

Site Investigation Field Procedures Workplan

Lloyd's Seneca Oasis/Betty's Bonzai
4885 State Highway 73
Vesper (Town of Sigel), Wisconsin

June 23, 2014

by METCO

WDNR File Reference #: 03-72-000291

PECFA Claim #: 54489-9716-85



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This document was prepared by:

A handwritten signature in black ink, appearing to read "Jason T. Powell", written over a horizontal line.

Jason T. Powell
Staff Scientist

A handwritten signature in black ink, appearing to read "Ronald J. Anderson", written over a horizontal line.

Ronald J. Anderson, P.G.
Senior Hydrogeologist/Project Manager



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June 23, 2014

WDNR BRRTS#: 03-72-000291
PECFA Claim #: 54489-9716-85

Karen Kubisiak
Wood County
400 Market Street
Wisconsin Rapids, WI 54495-8095

Dear Ms. Kubisiak,

Enclosed is our "Site Investigation Field Procedures Workplan" concerning the Lloyd's Seneca Oasis/Betty's Bonzai site in Vesper (Town of Sigel), 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,

A handwritten signature in black ink that reads "Jason T. Powell". The signature is fluid and cursive, with a long horizontal stroke extending to the left.

Jason T. Powell
Staff Scientist

C: Tom Hvizdak – WDNR

**Site Investigation Field Procedures Workplan - METCO
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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
HNU - brand name for Photoionization Detector
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

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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.

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INTRODUCTION

Site Name

Lloyd's Seneca Oasis/Betty's Bonzai

Site Address

4885 State Highway 73
Vesper (Town of Sigel), Wisconsin

Legal Description

NW ¼, SW ¼, Section 30, Township 23 North, Range 5 East, Wood County

Contact or Client

Wood County
Attn: Karen Kubisiak
400 Market Street
Wisconsin Rapids, WI 54495-8095
(715) 421-8484

WDNR Project Manager

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Consultant

METCO
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SITE BACKGROUND

Facility

Currently the subject property is vacant, but formerly operated as a tavern for many years. Retail fuel sales at the property date back to 1927 when a lease agreement was made between former property owner Harry Griffin and Wisconsin Rapids Oil Co. This lease was terminated in 1941. However, retail fuel sales continued at the property until the 1970's. In the 1980's, two 500 gallon gasoline UST's were removed from the subject property.

In 1990, the on-site potable well was sampled by the WDNR for VOC analysis. Petroleum contamination was detected in the on-site potable well and the WDNR required that a site investigation be completed.

In the early 1990's, a new potable well was installed at the subject property and the contaminated potable well was abandoned. Since then, the WDNR has periodically sampled the on-site potable well and other nearby potable wells for VOC analysis. Petroleum contamination has also been detected in two potable wells to the south of the subject property at 5488 CTH D (Vilbaum Residence) and 5470 CTH D (St Paul's Lutheran Church).

The nearest known LUST site is the Ralph Hammel Forest Products site, which is located approximately 1,300 feet to the south. Currently, it does not appear that the subject property is impacting or being impacted by this site.

Potential Risks and Impacts

The subject property and surrounding properties are all served by private potable wells. The on site potable well exists approximately 75 feet to the southeast of the removed UST systems. The location of the on-site potable well and any other potable wells within 500 feet of the former UST systems will be documented during the site investigation. The on-site potable well and other nearby potable wells will be sampled for VOC method 524.2 during the investigation.

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, the subject property is located in the northern portion of the Central Wisconsin River Basin. The topography of this

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area is characterized by a gently rolling till plain that has been slightly modified by stream erosion. This area has many crystalline rock outcrops that project through the glacial deposits. The glacial deposits in this area are generally less than 50 feet thick.

The elevation of the site is approximately 1085 feet above Mean Sea Level (MSL). See Appendix A for site location.

Geology

Native unconsolidated materials in this area generally consist of 5 to 10 feet of sand underlain by sandstone. The sandstone bedrock is approximately 25 to 30 feet thick in this area. The sandstone is underlain by granite at approximately 30 to 40 feet below ground surface. Some local well construction logs indicate a clay unit between the sandstone and granite.

Hydrology

The nearest surface water is an irrigation ditch, which exists approximately 1,400 feet to the west of the subject property.

Hydrogeology

Groundwater exists at approximately 3-8 feet below ground surface in this area. Groundwater flow direction is expected to be generally toward the south.

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 Project

METCO has proposed a one day Geoprobe Project. We propose 15 to 20 borings to 8-10 feet with soil and groundwater sampling in the area of the removed USTs. 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.

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The goal of the Geoprobe 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 8 to 10 boreholes to be completed on/off site. METCO has also proposed 6 to 8 monitoring wells and at least 1 piezometer well 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.

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.

HNU 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

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

To take readings, the HNU probe is inserted into the plastic bag halfway between the sample and the highest meter response recorded. The samples are screened with a MODEL DL-102 HNU 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.

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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

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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.

Variations

We are not aware of any variations needed at this time.

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.

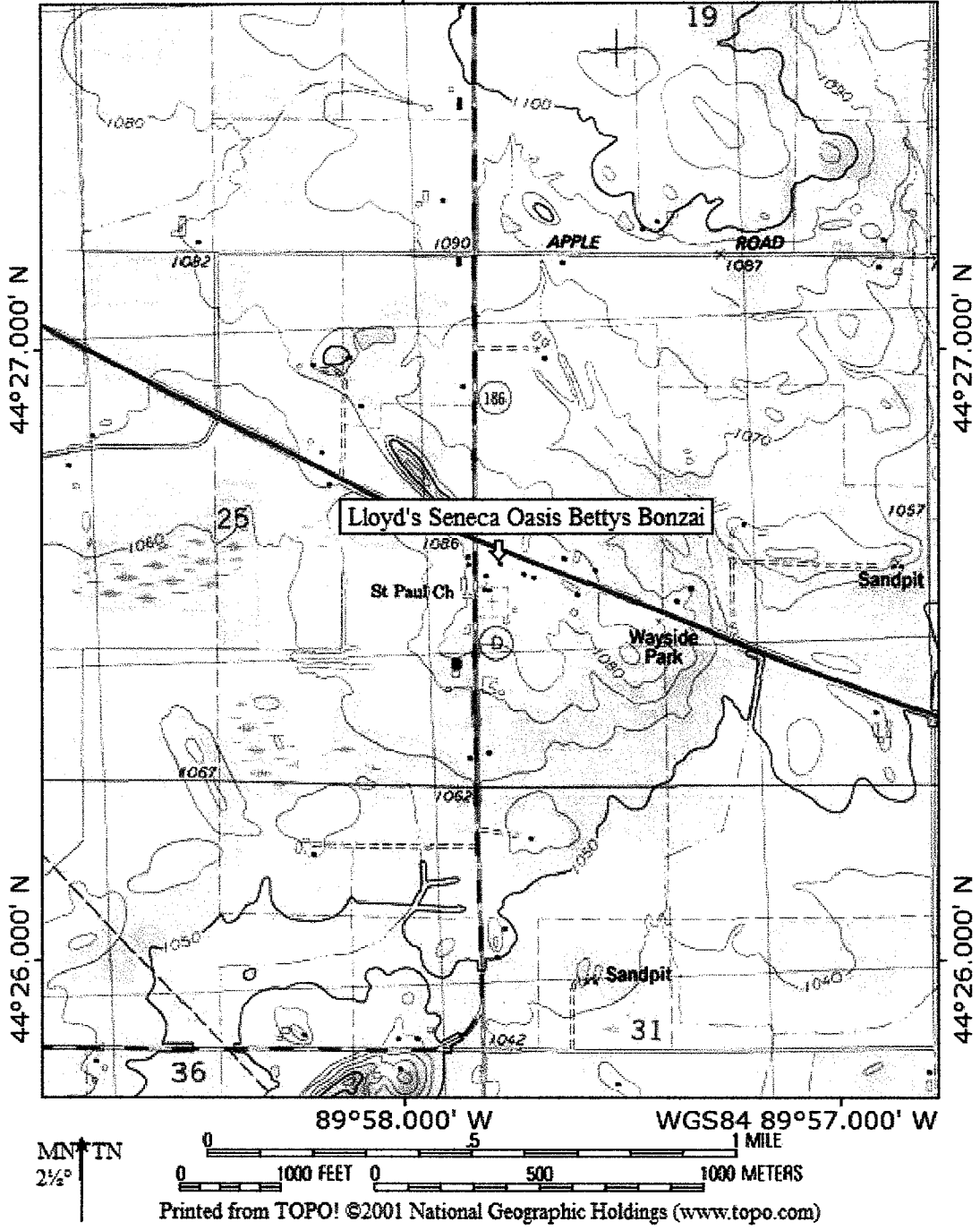
- 1) METCO submits a Site Investigation Project proposal to client (done).
- 2) Proposal acceptance by client. METCO notifies the WDNR that a consultant has been contracted (done).
- 3) Client obtains PECFA Packet and Site Eligibility Letter from PECFA (done).
- 4) METCO submits a Site Investigation Field Procedures Workplan to client and WDNR for review and approval (6/23/14).
- 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).

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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 or WDSPS. 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.

TOPO! map printed on 06/19/14 from "Wisconsin.tpo" and "Untitled.tpg"
 89°58.000' W WGS84 89°57.000' W



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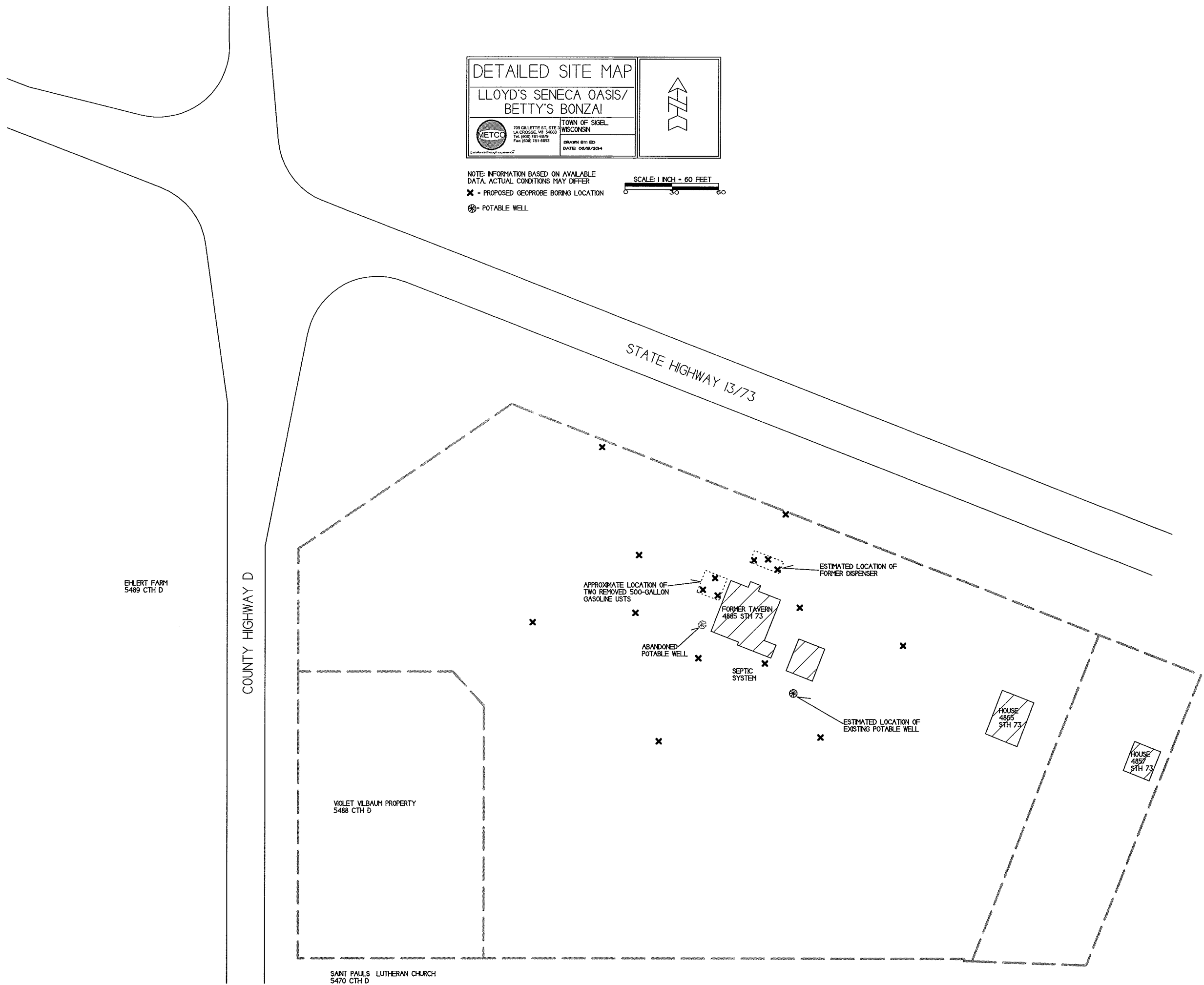
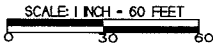
<p>B.1.a LOCATION MAP CONTOUR INTERVAL 10 FEET</p>
<p>LLOYD'S SENECA OASIS BETTYS BONZAI – SIEGEL, WI</p>
<p>SEAMLESS USGS TOPOGRAPHIC MAPS ON CD-ROM</p>

DETAILED SITE MAP LLOYD'S SENECA OASIS/ BETTY'S BONZAI		
	TOWN OF SIGEL WISCONSIN DRAWN BY: ED DATE: 06/26/2014	

NOTE: INFORMATION BASED ON AVAILABLE DATA. ACTUAL CONDITIONS MAY DIFFER.

✕ - PROPOSED GEOPROBE BORING LOCATION

⊗ - POTABLE WELL



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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 11HR 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 (3300-5B)
 - 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

**Site Investigation Field Procedures Workplan - METCO
Lloyd's Seneca Oasis/Betty's Bonzai**

APPENDIX C/LUST SAMPLING GUIDELINES

LUST and Petroleum Analytical and QA Guidance
July 1993 Revision

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 ₂ SO 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 ₂ SO 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 ₂ SO 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 ₂ SO 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 ₂ SO ₄	28 days
Organic Carbon SW846 9060/ EPA 415.1	40 ml Glass	4°C, pH<2 with H ₂ SO ₄ or HCL	28 days
Phenol, Total EPA 420.1	1 Liter Glass	4°C, pH<2 with H ₂ SO ₄	28 days
Phosphorus, Total EPA 365.3	250 mL HDPE	4°C, pH<2 with H ₂ SO 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.

**Site Investigation Field Procedures Workplan - METCO
Lloyd's Seneca Oasis/Betty's Bonzai**

APPENDIX D/WDNR DOCUMENTS

Residential setting. Not-To-Exceed D-C RCLs from web-calculator at: http://epa-prgs.ornl.gov/cgi-bin/chemicals/csl_search (Chicago as climatic zone).
 = cancer; nc = non-cancer; Csat = soil saturation concentration; ceiling = 10%.

Basis: ca

----> If web-calculator result or Csat exceeds 10% by weight (the ceiling limit concentration defined in RSL Users Guide), Not-to-Exceed D-C RCL defaults to 100,000 ppm.

1. Enter data in yellow cells. Numeric only values under "INPUT Site Data." For ND, use detection limit. Do not type '-', 'NA' nor 'space bar.' Leave purple cells "as is."

2. After completing data entry, See Summary in Row 872.

Site Name:

Sample ID:

Contaminant	CAS Number	NC RCL (mg/kg)	C RCL (mg/kg)	Not-To-Exceed D-C RCL (mg/kg)	Basis	INPUT Site Data (mg/kg)	Comparison / Hazard Index / Cumulative Cancer Risk			
							Flag E = Individual Exceedance?	Hazard Quotient (HQ) from Data	Cancer Risk (CR) from Data	
Benzene	71-43-2	111	1.49	1.49	ca			Target CR used: 1.00E-06		
Ethylbenzene	100-41-4	4220	7.47	7.47	ca					
Toluene	108-88-3	5300	-	818	Csat					
Xylenes	1330-20-7	890	-	258	Csat					
Methyl tert-Butyl Ether (MTBE)	1634-04-4	23800	59.4	59.4	ca					
Dichloroethane, 1,2-	107-06-2	46.7	0.61	0.61	ca					
Dibromomethane, 1,2-	106-93-4	107	0.05	0.05	ca					
Trichloroethylene	79-01-6	6.05	0.64	0.64	ca					
Tetrachloroethylene	127-18-4	115	30.7	30.7	ca					
Vinyl Chloride	75-01-4	93.3	0.07	0.07	ca					
Dichloroethylene, 1,1-	75-35-4	342	-	342	nc					
Dichloroethylene, 1,2-trans-	156-60-5	211	-	211	nc					
Dichloroethylene, 1,2-cis-	156-59-2	156	-	156	nc					
Trichloroethane, 1,1,1-	71-55-6	12300	-	640	Csat					
Carbon Tetrachloride	56-23-5	137	0.85	0.85	ca					
Trimethylbenzene, 1,2,4-	95-63-6	89.8	-	89.8	nc					
Trimethylbenzene, 1,3,5-	108-67-8	782	-	182	Csat					
Naphthalene	91-20-3	188	5.15	5.15	ca					
Benzo[a]pyrene	50-32-6	-	0.01	0.01	ca					
Acenaphthene	83-32-9	3440	-	3440	nc					
Anthracene	120-12-7	17200	-	17200	nc					
Benzo[a]anthracene	56-55-3	-	0.15	0.15	ca					
Benzo[j]fluoranthene	205-82-3	-	0.38	0.38	ca					
Benzo[b]fluoranthene	205-99-2	-	0.15	0.15	ca					
Benzo[k]fluoranthene	207-08-9	-	1.48	1.48	ca					
Chrysene	218-01-9	-	14.8	14.8	ca					
Dibenz[a,h]anthracene	53-70-3	-	0.01	0.01	ca					
Dibenzo[a,e]pyrene	192-65-4	-	0.04	0.04	ca					
Dimethylbenz[a]anthracene, 7,12-	57-97-6	-	0	0	ca					
Fluoranthene	206-44-0	2290	-	2290	nc					
Fluorene	86-73-7	2290	-	2290	nc					
Indeno[1,2,3-cd]pyrene	193-39-5	-	0.15	0.15	ca					
Methylnaphthalene, 1-	90-12-0	4010	15.6	15.6	ca					
Methylnaphthalene, 2-	91-57-6	229	-	229	nc					
Nilropyrene, 4-	57835-92-4	-	0.38	0.38	ca					
Pyrene	129-00-0	1720	-	1720	nc					
Cadmium (Diet)	7440-43-9	70.2	2110	70.2	nc					
Lead and Compounds	7439-92-1	400	-	400	nc					
Test1 Chem(DRO)	Wis. DRO			100						
Test2 Chem(GRO)	Wis. GRO			100						
Type BRRTS No. Here (If Known)							Exceedance Count / Hazard Index / Cumulative Cancer Risk:	0	0.00E+00	0.0E+00
							To Pass, data must meet all these criteria:	Exceedance HI	≤ Cumulative CR	
							Count = 0	1.00E+00	≤ 1e-05	
Bottom-Line:							Soil Data Entry Needed!			

NR140 Substance	NR 140 CAS	Fed MCL (ug/l) (If Red, MCL>ES)	NR 140 ES (ug/l)	RCL-gw (mg/kg) DF=1	Use 2, or input the calculated site-specific DF -->	2.00	INPUT NUMERIC Site Data Max (mg/kg)	Flag E = Individual Exceedance!
Acetochlor	34256-82-1	-	7	5.58E-03				
Acetone	67-64-1	-	9000	1.85E+00				
Alachlor	15972-60-8	2	2	1.65E-03				
Aldicarb	116-06-3	3	10	2.49E-03				
Aluminum	7429-90-5	-	200	3.01E+02				
Antimony	7440-36-0	6	6	2.71E-01				
Anthracene	120-12-7	-	3000	9.84E+01				
Arsenic	7440-38-2	10	10	2.92E-01				
Atrazine, total chlorinated residues	1912-24-9	3	3	1.95E-03				
Barium	7440-39-3	2000	2000	8.24E+01				
Bentazon	25057-89-0	-	300	6.59E-02				
Benzene	71-43-2	5	5	2.56E-03				
Benzo(a)pyrene (PAH)	50-32-8	0.2	0.2	2.35E-01				
Benzo(b)fluoranthene (PAH)	205-99-2	-	0.2	2.40E-01				
Beryllium	7440-41-7	4	4	3.16E+00				
Boron	7440-42-8	-	1000	3.20E+00				
Bromodichloromethane (THM)	75-27-4	80	0.6	1.63E-04				
Bromoform (THM)	75-25-2	80	4.4	1.17E-03				
Bromomethane	74-83-9	-	10	2.53E-03				
Butylate	2008-41-5	-	400	3.88E-01				
Cadmium	7440-43-9	5	5	3.76E-01				
Carbaryl	63-25-2	-	40	3.64E-02				
Carbofuran	1563-66-2	40	40	1.56E-02				
Carbon disulfide	75-15-0	-	1000	2.97E-01				
Carbon tetrachloride	56-23-5	5	5	1.94E-03				
Chloramben	133-90-4	-	150	3.63E-02				
Chlorodifluoromethane	75-45-6	-	7000	2.89E+00				
Chloroethane	75-00-3	-	400	1.13E-01				
Chloroform (THM)	67-66-3	80	6	1.67E-03				
Chlorpyrifos	2921-88-2	-	2	2.95E-02				
Chloromethane	74-87-3	-	30	7.76E-03				
Chromium (total)	7440-47-3	100	100	1.80E+05				
Chrysene (PAH)	218-01-9	-	0.2	7.25E-02				
Cobalt	7440-48-4	-	40	1.81E+00				
Copper	7440-50-8	1300	1300	4.58E+01				
Cyanazine	21725-46-2	-	1	4.68E-04				
Cyanide, free	57-12-5	200	200	2.02E+00				
Dacthal (DCPA)	1861-32-1	-	70	8.56E-02				
1,2-Dibromoethane	106-93-4	0.05	0.05	1.41E-05				
Dibromochloromethane (THM)	124-48-1	80	60	1.60E-02				
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	0.2	0.2	8.64E-05				
Dibutyl phthalate	84-74-2	-	1000	2.52E+00				
Dicamba	1918-00-9	-	300	7.76E-02				
1,2-Dichlorobenzene	95-50-1	600	600	5.84E-01				
1,3-Dichlorobenzene	541-73-1	-	600	5.76E-01				
1,4-Dichlorobenzene	106-46-7	75	75	7.20E-02				
Dichlorodifluoromethane	75-71-8	-	1000	1.54E+00				
1,1-Dichloroethane	75-34-3	-	850	2.42E-01				
1,2-Dichloroethane	107-06-2	5	5	1.42E-03				
1,1-Dichloroethylene	75-35-4	7	7	2.51E-03				
1,2-Dichloroethylene (cis)	156-59-2	70	70	2.06E-02				
1,2-Dichloroethylene (trans)	156-60-5	100	100	2.94E-02				
2,4-Dichlorophenoxyacetic acid (2,4-D)	94-75-7	70	70	1.81E-02				
1,2-Dichloropropane	78-87-5	5	5	1.66E-03				
1,3-Dichloropropane (cis/trans) (Telone)	542-75-6	-	0.4	1.43E-04				
Di (2-ethylhexyl) phthalate	117-81-7	6	6	1.44E+00				
Dimethoate	60-51-5	-	2	4.51E-04				
2,4-Dinitrotoluene	121-14-2	-	0.05	6.76E-05				
2,6-Dinitrotoluene	606-20-2	-	0.05	6.88E-05				
Dinitrotoluene, Total Residues	25321-14-6	-	0.05	6.89E-05				
Dinoseb	88-85-7	7	7	6.15E-02				
1,4-Dioxane (p-dioxane)	123-91-1	-	3	6.18E-04				
Dioxin (2,3,7,8-TCDD)	1746-01-6	0	0	1.50E-05				
Endrin	72-20-8	2	2	8.08E-02				
EPTC	759-94-4	-	250	1.32E-01				

Type BRTS No. Here (If Known). Assess groundwater levels separately.



Re-assess if Cr-VI present

Residual Contaminant Levels Protective of Groundwater Quality
 (Soil-to-Groundwater Scenario Results from: http://epa-prgs.ornl.gov/cgi-bin/chemicals/csl_search)

NR140 Substance	NR 140 CAS	Fed MCL (ug/l) (If Red, MCL>ES)	NR 140 ES (ug/l)	RCL-gw (mg/kg) DF=1	Use 2, or input the calculated site-specific DF ->	2.00	INPUT NUMERIC Site Data Max (mg/kg)	Flag E = Individual Exceedance!
Ethylbenzene	100-41-4	700	700	7.85E-01				
Ethyl Ether (Diethyl Ether)	60-29-7	-	1000	2.24E-01				
Ethylene glycol	107-21-1	-	14000	2.82E+00				
Fluoranthene	206-44-0	-	400	4.44E+01				
Fluorene (PAH)	86-73-7	-	400	7.41E+00				
Fluoride	7782-41-4	4000	4000	6.01E+02				
Fluorotrichloromethane	75-69-4	-	3490	2.23E+00				
Formaldehyde	50-00-0	-	1000	2.02E-01				
Heptachlor	76-44-8	0.4	0.4	3.31E-02				
Heptachlor epoxide	1024-57-3	0.2	0.2	4.08E-03				
Hexachlorobenzene	118-74-1	1	1	1.26E-02				
n-Hexane	110-54-3	-	600	4.22E+00				
Lead	7439-92-1	15	15	1.35E+01				
Lindane	58-89-9	0.2	0.2	1.16E-03				
Manganese	7439-96-5	-	300	1.96E+01				
Mercury	7439-97-6	2	2	1.04E-01				
Methanol	67-56-1	-	5000	1.01E+00				
Methoxychlor	72-43-5	40	40	2.16E+00				
Methylene chloride	75-09-2	5	5	1.28E-03				
Methyl ethyl ketone (MEK)	78-93-3	-	4000	8.39E-01				
Methyl isobutyl ketone (MIBK)	108-10-1	-	500	1.13E-01				
Methyl tert-butyl ether (MTBE)	1634-04-4	-	60	1.35E-02				
Metolachlor/s-Metolachlor	51218-45-2	-	100	1.17E-01				
Metribuzin	21087-64-9	-	70	2.14E-02				
Molybdenum	7439-98-7	-	40	8.08E-01				
Monochlorobenzene	108-90-7	100	100	6.79E-02				
Naphthalene	91-20-3	-	100	3.29E-01				
Nickel	7440-02-0	-	100	6.50E+00				
N-Nitrosodiphenylamine (NDPA)	86-30-6	-	7	3.82E-02				
Pentachlorophenol (PCP)	87-86-5	1	1	1.01E-02				
Phenol	108-95-2	-	2000	1.15E+00				
Picloram	1918-02-1	500	500	1.39E-01				
Polychlorinated biphenyls (PCBs)	1336-36-3	0.5	0.03	4.69E-03				
Prometon	1610-18-0	-	100	4.75E-02				
Propazine	139-40-2	-	10	8.86E-03				
Pyrene (PAH)	129-00-0	-	250	2.72E+01				
Pyridine	110-86-1	-	10	3.44E-03				
Selenium	7782-49-2	50	50	2.60E-01				
Silver	7440-22-4	-	50	4.25E-01				
Simazine	122-34-9	4	4	1.97E-03				
Styrene	100-42-5	100	100	1.10E-01				
Tertiary Butyl Alcohol (TBA)	75-65-0	-	12	2.45E-03				
1,1,1,2-Tetrachloroethane	630-20-6	-	70	2.67E-02				
1,1,2,2-Tetrachloroethane	79-34-5	-	0.2	7.80E-05				
Tetrachloroethylene (PCE)	127-18-4	5	5	2.27E-03				
Tetrahydrofuran	109-99-9	-	50	1.11E-02				
Thallium	7440-28-0	2	2	1.42E-01				
Toluene	108-88-3	1000	800	5.54E-01				
Toxaphene	8001-35-2	3	3	4.64E-01				
1,2,4-Trichlorobenzene	120-82-1	70	70	2.04E-01				
1,1,1-Trichloroethane	71-55-6	200	200	7.01E-02				
1,1,2-Trichloroethane	79-00-5	5	5	1.62E-03				
Trichloroethylene (TCE)	79-01-6	5	5	1.79E-03				
2,4,5-Trichlorophenoxyacetic acid (2,4,5-TCP)	93-72-1	50	50	2.75E-02				
1,2,3-Trichloropropane	96-18-4	-	60	2.60E-02				
Trifluralin	1582-09-8	-	7.5	2.48E-01				
Toxaphene (1,2,4- and 1,3,5- combined)	95-63-6 / 108-67-8	-	480	6.90E-01				
Vanadium	7440-62-2	-	-	-				
Vinyl chloride	75-01-4	2	0.2	6.90E-05				
Xylenes (m-, o-, p- combined)	1330-20-7	10000	2000	1.97E+00				

Type BRRTS No. Here (If Known). Assess groundwater levels separately.

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	Volatilization		Soil 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)	Ingestion		Dermal		Inhalation	
	Factor (m ³ /kg)	Factor (m ³ /kg)							SL Child HQ=1 (mg/kg)	SL Child HQ=1 (mg/kg)	SL Child HQ=1 (mg/kg)	SL Child HQ=1 (mg/kg)		
Benzene	5.49E+03	1.82E+03	1.56E+09	1.16E+01	1.71E+00	1.49E+00	1.49E+00	3.13E+02	3.13E+02	-	-	1.72E+02	-	-
Cadmium (Diet)	-	-	1.56E+09	-	2.11E+03	2.11E+03	2.11E+03	7.82E+01	7.82E+01	6.98E+02	6.98E+02	1.63E+04	-	-
Carbon Tetrachloride	2.32E+03	4.58E+02	1.56E+09	9.15E+00	9.42E-01	8.54E-01	8.54E-01	3.13E+02	3.13E+02	-	-	2.42E+02	-	-
Dibromoethane, 1,2-	1.34E+04	1.34E+03	1.56E+09	3.20E-01	5.45E-02	4.65E-02	4.65E-02	7.04E+02	7.04E+02	-	-	1.26E+02	-	-
Dichloroethane, 1,2-	7.11E+03	2.98E+03	1.56E+09	7.04E+00	6.65E-01	6.08E-01	6.08E-01	4.69E+02	4.69E+02	-	-	5.19E+01	-	-
Dichloroethylene, 1,1-	1.80E+03	1.19E+03	1.56E+09	-	-	-	-	3.91E+03	3.91E+03	-	-	3.75E+02	-	-
Dichloroethylene, 1,2-cis-	3.88E+03	2.37E+03	1.56E+09	-	-	-	-	1.56E+02	1.56E+02	-	-	-	-	-
Dichloroethylene, 1,2-trans-	3.90E+03	1.67E+03	1.56E+09	-	-	-	-	1.56E+03	1.56E+03	-	-	2.44E+02	-	-
Ethylbenzene	8.81E+03	4.80E+02	1.56E+09	5.82E+01	8.57E+00	7.47E+00	7.47E+00	7.82E+03	7.82E+03	-	-	9.18E+03	-	-
Lead and Compounds	-	-	1.56E+09	-	-	-	-	-	-	-	-	-	-	-
Methyl tert-Butyl Ether (MTBE)	7.62E+03	8.87E+03	1.56E+09	3.56E+02	7.13E+01	5.94E+01	5.94E+01	-	-	-	-	2.38E+04	-	-
Acenaphthene	2.19E+05	-	1.56E+09	-	-	-	-	4.69E+03	4.69E+03	1.29E+04	1.29E+04	-	-	-
Anthracene	8.13E+05	-	1.56E+09	-	-	-	-	2.35E+04	2.35E+04	6.45E+04	6.45E+04	-	-	-
Benz[a]anthracene	-	-	1.56E+09	2.04E-01	5.32E-01	5.32E-01	5.32E-01	1.36E+04	1.36E+04	1.48E-01	1.48E-01	-	-	-
Benzofluoranthene	-	-	1.56E+09	5.34E-01	1.30E+00	3.45E+04	3.45E+04	3.78E-01	3.78E-01	-	-	-	-	-
Benzofluoranthene	-	-	1.56E+09	2.04E-02	5.32E-02	1.36E+03	1.36E+03	1.48E-02	1.48E-02	-	-	-	-	-
Benzofluoranthene	-	-	1.56E+09	2.04E-01	5.32E-01	1.36E+04	1.36E+04	1.48E-01	1.48E-01	-	-	-	-	-
Chrysene	-	-	1.56E+09	2.04E+00	5.32E+00	1.36E+04	1.36E+04	1.48E+00	1.48E+00	-	-	-	-	-
Dibenz[a,h]anthracene	-	-	1.56E+09	2.04E-01	5.32E-01	1.36E+05	1.36E+05	1.48E+01	1.48E+01	-	-	-	-	-
Dibenz[a,e]pyrene	-	-	1.56E+09	2.04E-02	5.32E-02	1.25E+03	1.25E+03	1.48E-02	1.48E-02	-	-	-	-	-
Dimethylbenz(a)anthracene, 7,12-	-	-	1.56E+09	5.34E-02	1.30E-01	3.45E+03	3.45E+03	3.78E-02	3.78E-02	-	-	-	-	-
Fluoranthene	-	-	1.56E+09	5.97E-04	1.55E-03	2.11E+01	2.11E+01	4.31E-04	4.31E-04	-	-	-	-	-
Fluorene	4.37E+05	-	1.56E+09	-	-	-	-	3.13E+03	3.13E+03	8.59E+03	8.59E+03	-	-	-
Indeno[1,2,3-cd]pyrene	-	-	1.56E+09	2.04E-01	5.32E-01	1.36E+04	1.36E+04	1.48E-01	1.48E-01	-	-	-	-	-
Methylnaphthalene, 1-	9.11E+04	-	1.56E+09	2.21E+01	5.36E+01	1.56E+01	1.56E+01	5.48E+03	5.48E+03	1.50E+04	1.50E+04	-	-	-
Methylnaphthalene, 2-	9.01E+04	-	1.56E+09	-	-	-	-	3.13E+02	3.13E+02	8.59E+02	8.59E+02	-	-	-
Naphthalene	7.20E+04	-	1.56E+09	-	-	5.15E+00	5.15E+00	1.56E+03	1.56E+03	4.30E+03	4.30E+03	2.25E+02	-	-

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	Volatilization		Soil Saturation Concentration (mg/kg)	Particulate Emission Factor (m ³ /kg)	Ingestion		Dermal		Inhalation		Carcinogenic		Ingestion		Dermal		Inhalation	
	Factor (m ³ /kg)	SL (mg/kg)			TR=1.0E-6 (mg/kg)	SL (mg/kg)	TR=1.0E-6 (mg/kg)	SL (mg/kg)	TR=1.0E-6 (mg/kg)	SL (mg/kg)	TR=1.0E-6 (mg/kg)	SL (mg/kg)	TR=1.0E-6 (mg/kg)	SL (mg/kg)	TR=1.0E-6 (mg/kg)	SL Child HQ=1 (mg/kg)	SL Child HQ=1 (mg/kg)	SL Child HQ=1 (mg/kg)
Nitropyrene, 4-	-	-	-	1.56E+09	5.34E-01	1.30E+00	3.45E+04	3.78E-01	-	-	-	-	-	-	-	-	-	-
Pyrene	3.70E+06	-	-	1.56E+09	-	-	-	-	-	-	-	-	-	2.35E+03	6.45E+03	-	-	-
Tetrachloroethylene	3.65E+03	1.66E+02	1.66E+02	1.56E+09	3.05E+02	-	3.41E+01	3.07E+01	-	-	-	-	-	4.69E+02	-	-	-	1.52E+02
Toluene	6.66E+03	8.18E+02	8.18E+02	1.56E+09	-	-	-	-	-	-	-	-	-	6.26E+03	-	-	-	3.47E+04
Trichloroethane, 1,1,1-	2.56E+03	6.40E+02	6.40E+02	1.56E+09	-	-	-	-	-	-	-	-	-	1.56E+05	-	-	-	1.34E+04
Trichloroethylene	3.43E+03	6.92E+02	6.92E+02	1.56E+09	3.24E+00	-	8.04E-01	6.44E-01	-	-	-	-	-	3.91E+01	-	-	-	7.16E+00
Trimethylbenzene, 1,2,4-	1.23E+04	2.19E+02	2.19E+02	1.56E+09	-	-	-	-	-	-	-	-	-	-	-	-	-	8.98E+01
Trimethylbenzene, 1,3,5-	1.03E+04	1.82E+02	1.82E+02	1.56E+09	-	-	-	-	-	-	-	-	-	7.82E+02	-	-	-	-
Vinyl Chloride	1.49E+03	3.92E+03	3.92E+03	1.56E+09	9.32E-02	-	2.39E-01	6.71E-02	-	-	-	-	-	2.35E+02	-	-	-	1.55E+02
Xylenes	9.05E+03	2.58E+02	2.58E+02	1.56E+09	-	-	-	-	-	-	-	-	-	1.56E+04	-	-	-	9.44E+02

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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 rec. (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.

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

Unofficial Text (See Printed Volume). Current through date and Register shown on Title Page.

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

Unofficial Text (See Printed Volume). Current through date and Register shown on Title Page.

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
Picloram	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

Unofficial Text (See Printed Volume). Current through date and Register shown on Title Page.

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 (MVO-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

**Site Investigation Field Procedures Workplan - METCO
Lloyd's Seneca Oasis/Betty's Bonzai**

APPENDIX E/PROJECT DOCUMENTS

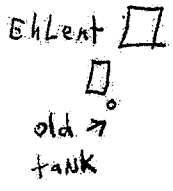
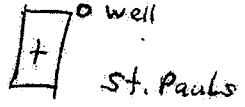
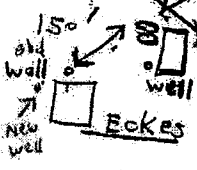
Hwy
186

- farm with
gas tanks on
above ground tank

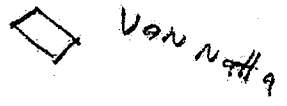
old tanks next to bldg.

- proposed new well site

11-yds on sis
BAR



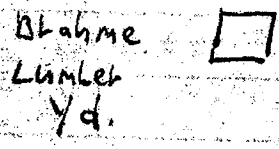
Hwy
73



~~XXXXXXXXXXXX~~

Hwy D

flow probably south



If New Facility

Bill to: Solid Waste Hazardous Waste Wastewater Water Supply Spills Other Wood Co Health

I.D. Number 772033130 Point/Well # 001 Field No. _____ County # 72 Route Code W270

I.D. Name Betty's Bar P.O. or City Vesper

Collection Date 03/26/90 Time: 10:30 Sample Location 4885 Hwy 13 N

Description bar tap

Send Report To:

Dept. of Natural Resources
Room 118
1681 Second Avenue South
Wisconsin Rapids, WI 54494

Account Number DH011

Collected By Billy Wood Co Health

Phone (715) 421-7829

Check any appropriate:

S Split E Enforcement B Field Blank
 S Surface Source T Treated

Free Chlorine Residual (Field) _____ mg/L
Free Chlorine Residual (Lab) _____ mg/L

Detection limits (ug/L) are indicated by []	Detected	ug/L
Benzone [1.0]	<input checked="" type="checkbox"/>	025
Bromobenzene [4.0]	_____	046
Bromodichloromethane [1.0]**	_____	051
Bromoform [5.0]**	_____	053
Bromomethane [1.0]	_____	055
Carbon Disulfide [5.0]	_____	071
Carbon Tetrachloride [2.0]	_____	073
Chlorobenzene [2.0]	_____	083
Chloroethane [2.0]	_____	087
2-Chloroethylvinyl ether [4.0]	_____	093
Chloroform [1.0]**	_____	095
o-Chlorotoluene [1.0]	_____	108
p-Chlorotoluene [1.0]	_____	110
Dibromomethane [2.0]	_____	146
Dibromochloromethane [2.0]**	_____	147
1,2-Dibromo-3-Chloropropane [7.0]	_____	148
1,2-Dichlorobenzene [2.0]	_____	153
1,3-Dichlorobenzene [2.0]	_____	155
1,4-Dichlorobenzene [2.0]	_____	157
1,1-Dichloroethane [1.0]	_____	166
1,2-Dichloroethane [1.0]	_____	167
1,2-Dichloroethylene, cis [1.0]	_____	168
1,1-Dichloroethylene [1.0]	_____	169
1,2-Dichloroethylene, trans [1.0]	_____	170
1,3-Dichloropropane [1.0]	_____	178
1,1-Dichloropropene [2.0]	_____	180
1,2-Dichloropropene [1.0]	_____	181

- MW Monitoring Well
- LY Lysimeter
- LE Leachate
- SE Sediment
- SU Surface Water
- PW Private Well
- EF Effluent
- IF Influent
- SO Soil
- OI Oil
- SL Sludge
- OT Other
- OW Waste

Analysis Type:
 Q GC/MS Screen and Quantification
 S GC/MS Screen
 O Parameter Specific
(NOTE: if followup enter previous sample no.) _____

Water System Type (Water Supply Use ONLY)
 M Community-Municipal Sample Type:
 O Community-OTM D (SDWA) Compliance Sample
 N Non-community C (SDWA) Check
 P Private (Initial Sample Date) _____
 X Non-potable W Raw Water if New Well
 I Miscellaneous Distribution

	Detected	ug/L
2,2-Dichloropropane [2.0]	<input checked="" type="checkbox"/>	182
1,3-Dichloropropene, cis [2.5]	_____	183
1,3-Dichloropropene, trans [2.5]	_____	186
Ethylbenzene [1.0]	<input checked="" type="checkbox"/>	283
Ethylene Dibromide [1.0]	_____	236
Methylalkylketone (MEK) [12]	_____	319
Methylene Chloride [5.0]	_____	325
Styrene [2.0]	_____	393
1,1,1,2-Tetrachloroethane [3.0]	_____	396
1,1,2,2-Tetrachloroethane [3.0]	_____	397
Tetrachloroethylene [1.0]	_____	399
Tetrahydrofuran (THF) [200]	_____	401
Toluene [1.0]	<input checked="" type="checkbox"/>	411
1,2,4-Trichlorobenzene [1.0]	_____	419
1,1,1-Trichloroethane [1.0]	_____	421
1,1,2-Trichloroethane [2.0]	_____	423
Trichloroethylene [1.0]	_____	425
Trichlorofluoromethane [1.0]	_____	427
Trichlorotrifluoroethane [3.0]	_____	428
1,2,3-Trichloropropane [2.0]	_____	432
Vinyl Chloride [1.0]	_____	434
Xylenes [2.0]	<input checked="" type="checkbox"/>	437

** Total Trihalomethanes _____

NO Detects

Date Received 3/29/90 3:52 And Sample No. HA 3521 MAR 28 1990

Date Reported ES3521 HA A032890CALI

R.H. Laessig, Ph.D., Director
Wisconsin State Laboratory of Hygiene
Madison, Wisconsin 53706

683

204691

Alfred Kissinger
569-4359
5507

Farm House

? Dan Tritz
569-4595

Farm House 5506

Bence Van...
Bruce Van...
569-4169
House
4842

Hwy 13

Hwy 186

Hwy 13

David Ehler
569-4695

? 5493 House

4885
Tootie's

House 4865

House 4857

Shawn Romanski
569-3626

Eola Ehler
569-4448

5489 Farm House

House 5488

House ← V. Vilbaum
569-3764

← St Paul's Church
5470

Appears Vacant

Logs

Hamel Forest Products ??

Grass Office

~~5462~~

Lumber Mill

Trailer

5401

CTH "D"

To → TOM HVEDAK

WELL CONSTRUCTOR'S REPORT TO WISCONSIN STATE BOARD OF HEALTH
See Instructions on Reverse Side

1. County Wood (Town Village City Check one and give name

2. Location T23N Sec 30 R13E Range 5 E
Name of street and number of premises or Section, Town and Range numbers

3. Owner or Agent Michey Schooley
Name of individual, partnership or firm

4. Mail Address Wis Rapids Route 4
Complete address required

5. From well to nearest: Building 8 ft; sewer 60 ft; drain _____ ft; septic tank _____ ft;
dry well or filter bed 80 ft; abandoned well none ft.

6. Well is intended to supply water for: home & tavern

RECEIVED
SEP 4 1956
ENVIRONMENTAL
SANITATION

7. DRILLHOLE:

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
10	0	18			
6	18	23			

8. CASING AND LINER PIPE OR CURBING:

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
6	steel	0	19

9. GROUT:

Kind	From (ft.)	To (ft.)
Clay		

11. MISCELLANEOUS DATA:

Yield test: _____ Hrs. at _____ GPM.
 Depth from surface to water-level: _____ ft.
 Water-level when pumping: _____ ft.
 Water sample was sent to the state laboratory at:
 _____ on _____ 19____
 City _____

10. FORMATIONS:

Kind	From (ft.)	To (ft.)
dirt	0	8
sandstone	8	23

Construction of the well was completed on:

May 1950

The well is terminated _____ inches
 above, below the permanent ground surface.


Was the well disinfected upon completion?

Yes _____ No _____

Was the well sealed watertight upon completion?

Yes _____ No _____

Signature Emul Bertram Wis Rapids Route
 Registered Well Driller Complete Mail Address
 Please do not write in space below

Rec'd _____ No. _____
 Ans'd _____
 Interpretation _____

 W D 1 7 0 7

10 ml _____ 10 ml _____ 10 ml _____ 10 ml _____ 10 ml _____
 Gas—24 hrs. _____
 48 hrs. _____
 Confirm _____
 B. Coli _____
 Examiner _____

Well Construction Report For
WISCONSIN UNIQUE WELL NUMBER **IH326**

Property Owner **ST PAULS LUTHERAN CHURCH** Telephone Number **- -**

Mailing Address **RT 1 5470 HWY D**

City **VESPER** State **WI** Zip Code **54489**

County of Well Location **WOOD** Co. Well Permit No. **April 13, 1995** Well Completion Date

Cnty **72** Well Constructor (Business Name) **BERTRAM JUNEMANN WELL** License # **10084** 2. Dates **10/27/95** Rcd

Dist **7** Address **7285 CTY TRK S** City **RUDOLPH** State **WI** Zip Code **54475** 12/16/98 Create

P M=Munic. O=OTM N=NonCom P=Priv Z=Other 12/04/95 Last FM
 X=Non-Pot. A=Anode L=Loop H=Drillhole

1. Well Location Flag **T** T=Town C=City V=Village Fire # (If avail.) **of SIGEL**

Grid or Street Address or Road Name and Number **5470 HWY D**

Subdivision Name **Lot # Block #**

Gov't Lot # **or NW 1/4 of SW 1/4 of**

Section **30**, T **23** N; R **05** E (E/W)

3. Well Type Flag **1** 1=New 2=Replacement 3=Reconstruction
 of previous unique well # **constructed in 19 0**

Reason for new, replaced or reconstructed well?
NITRALE IN OLD WELL

1 1=Drilled 2=Driven Point 3=Jetted 4=Other

4. Well serves **0001** # of homes and or (Ex: barn, restaurant, church, school, industry, etc.) High Capacity: Well? **N** Property? **N**

5. Well located on highest point of property, consistent with the general layout and surroundings? Well located in floodplain? **N**

Distance in Feet From Well To Nearest:

1. Landfill	9. Downspout/Yard Hydrant	Y	17. Wastewater Sump
2. Building Overhang	10. Privy		18. Paved Animal Barn Pen
3. Septic or Holding Tank (circle one) 60	11. Foundation Drain to Clearwater		19. Animal Yard or Shelter
4. Sewage Absorption Unit	12. Foundation Drain to Sewer		20. Silo - Type
5. Nonconforming Pit	13. Building Drain		21. Barn Gutter
6. Buried Home Heating Oil Tank	1 = Cast Iron or Plastic 2=Other		22. Manure Pipe 1=Gravity 2=Pressure
7. Buried Petroleum Tank	14. Building Sewer 1=Gravity 2=Pressure		1 = Cast Iron or Plastic 2=Other
8. Shoreline/Swimming Pool	1 = Cast Iron or Plastic 2=Other		23. Other Manure Storage
	15. Collector or Street Sewer		Other NR. 112 Waste Source
	16. Clearwater Sump		24.

6. Drillhole Dimensions

Dia. (in.)	From (ft.)	To (ft.)	Method of constructing upper enlarged drillhole only.
10.0	surface	10	1. Rotary - Mud Circulation
8.0	10	54	X 2. Rotary - Air
6.0	54	225	3. Rotary - Foam
			4. Reverse Rotary
			5. Cable-tool Bit in dia.
			X 6. Temp. Outer Casing 8 in. dia.
			Removed? Y
			7. Other

9. Geology Flag

DNR USE ONLY	Type, Caving/Noncaving, Color, Hardness, Etc.	From (ft.)	To (ft.)
N	SANDSTONE	Surface	42
C	CLAY	42	53
Q	GRANITE	53	225
			0
			0
			0
			0
			0
			0
			0
			0

7. Flag

Dia. (in.)	Casing, Liner, Screen Material, Weight, Specification Manufacturer & Method of Assembly	From (ft.)	To (ft.)
6.0	P E A 53 280 SAWHILL	surface	54
			0
			0
			0
			0
			0
			0
			0
			0
			0

10. Static Water Level Flag **18.0** ft. B ground surface
 A=Above B=Below

11. Pump Test Flag
 Pumping Level **200.0** ft. below ground surface
 Pumping at **4.0** GPM H **24.00** hrs

12. Well Is: Flag **12** in. A Grade
 A=Above B=Below
 Developed? **Y**
 Disinfected? **Y**
 Capped? **Y**
 Depth (feet) **0225.00**

8. Grout or Other Sealing Material

Method	Kind of Sealing Material	From (ft.)	To (ft.)	# Sacks Cement
BRADENHEAD	NEAT CEMENT	surface	54.0	0007.

13. Did you permanently seal all unused, noncomplying, or unsafe wells? **N**
 If no, explain **STILL IN USE**

14. Signature of Point Driver or Licensed Supervisory Driller **JJ** Date Signed **8/21/95**
 Signature of Drill Rig Operator (Mandatory unless same as above) Date Signed

Additional Comments? **0.0**
 More Geo? Owner Sent Label? **Y** **0.0**

NOTE:

White Copy - Division's Copy
 Green Copy - Driller's Copy
 Yellow Copy - Owner's Copy

WELL CONSTRUCTOR'S REPORT
 Form 3300-15
 Rev. 2-79

1. COUNTY WOOD CHECK (✓) ONE: Town Village City Name Siège

2. LOCATION 100-SW Section 30 Township 23N Range 5E 3. NAME OWNER AGENT AT TIME OF DRILLING CHECK: (✓) ONE
 OR - Grid or Street No. Street or Road Name Co D ADDRESS 5488 Co. Tek D
 AND - If available subdivision name, lot & block No. POST OFFICE WESTER, Wis ZIP CODE

4. Distance in feet from well to nearest: (Record answer in appropriate block) Building 10+ Sanitary Bldg. Drain C.I. Other Sanitary Bldg. Sewer C.I. Other Floor Drain Connected To: C.I. Sewer Other Sewer Storm Bldg. Drain C.I. Other Storm Bldg. Sewer C.I. Other

5. Well is intended to supply water for Res.

6. DRILLHOLE

Kind	From (ft.)	To (ft.)
<u>PAVD</u>	Surface	9
<u>PAVSTONE</u>	9	38
<u>CLAY</u>	38	44
<u>GRANITE</u>	44	182

7. CASING, LINER, CURBING AND SCREEN

Material, Weight, Specification	Mfg. & Method of Assembly	From (ft.)	To (ft.)
<u>6 New BLK Steel PE WELDED JTS.</u>	<u>AS3B HKK</u>	Surface	45

8. GROUT OR OTHER SEALING MATERIAL

Kind	From (ft.)	To (ft.)
<u>Cement</u>	Surface	45

9. FORMATIONS

10. TYPE OF DRILLING MACHINE USED

Cable Tool Rotary-hammer w/drilling mud & air Jetting with

Rotary-air w/drilling mud Rotary-hammer & air Air

Rotary-w/drilling mud Reverse Rotary Water

11. MISCELLANEOUS DATA

Well construction completed on 10-4-84 19

Yield Test: 2 Hrs. at 7 GPM Well is terminated 18 inches above below final grade

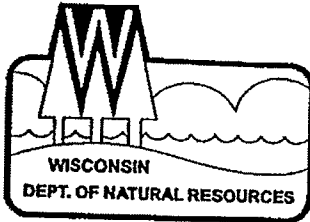
Depth from surface to normal water level 4 Ft. Well disinfected upon completion Yes No

Depth of water level when pumping 175 Ft. Stabilized Yes No Well sealed watertight upon completion Yes No

Water sample sent to Madison laboratory on 10-10-84 19

Your opinion concerning other pollution hazards, information concerning difficulties encountered, and data relating to nearby wells, screens, seals, method of finishing the well, amount of cement used in grouting, blasting, etc., should be given on reverse side.

Signature David Haurat Business Name and Complete Mailing Address Hauptville Pump & Rebuild
 Registered Well Driller 710



State of Wisconsin | DEPARTMENT OF NATURAL RESOURCES

Tommy G. Thompson, Governor
George E. Meyer, Secretary
Scott A. Humrickhouse, Regional Director

Wisconsin Rapids Service Center
473 Griffith Ave.
Wisconsin Rapids, Wisconsin 54494
Telephone 715-421-7804
FAX 715-421-7830

February 11, 2000

Sandra Fink
Tootsy's Bar
4885 STH. 13
Vesper, WI 54489

File Re: 3310
Wood Co.
77203313
CH280

Dear Mrs. Fink :

Thank you for participating in the groundwater sampling survey conducted in your area on 1/25/00. The purpose of the survey was to determine Volatile Organic Contaminant (VOC) concentrations in area groundwater.

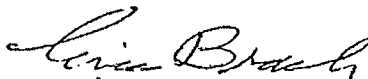
Your water sample test result is enclosed and indicates No Detections (ND) of VOCs in your drinking water at this time.

Also included with this letter is a VOC brochure for your information.

Thank you for your cooperation in this matter.

If you have further questions, please feel free to call me at 715-421-7829.

Sincerely,
WEST CENTRAL REGION


Eric Brach
Drinking Water Specialist

Cc: Tom Jerow - Wi. Rapids/Larry Schaefer - Eau Claire
Public Water - DG/2
Tom Hvizdak - Wi. Rapids
Nancy Eggleston - Wood County Health Department



State Laboratory of Hygiene
University of Wisconsin Center for Health Sciences
465 Henry Mall, Madison, WI 53706

R.H. Laessig, Ph.D., Director S.L. Inhorn, M.D., Medical Director

Environmental Science Section (608) 262-2797 DNR LAB ID 113133790
Organic chemistry (#1 of 10 on 02/04/00, unseen)

Id: Point/Well/...: TWO Field #: Route: DG60
Collection Date: 01/25/00 Time: 11:30 County: 72 (Wood)
From: ~~TOOTSIE'S, 4885 STH. 13, VESPER, WI~~
Description: MEN'S BATHRM. SINK
To: DNR - DRINKING WATER
473 GRIFFITH AVENUE Source: TN
WISCONSIN RAPIDS, WI 54494
Account number: DG018 Collected by: E. BRACH
Date Received: 01/26/00 Labslip #: OK002350 Reported: 02/03/00

---- test: VOCS IN WATER BY GCMS - EPA METHOD 524.2

BENZENE	ND (LOD=0.15 UG/L)
BROMOBENZENE	ND (LOD=0.15 UG/L)
BROMOCHLOROMETHANE	ND (LOD=0.15 UG/L)
BROMODICHLOROMETHANE	ND (LOD=0.15 UG/L)
BROMOFORM	ND (LOD=0.15 UG/L)
BROMOMETHANE	ND (LOD=0.15 UG/L)
N-BUTYLBENZENE	ND (LOD=0.15 UG/L)
SEC-BUTYLBENZENE	ND (LOD=0.15 UG/L)
TERT-BUTYLBENZENE	ND (LOD=0.15 UG/L)
CARBON TETRACHLORIDE	ND (LOD=0.15 UG/L)
CHLOROBENZENE	ND (LOD=0.15 UG/L)
CHLOROETHANE	ND (LOD=0.15 UG/L)
CHLOROFORM	ND (LOD=0.15 UG/L)
CHLOROMETHANE	ND (LOD=0.15 UG/L)
2-CHLOROTOLUENE	ND (LOD=0.15 UG/L)
4-CHLOROTOLUENE	ND (LOD=0.15 UG/L)
DIBROMOCHLOROMETHANE	ND (LOD=0.15 UG/L)
1,2-DIBROMO-3-CHLOROPROPANE	ND (LOD=0.20 UG/L)
1,2-DIBROMOETHANE (EDB)	ND (LOD=0.15 UG/L)
DIBROMOMETHANE	ND (LOD=0.15 UG/L)
1,2-DICHLOROBENZENE	ND (LOD=0.15 UG/L)
1,3-DICHLOROBENZENE	ND (LOD=0.15 UG/L)
1,4-DICHLOROBENZENE	ND (LOD=0.15 UG/L)
DICHLORODIFLUOROMETHANE	ND (LOD=0.20 UG/L)
1,1-DICHLOROETHANE	ND (LOD=0.15 UG/L)
1,2-DICHLOROETHANE	ND (LOD=0.15 UG/L)
1,1-DICHLOROETHYLENE	ND (LOD=0.15 UG/L)
CIS-1,2-DICHLOROETHYLENE	ND (LOD=0.15 UG/L)
TRANS-1,2-DICHLOROETHYLENE	ND (LOD=0.15 UG/L)
1,2-DICHLOROPROPANE	ND (LOD=0.15 UG/L)

RECEIVED
WI DEPT. OF NATURAL RESOURCES
7 2000

WI RAPIDS AREA HDQ.
WI RAPIDS, WI

State Laboratory of Hygiene
University of Wisconsin Center for Health Sciences
465 Henry Mall, Madison, WI 53706

R.H. Laessig, Ph.D., Director S.L. Inhorn, M.D., Medical Director

Environmental Science Section (608) 262-2797 DNR LAB ID 113133790
... continuing Labslip # OK002350

1,3-DICHLOROPROPANE ND (LOD=0.15 UG/L)
2,2-DICHLOROPROPANE ND (LOD=0.15 UG/L)
1,1-DICHLOROPROPENE ND (LOD=0.15 UG/L)
CIS-1,3-DICHLOROPROPENE ND (LOD=0.15 UG/L)
TRANS-1,3-DICHLOROPROPENE ND (LOD=0.15 UG/L)

ETHYLBENZENE ND (LOD=0.15 UG/L)
HEXACHLOROBUTADIENE ND (LOD=0.15 UG/L)
ISOPROPYLBENZENE ND (LOD=0.15 UG/L)
P-ISOPROPYLTOLUENE ND (LOD=0.15 UG/L)
METHYLENE CHLORIDE ND (LOD=0.15 UG/L)

NAPHTHALENE ND (LOD=0.15 UG/L)
N-PROPYLBENZENE ND (LOD=0.15 UG/L)
STYRENE ND (LOD=0.15 UG/L)
1,1,1,2-TETRACHLOROETHANE ND (LOD=0.20 UG/L)
1,1,2,2-TETRACHLOROETHANE ND (LOD=0.15 UG/L)

TETRACHLOROETHYLENE ND (LOD=0.15 UG/L)
TOLUENE ND (LOD=0.15 UG/L)
1,2,3-TRICHLOROBENZENE ND (LOD=0.15 UG/L)
1,2,4-TRICHLOROBENZENE ND (LOD=0.15 UG/L)
1,1,1-TRICHLOROETHANE ND (LOD=0.15 UG/L)

1,1,2-TRICHLOROETHANE ND (LOD=0.15 UG/L)
TRICHLOROETHYLENE ND (LOD=0.15 UG/L)
TRICHLOROFLUOROMETHANE ND (LOD=0.15 UG/L)
1,2,3-TRICHLOROPROPANE ND (LOD=0.15 UG/L)
1,2,4-TRIMETHYLBENZENE ND (LOD=0.15 UG/L)

1,3,5-TRIMETHYLBENZENE ND (LOD=0.15 UG/L)
VINYL CHLORIDE ND (LOD=0.20 UG/L)
M/P-XYLENE ND (LOD=0.15 UG/L)
O-XYLENE ND (LOD=0.15 UG/L)
VOCS IN WATER BY GC/MS - PREP - METHOD 524.2 C

---- test: TEMPERATURE ON RECEIPT-ICED - 0950
TEMPERATURE ON RECEIPT-ICED ICED
VOCS IN WATER BY GC/MS - PREP - EPA METHOD 524.2 C



State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

Tommy G. Thompson, Governor
George E. Meyer, Secretary
Scott A. Humrickhouse, Regional Director

Wisconsin Rapids Service Center
473 Griffith Ave.
Wisconsin Rapids, Wisconsin 54494
Telephone 715-421-7804
FAX 715-421-7830

February 15, 2000

Ecke

V. Vilbaum
5488 CTH. D
Vesper, Wi 54489

File Re: 3320
Wood Co.
JD907

Dear Mr. Vilbaum :

Thank you for participating in the groundwater sampling survey conducted in your area on 1/25/00. The purpose of the survey was to determine Volatile Organic Contaminant (VOC) concentrations in area groundwater.

Your water sample test result is enclosed and indicates a detection of Benzene at 1.3 ug/l. This detect is below the Health Advisory Limit (HAL) of 5.0 ug/l. However, the benzene detect is over the Preventative Action Limit (PAL) of .5 ug/l. The PAL serves as a warning for regulated drinking water contaminants.

Benzene is a known carcinogen.

It is highly recommended you test for VOCs again within 3 months from this date. I have included a list of certified laboratories that test for VOCs.

Also included with this letter is a VOC brochure for your information.

Thank you for your cooperation in this matter.

If you have further questions, please feel free to call me at 715-421-7804.

Sincerely,
WEST CENTRAL REGION

Eric Brach
Drinking Water Specialist

Cc: Tom Jerow - Wi. Rapids/Larry Schaefer - Eau Claire
Private Water - DG/2
Tom Hvizdak - Wi. Rapids
Nancy Eggleston - Wood County Health Department

Quality Natural Resources Management
Through Excellent Customer Service



**Site Investigation Field Procedures Workplan - METCO
Lloyd's Seneca Oasis/Betty's Bonzai**

APPENDIX F/HEALTH AND SAFETY PLAN

SAFETY PLAN INFORMATION

Code: METCO

METCO Project No: C2336

Company Name: METCO

Contact:

Last Name: Powell

First Name: Jason

Salutation:

P.O. Box

Street: 709 Gillette Street, Suite 3

City: La Crosse

State: WI

Zip Code: 54603-0000

Area code: 608

Phone: 781-8879

Fax: (608)781-8893

SITE INFORMATION

Site Name: Lloyd's Seneca Oasis/Betty's Bonzai

Site Address: 4885 State Highway 73

Site Address City: Vesper

Site Address State: WI Site Address Zip Code: 54489

Site Address County: Wood

WDNR Contact: Tom Hvizdak

Fire Dept. Contact: Town of Sigel

Project Date: 6/23/2014

Tank Removal Contractor:

General Contractor: METCO

TANK INFORMATION

Tank Sizes\Contents

Tank 1: 500	Contents: Leaded Gasoline	Age: Removed
Tank 2: 500	Contents: Unl Gasoline	Age: Removed
Tank 3:	Contents:	Age:
Tank 4:	Contents:	Age:
Tank 5:	Contents:	Age:
Tank 6:	Contents:	Age:

PURPOSE OF ACTIVITY (Check all appropriate)

New Tank Installation <input type="checkbox"/>	Tank Closure <input type="checkbox"/>	Install Tank Leak Detection <input type="checkbox"/>
Tank/Pipe Removal <input type="checkbox"/>	Tank/Pipe Repair <input type="checkbox"/>	Install Spill Protection <input type="checkbox"/>
Petroleum Release Investigation <input checked="" type="checkbox"/>	Install Remedial System <input type="checkbox"/>	Install Overfill Protection <input type="checkbox"/>
Leak Detection Testing <input type="checkbox"/>	Install Monitoring Wells <input type="checkbox"/>	Install Kard System <input type="checkbox"/>
Other <input type="checkbox"/>		

Background Information Complete Ir

TYPE OF SITE

SITE HEALTH AND SAFETY PLAN

POTENTIAL HEALTH AND SAFETY HAZARDS (check all appropriate)

- | | | |
|---|--|---|
| Handling/transfer of product: <input type="checkbox"/> | Heavy Equipment: <input checked="" type="checkbox"/> | Snakes: <input type="checkbox"/> |
| * Fire | Noise: <input checked="" type="checkbox"/> | Insects: <input type="checkbox"/> |
| * Explosions | Oxygen Depletion: <input type="checkbox"/> | Rodents: <input type="checkbox"/> |
| General Construction: <input checked="" type="checkbox"/> | Excavation: <input type="checkbox"/> | Heat: <input checked="" type="checkbox"/> |
| * Electrical Hazards | * Cave-ins | Cold: <input checked="" type="checkbox"/> |
| * Physical Injury | * Falls, slips | |
| Confined Space Entry: <input type="checkbox"/> | Poisonous plants: <input type="checkbox"/> | |
| * Explosions | Other (Specify): | |

Description of site-specific hazards (utilities, terrain, etc.):
Underground utilities and site traffic

EVALUATION OF CHEMICAL HAZARDS (MSDS sheets attached)

NAME	PHYSICAL STATE	ROUTE OF ENTRY	OSHA PEL/TLV	SYMPTOMS OF EXPOSURE
1.	Vapor/Liq	Inh/Skin	25-300PPM	Nausea, Irritation
2.				
3. Gasoline	Liquid/Vapor	Inh/Skin	100 PPM	Irritation of eyes, nose and throat
4.				
5.				

ON-SITE PERSONNEL RESPONSIBILITIES

Team Member	Responsibilities
1. Jason Powell	Site Project Management
2. Ron Anderson	Hydrogeologist
3. Eric Dahl	Hydrogeologist
4.	

METHOD TO CONTROL POTENTIAL HEALTH AND SAFETY HAZARDS

MONITORING INSTRUMENTS

Combustible Gas Indicator:

Action Levels
0-10% I FI No Explosion Hazard

Action Levels
Normal: 21%
Oxygen Deficient: Less than 21%
Oxygen Deficient: Less than 19.5%

Action
None
Action
None
Notify Health & Safety Officer
Evacuate

Photoionization Detector: Flame Ionization Detector: Detector Tubes:

SITE HEALTH AND SAFETY PLAN

PERSONAL PROTECTIVE EQUIPMENT

Minimum Requirements

- 1. Hardhat
- 2. Safety glasses\goggles
- 3. Steel toes\shank shoes or boots
- 4. Flame retardant coveralls
- 5. Hearing protection (muffs or ear plugs)

Is additional PPE required? yes: no:

Additional Requirements

- Uncoated tyvek coveralls:
- Saranex tyvek coveralls:
- Rubber boots:
- Overboots:
- Surgical Inner Gloves:
- Butyl Neoprene\ nitrile outer gloves:
- Full face respirators:
- * type of cartridge:
- SCBA \ SAR:
- Other:

Level of protection designated A: B: C: D:

SITE CONTROL

Work Zones

- Support Zone: Beyond a 25' Radius of drilling or excavation and upwind of operation
- Contamination Reduction Zone: Between 15 foot and 25 foot Radius of drilling or excavation
- Exclusion Zone: Within 15 feet Radius of excavation or machine operation

Site Entry Procedure: Obtain approval and instructions from Project Leader.

Decontaminations Procedures:

- Personnel: Remove protective equipment and wash hands prior to eating.
- Equipment: Wash with brush and Alconox soap and rinsed with portable 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 a minimum.

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

Employee Limitations:

Site Resources

Plan Approved by: _____ Date: _____

Shower: Water Supply:

SITE HEALTH AND SAFETY PLAN

CONTINGENCY PLANNING

LOCAL RESOURCES

Phone Number

Ambulance: Town of Sigel	911
Hospital Emergency Room: Riverview Hospital Association	(715) 423-6060
Poison Control Center: Milwaukee	(800) 222-1222
Police Wood County Sheriff	911
Fire Dept: Town of Sigel	911
Hazardous Waste Response Center:	800-943-0003 Wisconsin EPA 800-424-8802

Location Address: 145 S. Depot Street, Hixton, WI

EMERGENCY ROUTES (attach maps)

Hospital: Riverview Hospital Association (410 Dewey Street, Wisconsin Rapids, WI 54494) - Travel east 7.6 miles W Riverview Expy, turn right onto W Riverview Expy and travel 1.2 miles to 3rd St S, turn left on 3rd St S and travel 450 feet to Dewey Street, turn right onto Dewey and travel 500 feet, hospital will be on right

Other:

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 Leader.
- * 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.

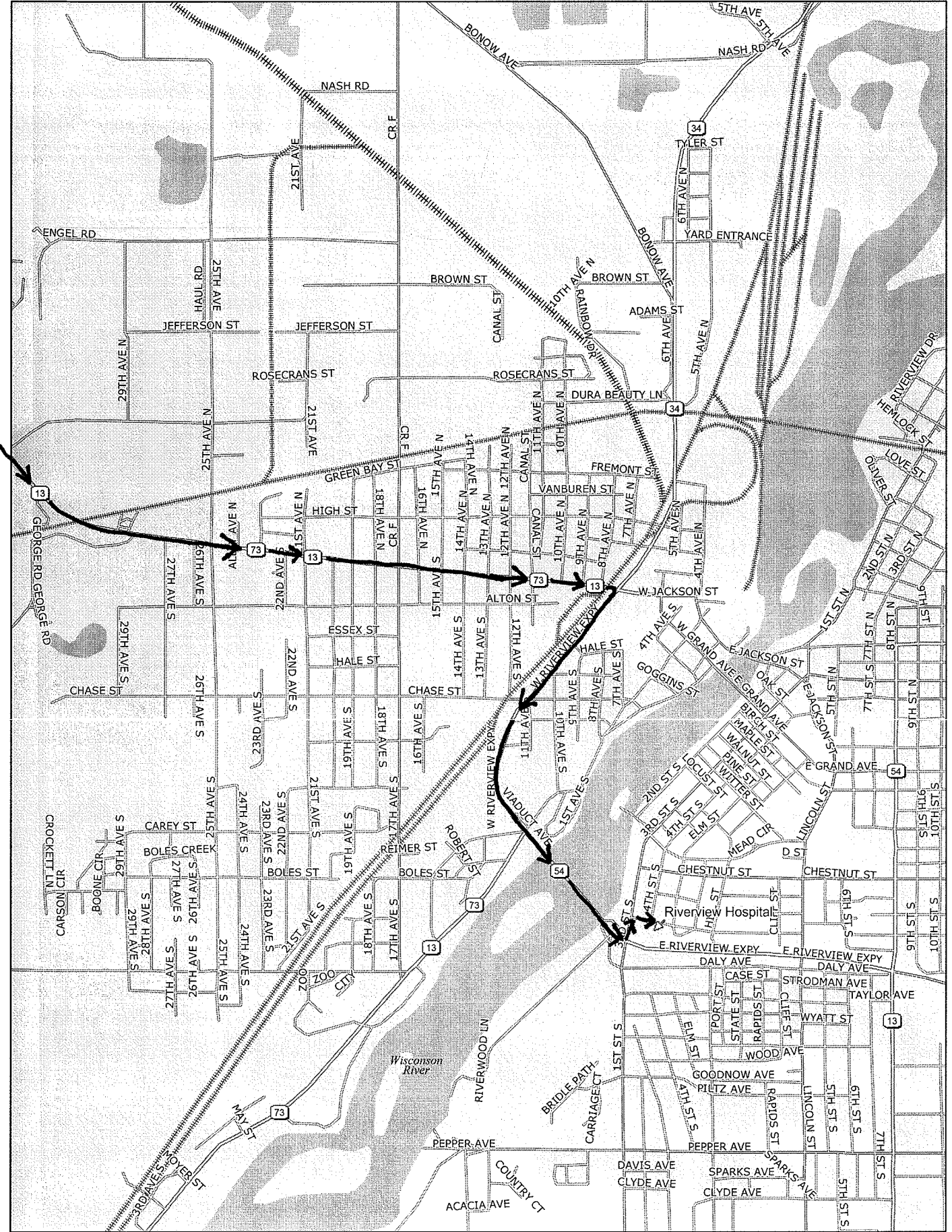
ON-SITE ORGANIZATION

PHONE NUMBERS

METCO Project Leader: Jason Powell	work	608-781-8879
	home	608-526-6108
METCO Safety Officer: Linda Eastman	work	1-800-236-0448
Engineer/Architect Contact:	home	(608)489-2236
Client Contact: Karen Kubisiak		(715) 421-8484
METCO Corporate Contact: Paul Knower	home	(608)489-2659
	work	1-800-236-0448

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 job site book is**



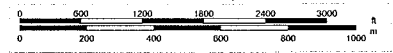
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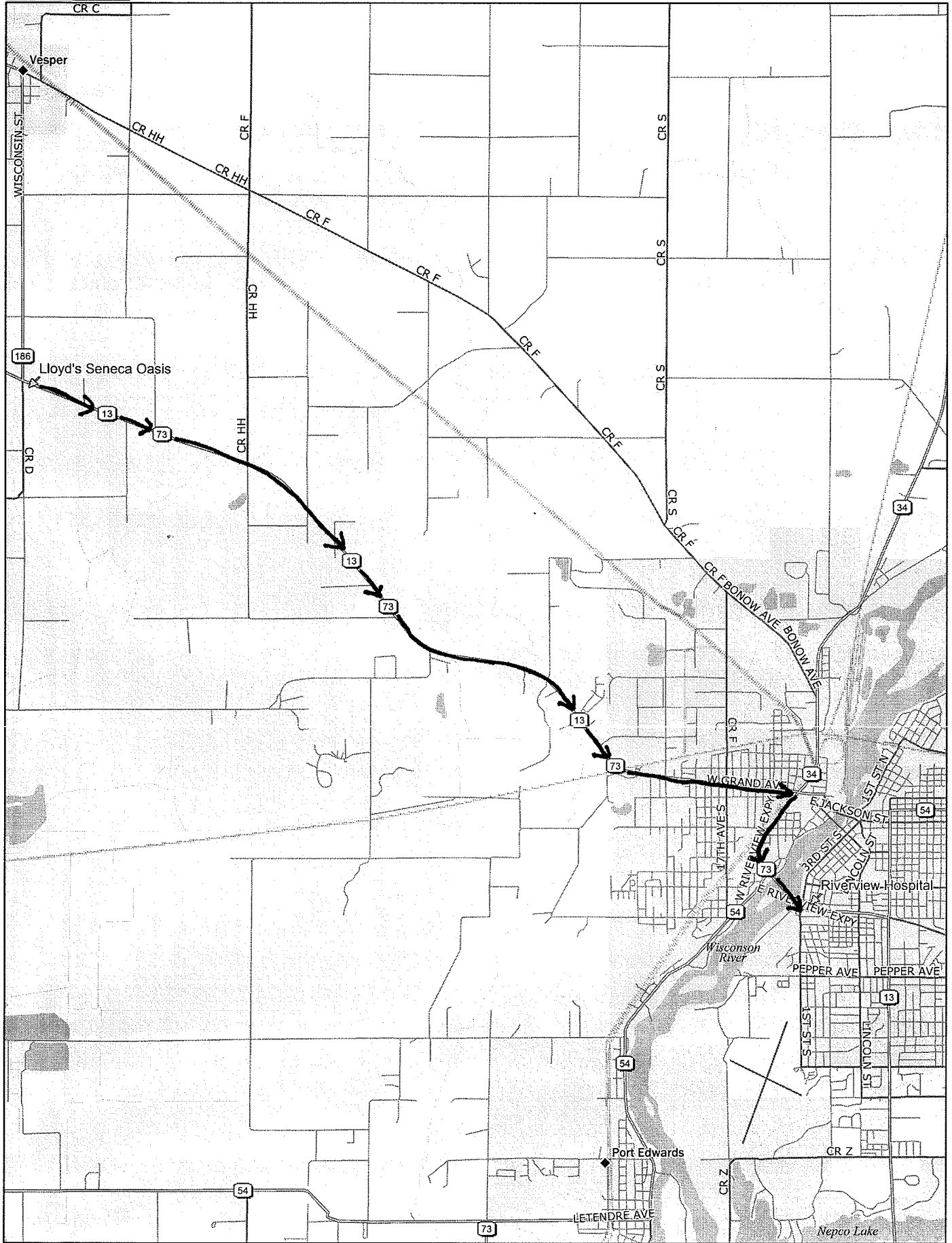
www.delorme.com



Scale 1 : 22,400



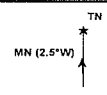
1" = 1,866.7 ft Data Zoom 13-2



Data use subject to license.

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www.delorme.com



Scale 1 : 68,750



1" = 1.09 mi

Data Zoom 11-5

State Laboratory of Hygiene
University of Wisconsin Center for Health Sciences,
465 Henry Mall, Madison, WI 53706

R.H. Laessig, Ph.D., Director S.L. Inhorn, M.D., Medical Director

Environmental Science Section (608) 262-2797 DNR LAB ID 113133790
Organic chemistry (#5 of 10 on 02/04/00, unseen)

Id: JD907 Point/Well/...: ONE Field #: Route: DG60
Collection Date: Time: County: 72 (Wood)
From: V. VILBAUM, 5488 CTH. D, VESPER, WI 54489
Description: KITCHEN SINK
To: DNR - DRINKING WATER
473 GRIFFITH AVENUE Source: Private
WISCONSIN RAPIDS, WI 54494
Account number: DG023 Collected by: E. BRACH
Date Received: 01/26/00 Labslip #: OK002353 Reported: 02/03/00

---- test: VOCS IN WATER BY GCMS - EPA METHOD 524.2

BENZENE	+ 1.3	UG/L
BROMOBENZENE	ND	(LOD=0.15 UG/L)
BROMOCHLOROMETHANE	ND	(LOD=0.15 UG/L)
BROMODICHLOROMETHANE	ND	(LOD=0.15 UG/L)
BROMOFORM	ND	(LOD=0.15 UG/L)
BROMOMETHANE	ND	(LOD=0.15 UG/L)
N-BUTYLBENZENE	ND	(LOD=0.15 UG/L)
SEC-BUTYLBENZENE	ND	(LOD=0.15 UG/L)
TERT-BUTYLBENZENE	ND	(LOD=0.15 UG/L)
CARBON TETRACHLORIDE	ND	(LOD=0.15 UG/L)
CHLOROBENZENE	ND	(LOD=0.15 UG/L)
CHLOROETHANE	ND	(LOD=0.15 UG/L)
CHLOROFORM	ND	(LOD=0.15 UG/L)
CHLOROMETHANE	ND	(LOD=0.15 UG/L)
2-CHLOROTOLUENE	ND	(LOD=0.15 UG/L)
4-CHLOROTOLUENE	ND	(LOD=0.15 UG/L)
DIBROMOCHLOROMETHANE	ND	(LOD=0.15 UG/L)
1,2-DIBROMO-3-CHLOROPROPANE	ND	(LOD=0.20 UG/L)
1,2-DIBROMOETHANE (EDB)	ND	(LOD=0.15 UG/L)
DIBROMOMETHANE	ND	(LOD=0.15 UG/L)
1,2-DICHLOROBENZENE	ND	(LOD=0.15 UG/L)
1,3-DICHLOROBENZENE	ND	(LOD=0.15 UG/L)
1,4-DICHLOROBENZENE	ND	(LOD=0.15 UG/L)
DICHLORODIFLUOROMETHANE	ND	(LOD=0.20 UG/L)
1,1-DICHLOROETHANE	ND	(LOD=0.15 UG/L)
1,2-DICHLOROETHANE	ND	(LOD=0.15 UG/L)
1,1-DICHLOROETHYLENE	ND	(LOD=0.15 UG/L)
CIS-1,2-DICHLOROETHYLENE	ND	(LOD=0.15 UG/L)
TRANS-1,2-DICHLOROETHYLENE	ND	(LOD=0.15 UG/L)
1,2-DICHLOROPROPANE	ND	(LOD=0.15 UG/L)

State Laboratory of Hygiene
University of Wisconsin Center for Health Sciences
465 Henry Mall, Madison, WI 53706

R.H. Laessig, Ph.D., Director

S.L. Inhorn, M.D., Medical Director

Environmental Science Section
... continuing Labslip # OK002353

(608) 262-2797

DNR LAB ID 113133790

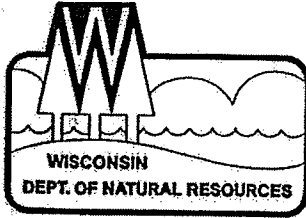
1,3-DICHLOROPROPANE	ND (LOD=0.15 UG/L)
2,2-DICHLOROPROPANE	ND (LOD=0.15 UG/L)
1,1-DICHLOROPROPENE	ND (LOD=0.15 UG/L)
CIS-1,3-DICHLOROPROPENE	ND (LOD=0.15 UG/L)
TRANS-1,3-DICHLOROPROPENE	ND (LOD=0.15 UG/L)
ETHYLBENZENE	ND (LOD=0.15 UG/L)
HEXACHLOROBUTADIENE	ND (LOD=0.15 UG/L)
ISOPROPYLBENZENE	ND (LOD=0.15 UG/L)
P-ISOPROPYLTOLUENE	ND (LOD=0.15 UG/L)
METHYLENE CHLORIDE	ND (LOD=0.15 UG/L)
NAPHTHALENE	ND (LOD=0.15 UG/L)
N-PROPYLBENZENE	ND (LOD=0.15 UG/L)
STYRENE	ND (LOD=0.15 UG/L)
1,1,1,2-TETRACHLOROETHANE	ND (LOD=0.20 UG/L)
1,1,2,2-TETRACHLOROETHANE	ND (LOD=0.15 UG/L)
TETRACHLOROETHYLENE	ND (LOD=0.15 UG/L)
TOLUENE	ND (LOD=0.15 UG/L)
1,2,3-TRICHLOROBENZENE	ND (LOD=0.15 UG/L)
1,2,4-TRICHLOROBENZENE	ND (LOD=0.15 UG/L)
1,1,1-TRICHLOROETHANE	ND (LOD=0.15 UG/L)
1,1,2-TRICHLOROETHANE	ND (LOD=0.15 UG/L)
TRICHLOROETHYLENE	ND (LOD=0.15 UG/L)
TRICHLOROFLUOROMETHANE	ND (LOD=0.15 UG/L)
1,2,3-TRICHLOROPROPANE	ND (LOD=0.15 UG/L)
1,2,4-TRIMETHYLBENZENE	ND (LOD=0.15 UG/L)
1,3,5-TRIMETHYLBENZENE	ND (LOD=0.15 UG/L)
VINYL CHLORIDE	ND (LOD=0.20 UG/L)
M/P-XYLENE	ND (LOD=0.15 UG/L)
O-XYLENE	ND (LOD=0.15 UG/L)
VOCS IN WATER BY GC/MS - PREP - METHOD 524.2	C

---- test: TEMPERATURE ON RECEIPT-ICED - 0950
TEMPERATURE ON RECEIPT-ICED
VOCS IN WATER BY GC/MS - PREP - EPA METHOD 524.2

ICED
C

--- Footnotes ---

+: Positive results are prefixed by a plus sign.



State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

Tommy G. Thompson, Governor
George E. Meyer, Secretary
Scott A. Humrickhouse, Regional Director

Wisconsin Rapids Service Center
473 Griffith Ave.
Wisconsin Rapids, Wisconsin 54494
Telephone 715-421-7804
FAX 715-421-7830

February 15, 2000

Ken Vollert - Chairman
St. Pauls Lutheran Church
3696 St. Johns Rd.
Wi. Rapids, Wi 54495

File Re: 3310
Wood Co.
77203324

Dear Mr. Vollert :

Thank you for participating in the groundwater sampling survey conducted in your area on 1/25/00. The purpose of the survey was to determine Volatile Organic Contaminant (VOC) concentrations in area groundwater.

Your water sample test result is enclosed and indicates detections of Benzene at 2.0 ug/l and Chloroform at 0.96 ug/l. These detects are below the Health Advisory Limits (HALs) of 5.0 ug/l and 6.0 ug/l respectively. However, the benzene detect is over the Preventative Action Limit (PAL) of .5 ug/l. The PAL serves as a warning for regulated drinking water contaminants.

Benzene is a known carcinogen and chloroform is a suspected carcinogen.

It is highly recommended you test for VOCs again within 3 months from this date. I have included a list of certified laboratories that test for VOCs.

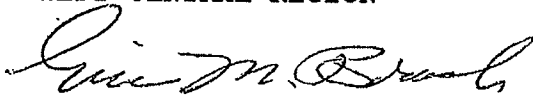
Also included with this letter is a VOC brochure for your information.

It is noted this Department (DNR) has no record of the old #1 well being properly abandoned as previously requested by Wood County Health Department. Attached is a Well Abandonment Brochure and Form for your use. Return the Top page of the form to me when the old well has been properly abandoned. This work must be completed by 2/29/00 at the very latest.

Thank you for your cooperation in this matter.

If you have further questions, please feel free to call me at
715-421-7804.

Sincerely,
WEST CENTRAL REGION



Eric Brach
Drinking Water Specialist

Cc: Tom Jerow - Wi. Rapids/Larry Schaefer - Eau Claire
Public Water - DG/2
Tom Hvizdak - Wi. Rapids
Nancy Eggleston - Wood County Health Department

State Laboratory of Hygiene
University of Wisconsin Center for Health Sciences
465 Henry Mall, Madison, WI 53706

R.H. Laessig, Ph.D., Director

S.L. Inhorn, M.D., Medical Director

Environmental Science Section (608) 262-2797 DNR LAB ID 113133790
Organic chemistry (#2 of 10 on 02/04/00, unseen)

Id: IH326 Point/Well/...: TWO Field #: Route: DG60
Collection Date: 01/25/00 Time: 10:30 County: 72 (Wood)
From: ST. PAUL'S LUTH. CHURCH, 5470 CTH. D, VESPER, WI 54489
Description: MEN'S BATHROOM SINK
To: DNR - DRINKING WATER
473 GRIFFITH AVENUE Source: TN
WISCONSIN RAPIDS, WI 54494
Account number: DG018 Collected by: E. BRACH
Date Received: 01/26/00 Labslip #: OK002352 Reported: 02/03/00

---- test: VOCS IN WATER BY GCMS - EPA METHOD 524.2

BENZENE		
BROMOBENZENE	+	2.0 UG/L
BROMOCHLOROMETHANE		ND (LOD=0.15 UG/L)
BROMODICHLOROMETHANE		ND (LOD=0.15 UG/L)
BROMOFORM		ND (LOD=0.15 UG/L)
BROMOMETHANE		
N-BUTYLBENZENE		ND (LOD=0.15 UG/L)
SEC-BUTYLBENZENE		ND (LOD=0.15 UG/L)
TERT-BUTYLBENZENE		ND (LOD=0.15 UG/L)
CARBON TETRACHLORIDE		ND (LOD=0.15 UG/L)
CHLOROENZENE		
CHLOROETHANE		ND (LOD=0.15 UG/L)
CHLOROFORM		ND (LOD=0.15 UG/L)
CHLOROMETHANE	+	0.96 UG/L
2-CHLOROTOLUENE		ND (LOD=0.15 UG/L)
4-CHLOROTOLUENE		
DIBROMOCHLOROMETHANE		ND (LOD=0.15 UG/L)
1,2-DIBROMO-3-CHLOROPROPANE		ND (LOD=0.15 UG/L)
1,2-DIBROMOETHANE (EDB)		ND (LOD=0.20 UG/L)
DIBROMOMETHANE		ND (LOD=0.15 UG/L)
1,2-DICHLOROENZENE		
1,3-DICHLOROENZENE		ND (LOD=0.15 UG/L)
1,4-DICHLOROENZENE		ND (LOD=0.15 UG/L)
DICHLORODIFLUOROMETHANE		ND (LOD=0.15 UG/L)
1,1-DICHLOROETHANE		ND (LOD=0.20 UG/L)
		ND (LOD=0.15 UG/L)
1,2-DICHLOROETHANE		
1,1-DICHLOROETHYLENE		ND (LOD=0.15 UG/L)
CIS-1,2-DICHLOROETHYLENE		ND (LOD=0.15 UG/L)
TRANS-1,2-DICHLOROETHYLENE		ND (LOD=0.15 UG/L)
1,2-DICHLOROPROPANE		ND (LOD=0.15 UG/L)

State Laboratory of Hygiene
University of Wisconsin Center for Health Sciences
465 Henry Mall, Madison, WI 53706

R.H. Laessig, Ph.D., Director

S.L. Inhorn, M.D., Medical Director

Environmental Science Section
... continuing Labslip # OK002352

(608) 262-2797

DNR LAB ID 113133790

1,3-DICHLOROPROPANE	ND (LOD=0.15 UG/L)
2,2-DICHLOROPROPANE	ND (LOD=0.15 UG/L)
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HEXACHLOROBUTADIENE	ND (LOD=0.15 UG/L)
ISOPROPYLBENZENE	ND (LOD=0.15 UG/L)
P-ISOPROPYLTOLUENE	ND (LOD=0.15 UG/L)
METHYLENE CHLORIDE	ND (LOD=0.15 UG/L)
NAPHTHALENE	ND (LOD=0.15 UG/L)
N-PROPYLBENZENE	ND (LOD=0.15 UG/L)
STYRENE	ND (LOD=0.15 UG/L)
1,1,1,2-TETRACHLOROETHANE	ND (LOD=0.20 UG/L)
1,1,2,2-TETRACHLOROETHANE	ND (LOD=0.15 UG/L)
TETRACHLOROETHYLENE	ND (LOD=0.15 UG/L)
TOLUENE	ND (LOD=0.15 UG/L)
1,2,3-TRICHLOROBENZENE	ND (LOD=0.15 UG/L)
1,2,4-TRICHLOROBENZENE	ND (LOD=0.15 UG/L)
1,1,1-TRICHLOROETHANE	ND (LOD=0.15 UG/L)
1,1,2-TRICHLOROETHANE	ND (LOD=0.15 UG/L)
TRICHLOROETHYLENE	ND (LOD=0.15 UG/L)
TRICHLOROFLUOROMETHANE	ND (LOD=0.15 UG/L)
1,2,3-TRICHLOROPROPANE	ND (LOD=0.15 UG/L)
1,2,4-TRIMETHYLBENZENE	ND (LOD=0.15 UG/L)
1,3,5-TRIMETHYLBENZENE	ND (LOD=0.15 UG/L)
VINYL CHLORIDE	ND (LOD=0.20 UG/L)
M/P-XYLENE	ND (LOD=0.15 UG/L)
O-XYLENE	ND (LOD=0.15 UG/L)
VOCS IN WATER BY GC/MS - PREP - METHOD 524.2	C

---- test: TEMPERATURE ON RECEIPT-ICED - 0950

TEMPERATURE ON RECEIPT-ICED

VOCS IN WATER BY GC/MS - PREP - EPA METHOD 524.2

ICED

C

--- Footnotes ---

+: Positive results are prefixed by a plus sign.

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APPENDIX G/QUALIFICATIONS

**Site Investigation Field Procedures Workplan - METCO
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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/DSPS 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.
- Member of the Wisconsin Fabricare Institute

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 700 environmental sites.

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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.

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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).
- 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 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.

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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.

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Brandon A. Walker

Professional Title

- Staff Scientist

Credentials

- Registered through the Wisconsin Department of Safety and Professional Services as a PECFA consultant (#1052577).

Education

Includes B.S. in Geography and a minor in Environmental Studies from the University of Wisconsin- La Crosse. Applicable courses successfully completed include Water Resources, Ecology, Climate Systems, Earth Science, Zoology, Fundamentals of Cartography, Interpretation of Aerial Photography, Global Issues, Urban Geography, Environmental Sociology, and Environmental Studies.

Work Experience

With METCO since April 2007 as a Staff Scientist. Duties have included: soil and groundwater sampling, operation and maintenance of remedial systems, geoprobe projects (oversight, direction, and sampling), site mapping, data reduction and analysis, and reporting.

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Matt Michalski

Professional Title

- Staff Scientist

Credentials

- Registered through the Wisconsin Department of Safety and Professional Services as a PECFA consultant (# 1228116).

Education

Includes B.S. in Geography with and Earth Science minor from University of Wisconsin – La Crosse: Applicable courses successfully completed include Geographic Field Methods, Water Resources, Environmental Hazards and Land Use, and Advanced Map Design.

Work Experience

With METCO since August 2012 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.