Site Investigation Field Procedures Workplan

Waubeca Mill, Inc.
W4132 Mill Street
Waubeca (Town of Fredonia), Wisconsin

September 14, 2017
by METCO
WDNR File Reference #: 03-46-183691
PECFA Claim #: 53021-9716-32

METCO

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This document was prepared by:

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Staff Scientist

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September 14, 2017

WDNR BRRTS#: 03-46-183691
PECFA Claim #: 53021-9716-32

Jacquelyn Voeks
680 Emerald Pt, Building 5, Condo 7
Hollister, MO 65672

Dear Ms. Voeks,

Enclosed is our "Site Investigation Field Procedures Workplan" concerning the Waubeca Mill, Inc. site in Waubeca, Wisconsin. This document outlines the procedures and the methods used to conduct such an investigation.

A copy of this workplan will be sent to the Wisconsin Department of Natural Resources for review.

We appreciate the opportunity to be of service to you on this project. Should you have any questions or require additional information, do not hesitate to contact our La Crosse office.

Sincerely,

Jason T. Powell
Staff Scientist

C: Lee Delcore – WDNR

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Site Investigation Field Procedures Workplan - METCO
Waubeca Mill, Inc.

OBJECTIVES

Requirements of the WDNR

A Site Investigation is required by the Wisconsin Department of Natural Resources (WDNR) by authority of Section 292.11 of the Wisconsin Statutes. According to the WDNR, any soil that tests over 10 ppm Gasoline Range Organics (GRO) or Diesel Range Organics (DRO) requires an investigation. Any soil that tests over the Chapter NR720 Groundwater RCLs, Direct Contact RCLs, or Soil Saturation Values an investigation and possible remediation. Any groundwater that tests over the Preventive Action Limits (PAL) or Enforcement Standards (ES) for compounds listed in Chapter NR140 of the Wisconsin Statutes requires an investigation and possible remediation. For a further explanation of WDNR rules and regulations, see Appendix D.

Requirements of the PECFA Program

According to rules adopted in May 2006, the maximum allowable cost for an initial Site Investigation shall be no more than $20,000 unless pre-approved by PECFA. All consultant and commodity service costs must not exceed the PECFA Usual and Customary Charges.

Purpose of Document

This document briefly outlines all methods and procedures used by METCO personnel concerning "Site Investigations". These guidelines are strictly followed unless changed by managing personnel, site conditions, or project situations. All changes will be clearly noted.

All work conducted by METCO is undertaken in accordance with approved methods and regulations of the WDNR Bureau for Remediation and Redevelopment.

This document is site specific and will always be on-site during the project.

INTRODUCTION

Site Name

Waubeca Mill, Inc.

Site Address

W4132 Mill Street
Waubeca (Town of Fredonia), Wisconsin

Legal Description

SE ¼, SW ¼, Section 28, Township 12 North, Range 21 East, Ozaukee County

Contact or Client

Jacquelyn Voeks
680 Emerald Pt, Building 5, Condo 7
Hollister, MO 65672
(262) 707-0735

WDNR Project Manager

Lee Delcore
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(920) 893-8524

Consultant

METCO
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SITE BACKGROUND

Facility

A feed mill has operated on the subject property since 1864. A 300-gallon underground storage tank (UST) existed on the east side of the building and was used for fueling company vehicles. The UST was last used for storing diesel fuel and had previously been used for leaded gasoline.

On January 2, 1998, the 300-gallon diesel UST was abandoned in place due to its location on a steep slope and proximity to concrete footings and support beams beneath the building. Cardinal Environmental, Inc. oversaw the abandonment of the UST and conducted a Closure Assessment. After the tank had been cut open and cleaned, a hole was cut in the bottom of the UST and a soil sample was collected from approximately 1 foot below the bottom of the UST for DRO and GRO analysis. The soil analytical results showed 17 ppm DRO and 350 ppm GRO. The petroleum contamination was subsequently reported to the WDNR, who then required that a site investigation be conducted.

The nearest known LUST site is the Retzer Sales & Service site (BRRTS# 03-46-005246), which is located approximately 450 feet to the northeast of the subject property. Due to the significant distance, it is unlikely that this site is impacting or being impacted by the subject property.

Potential Risks and Impacts

There is no potable water supply to the subject property. The surrounding properties are all served by private water supply wells. The locations of nearby private water supply wells will be documented during the site investigation. The nearest municipal wells are in the Village of Fredonia and are located over 1 mile to the east.

METCO is not currently aware of any other impacts, receptors, risks, or local problems associated with the subject property.

SITE CONDITIONS

Topography

According to the USGS Hydrologic Atlas, Waubeca is located in the central portion of the Lake Michigan Basin. Present day landforms in this area were formed by continental glaciers, which advanced from the north and east scouring the bedrock surface and transporting rock debris in the ice. As the glaciers melted, this unconsolidated material was deposited on the bedrock

surface. Kettle moraine deposits, which consist of permeable stratified sediments and till, exist in much of Ozaukee County. Glacial lake deposits of poorly permeable clay, silt, and sand occur along the shores of Lake Michigan.

The elevation of the site is approximately 790 feet above Mean Sea Level (MSL). See Appendix A for site location.

Geology

Native unconsolidated materials in this area generally consist of silt/clay with occasional lenses of sand or gravel. The unconsolidated materials are underlain by dolomite bedrock at approximately 50-75 feet below ground surface.

Hydrology

The nearest surface water is the Milwaukee River, which exists approximately 30 feet to the northwest of the former UST system.

Hydrogeology

Based on the local topography, groundwater is expected to exist at approximately 15 to 20 feet below ground surface. Local groundwater flow is expected to be toward the north to northwest.

SCOPE OF WORK

Site Investigation

An investigation consists of collecting samples of soil and groundwater for analysis by a laboratory for compounds related to petroleum products. The WDNR requires that the investigation determine the degree and extent of contaminants in these mediums, which is commonly referred to as "defining the contaminant plume". Further background information will also be collected to assist in the investigation.

Geoprobe/Hand Auger Project

METCO has proposed a 1 day Geoprobe Project. We propose at least 8 borings to 20-25 feet with soil and groundwater sampling. The Geoprobe will be used to collect soil samples at various depths in order to determine the general extent of contaminants in the subsurface environment.

To the northwest of the former UST is a steep slope, which drops down toward the Milwaukee River. Due to the steep slope, this area is inaccessible to a Geoprobe drill rig. Therefore, we propose at least 3 hand auger borings to 4-5

feet to collect soil and possibly groundwater samples.

The goal of the Geoprobe/Hand Auger Project is to complete the following:

1. Determine general subsurface geotechnical characteristics.
2. Determine general extent of the contaminants in the unconsolidated deposits.
3. Determine the general extent of contaminants in groundwater, if applicable.
4. Determine if contaminants have migrated to competent rock, if applicable.

This data will either completely define the extent of contamination or be used to guide the Drilling Project if required.

Drilling Project (if required)

METCO has proposed 4 to 6 boreholes to be completed on/off site. METCO has also proposed 3 to 5 monitoring wells to be installed on/off site. Based on the results of the Geoprobe project, we will be able to determine how many monitoring wells will need to be installed.

Since the area to the northeast of the former UST is not accessible to a drill rig, monitoring wells in this area will have to be installed in hand auger borings or steel sand point screens will be driven into the ground.

The goal of the Drilling Project is to complete the following:

1. Collect a soil sample for field analysis every 2.5 feet of boring.
2. Collect at least two soil samples for laboratory analysis in every boring.
3. Verify, through sampling, the horizontal and vertical extent of soil contamination, including smear zones.
4. Install monitoring wells in an arrangement that fully defines the horizontal and vertical extent of groundwater contamination.
5. Develop the monitoring wells.
6. Collect at least two rounds of groundwater samples from the monitoring wells.
7. If conditions warrant, perform slug tests on at least one monitoring well.

Report Preparation

The final report, prepared by METCO, will include background information,

observations, procedures, methods, field data, laboratory analysis, site maps, data analysis, risk assessment, conclusions, and recommendations concerning all activities conducted for this project. This report will be submitted to the client and the WDNR for review and discussion.

METCO PROCEDURES AND METHODS

Geoprobe

The Geoprobe consists of a truck mounted, hydraulically driven unit that advances 1-inch diameter, 3 or 4-foot long, stainless steel rods into the subsurface. At desired depths, either a soil or water sample can be collected.

A 4-foot or 5-foot long, ½ or 1-inch diameter soil sampler is advanced to the sampling location. At desired depths, a soil sample is collected and brought to the surface for analysis.

All Geoprobe holes are properly abandoned to ground level using bentonite clay and a surface seal.

Drilling

Drilling is conducted with a truck mounted auger drill rig. To penetrate any unconsolidated materials, work is conducted in accordance with ASTM D-1452 "Soil Investigation and Sampling by Auger Boring". If bedrock is encountered and cannot be penetrated with auger boring, an accepted air-rotary drilling procedure will be used.

Sampling unconsolidated materials is done in accordance with ASTM D-1586 "Penetration Tests and Split-Barrel Sampling of Soils" using a 2-inch outside diameter (O.D.), 2.5 foot split spoon sampler. Using this procedure, a split spoon sampler is driven into the soil by a 140-pound weight falling 30-inches, and a soil sample collected.

All borings are properly abandoned to ground level using bentonite clay.

PID Screening

Each of the samples, for headspace analysis, are placed in a clean, clear, plastic Ziploc bag. These containers are to be filled ¼ full. All containers are the same size and filled to the same volume. The containers are then sealed.

Once collected and sealed, samples are shaken for 30 seconds to break apart soil clods. They are then allowed to establish headspace. The following table is used to determine headspace equilibration time.

Outside temperature Time to establish headspace

- <40 deg. F 40 minutes
- 41-55 deg. F 20 minutes
- 56-69 deg. F 10 minutes
- >70 deg. F 5 minutes

To take readings, the PID probe is inserted into the plastic bag halfway between the sample and the highest meter response recorded. The samples are screened with a Rae Systems, Mini Rae Lite Meter equipped with a 10.6 eV lamp. Metered calibration is done at the beginning of each workday. Other notes taken are as follows:

1. Temperature and weather conditions.
2. Date of last factory calibration.
3. Field calibration gas used and concentration.
4. Date and time of last calibration.
5. Instrument gain setting.
6. Erratic instrument readings.
7. Cleaning or repairs performed in the field.
8. Sample moisture (saturated, wet, moist, damp, dry).
9. Petroleum odors or staining of samples.
10. Any instrument quenching.
11. Other relevant information.

Monitoring Wells

Groundwater monitoring well installations are completed under the direction of a METCO hydrogeologist and in accordance with Wisconsin Department of Natural Resources Chapter NR141, "Groundwater Monitoring Well Requirements." The monitoring wells are constructed of flush-threaded, two-inch inside diameter schedule 40 or 80 polyvinyl chloride (PVC) piping. Ten-foot well screens with 0.010-inch slots are installed approximately 5 to 6 feet into the watertable. A uniform washed sand is installed around the well screens to serve as a filter pack. Granular bentonite is used above the filter pack to provide a surface seal. Steel, locking protective well casings are cemented in at each well. Any variances from NR141 will be reported to the WDNR.

Each well is developed by alternately surging and purging with a clean polyethylene bailer for 20 to 30 minutes to remove fines from the well screen, after which ten well volumes are removed using a submersible pump.

Groundwater level measurements are obtained using an electronic water level indicator. All measurements are recorded to the nearest 0.01-foot. The probe is thoroughly washed between measurements.

At least two rounds of samples are collected using a bottom loading, disposable, polyethylene bailer and disposable polyethylene cord. Approximately four well volumes are purged from each well before collecting samples.

Depending on site conditions and groundwater sampling results, slug tests may be conducted on two or three of the monitoring wells to determine hydrogeologic parameters (hydraulic conductivity, transmissivity, and flow velocity). During the slug test, groundwater in a monitoring well is displaced using a solid plastic slug, while water levels are recorded using a transducer and data logger. Water levels are recorded until the water level in the well returns to equilibrium. Slug test data is evaluated using the Bouwer and Rice method.

Well Elevation Survey

All wells are surveyed to the nearest 0.01-foot MSL by a qualified surveying company.

Sample Analysis

Environmental samples are collected to minimize both soil disturbance and exposure of the sample to the air.

Field observations such as soil characteristics, petroleum odors, product sheens, and staining associated with the samples are continuously noted throughout sampling.

The amount of sample taken, the size of the container used, and the type of sample preservation used, will depend on the laboratory contracted and for which parameters the soil samples are analyzed. See Appendix C for LUST Sample Guidelines.

All collected samples are stored in a cooler that maintains a temperature of, at most, 4 degrees Celsius. The coolers are accompanied by a complete chain of custody and are delivered to the laboratory within two days of sampling.

The WDNR document, "LUST Analytical and Quality Assurance Guidance, July 1993" is referenced in determining what parameters in which the soil and water samples will be analyzed, and the amount of duplicates/blanks required.

Quality Assurance/Quality Control/Waste Management

All drilling and sampling equipment advanced into the subsurface is cleaned between sampling locations. This consists of washing with a biodegradable Alconox solution and rinsing with potable water. Wash and rinse water are disposed of atop an isolated area of asphalt for evaporation or discharged into a local storm sewer.

Drill cuttings, field screened as being contaminated, are contained in 55-gallon DOT barrels, characterized, and properly disposed of by METCO and/or client.

Development and purge waters are contained in 55 gallon DOT barrels, characterized, and properly disposed of by METCO and/or the client. Disposal options will depend on the amount of water, type of contaminants, and concentration of contaminants. All wastewater contaminants and disposal activities are recorded with complete documentation submitted to the WDNR.

Variances

If monitoring wells are installed to the northwest of the former UST, they will be installed in hand auger borings with 3 to 5 feet length PVC screens or steel sand point screens will be driven into the ground.

SCHEDULE FOR INVESTIGATION PROJECT

The following is a checklist of activities that have been, or will be completed, concerning the Site Investigation, along with an estimated time frame. A typical Site Investigation takes approximately 2 to 6 months. The investigation may take up to 12 months if bedrock or groundwater is contaminated.

1) METCO submits a Site Investigation Project proposal to client (done).
2) Proposal acceptance by client. METCO notifies the WDNR that a consultant has been contracted (done).
3) Client obtains PECFA Packet and Site Eligibility Letter from PECFA (done).
4) METCO submits a Site Investigation Field Procedures Workplan to client and WDNR for review and approval (9/14/17).
5) METCO conducts Geoprobe Project (2-4 weeks). More than one field mobilization may be needed to complete project depending on complexity of the site and project

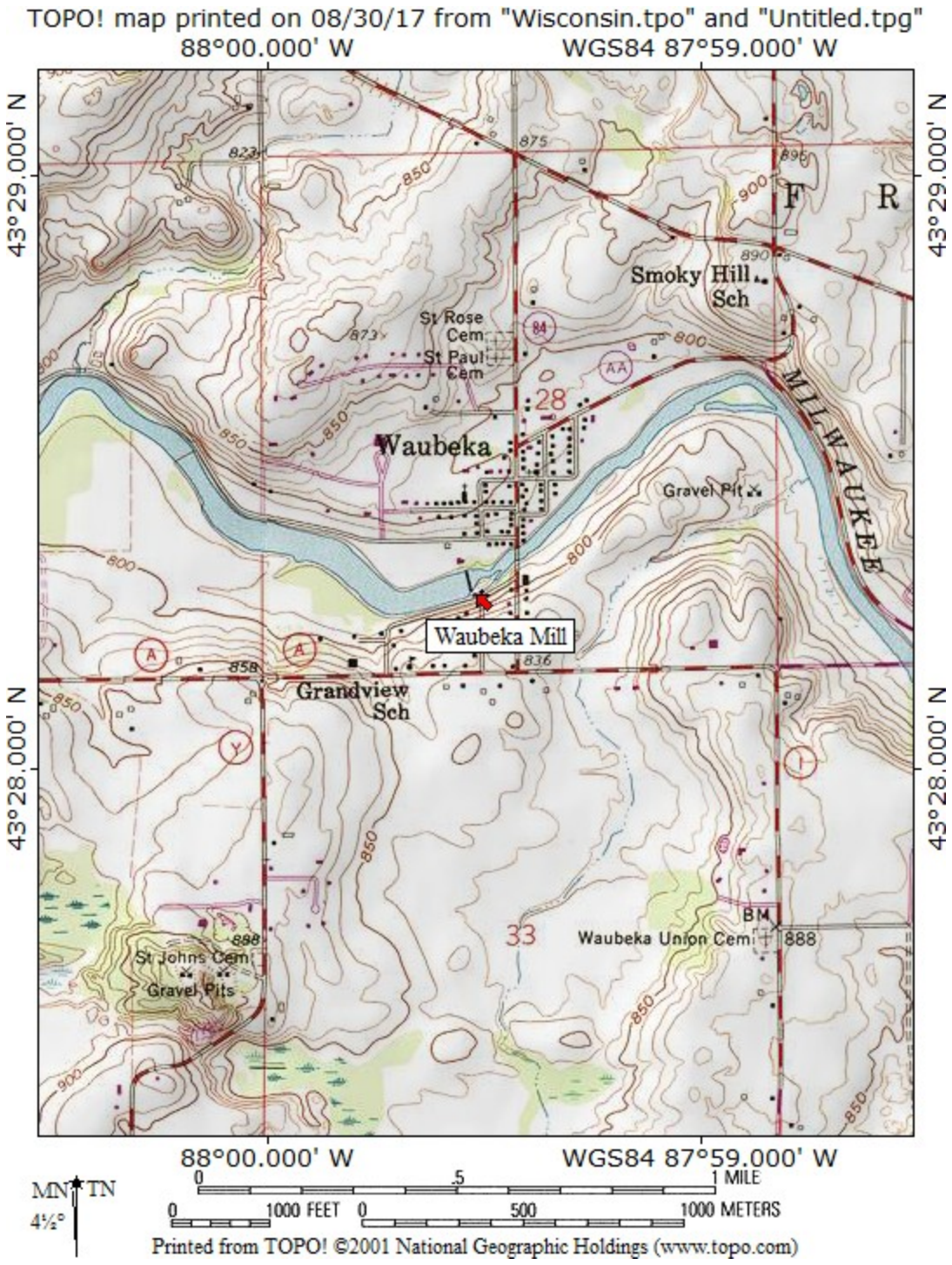
(1 month to receive lab results).

6) Depending on the results of the investigation, METCO prepares a brief summary report or final report and sends copies to client and WDNR (2 months after lab results are received).

   NOTE: If groundwater is found to be impacted or suspected of being impacted by released contaminants, the WDNR will require a Drilling Project with monitoring wells.

7) METCO conducts Drilling Project (2 months). More than one field mobilization may be needed to complete project depending on complexity of the site and project (1 month to receive lab results).
8) METCO develops/surveys the installed monitoring wells and collects. Round 1 groundwater samples for laboratory analysis (1 month to receive lab results).
9) METCO collects Round 2 groundwater samples for laboratory analysis (1 month to receive lab results).
10) METCO completes any additional work that is needed, such as slug tests (1 month).
11) METCO prepares a Site Investigation report that contains all collected data and submits to the client and WDNR (3-6 months).
12) If no further investigation work is required, METCO will apply for "site closure" with the WDNR. Upon closure, METCO will complete the PECFA Application and submit for reimbursement (reimbursement takes 3 to 6 months).
13) If further investigation and/or remediation is required METCO will provide further assistance.

APPENDIX A/SITE MAPS



B.1.a LOCATION MAP CONTOUR INTERVAL 10 FEET
WAUBEKA MILL – WAUBEKA, WI
SEAMLESS USGS TOPOGRAPHIC MAPS ON CD-ROM

SITE LAYOUT MAP

WAUBECA MILL

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Excellence through experience

FREDONIA,
WISCONSIN

DRAWN BY: ED
DATE: 08/29/2007

NOTE: INFORMATION BASED ON AVAILABLE DATA ACTUAL CONDITIONS MAY DIFFER

- PROPERTY LINE
- = ABANDONED IN PLACE 300-GALLON DIESEL/GASOLINE UST
- = FORMER PUMP ISLAND
- = UST CLOSURE SOIL SAMPLE LOCATION
- PROPOSED GEOPROBE BORING LOCATION
- PROPOSED HAND AUGER BORING LOCATION

SCALE:
1 INCH = 25 FEET
0 25

MILWAUKEE RIVER
FLOW
SPILLWAY
MILL CHANNEL
FLOW
STEEP SLOPE DROPPING 15-20 FEET
OVERHANG SUPPORTED BY STEEL COLUMNS ON CONCRETE PIERS
WM-1
FLOW
WAUBECA MILL
W4132 MILL STREET
MILL CHANNEL
STEEP SLOPE DROPPING 15-20 FEET
MILL STREET
TOWN OF FREDONIA
RESIDENTIAL
PARK AVENUE
LARGE, MOSTLY WOODED, RESIDENTIAL PARCEL

APPENDIX B/INVESTIGATION CHECKLIST

SITE INVESTIGATION CHECKLIST
Revised February 1992 PUBL-SW-115

This checklist was prepared by the Department of Natural Resources. It lists the necessary information to include in a site investigation report, for investigations conducted in accordance with guidelines prepared by the Emergency and Remedial Response Section, of the Bureau of Solid and Hazardous Waste Management, Wisconsin DNR. Sites include those where actions are conducted under the LUST, Spills and Environmental Repair programs. If some of this information is not submitted the report should clearly state why it is omitted. More complete information regarding site investigations is available in the Department's "Guidance on Conducting Environmental Response Actions".

The purpose of the site investigation is to 1) define the extent and degree of contamination and 2) to provide a basis for choosing a remedial action alternative. The narrative portion of the investigation report should clearly address these goals.

The Department strongly recommends that the site investigation report follow the sequence of information listed here. This will allow for a quick completeness check and more timely review of submittals. Incomplete reports will not be reviewed until all the necessary information has been received. The following information should be included in the site investigation, (as appropriate to each case):

I. INTRODUCTION/COVER LETTER

___ 1. Project title
___ 2. Purpose of report and desired department action
___ 3. Client(s)
___ 4. Author(s), with signatures
___ 5. Scope of Services
___ 6. Dates the work was performed
___ 7. Date of report
___ 8. Subcontractors employed by the consultant

II. GENERAL and BACKGROUND INFORMATION

1. General Information

A. Identify the owner/operator and/or person(s) responsible: (include all applicable)
___ 1. name
___ 2. address
___ 3. day phone number
___ 4. contact person (name)
___ 5. address
___ 6. phone number
___ 7. verification of ownership: photocopy of deed or exact legal description of property

B. Specify the site of contamination:
___ 1. name
___ 2. phone number
___ 3. specific location (street corner, miles from an intersection, etc)
___ a. legal address (street address if applicable, do not supply just a P.O. Box #)
___ b. location of impacted properties by latitude and longitude, to an accuracy of seconds, at a minimum (preferred method) or State Plane coordinate system
___ c. location of impacted properties by quarter, quarter, section, township, range, civil township, county, or other locational criteria if site(s) are not within the Public Land Survey system
___ 4. type of operation: gas station, tank farm, private residence, manufacturer, etc.

C. Site Location Maps
1. General Location Map
___ locate on a USGS topographic base map (include quadrangle name, series and scale)
___ locate on a plat map, if applicable

2. Local Base Map: the map must be drawn to scale and include the following items. Other features may also be needed:
___ a. bar scale
___ b. North arrow
___ c. legend
___ d. location of benchmark used
___ e. origin of horizontal grid system

3. Including Site Specific Features: more than one map may be appropriate, use the local map for the base map (These maps may be used for several purposes.)

- a. location of discharge on site or facility, for example, the location of (former) tank and pump islands and piping
- b. location of all buildings on site
- c. locations of public utilities, appropriately marked
- d. property boundaries
- e. location of all soil borings and wells (monitoring wells and potable wells)
- f. location of soil vapor points
- g. locations of where field screenings and lab confirmation samples were taken
- h. nearby/neighboring structures and private wells (within 1200 feet)
- i. any nearby surface waters (within map scale)
- j. roads and paved areas, and other access areas
- k. known and potential sources of contamination
- l. known and potential receptors
- m. limits of excavation

2. Site Background

A. General Site Information

1. site description, including features like:
   - number of tanks/containers
   - volume/size of tanks/containers
   - tank/container contents, past and present
   - tank/container age, installation dates
   - tank/container construction materials
   - presence and type of leak detection
   - presence and type of secondary containment
2. general site construction history
3. any past reports of spills, or other incidents
4. periods of nonoperation
5. proximity of sensitive sites such as schools, homes, private or public wells, etc.

B. Description of Discharge Incident

1. type of hazardous substances discharged, known or suspected (released, spilled, lost, etc.)
2. approximate amounts discharged
3. location of impact
4. dates of discharge
5. local problems associated with discharge, e.g. vapors in homes, well contamination, etc.
6. known receptors

C. Impacts

1. existing impacts to human health, safety, welfare and the environment
2. any impacts to adjacent or nearby buildings, wells or other structures
3. names and addresses of owners of adjacent properties, if those properties have been adversely impacted by the hazardous substance discharge

D. Past Activities, Monitoring and Testing

1. dates of site activities, duration and type and potential amounts of discharges
2. description of emergency actions taken and of interim actions taken, including dates
3. record of activities conducted at the site which had potential to cause contamination
4. inventory record system data
5. summary of monitoring results, including:
   - product monitoring records according to ILHR 10
   - groundwater monitoring
   - surface water monitoring
   - soil monitoring
   - sediment monitoring
   - atmospheric monitoring
6. records of testing, repair, removal or replacement, including dates
7. tank/container/line integrity testing
   - method
   - testing firm
   - dates
   - results

E. Hazardous Waste Generation

1. hazardous waste manifest
2. was hazardous waste ever generated or stored on site?

F. Description of Tank/Container and Soil Removal Activities

___ 1. description of soil conditions in the area of the tank/container excavation or in area of discharge
___ 2. volume of (contaminated) soils removed from the excavation
___ 3. location of stockpiled contaminated soils
___ 4. type of impermeable base for stockpiled soils
___ 5. type of impermeable cover for stockpiled soils
___ 6. if excavation was backfilled, what was used as fill?
___ 7. final deposition of soil excavated, where and how were they used? (daily cover, backfill on/off site, roasted, buried, etc.)
___ 8. condition of tanks, lines, pumps (corrosion, visible leaks, etc?)
___ 9. product (other than petroleum) or waste delivery or storage systems

G. Land Use Information

___ 1. current and past land uses of site and neighboring properties
___ 2. description of zoning of property and adjacent properties

3. Environmental Analysis

A. Site Historical Significance

___ 1. impacts or potential impacts to significant historical or archeological features due to any response activities or the discharge itself
___ 2. presence of buildings greater than 50 years old on or next to discharge site

B. Presence of "Sensitive" Environmental Receptors

___ 1. wildlife habitat
___ 2. state or federal threatened or endangered species
___ 3. sensitive or unique ecosystems or species
___ 4. areas of special natural resource interest
___ 5. other surface waters and wetlands, as appropriate

C. Geology (use maps as appropriate)

___ 1. geologic origin, nature and distribution of bedrock
___ 2. geologic origin, nature and distribution of overlying soils
___ 3. thicknesses of various strata (consolidated and unconsolidated)
___ 4. depth to bedrock
___ 5. geophysical characteristics
___ 6. soil types and texture
___ 7. soil descriptions to include:
___ - structure
___ - mottling
___ - voids
___ - layering
___ - lenses
___ - geologic origin
___ - Unified Soil System Classification
___ - grain size distribution, if applicable
___ - evidence of secondary permeability
___ - odor, if evident
___ - staining, if evident
___ 8. bedrock descriptions, if impacted:
___ - rock type
___ - grain size
___ - bedding thickness
___ - presence of fractures
___ - orientation of fractures
___ - sedimentary structures
___ - secondary porosity/solutional features
___ - other
___ 9. topography
___ 10. site hydrology, including
___ - intermittent and ephemeral streams,
___ - drain tile systems,
___ - surface waters
___ - wetlands
___ - location of floodway and floodplain (this may be best located on a site map)

D. Hydrogeology

___ 1. depth to water table
___ 2. flow directions, seasonal variations

___ 3. horizontal and vertical gradients
___ 4. hydraulic characteristics: (define as field test results or non-field estimates)
___ hydraulic conductivity, variation
___ transmissivity
___ storativity
___ 5. aquifer definition:
___ size
___ use
___ presence of aquitards
___ 6. local and regional recharge or discharge area(s)
___ 7. potentiometric surface
___ 8. location, seasonal variation of groundwater divides
___ 9. location and extent of perched groundwater
___ 10. local and regional groundwater quality
___ 11. hydraulic connection between aquifers
___ 12. saturated thickness of aquifer
___ 13. estimates of flow volume passing below the discharge site/facility (include calculations in the appendices)
___ 14. drillers logs which indicated any abnormal drilling difficulties
___ 15. isoconcentration maps
___ 16. other

III. RESULTS

1. Contaminant Migration Pathway and Receptor Assessment

A. Potential Vapor and Product Migration Pathways (include depth of burial and construction material)
___ 1. sewer lines
___ 2. storm sewers
___ 3. buried power cables
___ 4. buried telephone lines
___ 5. tile lines
___ 6. more permeable soil lenses
___ 7. water lines
___ 8. road beds
___ 9. foundations
___ 10. other

B. Potential Receptors of Contamination (description of impacts or potential impacts, if applicable)
___ 1. buildings on site
___ 2. neighboring basements/buildings
___ 3. nearby wells (locations must be provided on a map)
___ 4. nearby surface waters, including wetlands
___ 5. critical habitats
___ 6. endangered species
___ 7. outstanding resource waters
___ 8. exceptional resource waters
___ 9. sensitive or unique ecosystems
___ 10. other

C. Potential Health Impacts
___ 1. danger of explosion
___ 2. contaminated private wells
___ 3. contaminated public water supply wells
___ 4. exposure to vapors
___ 5. dermal exposure
___ 6. other

2. Sampling and Analysis Results (figures and tables should be used, but general trends and the overall evaluation should be in narrative form) Provide units of measurement for all results. Describe or provide the following information for each media impacted:

A. soil chemistry results, per parameter, per location
___ 1. field screening results with locations identified
___ 2. laboratory (confirmation) sample results with locations identified
___ 3. any indication of contamination of soils encountered (staining, odor, etc.)

B. groundwater sample results, per parameter, per well, over time
___ 1. laboratory results
___ 2. trends analysis

___ 3. compliance evaluation with NR 140 groundwater standards, if applicable

C. soil vapor results (define type of survey used)
___ 1. by parameter
___ 2. per location

D. sampling results from other media impacted by the discharge
___ 1. parameters
___ 2. locations

3. Sampling Methods Used (for each media impacted, lists provided for soil and groundwater only)

A. Soils:
___ 1. description of sample collection method
2. field screening or analytical instrument type used
___ lamp strength
___ calibration
___ operating procedure
___ 3. sample container
___ 4. temperature at which the sample was collected
___ 5. time allowed for PID or FID samples to achieve at least 70° F, and location

B. Groundwater
___ 1. method and instruments used to obtain sample
___ 2. any indication of contamination noticed in field
___ 3. whether the well was purged or not, why and how, and amount removed
___ 4. drilling method used
___ 5. monitoring well construction features
6. abandonment methods
___ a. boreholes
___ b. monitoring wells
___ c. excavations
___ 7. survey methods
___ 8. sample container size
___ 9. sample description
___ - turbid
___ - clear
___ - sheen
___ - free product
___ 10. other

C. Vapors/Ambient Air
___ 1. description of sample collection method
___ 2. field screening, if conducted
___ 3. sample container

4. Quality Control and Quality Assurance

A. General QA/QC (for all media impacted)
___ 1. name and address of laboratory
___ 2. laboratory certification number
3. number of blanks, with results:
___ - field blanks
___ - trip blanks
___ - lab spikes
___ - split samples
___ - replicate spikes
___ 4. name and training of person collecting the samples (including certification, if applicable)

B. Field Instrument Quality Control (for all media impacted)
___ 1. instrument make, model and lamp energy
2. limitations of field screening instruments
___ - temperature changes
___ - humidity changes
___ - other
___ 3. any repairs to the instrument
___ 4. field instrument calibration measures conducted
___ 5. time and frequency or schedule of field instrument calibration
___ 6. composition of the calibration gas used (calibration product ?)
___ 7. calibration curves used
___ 8. correction factor if one was used

___ 9. results of any calibration checks
___ 10. time of day and ambient temperature when calibrations, calibration curves or calibration checks were completed
___ 11. time and temperature that samples were equilibrated if the outside temperature is below 60°F at the time of field analysis

C. Field Sampling and Transportation Quality Control and Assurance (for all media impacted)
___ 1. sample type
___ 2. sample location and associated field and laboratory identification
___ 3. sampling technique used
___ 4. sampling techniques used to minimize exposure of samples to the atmosphere
___ 5. date and time of sampling
___ 6. field preservation performed
___ 7. date and time of preservation or extraction
___ 8. decontamination procedures used during the site investigation
___ 9. deviations from standard operating procedures
___ 10. shipping time and technique

D. Laboratory Receipt and Analysis (for all media impacted)
___ 1. chain of custody forms (4400-151)
___ 2. time and date of receipt of samples by the laboratory
___ 3. sample condition on receipt by the laboratory including
- the temperature of the samples and
- whether the samples were properly sealed
___ 4. time and date of analysis
___ 5. method of analysis
___ 6. laboratory detection limit
___ 7. sample results with units of measurement
___ 8. accuracy and precision of replicate spikes
___ 9. results or percent recovery of matrix spikes with every batch of samples not to exceed eight hours

5. Investigative Wastes (for all media impacted, to include but which is not limited to contaminated water from excavations, borings, purge water, rinse waters from decontamination procedures, extra sample)

___ A. analytical results (hazardous determination, if listed?)
___ B. ultimate disposal
___ C. other

IV. SUMMARY AND EVALUATION OF RESULTS (Analysis of Degree and Extent of Contamination)

___ 1. degree and extent of soil contamination
___ 2. degree and extent of groundwater contamination
___ 3. degree and extent of contamination of other media impacted
___ 4. known or potential impacts to receptors, such as water supply wells
___ 4. vapor migration potential
___ 5. impacts from seepage into basements, utility lines, surface waters
___ 6. difficulties experienced during the investigation
___ 7. unanticipated or questionable results
___ 8. details needing emphasis

V. CONCLUSIONS

___ source and type of release defined
___ soil and groundwater contamination adequately defined?
___ further study needed
___ further remediation needed
___ known or potential impacts from the release defined?
___ clean site, ready for case closure
___ other

VI. RECOMMENDATIONS

1. Investigation Incomplete
___ continued monitoring
___ additional investigation

2. Remedial Action Alternatives (provide description of alternatives) e.g.:
___ remediation method (to be) used for contaminated soil

___ soil removal, treatment and disposal
___ soil venting
___ product recovery
___ groundwater extraction and treatment
___ insitu biological treatment
___ other actions (define)

3. Other
___ work plans for further action
___ construction proposals for further action
___ pilot study, other treatability studies
___ schedules for further actions
___ required permits
___ air quality
___ wastewater discharge

VII. FIGURES

1. Site Maps
___ - location maps (regional and local)
___ - water table and/or potentiometric surface maps
___ - isoconcentration maps
___ - surface water depth maps
___ - bedrock and soil type and distribution maps
___ 2. Flow Cross Sections
___ 3. Extent of Contamination in Soil
___ 4. Extent of Contamination in Groundwater (Isoconcentration)
___ 5. Locations of Potential Receptors
___ 6. Geologic Cross-Sections
___ a. geologic setting
___ b. boring location
___ c. soil classification
___ d. analytical sampling
___ e. monitoring well locations
___ f. water table
___ g. extent of contaminant plume
___ h. concentrations at referenced date and point
___ i. sampling intervals (for soil and groundwater)
___ j. of excavation walls showing location of field screening and/or analytical results, as appropriate
___ 7. Photographs (NO black and white photocopies)

VIII. TABLES

___ 1. Groundwater Chemistry Results
___ 2. Soil Chemistry Results
___ 3. Analytical Methods Used
___ 4. Standards for Comparison and Compliance Determinations (Tables with compliance standards should be combined with analytical results for comparison)
___ 5. Geologic and Hydrogeologic Results
___ 6. Groundwater Elevations
___ 7. Screening Results
___ 8. Other

IX. APPENDICES (up to the author)

___ 1. Table giving data for compounds found, such as:
Chemical formula, Molecular weight, Ionic potential, Solubility,
Vapor pressure, Henry's Law Constant, Kow
___ 2. References used to support methods or provide standards methods, including previous reports
___ 3. All raw data
4. All documentation on forms: (DNR form number)
___ a. soil boring logs (4400-122)
___ b. monitoring well construction logs (4400-113A)
___ c. soil boring/well abandonment forms (3300-58)
___ d. chain of custody forms
___ e. lab/chemistry results
___ f. groundwater monitoring well information form (4400-89)
___ g. monitoring well development form (4400-113B)
___ 5. Variances (for well construction, hazardous waste storage requirements, etc.)

___ 6. Well logs of all impacted wells and potentially impacted wells within 1200' of the discharge site (locate wells on a map)
___ 7. All calculations and assumptions
___ 8. Landfill receipts for disposed soil
___ 9. Regional hydrogeological information references used

Other information that may be needed includes:
- access
- public information plan
- health and safety plan

APPENDIX C/LUST SAMPLING GUIDELINES

Petroleum Substance Discharged	Analysis of Samples Collected for UST Tank Closure Assessments	Solid Waste Program Requirements for Soils to be landfilled[5]	Site Investigation, Pretreatment and Posttreatment Sample Analysis[11]
Regular Gasoline	GRO[2]	Free Liquids[6] GRO Benzene[7] Pb[7] Haz. Waste Deter.[8]	GRO VOC/PVOC[15] Pb[12]
Unleaded Gasoline; Grades 80 100, and 100 LL (Low Lead) Aviation Fuel	GRO[2]	Free Liquids[6] GRO Benzene[7] Pb[7] Haz. Waste Deter.[8]	GRO PVOC
Diesel; Jet Fuels; and No's 1, 2, and 4 Fuel Oil	DRO[3]	Free Liquids[6] DRO Benzene[7] Haz. Waste Deter.[8]	DRO[3] PVOC PAH[13 14]
Crude Oil; Lubricating Oils; No. 6 Fuel Oil	DRO[3]	Free Liquids[6] DRO Haz. Waste Deter.[8]	DRO[3] PAH[13 14]
Unknown Petroleum	GRO[7] and DRO[3 4]	Free Liquids[6] GRO and DRO Pb, Cd[7] Haz. Waste Deter.[8] CN[19] S[2 10]	GRO and DRO[3 4] VOC/PVOC[15] PAH[13 14] Pb, Cd[12]
Waste Oil	DRO[3]	Free Liquids[6] DRO Pb, Cd[7] Haz. Waste Deter.[8] CN[19] S[2 10]	DRO[3] VOC/PVOC[15] PAH[13 14] PCBs[16] Pb, Cd[12]

Abbreviations:

GRO - Gasoline Range Organics, Determined by the Wisconsin Modified GRO Method

DRO - Diesel Range Organics, Determined by the Wisconsin Modified DRO Method

VOC - Volatile Organic Compounds (See Section 11.1 for a list of VOC compounds)

PVOC - Petroleum Organic Compounds (See Section 11.2 for a list of PVOC compounds)

PAH - Polynuclear Aromatic Hydrocarbons (See Section 11.3 for a list of the PAH compounds)

PCBs - Polychlorinated Biphenyls

Pb - Lead

SYNERGY ENVIRONMENTAL LAB – Sample Bottle Requirements

TABLE 1
SAMPLE & PRESERVATION REQUIREMENTS FOR WATER and DRINKING WATER SAMPLES

Test	Original Sample Container	Preserved	Holding Time to Analysis
WET CHEMISTRY			
Alkalinity SM2320B/EPA 310.2	250 mL HDPE	4°C	14 days
Ammonia EPA 350.1	250 mL HDPE	4°C, pH<2 with H_2SO_4	28 days
BOD, cBOD SM5210B	500 ml HDPE	4°C	48 hrs.
COD EPA 410.4	500 ml HDPE	4°C, pH<2 with H_2SO_4	28 days
Chloride EPA 300.0/EPA 325.2	250 mL HDPE	4°C	28 days
Cyanide SW846 9012A/SM4500-CN-C	1000 mL HDPE	4°C, pH>12 with NaOH	14 days
Flashpoint SW846 1010	250 mL HDPE	4°C	28 days
Fluoride EPA 300.0	250 mL HDPE	4°C	28 days
Hardness SW846 6010B	250 mL HDPE	4°C, pH<2 with HNO_3	180 days
TKN EPA 351.2	1 Liter HDPE	4°C, pH<2 with H_2SO_4	28 days
Nitrate EPA 300.0	250 mL HDPE	4°C	48 hours
Nitrate+Nitrite EPA 300.0	250 mL HDPE	4°C, pH<2 with H_2SO_4	28 days
Nitrite EPA 300.0	250 mL HDPE	4°C	48 hours
Oil & Grease EPA 1664	1 Liter Glass	4°C, pH<2 with H_2SO_4	28 days
Organic Carbon SW846 9060/ EPA 415.1	40 ml Glass	4°C, pH<2 with H_2SO_4 or HCL	28 days
Phenol, Total EPA 420.1	1 Liter Glass	4°C, pH<2 with H_2SO_4	28 days
Phosphorus, Total EPA 365.3	250 mL HDPE	4°C, pH<2 with H_2SO_4	28 days
Sulfate EPA 300.0	250 mL HDPE	4°C	28 days
Total Dissolved Solids EPA 160.1	250 ml HDPE	4°C	7 days
Total Solids EPA 160.3	250 ml HDPE	4°C	7 days
Total Suspended Solids EPA 160.2	250 mL HDPE	4°C	7 days
METALS			
Metals	250 mL HDPE	4°C, pH<2 with HNO_3	6 months
Mercury SW8467470/EPA 245.1	250 mL HDPE	4°C, pH<2 with HNO_3	28 days
ORGANICS			
Semivolatiles SW846 8270C	1 Liter amber glass, collect 2 for one of the samples submitted .	4°C	7 days extr. 40 days following extr
PAH SW846 8270C	1 Liter amber glass, collect 2 for one of the samples submitted	4°C	7 days extr. 40 days following extr
PCB SW846 8082	1 Liter amber glass, collect 2 for one of the samples submitted.	4°C	7 days extr. 40 days following extr
DRO, Modified DNR Sep 95	1 Liter amber glass with Teflon lined cap	4°C, 5 mL 50% HCl	7 days extr. 40 days following extr
VOC'S SW846 8260B/EPA524.2	(3) 40 mL glass vials with Teflon lined septum caps	4°C, 0.5 mL 50% HCl, No Headspace	14 days
GRO/VOC	(4) 40 mL glass vials with Teflon lined septum caps	4°C, 0.5 mL 50% HCl prior to adding sample to jar	14 days
GRO, Modified DNR Sep 95	(2) 40 mL glass vials with Teflon lined septum caps	4°C, 0.5 mL 50% HCl prior to adding sample to jar	14 days
GRO/PVOC	(2) 40 mL glass vials with Teflon lined septum caps	4°C, 0.5 mL 50% HCl prior to adding sample to jar	14 days
PVOC	(2) 40 mL glass vials with Teflon lined septum caps	4°C, 0.5 mL 50% HCl prior to adding sample to jar	14 days

All samples are to be cooled to 4°C until tested.
HDPE = High Density Polyethylene.

SYNERGY ENVIRONMENTAL LAB – Sample Bottle Requirements

TABLE 2
SAMPLE & PRESERVATION REQUIREMENTS FOR SOIL SAMPLES

Test	Original Sample Container	Preserved	Holding Times from Date and Time of Collection			
			Solvent Addition	Shipping	Extraction	Analysis
METALS						
Metals	2 oz glass or soil cup	4°C	NA	NA	NA	180 days
Mercury SW846 7471	2 oz glass or soil cup	4°C	NA	NA	NA	28 days
Chromium Hexavalent SM3500-Cr	2 oz glass or soil cup	4°C	NA	NA	NA	24 hours
ORGANICS						
Any combinations of GRO, VOC, PVOC	1- tared VOC vial with 10 mls methanol, 13 grams of soil collected with syringe	4°C, 1:1 with methanol	Immediately	4 days	21 days	21 days
DRO, Modified	1- tared VOC vial, 13 grams of soil collected with syringe jar	4°C, Hexane	10 days	4 days	47 days	47 days
PAH, SW846 8270C	2 oz glass untared	4°C	NA	NA	14 days	40 days
Semivolatile SW846 8270C	2 oz glass untared	4°C	NA	NA	14 days	40 days
PCB SW846 8082	2 oz glass untared	4°C	NA	NA	14 days	40 days

All samples are to be cooled to 4°C until tested.

APPENDIX D/WDNR DOCUMENTS

RCL Quick Reference Table

March 2017

Contaminant	Not-To-Exceed D-C RCL (mg/kg)	Not-To-Exceed D-C RCL (mg/kg)	RCL-gw (mg/kg) DF=2
	Non-Industrial	Industrial	
Benzene	1.6	7.07	0.0051
Ethylbenzene	, 8.02	, 35.4	, 1.57
Toluene	,818.	,818.	, 1.1072
Xylenes	,260.	,260.	, 3.96
Methyl tert-Butyl Ether (MTBE)	, 63.8	,282.	, 0.027
Dichloroethane, 1,2- (DCA)	, 0.652	, 2.87	, 0.0028
Dibromoethane, 1,2-	, 0.05	, 0.221	2.82E-05
Trichloroethylene (TCE)	1.3	8.41	0.0036
Tetrachloroethylene (PCE)	[illegible]	145	0.0045
Vinyl Chloride (VC)	0.067	2.08	0.0001
Dichloroethylene, 1,1- (DCE)	320	1190	0.005
Dichloroethylene, 1,2-trans-	1,560.	1,850.	, 0.0626
Dichloroethylene, 1,2-cis-	,156.	2,340.	, 0.0412
Trichloroethane, 1,1,1-	,640.	,640.	, 0.1402
Carbon Tetrachloride	, 0.916	, 4.03	, 0.0039
Pentachlorophenol (PCP)	, 1.02	, 3.97	, 0.0028
Trimethylbenzene, 1,2,4-	,219.	,219.	, 1.382
Trimethylbenzene, 1,3,5-	,182.	,182.	
Naphthalene	5.52	24.1	0.6582
Benzo[a]pyrene	0.115	2.11	0.47
Acenaphthene	3,590.	45,200.	
Anthracene	17,900.	100,000.	,196.9492
Benz[a]anthracene	, 1.14	, 20.8	

Contaminant	Not-To-Exceed D-C RCL (mg/kg)	Not-To-Exceed D-C RCL (mg/kg)	RCL-gw (mg/kg) DF=2	Background Threshold Value (BTV) (mg/kg)
	Non-Industrial	Industrial		
Benzo(j)fluoranthene	, 0.424	, 1.76		
Benzo[b]fluoranthene	, 1.15	, 21.1	, 0.4793	
Benzo[k]fluoranthene	, 11.5	,211.		
Chrysene	,115.	2,110.	, 0.1446	
Dibenz[a,h]anthracene	, 0.115	, 2.11		
Dibenzo(a,e)pyrene	, 0.042	, 0.176		
Dimethylbenz(a)anthracene, 7,12-	4.59E-04	, 0.008		
Fluoranthene	2,390.	30,100.	, 88.8778	
Fluorene	2,390.	30,100.	, 14.8299	
Indeno[1,2,3-cd]pyrene	, 1.15	, 21.1		
Methylnaphthalene, 1-	, 17.6	, 72.7		
Methylnaphthalene, 2-	,239.	3,010.		
Nitropyrene, 4-	, 0.424	, 1.76		
Pyrene	1,790.	22,600.	, 54.5455	
Arsenic, Inorganic	0.677	3	0.584	8
Barium	15,300.	100,000.	,164.8	364
Beryllium and compounds	,156.	2,300.	, 6.32	
Cadmium (Diet)	, 71.1	,985.	, 0.752	1
Chromium(VI)	, 0.301	, 6.36	, 3.84	
Chromium, Total			360,000 if no Cr-VI	44
Lead and Compounds	400	800	27	52
Mercury (elemental)	, 3.13	, 3.13	, 0.208	
Selenium	,391.	5,840.	, 0.52	

NOTES:

1) **This table of the most common compounds is intended to be a quick reference <u>ONLY</u>. It does not take into account cumulative effects as required in NR 700.**

2) **Values in this table are taken from the RCL spreadsheet which is periodically updated. PLEASE be sure to reference the RCL spreadsheet for the most current values.**

Site-specific

Resident Screening Levels (RSL) for Soil

ca=Cancer, nc=Noncancer, ca* (Where nc SL < 100 x ca SL),
ca** (Where nc SL < 10 x ca SL), max=SL exceeds ceiling limit (see User's Guide), sat=SL exceeds csat,
Smax=Soil SL exceeds ceiling limit and has been substituted with the max value (see User's Guide),
Ssat=Soil inhalation SL exceeds csat and has been substituted with the csat

Chemical	GIABS	ABS	RBA	Volatilization Factor (m^3/kg)	Soil Saturation Concentration (mg/kg)	Particulate Emission Factor (m^3/kg)	Ingestion SL TR=1.0E-6 (mg/kg)	Dermal SL TR=1.0E-6 (mg/kg)	Inhalation SL TR=1.0E-6 (mg/kg)	Carcinogenic SL TR=1.0E-6 (mg/kg)
Benzene	1	-	1	5.10E+03	1.82E+03	1.56E+09	1.26E+01	-	1.84E+00	1.60E+00
Dibromoethane, 1,2-	1	-	1	1.25E+04	1.34E+03	1.56E+09	3.48E-01	-	5.84E-02	5.00E-02
Dichloroethane, 1,2-	1	-	1	6.60E+03	2.98E+03	1.56E+09	7.64E+00	-	7.13E-01	6.52E-01
Ethylbenzene	1	-	1	8.18E+03	4.80E+02	1.56E+09	6.32E+01	-	9.19E+00	8.02E+00
Lead and Compounds	1	-	1	-	-	1.56E+09	-	-	-	-
Methyl tert-Butyl Ether (MTBE)	1	-	1	7.08E+03	8.87E+03	1.56E+09	3.86E+02	-	7.64E+01	6.38E+01
Acenaphthene	1	0.13	1	2.03E+05	-	1.56E+09	-	-	-	-
Anthracene	1	0.13	1	7.56E+05	-	1.56E+09	-	-	-	-
Benz[a]anthracene	1	0.13	1	6.37E+06	-	1.56E+09	2.10E-01	6.29E-01	5.85E+01	1.57E-01
Benzo(j)fluoranthene	1	0.13	1	-	-	1.56E+09	5.79E-01	1.58E+00	3.98E+04	4.24E-01
Benzo[a]pyrene	1	0.13	1	-	-	1.56E+09	2.10E-02	6.29E-02	1.44E+03	1.57E-02
Benzo[b]fluoranthene	1	0.13	1	-	-	1.56E+09	2.10E-01	6.29E-01	1.44E+04	1.57E-01
Benzo[k]fluoranthene	1	0.13	1	-	-	1.56E+09	2.10E+00	6.29E+00	1.44E+04	1.57E+00
Chrysene	1	0.13	1	-	-	1.56E+09	2.10E+01	6.29E+01	1.44E+05	1.57E+01
Dibenz[a,h]anthracene	1	0.13	1	-	-	1.56E+09	2.10E-02	6.29E-02	1.32E+03	1.57E-02
Dibenzo(a,e)pyrene	1	0.13	1	-	-	1.56E+09	5.79E-02	1.58E-01	3.98E+03	4.24E-02
Dimethylbenz(a)anthracene, 7,12-	1	0.13	1	-	-	1.56E+09	6.13E-04	1.84E-03	2.23E+01	4.59E-04
Fluoranthene	1	0.13	1	-	-	1.56E+09	-	-	-	-
Fluorene	1	0.13	1	4.06E+05	-	1.56E+09	-	-	-	-
Indeno[1,2,3-cd]pyrene	1	0.13	1	-	-	1.56E+09	2.10E-01	6.29E-01	1.44E+04	1.57E-01
Methylnaphthalene, 1-	1	0.13	1	8.46E+04	3.94E+02	1.56E+09	2.40E+01	6.55E+01	-	1.76E+01
Methylnaphthalene, 2-	1	0.13	1	8.37E+04	-	1.56E+09	-	-	-	-
Naphthalene	1	0.13	1	6.69E+04	-	1.56E+09	-	-	5.52E+00	5.52E+00
Nitropyrene, 4-	1	0.13	1	-	-	1.56E+09	5.79E-01	1.58E+00	3.98E+04	4.24E-01
Pyrene	1	0.13	1	3.43E+06	-	1.56E+09	-	-	-	-
Toluene	1	-	1	6.19E+03	8.18E+02	1.56E+09	-	-	-	-
Trimethylbenzene, 1,2,4-	1	-	1	1.14E+04	2.19E+02	1.56E+09	-	-	-	-
Trimethylbenzene, 1,3,5-	1	-	1	9.54E+03	1.82E+02	1.56E+09	-	-	-	-
Xylenes	1	-	1	8.28E+03	2.60E+02	1.56E+09	-	-	-	-

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(22) "Wastewater and sludge storage or treatment lagoon" means a natural or man−made containment structure, constructed primarily of earthen materials for the treatment or storage of wastewater or sludge, which is not a land disposal system.

History: Cr. Register, September, 1985, No. 357, eff. 10−1−85; cr. (1m), am. (7), (17) and (18), Register, October, 1988, No. 394, eff. 11−1−88; am. (6), cr. (20h) and (20m), Register, March, 1994, No. 459, eff. 4−1−94; cr. (1s), (10e), (10s), (20k), r. and recr. (12), (13), Register, August, 1995, No. 476, eff. 9−1−95; cr. (14m), Register, October, 1996, No. 490, eff. 11−1−96; am. (20), Register, December, 1998, No. 516, eff. 1−1−99; correction in (9) made under s. 13.93 (2m) (b) 7., Stats.,Register, April, 2001, No. 544; CR 02−134: cr. (1u), (1w), (1y) and (20s) Register June 2003 No. 570 eff. 7−1−03; correction in (20) made under s. 13.92 (4) (b) 6., Stats., Register January 2012 No. 673.

Subchapter II — Groundwater Quality Standards

NR 140.10 Public health related groundwater standards. The groundwater quality standards for substances of public health concern are listed in Table 1.

Note: For all substances that have carcinogenic, mutagenic or teratogenic properties or interactive effects, the preventive action limit is 10% of the enforcement standard. The preventive action limit is 20% of the enforcement standard for all other substances that are of public health concern. Enforcement standards and preventive action limits for additional substances will be added to Table 1 as recommendations are developed pursuant to ss. 160.07, 160.13 and 160.15, Stats.

Table 1
Public Health Groundwater Quality Standards

Substance[1]	Enforcement Standard (micrograms per liter − except as noted)	Preventive Action Limit (micrograms per liter − except as noted)
Acetochlor	7	0.7
Acetochlor ethane sulfonic acid + oxanilic acid (Acetochlor − ESA + OXA)	230	46
Acetone	9 mg/l	1.8 mg/l
Alachlor	2	0.2
Alachlor ethane sulfonic acid (Alachlor − ESA)	20	4
Aldicarb	10	2
Aluminum	200	40
Ammonia (as N)	9.7 mg/l	0.97 mg/l
Antimony	6	1.2
Anthracene	3000	600
Arsenic	10	1
Asbestos	7 million fibers per liter (MFL)	0.7 MFL
Atrazine, total chlorinated residues	3[2]	0.3[2]
Bacteria, Total Coliform	0[3]	0[3]
Barium	2 milligrams/liter (mg/l)	0.4 mg/l
Bentazon	300	60
Benzene	5	0.5
Benzo(b)fluoranthene	0.2	0.02
Benzo(a)pyrene	0.2	0.02
Beryllium	4	0.4
Boron	1000	200
Bromodichloromethane	0.6	0.06
Bromoform	4.4	0.44
Bromomethane	10	1
Butylate	400	80
Cadmium	5	0.5
Carbaryl	40	4
Carbofuran	40	8
Carbon disulfide	1000	200
Carbon tetrachloride	5	0.5
Chloramben	150	30
Chlordane	2	0.2
Chlorodifluoromethane	7 mg/l	0.7 mg/l
Chloroethane	400	80
Chloroform	6	0.6
Chlorpyrifos	2	0.4
Chloromethane	30	3
Chromium (total)	100	10
Chrysene	0.2	0.02

Table 1 – Continued
Public Health Groundwater Quality Standards

Substance[1]	Enforcement Standard (micrograms per liter – except as noted)	Preventive Action Limit (micrograms per liter – except as noted)
Cobalt	40	8
Copper	1300	130
Cyanazine	1	0.1
Cyanide, free[4]	200	40
Dacthal	70	14
1,2–Dibromoethane (EDB)	0.05	0.005
Dibromochloromethane	60	6
1,2–Dibromo–3–chloropropane (DBCP)	0.2	0.02
Dibutyl phthalate	1000	100
Dicamba	300	60
1,2–Dichlorobenzene	600	60
1,3–Dichlorobenzene	600	120
1,4–Dichlorobenzene	75	15
Dichlorodifluoromethane	1000	200
1,1–Dichloroethane	850	85
1,2–Dichloroethane	5	0.5
1,1–Dichloroethylene	7	0.7
1,2–Dichloroethylene (cis)	70	7
1,2–Dichloroethylene (trans)	100	20
2,4–Dichlorophenoxyacetic Acid (2,4–D)	70	7
1,2–Dichloropropane	5	0.5
1,3–Dichloropropene (cis/trans)	0.4	0.04
Di (2–ethylhexyl) phthalate	6	0.6
Dimethenamid/Dimethenamid–P	50	5
Dimethoate	2	0.4
2,4–Dinitrotoluene	0.05	0.005
2,6–Dinitrotoluene	0.05	0.005
Dinitrotoluene, Total Residues[5]	0.05	0.005
Dinoseb	7	1.4
1,4–Dioxane	3	0.3
Dioxin (2, 3, 7, 8–TCDD)	0.00003	0.000003
Endrin	2	0.4
EPTC	250	50
Ethylbenzene	700	140
Ethyl ether	1000	100
Ethylene glycol	14 mg/l	2.8 mg/l
Fluoranthene	400	80
Fluorene	400	80
Fluoride	4 mg/l	0.8 mg/l
Fluorotrichloromethane	3490	698
Formaldehyde	1000	100
Heptachlor	0.4	0.04
Heptachlor epoxide	0.2	0.02
Hexachlorobenzene	1	0.1
N–Hexane	600	120
Hydrogen sulfide	30	6
Lead	15	1.5
Lindane	0.2	0.02
Manganese	300	60
Mercury	2	0.2

Table 1 – Continued
Public Health Groundwater Quality Standards

Substance[1]	Enforcement Standard (micrograms per liter – except as noted)	Preventive Action Limit (micrograms per liter – except as noted)
Methanol	5000	1000
Methoxychlor	40	4
Methylene chloride	5	0.5
Methyl ethyl ketone (MEK)	4 mg/l	0.8 mg/l
Methyl isobutyl ketone (MIBK)	500	50
Methyl tert–butyl ether (MTBE)	60	12
Metolachlor/s–Metolachlor	100	10
Metolachlor ethane sulfonic acid + oxanilic acid (Metolachlor – ESA + OXA)	1.3 mg/l	0.26 mg/l
Metribuzin	70	14
Molybdenum	40	8
Monochlorobenzene	100	20
Naphthalene	100	10
Nickel	100	20
Nitrate (as N)	10 mg/l	2 mg/l
Nitrate + Nitrite (as N)	10 mg/l	2 mg/l
Nitrite (as N)	1 mg/l	0.2 mg/l
N–Nitrosodiphenylamine	7	0.7
Pentachlorophenol (PCP)	1	0.1
Perchlorate	1	0.1
Phenol	2 mg/l	0.4 mg/l
Pictoram	500	100
Polychlorinated biphenyls (PCBs)	0.03	0.003
Prometon	100	20
Propazine	10	2
Pyrene	250	50
Pyridine	10	2
Selenium	50	10
Silver	50	10
Simazine	4	0.4
Styrene	100	10
Tertiary Butyl Alcohol (TBA)	12	1.2
1,1,1,2–Tetrachloroethane	70	7
1,1,2,2–Tetrachloroethane	0.2	0.02
Tetrachloroethylene	5	0.5
Tetrahydrofuran	50	10
Thallium	2	0.4
Toluene	800	160
Toxaphene	3	0.3
1,2,4–Trichlorobenzene	70	14
1,1,1–Trichloroethane	200	40
1,1,2–Trichloroethane	5	0.5
Trichloroethylene (TCE)	5	0.5
2,4,5–Trichlorophenoxy–propionic acid (2,4,5–TP)	50	5
1,2,3–Trichloropropane	60	12
Trifluralin	7.5	0.75
Trimethylbenzenes (1,2,4– and 1,3,5– combined)	480	96
Vanadium	30	6

Table 1 – Continued
Public Health Groundwater Quality Standards

Substance[1]	Enforcement Standard (micrograms per liter – except as noted)	Preventive Action Limit (micrograms per liter – except as noted)
Vinyl chloride	0.2	0.02
Xylene[6]	2 mg/l	0.4 mg/l

[1] Appendix I contains Chemical Abstract Service (CAS) registry numbers, common synonyms and trade names for most substances listed in Table 1.

[2] Total chlorinated atrazine residues includes parent compound and the following metabolites of health concern: 2-chloro-4-amino-6-isopropylamino-s-triazine (formerly deethylatrazine), 2-chloro-4-amino-6-ethylamino-s-triazine (formerly deisopropylatrazine) and 2-chloro-4,6-diamino-s-triazine (formerly diaminoatrazine).

[3] Total coliform bacteria may not be present in any 100 ml sample using either the membrane filter (MF) technique, the presence-absence (P-A) coliform test, the minimal medium ONPG-MUG (MMO-MUG) test or not present in any 10 ml portion of the 10-tube multiple tube fermentation (MTF) technique.

[4] "Cyanide, free" refers to the simple cyanides (HCN, CN^-) and /or readily dissociable metal-cyanide complexes. Free cyanide is regulatorily equivalent to cyanide quantified by approved analytical methods for "amenable cyanide" or "available cyanide".

[5] Dinitrotoluene. Total Residues includes the dinitrotoluene (DNT) isomers: 2,3-DNT, 2,4-DNT, 2,5-DNT, 2,6-DNT, 3,4-DNT and 3,5-DNT.

[6] Xylene includes meta-, ortho-, and para-xylene combined.

History: Cr. Register, September, 1985, No. 357, eff. 10-1-85; am. table 1, Register, October, 1988, No. 394, eff. 11-1-88; am. table 1, Register, September, 1990, No. 417, eff. 10-1-90; am. Register, January, 1992, No. 433, eff. 2-1-92; am. Table 1, Register, March, 1994, No. 459, eff. 4-1-94; am. Table 1, Register, August, 1995, No. 476, eff. 9-1-95; am. Table 1, Register, December, 1998, No. 516, eff. 1-1-99; am. Table 1, boron, Register, December, 1998, No. 516, eff. 12-31-99; am. Table 1, Register, March, 2000, No. 531, eff. 4-1-00; CR 03-063: am Table 1, Register February 2004 No. 578, eff. 3-1-04; CR 02-095: am. Table 1, Register November 2006 No. 611, eff. 12-1-06; reprinted to correct errors in Table 1, Register January 2007 No. 613; CR 07-034: am. Table 1 Register January 2008 No. 625, eff. 2-1-08; CR 09-102: am. Table 1 Register December 2010 No. 660, eff. 1-1-11.

NR 140.12 Public welfare related groundwater standards. The groundwater quality standards for substances of public welfare concern are listed in Table 2.

Note: For each substance of public welfare concern, the preventive action limit is 50% of the established enforcement standard.

Table 2
Public Welfare Groundwater Quality Standards

Substance	Enforcement Standard (milligrams per liter – except as noted)	Preventive Action Limit (milligrams per liter – except as noted)
Chloride	250	125
Color	15 color units	7.5 color units
Foaming agents MBAS (Methylene-Blue Active Substances)	0.5	0.25
Iron	0.3	0.15
Manganese	0.05	0.025
Odor	3 (Threshold Odor No.)	1.5 (Threshold Odor No.)
Sulfate	250	125
Zinc	5	2.5

History: Cr. Register, September, 1985, No. 357, eff. 10-1-85; am. table 2, Register, October, 1990, No. 418, eff. 11-1-90; am. Table 2, Register, March, 1994, No. 459, eff. 4-1-94.

NR 140.14 Statistical procedures. (1) If a preventive action limit or an enforcement standard for a substance listed in Table 1 or 2, an alternative concentration limit issued in accordance with s. NR 140.28 or a preventive action limit for an indicator parameter established according to s. NR 140.20 (2) is attained or exceeded at a point of standards application:

(a) The owner or operator of the facility, practice or activity at which a standard is attained or exceeded shall notify the appropriate regulatory agency that a standard has been attained or exceeded; and

(b) The regulatory agency shall require a response in accordance with the rules promulgated under s. 160.21, Stats. No response shall be required if it is demonstrated to the satisfaction of the appropriate regulatory agency that a scientifically valid determination cannot be made that the preventive action limit or enforcement standard for a substance in Table 1 or 2 has been attained or exceeded based on consideration of sampling procedures or laboratory precision and accuracy, at a significance level of 0.05.

(2) The regulatory agency shall use one or more valid statistical procedures to determine if a change in the concentration of a substance has occurred. A significance level of 0.05 shall be used for all tests.

(3) In addition to sub. (2), the following applies when a preventive action limit or enforcement standard is equal to or less than the limit of quantitation:

(a) If a substance is not detected in a sample, the regulatory agency may not consider the preventive action limit or enforcement standard to have been attained or exceeded.

(b) If the preventive action limit or enforcement standard is less than the limit of detection, and the concentration of a substance is reported between the limit of detection and the limit of quantitation, the regulatory agency shall consider the preventive action limit or enforcement standard to be attained or exceeded only if:

1. The substance has been analytically confirmed to be present in the same sample using an equivalently sensitive analytical method or the same analytical method, and

2. The substance has been statistically confirmed to be present above the preventive action limit or enforcement standard, determined by an appropriate statistical test with sufficient samples at a significance level of 0.05.

(c) If the preventive action limit or enforcement standard is between the limit of detection and the limit of quantitation, the regulatory agency shall consider the preventive action limit or

APPENDIX E/PROJECT DOCUMENTS

CARDINAL ENVIRONMENTAL

COPY

300 Gallon Diesel Fuel Underground Storage Tank Closure Assessment

Waubeka Mill Inc.
W4132 Mill Street
Waubeka, Wisconsin

prepared for:

Ms. Jacquelyn M. Voeks
Waubeka Mill Inc.
W4132 Mill Street
Waubeka, Wisconsin 53021

prepared by:

Signature: Bruce Ten Haken Date: 1/14/98

Bruce Ten Haken, CHMM
Senior Project Manager
DILHR Certification Number 41751

3303 Paine Avenue Sheboygan, WI 53081
920/459-2500 800/413-7225 FAX 920/459-2503

CARDINAL
ENVIRONMENTAL

COPY

300 GALLON DIESEL FUEL
UNDERGROUND STORAGE TANK CLOSURE ASSESSMENT

PREPARED FOR:

WAUBEKA MILL INCORPORATED
W4132 MILL STREET
WAUBEKA, WI

A. SITE BACKGROUND INFORMATION

A 300 gallon diesel fuel Underground Storage Tank (UST) was closed in place on January 02, 1998, from Waubeka Mill Inc., W4132 Mill Street, Waubeka, Wisconsin ("the site"). The UST's ID # is 450900076, and is registered as storing leaded gasoline for industrial purposes. According to Jacquelyn Voeks, the owner of the Mill, the UST was last used for storing diesel fuel for industrial purposes (fueling the Mill's vehicles). The UST has not been used for a number of years.

The UST is located 2' from the east side of the Mill, next to a steep slope. The section of the Mill that the UST is next to is supported by steel beams attached to concrete piling/footings. Part of the Milwaukee River passes underneath this section. Over the years, the slope has been eroding, mainly from water running down Park Avenue. Removing the UST may increase the erosion and undermine the footings on the southeast side of the mill. Approval for the closure in place was obtained from Independent Inspections, Ltd. (IIL), the DILHR local program operator for this area.

Cardinal Environmental Inc. (Cardinal) was hired by the owner to close the UST. Mr. Roman Nespodzany from IIL was the on site inspector, Inspector Cert. #35245.

B. TANK ACTIVITIES AND EXCAVATION

Bruce Ten Haken (DILHR Cert. #41751) from Cardinal Environmental Inc., Sheboygan, Wisconsin, was the acting Cleaner/Remover and Site Assessor. Attachment III contains a diagram of the UST system. The UST was 3' D x 6'L (300 gal.). The fill and vent pipes were still in place. The pump had been removed prior to Cardinal's arrival. An excavator was used to expose the top portion of the UST so the top could be cut off.

3303 Paine Avenue Sheboygan, WI 53081
920/459-2500 800/413-7225 FAX 920/459-2503

C. TANK CLEANING AND DISPOSAL

A hole was cut in the top portion of the UST which was exposed by the excavator. There was 2" (5 gallons) of diesel fuel in the UST. The diesel fuel was transferred to a 5 gallon metal can. A small amount of sludge was also removed. The diesel fuel and sludge were taken back to Cardinal's Sheboygan location, and transferred to a 55 gallon drum of waste fuels. The drum was picked up on January 5, 1998, by Laidlaw Environmental Services, Inc., Pecatonica, IL. for proper disposal (fuels blending).

D. SURPLUS PRODUCT AND TANK SLUDGE MANAGEMENT

The diesel fuel and sludge removed from the UST were taken back to Cardinal and placed in a 55 gallon drum of waste fuels. The drum was picked up on January 5, 1998, by Laidlaw Environmental Services, Inc., for disposal. A copy of the manifest is in Attachment I.

E. SITE LOCATION AND LAYOUT MAP.

The property is located at W4132 Mill Street in the village of Waubeka, Wisconsin. The property is located in Ozaukee County, and is between Mill Street and the Milwaukee River. The property is located on the north side of the Mill Street and Park Avenue intersection. The mailing address for the site is Fredonia, WI. Site maps are located in Attachment III.

F. VISUAL INSPECTION

The weather conditions the day of the closure were as follows: temperature of 34°F; partly cloudy; wind from the west - southwest at 10 mph. The UST was located under gravel. Native soil was never encountered.

While uncovering the UST, it was observed that the soil under and around the dispenser location was stained and had a petroleum odor. After cleaning, the UST was inspected. There did not appear to be any holes in the UST. A hole was cut in the bottom for the collection of soil samples. The soil under the UST was stained and had a petroleum odor.

G. SOIL SAMPLING AND ANALYSIS

The soil 1 foot below the bottom of the UST was sampled for Diesel Range Organics (DRO) and Gasoline Range Organics (GRO). The sample location was given a Field ID# of WM-1. An En Chem "Encore" sampling tool was used to collect the DRO. The GRO sample was collected using a 2 ounce glass jar with a teflon lined lid. About 20 grams of soil was placed in the jar and preserved with methanol. The samples were placed on ice.

The samples were transported to En Chem Inc. of Green Bay, WI., WDNR Lab Certification #405132750, on January 5, 1998. En Chem analyzed the samples by the Wisconsin Modified DRO and GRO Methods. WM-1 had a DRO of 17 mg/kg, and a GRO of 350 mg/kg. The chain of custody and lab results can be found in Attachment IV.

H. SUPPORTING DOCUMENTATION

Copies of the tank inventory form, closure checklist, and other supporting documentation are provided in Attachment I. Site photographs are in Attachment II.

I. CONCLUSIONS AND RECOMMENDATIONS

While uncovering the UST, it was observed that the soil under and around the dispenser location was stained and had a petroleum odor. After cleaning, the UST was inspected. There did not appear to be any holes in the UST. A hole was cut in the bottom for the collection of soil samples. Since the UST was used to store gasoline before being used to store diesel fuel, the soil was analyzed for both DRO and GRO.

The soil under the UST was also stained and had a petroleum odor. The results of the DRO and GRO analyses were received on January 14, 1998. The DRO was 17 mg/kg, and the GRO was 350 mg/kg. The laboratory report states that the "Sample exhibits hydrocarbon pattern resembling gasoline". The Wisconsin Department of Natural Resources (WDNR) requires that UST sites with DRO/GRO results greater than 10 mg/kg be reported as suspected releases. Mr. Mike Farley from the WDNR was notified by Cardinal via fax of the suspected release on January 14, 1998. A copy of the release notification is in Attachment I. The WDNR will be notifying you in the form of a letter with the actions you will be required to take.

COPY

ATTACHMENT I

IIL

COPY

Independent Inspections, Ltd.
Certified Construction Inspectors
S30 W24670 Sunset Drive
Waukesha, WI 53186

December 23, 1997

Mr. Bruce Ten Haken, CHMM
3303 Paine Avenue
Sheboygan, WI 53081

Re: Closure-in-Place for Waubeka Mill Inc., W4132 Mill Street, Waubeka, WI

Dear Mr. Haken:

I do agree with you that a closure-in-place may be the most practical method in which to close the underground storage tank the above referenced address because of the following cited reason:

> "The UST is located next to the Mill in steep slope and removing may cause the slope to erode faster and undermine the footings on the southeast side of the Mill."

Therefore, I am granting a "conditional" approval; however, the inspector will make the final decision at the time of the closure inspection.

The State certified remover/cleaner will need to mail or FAX (414-544-8291) an ILHR 10 Notification Record showing the date and time for the inspector to be on site to verify and sign the necessary paperwork. If you have any questions, please feel free to call the office at (800)422-5220.

Sincerely,

Ronald C. Habermann

Ronald C. Habermann, Vice President
Co-Director Fire and Tank Services
INDEPENDENT INSPECTIONS, LTD.

c: File

RH/tls

F:\WPDATA\TANKS\CLOSURE\HAKEN.LET

State of Wisconsin

WI Tank ID#: 450900076

UNDERGROUND PETROLEUM PRODUCT TANK INVENTORY

Information Required By Section 101.142, Wis. Stats.

COPY

Send Completed Form To:
Department of Commerce
ERS Division
Bureau of Storage Tank Regulation
P.O. Box 7969, Madison, WI 53707

Underground tanks in Wisconsin that have stored or currently store petroleum or regulated substances must be registered. Please see the reverse side for additional information on this program. An underground storage tank is defined as any tank with at least 10 percent of its total volume (including piping) located below ground level. A separate form is needed for each tank. Send each completed form to the agency designated in the top right corner. Have you previously registered this tank by submitting a form? ☒ Yes ☐ No If yes, are you correcting/updating information only? ☒ Yes ☐ No

Personal information you provide may be used for secondary purposes. [Privacy Law, s. 15.04 (1)(m)]

This registration applies to a tank that is (check one):
1A. ☐ In Use or
1B. ☐ Newly Installed
2. ☐ Abandoned with Product
3. ☐ Abandoned No Product (empty) or with Water
4. ☐ Closed - Tank Removed
6. ☒ Closed - Filled with Inert Materials
7. ☐ Out of Service - Provide Date: _____
8. ☐ Ownership Change (Indicate new owner name in block 2)

Fire Department providing fire coverage where tank is located:
☐ City ☒ Village Waubeka 4500
☐ Town of _____

A. IDENTIFICATION (Please Print)

1. Tank Site Name	Site Address	Site Telephone Number
Waubeka Mill Inc.	W4132 Mill Street	(414) 692-9414
☐ City ☒ Village ☐ Town of: Waubeka	State: WI / Zip Code: 53021	County: Ozaukee
2. Tank Owner Name	Mailing Address	Telephone Number
Jacquelyn M. Voeks	N6002 Valley Heights	414-692-9414
☐ City ☒ Village ☐ Town of: Fredonia	State: WI / Zip Code: 53021	County: Ozaukee
3. Previous Name	Previous site address if different than #1	

4. Tank Age (date installed, if known or years old)	5. Tank Capacity (gallons)	6. If more than one tank is located at facility, please provide tank #
	300 Gallon	

B. TYPE OF USER (check one)
1. ☐ Gas/Retail Sales 2. ☐ Bulk Storage 3. ☐ Utility 4. ☒ Mercantile/Commercial 5. ☐ Industrial
6. ☐ Government 7. ☐ School 8. ☐ Residential 9. ☐ Agricultural 10. ☐ Other (specify):
11. ☐ Tribal Nation 12. ☐ Federal Property 13. ☐ Backup Generator

C. TANK CONSTRUCTION (check one)
1. ☐ Bare Steel 2. ☐ Cathodically Protected & Coated Steel (Check one: A. ☐ Sacrificial Anodes or B. ☐ Impressed Current)
3. ☒ Coated Steel 4. ☐ Fiberglass 5. ☐ Other (specify): _____
6. ☐ Lined - Date: _____ 7. ☐ Steel - Fiberglass Reinforced Plastic Composite 9. ☐ Unknown

Approval: 1. ☐ Nat'l Std. 2. ☐ UL 3. ☐ Other: | Is tank double walled? ☐ Yes ☒ No
Overfill Protection Provided? ☐ Yes ☐ No If yes, identify type: | Spill Containment? ☐ Yes ☒ No

Tank leak detection method: 1. ☐ Automatic tank gauging 2. ☐ Vapor monitoring 3. ☐ Groundwater monitoring
4. ☐ Inventory control and tightness testing 5. ☐ Interstitial monitoring
7. ☐ Manual tank gauging (only for tanks of 1,000 gallons or less) 8. ☐ Statistical Inventory Reconciliation (SIR)

D. PIPING CONSTRUCTION
1. ☒ Bare Steel 2. ☐ Cathodically Protected & Coated Steel (Check one: A. ☐ Sacrificial Anodes or B. ☐ Impressed Current)
3. ☐ Coated Steel 4. ☐ Fiberglass 5. ☐ Other (Specify): 9. ☐ Unknown

Vapor Recovery/Stage II
4. ☐ Fiberglass 6. ☐ Flexible 5. ☐ Other (specify): ☐ CARB #: _____ ☐ Operational - Provide Date (mo/day/yr):

Piping System Type: 1. ☐ Pressurized piping with A. ☐ auto shutoff, B. ☐ alarm or C. ☐ flow restrictor
2. ☐ Suction piping with check valve at tank 3. ☐ Suction piping with check valve at pump and inspectable 4. ☐ Not needed if waste oil

Piping leak detection method: used if pressurized or check valve at tank: 1. ☐ Vapor monitoring 2. ☐ Interstitial monitoring
3. ☐ Groundwater monitoring 4. ☐ Tightness testing 5. ☐ Line leak detector 6. ☐ Not required 8. ☐ SIR

Approval: 1. ☐ Nat'l Std. 2. ☐ UL 3. ☐ Other: | Is pipe double walled? ☐ Yes ☒ No

E. TANK CONTENTS
1. ☒ Diesel 2. ☐ Leaded 3. ☐ Unleaded 4. ☐ Fuel Oil 5. ☐ Gasohol
6. ☐ Other (Specify): _____ 7. ☐ Empty* 8. ☐ Sand/Gravel/Slurry* 9. ☐ Unknown* 10. ☐ Premix
11. ☐ Waste/Used Motor Oil 13. ☐ Chemical _____ (Indicate chemical name and number) 14. ☐ Kerosene 15. ☐ Aviation

* If 7, 8, 9, or 13 is chosen, this tank is NOT PECFA eligible.

If Tank Closed, Abandoned or Out of Service, give date (mo/day/yr):	Has a site assessment been completed (see reverse side for details)
1/2/98	☒ Yes ☐ No

Owner or Operator Name (please print):	Indicate whether:
Jacquelyn M. Voeks	☒ Owner or ☐ Operator
Owner or Operator Signature:	**Date Signed**
Jacquelyn M. Voeks (Will Initial)	1/2/98

IMPORTANT: Failure to provide sufficient information may cause you to fall under additional regulations, and may delay PECFA eligibility determination. It is necessary to complete ALL shaded areas and as many other items as possible.

ERS-7437 (R. 01/97)

Wisconsin Department of Industry, Labor and Human Relations

Complete one form for each site closure.

CHECKLIST FOR UNDERGROUND TANK CLOSURE

The information you provide may be used by other government agency programs [Privacy Law, s. 15.04 (1) (m)].

RETURN COMPLETED CHECKLIST TO:
Safety & Buildings Division
Fire Prevention & Underground Storage Tank Section
P. O. Box 7969, Madison, WI 53707

A. IDENTIFICATION: (Please Print) Indicate whether closure is for: ☒ Tank System ☐ Tank Only ☐ Piping Only

1. Site Name	2. Owner Name
Waubeca Mill Inc.	Jacquelyn M. Voeks
Site Street Address (not P.O. Box)	Owner Street Address
W4132 Mill Street	N6002 Valley Heights
☐ City ☒ Village ☐ Town of: Waubeka	☐ City ☒ Village ☐ Town of: Fredonia; State: WI; Zip Code: 53021
State: WI; Zip Code: 53021; County: Ozaukee	County: Ozaukee; Telephone No. (include area code): (414) 692-9414

3. Closure Company Name (Print)	Closure Company Street Address
Cardinal Environmental Inc.	3303 Paine Avenue
Closure Company Telephone No. (include area code)	Closure Company City, State, Zip Code
(920) 459-2500	Sheboygan, WI 53081
4. Name of Company Performing Closure Assessment	Assessment Company Street Address, City, State, Zip Code
Cardinal Environmental	3303 Paine Ave. Sheboygan, WI 53081
Telephone # (include area code)	Certified Assessor Name (Print) / Assessor Signature / Assessor Certification No.
(920) 459-2500	Bruce Ten Haken / Bruce Ten Haken / 41751

Tank ID #	Closure	Temp. Closure	Closure in Place	Tank Capacity	Contents *	Closure Assessment
1. 450900076	☐	☐	☒	300	1	☒ Y ☐ N
2.	☐	☐	☐			☐ Y ☐ N
3.	☐	☐	☐			☐ Y ☐ N
4.	☐	☐	☐			☐ Y ☐ N
5.	☐	☐	☐			☐ Y ☐ N
6.	☐	☐	☐			☐ Y ☐ N

* Indicate which product by numeric code: 01-Diesel; 02-Leaded; 03-Unleaded; 04-Fuel Oil; 05-Gasohol; 06-Other; 09-Unknown; 10-Premix; 11-Waste oil; 13-Chemical (indicate the chemical name(s) or numbers(s) _____ _____ _____; 14-Kerosene; 15-Aviation.

Written notification was provided to the local agent 15 days in advance of closure date.	☒ Y	☐ N	☐ NA
All local permits were obtained before beginning closure.	☒ Y	☐ N	☐ NA

Check applicable box at right in response to all statements in Sections B - E.

B. TEMPORARILY OUT OF SERVICE	Remover Verified	Inspector Verified	NA
Written inspector approval of temporary closure obtained, which is effective until (provide date) _____	☐ Y ☐ N	☐	☐
1. Product Removed			
a. Product lines drained into tank (or other container) and resulting liquid removed, AND	☐ Y ☐ N	☐	☐
b. All product removed to bottom of suction line, OR	☐ Y ☐ N	☐	☐
c. All product removed to within 1" of bottom	☐ Y ☐ N	☐	☐
2. Fill pipe, gauge pipe, tank truck vapor recovery fittings, and vapor return lines capped.	☐ Y ☐ N	☐	☐
3. All product lines at the islands or pumps located elsewhere are removed and capped, OR	☐ Y ☐ N	☐	☐
4. Dispensers/pumps left in place but locked and power disconnected.	☐ Y ☐ N	☐	☐
5. Vent lines left open.	☐ Y ☐ N	☐	☐
6. Inventory form filed indicating temporary closure.	☐ Y ☐ N	☐	☐

C. CLOSURE BY REMOVAL			
1. Product from piping drained into tank (or other container).	☐ Y ☐ N	☐	☐
2. Piping disconnected from tank and removed.	☐ Y ☐ N	☐	☐
3. All liquid and residue removed from tank using explosion proof pumps or hand pumps.	☐ Y ☐ N	☐	☐
4. All pump motors and suction hoses bonded to tank or otherwise grounded.	☐ Y ☐ N	☐	☐
5. Fill pipes, gauge pipes, vapor recovery connections, submersible pumps and other fixtures removed. **NOTE: DROP TUBE SHOULD NOT BE REMOVED IF THE TANK IS TO BE PURGED THROUGH THE USE OF AN EDUCTOR.**	☐ Y ☐ N	☐	☐
6. Vent lines left connected until tanks purged.	☐ Y ☐ N	☐	☐
7. Tank openings temporarily plugged so vapors exit through vent.	☐ Y ☐ N	☐	☐
8. Tank atmosphere reduced to 10% of the lower flammable range (LEL) - see Section F.	☐ Y ☐ N	☐	☐
9. Tank removed from excavation after PURGING/INERTING; placed on level ground and blocked to prevent movement.	☐ Y ☐ N	☐	☐
10. Tank cleaned before being removed being removed from site.	☐ Y ☐ N	☐	☐

- CONTINUE ON NEXT PAGE -

COPY

C. CLOSURE BY REMOVAL (continued)

	Remover Verified	Inspector Verified	NA
11. Tank labeled in 2" high letters after removal but before being moved from site.	☐ Y ☐ N	☐	☐
NOTE: COMPLETE TANK LABELING SHOULD INCLUDE WARNING AGAINST REUSE; FORMER CONTENTS; VAPOR STATE; VAPOR FREEING TREATMENT; DATE.			
12. Tank vent hole (1/8 th " in uppermost part of tank) installed prior to moving the tank from site.	☐ Y ☐ N	☐	☐
13. Inventory form filed by owner with Safety and Buildings Division indicating closure by removal.	☐ Y ☐ N	☐	☐
14. Site security is provided while the excavation is open.	☐ Y ☐ N	☐	☐

D. CLOSURE IN PLACE

NOTE: CLOSURES IN PLACE ARE ONLY ALLOWED WITH THE PRIOR WRITTEN APPROVAL OF THE DEPARTMENT OF INDUSTRY, LABOR AND HUMAN RELATIONS OR LOCAL AGENT.

	Remover Verified	Inspector Verified	NA
1. Product from piping drained into tank (or other container).			
2. Piping disconnected from tank and removed.	☒ Y ☐ N	✓	☐
3. All liquid and residue removed from tank using explosion proof pumps or hand pumps.	☒ Y ☐ N	✓	☐
4. All pump motors and suction hoses bonded to tank or otherwise grounded.	☒ Y ☐ N	✓	☐
5. Fill pipes, gauge pipes, vapor recovery connections, submersible pumps and other fixtures removed.	☒ Y ☐ N	✓	☐
NOTE: DROP TUBE SHOULD NOT BE REMOVED IF THE TANK IS TO BE PURGED THROUGH THE USE OF AN EDUCTOR - EDUCTOR OUTPUT 12 FT ABOVE GRADE.			
6. Vent lines left connected until tanks purged.	☒ Y ☐ N	✓	☐
7. Tank openings temporarily plugged so vapors exit through vent.	☒ Y ☐ N	✓	☐
8. Tank atmosphere reduced to 10% of the lower flammable range (LEL) - see Section F.	☒ Y ☐ N	✓	☐
9. Tank properly cleaned to remove all sludge and residue.	☒ Y ☐ N	✓	☐
10. Solid inert material (sand, cyclone boiler slag, pea gravel recommended) introduced and tank filled.	☒ Y ☐ N	✓	☐
11. Vent line disconnected or removed.	☒ Y ☐ N	✓	☐
12. Inventory form filed by owner with Safety and Buildings Division indicating closure in place.	☒ Y ☐ N	✓	☐

E. CLOSURE ASSESSMENTS

NOTE: DETERMINE IF A CLOSURE ASSESSMENT IS REQUIRED BY REFERRING TO ILHR 10.

	Remover Verified	Inspector Verified	NA
1. Individual conducting the assessment has a closure assessment plan (written) which is used as the basis for their work on the site.	☒ Y ☐ N	✓	☐
2. Do points of obvious contamination exist?	☒ Y ☐ N	✓	☐
3. Are there strong odors in the soils?	☒ Y ☐ N	✓	☐
4. Was a field screening instrument used to pre-screen soil sample locations?	☐ Y ☒ N	☐	☐
5. Was a closure assessment omitted because of obvious contamination?	☐ Y ☒ N	✓	☐
6. Was the DNR notified of suspected or obvious contamination?	☒ Y ☐ N	✓	☐

Agency, office and person contacted: WDNR - S.E. District

7. Contamination suspected because of: ☐ Odor ☐ Soil Staining ☐ Free Product ☐ Sheen On Groundwater ☐ Field Instrument Test

F. METHOD OF ACHIEVING 10% LEVEL DESCRIPTION

☐ Educator Or Diffused Air Blower
Eductor driven by compressed air, bonded and drop tube left in place; vapors discharged minimum of 12 feet above ground. Diffused air blower bonded and drop tube removed. Air pressure not exceeding 5 psig.

☐ Dry Ice
Dry ice introduced at 1.5 pounds per 100 gallons of tank capacity. Dry ice crushed and distributed over the greatest possible tank area. Dry ice evaporated before proceeding.

☐ Inert Gas (CO/2 or N/2) **NOTE: INERT GASSES PRODUCE AN OXYGEN DEFICIENT ATMOSPHERE. THE TANK MAY NOT BE ENTERED IN THIS STATE WITHOUT SPECIAL EQUIPMENT**
Gas introduced through a single opening at a point near the bottom of the tank at the end of the tank opposite the vent. Gas introduced under low pressure not to exceed 5 psig to reduce static electricity. Gas introducing device grounded.

☒ Tank atmosphere monitored for flammable or combustible vapor levels.
Calibrate combustible gas indicator. Drop tube removed prior to checking atmosphere. Tank space monitored at bottom, middle and upper portion of tank. Readings of 10% or less of the lower flammable range (LEL) obtained before removing tank from ground.

G. NOTE SPECIFIC PROBLEMS OR NONCOMPLIANCE ISSUES BELOW

H. REMOVER/CLEANER INFORMATION

Remover Name (print)	Remover Signature	Remover Certification No.	Date Signed
Bruce TenHaken	[signature]	41751	1/2/98

I. INSPECTOR INFORMATION

Inspector Name (print)	Inspector Signature	Inspector Certification No.
[illegible]	[signature]	35245

FDID # For Location Where Inspection Performed	Inspector Telephone Number	Date Signed
450900076	800-422-3220	1/2/98

OWNER

Wisconsin Department of Natural Resources

COPY

Notification of Petroleum Contamination from Underground Storage Tank System

Please complete this form and FAX it to Giselle Red, LUST Program Assistant, Southeast District, Milwaukee, immediately upon discovery of a release from an UST system.

TO: WDNR, Attn: Mike Farley
FAX #: 414-229-0810

1. Name, company, mailing address and phone number of person reporting the discharge:
Bruce Ten Haken
Cardinal Environmental Inc.
3303 Paine Avenue
Sheboygan, WI 53081 920-459-2500

2. Site Information

Name of site at which discharge occurred (local name of site/business - not responsible party name, unless a residence): Waubeka Mill Inc.

Location (actual street address, not PO box; if no street address, describe as precisely as possible, i.e., ¼ mile NW of CTHs 60 & 123 on E side of CTH 60):
W4132 Mill Street, Waubeka, Wisconsin

Municipality (city, village, township in which the site is located - not mailing address):
Waubeka

County:
Ozaukee

Legal Description: ___ ¼, ___¼, Section ____, Tn ____, Range ____ E / W

3. Responsible Party (RP) and/or RP Representative Information

Company Name: Waubeka Mill Inc.

Contact Person: Jacquelyn M. Voeks

Mailing Address (with zip code): W4132 Mill Street, Fredonia, WI, 53021

Telephone Number: (414) 692-9414

4. Identify tank size(s) and contents (list all that apply):

_____	Unleaded gasoline	_____	Fuel oil
_____	Leaded gasoline	_____	Waste oil
300	Diesel	_____	Other _____

5. Impacts to the environment:

____ Fire/explosion threat	X Soil contamination
____ Contaminated private wells	____ Surface water impacts
(#of wells ____)	____ Floating product
____ Contaminated public wells	____ Other ____
____ Groundwater contamination	

6. Contamination was discovered as a result of:

X Tank closure assessment ____ Site assessment ____ (Other) ____

7. Immediate actions being taken and the name of the contractor or other person performing the actions:

---

8. Source, speed of movement, and destination or probable destination of the discharged hazardous substances:

---

9. Local soil type and topography in the area of the discharge, depth to groundwater, and distance to surface water:

Milwaukee River is located about 50 feet away, down

10. Weather conditions existing at the scene, including presence of precipitation, and wind direction and velocity:

---

11. Soil contaminant concentration of laboratory analytical samples (if known):

DRO - 17 mg/kg
GRO - 350 mg/kg

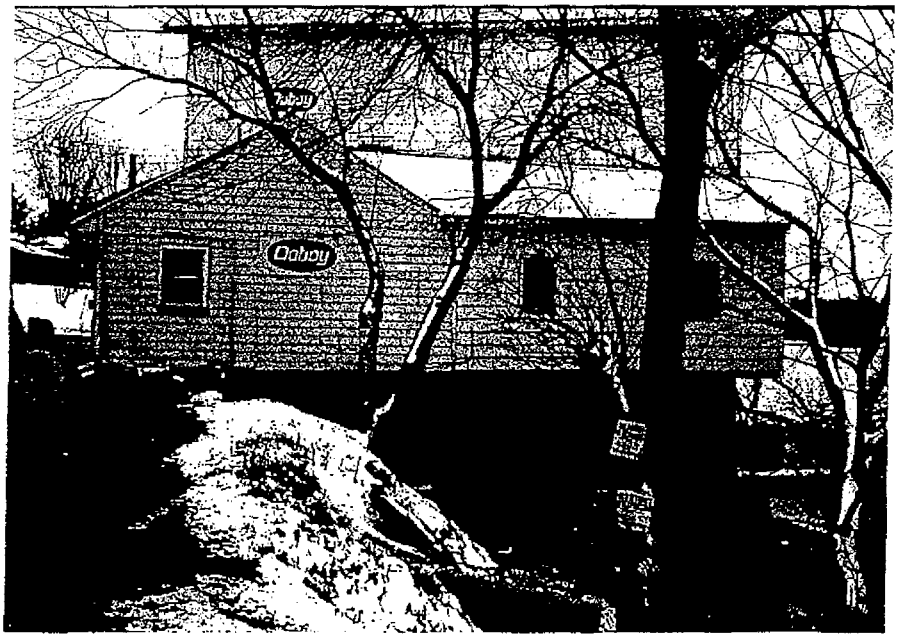
Additional Comments:

- The UST originally contained gasoline, but was later used for diesel fuel.
- The UST was closed-in-place. Samples were collected through a hole cut in the bottom of the UST.
- UST located on top of a steep slope that drops to the Milwaukee River.

COPY

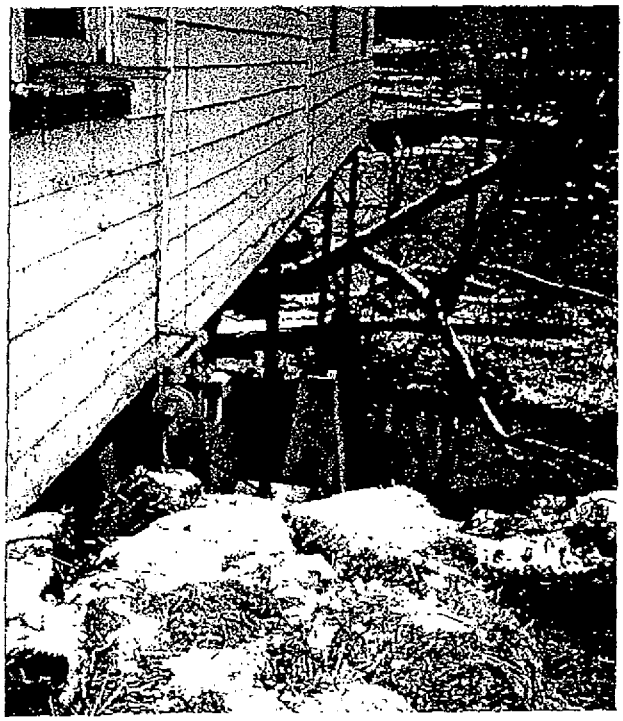
ATTACHMENT II

South Side (Front) of Waubeca Mill, looking down from Park Avenue.

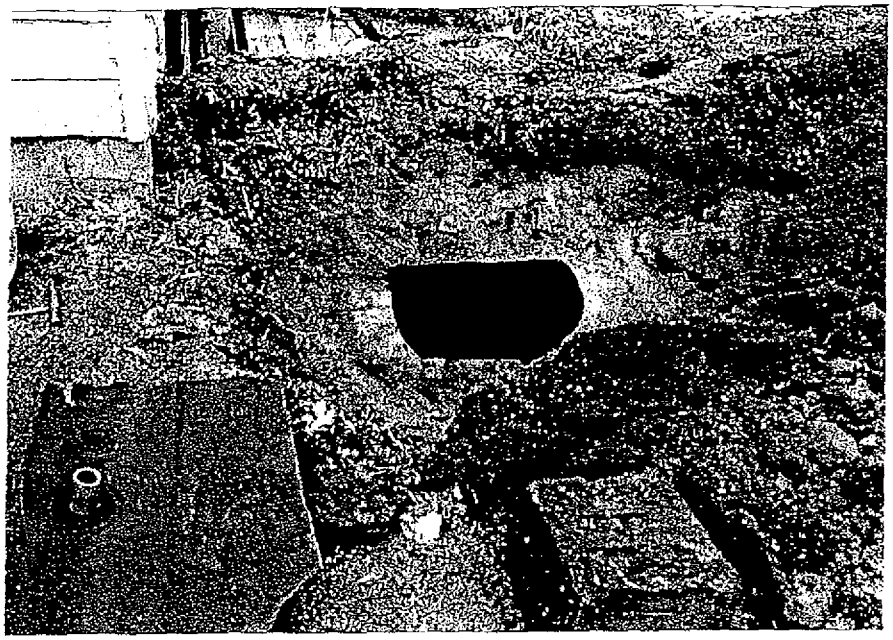


East side of Waubeca Mill.

East side of Waubeca Mill. UST under bales. Vent pipe running up the south east corner of building at a slight angle.

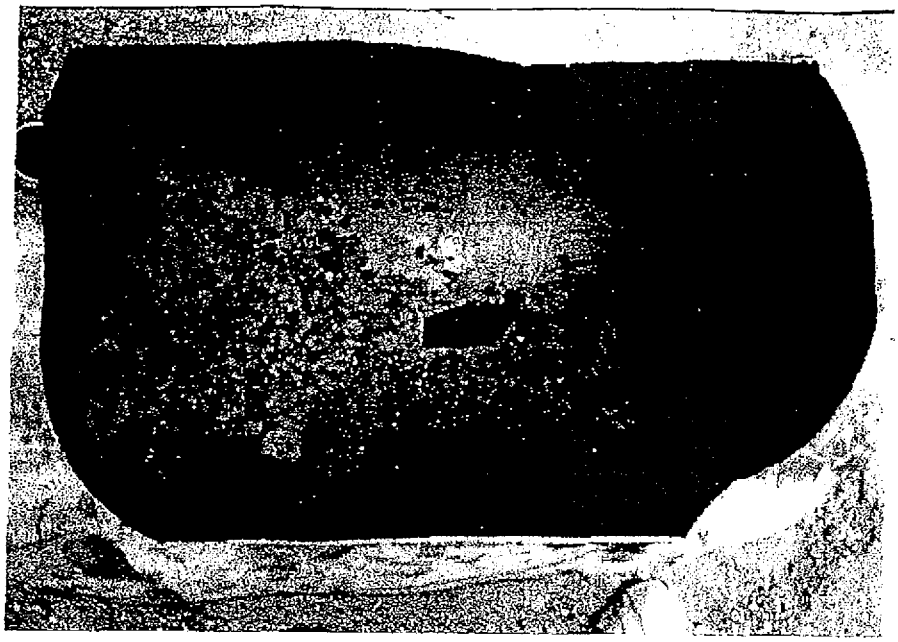


Looking North along east side of mill. The Milwaukee River is visible in the background.



Waubeka Mill UST uncovered with top cut off.

Two inches of diesel fuel in UST.



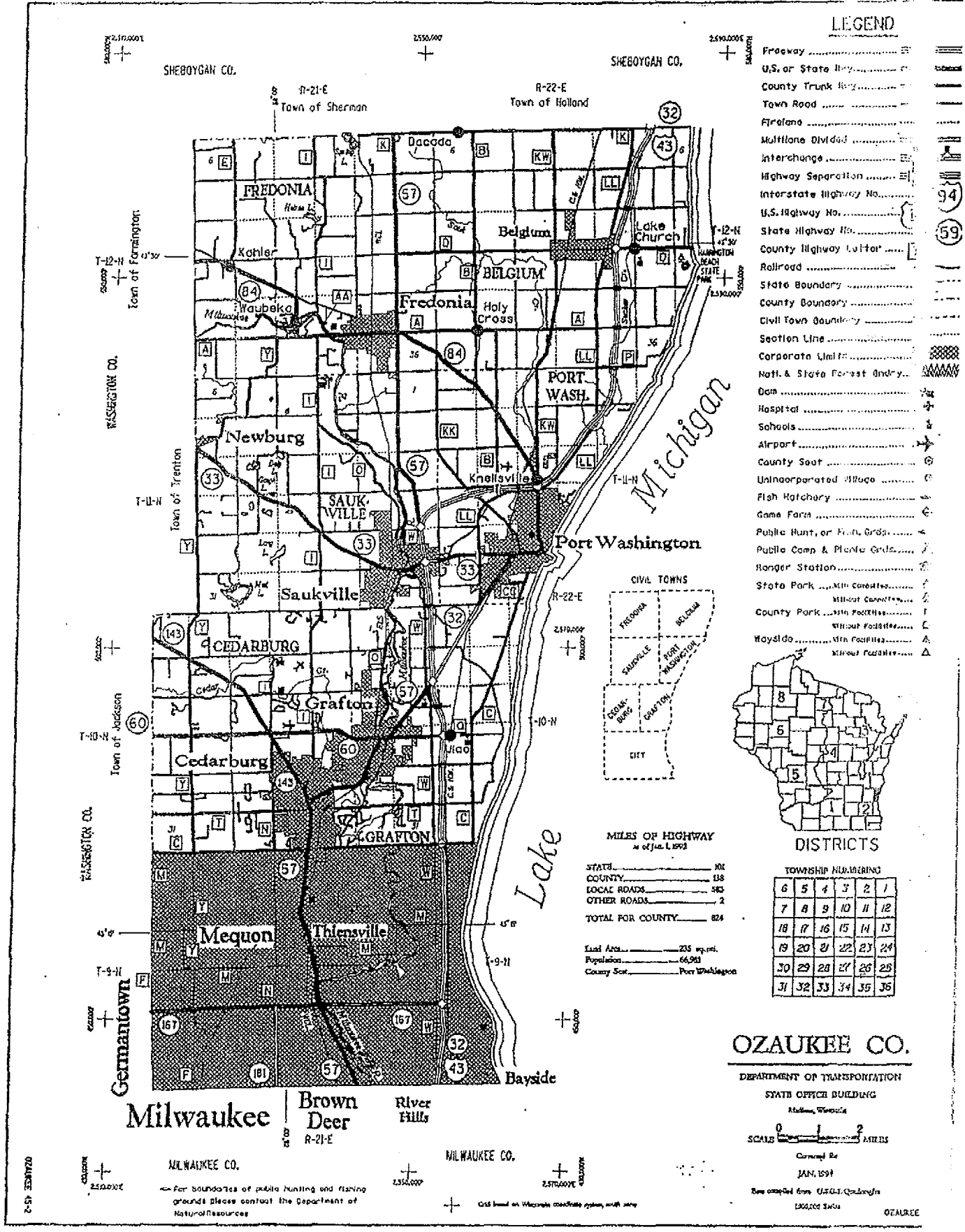
After UST was cleaned, a hole was cut in the bottom.
Soil removed during soil sampling is on left side of hole.

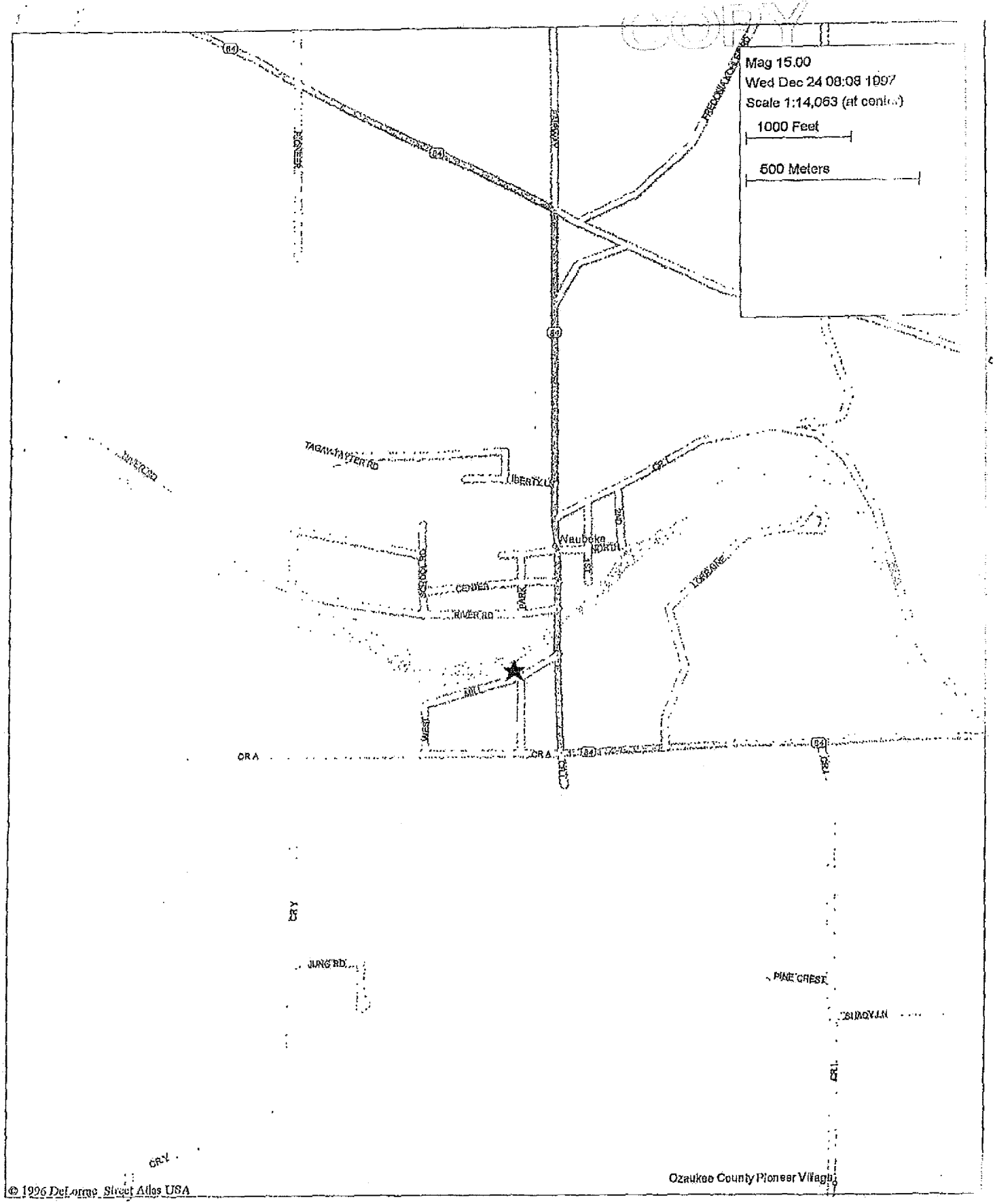
After sampling, the UST was filled in place
with gravel. Excavation brought to grade.

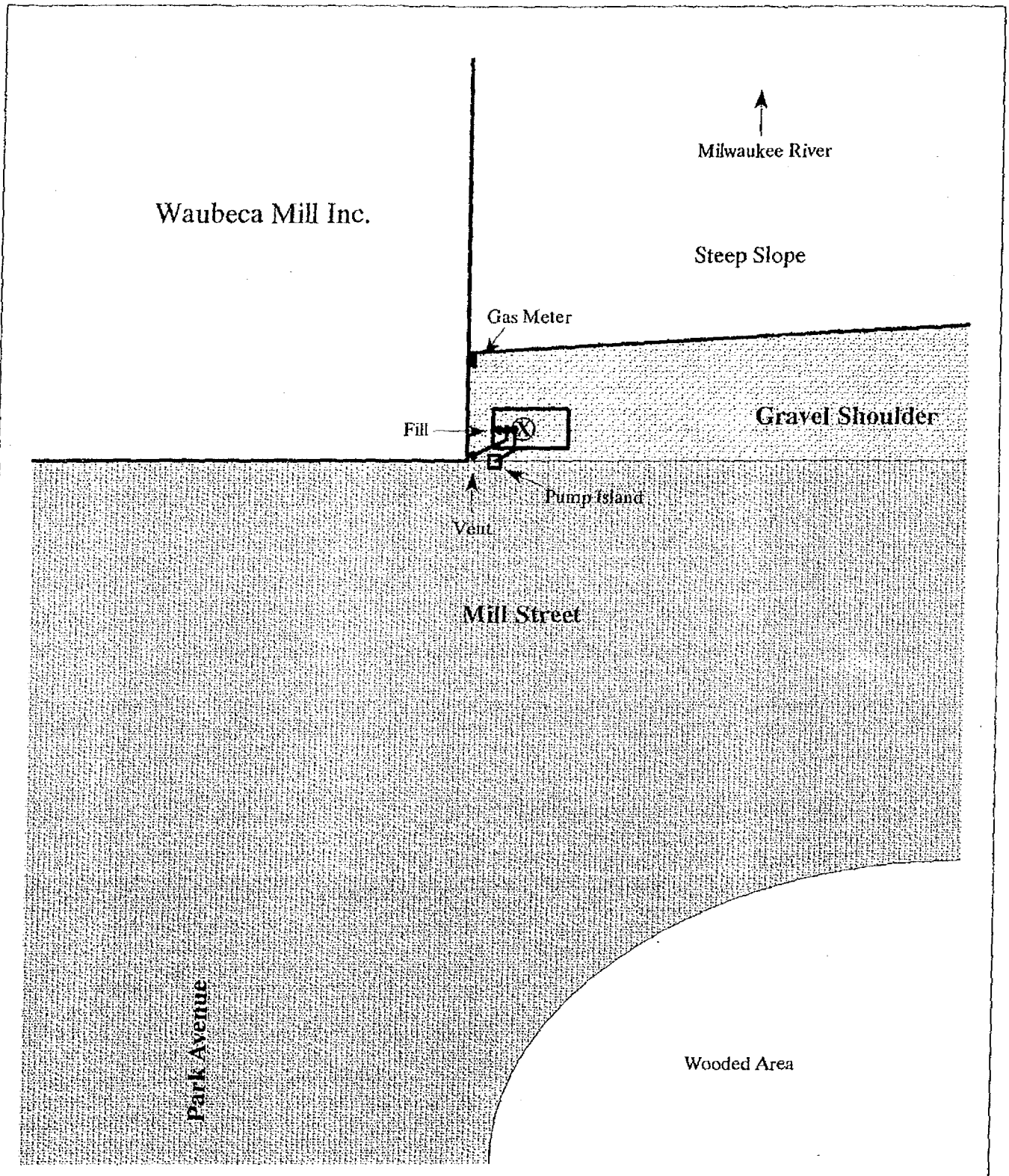
COPY

ATTACHMENT III

FIGURE 1




Mag 15.00
Wed Dec 24 08:08 1997
Scale 1:14,063 (at center)
1000 Feet
500 Meters
Waubeka
CENTER
RIVER RD
MILL
JUNG RD
PINE CREST
Ozaukee County Pioneer Village
© 1996 DeLorme Street Atlas USA



LEGEND	Site Map	Cardinal Environmental Inc.
Scale 0' 10'	N Waubeka Mill Inc.	
= 300 Gallon Gasoline UST (3'D x 6'L)	W4132 Mill Street	Date: 1/02/98
⊗ = Sampling Location	Waubeca, WI	By: BTH / Scale: 1" = 10'
	300 Gal. UST Closure in Place	FIGURE 3

COPY

ATTACHMENT IV

State of Wisconsin
Department of Natural Resources

EN CHEM INC.

Returned | Enlon[?]

CHAIN OF CUSTODY RECORD
UST PROGRAM
Based on Form 4400-151 Rev. 4-93

OJ

Note: Use of this form is voluntary but is requested by the Department pursuant to ch. NR 149, NR 500-540, NR 158 and NR 419, Wis.Adm.Code. Personally identifiable information will be used for no other purpose.

Sample Collector(s)	Title/Work Station/Company	Telephone Number (include area code)
Bruce Ten Haken	Project Manager / Cardinal Env.	920-459-2500
Property Owner	**Property Address**	**Telephone Number (include area code)**
Waubeka Mill Inc.	W4132 Mill Street, Waubeka, WI 53021	414-692-9414

I hereby certify that I received, properly handled and disposed of these samples as noted below:

Relinquished By (Signature)	Date/Time	Received By (Signature)
[signature]	1/2/98 3:00p.m.	[signature]
[signature]	1/5/98 2:45	
		Received for EN CHEM by (Signature) [signature] 1/5/98 1445

LABORATORY USE ONLY

Temperature of temperature blank ROI

If samples were received on ice and there was ice remaining, you may report the temperature as "received on ice". If all of the ice was melted, the temperature of the melt may be substituted for a temperature blank.

Field ID Number	Date Collected	Time Collected	Sample Type 1	Sample Device	Preserv. Type	Field Screening	Location/Description (see footnote 2)	Analysis Type	Lab ID Number	No/Type of Containers	Cracked /broken	Improp. Sealed	Good Cond.	Other Comments
WM-1	1/2/98	12:00 p.m.	SOIL	Jar w/Teflon Lid	Methanol ICE	ODOR	1 Foot Below UST	GRO 1	001	1-5oz [illegible]			X	2143
WM-1	1/2/98	12:00 p.m.	SOIL	Encore 2143	ICE	ODOR	1 Foot Below UST	DRO 5	↓				↓	

FOOTNOTES
1. specify groundwater, surface water, soil, leachate, sludge, etc.
2. sample description must clearly correlate the sample ID to the sampling location.

QTA#________ En Chem Project# 880022

ANALYSIS CODES

1. GRO	5. DRO	9. Free Liquids	13. BETX
2. PVOC	6. PAH	10. pH	14. Protocol D1-GRO
3. Lead	7. Flashpoint	11. TCLP-Benzene	15. Protocol D1-DRO
4. 8021	8. Percent Solids	12. TCLP-Lead	16. 8260

BILLING ADDRESS: Cardinal Environmental Inc.
3303 Paine Ave.
Sheboygan, WI 53081

Job Name/Number: PR# 772.01 Waubeka Mill
Job Description: 300 Gal. UST Closure in Place

COPY

EN CHEM INC.

1795 Industrial Drive
Green Bay, WI 54302
920-469-2436
800-7-ENCHEM
Fax: 920-469-8827

- Analytical Report -

Project Name : WAUBEKA MILL

Project Number : 772.01

WI DNR LAB ID : 405132750

Client: CARDINAL ENVIRONMENTAL

Report Date : 1/9/98

Sample No.	Field ID	Collection Date	Sample No.	Field ID	Collection Date
880022-001	WM-1	1/2/98			

The "Q" flag is present when a parameter has been detected below the LOQ. This indicates the results are qualified due to the uncertainty of the parameter concentration between the LOD and the LOQ.

Soil VOC detects are corrected for the total solids, unless otherwise noted.

I certify that the data contained in this Final Report has been generated and reviewed in accordance with approved methods and Laboratory Standard Operating Procedure. Exceptions, if any, are discussed in the accompanying sample narrative. Release of this final report is authorized by Laboratory management, as is verified by the following signature.

Approval Signature

Date 1/9/98

ENCHEM INC.

1795 Industrial Driv
Green Bay, WI 5430
920-469-243
800-?-ENCHE
FAX: 920-469-802

LabID:	TestGroupID:	Comment:
890022-001	DRO-S	Early peaks present outside of window of analysis.
	GRO-S-ME	Sample exhibits hydrocarbon pattern resembling gasoline. Early and late peaks were present outside of window.

EN CHEM INC.

1795 Industrial Drive
Green Bay, WI 54302
920-469-2436
800-[illegible] ENCHEM
Fax: 920-469-8827

- Analytical Report -

Project Name : WAUBEKA MILL

Project Number : 772.01

Field ID : WM-1

Lab Sample Number : 980022-001

WI DNR LAB ID : 405132750

Client : CARDINAL ENVIRONMENTAL

Report Date : 1/8/98

Collection Date : 1/2/98

Matrix Type : SOIL

Inorganic Results

Test	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Prep Method	Analysis Method	Analyst
Solids, percent	84.2				%		1/6/98	SM2540G	SM2540G	PHS

Organic Results

Preservation Date : 1/6/98

DIESEL RANGE ORGANICS - SOIL Prep Method: WI MOD DRO Prep Date: 1/7/98 Analyst: PHS

Analyte	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Analysis Method
DIESEL RANGE ORGANICS	17			3.8	mg/kg		1/7/98	WI MOD DRO
Blank spike	89			50	%Recov		1/7/98	WI MOD DRO
Blank spike duplicate	84			50	%Recov		1/7/98	WI MOD DRO
Blank	< 5.0			5.0	mg/kg		1/7/98	WI MOD DRO

Organic Results

GASOLINE RANGE ORGANICS - SOIL/METHANOL Prep Method: WI MOD.GRO Prep Date: 1/6/98 Analyst: EGS

Analyte	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Analysis Method
Gasoline Range Organics	350			15	mg/kg		1/7/98	WDNR MOD GRO
Blank Spike	92			1.0	%Recov		1/7/98	WDNR MOD GRO
Blank Spike Duplicate	105			1.00	%Recov		1/7/98	WDNR MOD GRO
Blank	< 2.5			2.5	mg/kg		1/7/98	WDNR MOD GRO

All soil results are reported on a dry weight basis unless otherwise noted.

State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

Tommy G. Thompson, Governor
George E. Meyer, Secretary
Gloria L. McCutcheon, Regional Director

Southeast Region Headquarters
2300 N. Dr. ML King Jr. Drive, Box 12436
Milwaukee, WI 53212-0436
TELEPHONE 414-263-8500
FAX 414-263-8483
TDD 414-263-8713

March 24, 1998

BRRTS# : 03-46-183691
Facility ID#: 246147110
BRR/LUST

JACQUELYN M VOEKS
WAUBEKA MILL INC
W4132 MILL ST
FREDONIA WI 53021

SUBJECT: Reported Contamination at your location

To speed processing, correspondence should reference BRRTS & FID numbers at top of letter.

Dear Ms. Voeks:

On 1-14-98 Bruce Ten Haken of Cardinal Environmental informed the Department that diesel fuel which leaked from an underground storage system caused soil contamination at your address.

Based on the information submitted to the Wisconsin Department of Natural Resources (WDNR), we believe you are responsible for restoring the environment at the referenced site under Section 292, Wisconsin Stats., known as the hazardous substances spills law. Utilizing information submitted to the Department, this case has been assigned an unknown ranking due to the lack of information concerning soil and groundwater contamination.

WDNR Southeast Region Prioritization and Scoring Policy

Due to the WDNR workload, it is necessary to rank all contamination cases for review priority. Lower priority cases do not have assigned project managers, however, responsible parties are required to proceed with investigation and clean-up efforts. Until a priority has been assigned to this site, you should proceed with the required response work, submitting all plans and reports, along with status reports, to this office. The WDNR will notify you if your site will receive active oversight.

Your responsibilities include investigating the extent of the contamination and then selecting and implementing the most appropriate remedial action. Enclosed is information to help you understand what you need to do to ensure your compliance with the spills law.

The purpose of this letter is threefold: 1) to describe your legal responsibilities, 2) to explain what you need to do to investigate and clean up the contamination, and 3) to provide you with information about cleanups, environmental consultants, possible financial assistance, and working cooperatively with the Department of Natural Resources.

Legal Responsibilities:
Your legal responsibilities are defined both in statute and in administrative codes. The hazardous substances spill law, Section 292.11 (3) Wisconsin Statutes, states:

* RESPONSIBILITY. A person who possesses or controls a hazardous substance which is discharged or who causes the discharge of a hazardous substance shall take the actions necessary to restore the environment to the extent practicable and minimize the harmful effects from the discharge to the air, lands, or waters of the state.

Wisconsin Administrative Codes chapters NR 700 through NR 728 establish requirements for emergency and interim actions, public information, site investigations, design and operation of remedial action systems, and case closure. Chapter NR 708 includes provisions for immediate actions in response to limited contamination. Wisconsin Administrative Code chapter NR 140 establishes groundwater standards for contaminants that reach groundwater.

Steps to Take:
The longer contamination is left in the environment the farther it can spread and the more it may cost to clean up. Quick action may lessen damage to your property and neighboring properties and reduce your costs in investigating and cleaning up the contamination. To ensure that your cleanup complies with Wisconsin's laws and administrative codes, you should hire a professional environmental consultant who understands what needs to be done. These are the first four steps to take:

1. By 5-6-98, please submit written verification (such as a letter from the consultant) that you have hired an environmental consultant. You will need to work quickly to meet this timeline.

2. By 6-19-98, your consultant must submit a workplan and schedule for the investigation. The consultant must follow the DNR administrative codes and technical guidance documents. Please include with your workplan a copy of any previous information that has been completed (such as an underground tank removal report or a preliminary excavation report).

3. Please inform DNR of what is being done at your site. Submittal requirement timelines depend on the contaminants at the site. As described in s. NR 700.11, if the site meets criteria for a "simple site", progress reports must be submitted semi-annually, beginning 6 months from the initial notification date. If the site meets criteria for a "complex site", the site investigation report and a draft remedial options report must be submitted to DNR within 30 days of completion of both reports. Your consultant must clearly document the extent and degree of soil and groundwater contamination and submit a proposal for cleaning it up.

4. For complex sites, per s. NR 724.13(3), you or your consultant must provide a brief report at least every 90 days, starting after the remediation system begins operation. The reports should summarize the work completed since the last report. Quarterly reports need only include one or two pages of text, plus any relevant maps and tables. However, should conditions at your site warrant, we may require more frequent contacts with the Department.

Due to the number of contaminated sites and our staffing levels in DNR's Southeast Region, we will be unable to provide workplan approvals for investigations or remedial actions. To maintain your compliance with the spills law and chs. NR 700 through NR 728, do not delay the investigation and cleanup of your site by waiting for DNR response. We have provided detailed technical guidance to environmental consultants. Your consultant is expected to know our technical procedures and administrative codes and should be able to answer your questions on meeting cleanup requirements.

Your correspondence and reports regarding this site should be sent to:

Michael Farley, BRR Program Assistant

Wisconsin Department of Natural Resources
Box 12436
Milwaukee WI 53212

Unless otherwise requested, please send only one copy of plans and reports. To speed processing, correspondence should reference the BRRTS and FID numbers shown at the top of this letter.

Information for Site Owners:
Enclosed is a list of environmental consultants and some tips on selecting one. If you are eligible for reimbursement of costs under Wisconsin's PECFA program (see last paragraph) you will need to compare at least three consultants' proposals before hiring a consultant. Consultants and laboratories working in the PECFA program are required to carry errors and omissions insurance to help protect you against unsuitable work. Also enclosed are materials on controlling costs, understanding the cleanup process, and choosing a site cleanup method. Please read this information carefully.

If you are interested in obtaining the protection of limited liability under s. 292, Stats., please call 1-800-367-6076 in DNR's Madison office for more information. The liability exemption under s. 292 Stats., is available to persons who meet the definition of "purchaser" in s. 292 and receive DNR approval for the response actions taken at the property undergoing cleanup. DNR will determine eligibility for this program on a case-by-case basis, prior to the "purchaser" developing a scope of work for conducting a ch. NR 716 site investigation.

Financial Information:
Reimbursement from the Petroleum Environmental Cleanup Fund (PECFA) is available for the costs of cleaning up contamination from eligible petroleum storage tanks. The fund is administered by the Department of Industry, Labor, and Human Relations (DILHR). Please contact DILHR at (608) 266-2424 for more information on eligibility and regulations for this program.

Thank you for your cooperation.

Sincerely,

Michael G. Farley
Program Assistant
414-263-8680

cc: Bruce Ten Haken, Cardinal

PLEASE always refer to both the BRRTS # *and* the FID # on all correspondence. Failure to do so will result in slower processing, which could delay closures, Form 4 approvals and other time-related functions.

APPENDIX F/HEALTH AND SAFETY PLAN

Site Investigation Field Procedures Workplan - METCO
Waubeca Mill, Inc.

Safety Plan Information

Company Name:	METCO
Contact Information:	Jason Powell 709 Gillette Street, Suite 3 La Crosse, WI 54603 (608) 781-8879

Site Information

METCO Project #:	C2632
Site Name: Site address:	Waubeca Mill, Inc. W4132 Mill Street Fredonia, WI 53021
County:	Ozaukee
WDNR Contact:	Lee Delcore 1155 Pilgrim Parkway Plymouth, WI 53073 (920) 893-8524
WDNR BRRTS Case #:	03-46-183691

Purpose of Activity (Check all that apply)

Petroleum Release Investigation	X
Ag Chemical Release Investigation	
Install Soil Borings/Monitoring Wells	X
Tank/Piping Removal	
Tank/Piping Closure Assessment	
Phase 1/Phase 2 Environmental Site Assessment	
Install Remedial System	
Other	

Site Investigation Field Procedures Workplan - METCO
Waubeca Mill, Inc.

Tank Information

Tank Size (Gallons)	Contents	Age
300	Diesel (Previously Gasoline)	Abandoned in Place (1998)

Potential Health and Safety Hazards (Check all that apply)

Handling/Transfer of Product (Fire, Explosions)	
General Construction (Electrical Hazards, Physical Injury)	X
Confined Space Entry (Explosions)	
Heavy Equipment	X
Noise	X
Underground and Overhead Utilities	X
Site Traffic	X
Oxygen Depletion	
Excavation (Cave Ins, Falls, Slips)	
Poisonous Plants	
Snakes, Insects, Rodents	
Heat, Cold	X
Other	

Evaluation of Chemical Hazards

Name	Physical State	Route of Entry	TWA/STEL (ppm)	Symptoms of Exposure
Gasoline	Vapor/Liquid	Inhalation/Skin	300/500	Irritation, Nausea, Vomiting, Dizziness, Unconsciousness
Diesel Fuel	Vapor/Liquid	Inhalation/Skin	100/None	Irritation, Nausea, Vomiting, Dizziness, Unconsciousness

On-Site Personnel Responsibilities

	Team Member	Responsibility
1.	Ron Anderson	Senior Project Manager
2.	Jason Powell	Site Project Manager
3.	Eric Dahl	Hydrogeologist
4.	Jon Jensen	Staff Scientist
5.	Matt Michalski	Hydrogeologist
6.	Bryce Kujawa	Hydrogeologist

Method to Control Potential Heath and Safety Hazards

Monitoring Instruments

Photoionization Detector (PID) [X]

Site Investigation Field Procedures Workplan - METCO
Waubeca Mill, Inc.

Flame Ionization Detector (FID)	
Combustible Gas Indicator	
Four Gas Meter	
Detector Tubes	

Action Levels	Action
0-10% LEL (No Explosion Hazard)	None
Oxygen Deficient (Less Than 21%)	Notify Health & Safety Officer
Oxygen Deficient (Less Than 19%)	Evacuate

Personal Protective Equipment

Minimum Requirements:

1. Hardhat
2. Safety Glasses/Goggles
3. Steel Toe Shoes or Boots
4. Flame Retardant Coveralls
5. Hearing Protection (Muffs or Ear Plugs)
6. Nitrile Gloves

Is additional PPE required? No

Additional Requirements

Uncoated Tyvek Coveralls	
Saranex Tyvek Coveralls	
Rubber Boots	
Overboots	
Surgical Inner Gloves	
Butyl Neoprine/Nitrile Outer Gloves	
Full Face Respirators	
Type of Cartridge:	
SCBA/SAR	
Other	

Level of Protection Designated: D

Site Investigation Field Procedures Workplan - METCO
Waubeca Mill, Inc.

Site Control

Work Zones

Support Zone: Beyond a 25 foot radius of drilling or excavation and upwind of operation.
Contamination Reduction Zone: Between 15 and 25 foot radius of drilling or excavation.
Exclusion Zone: Within 15 foot radius of of drilling or excavation.

Site Entry Procedure: Obtain all approval and instructions from project manager.

Decontamination Procedures:

Personnel: Remove protective equipment and wash hands prior to eating.
Equipment: Wash with brush and Alconox soap, rinse with fresh tap water.

Investigation Derived Material Disposal:

Stockpiling: The soils will be placed on and covered with plastic. The client will determine the stockpile location, but will have to be approved by the project manager. Soils will be disposed of by the most efficient and cost effective approved method.

DOT drums: Label drums as to content and date filled. Routinely inspect drums for leakage or spills. Place together in area where movement is at minimum.

Work Limitations: Daylight hours. No eating, drinking, or smoking in the exclusion zone or contamination reduction zone.

Employee Limitations:

Site Resources:

Shower	
Water Supply	X

Contingency Planning

Emergency Contacts	Phone Number
Ambulance: Waubeca	911
Hospital Emergency Room: St Joseph's Community Hospital	(262) 334-5533
Poison Control Center: Milwaukee	(800) 222-1222
Police: Ozaukee County Sheriff	911
Fire Department: Waubeca	911
Hazardous Waste Response Center: Wisconsin	(800) 943-0003
EPA	(800) 424-8802

Location Address: W4132 Mill Street, Fredonia WI 53021

Site Investigation Field Procedures Workplan - METCO
Waubeca Mill, Inc.

Hospital: St Joseph's Community Hospital
3200 Pleasant Valley Road
West Bend, WI 53095
(262) 334-5533

Emergency Route:

Head **east** on **Mill St** toward **Park Ave**	20 ft
Turn **right** onto **Park Ave**	0.1 mi
Turn **right** onto **Co Hwy A**	7.9 mi
Turn **left** onto **State Hwy 144 S**	1.2 mi
Turn **right** onto **Newark Dr**	1.0 mi
Turn **right** onto **Salisbury Rd**	469 ft
Turn **left** onto **Newark Dr**	0.7 mi
Continue onto **Kettle Moraine Scenic Dr/Lighthouse Ln**	0.3 mi
Turn **right** to stay on **Kettle Moraine Scenic Dr/Lighthouse Ln**	0.3 mi
Turn **left** to merge onto **US-45 S**	7.1 mi
Take exit **65** for **Pleasant Valley Rd/County Highway PV**	0.3 mi
Turn **right** onto **Pleasant Valley Rd**	0.2 mi
Turn **right**	295 ft
Turn **left,** Destination will be on the right	0.2 mi

Emergency Procedures:

If an emergency develops at the site, the discoverer will take the following course of action:
- Notify the proper emergency service (fire, police, etc.) for assistance.
- Notify other personnel on the site. Notify project manager.
- Contact METCO and the client representative to inform them of the incident as soon as possible.
- Prepare a summary report of the incident for METCO and the client representative.

On-Site Organization	Phone Numbers	
METCO Project Manager: Jason Powell	work	(608) 781-8879
	cell	(608) 385-1467
METCO Safety Officer: Brian Hora	work	(800) 236-0448
	cell	(608) 604-2933
METCO Corporate Contact: Paul Knower	work	(800) 236-0448
	cell	(608) 604-2931
Client Contact: Jacquelyn Voeks		(262) 707-0735

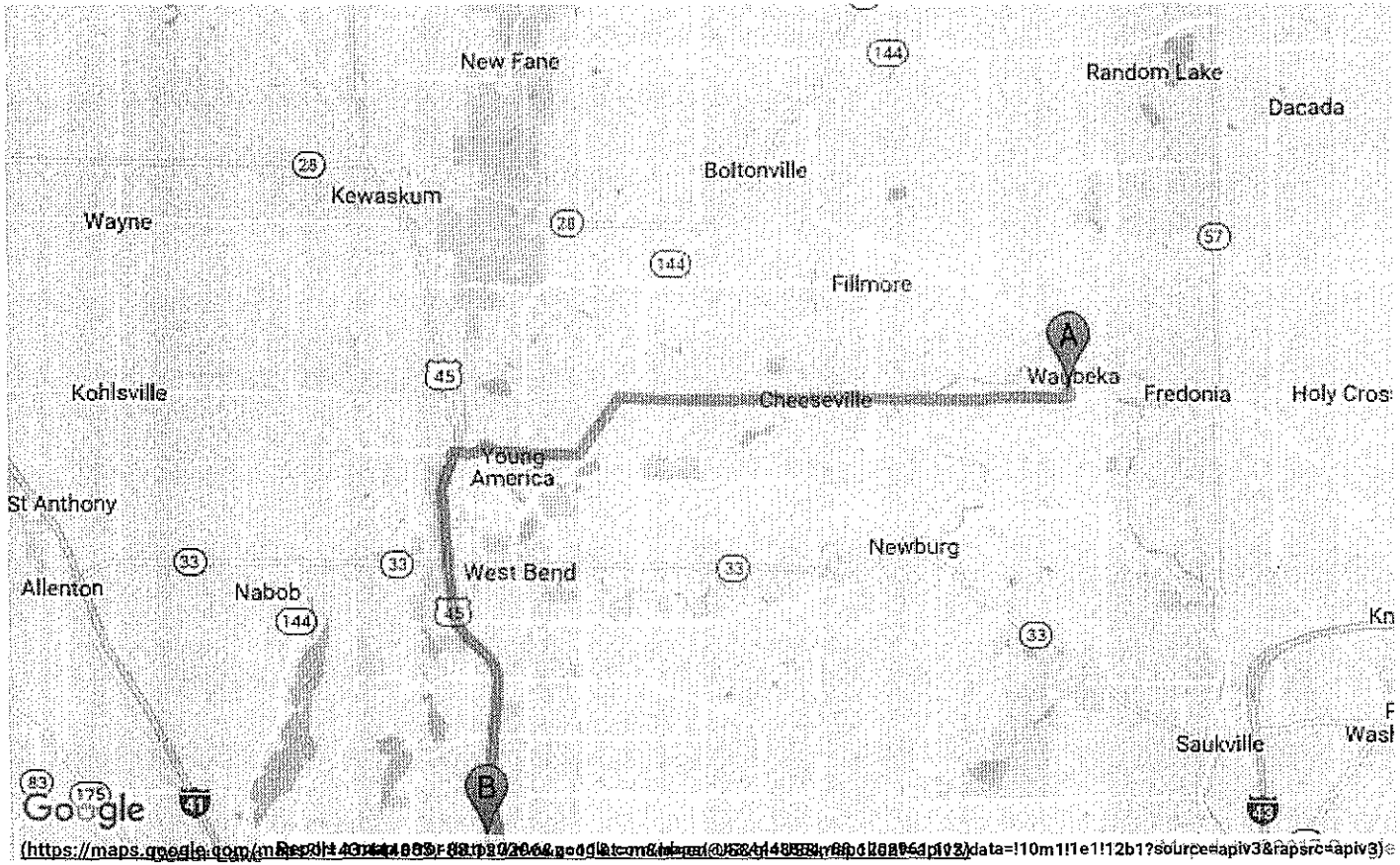
Daily Safety Plan Check

1. Hard Hat
2. Visible Fire Extinguisher
3. Safety Glasses
4. Hearing Protection
5. No Smoking On Site
6. Safety Data Sheet
7. Route to Hospital
8. Barricades (Cones, Flags, Fences, Vehicle)
9. Emergency Phone Numbers
10. Know Where the Site Safety Plan Is

US Hospital Finder (/)™: Directions

From: W4132 Mill Street, Fredonia, WI

To: St Joseph's Community Hospital 3200 Pleasant Valley Road West Bend, WI 53095



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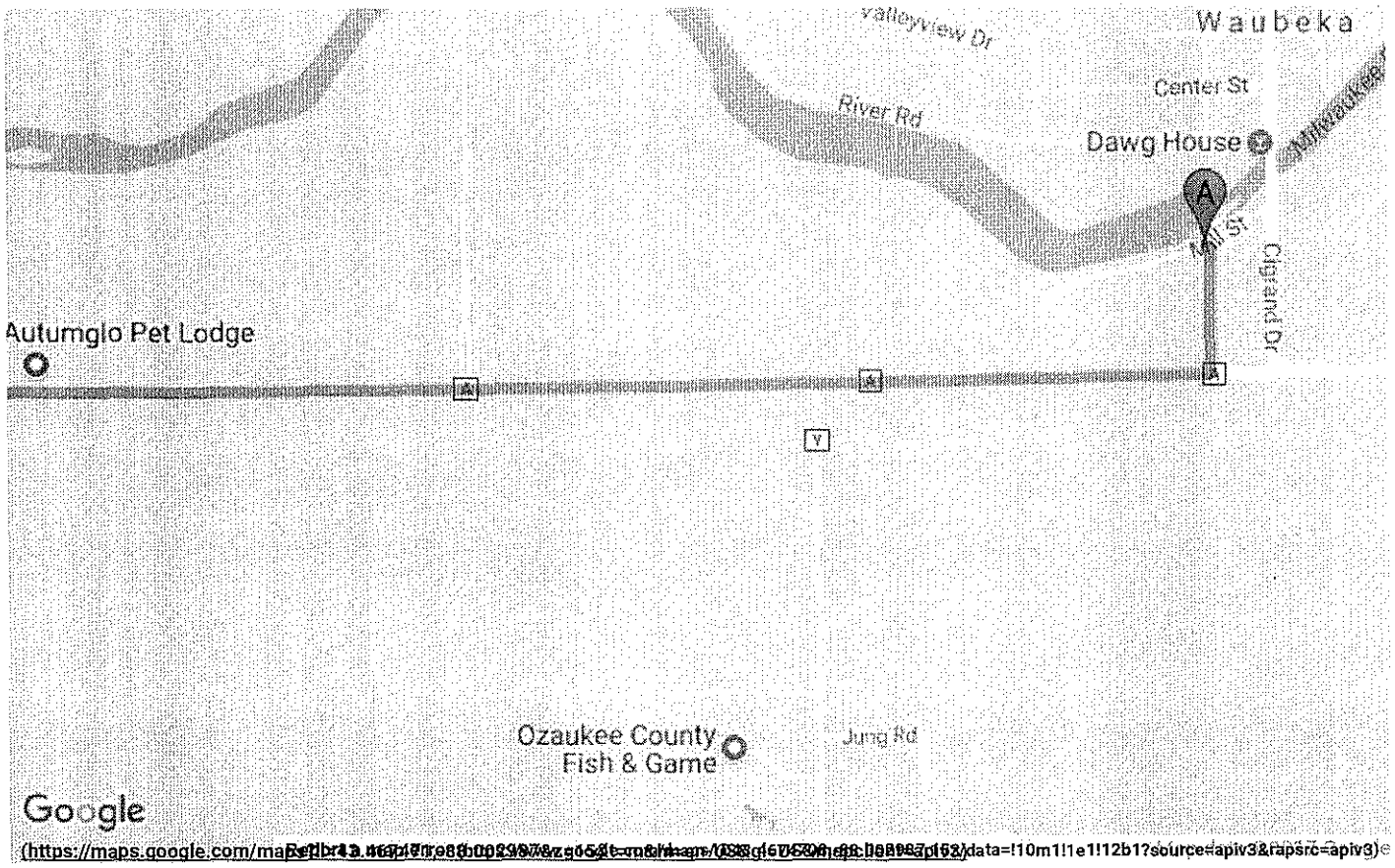

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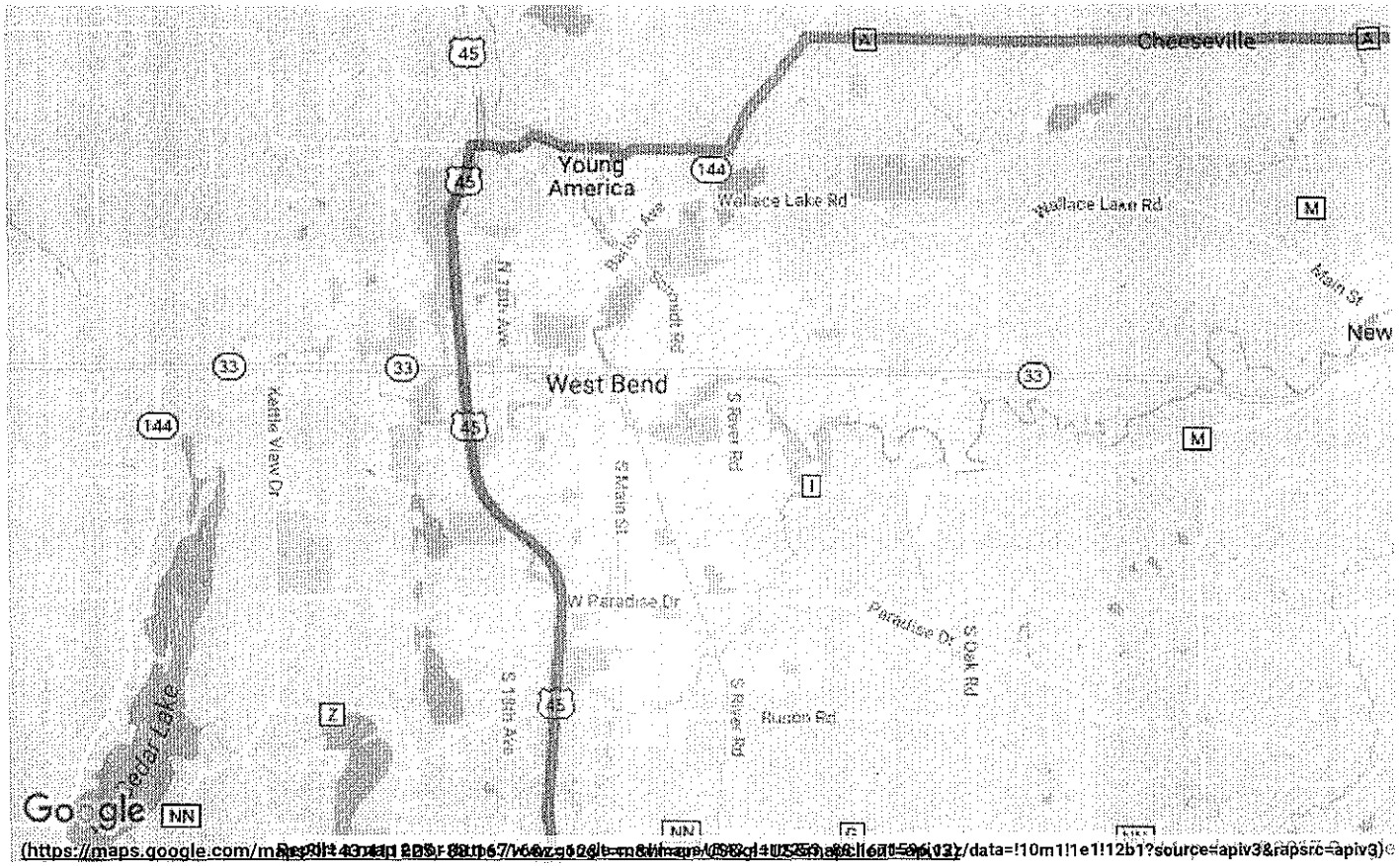

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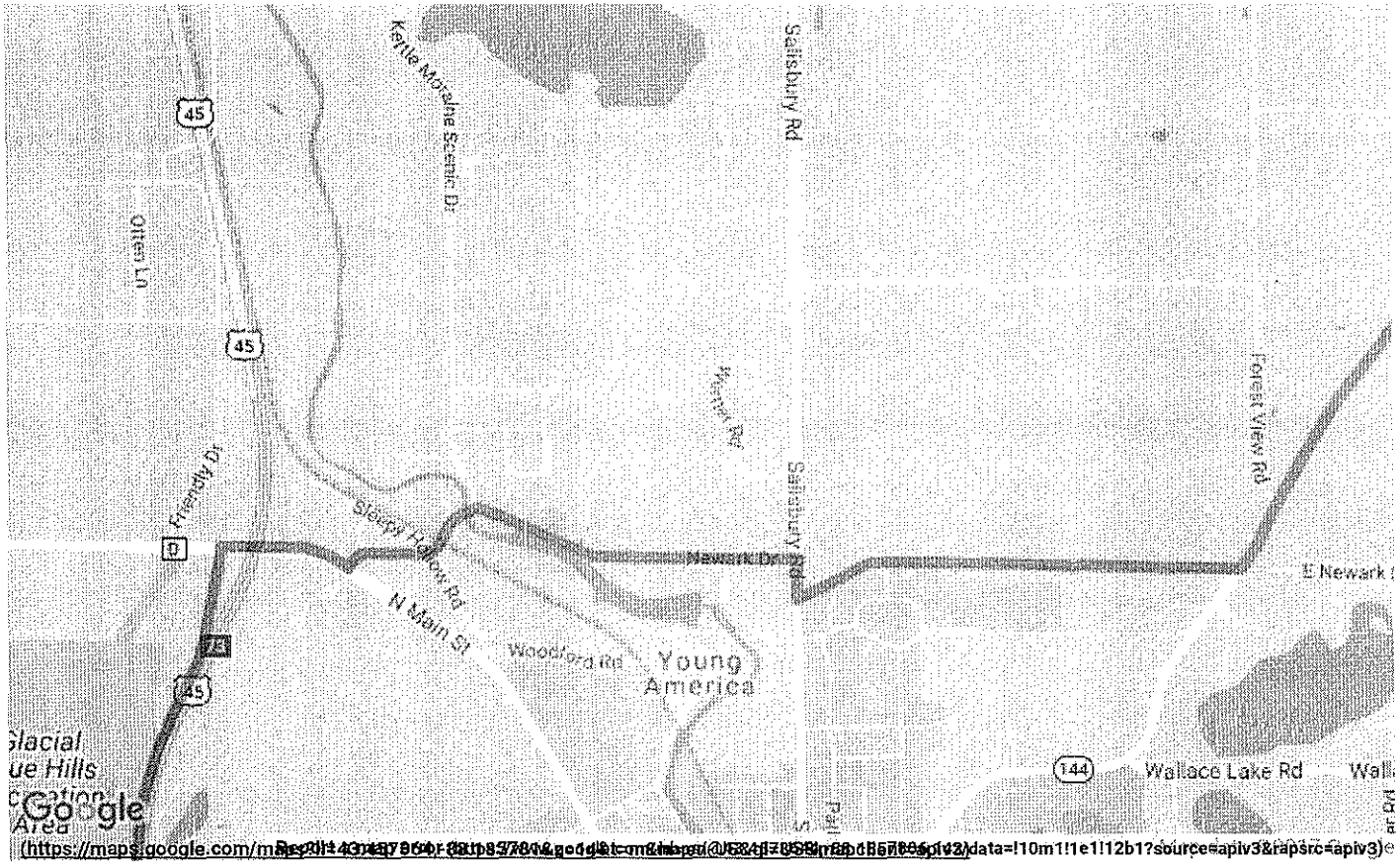

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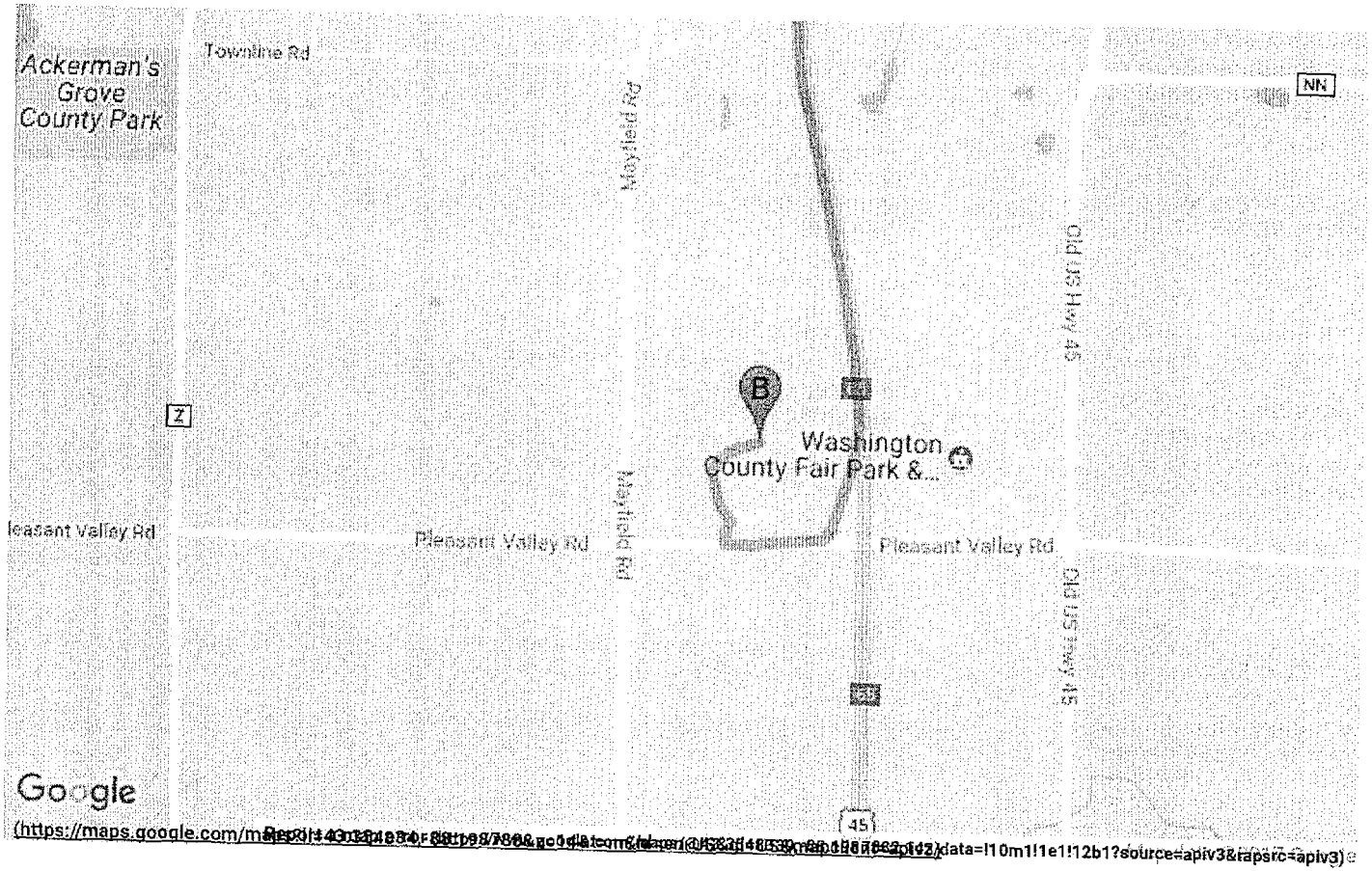

APPENDIX G/QUALIFICATIONS

Ronald J. Anderson, P.G.

Professional Titles

- Senior Hydrogeologist
- Project Manager

Credentials

- Licensed Professional Geologist in Wisconsin
- Licensed Professional Geologist in Minnesota
- Recognized by the State of Wisconsin Department of Natural Resources (Chapter NR712) as a qualified Hydrogeologist
- Certified by State of Wisconsin to conduct PECFA-funded LUST projects
- Certified tank closure site assessor (#41861) in Wisconsin
- Member of the Wisconsin Groundwater Association
- Member of the Minnesota Groundwater Association
- Member of the Federation of Environmental Technologist, Inc.

Education

Includes a BA in Earth Science from the University of Minnesota-Duluth. Applicable courses successfully completed include Hydrogeology, Applied Hydrogeology, Environmental Geology, Geological Field Methods, Geology Field Camp, Geomorphology, Structural Geology, Stratigraphy/Tectonics, Mineralogy/Petrology, Glacial/Quaternary Geology, Geology of North America, Oceanography, General Chemistry, Organic Chemistry, and Environmental Conservation.

Post-Graduate Education

Includes Personnel Protection and Safety, Conducting Comprehensive Environmental Property Assessments, Groundwater Flow and Well Hydraulics, Effective Techniques for Contaminated Groundwater Treatment, and numerous other continuing education classes and conferences.

Work Experience

Includes nine months with the Wisconsin Department of Natural Resources Leaking Underground Storage Tank Program regulating LUST sites and since June 1990, with METCO as a Hydrogeologist and Project Manager. Duties have included: managing, conducting, and reporting tank closure assessments; property assessment, LUST investigations; spill investigations; agricultural chemical investigations, dry cleaning chemical investigations, general geotechnical/environmental investigations; Geoprobe projects (soil, groundwater, soil gas sampling); drilling projects (soil boring and monitoring wells); and remedial projects. Since 1989, METCO has sampled/consulted over 1,465 environmental sites.

Jason T. Powell

Professional Title

- Staff Scientist

Credentials

- Recognized by the State of Wisconsin Department of Natural Resources (Chapter NR712) as a qualified Scientist.

Education

Includes a BS in Groundwater Management from the University of Wisconsin- Stevens Point. Applicable courses successfully completed include Hydrogeology, Applied Hydrogeology, Environmental Geology, Hydrogeology-Groundwater Flow Modeling, Groundwater Management, Structural Geology, Mineralogy, Glacial Geology, Soils, Soil Physics, Hydrology, Geochemistry, Water Chemistry, Organic Chemistry, General Chemistry, Environmental Issues.

Post-Graduate Education

40-hour OSHA Hazardous Materials Safety Training course with 8-hour refresher course.

Work Experience

With METCO since May 1992 as a Geoprobe Assistant and Geoprobe Operator. In June 1995 to July 1996 as a Environmental Technician. In July 1996 as a Staff Scientist. Duties have included: LUST investigations; general geotechnical/environmental investigations; Geoprobe projects (soil, groundwater sampling); drilling projects (soil boring and monitoring wells); remedial projects (sampling, pilot tests, system operation/maintenance) and project management.

Eric J. Dahl

Professional Title

- Hydrogeologist

Credentials

- Recognized by the State of Wisconsin Department of Natural Resources (Chapter NR712) as a qualified Hydrogeologist.
- Registered through the Wisconsin Department of Safety and Professional Services as a PECFA consultant (#823519).

Education

Includes B.S. in Geology from the University of Wisconsin-Eau Claire. Applicable courses successfully completed include Environmental Geology, Physical Hydrogeology, Chemical Hydrogeology, Computer Modeling in Hydrogeology, Aqueous Geochemistry, Field Geology I and II, Mineralogy and Petrology I and II, Sedimentology and Stratigraphy, Petroleum and Economic Geology, Earth Resources, Earth History, and Structural Geology.

Post-Graduate Education

40-hour OSHA Hazardous Materials Safety Training course with 8-hour refresher course.

Work Experience

With METCO since November 1999 as a Hydrogeologist. Duties have included: Site Investigations, Phase I and Phase II Environmental Site Assessments, Case Closure Requests/GIS Registry, Geoprobe projects (oversight, direction, and sampling), drilling projects/monitoring well installation (oversight, direction, and sampling), soil excavation projects (oversight, direction, and sampling), Geoprobe operation, and operation and maintenance of remedial systems.

Thomas P. Pignet, P.E.

Professional Titles

- Chemical Engineer
- Industrial Engineer

Credentials

- Licensed Professional Engineer in Wisconsin

Education

Undergraduate: B.S. in Chemical Engineering from the University of Wisconsin. Applicable courses include the standard chemistry curriculum - basic, physical, organic, etc. - plus engineering transport phenomena, chemical unit operations (e.g. separations), fluid mechanics, etc.

Post-Graduate Education

Ph.D. in Chemical Engineering from the University of Minnesota - with applicable special training in absorption & catalysis; M.S. in Industrial Engineering from the University of Wisconsin - Milwaukee - with special emphasis on statistical techniques and data analysis. Applicable further training: continuing education, semester-length courses in [1] Understanding Environmental & Safety Regulation; [2] Hazardous & Toxic Waste Management; plus a number of 1-2 day workshops - Fire & Explosion Safety; Small Quantity Generations of Hazardous Waste.

Work Experience

Includes ten years as a research chemical engineer with a large chemical manufacturer; one year as process development engineer and demonstration-scale test analyst on a unique coal gasification project; ten years in association with UW-M, teaching and consulting to industry on energy efficiency, waste minimization and productivity improvement. One year working with a small engineering consulting firm on energy, environmental, and process improvement projects, including LUST Investigations and Remediations. With METCO since February 2000. Duties include Remedial Action Plan preparation, pilot test design and performance, remedial systems design and implementation, and general management of METCO's remedial projects.

Jon Jensen

Professional Title

- Staff Scientist

Credentials

- Registered through the Wisconsin Department of Safety and Professional Services as a PECFA consultant (#1294924).

Education

Includes B.S. in Geography with and Environmental Science minor from University of Wisconsin – La Crosse: Applicable courses successfully completed include Interpretation of Aerial Photographs, Intro to GIS, Advanced Remote Sensing, Fundamentals of Cartography, Biogeography, and Conservation of Global Environments.

Work Experience

With METCO since July, 2014 as Staff Scientist. Duties include: soil and groundwater sampling, operation and maintenance of remedial systems, Geoprobe projects (oversight, direction, and sampling), site mapping, data reduction and analysis, and reporting.

Matthew C. Michalski

Professional Title

- Hydrogeologist

Credentials

- Registered through the Wisconsin Department of Safety and Professional Services as a PECFA consultant (#1261443).
- Member of the Wisconsin Groundwater Association
- Member of the Minnesota Groundwater Association
- Member of the National Groundwater Association
- Member of the American Institute of Professional Geologist
- Member of the Geological Society of America

Education

Includes B.S. in Geology with an emphasis in Hydrogeology and Water Chemistry from the University of Wisconsin-Eau Claire, completion of Western Michigan University's Hydrogeology Field Camp, and a B.S. In Geography from the University of Wisconsin-La Crosse. Applicable courses successfully completed include Hydrogeology, Contaminant Hydrogeology, Aqueous Geochemistry, Geomorphology and Aerial Photography interpretation, Sedimentology and Stratigraphy, Structural Geology, Mineralogy and Petrology, Hazardous Waste Operation and Emergency Response, Surface Geophysics, Principles and Practices of Groundwater Sampling and Monitoring, Principles and Practices of Aquifer Testing, Principles of Well Drilling and Installation, Remediation Design and Implementation, Water Resources, Environmental Hazards and Land Use, and Advanced Map Design.

Post-Graduate Education

40-hour OSHA Hazardous Materials Safety Training course with 8-hour refresher course.

Work Experience

With METCO since May 2016 as a Hydrogeologist and from August 2012 to August 2014 as a Staff scientist. Duties have included: soil and groundwater sampling, Site Investigations, Phase I and Phase II Environmental Site Assessments, Case Closure Requests/GIS Registry, Geoprobe projects (oversight, direction, and sampling), drilling projects/monitoring well installation (oversight, direction, and sampling), and operation and maintenance of remedial systems, site mapping, data reduction and analysis, and reporting.

Bryce L. Kujawa

Professional Title

- Staff Scientist

Credentials

- Registered through the Wisconsin Department of Safety and Professional Services as a PECFA consultant (#17138).
- Member of the Geological Society of America

Education

Includes B.S. in Geology from the University of Wisconsin-Eau Claire. Applicable courses successfully completed include Hydrogeology, Contaminant Hydrogeology, Field Geology I and II, Mineralogy and Petrology I and II, Sedimentology and Stratigraphy, Petroleum and Economic Geology, Earth History, Physical Geology, Structural Geology, Computers in Geology, Geographic Informational Systems, Global Environmental Change, and General Chemistry.

Work Experience

With METCO since June, 2016 as Staff Scientist. Duties include: soil and groundwater sampling, operation and maintenance of remedial systems, Geoprobe projects (oversight, direction, and sampling), site mapping, data reduction and analysis, and reporting.

LIST OF ACRONYMS

AST - Aboveground Storage Tank
ASTM - American Society for Testing and Materials
Cd - Cadmium
DOT - Department of Transportation
DRO - Diesel Range Organics
ES - Enforcement Standards
gpm - gallons per minute
GRO - Gasoline Range Organics
ID - inside-diameter
LAST - Leaking Aboveground Storage Tank
LUST - Leaking Underground Storage Tank
MSL - Mean Sea Level
MTBE - Methyl-tert-butyl ether
MW - Monitoring Well
NIOSH - National Institute for Occupational Safety & Health
NR - Natural Resources
OD - outside-diameter
PAH - Polynuclear Aromatic Hydrocarbons
PAL - Preventive Action Limits
Pb - Lead
PECFA - Petroleum Environmental Cleanup Fund
PID - Photoionization Detector
POTW - Publicly Owned Treatment Works
ppb ug/kg - parts per billion
ppm mg/kg - parts per million
psi - pounds per square inch
PVC - Polyvinyl Chloride
PVOC - Petroleum Volatile Organic Compounds
RAP - Remedial Action Plan
scfm - standard cubic feet per minute
SVE - Soil Vapor Extraction
USCS - Unified Soil Classification System
USGS - United States Geological Survey
UST - Underground Storage Tank
VOC - Volatile Organic Compounds
WDNR - Wisconsin Department of Natural Resources
WPDES - Wisconsin Pollutant Discharge Elimination System