land Surveyor (PLS), surveyed the new wells (including the ground surface, well components, and Maple Lake elevations), using USGS geodetic datum. The wells were purged and developed in accordance with ch. NR 141, and subsequently sampled for field parameters and VOCs on June 30, 2020 after measuring the water level elevations. The purge/development water was contained in a poly tank pending laboratory analysis. Figure 5 depicts the parcel and monitoring well locations.



RESULTS

Limited Phase I ESA Findings

Mi-Tech subcontracted with Environmental Risk Information Services (ESRI) in mid December 2019, to provide comprehensive records and database documents of environmental risk and historical information for the “Target Property” at 1743 Superior Street (Three Lakes Laundry), and surrounding area. The records search was conducted as part of Mi-Tech’s Limited Phase I ESA for the Due Diligence component of the project.

The ESRI reports provided detailed information obtained from various databases including a summary of the WDNR BRRTS on the web records, underground and aboveground tank registration documents, historic aerial photographs dating back to 1938, two Sanborn Fire Insurance Maps (1901 and 1926), City Directory Listings back to 1998, and a comprehensive summary of the physical characteristics of the area (e.g. geology, hydrogeology, wetlands, flood maps, topography), etc. The Phase I ESA process did not involve interviews with specific individuals or public officials familiar with the area, a site reconnaissance of building interiors, or preparation of an ASTM-compliant report. As such, the environmental assessment process does not meet the criteria outlined in the ASTM standards, and is therefore considered to be a “limited” Phase I ESA.

The address for the Three Lakes Laundry Facility (“Target Property”), is 1743 Superior Street, Three Lakes, Wisconsin, in Oneida County. The coordinates for this parcel are:

45.79800538 Latitude
-89.16676847 Longitude

The elevation of the site is approximately 1663 feet msl, the topography on this parcel is relatively flat. However, the regional topographic slope is to the north toward Maple Lake, where the ground elevation (along Lake Drive), drops roughly 23 feet to approximately 1640 msl; the elevation of Maple Lake is approximately 1633.45 msl. *See Figure 3 for Parcel ID Map and Figure 4 for Project Vicinity Map; the Parcel addresses and Monitoring Well Locations are presented on Figure 5.*

All of the parcels within the project area have been serviced by a municipal water and sewerage system since 1993; there are no remaining private wells in or near the investigative area. There are two municipal wells in the Three Lakes area; the closest is located more than 1200 feet south (upgradient).

The mapped soil unit in the project area is the Padus-Pence sandy loams, with 6 to 15 percent slopes. The soils are comprised primarily of well-drained sandy loams, gravelly sandy loam, and gravelly coarse sand. Bedrock is expected to occur at depths greater than 200 feet below surface grade (bsg). The depth to groundwater is approximately 27 feet bsg near the Target Property, but closer to 6 feet bsg near Maple Drive, due to the drop in surface elevation. There are no mapped wetlands in the project area and the parcels near Superior Street are in Zone X, an area of minimal flood hazard according to the FEMA Flood panel maps.



The findings of the ESRI reports confirmed that the Former Draeger Oil Station (currently a Shell Gasoline Station), was identified on the 1926 Sanborn Map with two separate structures. The larger one is identified as a “Garage” along the east side of the parcel near the location of the existing convenience store. Two (buried) two gasoline tanks (identified as G.T.) are identified along the south side of the Garage building (currently, the existing Right-of-Way of Superior Street (Highway 45)). The Sanborn Map also depicts a dwelling (house) in the location of the existing car wash.

The Former Amoco Station (the triangular parcel located at the convergence of Superior and Anderson Streets), is also depicted on the 1926 Sanborn map as a “Filling Station” with several underground gasoline tanks depicted along the south side of the structure. The adjacent street (currently Huffman Street) is labeled as Pulaski Avenue on both the 1901 and 1926 Sanborn Maps. The Three Lakes Laundry property (1743 Superior Street) is undeveloped on both maps.

Review of WDNR Project Files

Mi-Tech conducted a comprehensive review of the four pertinent WDNR project files from the BRRTS website and the WDNR Antigo office in January 2020. Mr. Matt Rahn, WDNR Project Manager, provided access to the WDNR files for the following projects, all of which are located within the PCE contamination investigative area:

- *Former Amoco Station* *BRRTS #03-44-001239*
- *Former Draeger Oil* *BRRTS #03-44-001066*
- *Scott Soder Property* *BRRTS #03-44-000737 (2 BRRTS numbers assigned)*
BRRTS #02-44-000266
- *Contamination Detected PCE* *BRRTS #02-44-000267*

A summary of each of the WDNR project files above is provided in the following sections:

Former Amoco Station Project at 1752 Superior Street

The triangular parcel located at the intersection of Superior/Anderson/Huffman Streets in Three Lakes, formerly operated as a retail gasoline station (Amoco) from approximately 1920 to 1994. Several residents along Huffman Street (downgradient to the north), reported petroleum odors in their potable drinking water in 1992.

The WDNR subsequently tested three of the private wells and confirmed the presence of petroleum and/or chlorinated compounds, in all three wells (Peterson, Soder, and Leonhardt well). The highest concentration of benzene was reported in the Scott Soder well at 55 ug/L. The John Peterson well contained detections of several petroleum related compounds including 1,2-Dichloroethane, Ethylene Dibromide, Toluene, and Xylenes above the Preventive Action Limit. The chlorinated compound Tetrachloroethylene (PCE) was detected in the Leonhardt well at 34 ug/L. Table 1 summarizes the groundwater quality data for the private wells sampled by the WDNR in 1992 (excerpt from report prepared by ECCI, Inc., March, 1995).



The WDNR subsequently identified the (former) Three Lakes Standard Property (Amoco) as a possible source of the contamination. In 1993, all three private wells were abandoned following the extension and connection of the homes to the Three Lakes municipal water and sewer systems. In 1994, an environmental consultant was retained to conduct a site investigation, which included the installation of 9 groundwater monitoring wells, one piezometer, and three soil borings. The soils were comprised primarily of fine to medium grained silty sands and sandy gravels. A thin clay layer was reported at about 4-5 feet below grade. Groundwater was present at roughly 30 feet, flowing in a northerly direction toward Maple Lake, with an estimated horizontal seepage velocity of 180 feet per year. Bedrock was estimated to occur at more than 200 feet bsg.

Extensive petroleum-contaminated soil and groundwater were detected both on and off site, although no free product was reported in any of the wells; no chlorinated compounds were ever detected in any of the on-site soils or groundwater. The site contained at least five underground storage tanks (containing leaded, unleaded gasoline, diesel, and waste oil), and associated dispensers. A remedial excavation was conducted at the time the tank system was removed in 1994, confirming that the soils beneath the tanks were the source of the contamination extending to the water table (about 30 feet bsg). The highest benzene concentration was reported in MW-6 (off-site, and downgradient to the north) in July 1997 at 198 ug/L.

By 1999, the petroleum contamination levels in the groundwater had decreased to 7 ug/L in MW-3 (on-site), and 48 ug/L in MW-9 (off site and downgradient); elevated levels of chlorinated hydrocarbons still remained in several of the off-site wells. The project achieved site closure in May 2001 with restrictions including continuing obligations for the residual (petroleum) soil and groundwater contamination both on and off-site. The site is currently vacant although the structure still remains.

Former Draeger Oil at 1742 Superior Street

The former Draeger Oil site (currently operating as a Shell Station), is located at 1742 Superior Street, which is the northeast corner of the intersection of Superior/Anderson/Huffman Streets. The parcel was depicted as a "Garage" in the historic 1926 Sanborn Fire Insurance Map, with buried gasoline tanks along the southern property boundary. Around 1937, the property reportedly operated as a shoe repair shop for about 20 years. It then operated as a Mobil retail gasoline station from about 1957 to 1989, providing occasional services for the painting of vehicles. In 1976, the station was remodeled and a separate car wash was constructed along the eastern parcel. A total of 5 underground storage tanks (containing unleaded gasoline and diesel), have been registered at the site.

The WDNR also identified the Former Draeger Oil site as a possible source of the contamination that had been detected in the private water-supply wells (along Huffman Street in 1992). In December 1993, the owner retained an environmental consulting firm to collect soil samples from near the buried tanks and the pump islands; the samples were analyzed for the presence of Gasoline Range Organics (GRO) only. Contamination of GRO was confirmed near the east side of the pump island at 1,000 ppm from 14-16' bsg.

A total of five monitoring wells were later installed on the property from May to September 1995, along with several additional test borings at various locations on the property. The wells were installed to approximately 35' below surface grade (bsg) with 10-foot well screens.



Soil samples from the boreholes were analyzed for GRO, DRO, BTEX, and lead from various depths. The findings indicated that only low levels of petroleum compounds were detected, although below the NR 720 Residual Contaminant Levels (RCLs). The soil samples were not analyzed for chlorinated compounds since the BTEX analysis does not include them. The consultant reported that the soils were a continuous sequence of light brown sand with occasional layers of silty sand and rounded pebbles.

Groundwater from each of the wells was sampled for PVOCs twice and VOCs on at least one occasion from June 1995 to January 1996. The results indicated that only low levels of petroleum-related compounds were detected in each of the wells, all below the ES for the NR 140 Groundwater Quality Standards. However, all five wells contained elevated levels of Tetrachloroethene (PCE) that exceeded the ES, and four of the wells also contained PAL exceedances for TCE. The PAL and ES for both PCE and TCE, are 0.5 ug/L and 5.0 ug/L for both compounds respectively.

The following table summarizes the highest results of chlorinated compounds detected in the Former Draeger Oil groundwater monitoring wells from June through September 1995.

Highest Chlorinated Compounds Detected in Draeger Oil Wells (June – September 1995)							
	<u>MW-1</u>	<u>MW-2</u>	<u>MW-3</u>	<u>MW-4</u>	<u>MW-5</u>	<u>PAL</u>	<u>ES</u>
Tetrachloroethene (PCE)	19	35	12	63	43	0.5	5.0
Trichloroethene (TCE)	ND	1.7	ND	0.63	1.9	0.5	5.0

All results reported as ug/L, equivalent to parts per billion (ppb).

Due to the low levels of petroleum contamination in the wells, the project achieved site closure in December 1997, with no soil or groundwater use restrictions. Two of the wells (MW-1 and MW-2) were transferred to the Former Amoco Station as a monitoring point for that investigation, but later abandoned. Site closure of the Former Draeger Oil site applied only to the petroleum contamination; the elevated levels of chlorinated hydrocarbons still remained after closure. According to the closure documents, the environmental consultant did not feel that Draeger Oil was the source of the chlorinated compounds in the area, but that the contaminants were migrating from an off-site source.

Soder Property at 1751 Lake Drive (Intersection of Lake Drive and Huffman St.)

The home of Scott Soder is located roughly 400 feet north (downgradient) of the Former Three Lakes Amoco Station, at the intersection of Lake Drive and Huffman Street. The WDNR designated the Soder Property as a possible source of petroleum contamination at the time the WDNR tested several private wells and confirmed the presence of contaminants in the potable water-supply wells in 1992. Two separate WDNR BRRS project files and numbers were assigned to the Soder Property: (1) Soder Property, LUST Project #03-44-000737 and (2) Scott Soder, ERP Project #02-44-000266. The contamination investigations at the Former Amoco Station and Former Draeger Oil Station were subsequently initiated, and the homes in the area were connected to the municipal water and sewer systems, and the private wells abandoned (in 1993).



The Department acknowledged that the Soder Property did not have an underground storage tank and was never the source of any contamination in the area; as such, both files and BRRTS numbers for the Soder Property, were administratively closed by the WDNR in Fall 2001.

Contamination Detected PCE at 7052 Huffman Street (Former Leonhardt Property)

This WDNR project file has been an open Environmental Repair Project (ERP) since August 1992 and remains an open ERP project today. According to the BRRTS on the Web activity details, the address associated with this file is "7052 Hoffman Street", which pertains to the former Leonhardt Residence at 7052 Huffman Street where the private well had been impacted with PCE back in 1992.

The BRRTS activity details for this site also references the Three Lakes Laundromat business, specifically, a site investigation conducted by Seymour Environmental at the laundromat in August 2007. A total of 5 soil borings were advanced (using a Geoprobe and hand auger), to depths of up to 12 feet; 3 groundwater samples were also collected at locations upgradient and downgradient on the property. Soil and groundwater samples were analyzed for VOCs. The findings were submitted in a report to the WDNR in September 2007, and indicated that none of the soil samples contained any detectable concentrations for any of the VOCs, including chlorinated compounds. The groundwater data indicated that a PAL exceedance for Tetrachloroethene (PCE) at 2.5 ug/L, was the only VOC detected in any of the three groundwater samples collected. The PAL for PCE is 0.5 ug/L, and the ES is 5.0 ug/L. The address of Three Lakes Laundry Facility was incorrectly stated (in the Seymour Environmental Report), as 1243 Superior Street; the correct address is 1743 Superior Street.

Drilling and Monitoring Well Installation

The drilling of the 9 soil borings and installation of the groundwater monitoring wells was completed from June 16-18, 2020. Mi-Tech subcontracted with Geotechnical Drilling Contractors (GDC, Inc.) to provide the drilling and well construction services for this project. Verification of the proposed well locations and buried utilities was discussed during a scheduled utility meet the prior week. Five of the wells were placed in Right-of-Way property owned by the Town of Three Lakes; three wells were placed on the property owned by the Shell Station (Former Draeger Oil Site). The last well was placed along the northern portion of the Three Lakes Laundry property (refer to Figure 5).

The proposed well locations were provided to the WDNR in the Site Investigation Work Plan in May 2020. The wells were generally placed at locations where the highest detections of chlorinated compounds had been reported in the past, as well as in areas to ascertain the extent and degree of any residual contamination remaining within the soil and groundwater.

The boreholes were drilled using a CME 75 truck-mounted drill rig with an automatic hammer, and 4-1/4" hollow stem augers. Soil samples were collected continuously from approximately 2 feet below surface grade to several feet into the water table from split-spoon samplers, from all of the borings, with the exception of the two shallow borings of the well nests. The samples were collected into zip-lock bags, labeled, and field-screened on site with a hand-held Photoionization Detector (PID) for volatiles.

The soils were characterized in the field for physical and geologic characteristics, noting any unusual staining or odors, as well as moisture content. A minimum of two samples per boring were prepared for laboratory analysis of VOCs by placing approximately 25 grams of soil in a glass jar, preserving the sample with Methanol, and placing it in a cooler on ice in a plastic bag. In general, samples for laboratory analysis were collected from varying depths within the vadose (unsaturated) zone including several at the groundwater interface.

Drill cuttings were contained on site in 55-gallon drums and later transported and emptied off-site for stockpiling on plastic sheeting at a construction yard (owned by the Town of Three Lakes), pending laboratory analyses. Difficult drilling was encountered during advancement of the deeper wells (Piezometers) due to the pressure and “blow-up” in the augers. Following the drilling of each boring, the borehole was converted to a groundwater monitoring well. Seven (7) water table observation wells were installed to about 4-5 feet below the water table; two (2) piezometers were drilled to approximately 10 feet deeper. All wells were constructed of 2-inch diameter schedule 40 PVC; water table wells with a 10-foot well screen and piezometers with a 5-foot well screen. Five wells were constructed with above-grade protective pipes with locking well covers, and the remaining four wells were constructed with 12-inch diameter flush-mount steel covers.

Soil Data

The results of the field analyses for the soil samples indicated that none of the soil samples from any of the borings contained any unusual color, sheen, or odor. Likewise, none of the samples exhibited any readings when field-screened with the PID. Nearly all soil samples were comprised of varying shades of brown, with fine to medium grained sand and/or coarse gravelly sand, and some with occasional silt. The laboratory data indicated no detectable concentrations of any VOCs for the chemical analyses of the soil samples. *Refer to Table 2 for a summary of the Soil Chemistry Data.*

Groundwater Data

The groundwater elevation data indicates that the depth to groundwater in wells near Superior Street (e.g. MW-6, MW-7, and MW-7P), was approximately 27 feet (below surface grade), and closer to 6 feet bsg in wells further north, along Lake Drive where the topography slopes significantly toward Maple Lake (e.g. MW-3). *The Groundwater Elevations (from the wells and Maple Lake), and Flow Direction are depicted on Figure 6.*

Water samples were characterized on site for field parameters including: color, odor, and turbidity. All of the samples were slightly light brown in color; none of the water samples exhibited any unusual odor or turbidity. The groundwater chemistry data indicated that none of the water samples from any of the 9 wells contained detections of VOCs above the chapter NR 140 Enforcement Standards (ES). Three of the wells contained a Preventive Action Limit (PAL) exceedance for Tetrachloroethene (PCE). They included MW-4 at 1.5 ug/L, MW-5 at 0.73 ug/L, and MW-7 at 1.2 ug/L. The PAL and ES for PCE are 0.5 ug/L and 5.0 ug/L respectively. No other VOCs were detected in any of the wells. *See Table 3 for a summary of the Groundwater Chemistry Data. The PCE values reported for each of the wells during the June 2020 sampling event are included on Figure 5.*



INVESTIGATIVE WASTE DISPOSAL

After receiving the laboratory results for the soil samples, confirming that no detectable concentrations had been reported, the stockpiled soil of drill cuttings was incorporated into existing clean fill at the Town yard. The purge/development water contained in the poly tank, was disposed at the Rib Mountain Metropolitan Sewerage District Facility on July 28, 2020, following approval from the Plant Director, Mr. Eric Donaldson.

RECOMMENDATIONS

Based on the findings presented in this report, Mi-Tech has determined that no interim action to address residual soil and/or groundwater contamination is necessary or warranted. As indicated in the Site Investigation Work Plan, Mi-Tech will collect a second round of groundwater samples from all 9 wells, for VOC analyses approximately 3 months after the first round of sampling (early October 2020). Should the data indicate that the laboratory results are similar or lower than the data from the first round of groundwater sampling, Mi-Tech recommends that a combination Site Investigation/Closure Report be submitted to the WDNR for closure review. Following conditional site closure, all of the monitoring wells should be abandoned in accordance with NR 141.

CLOSING

Should you have any questions and/or comments regarding this report or the project in general, please feel free to contact me via email at czelenka@mi-tech.us or at (715) 359-9400 extension 5233. We appreciate the opportunity to work with the Department on this project

Sincerely,
Mi-Tech Services, Inc.

Cindy L. Zelenka, B.S.
Environmental Specialist/Professional

Attachments

Maps and Figures

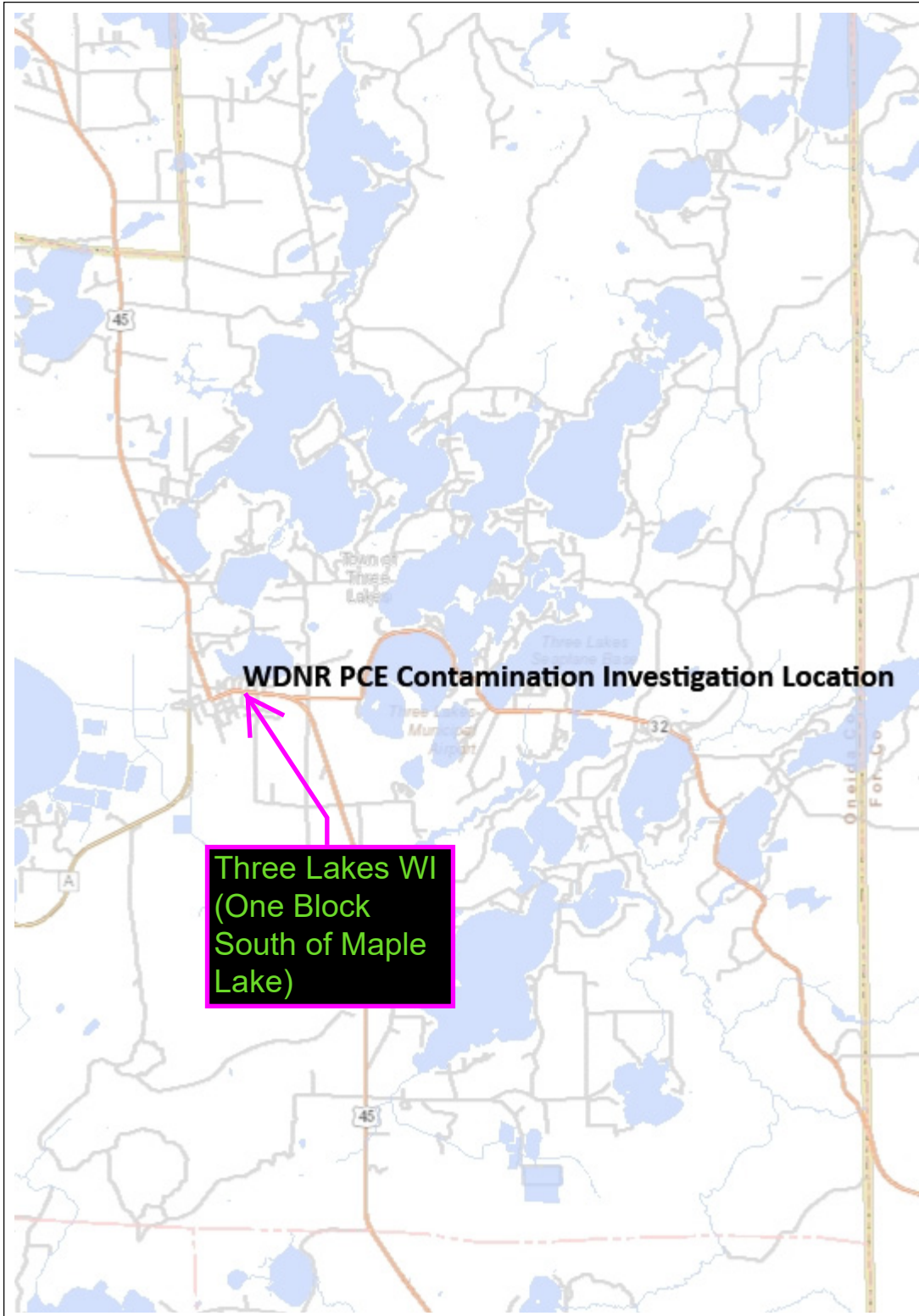
- Figure 1 - Site Location Map
- Figure 2 - Project Location Map
- Figure 3 – Parcel ID Map
- Figure 4 – Project Vicinity Map
- Figure 5 – Monitoring Well Locations and PCE Values Map
- Figure 6 - Groundwater Elevations and Flow Direction Map
- Figure 7 – Historic PCE Isoconcentration Map (reproduced from Map by Seymour Environmental)

Chemistry Data Tables

- Table 1 Lab Results for Potable Wells Sampled by WDNR (June 1992) – Excerpt from ECCI, Inc.
- Table 2 Summary of Soil Data
- Table 3 Summary of Groundwater Data



Figure 1 - Site Location Map



Legend

WDNR PCE Contamination Investigation Area includes parcels near intersection of Superior Street (Highway 45), Anderson Street, and Huffman Street in Town of Three Lakes, Oneida County, WI

1.9 0 1.9 Miles

1:95,040



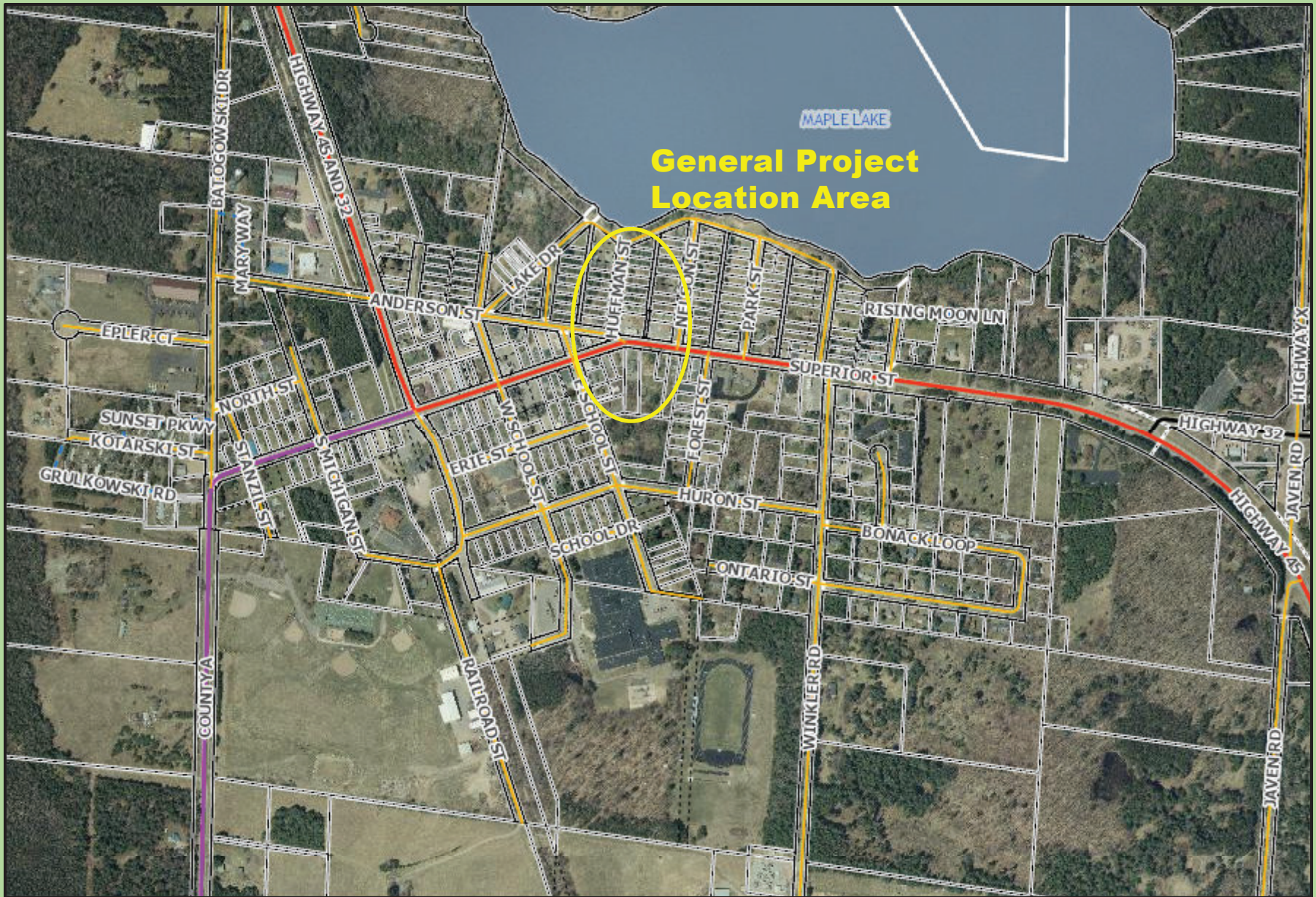
NAD_1983_HARN_Wisconsin_TM

DISCLAIMER: The information shown on these maps has been obtained from various sources, and are of varying age, reliability and resolution. These maps are not intended to be used for navigation, nor are these maps an authoritative source of information about legal land ownership or public access. No warranty, expressed or implied, is made regarding accuracy, applicability for a particular use, completeness, or legality of the information depicted on this map. For more information, see the DNR Legal Notices web page: <http://dnr.wi.gov/org/legal/>

Note: Not all sites are mapped.

Notes

WDNR PCE Contamination Investigation Area in Three Lakes, WI



General Project Location Area



Figure 2
Project Location

Community of Three Lakes
Oneida County, Wisconsin

0 0.045 0.09 0.18 0.27 0.36
Miles

This map is courtesy of the Oneida County Land Information office and is a general sketch of areas in Oneida County. It should not be used to represent surveys of property. See original source documents for more information.



Figure 3
Parcel ID Map

Parcel ID Map
Oneida County, Wisconsin

0 0.01 0.02 0.04 0.06 0.08 Miles

This map is courtesy of the Oneida County Land Information office and is a general sketch of areas in Oneida County. It should not be used to represent surveys of property. See original source documents for more information.

Figure 4 - Project Vicinity

WDNR PCE Contamination Investigation in Three Lakes, WI

Maple Lake



Public Beach

Soder

Leonhardt

Cy Williams Park

Peterson

Former Draeger Oil Site

Former Amoco Site

Three Lakes Laundry

1743 Superior St

Google Earth

© 2020 Google

300 ft



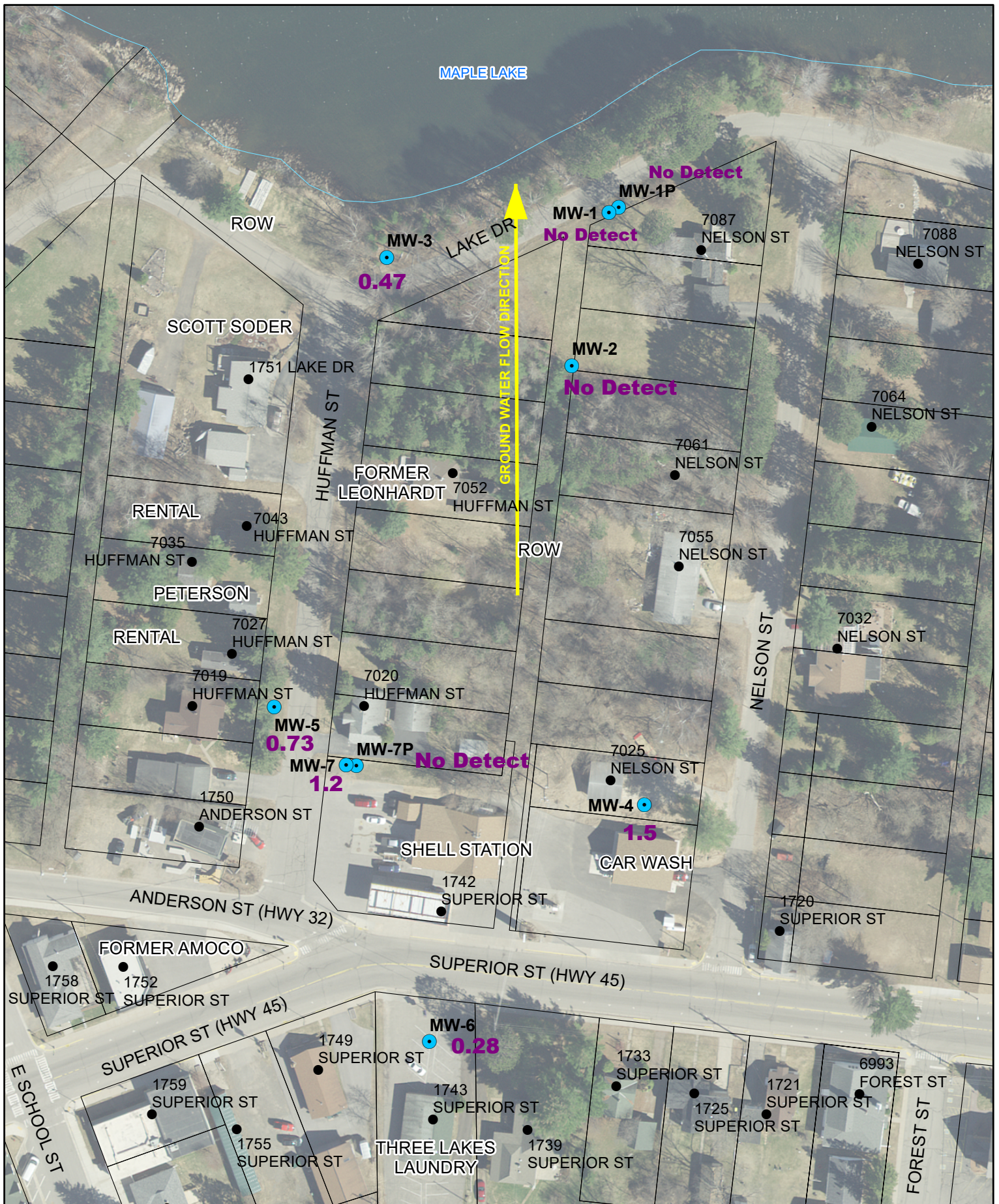
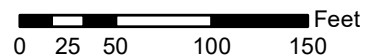


FIGURE 5
MONITORING WELL LOCATIONS
AND
PCE VALUES IN GROUNDWATER (ug/L)

● MONITORING WELLS
JUNE 2020 DATA



*Basemap data from county sources. For reference only

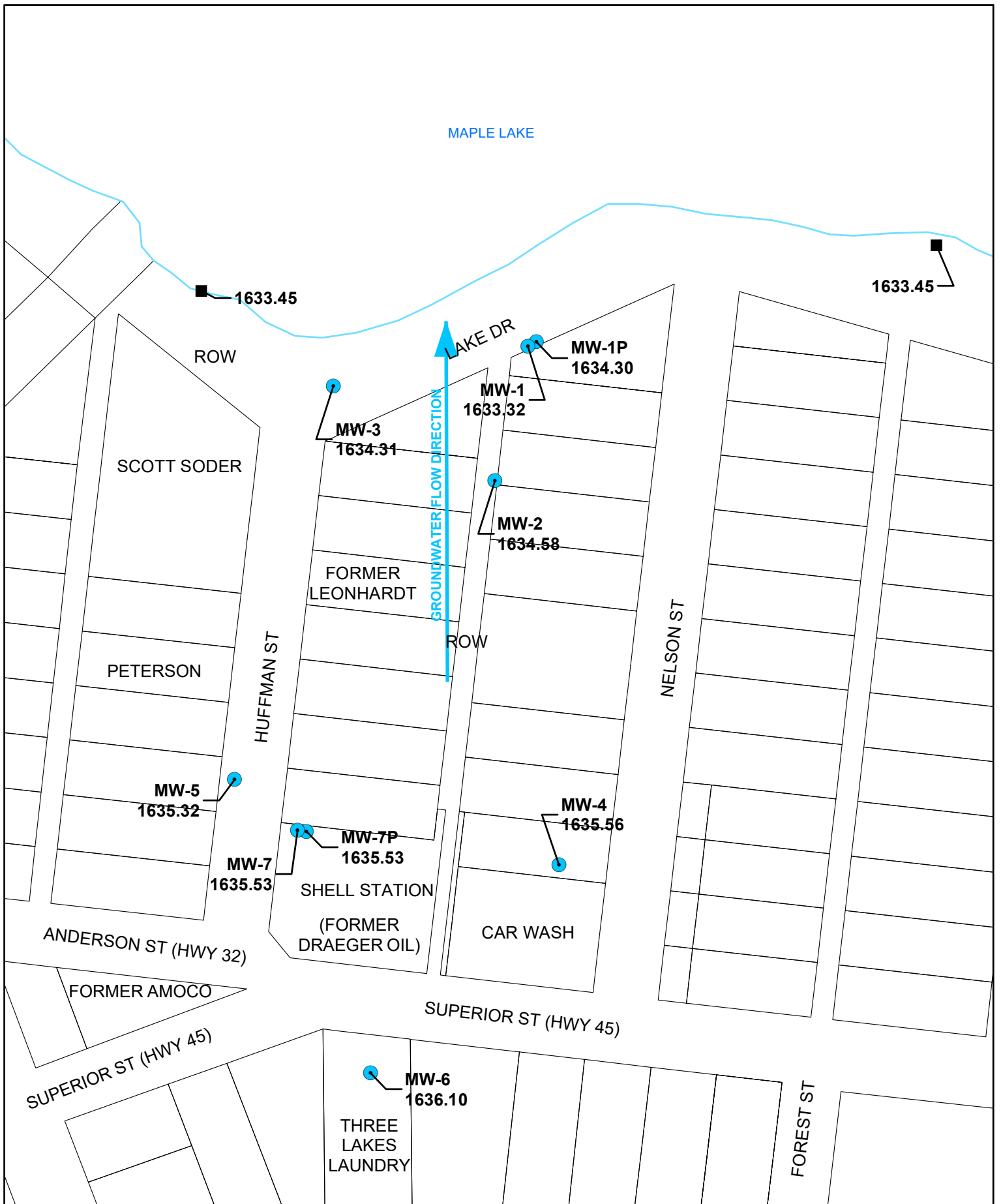


FIGURE 6
GROUNDWATER ELEVATIONS MAP

- MONITORING WELLS
 - WATER ELEVATION
- JUNE 2020



0 25 50 100 150 Feet

*Basemap data from county sources. For reference only

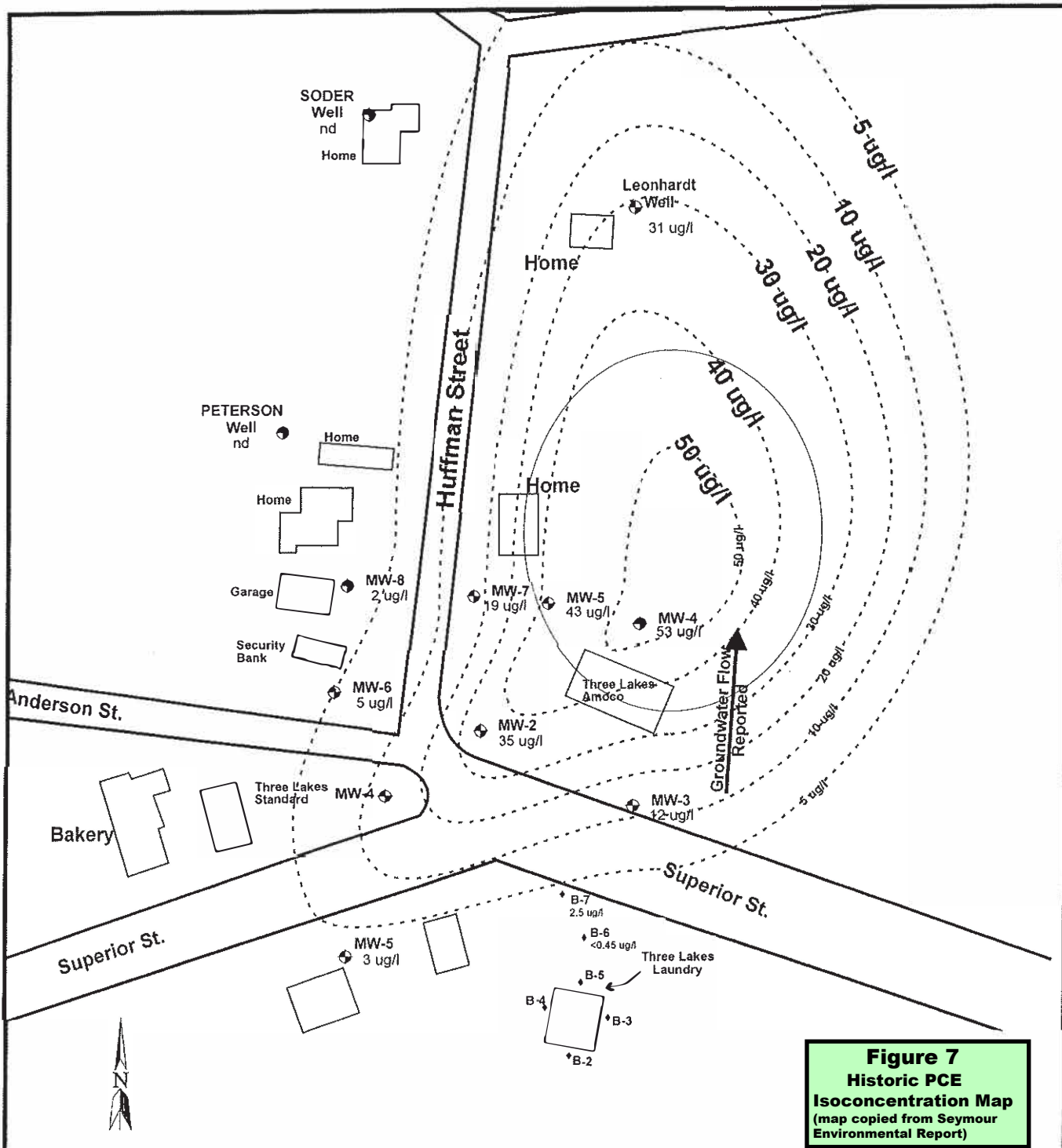


Figure 7
Historic PCE
Isoconcentration Map
 (map copied from Seymour Environmental Report)

LEGEND

- ⊕ - Well Location (with historic PCE concentration)
- ◆ - Geoprobe Location (Aug. 2007) (with PCE on Aug. 28, 2007)

0 100' 200'

1 INCH = 50 FEET
 SCALE IS APPROXIMATE

FILE/PATH: D:\PROJECTS\ThreeLakesLaundry
 Fig4-PCEgw.cdr
 DATE: 10/01/07
 PREPARED: MDF APPROVED:
 SOURCE: FIELD MEASUREMENTS

SEYMOUR
 ENVIRONMENTAL
 SERVICES, INC.

PCE DISTRIBUTION IN GROUNDWATER
 THREE LAKES LAUNDRY
 1243 Superior Street
 Three Lakes, Wisconsin

FIGURE
4

Party (PRP) letter to a likely source of the contaminants, Three Lakes Amoco. A copy of the PRP letter is in Appendix C.

Table 1:

Lab Results from Potable Wells Along Hoffman and Lake St. in Three Lakes June 1992
Sampled by WDNR Water Supply Department
All units are expressed in ug/L, which is equivalent to parts-per billion (ppb)

Compound Detected	Benzene	1,2 Dichloroethane	Ethylene Dibromide	Toluene	Xylene	Tetrachloro-ethylene
WDNR Enforcement Standard	5.0	5.0	0.05	343	620	5.0
Peterson Residence	54	2.2	5.1	2	18	
Soder Residence	55	1.8	3.6		9.7	
Leonhardt Residence	1.3		2.1			34

The source of the contaminants detected in the wells has not been determined as of March 1995.

The tetrachlorethane detected in the Leonhardt well has an unknown source. One possibility is the dry cleaning business located along Superior Street across from the Three Lakes Amoco Station.

Figure 2 Shows the locations of the affected potable wells on Hoffman and Lake Streets.

Underground Storage Tanks

Because the site has been a gas station for nearly 70 years, there have likely been at least several generations of UST facilities used on the property over the period. The 1926 Sanborn Map shows pumps located along Superior Street, and their mapped location indicates they were located in the Superior Street right-of way.

In 1952, the current gas station building was constructed and four new UST's were installed. Details regarding the UST's used over the period 1926 through 1952 concerning their construction, precise location, and date of removal were not readily available for this investigation. Other than the information from the 1926 Sanborn Map, virtually nothing is know about the tank facilities over this period.

Table 2
Soil Chemistry Data - Soil Borings
WDNR PCE Contamination Investigation - Three Lakes, WI (BRRTS #02-44-000267)

July 2020
Page 1 of 2

SAMPLE I.D.	MW1P-4	MW1P-6	MW2-5	MW2-7	MW3-2	MW3-4	MW4-5	MW4-8	MW4-12	MW5-4	MW5-12	MW6-5	MW6-10	MW6-15	MW7P-4	
SAMPLE DEPTH (Ft.)	6-8'	10-12'	8-10'	12-14'	2-4'	6-8'	8-10'	14-16'	22-24'	6-8'	22-24'	8-10'	18-20'	28-30'	6-8'	
SAMPLE COLLECTION DATE	6/16/2020	6/16/2020	6/16/2020	6/16/2020	6/16/2020	6/16/2020	6/17/2020	6/17/2020	6/17/2020	6/17/2020	6/17/2020	6/17/2020	6/17/2020	6/17/2020	6/18/2020	
PID Reading (instrument units - i.u.)	0	0	0	0	0	0	0	Too Wet	121*	0	0	0	0	0	0	
ANALYTICAL PARAMETERS	WDNR NR 720 RCLs															
VOCs (mg/kg)	mg/kg															
Benzene	0.0051	<0.014	<0.013	<0.012	<0.013	<0.012	<0.011	<0.012	<0.011	<0.0091	<0.012	<0.011	<0.011	<0.011	<0.012	<0.012
Ethylbenzene	1.57	<0.014	<0.013	<0.012	<0.013	<0.012	<0.011	<0.012	<0.011	<0.0091	<0.012	<0.011	<0.011	<0.011	<0.012	<0.012
Methyl-tert-butyl ether	0.027	<0.020	<0.020	<0.018	<0.019	<0.018	<0.016	<0.017	<0.016	<0.031	<0.017	<0.016	<0.016	<0.016	<0.018	<0.017
Toluene	1.1072	<0.020	<0.020	<0.018	<0.019	<0.018	<0.016	<0.017	<0.016	<0.013	<0.017	<0.016	<0.016	<0.016	<0.018	<0.017
1,2,4-Trimethylbenzene		<0.014	<0.013	<0.012	<0.013	<0.012	<0.011	<0.012	<0.011	<0.0091	<0.012	<0.011	<0.011	<0.011	<0.012	<0.012
1,3,5-Trimethylbenzene	1.3787	<0.016	<0.016	<0.014	<0.016	<0.015	<0.013	<0.014	<0.013	<0.0111	<0.014	<0.013	<0.013	<0.013	<0.014	<0.014
o -Xylenes		<0.0087	<0.0085	<0.0078	<0.0084	<0.0079	<0.0070	<0.0074	<0.0076	<0.0058	<0.0075	<0.0070	<0.0070	<0.0068	<0.0078	<0.0075
m & p - xylenes	3.96	<0.031	<0.030	<0.028	<0.030	<0.028	<0.025	<0.026	<0.025	<0.021	<0.027	<0.025	<0.025	<0.024	<0.028	<0.027
1,2-Dibromoethane	0.0000282	<0.014	<0.013	<0.012	<0.013	<0.012	<0.011	<0.012	<0.011	<0.0091	<0.012	<0.011	<0.011	<0.011	<0.012	<0.012
1,2-Dichloroethane	0.0028	<0.027	<0.027	<0.024	<0.027	<0.025	<0.022	<0.023	<0.022	<0.018	<0.024	<0.022	<0.022	<0.021	<0.024	<0.024
Tetrachloroethene	0.0045	<0.014	<0.013	<0.012	<0.013	<0.012	<0.011	<0.012	<0.011	<0.0091	<0.012	<0.011	<0.011	<0.011	<0.012	<0.012
Trichloroethene	0.0036	<0.024	<0.023	<0.021	<0.023	<0.021	<0.019	<0.020	<0.019	<0.016	<0.020	<0.019	<0.019	<0.018	<0.021	<0.020

VOCs = Volatile Organic Compounds EPA Method 8260 (No Other Compounds Analyzed Were Detected Above Lab Detection Limits - See Lab Report for Complete Results)

Results presented as milligrams per kilogram (mg/Kg), which is equivalent to parts per million (ppm)

Photoionization Detector (PID) calibrated to 100 parts per million isobutylene

1,2-Dibromoethane is also known as Ethylene Dibromide

1,2-Dichloroethane is also known as Ethylene Dichloride

Tetrachloroethene is also known as Tetrachloroethylene / Perchloroethene / Perchloroethylene / PERC / or PCE

Trichloroethene is also known as Trichloroethylene or TCE

Ch. NR 720 Residual Contaminant Levels established by Wisconsin Department of Natural Resources for the Protection of Groundwater Quality

Residual Contaminant Levels (RCLs) calculated from WDNR Excel Spreadsheet at the Following website address: <http://dnr.wi.gov/topic/Brownfields/documents/tech/RCLs1213.xlsm>

* PID May not have been working properly due to wet soil in previous sample.

Table 2 Continued
Soil Chemistry Data - Soil Borings
WDNR PCE Contamination Investigation - Three Lakes, WI (BRRTS #02-44-000267)

July 2020
Page 1 of 2

SAMPLE I.D.		MW-7P	DUPLICATE	MeOH Blank											
SAMPLE DEPTH (Ft.)		18-20'													
SAMPLE COLLECTION DATE		6/18/2020													
PID Reading (instrument units - i.u.)		0	0	0											
ANALYTICAL PARAMETERS	WDNR NR 720 RCLs														
VOCs (mg/kg)	mg/kg														
Benzene	0.0051	<0.010	<0.011	<0.011											
Ethylbenzene	1.57	<0.010	<0.011	<0.011											
Methyl-tert-butyl ether	0.027	<0.015	<0.016	<0.016											
Toluene	1.1072	<0.015	<0.016	<0.016											
1,2,4-Trimethylbenzene		<0.010	<0.011	<0.017											
1,3,5-Trimethylbenzene	1.3787	<0.012	<0.013	<0.013											
o -Xylenes		<0.0068	<0.0068	<0.0070											
m & p - xylenes	3.96	<0.025	<0.024	<0.025											
1,2-Dibromoethane															
1,2-Dichloroethane															
Tetrachloroethene	0.0045	<0.010	<0.011	<0.011											
Trichloroethene															

VOCs = Volatile Organic Compounds EPA Method 8260 (No Other Compounds Analyzed Were Detected Above Lab Detection Limits - See Lab Report for Complete Results)

Results presented as milligrams per kilogram (mg/Kg), which is equivalent to parts per million (ppm)

Photoionization Detector (PID) calibrated to 100 parts per million isobutylene

1,2-Dibromoethane is also known as Ethylene Dibromide

1,2-Dichloroethane is also known as Ethylene Dichloride

Tetrachloroethene is also known as Tetrachloroethylene / Perchloroethene / Perchloroethylene / PERC / or PCE

Trichloroethene is also known as Trichloroethylene or TCE

Ch. NR 720 Residual Contaminant Levels established by Wisconsin Department of Natural Resources

Residual Contaminant Levels (RCLs) calculated from WDNR Excel Spreadsheet at the Following website address:

**Table 3
Summary of Groundwater Chemistry Data - Monitoring Wells
WDNR PCE Contamination Investigation - Three Lakes, WI (BRRS #02-44-000267)**

Sample ID			MW-1	MW-1P	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7	MW-7P	DUPLICATE	FIELD BLANK
Well Type			Pro-Top	Pro-Top	Pro-Top	Pro-Top	Flushmount	Pro-Top	Flushmount	Flushmount	Flushmount		
Well Depth (Ft. from Surface)			17'	37'	20'	15'	30'	32'	35'	32'	47.7'		
Ground Elevation (MSL)			1643.08	1643.14	1647.84	1640.41	1660.91	1659.94	1664.18	1662.46	1662.39		
Depth to Groundwater			12	11.07	15.76	8.43	24.82	26.97	27.72	26.76	26.68		
Screened Interval (Ft.)			7-17'	32-37'	10-20'	5-15'	20-30'	22-32'	25-35'	22-32'	42.7-47.7'		
Top of PVC (MSL)			1645.32	1645.37	1650.34	1642.74	1660.38	1662.29	1663.82	1662.29	1662.21		
Water Elevation (MSL)			1633.32	1634.3	1634.58	1634.31	1635.56	1635.32	1636.1	1635.53	1635.53		
Sample Collection Date			06/30/20	06/30/20	06/30/20	06/30/20	06/30/20	06/30/20	06/30/20	06/30/20	06/30/20	06/30/20	06/30/20
ANALYTICAL PARAMETERS	NR 140 PAL	NR 140 ES										Duplicate of MW-4	
VOCs (µg/L)													
Benzene	0.5	5	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40
Ethylbenzene	140	700	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
Methyl-tertiary-butyl ether	12	60	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
Toluene	160	800	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21
Trimethylbenzenes (combined)	96	480	<0.56	<0.56	<0.56	<0.56	<0.56	<0.56	<0.56	<0.56	<0.56	<0.56	<0.56
Xylenes (combined)	400	2,000	<0.96	<0.96	<0.96	<0.96	<0.96	<0.96	<0.96	<0.96	<0.96	<0.96	<0.96
1,2-Dibromoethane (EDB)	0.005	0.050	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
1,2-Dichloroethane	0.5	5	<0.24	<0.24	<0.24	<0.24	<0.24	<0.24	<0.24	<0.24	<0.24	<0.24	<0.24
Tetrachloroethene (PCE)	0.5	5	<0.27	<0.27	<0.27	0.47	1.5	0.73	0.28	1.2	<0.27	1.6	<0.27
Trichloroethene (TCE)	0.5	5	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
FIELD PARAMETERS													
Odor			None	None	None	None	None	None	None	None	None	None	None
Color			Slight	Slight	Slight	Slight	Slight	Slight	Slight	Slight	Slight	Slight	Slight
Turbidity			None	None	None	None	None	None	None	None	None	None	None

Notes:
 Results presented as micrograms per liter (ug/L), which is equivalent to parts per billion (ppb), unless otherwise noted.
 VOCs = Volatile Organic Compounds (Groundwater Samples analyzed using Method EPA 8260); no other compounds analyzed were detected above the laboratory detection limits. See lab report for complete results.
 MSL = Mean Sea Level
 1,2-Dibromoethane (EDB) is also known as Ethylene Dibromide
 1,2-Dichloroethane is also known as Ethylene Dichloride
 Tetrachloroethene is also known as Tetrachloroethylene / Perchloroethylene / Perc /and PCE
 Trichloroethene is also known as Trichloroethylene or TCE

ch. NR 140 Preventive Action Limit (PAL) Exceedance	23
ch. NR 140 Enforcement Standard (ES) Exceedance	157