CCA Facility &

Aboveground Tank Site Assessments

for

Weisenberger Tie & Lumber Company

MAR 1 7 1999

Project #42991000

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1.0 INTRODUCTION

Central Wisconsin Engineers, Inc. was retained by Weisenberger Tie and Lumber Co., Marathon, Wisconsin, to assess the effects of arsenic, chromium and copper contamination adjacent to the Copper Chromated Arsenic (CCA) facility and petroleum contamination adjacent to the aboveground tanks.

This report has been prepared to summarize the environmental concerns discovered during the investigations conducted on April 8 and 9, 1992. The data collected, field investigations and items addressed are in accordance with the Wisconsin Department of Natural Resources (WDNR) letter dated November 27, 1991.

The purpose of this investigation was as follows:

- 1. To provide all related information that is beneficial for site assessment.
- 2. To evaluate the extent of contamination to soil and groundwater both horizontally and vertically.
- 3. To evaluate the type and source of contamination.
- 4. To construct a generalized potentiometric map of the groundwater system beneath the site and estimate groundwater flow patterns.
- 5. To provide recommendations for additional field work necessary to design and implement remedial actions (if required).

2.0 GENERAL BACKGROUND INFORMATION

2.1 Responsible Party

Weisenberger Tie and Lumber Company Weisenberger Road Marathon, WI 54448

Attn: Mr. Rudy Weisenberger Phone: 715-443-2049

2.2 Engineering Consultant

Central Wisconsin Engineers, Inc. 903 Grand Avenue Rothschild, Wisconsin 54474

Attn: Hooshang Zeyghami, P.E. Phone: 715-359-9400

2.3 Drilling Contractor

WTD Environmental Drilling 101 Alderson Street Schofield, WI 54476

Attn: Mr. Bob Prueher Phone: 715-359-7090

2.4 <u>Site Location</u>

The site is located on Weisenberger Road in the NW¹/₄ of the NE¹/₄ of Section 1,

Township 28 North, Range 5 East, Town of Cassel, Marathon County, Wisconsin (see

Figures 1 and 2 in Appendix A).

3.0 SITE BACKGROUND

3.1 General Site Information

3.1.1 <u>Site Description</u>

Located on the site are three aboveground tanks used to store fuel for Weisenberger's vehicles. The tanks include a ten thousand (10,000) gallon diesel fuel tank, a four thousand (4,000) gallon #1 fuel oil tank and a five hundred (500) gallon gasoline tank. The tanks have been on-site for approximately 20 years. The steel tanks have no leak detection systems nor any secondary containment structures.

3.1.2 General Site History

Weisenberger Tie and Lumber Company sells landscape ties, preservative-treated ties and wholesale lumber. The site has been a lumber mill since 1971. One method used to treat ties is to pressure treat the ties with a copper chromated arsenic solution. The second method used to treat ties is to dip the ties in a wood preservative.

3.1.3 Past Reports of Spills

On the south end of the site in the area of the pallet mill (see Figure 3) ties were dipped in a wood preservative. Pentachlorophenol (PCP) wood preservative was mixed with diesel fuel and used as a preservative to treat ties. Past practice was to dip bundles of ties in the preservatives and then set the ties out in the yard to dry. Currently the WDNR has hired an environmental consultant to investigate that portion of the project site.

3.1.4 Proximity to Private Wells

The Weisenberger site has four (4) private wells. The well locations are shown on Figure 4. The two industrial buildings to the east of the project site, Furger Ginseng Supply and Ceranski Engineering and Machine Inc. have no private wells. Joe's Auto to the northeast of the site could not be reached by phone or by visit to verify the emistence of a private well.

3.2 <u>Description of Discharge Incidents</u>

On May 6, 1991, Inspector David Hyer, Department of Agriculture, Trade and Consumer Protection (DATCP) took two soil samples near the pressure treating building (CCA facility) in the area east of the tram (see Figure 8 for building layout). The sample taken adjacent to the tram showed elevated levels of copper and arsenic.

The CCA facility has been in use since March 1988. The amount of contaminant discharged is not known; however, contaminated soils were found in the area east of the tram and in the area adjacent to the concrete drip pad. Presently there are no known groundwater contamination problems from the discharge of copper, chromium and arsenic.

The area around the aboveground petroleum storage tanks has been suspected as a location of soil contamination. Although no product is known to have leaked from the tanks through product gallon usage and measuring, the area to the south of the tanks was suspected to be contaminated because of the practice of hanging the dispenser nozzles upside down after refueling vehicles. This practice probably has been used since

the tanks were brought on-site. Presently there are no wells known to be contaminated by hydrocarbons from this area.

3.3 Impacts

The area east of the CCA facility is of particular concern because of the close proximity of the Furger Ginseng Supply building. This building is approximately 150 feet to the east-southeast of where contaminated soils were found.

The area around the aboveground tanks is not adjacent to any other properties. Private well PW-1 is located approximately 400 feet to the southwest and PW-4 is located approximately 300 feet to the east of the tanks.

3.4 Past Activities

3.4.1 Pressure Treating Wood Preservation

The process involves hauling ties into the CCA facility and pressure treating the ties with the CCA solution in a pressure chamber. After the ties are treated, they are brought out of the building on a tram. Here the ties are allowed to drip. Preservative that drips from the ties drains back into a holding tank. After the ties are allowed to drip, they are moved to the adjacent concrete pad to dry.

It appears that wind is blowing preservative off the ties as they sit on the tram. To prevent this from happening in the future, Weisenberger is currently building a wall on the leeward side of the tram. Another concern in the CCA facility area is the possibility of preservative dripping off the pad onto the ground. The quantities of preservative that may have been discharged to the environment in this fashion are unknown. To correct this problem, Weisenberger is looking into building a higher concrete wall around the concrete drip pad. Presently there is only a 2" lip around the perimeter.

Because of the elevated levels of contaminants shown in the DATCP sampling on May 6, 1991, the WDNR required that a site investigation of the area around the CCA facility be conducted to determine the extent and degree of contamination. This report contains the results of that investigation.

3.4.2 Aboveground Petroleum Storage Tanks

Although the three storage tanks have not been tested for leaks, they are all in good condition and are therefore not suspected of having lost any product.

Instead, the practice of hanging the nozzles upside down after refueling the vehicles appears to a source of contamination south of the tanks. The possible quantities of petroleum products discharged in this fashion are unknown. Because the tanks currently have no secondary containment structures around the tanks, the WDNR is requiring Weisenberger to bring these tanks up to code. In a discussion with a Weisenberger representative it was learned that the company probably will abandon the tanks and purchase fuel in town, instead of providing the secondary containment needed around the tanks.

The WDNR is requiring a site investigation of the area around the aboveground tanks to determine the extent and degree of contamination. This report contains the results of such an investigation.

3.5 Hazardous Waste Generation

Currently 78 barrels of hazardous waste are being stored in a garage on the property. The hazardous waste consists of used pentachlorophenol wood preservative that was utilized in another preservation method. Recently a request for a variance to store the drums on-site until the waste can be disposed of properly was submitted to the WNDR. At the present time, WDNR approval has not been received.

3.6 Description of Tank & Soil Removal Activities

Soils adjacent to the tanks are stained and a petroleum odor is noticeable. No soils have been excavated from this area at the present time.

The tanks appear to be in good condition. The only sign of discharge is the side of the tanks where the nozzles are hung. There probably was discharge to the ground due to overfilling and/or fuel dripping out of the nozzles when pulled out of the vehicle tanks.

3.7 Land Use Information

Prior to 1971, the project site was used for agricultural purposes by Antone Weisenberger. The lands immediately surrounding the project site to the west, north and east are used as agriculture land. The exceptions are the three lots to the east of Windy Lane which have had industrial buildings built on them. The area to the south of the project is a gravel pit.

4.0 <u>ENVIRONMENTAL ANALYSIS</u>

4.1 <u>Site Historical Significance</u>

There are no buildings on or next to the project site which have any significant historical or archeological features.

4.2 Presence of "Sensitive" Environmental Receptors

It is believed the site is not located in habitat critical to the continued existence of any threatened or endangered species. A letter from the Bureau of Endangered Resources attesting to this fact has been requested and will be added to Appendix B when received. The site is not a wetland and is not located in a 100 year floodplain (see Figure 5).

4.3 Geology

4.3.1 <u>Topography</u>

Much of Marathon County can be described as a gently rolling plain (LaBerge and Myers, 1983), but central portions of the county are more hilly due to erosion by the Wisconsin River and its tributaries. The Weisenberger Tie & Lumber Company is located within the valley of the Big Rib River, a major tributary to the Wisconsin River

that drains northwestern Marathon County. As shown on Figure 1, the project site occurs on south-facing valley slopes in an area where local relief approaches 250 feet.

4.3.2 Bedrock

Virtually all of Marathon County is included within a geologic province known as the Canadian Shield. This province is characterized by the near-surface occurrence of Precambrian igneous and metamorphic rocks that were produced by a complex sequence of tectonic events in the geologic past. Although these rocks are often shown on maps as an undifferentiated unit (i.e. Precambrian crystalline bedrock), the geologic history of northern Wisconsin has been unraveled only by detailed mapping on a local scale. One such map produced for Marathon County by LaBerge and Myers (1983) shows the project site to be underlain by quartz diorite. This is an intrusive igneous rock similar to granite and is often classified as such by well drillers.

4.3.3 Unconsolidated Materials

In uplands of central Marathon County bedrock is covered with gravelly, clayey, sandy silt that was derived from the weathering of underlying bedrock (Attig and Muldoon, 1989). The thickness of this residual layer is typically less than 6 feet, but up to 45 feet of unconsolidated material have been encountered in areas where it accumulated via hillslope processes (Attig and Muldoon, 1989).

The valley bottoms of the Wisconsin River and its major tributaries contain a combination of glacial meltwater-stream deposits and alluvial sediments left by modern

streams (Attig and Muldoon, 1989). Because the meltwater-stream sediments were deposited by high-discharge rivers that drained from a receding ice sheet to the north, they are typically better sorted and coarser grained than modern stream alluvium.

The Weisenberger property is situated on upland residual materials near their contact with meltwater-stream deposits in the Big Rib River valley. Soils mapping by the Soils Conservation Service (1989) classified this site as Fenwood silt loam, which is derived from bedrock weathering. A typical Fenwood soil profile includes 8 inches of silt loam (ML, CL-ML, or CL), 10 inches of loam to sandy loam (ML, CL-ML, SM, or SM-SC), 13 inches of gravelly loam to clay loam (CL, SC, or GC), and 12 inches of very cobbly loam to cobbly sandy clay loam (CL, SC, GC, or CL-ML). Beyond this depth of 43 inches, weathered and unweathered bedrock is usually encountered. On-site borings confirm this general description (see Appendix C).

4.3.4 <u>Hydrology</u>

The closest surface water to the Weisenberger property is a small, intermittent stream which flows generally southward about 600 feet west of the site (see Figure 1). This intermittent stream joins the Big Rib River approximately 1800 feet to the south of the southern property boundary. The Big Rib River is perennial stream which flows easterly from Marathon to the Wisconsin River.

As shown on Figure 5, the project site is not within the 100-year floodplain of the Big Rib River. Detailed floodplain information is included in Appendix D.

4.4 Hydrogeology

4.4.1 General Hydrogeology

The Wisconsin River is the regional discharge area for the Central Wisconsin River Basin, although there are many local discharge points. Near Marathon, groundwater flow is directed towards the Big Rib River as dictated by local topographic conditions (Devaul and Green, 1971).

The natural groundwater quality in this basin is considered to be generally good, although high values of hardness, iron and total dissolved solids can be found locally. Iron has its source from groundwater moving slowly through iron rich bedrock or from reducing conditions in wetland areas (marshes or swamps)(Holt, 1965). The hardness is also related to the type of rock the water travels through. Carbonate minerals (i.e. calcite and dolomite) provide calcium and magnesium to the water when dissolved, and these minerals are commonly found in the sands and gravels of the area.

4.4.2 <u>Site Hydrogeology</u>

Monitoring wells were not constructed as part of this investigation. Central Wisconsin Engineers' objective was to drill to a depth of 10 feet or until bedrock was encountered. All boreholes were advanced to 9.5 feet, although bedrock was encountered at depths ranging from 4 to 7 feet (see Appendix C). Groundwater, which occurs approximately 30 feet below the land surface, was not encountered in any of the boreholes.

A groundwater flow map was constructed based on the water levels measured the private on-site wells (see Figure 6). Because these wells are relatively deep (see

Appendix I) and probably screened at various depths, the water levels measured may not represent the actual water table. However, the local flow direction shown on Figure 6 (towards Big Rib River) is consistent with the regional water table contour map provided by Devaul and Green (1971).

The elevation of groundwater beneath the Weisenberger site indicates that it moves through bedrock. In crystalline rock, such as quartz diorite, the primary porosity and permeability is very low. Therefore, groundwater movement is restricted to fractures within the bedrock. This makes the actual flow paths within a localized area very difficult to predict.

4.5 <u>Utilities</u>

At the CCA facility, utilities of concern at the time of drilling were buried electrical and water lines.

At the storage tank area, utilities of concern were a buried electrical line and overhead power lines. Borehole locations were adjusted to avoid utilities.

5.0 <u>SITE SURVEY</u>

The site was not surveyed for this investigation, but was previously surveyed for another investigation. The boreholes were measured from surrounding buildings. See Figure 8 and 9 for borehole locations.

6.0 CONTAMINATION MIGRATION

6.1 <u>Migration Pathway</u>

At the CCA facility, buried electric lines run from north to south through the impacted area east of the tram. Two buried water lines run through the impacted area north and west of the concrete drip pad.

At the aboveground tanks, a buried electrical line runs from the tank to the storage garage.

6.2 <u>Contamination Receptors</u>

Possible receptors of migrating contamination include all four private wells on the Weisenberger property. Figure 4 shows the locations of these wells. PW-2 was drilled in what has become an impacted area adjacent to the CCA facility (see Figure 8). PW-3 is approximately 180 feet west of the CCA facility concrete drip pad. PW-4 is approximately 300 feet to the east of the aboveground storage tanks. The private well for the house (PW-1) is 400 feet west of the tank area.

6.3 <u>Potential Health Impacts</u>

Private Well PW-2 is of primary concern because it is in a contaminated soil area. PW-2 is used to provide water to the CCA facility for the pressure treating process,

Private well PW-4 is of concern because of its location downgradient of CCA facility. Water from that well is occasionally used by Ceranski Engineering and Machine, Inc.

7.0 FIELD INVESTIGATIONS

Nine (9) test borings were drilled on April 8 and 9, 1992, in the area of the CCA facility and three (3) test borings were drilled in the area of aboveground tanks by WTD Environmental Drilling. Drilling was supervised by Central Wisconsin Engineers, Inc. personnel. Boring placement was adjusted for utilities and water lines. Boring locations are shown on Figures 7 and 8.

The borings were drilled using an all-terrain mobile drilling rig. To advance the boreholes, 3¼ and 4¼ inch hollow stem augers were employed. No water or additives were used during drilling. Split spoon samples were collected from the borings using standard undisturbed sampling techniques. The samples were obtained by driving a two inch diameter (OD) sample spoon with a 140-pound weigh free falling 30 inches. Field boring logs were kept during drilling and are included in Appendix C.

8.0 SOIL SAMPLING

8.1 <u>Sample Results from Borings</u>

Table 1 shows the laboratory results for soil samples collected near the CCA facility. These samples were analyzed for total arsenic, total chromium and total copper. Included in Table 1 are the depths from which samples were taken.

Table 2 contains the field information and laboratory results for soil samples collected from the area adjacent to the aboveground tanks. These samples were analyzed for diesel range organics and petroleum volatile organic compounds (PVOC).

Table 1 - Soil Samples - CCA FacilityWeisenberger Tie & Lumber - Marathon, WI

<u>Sample</u>	Depth (feet)	<u>Arsenic</u>	<u>Chromium</u>	<u>Copper</u>
TB1-1	0-2	14	18	12
TB1-2	21/2-41/2	1.1	15	15
TB2-1	0-2	0.6	7.0	11
TB2-2	21/2-41/2	1.1	14	14
TB3-1	0-2	6.6	17	15
TB3-2	21⁄2-41⁄2	1.1	39	21
TB4-1	0-2	130	37	26
TB4-2	21/2-41/2	0.3	26	23
TB5-1	0-2	0.4	2.3	13
TB5-2	21/2-41/2	0.7	18	22
TB6-1	0-2	30	17	16
TB6-2	21⁄2-41⁄2	1.1	16	16
TB7-1	0-2	190	150	91
TB7-2	21/2-41/2	1.9	16	17
TB8-1	0-2	420	170	110
TB8-2	21/2-41/2	1.7	12	10
TB9-1	0-2	1600	1200	760
TB9-2	21⁄2-41⁄2	1.5	21	14

Units in mg/kg = parts-per-million

The complete laboratory results are in Appendix E.

Table 2 - Soil Samples - Aboveground Tanks Weisenberger Tie and Lumber Company, Marathon, WI

Sample	Depth (feet)	Field Screening	Diesel Range Organics	e OOSS Benzene	-0049 Ethyl- benzene	۱ <u>۶</u> Toluene	Ч.1 Xylenes	MTBE	1,2,4- Trimethyl- benzene	1,3,5- Trimethyl- benzene
TB10-1	0-2	13	440	ND	ND 2 COIL	NDL.coll	.0033	ND	0.004	0.0014
TB10-3	5-7	2	ND < 5	NDL.0011	NDZ.001	3.2B	ND4.0033	ND: .0611	ND	ND
TB11-1	0-2	66	1,300	NDL	0.0053	NDL.col	0.120	ND4.com	0.210	0.150
TB11-3	5-7	6	230	ND4.0011	ND C.OON	ND2.0011	NDL. UBB	ND	0.0019	0.0011
TB12-1	0-2	126	46,000	ND4.150	3.1	0.15	7.2	NDASO	6.4	32.0
TB12-2	21/2-41/2	114	5,400	ND 4.140	0.52	0.21	2.40	NDC. 140	6.2	5.1

* = parts-per-million meter units as isobutylene ND = Not Detected Units in ppm = parts-per-million NOTE: HNu Calibration: Span 2.98, Date 4-9-92

B = Detected in lab blank at $1 \mu g/kg$

The complete laboratory results are in Appendix F.

8.2 Soil Sample Results - CCA Facility

The interpretation of soil chemistry data such as that shown in Table 1 requires an understanding of naturally occurring soil metal contents. Based on literature values and our experience in the Central Wisconsin region, we have established the following background levels: (1) arsenic - less than 13 mg/kg; (2) chromium - less than 20 mg/kg; and (3) copper - less than 25 mg/kg.

The values cited above would suggest that at least five and possibly seven of the borings penetrated areas of soil contamination: TB-4, TB-6, TB-7, TB-8, TB-9 are certainly contaminated, and TB-1 and TB-3 may also be contaminated. The only value which appears to be above background in TB-1 is the 14 mg/kg arsenic. In TB-3 the 39 mg/kg chromium may represent contamination. There is also a significant decrease in arsenic content with depth for TB-3. It should be noted that no soil staining or odor was apparent during field sampling.

8.3 Soil Sample Results - Aboveground Tanks

Soil samples from TB-10, TB11 and TB-12 show concentrations of diesel range organics exceeding the limit of 10 ppm as established by the Wisconsin Department of Natural Resources (see Table 2). Most of the samples also showed very high levels of petroleum volatile organic compounds (PVOC). All test borings showed levels of contamination as identified by field screening. In the area where the borings were placed there was soil staining and an odor present.

8.4 <u>Sampling Methods Used</u>

Soil samples were collected for laboratory analysis from the split spoon during drilling of the boreholes at 2½ foot intervals. Sampling followed Standard Operating Procedures described in Appendix G. Samples for analytical analysis were placed in laboratory supplied jars. Samples for borings TB-1 through TB-9 were placed in 500 ml plastic jars. Samples for borings TB-10, TB-11 and TB-12 were placed in 4 oz. glass jars.

8.5 <u>HNu Calibration</u>

The HNu photoionization detector used for field screening of soil samples for volatile organic compounds (VOCs) is calibrated each time it is used in accordance with the manufacturer's instructions.

The HNu is calibrated with a 100 ppm isobutylene/air mixture. The pressurized gas is released through a hose directly to the 8" extension of the photoionization probe. As the instrument draws in the volume of sample required for detection, the span potentiometer is adjusted to a reading of 58 ppm with the 10.2 ev lamp. All HNu responses contained in this report are shown relative to 100 ppm isobutylene. Because HNu screening is not a quantitative method and screening detects total ionizable hydrocarbons, lab analysis and soil screening results do not directly correlate. However, screening does give a qualitative indication of the magnitude of contamination present.

8.6 <u>HNu Sampling Procedures</u>

The samples gathered for HNu analysis were collected using a disposable latex gloves. The samples were placed in clean, clear glass bottles (1/2 full) and covered tightly with aluminum foil. Samples were placed in a protected area and allowed to reach an approximate temperature of 70° F. The head space soil gases were then measured by gently placing the probe through the aluminum foil. The meter readings are direct from a needle gauged potentiometer in parts per million (ppm). The span potentiometer was adjusted to 2.98 on April 9, 1992.

8.7 <u>Temperatures During Collection</u>

Samples taken for borings TB-1 through TB-6 on April 8, 1992, were not field screened. Ambient air temperatures during sample collection ranged from 25°-42°F.

Samples taken for borings TB-7 through TB-9 on April 9, 1992, were not field screened. Ambient air temperatures during sample collection ranged from 29°-35°F.

Samples taken for borings TB-10 through TB-12 on April 9, 1992, were field screened. Individual temperature of sample jars were not taken, but the headspace jars were allowed to sit in a heated vehicle for a minimum of 20 minutes before reading. Ambient air temperatures during sample collection ranged from 35°-48°F.

9.0 QUALITY ASSURANCE AND QUALITY CONTROL

9.1 <u>General OA/OC</u>

Samples were analyzed by Ortek Environmental laboratory, 2496 West Mason

Street, Green Bay, Wisconsin, Ortek's Wisconsin Certification Number is 405099530. There were no blanks submitted with samples. See Appendix E for laboratory reference to spikes. Samples were collected by Dale R. Kauzlaric, DILHR Certification Number 01827 for Site Assessment.

9.2 Field Instrument Quality Control

The photoionization analyzer is a Model PI 101, made by HNu Systems, Inc. with a 10.2 ev lamp. The instrument is limited to an operating ambient temperature to 40°C and ambient humidity to 95% RH. The instrument is temperature compensated. The instrument was calibrated to manufacturer's instructions prior to usage on April 9, 1992. The instrument is calibrated with a 100 ppm isobutylene/air mixture. No calibration curves or correction factor were used.

9.3 Field Sampling and Transportation Quality Control & Assurance

9.3.1 CCA Facility

Samples were analyzed for copper, chromium and arsenic. See Figure 8 for specific boring locations. No field samples were taken. Laboratory samples were taken at each sampling point. The first two samples from each boring were sent to the laboratory for analysis.

Soil samples were collected for analysis from the split spoon during drilling of the boreholes. Boreholes were drilled to 10 feet or bedrock with four (4) samples being taken at 2½ foot intervals. Upon retrieval of the split spoon after driving the sampler in

undisturbed soil, the soil was placed in laboratory supplied 500 ml plastic jars. Samples were collected from the sampler with disposable latex gloves. Containers were filled to the top such that no headspace remained. The jars were properly sealed and labeled and immediately placed in a cooler with ice. Samples were collected on April 8 and 9, 1992. See the chain of custody forms in Appendix E for specific sampling times.

No field preservation was required by the laboratory and none was performed.

The split spoon sampler was steamed cleaned prior to initial use. After each sample, the sampler was cleaned with water and Alconox detergent and rinsed with distilled water. All augers were steamed cleaned prior to use or reuse on the site.

There were no deviations from the standard operating procedures contained in Appendix G.

Samples were properly labeled and sealed and shipped on April 9, 1992 at 3:50 pm. Samples were placed in plastic ziploc bags and shipped on ice.

9.3.2 Aboveground Tanks

Samples were analyzed for diesel range organics (DRO) and petroleum volatile organic compounds (PVOC). See Figure 9 for specific boring locations. Laboratory and field samples were taken at each sampling point with the laboratory sample collected prior to the field sample. The two samples from each boring with the highest field screening were sent to the laboratory for analysis. The exception is TB-11, where sample TB11-2 had insufficient sample recovery to submit to the laboratory. TB11-3 was collected and sent to the laboratory instead. Soil samples were collected for analysis from the split spoon during drilling of the borehole. Boreholes were drilled to ten feet or bedrock with four (4) samples being taken at 2½ foot intervals. Upon retrieval of the split spoon after driving the sampler in undisturbed soil, the soil was placed in laboratory supplied 4 oz. glass jars. Samples were collected from the sampler with disposable latex gloves. Containers were filled to the top such that no headspace remained. The jars were properly sealed and labeled and immediately placed in a cooler with ice. Samples were collected on April 9, 1992. See the chain of custody form in Appendix F for specific sampling times.

No field preservation was required by the laboratory and none was performed.

The split spoon was steamed cleaned prior to initial use. After each sample, the sampler was cleaned with water and Alconox detergent and rinsed with distilled water. All augers were steamed cleaned prior to use.

Deviations from the standard operating procedures include using 4 oz. jars instead of 40 ml VOC vials for DRO as the jars were supplied by laboratory; and no duplicate samples were sent in because of lack of sample recovery to fill all the jars necessary for duplicate samples.

Samples were properly labeled and sealed and shipped on April 9, 1992 at 3:55 pm. Samples were placed in plastic ziploc bags and shipped on ice.

9.4 Laboratory Receipt and Analysis

Chain of custody forms (4400-151) for the LUST program were not used because the areas investigated were not from underground storage tanks. Samples were received by Ortek on April 10, 1992 at 13:01. Samples were received with seal intact and at 2.0°C. Copper and chromium analysis were done on April 29, 1992, arsenic analysis was done on April 30, 1992 and DRO and PVOC analyses were done on April 14, 15 or 16, 1992. Laboratory detection limits for arsenic, copper and chromium were not noted on laboratory data sheets. Laboratory detection limits for DRO and PVOC varied with concentrations, see Appendix E & F for individual detection limits. See Tables 1 and 2 for sample results and Appendices E and F for actual laboratory data sheets. See laboratory sheets for spike notations.

10.0 INVESTIGATIVE WASTES

Soil cuttings were placed in WisDOT approved fifty five (55) gallon barrels and remain on-site.

11.0 BOREHOLE ABANDONMENT

All boreholes were properly abandoned with chipped bentonite. Borehole abandonment forms are included in Appendix H.

12.0 SUMMARY AND EVALUATION OF RESULTS - CCA FACILITY

12.1 Degree and Extent Determination

Contamination was detected in all of the shallow soil samples collected adjacent to the concrete pad (TB-6 through TB-9); therefore it is not possible to define the horizontal extent of contamination on the western side of the CCA facility (see Figure 8). To the east of the tram, one sample definitely showed contamination (from TB-4), and two others may also be contaminated (from TB-1 and TB-3). The contaminant levels are much lower on the east side, and the effects of previous spills or discharges appear to become negligible beyond 15 feet of the tram. The data in Table 1 indicate that soil contamination by arsenic, chromium or copper does not extend more than 2½ feet below the land surface. Whatever discharge of contaminants occurred here in the past has apparently been attenuated within the upper two feet of soil material. This suggests that contamination has not reached bedrock or the groundwater.

12.2 Potential Impacts

Private Well PW-4 is in the area of known soil contamination (see Figure 8). However, PW-4 is set in bedrock at a depth of 142 feet (see Appendix I), and it is unlikely that contaminants have reached the groundwater which recharges this well.

There is a buried electric line that traverses the contaminated area which may be a potential pathway for contamination migration. The likelihood of this occurring is small, because the electric line runs to the east of known contamination limits (see Figure 8).

The possibility of contaminant migration with surface runoff exists because of the sloping topography adjacent to the CCA building.

13.0 <u>CONCLUSIONS AND RECOMMENDATIONS</u>

Because the horizontal extent was not the determined, further investigation is

needed. Central Wisconsin Engineers, Inc. (CWE) recommends additional borings further to the west and north of the concrete pad to determine the extent of contamination in that area. When the horizontal extent is determined, the soil should be excavated to a depth of at least 2 feet below the land surface. The soil will have to be containerized and properly treated or disposed of.

14.0 SUMMARY AND EVALUATION OF RESULTS-ABOVEGROUND TANKS

14.1 Degree and Extent Determination

All three of the borings drilled in this area encountered petroleum product (see Table 2). Therefore, the horizontal extent of contamination can not be determined. Samples from TB-10 and TB-11 show that contamination extends to a depth of 5 to 7 feet. TB-12 shows that contamination exists to at least 4½ feet. Bedrock in this area was encountered at approximately 7½ feet below ground surface. Therefore,

petroleum products may have migrated to the bedrock and also contaminated the groundwater.

14.2 Potential Impacts

There are no private wells in the area immediately adjacent to the storage tanks. There is one buried electrical line in the area of contamination that may act as a migration pathway. The area around the aboveground tanks is fairly flat, and potential impacts from surface runoff appear to be minimal.

15.0 <u>CONCLUSIONS AND RECOMMENDATIONS</u>

Because the horizontal extent was not determined, further investigation is needed. CWE recommends additional borings to determine the extent of the contamination in the area around the tanks.

CWE also recommends the placement of monitoring wells to monitor any effects of the contamination on the groundwater. After the additional investigative work, a remedial action plan could be developed.

Before any work is initiated, a work plan will be submitted to the WDNR for approval.

16.0 GENERAL QUALIFICATIONS AND LIMITATIONS

Field and laboratory tests were conducted on samples collected at the locations specified in this report. Sample locations, numbers and parameters analyzed for in each sample were determined by Central Wisconsin Engineers, Inc. personnel in accordance with the Wisconsin Department of Natural Resources (WDNR) letter dated November 27, 1991 and the Leaking Underground Storage Tank (LUST) Analytical Guidance (June 1991). Variation in soil tests may occur in both the horizontal and vertical directions between any test locations. Because of these potential variations, no warranty or guarantee, expressed or implied, can be made by Central Wisconsin Engineers, Inc. in respect to all in-place soils, excavated soils or groundwater quality at the site. The results and conclusions contained herein are based upon the data supplied to Central Wisconsin Engineers, Inc. by the analytical laboratory(ies) indicated in the Appendices.

17.0 <u>REFERENCES</u>

- Attig, J.W., and Muldoon, M.A., 1989, Pleistocene Geology of Marathon County, Wisconsin; Wis. Geol. and Nat. History Survey, Info. Circ. 65, 27 p.
- Devaul, R.W. and Green, J.H., 1971, Water Resources of Wisconsin; Central Wisconsin River Basin, U.S. Geol. Survey Hydrologic Investigations Atlas HA-367, 4 sheets
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- Federal Emergency Management Agency, 2-3-81, Flood Insurance Study, Table 2 and 10 p.
- Soil Conservation Service, 1989, Soil Survey of Marathon County, Wisconsin, U.S. Dept. of Agric., 217 p.

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APPENDIX A FIGURES

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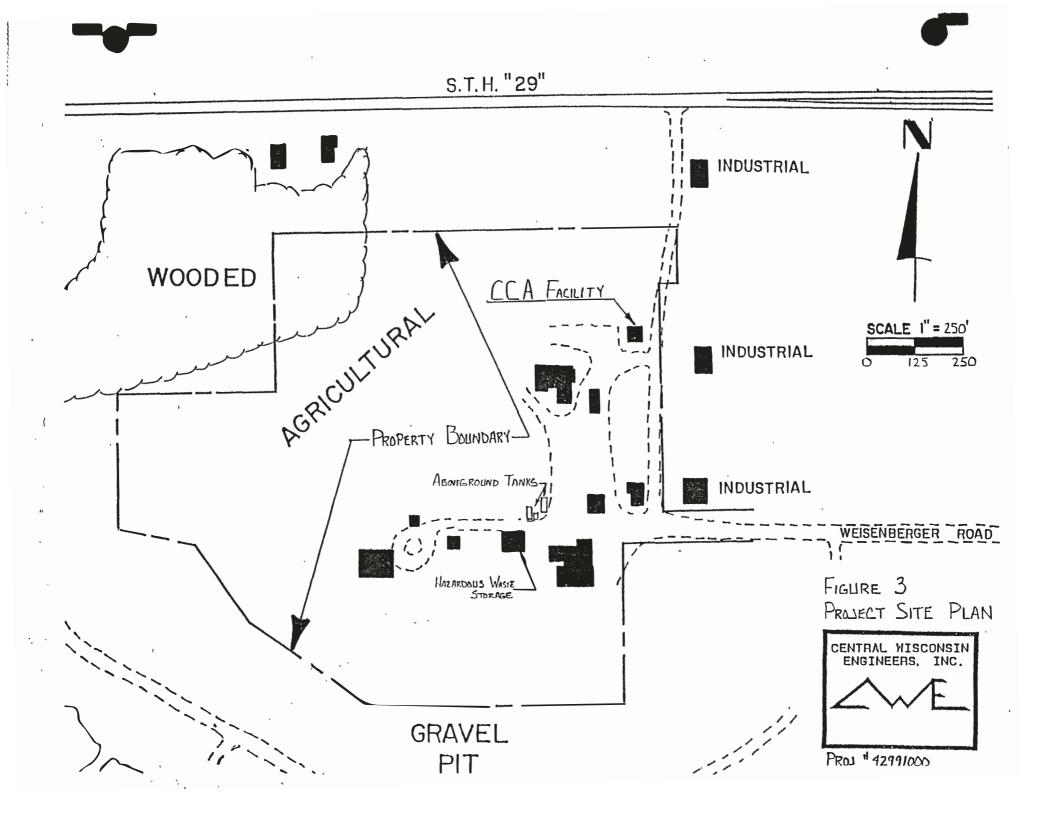
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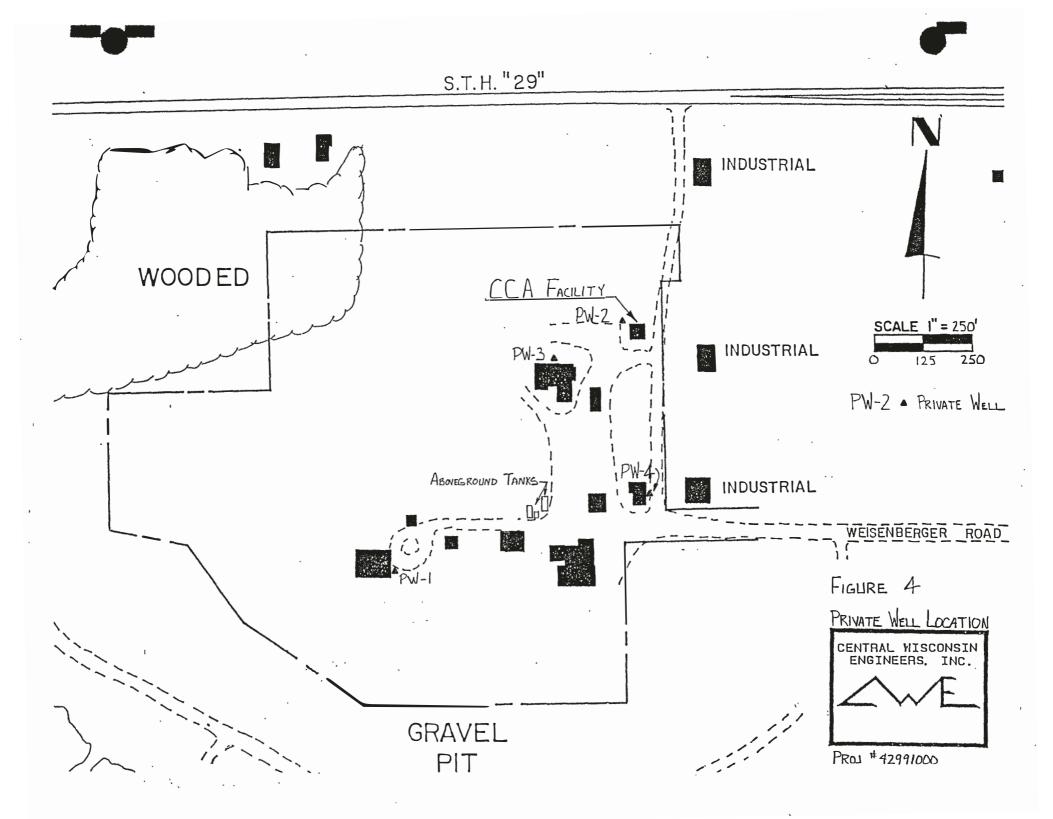


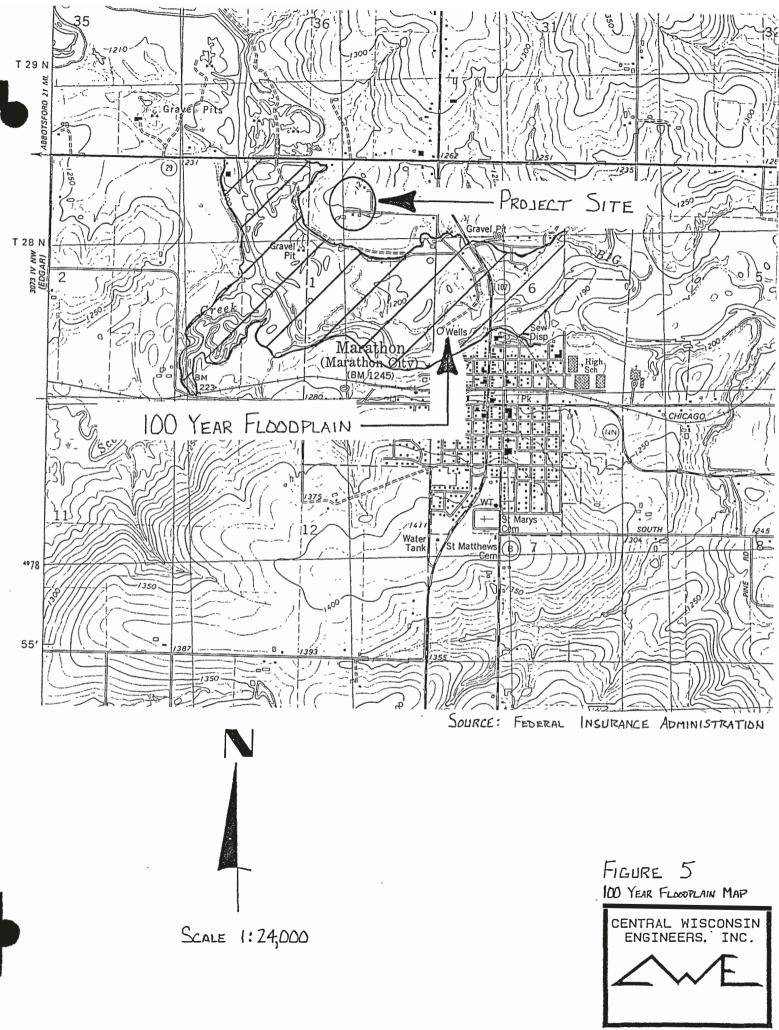
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FIGURE 2 SITE LOCATION



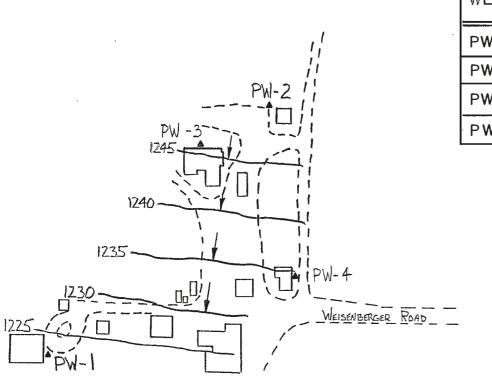






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PW3	1328.0	865.3	NA	NA	1275.80	1245.80
PW-4	997.7	1108.5	NA	NA	1261.33	1233.88

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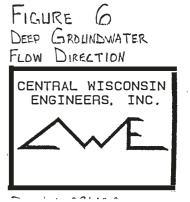
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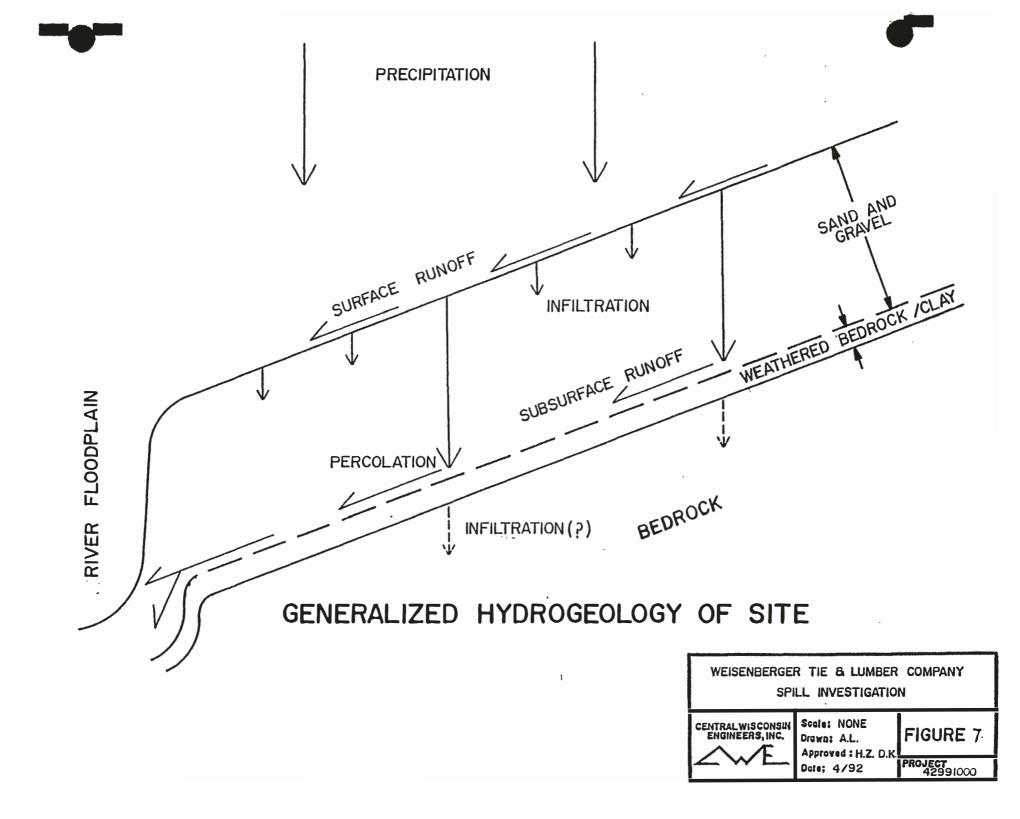
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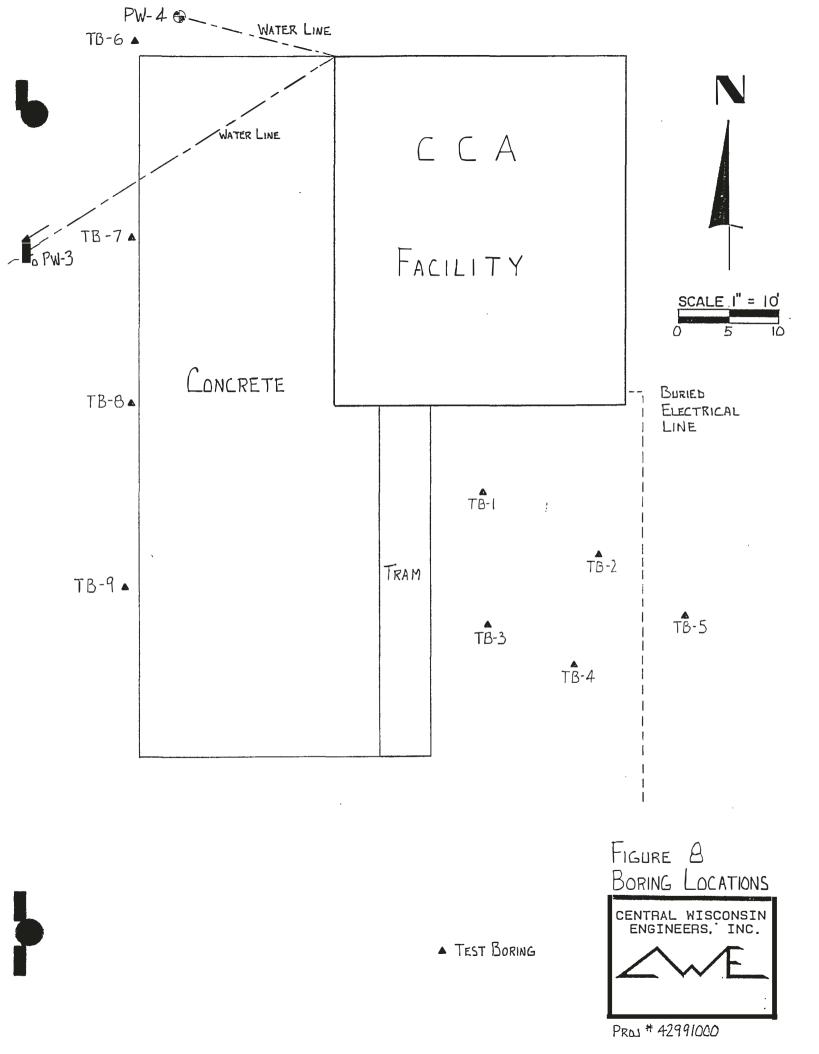
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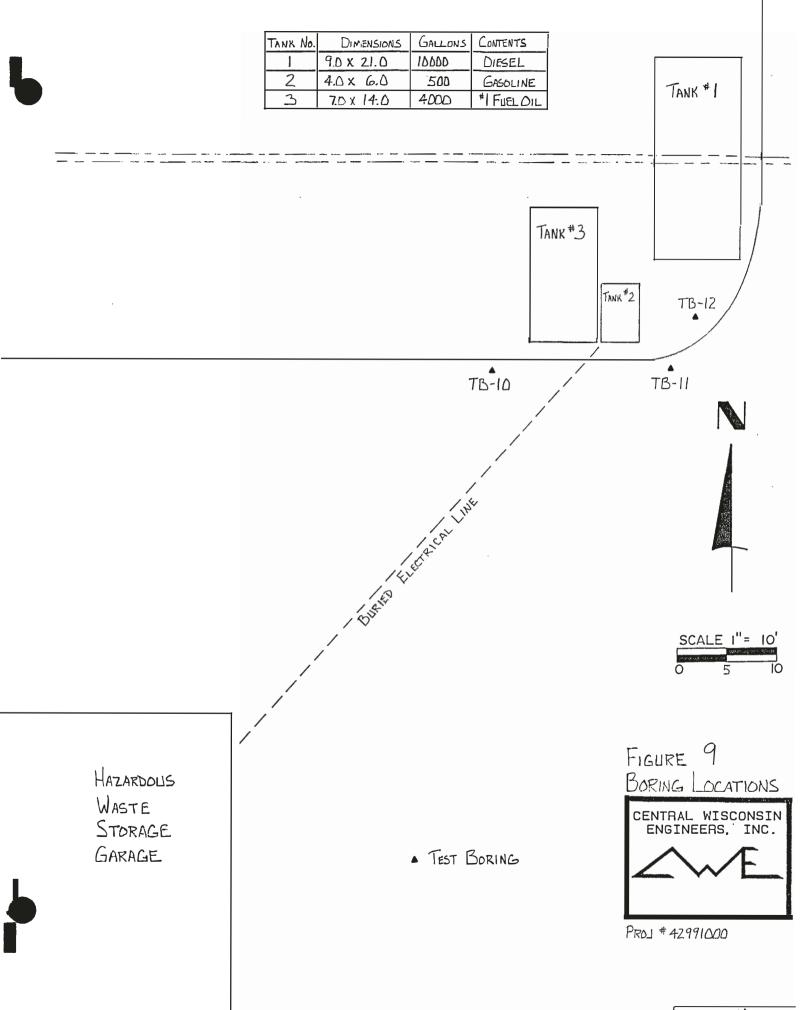
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APPENDIX B

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APPENDIX C BORING LOGS

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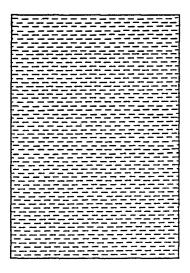
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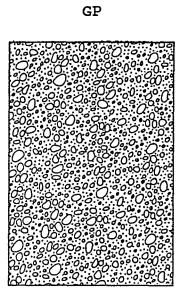
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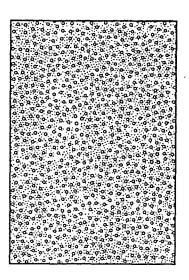
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Key for Graphic Log Chart DNR Soil Boring Information Form 4400-122 (7/91)

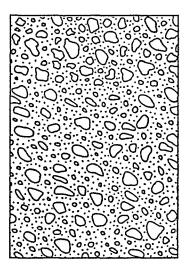
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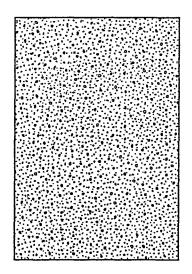






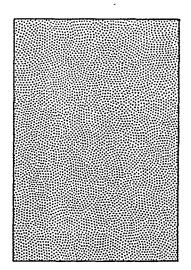
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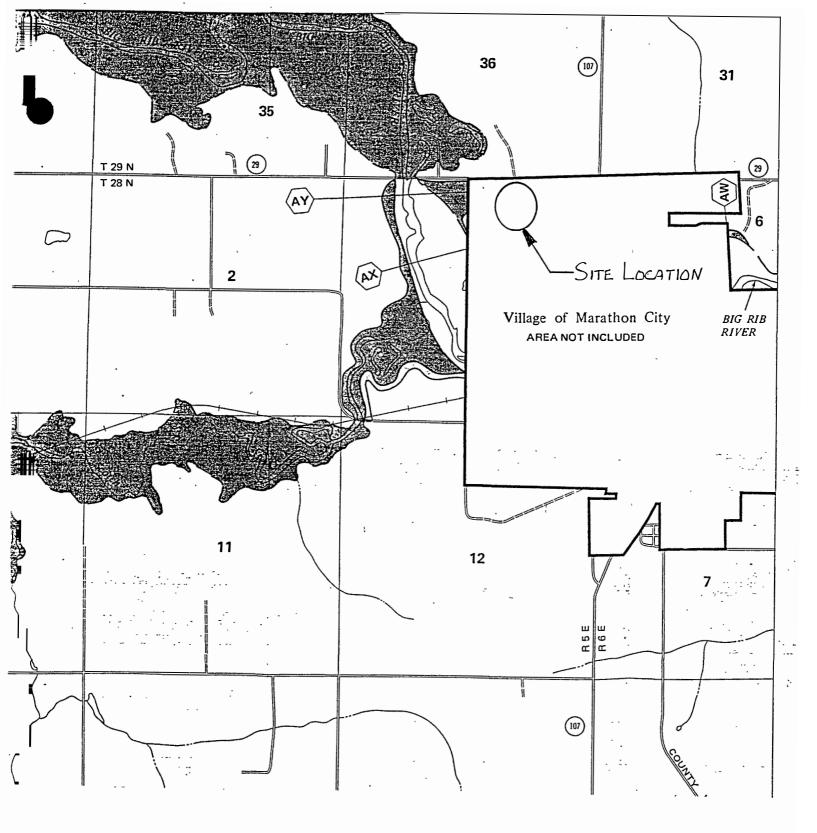
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APPENDIX D

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FLOODPLAIN INFORMATION

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FEDERAL INSURANCE ADMINISTRATION FLOODWAY MAP PANEL No. 550245 0350

FLOODING SOURCE FLOODWAY BASE FLOOD WATER SURFACE ELEVATION **SECTION** MEAN REGULATORY INCREASE WITHOUT . WITH WIDTH DISTANCE¹ CROSS SECTION AREA VELOCITY FLOODWAY FLOODWAY (FEET) (FEET/SEC.) (SQ. FEET) (NGVD) (NGVD) (NGVD) (FEET) **BIG RIB RIVER** AA 8.91 1231 10.750 3.3 1190.6 1190.6 1190.6 0.0 AB 9.08 1289 11,570 3.1 1191.0 1191.0 1191.0 0.0 AC 2.3 1191.7 1191.7 9.28 1650 15,760 1191.7 0.0 20,620 1.7 1192.2 AD 2427 1192.2 1192.2 9.44 0.0 AE 9.60 2415 17,890 2.0 1192.7 1192.7 1192.7 0.0 AF 9.77 2006 21,230 1.7 1193.3 1193.3 1193.3 0.0 AG 2501 21,580 1193.7 1193.7 1193.7 9.94 1.7 0.0 AH 10.08 2629 28.050 1.3 1194.2 1194.2 1194.2 0.0 AI 10.32 1517 13.280 2.7 1194.4 1194.4 1194.4 0.0 AJ 10.47 1668 1194.9 1194.9 1194.9 21.410 1.7 0.0 AK 10.59 1916 20.560 1.7 1195.0 1195.0 1195.0 0.0 AL 10.76 13,660 2.6 1195.3 1195.3 1195.3 0.0 2111 AM 10.93 2550 27.570 1.3 1196.1 1196.1 1196.1 0.0 AN 11.34 3054 28,250 1.2 1196.2 1196.2 1196.2 0.0 2.5 AO 11.50 2647 13.930 1196.2 1196.2 1196.2 0.0 AP 11.64 1821 8200 4.3 1196.5 1196.5 1196.5 0.0 AQ 11.81 1515 10,410 1197.1 1197.1 1197.1 0.0 3.4 AR 2499 12,720 2.7 1198.7 1198.7 1198.7 0.0 12.18 AS 12.27 2224 13,710 2.5 1199.9 1199.9 1199.9 0.0 AT 12.54 1643 10.390 3.4 1201.1 1201.1 1201.1 0.0 1699^{2} 3.2 1202.3 1202.3 12.74 11,000 1202.3 0.0 AU AV 12.92 1900^{2} 11.770 3.0 1202.8 1202.8 1202.8 0.0 AW 13.73 2080^{2} 20,710 1.7 1203.8 1203.8 1203.8 0.0 AX 15.34 1443² 12,710 · == 2.7 1206.7 1206.7 1206.7 0.0 AY 1208.2 1208.2 15.66 797 7260 4.7 1208.2 0.0 ¹MILES ABOVE MOUTH ²THIS WIDTH EXTENDS WITHIN VILLAGE OF MARATHON CITY

FEDERAL EMERGENCY MANAGEMENT AGENCY Federal Insurance Administration COUNTY OF MARATHON, WI (UNINCORPORATED AREAS)

TABLE

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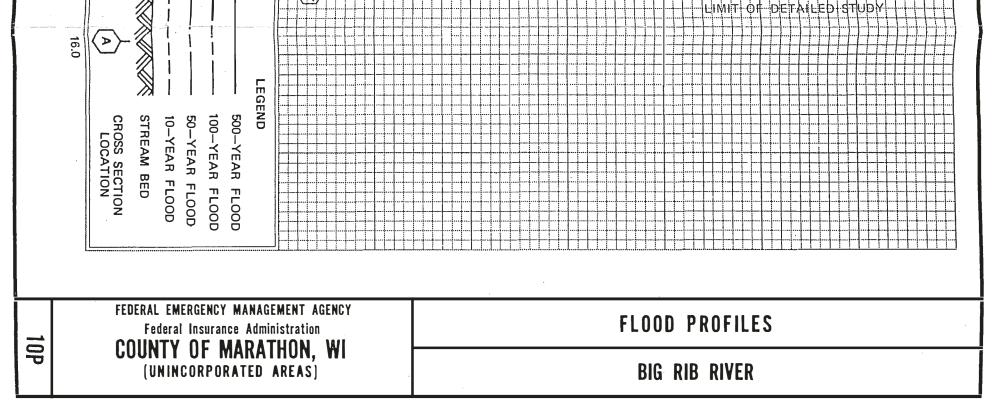
BIG RIB RIVER

FLOODWAY DATA



<u>:</u> · .-

ELEVATION IN FEET (NGVD) 1160 1170 1180 1190 1220 1200 1210 11.0 11.5 12.0 12.5 STREAM DISTANCE IN MILES ABOVE MOUTH VILLAGE OF MARATHON CIT CORPORATE LIMITS 13.0 13.5 MARATHON CI VILLAGE OF 14.0 14.5 VILLAGEOF MARATHON **I**GIT 15.0 CORPO AX 15.5 STATE HIGHWAY 29



APPENDIX E

LABORATORY RESULTS - CCA FACILITY



Client: CENTRAL WISCONSIN ENGINEERS Lab Sample No. 124375-124392 903 GRAND AVENUE ORTEK Batch No. 9204101 ROTHSCHILD WI 54474

.....

Client Contact: DALE KAUZLARIC Client ID #: TB1-1 THRU TB9-2 Client Project: 42991000/WEISENBERGER

1.0 SCOPE OF ANALYTICAL SERVICES

- Eighteen (18) soil samples were received at ORTEK on 1.1 04/10/92.
- 1.2 The eighteen (18) soil samples were analyzed in accordance with ICAP and GFAA Methods.

2.0 ANALYTICAL RESULTS

- Based on the analytical services performed, attached is 2.1 a summary of the Metals Data and a Chain of Custody for your records.
- Furthermore, ORTEK identifies and lists below 2.2 difficulties encountered while performing the analytical service:
 - Arsenic Duplicate and spike out of control. Sample matrix problem.

James Chang, Ph.D

Laboratory Director



- SAMPLE ANALYSIS REPORT -

CENTRAL WISCONSIN ENGINEERS To: 903 GRAND AVENUE **ROTHSCHILD WI 54474**

Attn: DALE KAUZLARIC

Batch ID : 9204101 Our lab # : 124375 Your sample ID: TB1-1 Sample Matrix : SOIL

Report Date: 05/05/92

COLLECTION INFORMATION

Date/Time/By: 04/08/92 09:15 DK Location : 42991000/WEISENBERGER

Lab#	Test	Result	Units	Analysis Date
124375	Arsenic Total Solids Chromium Copper	89.2 18	% MG/KG	04/30/92 04/15/92 04/29/92 04/29/92

*** DUPLICATE AND SPIKE OUT OF CONTROL. SAMPLE MATRIX PROBLEMS.

Signed

Date_	5-5-92
Date	



414-498-2222 FAX: 414-498-4067 Green Bay, WI 54307-2435

2496 West Mason Street

- SAMPLE ANALYSIS REPORT -

To: CENTRAL WISCONSIN ENGINEERS 903 GRAND AVENUE ROTHSCHILD WI 54474

Attn: DALE KAUZLARIC

Batch ID : 9204101 Our lab # : 124376 Your sample ID: TB1-2 Sample Matrix : SOIL

Report Date: 05/05/92

COLLECTION INFORMATION

Date/Time/By: 04/08/92 09:08 D K Location : 42991000/WEISENBERGER

Lab#	Test	Result	Units	Analysis Date
124376	Arsenic Total Solids Chromium Copper	94.1 15	% MG/KG	04/30/92 04/15/92 04/29/92 04/29/92

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Date	<u>5-5</u>	-92

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Date____



- SAMPLE ANALYSIS REPORT -

CENTRAL WISCONSIN ENGINEERS To: 903 GRAND AVENUE **ROTHSCHILD WI 54474**

Attn: DALE KAUZLARIC

Batch ID : 9204101 Our lab # : 124377 Your sample ID: TB2-1 Sample Matrix : SOIL

Report Date: 05/05/92

COLLECTION INFORMATION

Date/Time/By: 04/08/92 11:05 D K Location : 42991000/WEISENBERGER

Lab#	Test	Result Unit	Analysis s Date
124377	Arsenic Total Solids Chromium Copper	90.4 % 7.0 MG/K	G 04/30/92 04/15/92 G 04/29/92 G 04/29/92

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Date_	5-5-92
Date	



- SAMPLE ANALYSIS REPORT -

CENTRAL WISCONSIN ENGINEERS To: 903 GRAND AVENUE **ROTHSCHILD WI 54474**

Attn: DALE KAUZLARIC

Batch ID : 9204101 Our lab # : 124378 Your sample ID: TB2-2 Sample Matrix : SOIL

Report Date: 05/05/92

COLLECTION INFORMATION

Date/Time/By: 04/08/92 11:00 DК Location : 42991000/WEISENBERGER

Lab#	Test	Result	Units	Analysis Date
124378	Arsenic Total Solids Chromium Copper	93.1 14	% MG/KG	04/30/92 04/15/92 04/29/92 04/29/92

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Date_	5-5-12
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- SAMPLE ANALYSIS REPORT -

CENTRAL WISCONSIN ENGINEERS To: 903 GRAND AVENUE **ROTHSCHILD WI 54474**

Attn: DALE KAUZLARIC

Batch ID : 9204101 Our lab # : 124379 Your sample ID: TB3-1 Sample Matrix : SOIL

Report Date: 05/05/92

COLLECTION INFORMATION

Date/Time/By: 04/08/92 12:12 D K Location : 42991000/WEISENBERGER

Lab#	Test	Result	Units	Analysis Date
124379	Arsenic Total Solids Chromium Copper	89.5 17	% MG/KG	04/30/92 04/15/92 04/29/92 04/29/92

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Date_	5-5-92
Date	



414-498-2222 FAX: 414-498-4067 Green Bay, WI 54307-2435

- SAMPLE ANALYSIS REPORT -

To: CENTRAL WISCONSIN ENGINEERS 903 GRAND AVENUE ROTHSCHILD WI 54474

Attn: DALE KAUZLARIC

Batch ID : 9204101 Our lab # : 124380 Your sample ID: TB3-2 Sample Matrix : SOIL

Report Date: 05/05/92

COLLECTION INFORMATION

Date/Time/By: 04/08/92 12:06 D K Location : 42991000/WEISENBERGER

Lab#	Test	Result	Units	Analysis Date
124380	Arsenic Total Solids Chromium Copper	89.1 39	% MG/KG	04/30/92 04/15/92 04/29/92 04/29/92

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- SAMPLE ANALYSIS REPORT -

To: CENTRAL WISCONSIN ENGINEERS 903 GRAND AVENUE ROTHSCHILD WI 54474

Attn: DALE KAUZLARIC

Batch ID : 9204101 Our lab # : 124381 Your sample ID: TB4-1 Sample Matrix : SOIL

Report Date: 05/05/92

COLLECTION INFORMATION

Date/Time/By: 04/08/92 13:18 D K Location : 42991000/WEISENBERGER

Lab#	Test	Result	Units	Analysis Date
124381	Arsenic Total Solids Chromium Copper	88.5 37	∦ MG/KG	04/30/92 04/15/92 04/29/92 04/29/92

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Date_	5-5-91	
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414-498-2222

FAX: 414-498-4067

- SAMPLE ANALYSIS REPORT -

CENTRAL WISCONSIN ENGINEERS To: 903 GRAND AVENUE **ROTHSCHILD WI 54474**

Attn: DALE KAUZLARIC

Batch ID : 9204101 : 124382 Our lab # Your sample ID: TB4-2 Sample Matrix : SOIL

Report Date: 05/05/92

COLLECTION INFORMATION

Date/Time/By: 04/08/92 13:13 DK Location : 42991000/WEISENBERGER

Lab#	Test		Result	Units	Analysis Date
124382	Arsenic Total Solids Chromium Copper	<	87.8 26	° 8 ₩G/KG	04/30/92 04/15/92 04/29/92 04/29/92

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Date_	5-5-92
Date	



Green Bay, WI / 54307-2435

- SAMPLE ANALYSIS REPORT -

To: CENTRAL WISCONSIN ENGINEERS 903 GRAND AVENUE ROTHSCHILD WI 54474

Attn: DALE KAUZLARIC

Batch ID : 9204101 Our lab # : 124383 Your sample ID: TB5-1 Sample Matrix : SOIL

Report Date: 05/05/92

COLLECTION INFORMATION

Date/Time/By: 04/08/92 14:29 D K Location : 42991000/WEISENBERGER

Lab#	Test	Result	Units	Analysis Date
124383	Arsenic Total Solids Chromium Copper	92.5 2.3	% MG/KG	04/30/92 04/15/92 04/29/92 04/29/92

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Date <u>5-5-92</u>	
Date	



- SAMPLE ANALYSIS REPORT -

To: CENTRAL WISCONSIN ENGINEERS 903 GRAND AVENUE ROTHSCHILD WI 54474

Attn: DALE KAUZLARIC

Batch ID : 9204101 Our lab # : 124384 Your sample ID: TB5-2 Sample Matrix : SOIL

Report Date: 05/05/92

COLLECTION INFORMATION

Date/Time/By: 04/08/92 14:23 D K Location : 42991000/WEISENBERGER

Lab#	Test	Result	Units	Analysis Date
124384	Arsenic Total Solids Chromium Copper	88.4 18	% MG/KG	04/30/92 04/15/92 04/29/92 04/29/92

Signed	Par	fit	Date_	5-5-92
Signed		1	 Date	• •



414-498-2222 FAX: 414-498-4067 Green Bay, WI 54307:2435

- SAMPLE ANALYSIS REPORT -

To: CENTRAL WISCONSIN ENGINEERS 903 GRAND AVENUE ROTHSCHILD WI 54474

Attn: DALE KAUZLARIC

Batch ID : 9204101 Our lab # : 124385 Your sample ID: TB6-1 Sample Matrix : SOIL

Report Date: 05/05/92

COLLECTION INFORMATION

Date/Time/By: 04/08/92 16:00 D K Location : 42991000/WEISENBERGER

Lab#	Test	Result	Units	Analysis Date
124385	Arsenic Total Solids Chromium Copper	90.0 17	% MG/KG	04/30/92 04/15/92 04/29/92 04/29/92

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Date_	5-5-12
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- SAMPLE ANALYSIS REPORT -

To: CENTRAL WISCONSIN ENGINEERS 903 GRAND AVENUE ROTHSCHILD WI 54474

Attn: DALE KAUZLARIC

Batch ID : 9204101 Our lab # : 124386 Your sample ID: TB6-2 Sample Matrix : SOIL

Report Date: 05/05/92

COLLECTION INFORMATION

Date/Time/By: 04/08/92 15:53 DK Location : 42991000/WEISENBERGER

Lab#	Test	Result	Units	Analysis Date
124386	Arsenic Total Solids Chromium Copper	88.8 16	° ₩G/KG	04/30/92 04/15/92 04/29/92 04/29/92

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Date_	5-5-92
Date	



- SAMPLE ANALYSIS REPORT -

CENTRAL WISCONSIN ENGINEERS To: 903 GRAND AVENUE **ROTHSCHILD WI 54474**

Attn: DALE KAUZLARIC

Batch ID : 9204101 Our lab # : 124387 Your sample ID: TB7-1 Sample Matrix : SOIL

Report Date: 05/05/92

COLLECTION INFORMATION

Date/Time/By: 04/09/92 08:05 DK Location : 42991000/WEISENBERGER

Lab#	Test	Result	Units	Analysis Date
124387	Arsenic Total Solids Chromium Copper	91.7 150	% MG/KG	04/30/92 04/15/92 04/29/92 04/29/92

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Date	5-5-12

Date



Green Bay, WI 54307-2435

- SAMPLE ANALYSIS REPORT -

To: CENTRAL WISCONSIN ENGINEERS 903 GRAND AVENUE ROTHSCHILD WI 54474

Attn: DALE KAUZLARIC

Batch ID : 9204101 Our lab # : 124388 Your sample ID: TB7-2 Sample Matrix : SOIL

Report Date: 05/05/92

COLLECTION INFORMATION

Date/Time/By: 04/09/92 07:58 D K Location : 42991000/WEISENBERGER

Lab#	Test	Result	Units	Analysis Date
124388	Arsenic Total Solids Chromium Copper	87.5 16	ء MG/KG	04/30/92 04/15/92 04/29/92 04/29/92

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Date_	5-5	5-72	

Date



- SAMPLE ANALYSIS REPORT -

To: CENTRAL WISCONSIN ENGINEERS 903 GRAND AVENUE **ROTHSCHILD WI 54474**

Attn: DALE KAUZLARIC

Batch ID : 9204101 Our lab # : 124389 Your sample ID: TB8-1 Sample Matrix : SOIL

Report Date: 05/05/92

COLLECTION INFORMATION

Date/Time/By: 04/09/92 08:54 D K Location : 42991000/WEISENBERGER

Lab#	Test	Analysis Result Units Date	Units	
124389	Arsenic Total Solids Chromium Copper	420 MG/KG 04/30/92 94.8 % 04/15/92 170 MG/KG 04/29/92 110 MG/KG 04/29/92	° ∦ 8 % 8 %	

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Date Date



- SAMPLE ANALYSIS REPORT -

CENTRAL WISCONSIN ENGINEERS To: 903 GRAND AVENUE **ROTHSCHILD WI 54474**

Attn: DALE KAUZLARIC

Batch ID : 9204101 Our lab # : 124390 Your sample ID: TB8-2 Sample Matrix : SOIL

Report Date: 05/05/92

COLLECTION INFORMATION

Date/Time/By: 04/09/92 08:48 DK Location : 42991000/WEISENBERGER

Lab#	Test	Result	Units	Analysis Date
124390	Arsenic Total Solids Chromium Copper	89.6 12	% MG/KG	04/30/92 04/15/92 04/29/92 04/29/92

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Date ___

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Green Bay, WI 54307-2435

- SAMPLE ANALYSIS REPORT -

To: CENTRAL WISCONSIN ENGINEERS 903 GRAND AVENUE ROTHSCHILD WI 54474

Attn: DALE KAUZLARIC

Batch ID : 9204101 Our lab # : 124391 Your sample ID: TB9-1 Sample Matrix : SOIL

Report Date: 05/05/92

COLLECTION INFORMATION

Date/Time/By: 04/09/92 09:58 D K Location : 42991000/WEISENBERGER

Lab#	Test	Result	Units	Analysis Date
124391	Arsenic Total Solids Chromium Copper	93.9 1200	∦ MG/KG	04/30/92 04/15/92 04/29/92 04/29/92

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Date_	5-5-92

Date__



- SAMPLE ANALYSIS REPORT -

To: CENTRAL WISCONSIN ENGINEERS 903 GRAND AVENUE **ROTHSCHILD WI 54474**

Attn: DALE KAUZLARIC

Batch ID : 9204101 Our lab # : 124392 Your sample ID: TB9-2 Sample Matrix : SOIL

Report Date: 05/05/92

COLLECTION INFORMATION

Date/Time/By: 04/09/92 09:45 D K Location : 42991000/WEISENBERGER

Lab#	Test	Result	Units	Analysis Date
124392	Arsenic Total Solids Chromium Copper	88.4 21	°. MG∕KG	04/30/92 04/15/92 04/29/92 04/29/92

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Date Time Sample I.D./Description	No	o. of I	Bottl	es	Total	*Sample Type			AN	ALY	SIS	REC	QUES	STE	D	Remarks	Lab Use Only ID Number
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9:08 731-2 21/2-41/2	*				1	11	×	\sim	>								124376
11:05 TBZ-1 0-2	*				1	11	X	×	×								124377
11:00 TBZ-2 21/2-41/2	1				1	p	$ $ \checkmark	\times	×								124378
12:12 TB3-1 0-2	K					17	X	乂	×								124379
12:06 783-2 21/2-41/2	1			_		гj	\times	*	×								124380
13:18 TB4-1 0-2	1				1	11	X	×	X		<u> </u>						124381
13:13 TB4-Z 21/2-41/2	<u> </u>)	11	×	ベ	7								124382
V 14:29 TB5-1 0-2	+)	1	√	ス	7								124383
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APPENDIX F

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LABORATORY RESULTS - ABOVEGROUND TANKS

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Client: CENTRAL WISCONSIN ENGINEERS Lab Sample No. <u>124432-124437</u> 903 GRAND AVENUE ORTEK Batch No. 9204110 ROTHSCHILD WI 54474

Client Contact:	DALE KAUZLARIC
Client ID #:	TB10-1, TB10-3, TB11-1, TB11-3, TB12-1, TB12-2
Client Project:	42991000/WEISENBERGER 05/01/92

1.0 SCOPE OF ANALYTICAL SERVICES

- Six (6) soil samples were received at ORTEK on 1.1 04/10/92.
- 1.2 The six (6) soil samples were analyzed in accordance with California Method for DRO and 8020.

2.0 ANALYTICAL RESULTS

Based on the analytical services performed, attached is 2.1 a summary of the GC Organic Data and a Chain of Custody for your records.

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James Chang, Ph.D Laboratory Director

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CLIENT: CENTRAL WISCONSIN ENGINEERS Wisconsin Certification No. ADDRESS: 903 GRAND AVENUE 405099530 ROTHSCHILD WI 54474 Sample ID: TB10-1 0'-2' Sample Desc: SOIL DALE KAUZLARIC ATTENTION: Date Collected: 04/09/92 **TELEPHONE:** (715) 359-9400 Date Received: 04/10/92 Job #: 42991000/WEISENBERGER

TPH AS DIESEL FUEL

Solvent Extraction Gas Chromatographic Method (A California Method)

PARAMETER	DETECTION LIMIT	CONCENTRATION mg/l
Diesel Fuel	50	440
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ND = Not Detected

Comments: Lab Sample ID: 9204110 - 124432 Date Extracted: 04/14/92 Date Analyzed: 04/14/92, 04/15/92, 04/16/92 Analyzed by GC/FID.

Signed:

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4-21-82 Date:



Wisconsin Certification No. CLIENT: CENTRAL WISCONSIN ENGINEERS 405099530 ADDRESS: 903 GRAND AVENUE ROTHSCHILD WI 54474 Sample ID: TB10-1/0'-2' Sample Desc: SOIL ATTENTION: DALE KAUZLARIC Date Collected: 04/09/92 **TELEPHONE:** (715) 359-9400 Date Received: 04/10/92 Job #: 42991000/WEISENBERGER

VOLATILE ORGANIC SOIL ANALYSIS

PARAMETER	DETECTION LIMIT	CONCENTRATION ug/kg*
Benzene	1.1	ND
Ethylbenzene	1.1	ND
Toluene	1.1	ND
Total Xylenes	3.3	3.3
Methyl-t-butylether	1.1	ND
1,2,4-Trimethylbenzene	1.1	4.0
1,3,5-Trimethylbenzene	1.1	1.4

* = Dry Weight Basis
ND = Not Detected

Lab Sample ID: 9204110 - 124432 Comments: Date Analyzed: 04/14/92 Analyzed by GC Method 8020.

Signed: D. C.C.

Date: 5-1-92

ORTEK	414-498-2222
ENVIRONMENTAL LABORATORY	FAX: 414-498-4067
2496 West Mason Street	Green Bay, WI 54307-2435
CLIENT: CENTRAL WISCONSIN ENGINEERS ADDRESS: 903 GRAND AVENUE ROTHSCHILD WI 54474	Wisconsin Certification No. 405099530
	Sample ID: TB10-3 5'-7' Sample Desc: SOIL
ATTENTION: DALE KAUZLARIC TELEPHONE: (715) 359-9400	Date Collected: 04/09/92 Date Received: 04/10/92 Job #: 42991000/WEISENBERGER

TPH AS DIESEL FUEL

Solvent Extraction Gas Chromatographic Method (A California Method)

PARAMETER	DETECTION LIMIT	CONCENTRATION mg/l
Diesel Fuel	5.0	ND

ND = Not Detected

Comments: Lab Sample ID: 9204110 - 124433 Date Extracted: 04/14/92 Date Analyzed: 04/14/92, 04/15/92, 04/16/92 Analyzed by GC/FID.

D-flc Date: 4-21-92

ENVIRONMENTAL LABORATORY	414-498-2222 FAX: 414-498-4067
2496 West Mason Street	
2470 TYEST WASDITSHEET	Gitcell Day, VTI, 5450/-2453
CLIENT: CENTRAL WISCONSIN ENGINEERS ADDRESS: 903 GRAND AVENUE ROTHSCHILD WI 54474	Wisconsin Certification No. 405099530
	Sample ID: TB10-3/5'-7'
	Sample Desc: SOIL
ATTENTION: DALE KAUZLARIC	Date Collected: 04/09/92
TELEPHONE: (715) 359-9400	Date Received: 04/10/92

VOLATILE ORGANIC SOIL ANALYSIS

PARAMETER	DETECTION LIMIT	CONCENTRATION ug/kg*
Benzene	1.1	ND
Ethylbenzene	1.1	ND
Toluene	1.1	3.2 B
Total Xylenes	3.3	ND
Methyl-t-butylether	1.1	ND
1,2,4-Trimethylbenzene	1.1	ND
1,3,5-Trimethylbenzene	1.1	ND

* = Dry Weight Basis
ND = Not Detected B = Detected in lab blank at 1 ug/kg.

Comments: Lab Sample ID: 9204110 - 124433 Date Analyzed: 04/14/92, 04/15/92 & 04/23/92 Analyzed by GC Method 8020.

Signed: Date: <u>71-92</u>

Job #: 42991000/WEISENBERGER



CLIENT: ADDRESS:	CENTRAL WISCONSIN ENGINEERS 903 GRAND AVENUE ROTHSCHILD WI 54474	Wisconsin Certification No. 405099530
ATTENTION: TELEPHONE:		Sample ID: TB11-1 0'-2' Sample Desc: SOIL Date Collected: 04/09/92 Date Received: 04/10/92 Job #: 42991000/WEISENBERGER

TPH AS DIESEL FUEL

Solvent Extraction Gas Chromatographic Method (A California Method)

PARAMETER	DETECTION LIMIT	CONCENTRATION mg/l
Diesel Fuel	50	1300

ND = Not Detected

Comments: Lab Sample ID: 9204110 - 124434 Date Extracted: 04/14/92 Date Analyzed: 04/14/92, 04/15/92, 04/16/92 Analyzed by GC/FID.

Date:

4-21-82



CLIENT: Wisconsin Certification No. CENTRAL WISCONSIN ENGINEERS ADDRESS: 405099530 903 GRAND AVENUE ROTHSCHILD WI 54474 Sample ID: TB11-1/0'-2' Sample Desc: SOIL ATTENTION: DALE KAUZLARIC Date Collected: 04/09/92 TELEPHONE: (715) 359-9400 Date Received: 04/10/92 Job #: 42991000/WEISENBERGER

VOLATILE ORGANIC SOIL ANALYSIS

PARAMETER	DETECTION LIMIT	CONCENTRATION ug/kg*
Benzene	1.2	ND
Ethylbenzene	1.2	5.3
Toluene	1.2	ND
Total Xylenes	3.6	120
Methyl-t-butylether	1.2	ND
1,2,4-Trimethylbenzene	1.2	210
1,3,5-Trimethylbenzene	1.2	150

* = Dry Weight Basis ND = Not Detected

Comments: Lab Sample ID: 9204110 - 124434 Date Analyzed: 04/14/92 Analyzed by GC Method 8020.

Signed:

Dale

Date: 5-/- 82



CLIENT: CENTRAL WISCONSIN ENGINEERS ADDRESS: 903 GRAND AVENUE ROTHSCHILD WI 54474	Wisconsin Certification No. 405099530
	Sample ID: TB11-3 5'-7' Sample Desc: SOIL
ATTENTION: DALE KAUZLARIC	Date Collected: 04/09/92
TELEPHONE: (715) 359-9400	Date Received: 04/10/92 Job #: 42991000/WEISENBERGER

TPH AS DIESEL FUEL

Solvent Extraction Gas Chromatographic Method (A California Method)

PARAMETER	DETECTION LIMIT	CONCENTRATION mg/l
Diesel Fuel	10	230

ND = Not Detected

Comments: Lab Sample ID: 9204110 - 124435 Date Extracted: 04/14/92 Date Analyzed: 04/14/92, 04/15/92, 04/16/92 Analyzed by GC/FID.

D-fle_____ Date: 4-21-87

ENVIRONMENTAL LABORATORY	414-498-2222 FAX: 414-498-4067
2496 West Mason Street 7 and 12435 Care	Green Bay, WI 54307-2435
CLIENT: CENTRAL WISCONSIN ENGINEERS ADDRESS: 903 GRAND AVENUE ROTHSCHILD WI 54474	Wisconsin Certification No. 405099530
ATTENTION: DALE KAUZLARIC TELEPHONE: (715) 359-9400	Sample ID: TB11-3/5'-7' Sample Desc: SOIL Date Collected: 04/09/92 Date Received: 04/10/92 Job #: 42991000/WEISENBERGER

VOLATILE ORGANIC SOIL ANALYSIS

PARAMETER	DETECTION LIMIT	CONCENTRATION ug/kg*
Benzene	1.1	ND
Ethylbenzene	1.1	ND
Toluene	1.1	ND
Total Xylenes	3.3	ND
Methyl-t-butylether	1.1	ND
1,2,4-Trimethylbenzene	1.1	1.9
1,3,5-Trimethylbenzene	1.1	1.1

* = Dry Weight Basis
ND = Not Detected

Lab Sample ID: 9204110 - 124435 Date Analyzed: 04/14/92 Analyzed by GC Method 8020. Comments:

Signed: D-that Date: 5-1-92

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ENVIRO	ONMEN	ITAL L	ABOR	ATORY

ATTENTION:

 414-498-2222

 ENVIRONMENTAL LABORATORY
 414-498-2222

 FAX:
 414-498-4067

 2496/West/Misson/Streat
 P.O. Box12435
 Green Bay, WI 54307-2435

CLIENT: CENTRAL WISCONSIN ENGINEERS ADDRESS: 903 GRAND AVENUE ROTHSCHILD WI 54474

DALE KAUZLARIC

TELEPHONE: (715) 359-9400

Wisconsin Certification No. 405099530

Sample ID: TB12-1 0'-2' Sample Desc: SOIL Date Collected: 04/09/92 Date Received: 04/10/92 Job #: 42991000/WEISENBERGER

TPH AS DIESEL FUEL

Solvent Extraction Gas Chromatographic Method (A California Method)

PARAMETER	DETECTION LIMIT	CONCENTRATION mg/l
Diesel Fuel	2,500	46,000

ND = Not Detected

Comments: Lab Sample ID: 9204110 - 124436 Date Extracted: 04/14/92 Date Analyzed: 04/14/92, 04/15/92, 04/16/92 Analyzed by GC/FID.

Signed:

 $\int \int \mathcal{L}$

Date:

4-21-82



CLIENT: CENTRAL WISCONSIN ADDRESS: 903 GRAND AVENUE ROTHSCHILD WI 544	405099530
ATTENTION: DALE KAUZLARIC TELEPHONE: (715) 359-9400	Sample ID: TB12-1/0'-2' Sample Desc: SOIL Date Collected: 04/09/92 Date Received: 04/10/92 Job #: 42991000/WEISENBERGER

VOLATILE ORGANIC SOIL ANALYSIS

PARAMETER	DETECTION LIMIT	CONCENTRATION ug/kg*
Benzene	150	ND
Ethylbenzene	150	3100
Toluene	150	150
Total Xylenes	450	7200
Methyl-t-butylether	150	ND
1,2,4-Trimethylbenzene	150	6400
1,3,5-Trimethylbenzene	150	32000

* = Dry Weight Basis ND = Not Detected

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Lab Sample ID: 9204110 - 124436 Date Analyzed: 04/14/92 & 04/15/92 Comments: Analyzed by GC Method 8020.

D. A.C. Date: 5-1-92 Signed:

		2		E	K
ENVIRO	DNM	IENT	AL L	ABOR	ATORY

2496 West Mason Street Green Bay, WI 54307-2435

ADDRESS: 9	CENTRAL WISCONSIN ENGINEERS 003 GRAND AVENUE ROTHSCHILD WI 54474	Wisconsin Certification No. 405099530
	DALE KAUZLARIC (715) 359-9400	Sample ID: TB12-2 2 1/2'-4 1/2' Sample Desc: SOIL Date Collected: 04/09/92 Date Received: 04/10/92 Job #: 42991000/WEISENBERGER

TPH AS DIESEL FUEL

Solvent Extraction Gas Chromatographic Method (A California Method)

PARAMETER	DETECTION LIMIT	CONCENTRATION mg/l
Diesel Fuel	5.0	5400

ND = Not Detected

Comments: Lab Sample ID: 9204110 - 124437 Date Extracted: 04/14/92 Date Analyzed: 04/14/92, 04/15/92, 04/16/92 Analyzed by GC/FID.

Signed:

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Date: <u>4-24-92</u> b



CLIENT: ADDRESS:	CENTRAL WISCONSIN ENGINEERS 903 GRAND AVENUE ROTHSCHILD WI 54474	Wisconsin Certification No. 405099530
ATTENTION TELEPHONE		Sample ID: TB12-2/2-1/2'-4-1/2' Sample Desc: SOIL Date Collected: 04/09/92 Date Received: 04/10/92 Job #: 42991000/WEISENBERGER

VOLATILE ORGANIC SOIL ANALYSIS

PARAMETER	DETECTION LIMIT	CONCENTRATION ug/kg*
Benzene	140	ND
Ethylbenzene	140	520
Toluene	140	210
Total Xylenes	420	2400
Methyl-t-butylether	140	ND
1,2,4-Trimethylbenzene	140	6200
1,3,5-Trimethylbenzene	140	5100

* = Dry Weight Basis
ND = Not Detected

Comments: Lab Sample ID: 9204110 - 124437 Date Analyzed: 04/14/92 & 04/15/92 Analyzed by GC Method 8020.

Signed:

Dela

Date: <u>57-82</u>

ORTEK CHAIN OF CUSTODY/ANALYSIS REQUEST FORM	
Company Name: Central Wiscomen Engineers	
	4208
Project No./Client <u>42991000 Weisenbergen</u>	No.: 4308
Sampling Location: Marathon w Sampler Dale Kautom	OFITEK Batch No.
Date Time Sample I.D./Description No. of Bottles Total *Sample ANALYSIS REQUESTED Remarks	Lab Use Only ID Number
49/92/11/18 TB10-1 0'-2' Z Z Z X X	124432
11:31 TO10-3 5-7 Z Z X X	124433
12:01 7B11-1 0-2 2 2 X X	124434
12:227611-3 5-7 2 Z X X	124435
12:46 TB12-1 6-2 2 2 5 X X	124434
12:58 TB 12-2 21/2 2 25 XX	124437
COMMENTS/SPECIAL INSTRUCTIONS: analysis Change per Bell Vielon/Alala Kauglani/ *Sample Type SW-Surface Water H-Hazardous Liquid Date Received: 4/10/92 MS S-Soil DW-Drinking Water A-Air Date Due: 1/20/92	
M3 S - Soil DW - Drinking Water A- Air Date Due: $\frac{\sqrt{2}}{2}\frac{\sqrt{2}}{7}\frac{\sqrt{2}}{2}$ SE - Sediment WW - Wastewater O - Oil Quotation #:	RUSH (approved by lab)
SO - Solid GW - Groundwater X - Other Purchase Order #:	
Results To: CWE Billing Address: Some	
To Be Completed by Client 903 grad Gave	
Packed By: Mall Jour '	
Sealed For Shipping By: <u>All Faufon</u> Seal # Attention: Dale Kauforn Phone: FAX	
Received by: Date: Time: Received by: Date: Time: Shipping Details - To Be Completed By Seal Intact Upon Receipt by Laboratory Pres	
1. Math A Transmer 4991 3:55 Method of Shipment: LANTER	
2 Contents Temperature 2. 0 ° C Refrig. # 107 2 2496 West Mason Street	
Received for Laboratory: Horiz Duffiter 4/10/92 13.01 (414) 498-2222	

APPENDIX G

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STANDARD OPERATING PROCEDURES

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CENTRAL WISCONSIN ENGINEERS, INC.

STANDARD OPERATING PROCEDURES

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Prepared by:

Central Wisconsin Engineers, Inc. 903 Grand Avenue Rothschild, WI 54474 Phone: 715-359-9400

TABLE OF CONTENTS

Standard Groundwater Sampling Procedures CWE SOP GWSAMP-1

Standard Procedures for Collection of Soil Samples CWE SOP SOILSAMP-1

Soil Vapor/Air Emissions Monitoring Procedures CWE SOP SVSAMP-1

Standard Procedures for Performing Field Hydraulic Conductivity Tests (Baildown Tests) CWE SOP BDTEST-1

Standard Field Meter Operating Procedures

-	Photoionization Detectors	CWE SOP METEROP-1
-	Flame Ionization Detector	CWE SOP METEROP-2
-	Trimonitor	CWE SOP METEROP-3
-	Combustible Gas Indicator	CWE SOP METEROP-4

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STANDARD GROUNDWATER SAMPLING PROCEDURES

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Issue Date	Revision	Description	Ву	Approved
4-16-92		Original Issue	CE-	H-Z
				5-4-92

STANDARD GROUNDWATER SAMPLING PROCEDURES CWE SOP GWSAMP-1

I Review past sampling data and well logs.

Be sure equipment is field ready and clean.

Bailers:

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PVC (dedicated per use, see Section X) Teflon

Water level measuring device:

Solinst - 300-foot or 100 foot electric tape Thermometer

Ertco ASTM 2 75MM 1MM thermometer

pH meter:

Orion SA 250 pH Meter

Conductivity meter:

Yellow Springs Instrument Co., Model 33

Filtering equipment:

QED QuickFilter system

QuickFilter Transfer Vessel electric or hand pump standard QuickFilters 0.45 micron high capacity QuickFilters 0.45 micron

Sample containers (as received from lab): container type and size vary with parameter to be analyzed. Be sure to check with lab and/or project manager regarding container type, size, preservation and if sample needs field filtration.

The following is a general list of most commonly used containers:

250 ml Nalgene bottles (for inorganic indicator parameters)

500 ml Nalgene bottles (for leachate inorganic parameters)

500 ml Nalgene bottles (for transfer bottles)

500 ml Nalgene bottles - pre-acidified with HNO₃ (for metals, filtered)

500 ml Nalgene bottles - pre-acidified with HNO₃ for unfiltered lead samples

25 or 100 ml Nalgene bottles - pre-acidified with HNO_3 (for iron only, filtered)

1000 ml amber glass bottles (one each for phenols and PAHs)

1000 ml amber glass bottles - pre-acidified with 5 mls 50% HCl (for diesel-range organics)

1000 ml glass bottles - pre-acidified with H_2SO_4 (for oil & grease)

40 ml VOC bottles with Teflon septa - pre-acidified with HCl (for full VOC scan, PVOC, or GRO).

Reagent grade water (organic free and distilled)

Description	Revision	Page
CWE SOP GWSAMP-1		1 of 7

- III <u>Rinse filters</u> with 500 mls of reagent grade water (can be done before going out in the field).
- IV Order of sampling

Sample upgradient (or least contaminated) wells first and continue sequentially to downgradient (or most contaminated) wells.

- V Determine depth to water.
 - A. Turn on electric water level device and rinse once with reagent grade water.
 - B. Lower into well until device sounds.
 - C. Use thumb and fore finger to hold tape and determine the precise depth from the high point (or marked reference point) of the permanent well casing.
 - D. Record this value to the nearest 0.01 ft in field notebook or other suitable location.
 - E. Rinse device with reagent grade water.
- VI Well purging procedures
 - Use dedicated 5-foot PVC bailer. Do not allow rope to lay on bare ground, contain in bucket or on plastic tarp. Contain water in 55-gallon drums if it is known to be contaminated above preventative action limits or if PID screening shows <u>any</u> detections.
 - A. Bail the well dry (well can be considered dry if it has less than 1/2 foot of water in it). Allow well to recover and repeat process (if time permits).

or

B. Remove four times the volume of the well (see calculation sheets for appropriate volumes). Measure the volume of water removed by pouring purge water into a calibrated 5-gallon bucket (preferred method) or counting the number of bailer-volumes removed.

It generally takes 15 - 30 minutes to purge watertable wells and 60 - 90 minutes to purge piezometers.

Note: It is occasionally acceptable to purge all wells, then go back and sample the wells (e.g., in areas with slow recharge). In these instances, the wells should be purged no more than 24 hours prior to sampling. Make a note in the sampling log. Follow the same sampling procedure/sequence each time.

Description	Revision	Page
CWE SOP GWSAMP-1		2 of 7

VII Sample well as soon as there is adequate volume for all parameters. If possible, perform all procedures at the well. Wear latex gloves during sampling procedures, change gloves between sampling points.

A. VOCs

- 1. Use Teflon bailer and Teflon leader or dedicated bailer.
- 2. Lower gently into well and retrieve sample causing a minimal amount of turbulence. Do not allow bailer to free fall into water or touch bottom of well.
- 3. Insert bottom emptying device and drain off a bit of water to clear opening.
- 4. Carefully fill sample bottles causing a minimal amount of turbulence, fill to just overflowing and a positive meniscus.
- 5. Replace cap and tighten. Invert bottle and tap on hard surface to check for air bubbles. <u>Do not reopen bottle</u>. If large bubbles are present, sample again with new vial.
- 6. The bailer rope should be kept on a reel, coiled and placed on a clean plastic tar to prevent the rope from coming in contact with the ground.
- Note: Note any sources of contamination such as gas cans, gas stations, auto exhaust, etc. In any case keep the caps off the bottles for as short of time as possible. Make notes on any potential sources of contamination. Do not run vehicle near sampling point.

VOC samples are generally taken within five minutes of the well being purged and collected first.

- B. Field measurements
 - 1. Temperature
 - a. Rinse thermometer with reagent grade water.
 - b. Immerse in sample and allow reading to stabilize.
 - c. Read and record temperature to nearest 0.5°C while still immersed.
 - d. Rinse and return to case.
 - 2. Conductivity
 - a. Set-up and calibrate meter.
 - b. Set dial to desired range (i.e., $x100 \ \mu mhos/cm$).
 - c. Rinse probe with reagent grade water.
 - d. Take reading by following instrument instructions.
 - e. Adjust reading by multiplication factor and record.
 - f. Rinse cell with reagent grade water and replace in case.
 - h. Correct field reading to 25°C using the formula:

field conductivity value x 1.02^n = actual conductivity value

where $n=25^{\circ}C$ - field temp.(°C)

Description	Revision	Page
CWE SOP GWSAMP-1		3 of 7

- 3. pH
 - a. Set up and calibrate meter using two standardized Fisher buffer solutions (pH 7.0 and either pH 4.0 or pH 10.0, depending upon the expected pH c sample).
 - b. Rinse electrodes with reagent grade water.
 - c. Immerse electrodes in sample and allow reading to stabilize.
 - d. Read and record pH to nearest 0.1 pH unit.
 - e. Rinse electrode with reagent grade water and return to case.

Field measurements are generally completed within twenty minutes of purging the well.

- C. Metals and other inorganics
 - 1. Teflon or PVC bailers can be used.
 - 2. Retrieve samples as with VOCs (same bailer volume can be used).
 - 3. Filter sample.
 - a. Rinse entire filtration apparatus three times with at least 100 ml reagent grade water, use pre-rinsed 0.45 micron standard QuickFilter. A high capacity QuickFilter may be used if sample is especially turbid.
 - b. Rinse filter with sample (approx. 100 mls), swirl around filter flask and discard.
 - c. Filter adequate amount of sample to fill sample bottles.
 - d. Fill sample bottles

i.	metals, phenols -	do not rinse any acidified bottle, just fill and
ii.	other inorganics -	cap. rinse bottle with sample and discard. Fill bott to the top, leaving as little headspace as
ъ.		possible.

e. Rinse filtration flask with reagent-grade water.

We expect the sample to be filtered, acidified (if necessary), and stored o ice within 30 minutes of the well being purged.

Note for Lust Sites:

Analysis for total lead and/or cadmium is required at LUST sites. These samples <u>shou</u> <u>not be filtered</u>; however, if appreciable sediments are present, filter a separate sample and submit it for dissolved lead/cadmium analysis.

D. Phenols

Description	Revision	Page
CWE SOP GWSAMP-1		4 of 7

Do not filter sample. Do not rinse bottle. Simply fill the one liter unpreserved amber glass bottle.

- E. Leachate head wells
 - 1. Do these wells last.
 - 2. Record depth to water.
 - 3. Do not purge these wells.
 - 4. Use a Voss polyethylene single sample disposable bailer.
 - 5. Run pH and conductivity (see above).
 - 6. Do not filter.
 - 7. Fill all appropriate sample bottles.
 - 8. Wash pH and conductivity meters with alconox and triple rinse with distilled water.
 - 9. Properly dispose of gloves and bailer.
- F. Data recording

Record the time when the various procedures were performed (purged, sampled, filtered, etc.). Record any obvious sample odor. Note any variations from the sampling plan. Record all information on either a field procedure sheet or in a field sampling notebook.

- Note: It is not always possible or practical to run pH and conductivity, or filter the sample at the well. In these situations it is acceptable to (1) fill all sample containers that do not need to be filtered, (2) fill a clean, sample-rinsed transfer bottle with enough water for all remaining sampling requirements (e.g., pH and conductivity analysis, filtering for metals, etc.), (3) perform remaining activities as soon as possible, preferably before goin on to next well and certainly within a few hours.
- VIII Quality Assurance/Quality Control
 - A. Field blanks
 - 1. Blanks for each sample type (VOC, metals, inorganics) should be taken at least once per site or once per ten samples, whichever is greater.
 - 2. Use clean sampling equipment.
 - 3. Fill sampling device with reagent grade water.
 - 4. Repeat sampling process (including filtration) for each of the parameters.
 - 5. Do not label as a blank but rather as an additional monitoring well. Be sure to make a note of it.

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B. Duplicates

Collect a duplicate sample for each parameter from the same bailer volume at least once per site or once per ten samples, whichever is greater. Treat it the same as the original sample. Do not label it as a duplicate but rather as an additional monitorir. well. Be sure to make a note of it.

C. Trip blanks

A trip blank should be supplied by the lab whenever VOC samples are taken. D not open this bottle during the sampling procedures. Simply include it with the other VOC samples when they are delivered to the lab.

D. Temperature blanks

A temperature blank is needed only when blue ice is used. Exact sample temperature is not needed for samples shipped on ice. All samples will be shipped on ice.

- IX Sample delivery and analysis
 - A. Sample holding and transport

Store samples on ice in coolers. Complete the chain-of-custody documents for th appropriate lab. If possible, mail or hand deliver all samples to the lab on the same day that the samples were taken, otherwise deliver the samples as soon as possible (remember the two week sample holding time starts when the sample is taken).

- B. Laboratories used
 - 1. Central Wisconsin Enviro Lab, Inc., 5907 Prarie Street, Schofield, WI 54476
 - Environmental Task Force, UW-Stevens Point, Rm 220 CNR, Stevens Point, WI 54481. Lab Certification No. 750040280
 - 3. Enviro-Scan, 303 W. Military Rd., Rothschild, WI 54474. Lab Certification No. 737053130
 - 2. ORTEK Environmental Laboratory, 2496 West Mason Street, Green Bay, WI 54307-2435. Lab Certification No. 405099530
- X Clean equipment

After each day of sampling, all equipment should be washed including sample cases and protective clothing. Wear clean gloves during cleaning.

A. Bailers:

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Clean with steam pressure washer.

- 1. Spread blue washing tarp on floor of washing area.
- 2. Place bailers (PVC and Teflon) on tarp.
- 3. Rinse well with steam cleaner.
- 4. Fill 5-gallon bucket with warm water and Alconox. Use bailer cleaning brush to wash all the bailers with soap and water. Be sure to take bailers apart (remove threaded bottom piece and check valve ball). Scrub inside and out.
- 5. After all bailers have been cleaned, rinse again with steam cleaner.
- 6. Triple rinse all bailers with reagent grade water.
- 7. Cover individual bailers with protective plastic sheaths.
- 8. Store in bailer bag.
- B. Field Equipment (pH meter, conductivity meter, water level indicator):

This equipment should be triple rinsed with reagent grade water in the field afte every use. If any equipment gets exceptionally dirty it may be washed (gently) with a warm water and alconox solution, then triple rinsed with reagent grade water.

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C. Other Equipment (buckets, tarps, ropes, etc.)

This equipment can be cleaned the same as the bailers.

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STANDARD PROCEDURES FOR COLLECTION OF SOIL SAMPLES FOR LABORATORY ANALYSIS

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4-16-92		Original Issue	DRK	H-2
				5-4-92

STANDARD PROCEDURES FOR COLLECTION OF SOIL SAMPLES CWE SOP SOILSAMP-1

Central Wisconsin Engineers, Inc.'s soil sampling procedures follow the Leaking Underground Storage Tank (LUST) Quality Assurance Plan.

1.0 <u>Sampling Procedures</u>

Soil samples collected at LUST sites will be handled in a manner that is consistent with the analytical testing to be performed and that preserves the integrity of the sample. Samples will be handled in a manner that minimizes loss of organic contaminants due to volatilization or biodegradation. Appropriate sampling devices must be capable of rapidly collecting samples with a minimum of atmospheric exposure. All soil samples for laboratory analysis should be collected from a freshly exposed surface (at least 18" below the initial surface). For this reason, lab samples should be collected before screening samples (i.e., soils for lab analysis must not be exposed to the atmosphere while screening is being done). Screening samples may be taken before laboratory samples are taken if the lab samples are taken from a freshly exposed surface and if the soils have not been exposed to the atmosphere while screening is performed. Separate samples will be collected for laboratory analysis and field screening. All samples will be cooled to 4° C immediately after sampling and kept at 4°C or may be stored on ice until they arrive at the laboratory.

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Sampling locations will be selected in accordance with "Assessments for

Underground Storage Tanks: Soil Sampling Requirements - Attachment 3", and the

Environmental Response and Repair Program (ERRP) Corrective Action Guidance.

Sample preservation, container type and number of containers per sampling

location will follow specified WDNR and analytical laboratory requirements.

2.0 Sample Preservation for Modified GRO Method

a) Sampling

Soil can be collected using a 30 ml plastic syringe with the end sliced off, a scoopla spatula, or a hand trowel. Work quickly and minimize agitation of the soil to prevent loss of volatile contaminants. Add a soil volume of 15-20 mls (corresponding to 25 gms) to the vial. Samplers may use a scale prior to sample collection to determine the volume of soil at the site weighing 25 gms, to help visually estimate approximately 25 gm samples. Place the soil in an empty (but tared) 40 or 60 ml VOC vial. Be sure to clean all sediment from the vial threads. Use a clean toothbrush or other clean utensil to sweep particles off the nim. Secure the vial cap. Cool all samples to 4°C immediately after collection.

b) Preservation

After field screening has been completed and those vials that will be sent to the laboratory for analysis have been identified, add methanol only to the vials which will be analyzed by the laboratory. The methanol must be added to the sample within <u>2 hours</u> of sample collection.

- c) Methanol Transfer three acceptable methods
 - 1) Transfer 25 mls of methanol (laboratories should be able to supply vials containing premeasured amounts of methanol) from one septa vial to the sample vial with a common laboratory glass syringe and noncoring type syringe needle. Use a fresh syringe needle for each new vial to avoid cross contamination.

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- 2) Transfer 25 mls of methanol from one septa vial to the sample vial by opening the sample vial and pouring in all of the 25 mls of methanol.
- 3) If all samples taken will be sent to the laboratory, the 25 gms of soil may be put in a vial containing the 25 mls of methanol.
- d) Handling and Shipping

After securing vial cap or transferring methanol, shake the vial to coat the soil with methanol. Immediately replace the sample on ice to cool to 4°C. Properly label each sample collected. Assign an I.D. to the sample and write the number directly on the sample label. Also, write the number in the field notebook along with verbal description of the sample location and write the number on the site sketch. Identify the soil type (e.g. sand, silt, clay or intergrade). Note any obvious sample odor, but do not sniff soil samples. Record all observations in the field notebook. Each vial cap shall be taped to the bottle. Vials should be placed in separate reusable plastic bags to avoid any problems that might occur if a vial leaks. Be sure to ship vials in an upright position. Vials must be securely packed with cushioning and surrounded by an absorbent material such as vermiculite. Packaging must be strong enough to hold up to the intended use. The maximum package weight is 65 pounds. The package must be marked with the following statement: "This package conforms to conditions and limitations specified in 49 CFR 173.4". In addition, mark the packages with the words "THIS SIDE UP" and arrows in case the vials are improperly sealed. If the methanol has leaked from the vials in transport to the lab, the Department will ask for resampling. Shipping time should be minimized and sample must be received by the lab within 4 days. Complete all proper chain of custody forms including WDNR forms.

e) Number of Sample Vials

A sufficient number of vials (three recommended) should be collected to provide for backup analysis in the event of breakage and to allow for screening. In addition, one vial should be collected for dry weight determination (without methanol). A total of 4 sample vials are to be collected from each sampling point (three preserved, one not preserved).

Perform one transfer of methanol in the same fashion as in sampling from a premeasured vial to an empty (but tared) vial. This vial will serve as the methanol trip blank.

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3.0 <u>Sampling for Modified DRO Material</u>

a) Sampling

Soil can be collected using a 30 ml plastic syringe with the end sliced off, a scoopla spatula, or a hand trowel. Work quickly and minimize agitation of the soil to prevent loss of volatile contaminants. Add a soil volume of 15-20 mls (corresponding to 25 gms) to the vial. Samplers may use a scale prior to sample collection to determine the volume of soil at the site weighing 25 gms, to help visually estimate approximately 25 gm samples. Place the soil in an empty (but tared) 40 or 60 ml VOC vial. Be sure to clean all sediment from the vial threads. Use a clean toothbrush or other clean utensil to sweep particles off the rim. Secure the vial cap. Cool all samples to 4°C immediately after collection.

b) Preservation

No field preservation is necessary with modified DRO method. Extraction solvent must be injected through the septum of the soil vials within 18 hours of their receipt by the lab to insure preservation.

c) Handling and Shipping

No special handling or shipping is required for Modified DRO samples. Samples must be received by the lab within 4 days.

d) Number of Sample Vials

A sufficient number of vials (three recommended) should be collected to provide for backup analyses in the event of breakage. In addition, one vial should be collected for dry weight determination. A total of 4 sample vials are to be collected from each sampling point.

In addition, one duplicate sample must be collected with every 10 samples (or less) collected.

4.0 <u>Sampling for Petroleum Volatile Organic Compounds (PVOC)</u>

a) Sampling

Soil can be collected using a spatula, hand trowel or latex glove. Work quickly and minimize agitation of the soil to prevent loss of volatile contaminants. Add soil to fill a 4 oz glass jar with a teflon lined cap. Be sure to clean all sediment from the jar threads prior to sealing cap.

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- b) Preservation No field preservation is necessary with PVOC method.
- c) Handling and Shipping

No special handling or shipping is required for PVOC method. Sample holding time is limited to 14 days from date of collection.

d) Number of Sample Jars

Two (2) four ounce sample jars should be collected for each sampling point.

In addition, one duplicate sample must be collected with every 10 samples (or less) collected.

5.0 Sampling for Total Recoverable Petroleum Hydrocarbons (TRPH)

a) Sampling

Soil can be collected using a spatula, hand trowel or latex glove. Excessive soil handling should be avoided. Soil samples should be collected without headspace in contaminant-free wide mouth 8 ounce bottles with teflon lined caps. Be sure to clean all sediment from the jar threads prior to sealing.

b) Preservation

No field preservation is necessary with TRPH Modified method.

c) Handling and Shipping

No special handling or shipping is required for TRPH Modified method. Sample extraction by lab must be performed within seven (7) days from date of collection.

d) Number of Sample Bottles

Three (3) eight ounce bottles should be collected from each sampling point to provide for backup analyses in the event of breakage and to allow for dry weight determination.

In addition, one duplicate sample must be collected with every 10 samples (or less) collected.

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6.0 Field Quality Assurance

Field QA samples will be handled in a manner identical to that used for actual samples. Results of the analysis of replicates, field, and trip blanks will be included in the written final report and will be taken into account in the data assessment portion of the report. One duplicate sample will be taken for every 10 samples (or less) collected. One temperature blank will be included per sampling event (batch of samples).

7.0 <u>General Requirements</u>

- a) Soil samples must be collected in a manner which causes the least disturbance to the sample.
- b) Composite samples are not to be collected for purposes of complying with the closure assessment requirements, but may be appropriate in other circumstances (with prior WDNR approval).
- c) All soil samples shall be properly labeled with the sample number and collection date.

8.0 <u>Materials Required</u>

- a) disposable latex gloves
- b) stainless steel trowel
- c) reagent grade water (double distilled organic free)
- d) tap water
- e) Alconox detergent
- f) bucket
- g) brush
- h) properly preserved laboratory supplied sample jars

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- i) wash water containment if necessary (based on PID/FID detection)
- j) syringe/hand auger

9.0 Soil Sampling Methods for UST Closures

- a) When the UST system is closed by removal of the tank system from the ground, the following sample collection method must be used:
 - i) If the excavation, pipe trench or other sampling location can be entered in accordance with applicable OSHA regulations, samples may be collected using a hand auger or trowel.
 - ii) If, in the opinion of the field personnel, the excavation, pipe trench or other sampling location cannot be entered safely for sampling, the sample must be collected from the excavation using a hand auger with extension or from the backhoe bucket.
- b) When the UST system is closed in place, soil samples shall be collected through one of the following techniques:
 - i) If the tank can be safely entered and has been properly cleaned, samples can be collected through holes cut in the tank. They shall be collected using a hand held soil auger or trowel.
 - ii) If the samples are to be collected by drilling, then split spoon (barrel, tube) samplers or thin-walled (Shelby) samplers must be used when conditions permit. Grab samples from drill cuttings cannot be used unless undisturbed samples are impossible to collect.
- c) Whenever hand held tools are used to collect samples, the first three to four inches of soil must be scraped away immediately before sampling so that the sample is collected from a previously unexposed soil area.
- d) All soil sampling tools must be thoroughly cleaned between all sampling points using water/detergent solutions, methanol, or other appropriate solvents.

10.0 Soil Sampling Methods for Site Investigations

a) Soil samples collected during the construction of test borings or monitoring wells will be collected in the following manner:

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- Samples will be obtained by using a split spoon sampler. The samples will be obtained by driving a two or three-inch diameter (OD) sample spoon with a 140-pound weight free falling 30 inches. The split spoon sampler will be steam cleaned prior to initial use and cleaned with water and Alconox detergent and rinsed with double distilled organic free water, prior to each sample collected.
- ii) Soil samples will be collected from the split spoon sampler with a stainless steel trowel or disposable latex gloves and placed in the appropriate laboratory supplied container.
- iii) All soil sampling tools must be thoroughly cleaned between all sampling points using water/detergent solutions, methanol, or other appropriate solvents.

11.0 Sample Containers for Laboratory Analysis

- a) Samples shall be collected in glass or inert synthetic containers obtained from or approved by the certified laboratory which will analyze the samples. Polyethylene bags are not to be used for laboratory samples.
- b) All sample containers shall have Teflon or equivalent lined caps.
- c) Sample containers shall be filled to the top such that no headspace remains.
- d) The use of "wide mouth" vials is highly recommended.

12.0 <u>Sample Handling</u>

- a) Properly seal samples no sand or other debris on the threads of the vial/bottle.
- b) Label samples prior to collection or immediately following collection.
- c) Chill samples immediately using adequate quantities of ice to maintain temperature at 4°C or below. Note: Closure assessment documentation requires analytical laboratories to report sample temperatures if "blue ice" is used or solid ice is melted. Improper storage resulting in sample warming could result in rejection of report results.

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- d) Follow chain of custody procedures. Fill out Chain of Custody Record, form 4400-151, Standard Data Reporting Form, form 4400-152 and Laboratory Chain of Custody Form.
- e) Ship samples to analytical laboratory as soon as possible. Do not allow samples to be held so long that the maximum holding time is exceeded.
- f) Unless otherwise specified, the maximum holding time for soil samples collected for TPH analysis is 14 days.

NOTE: Headspace analysis using field instruments will not be performed on samples collected for lab analysis. Duplicate samples shall be collected for headspace analysis.

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STANDARD SOIL VAPOR/AIR EMISSIONS

MONITORING PROCEDURES

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4-16-92		Original Issue	- K.I.	H-Z
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STANDARD SOIL VAPOR/AIR EMISSIONS MONITORING PROCEDURES CWE SOP SVSAMP-1

TOTAL HYDROCARBON QUANTIFICATION

EOUIPMENT

- Century OVA Model 108 Hydrogen Flame Ionization Detector
- Disposable Sample Bags
- 3/16" I.D. vinyl tubing
- Magnehelic pressure gauges

PROCEDURE

- a. Connect 3/16" I.D. vinyl tubing to sample port on discharge side of blower.
- b. Connect vinyl tubing to sample bag.
- c. Insert sampling probe of Century OVA Model 108 hydrogen flame ionization detector into sample bag. Read concentration directly from readout assembly.
- d. If flame out is experienced, connect 10:1 serial dilution device in series according to manufactures recommendations.
- e. Record total VOC concentration (c) in parts per million (ppm) methane equivalents.
- f. Record inlet vacuum pressure at blower using appropriate pressure gauge.
- g. Obtain flow rate (Q) from blower curve based on vacuum pressure.
- h. Calculate pounds per hour (q) using q = CQK where K = .000015.
- i. Adjust flow with dilution air as needed to meet emission regulations of 5.7 pounds per hour.

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BENZENE QUANTIFICATION

EQUIPMENT

- 150 mg charcoal tubes
- MSA flow-lite pump
- Dwyer Visi-Float 4" scale flowmeter 0.2 to 4 liter per minute air range
- 3/16" I.D. vinyl tubing
- SKC soap film flow meter

PROCEDURE

- a. Calibrate MSA pump in office using SKC soap film flow meter.
- b. Check calibration of pump prior to sampling using Dwyer Visi-Float Flowmeter.
- c. Connect 3/16" I.D. vinyl tubing to sample port on discharge side of blower.
- d. Insert inlet side of 150 mg charcoal tube into vinyl tubing.
- e. Insert outlet side of 150 mg charcoal tube into charcoal tube holder attached to MSA Flow-Lite pump.
- f. Draw discharge air through charcoal tube at a maximum flow rate of 1000 cc/min. Record flow rate, start time,and stop time. NOTE: Multiple samples at various volumes of 1 to 10 liters must be taken in case of break through. The saturation limit of the sample portion is approximately 15 milligrams of total solvent.
- g. Record blower discharge flow rate.
- h. Store sample on ice pending delivery to lab.
- i. Submit sample to lab for benzene analysis using EPA method 8020.

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AIR EMISSIONS CALCULATIONS

To calculate #/hour total VOCs.

q = CQK

where

q	=	#/hour of total VOCs
Ĉ	=	Total VOC Concentration in ppm on a
		volume/volume basis (ppm-v/v).
Q	=	Flow Rate (scfm) 1 ATM, 60°F
Κ	=	Constant = $.00001503$ for total VOCs for benzene

K is determined as follows:

$$1 ppm-v/v = \frac{1 \ell}{10^6 \ell}$$

therefore,

$$\frac{1 \ell}{10^{6} \ell} \times \frac{1 \text{ mol}}{23.69 \ell} \times \frac{95.0 \text{ g}}{\text{mol}} \times \frac{1 \text{ lb}}{453.6 \text{ g}} \times \frac{1 \ell}{0.0353 \text{ ft}^{3}} \times \frac{60 \text{ mir.}}{\text{hr}}$$

thus,

 $K = .00001503 \text{ lb-min/ft}^{3}-\text{hr/ppm}$

(Units cancel when multiplying by CFM)

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FIELD HYDRAULIC CONDUCTIVITY TESTS

BAILDOWN TESTS

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				5-4-92

STANDARD PROCEDURES FOR PERFORMING FIELD HYDRAULIC CONDUCTIVITY TESTS (BAILDOWN TESTS) CWE SOP BDTEST-1

Hydraulic conductivity can be determined in the field by various methods. All of these methods include removing or recharging a volume of water from a well instantaneously or at a specified rate. The tests conducted at a specified rate are typically called pumping tests. The tests recharging or removing a specified volume are called slug tests or bail-down tests. The common principle is to put a stress on the groundwater system and to watch the groundwater level changes through time. Unlike pumping tests, the "slug test" has a limited drawdown and a short duration and therefore gives values only for the materials close to the well. Because of this, measurements on several wells are needed to characterize the soils under a site.

FIELD PROCEDURE

- Equipment: Bailer or pump Water level indicator or tape Watch with a second hand Field sheets
- 1. Record the inside diameter of the riser pipe.
- 2. Measure the depth to static water before bailing.
- 3. Bail the well as low and as quickly as possible (especially in highly permeable soils) and measure the water level. Record this as Dt at time 0. Bailing the well as low as possible increases the recovery time and makes the test less sensitive to errors in water level measurements.
- 4. Record depth to water at 30-second intervals for the first few minutes. Then increase the intervals until the water level has stabilized. Record the time to the nearest second (12:05:32). The purpose here is to record and be confident that the plot is a straight line. Generally, 5 measurements equally spaced through time is a minimum; 9 or more are desirable.

ADDITIONAL INFORMATION NEEDED

In order to calculate the permeability, the following well construction information is needed:

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- 1. Radius of the bore hole at the intake point or pipe diameter and gravel pack thickness.
- 2. Length of the interval contributing flow into the well (screened interval or open hole).
- 3. Gravel pack length or position of seal in piezometer.

ANALYSIS

There are several methods available to calculate hydraulic conductivity. The method explained below (Naval Facilities Design Manual, 1971) produces satisfactory results. Three other methods, Cooper (1967), Bouwer (1976) and Hvorslev (in Freeze and Cherry, 1979, p. 340) are attached for reference.

The equation used is:

$$K = \frac{r^2}{2L(t_2 - t_1)} \ln(L/R) \ln(H_1/H_2)$$

where

radius of the standpipe (cm) r = R radius of bore hole at the intake point (cm) = length along which water can enter the well (cm) L = $H_1/H_2 = H_{t1}/H_0 / H_{t2}/H_0 =$ ratio of head values (taken from log plot) time after bailing stops (sec) (taken from log plot) t hydraulic conductivity (permeability) (cm/sec) Κ =

Although the equation was developed for piezometers, it can be used for water table observation wells as long as values for r, R and L are chosen with consideration for the geometry of the well and the position of the static water level.

LENGTH (L)

Where the static water level is above the top of the gravel pack, the entire length of saturated gravel pack should be used even when it is greater than the screen height (assuming the gravel pack is more permeable than the formation). Where the well is screened through units of widely differing permeabilities, a reasonable estimate of K can be obtained by using the length that is screened through the unit of greatest permeability.

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RADIUS OF CASING (r)

The function of this term in the equation is to input the quantity of water moving into or out of the well. (The π term drops out of the equation.) Therefore, if the water level is rising in the solid casing (diagram B), r is equal to the inside radius. If the water level is rising in the screened interval (diagram A), r is equal to the radius of the screen plus the thickness of the gravel pack times the porosity of the gravel pack.

RADIUS OF BORE HOLE (R)

In cases where the aquifer is less permeable than the gravel pack, R will be the standpipe radius plus the gravel pack thickness. In highly permeable aquifers, where the permeability of the pack is not much different from that of the aquifer, the standpipe radius, r, can be used for R.

ASSUMPTIONS

The above method assumes an instantaneous discharge for water from the well. In highly permeable materials the well may recharge so quickly that the error in the initial reading D_{to} is significant. In these cases, the D_{to} can be calculated by measuring the volume of water withdrawn and knowing the geometry of the well.

In addition, the method is designed for situations where the static water level is at or above the top of the gravel pack or piezometer seal. Since water table observation wells are often designed so that the water table intersects the screened interval, this assumption is violated. The differences in permeability calculations, however, should not be significant for these purposes.

CALCULATIONS TO DETERMINE H1, H2, T1, T2

- 1. Change time to duration (sec).
- 2. Calculate H_t , H_t = depth to water at a certain time static water level. (i.e., H_o = depth to water at time 0 static water level.
- 3. Find the ratio H_t/H_o .
- 4. Plot time vs. H_t/H_o using semi-log paper with the ratio on the log scale.
- 5. Fit a line to the points and choose 2 points on the line, recording the ratio and time for each $(\underline{H}_1 \ \underline{H}_2 \ t_1 \ t_2)$. Ho Ho

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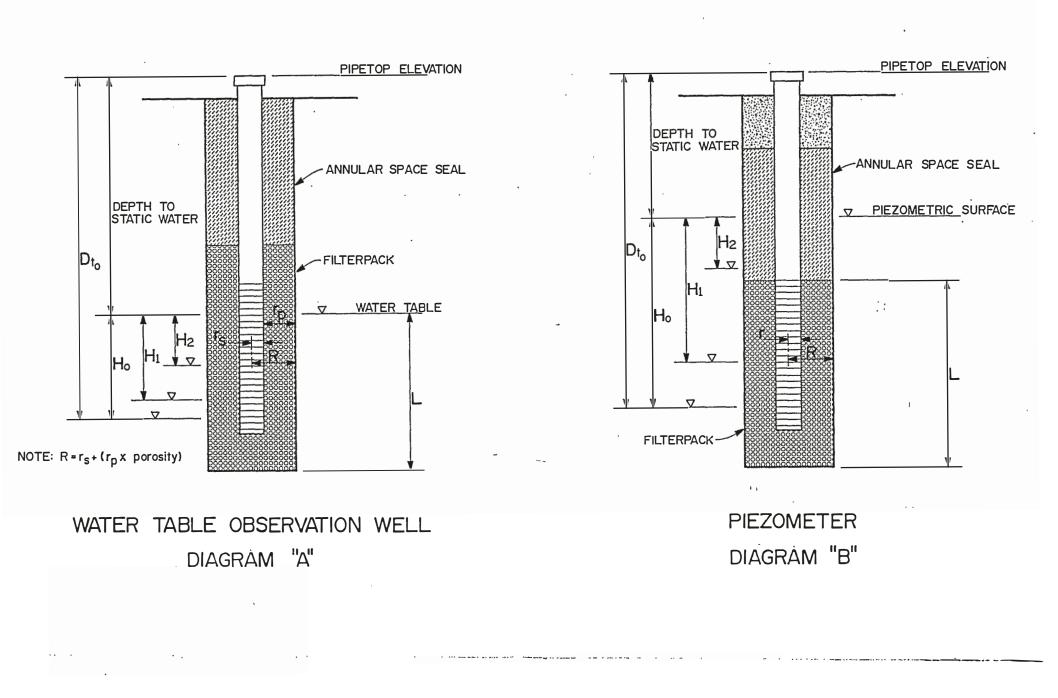
Since the purpose of the graphical plot is to smooth out scatter in the data, the line should be drawn so that it is representative of the test throughout most of its duration. Points can be taken from any place on the line.

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6. Calculate the hydraulic conductivity using the formula. Units of L, r, R, and t must be in cm and sec to produce K in cm/sec.

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STANDARD FIELD METER OPERATING PROCEDURES

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-	Trimonitor	CWE SOP METEROP-3
_	Combustible Gas Indicator	CWE SOP METEROP-4

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C				5-4-92

STANDARD FIELD METER OPERATING PROCEDURES

Photoionization Detectors

CWE SOP METEROP-1

Purpose: To establish and document specific operating procedures for the portable photoionization meters.

Objectives: To outline techniques for calibration and use of the:

- Thermo Environmental Instruments Organic Vapor Meter Model 580A (PID) (OVM).
- Hnu Systems Model Pl-101 (PID)(HNu)

The OVM and HNu meters are equipped with 10.0 ev and 10.2 ev photoionization detectors (PID) respectively.

<u>PID Calibration</u>

NOTE: For procedures to start up and operate the TEI Model 580A or HNu Model Pl-101 refer to the appropriate instrument operation manual.

Thermo Environmental Instruments OVM Model 580A

OVM Materials

- 1. One 1-2 liter Teflon or Tedlar gas sampling bag equipped with a sampling nozzle and gas-tight septum.
- 2. Pressure valve.
- 3. Tygon tubing for attachment from bag to instrument.
- 4. Specialty Gas Mixture Isobutylene 100 ppm.
- 5. OVM Model 580A.

Procedure

- 1. Attach pressure valve to Isobutylene cylinder. Be sure valve is shut.
- 2. Attach Tygon tubing from bag to valve.
- 3. Open sampling nozzle on bag and valve on cylinder.
- 4. Fill bag approximately 1/3 full.

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- 5. Shut valve off on bag and on cylinder.
- 6. Remove pressure valve from cylinder.
- 7. Follow instruction manual to reach "Reset to Calibrate" on meter.
- 8. Attach tubing from bag to instrument probe.
- 9. Follow calibration procedures outlined in Section 2.4.7 of manual.

HNu Systems Model PI-101 Photoionization Detector

Materials

- 1. Pressure valve.
- 2. Tygon tubing for attachment from calibration gas to instrument.
- 3. Hnu systems span gas 100 ppm isobutylene/air.
- 4. HNu systems Model PI-101.

Procedure

- 1. Turn instrument on check battery.
- 2. While in standby mode, adjust potentiometer to zero.
- 3. Attach pressure valve to HNu systems span gas cylinder, be sure valve is closed.
- 4. Connect Tygon tubing to pressure valve and to probe on meter.
- 5. Set range on HNu to 0-200.
- 6. Open span gas valve.
- 7. Adjust Span Potentiometer to obtain reading of 57 ppm.
- 8. Record span potentiometer setting in field notes.
- 9. Set switch to standby position.
- 10. Meter is ready for use.

Sampling Procedures for PID

Materials

- 1. Stainless steel trowel washed in Alconox, rinsed with distilled water.
- 2. 8 oz. sample jar (with lid, optional).
- 3. Aluminum foil
- 4. Field PID meter
- 5. Latex gloves
- 6. 60d nail washed in Alconox, rinsed with distilled water.

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Procedures

- 1. Fill jar approximately half full with sample using a clean trowel or latex glove.
- 2. If sample is compacted, break up with clean 60d nail.
- 3. Cover jar tightly with aluminum foil, label lid, and place on jar. Be careful not to tear foil.
- 4. Place jar in protected area and allow to reach approximate room temperature, about 70°F.
- 5. When sample temperature has stabilized, remove lid and gently pierce foil with PID probe.
- 6. Response is within 3 seconds, read dial or LED readout, remove probe.
- 7. Allow meter to clear before next reading.
- 8. Record any background detections.
- Note: Check the calibration of the PID every few hours of operation and after the last sample has been analyzed. Simply analyze standard gas, record reading in field book.

Minimum Calibration Frequency:

- 1. At the beginning of each day.
- 2. After lunch or the middle of a day's use.
- 3. After any significant changes in humidity or temperature (more than 15°F).
- 4. After any repairs to the instrument are performed.

Reporting Requirements

- 1. For all calibrations report time of day and temperature at that time.
- 2. Which PID model is being used.

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CWE SOP METEROP-1		3 of 3

STANDARD FIELD METER OPERATING PROCEDURES

Flame Ionization Detector

CWE SOP METEROP-2

 PURPOSE:
 To establish and document specific operating procedures for the portable flame ionization detectors.

 OBJECTIVES:
 To outline techniques for calibration and use of the:

 Foxboro Century Model 108 Organic Vapor Analyzer (OVA)

CALIBRATION

NOTE: For procedures to start up and operate the OVA 108 refer to the appropriate instrument operation manual. Calibrate the instrument weekly at a minimum.

MATERIALS

- 1. Two dedicated gas sampling bags with sampling nozzle.
- 2. Pressure valve
- 3. Vinyl tubing for attachment from bag to instrument.
- 4. Specialty gas mixtures 9500 ppm and 95 ppm methane.
- 5. OVA Model 108

PROCEDURE

- 1. Attach pressure valves to methane cylinders.
- 2. Attach vinyl tubing and fill appropriate bag 1/3 full.
- 3. Follow calibration procedures outlined in the instruction manual.

SAMPLING PROCEDURES

- A. Soil Samples
 - 1. Follow procedures outlined under Portable Photoionization Meter Operation.

Description	Revision	Page
CWE SOP METEROP-2		1 of 2

- B. Air Samples
 - 1. Connect vinyl tubing to sampling port.
 - 2. Connect tubing to sample bag.
 - 3. Insert sampling probe into sample bag.
 - 4. Read concentration directly from readout assembly.
 - 5. If flame-out is experienced, connect serial dilution device according to manufacturers guidelines.
 - 6. Determine response factor using 9500 ppm calibration gas.
 - 7. Repeat steps 1-4.
 - 8. Multiply readout by response factor to obtain actual concentration.

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Description	Revision	Page
CWE SOP METEROP-2		2 of 2

STANDARD FIELD METER OPERATING PROCEDURES

Trimonitor

CWE SOP METEROP-3

Purpose: To establish and document specific operating procedures for the portable Trimonitor.

- **Objective:** To outline techniques for calibration of the:
 - MSA Model 361 Hydrogen Sulfide, Combustible Gas and Oxygen Alarm Meter

Calibration:

NOTE: For procedures to start up and operate the MSA Model 361 Trimonitor refer to the MSA Instrument Operation Manual

Materials Required

- 1. Flow Control, part no. 467896
- 2. Adapter-Hose, part no. 449401
- Calibration Gas, part no. 478192
 50% LEL pentane (.75% pentane and 15% oxygen in nitrogen)
- 4. Calibration Gas, part no. 467898 hydrogen sulfide 10 ppm in nitrogen

Instructions

Test the operation of the pump and sample flow indicator by momentarily placing a finger over the sample inlet of the instrument. The flow indicator should be at the top of the window before falling from view while the inlet is blocked. If not, see the instrument instruction manual for required maintenance.

- 1. Attach the flow control to the .75% pentane and 15% oxygen calibration gas tank.
- 2. Connect the adapter-hose to the flow control.
- 3. Open the flow control valve.
- 4. Connect the adapter-hose fitting to the inlet of the instrument; after approximately 15 seconds, the LEL meter should stabilize and indicate between

Description	Revision	Page
CWE SOP METEROP-3		1 of 2

47 and 55%. If the indication is not in the correct range, remove the right end of the trimonitor and adjust the LEL SPAN control to obtain 50%.

- 5. Verify the oxygen reading; it should be between 13 and 17%. (This is a response check only. The oxygen sensor should be calibrated to 20.8% oxygen in fresh air before each use.)
- 6. Disconnect the adapter-hose fitting from the instrument.
- 7. Close the flow control valve.
- 8. Remove the flow control from the calibration gas tank.
- 9. Attach the flow control to the hydrogen sulfide calibration gas tank.
- 10. Open the flow control valve.
- 11. Connect the adapter-hose fitting to the inlet of the instrument; after approximately 1 minute, the TOX readout should stabilize and indicate 7 to 13 ppm. If the indication is not in the correct range, remove the right end of the trimonitor and adjust the TOX SPAN control to obtain 10 ppm.
- 12. Disconnect the adapter-hose fitting from the instrument.
- 13. Close the flow control valve.
- 14. Remove the adapter-hose from the flow control.
- 15. Remove the flow control from the calibration gas tank.

Description	Revision	Page
CWE SOP METEROP-3		2 of 2

STANDARD FIELD METER OPERATING PROCEDURES

Combustible Gas Indicator

CWE SOP METEROP-4

Purpose: To establish and document specific operating procedures for the Gascope.

Objective: To outline the techniques for calibration and use of:

Gascope Combustible Gas Indicator, Industrial Model 62S

NOTE: For procedures to start up and operate the Gascope refer to the appropriate instrument operation manual.

Gascope Calibration Procedure

The Gascope should be calibrated periodically by performing the following procedure in an environment free of combustible gases. This procedure should also be used if either the catalytic or thermal conductivity filament has been replaced. If the instrument cannot be calibrated with this procedure, refer to TROUBLE SHOOTING in Section 4 of the operation manual.

- 1. Open cover and loosen clasps securing top and bottom sections of case.
- 2. Remove bottom section of case and position instrument on rubber bumpers (see Figure 5-1 of operation manual) so that meter can be read.
- 3. Set RANGE switch to LEL and ON/OFF switch to ON. Needle should come to rest near 0 and READY indicator should turn on. If indicator does not turn on, refer to Table 4-1 in Section 4 of operation manual.
- 4. Squeeze aspirator bulb 8 to 10 times to purge instrument with fresh air. Permit bulb to inflate completely after each squeeze.
- 5. Adjust LEL ZERO control to obtain zero indication on meter.
- 6. Connect flow control of Calibration Check Kit, Model R, to Calibration Check Gas Cylinder (2% or 2.5% methane). Connect adapter hose between flow control and inlet fitting of instrument (see Figure 5-2 of operation manual).
- 7. Turn flow control valve counterclockwise. When needle stabilizes, meter should indicate 50%. If it does not, turn LEL span adjustment (Figure 5-1 of operation manual) to obtain a reading of 50 on the meter. If 50 cannot be obtained by turning LEL span adjustment, refer to Replacing Catalytic Filament in Section 4 of operation manual.

8. Turn flow control valve clockwise and disconnect adapter hose from inlet fitting.

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CWE SOP METEROP-4		1 of 2

- 9. Squeeze aspirator bulb 8 to 10 times to purge instrument with fresh air. Meter should indicate 0. If it does not, adjust LEL ZERO control to obtain a reading of zero on the meter, then connect adapter hose to inlet fitting and repeat steps 7 and 8. Remove flow control from gas cylinder.
- 10. Set RANGE switch to GAS. When READY indicator turns on, adjust GAS ZERO control to obtain zero indication on meter.
- 11. Connect source of 2.0 or 2.5% methane to inlet fitting. Pass gas through instrument and then shut off flow. Meter should indicate 2.0 or 2.5. If it does not, turn GAS span adjustment to obtain a meter reading of 2.0 or 2.5. If 2.0 or 2.5 cannot be obtained by turning gas span adjustment, refer to Replacing TC Filament in Section 4 of operation manual.
 - * Do not introduce 2.0 or 2.5% methane gas to an instrument located near a source of ignition; otherwise, an explosion may occur.
- 12. Disconnect source of methane and squeeze aspirator bulb 8 to 10 times to purge instrument with fresh air. Meter should indicate zero. If it does not, adjust GAS ZERO control to obtain zero indication on meter; then repeat steps 11 and 12.

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13. Place instrument in bottom section of case and clasp top and bottom section together. Close cover.

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CWE SOP METEROP-4		2 of 2

APPENDIX H

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BOREHOLE ABANDONMENT FORMS

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City, State, Zip Code

KOTHSCHILD

WI

54474

All abandonment work shall be performed in accordance with the provisions of Chapters NR 111, NR 112 or NR 141, Wis. Admin. Code, whichever is applicable. Also, see instructions on back.

π) GENERAL INFORMATION	·	(2) FACIL	ITY NAME		
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All abandonment work shall be performed in accordance with the provisions of Chapters NR 111, NR 112 or NR 141, Wis. Admin. Code, whichever is applicable. Also, see instructions on back.

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Construction Type: Driven (Sandpoin) Dug Did Sealing Material Rise to Surface? Ye No Pormation Type: Did Material Sente After 24 Hours? Yes No Pormation Type: Did Sealing Material Conductor Pipe-Gravity Conductor Pipe-Dramped Unconsolidated Formation Debcock Dump Bailer Conductor Pipe-Gravity Conductor Pipe-Pumped Total Well Depth (ft.) Casing Diameter (ins.) (6) Sealing Material For monitoring wells and monitoring wells and monitoring well boreholes only Casing Depth (ft.) Concrete Bentonite Pellets Granular Bentonite (7) Sealing Material Used From (Ft.) To (Ft.) Sock Sealing Material Used (7) Sealing Material Used From (Ft.) To (Ft.) Sock Sealing Material Used (8) Sealing Material Used From (Ft.) To (Ft.) Sock Sealing Material Used (9) Sealing Material Used For (Ft.) To (Ft.) Sock Sealing Material Used (9) Sealing Material Used For (Ft.) To (Ft.) Sock Sealing Material Used (10) Chipped Bentonite Imaterial Used For (Ft.) Sock Sealing Material Used		X Borehole		West Co	C-+ Off	D - 1 C		
□ Drilled □ Driven (Sandpoint) □ Dug Did Material Settle After 24 Hours? □ Yee ⊠ No □ Other (Specify) □ Driven (Sandpoint) □ Dug Did Material Settle After 24 Hours? □ Yee ⊠ No □ Formation Type: □ Unconsolidated Formation ⊠ Behock □ Conductor Pipe-Gravity □ Conductor Pipe-Pumped □ Dump Bailer ○ Other (Explain) L=ExwrrY □ Other (Explain) L=ExwrrY (6) Sealing Materials Formonitoring wells and □ Casing Depth (ft.) □ Casing Diameter (ins.) □ ○ Sand-Cement Grout □ Bentonite Shary □ Granular Bentonite □ Was Well Annular Space Grouted? □ Yes ⊠ No □ Unknown □ Material Used From (Ft.) To (Ft.) Sack Sealint ⑦ Sealing Material Used From (Ft.) To (Ft.) Sack Sealint ⑦ Sealing Material Used From (Ft.) To (Ft.) Sack Sealint Mix Ratio or Mud Weight ⑦ Sealing Material Used For (Ft.) To (Ft.) Sack Sealint Mix Ratio or Mud Weight ⑦ Sealing Material Used For (Ft.) To (Ft.) Sack Sealint Mix Ratio or Mud Weight ⑦ Name of		Construction Theorem		1	-			
□ Other (Specify) □ Different Composition □ Yes □ No □ Other (Specify) □ Press No □ Conductor Pipe-Gravity □ Conductor Pipe-Pumped □ Conductor Pipe-Gravity □ Conductor Pipe-Pumped □ Dump Bailer ○ Other (Explain) (Greater) (6) Sealing Materials For monitoring wells and □ Press □ No □ Unknown If Yes, To What Depth (ft.)				(-			
Formation Type:			(Sandpoint)	1				
Formation Type: Image: Conductor Pipe-Gravity Conductor Pipe-Pumped Muconsolidated Formation Image: Conductor Pipe-Gravity Conductor Pipe-Pumped Total Well Depth (ft.) Casing Diameter (ins.) Image: Conductor Pipe-Gravity Conductor Pipe-Pumped Casing Depth (ft.) Casing Depth (ft.) For monitoring wells and Net: Cernent Grout Montring wells and Was Well Annular Space Grouted? Yes Yes No Unknown Bentonite-Sand Slurry Bentonite Pellets Image: Clay-Sand Slurry Gravular Bentonite Goravitar Science Mix Ratio or Mud Weight Image: Clay-Sand Slurry Bentonite - Cement Grout Sand-Cement (Concrete) Mix Ratio or Mud Weight Image: Clay-Sand Slurry Bentonite - Cement Grout Sand Science No: Yolitime Image: Clay-Sand Slurry Bentonite - Cement Grout Sand Science No: Yolitime Image: Clay-Sand Slurry Bentonite - Cement Grout Sand Science No: Yolitime Image: Clay-Sand Slurry Bentonite - Cement Grout Sand Science No: Yolitime Image: Clay-Sand Slurry Sand Science Sand Science O: The Science Sand Science Image: Clay-Sand Slurry								
☑ Unconsolidated Formation ☑ Bedrock ☐ Unconsolidated Formation ☑ Bedrock ☐ Total Well Depth (ft.)		Formation Type:						
Total Well Depth (ft.) Casing Diameter (ins.) (6) Sealing Materials For monitoring wells and monitoring wells and monitoring wells and monitoring wells only Casing Depth (ft.)	_		Bedrock					
(From groundsurface)			Casing Dismotor (inc.)			<u>کا</u>		
Casing Depth (ft.)				1°		-		
Casing Depth (ft.)		(1000 800-000 2000)						
Was Well Annular Space Grouted? Yes Yes Inknown Granular Sentonite If Yes, To What Depth? Feet Bentonite-Sand Slurry Bentonite - Cement Grout If Yes, To What Depth? Feet From (Ft.) To (Ft.) Sacks Sealant or Volume Mix Ratio or Mud Weight Image: Chipped Bentonite Sacks Sealant or Volume Mix Ratio or Mud Weight Mix Ratio or Mud Weight Image: Chipped Bentonite Sacks Sealant or Volume Mix Ratio or Mud Weight Image: Chipped Bentonite Sacks Sealant or Volume Mix Ratio or Mud Weight Image: Chipped Bentonite Sacks Sealant or Volume Mix Ratio or Mud Weight Image: Chipped Bentonite Sacks Sealant or Volume Mix Ratio or Mud Weight Image: Chipped Bentonite Sacks Sealant or Volume Mix Ratio or Mud Weight Image: Chipped Bentonite Sacks Sealant or Volume Mix Ratio or Mud Weight Image: Chipped Bentonite Sacks Sealant or Volume Mix Ratio or Mud Weight Image: Chipped Bentonite Sacks Sealant or Volume Mix Ratio or Mud Weight Image: Chipped Bentonite Sacks Sealant or Volume Mix Ratio or Mud Weight Image: Chipped Bentonite Sacks Sealant or Volume Image:		Casing Depth (ft.)					Bentonite Pellets	
If Yes, To What Depth? Feet Image: Chipped Bentonite No. Yards, Sacks Sealant or Volume Mix Ratio or Mud Weight Image: Chipped Bentonite Image: C				Clay	-Sand Slurry			
If Yes, To What Depth? Feet Image: Chipped Bentonite Image: One of the second sec		Was Well Annular Space Grouted?	🗌 Yes 🔀 No 🔲 Unknown	Bent	onite-Sand Sl	uny	Bentonite - Cement Grout	
CHIPPED BENTONITE Surface Z 0.7.4/3 Image: Surface Image: Surface Image: Surface Image: Surface Image: Surface		If Yes, To What Depth?			ped Bentonite	• 1	1	
CHIPPED BENTONITE Surface Z 0.7.4/3 Image: Surface Image: Surface Image: Surface Image: Surface Image: Surface	Ø					No. Yards,		
CHIPPED BENTONITE Surface Z 0.7.4/3 Image: Surface Image: Surface Image: Surface Image: Surface Image: Surface	.,	Sealing Mater	ial Used	From (Ft.)	To (Ft.)	or Volume	Mix Ratio of Mud weight	
(8) Comments: (9) Name of Person or Firm Doing Sealing Work (10) <td< td=""><td></td><td></td><td></td><td>Surface</td><td>7</td><td></td><td></td></td<>				Surface	7			
(9) Name of Person or Firm Doing Sealing Work (10): FOR: DNR: OR: CO UNTY: USE: ONLY: (10): FOR: DNR: OR: CO UNTY: USE: ONLY: Date: County: USE: ONLY: Signature of Person Doing Work. Date Signed Signature of Person Doing Work. Date Signed Street or Route 5-14-92 Reviewer/Inspector: Telephone Number 713 G RAND AUE (715) 359-9408 Follow-up: Necessary: Follow-up: Necessary:		LHIPPED DENT	ONITE		<u> </u>	0.777		
(9) Name of Person or Firm Doing Sealing Work (10): FOR: DNR: OR: CO UNTY: USE: ONLY: (10): FOR: DNR: OR: CO UNTY: USE: ONLY: Date: County: USE: ONLY: Signature of Person Doing Work. Date Signed Signature of Person Doing Work. Date Signed Street or Route 5-14-92 Reviewer/Inspector: Telephone Number 713 G RAND AUE (715) 359-9408 Follow-up: Necessary: Follow-up: Necessary:	_							
(9) Name of Person or Firm Doing Sealing Work (10) FOR: DNR: OR: CO UNTY: USE: ONLY: (10) FOR: DNR: OR: CO UNTY: USE: ONLY: Date: ONLY: (10) FOR: DNR: OR: CO UNTY: USE: ONLY: (10) For Original Content in the original conten			۲.					
(9) Name of Person or Firm Doing Sealing Work (10): FOR: DNR: OR: CO UNTY: USE: ONLY: (10): FOR: DNR: OR: CO UNTY: USE: ONLY: Date: County: USE: ONLY: Signature of Person Doing Work. Date Signed Signature of Person Doing Work. Date Signed Street or Route 5-14-92 Reviewer/Inspector: Telephone Number 713 G RAND AUE (715) 359-9408 Follow-up: Necessary: Follow-up: Necessary:								
(9) Name of Person or Firm Doing Sealing Work (10): FOR: DNR: OR: CO UNTY: USE: ONLY: (10): FOR: DNR: OR: CO UNTY: USE: ONLY: Date: County: USE: ONLY: Signature of Person Doing Work. Date Signed Signature of Person Doing Work. Date Signed Street or Route 5-14-92 Reviewer/Inspector: Telephone Number 713 G RAND AUE (715) 359-9408 Follow-up: Necessary: Follow-up: Necessary:	—							
(9) Name of Person or Firm Doing Sealing Work (10): FOR: DNR: OR: CO UNTY: USE: ONLY: (10): FOR: DNR: OR: CO UNTY: USE: ONLY: Date: County: USE: ONLY: Signature of Person Doing Work. Date Signed Signature of Person Doing Work. Date Signed Street or Route 5-14-92 Reviewer/Inspector: Telephone Number 713 G RAND AUE (715) 359-9408 Follow-up: Necessary: Follow-up: Necessary:	I							
CENTRAL WISLONGIN ENGINEERS Date Signed Signature of Person Doing Work Date Signed Street or Route 5-14-92 Reviewer/Inspector Reviewer/Inspector 713 GRAND AUE (715) 359-9408 Follow-up Necessary Follow-up Necessary	(8)	Comments:						
CENTRAL WISLONGIN ENGINEERS Date Signed Signature of Person Doing Work Date Signed Street or Route 5-14-92 Reviewer/Inspector Reviewer/Inspector 713 GRAND AUE (715) 359-9408 Follow-up Necessary Follow-up Necessary								
Signature of Person Doing Work Date Signed All Kandowe 5-14-92 Street or Route Telephone Number 713 GRAND AUE (715) 359-9408 City, State, Zip Code Till out	(9)					and the second se		
Dale K fourforce 5-14-92 Street or Route Telephone Number 713 GRAND AUE (715) 359.9408 City, State, Zip Code Tilliout				Date	Received/Insp	ected	District/County	
Street or Route C Telephone Number 713 GRAND AUE (715) 359.9408 Follow-up Necessary City, State, Zip Code				. D	awer/Increase			
913 GRAND AUE (715) 359-9400 City, State, Zip Code		Street or Route		(Kevi	- ACTURDECTO			
City, State, Zip Code			(715) 359.9408	Falla	wim Naroer	rv.		
		City, State, Zip Code				-7	}	
		ROTHSCHILD WI	54474			1997 - 2007 - 2006 - 2007 - 2007 - 2007 - 2007 - 2007 - 2007 - 2007 - 2007 - 2007 - 2007 - 2007 - 2007 - 2007 - Ling an		

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All abandonment work shall be performed in accordance with the provisions of Chapters NR 111, NR 112 or NR 141, Wis. Admin. Code, whichever is applicable. Also, see instructions on back.

(1) GENERAL INFORMATION			ITY MANE				
			(2) FACILITY NAME Original Well Owner (If Known)				
Well/Drillhole/Borehole Location	WEISENBERGER TIE ! LUMBER COMPANY						
NW 1/4 of NE 1/4 of Sec.	; T. <u>28</u> N; R. <u>5</u> W	Present	Well Owner	RTIE ! L	UMBER COMPANY		
(If applicable)		Street	or Route				
Gov't Lot	Grid Number		EN BENGE tate, Zip Cod		· · · ·		
ft N S.,	ft. 🗌 E. 🔲 W.	1 J	ATHON .	W1 5444	1B		
Civil Town Name		1		Vor Name (II Ap	plicable) WI Unique Well No.		
Street Address of Well			BORING For Abandon	TB-3			
Dicci Addies of Well			ISCONTIN	. 1			
City, Village			Abandonmen 4-8	t			
WELL/DRILLHOLE/BOREHOLE	INFORMATION	1	,				
(3) Original Well/Drillhole/Borehole C	-		o Water (Feet				
(Date) 4-8-4	92		2 Piping Rem Removed?		Yes No X Not Applicable		
Monitoring Well	Construction Report Available? NA		Removed?		$\begin{array}{c c} Y \Leftrightarrow & \square & No & \boxtimes & \text{Not Applicable} \\ Y \Leftrightarrow & \square & No & \boxtimes & \text{Not Applicable} \end{array}$		
Water Well	Yes No	Casing	Left in Place?		les ∏ №		
Drillhole		If No, E	xplain				
Dorehole		Was Ca	sing Cut Off	Below Surface?			
Construction Type:		}	-	Rise to Surface?			
	(Sandpoint) 🔲 Dug	Did Material Settle After 24 Hours?					
Other (Specify)			, Was Hole R		☐ Y ≅ ☐ №		
Formation Type:				lacing Sealing M	•		
Unconsolidated Formation	Bedrock	Conductor Pipe-Gravity Conductor Pipe-Pumped Dump Bailer X Other (Explain) GRAVITY					
Total Well Depth (ft.)	Casing Diameter (ins.)		Materials		For monitoring wells and		
(From groundsurface)			t Ceinent Gro		monitoring well boreholes only		
Casing Depth (ft.)			l-Cement (Con	ncrete) Grout	Bentonite Pellets		
			-Sand Slurry	1	Granular Bentonite		
Was Well Annular Space Grouted?	🗌 Yes 🔀 No 🔲 Unknown	Bent	onite-Sand Sl		Bentonite - Cement Grout		
If Yes, To What Depth?	Feet	🛛 🛛 Chip	ped Bentonite				
(7) Sealing Materi	al Used	From (Ft.)	To (Ft.)	No. Yards, Sacks Sealant or Volume	Mix Ratio or Mud Weight		
CHIPPED BENT	ONITE	Surface	6	$Z.1fr^3$	•		
	1		- <u></u>				
(8) Comments:							
· · · · · · · · · · · · · · · · · · ·							
(9) Name of Person or Firm Doing Seal		f			UNTY USE ONLY		
CENTRAL WISCONSIN E		Date	Received/Insp	ected	District/County		
Signature of Person Doing Work	Date Signed 5-14-92	Revi	ewer/Inspector				
Street or Route	Telephone Number						
913 GRIAND AVE	(715) 359.9400	Follo	w-up Necessa	ıy			
City, State, Zip Code		1	****				

City, State, Zip Code

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54474

All abandonment work shall be performed in accordance with the provisions of Chapters NR 111, NR 112 or NR 141, Wis. Admin. Code, whichever is applicable. Also, see instructions on back.

(1) GENERAL INFORMATION		(2) FACIL	ITY NAME		
		Origina	I Wall Owne	r (lf Known)	
Well/Drillhole/Borehole	MARATHON			r (II Khown)	UMBER COMPANY
		Present	Well Owner		DPIDER COMPANY
NW 1/4 of NE 1/4 of Sec.]	: T. 28 N: R. 5	ALE I	TALBERLE	PTIE El	UMBER COMPANY
(If applicable)	, 1. <u>20</u> 1, 1. <u>0</u> [] W	Street	rRoute	K IIL IL	DENSEL LUITERNI
Gov't Lot	Grid Number		ENBENGE	n ROAD	
Grid Location	Gild Humber		tate, Zip Coo		·····
ft. 🗌 N. 🗌 S.,	ft. 🗌 E. 🔲 W.		ATHON ,		18
Civil Town Name		Facility	Well No. and	I/or Name (If Ap	
CASSEL		TEST	BORING	TB-4	
Street Address of Well	Anno 1997 - 19	Reason	For Abandon		
		D	ISCONTIN	UED USE	
City, Village		Date of	Abandonmer	it Ca	
· ·			4- 2	- 92	
WELL/DRILLHOLE/BOREHOLE IN					
(3) Original Well/Drillhole/Borehole Const			o Water (Fee		
(Date) <u>4-8-92</u>			k Piping Rem	ioved?	Yes 🔲 No 🔀 Not Applicable
			Removed?		Yes No 🔀 Not Applicable
	nstruction Report Available? NA	1	Removed?		$I \in \prod^{N_0} N_0 \boxtimes Not Applicable$
Water Well	Yes No	-	Left in Place		(es No T
Drillhole		If No, E	xplain		
Borehole					
		1	-	Below Surface?	□ Yes ⊠ No
Construction Type:	droint) 🗖 Dug	(-	Rise to Surface? fter 24 Hours?	∑ Y≈ □ № □ Y≈ ⊠ №
Driven (San	dpoint)	1	, Was Hole R		
Formation Type:				Placing Sealing M	•
Unconsolidated Formation	Betrock		luctor Pipe-G		onductor Pipe-Pumped
			p Bailer		Other (Explain) GRAVITY
Total Well Depth (ft.) Casin (From groundsurface)	ng Diameter (ins.)	(6) Sealing	Materials Ceinent Gro	•	For monitoring wells and monitoring well boreholes only
(i tom grounds at face)				ncrete) Grout	momorning went borenoies only
Casing Depth (ft.)			•		Bentonite Pellets
			-Sand Slurry	1 1	Granular Bentonite
Was Well Annular Space Grouted?	🗌 Yes 🖾 No 🔲 Unknown		onite-Sand Sl	urry i	Bentonite - Cement Grout
If Yes, To What Depth?	Feet		ped Bentonite		
				No. Yards,	
(7) Sealing Material U	sed	From (Ft.)	To (Ft.)	No. Yards, Sacks Sealant or Volume	Mix Ratio or Mud Weight
CHIPPED BENTON:	ITE	Surface	3	0.6 ft 3	
	l.				
(8) Comments:					
(9) Name of Person or Firm Doing Sealing	Work	(10)	FOR	DNROROCO	UNTY USE ONLY
LENTRAL WISCONSIN ENG			Received/Insp		District/County
	Date Signed				
	5-14-92	Revie	wer/Inspecto	r.	
	elephone Number				
913 GRAND AVE	(715) 359-9400	Follo	w-up Necess:	ury.	

City, State, Zip Code

ROTHSCHILD

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All abandonment work shall be performed in accordance with the provisions of Chapters NR 111, NR 112 or NR 141, Wis. Admin. Code, whichever is applicable. Also, see instructions on back.

715		
$\left(\underline{1} \right)$		(2) FACILITY NAME
	Well/Drillhole/Borehole County Location MIARATHON	Original Well Owner (If Known) WEISENBERGER TIE ? LUMBER COMPANY
		- Present Well Owner
		WEISENBERGER TIE I LUMBER COMPANY
	(If applicable)	Street or Route
	Gov't Lot Grid Number	WEISENBENZGER ZUAD
	Grid Location	City, State, Zip Code
		N. MARATHON, WI 54448
	Civil Town Name	Facility Well No. and/or Name (II Applicable) WI Unique Well No.
	(ASSEL	TEST BOZING TB-S
	Street Address of Well	Reason For Abandonment DISCONTINUED USE
	City, Village	DISCONTINUED USE Date of Abandonment
		4-8-92
WI	ELL/DRILLHOLE/BOREHOLE INFORMATION	
(3)	Original Well/Drillhole/Borehole Construction Completed On	(4) Depth to Water (Feet) UNKNO WIN
	(Date) $4 - 8 - 92$	Pump & Piping Removed? Yes No V Not Applicable
		Liner(s) Removed? Yes No X Not Applicable
	Monitoring Well Construction Report Available? NA	
	Water Well Yes No	Casing Left in Place? Yes No
	Drillhole	If No, Explain
	Borehole	·
		Was Casing Cut Off Below Surface?
	Construction Type:	Did Sealing Material Rise to Surface? Yes No
	Driven (Sandpoint)	Did Material Settle After 24 Hours? Yes X No If Yes, Was Hole Retopped? Yes No
	Other (Specify)	
	Formation Type:	(5) Required Method of Placing Sealing Material
1	Unconsolidated Formation Betrock	Conductor Pipe-Gravity Conductor Pipe-Pumped
		Dump Bailer X Other (Explain) GENITY
	Total Well Depth (ft.) Casing Diameter (ins.)	(6) Sealing Materials For mon toring wells and
	(From groundsurface)	Neat Cement Grout monitoring well boreholes only
	Casing Depth (ft)	Sand-Cement (Concrete) Grout
	Casing Depth (fL)	Clay-Sand Slurry
	Was Well Annular Space Grouted? 🛛 Yes 🔀 No 🗌 Unknow	
	If Yes, To What Depth? Feet	Chipped Bentonite
$\overline{(7)}$	Sealing Material Used	From (Ft.) To (Ft.) Sacks Sealant or Volume Mix Ratio or Mud Weight
<u> </u>		
	CHIPPED BENTONITE	Surface 6 $1.2 + 7^3$
	1	
(8)	Comments:	
(0)	Comments.	
(9)	Name of Person or Firm Doing Sealing Work	(10) FOR DNR OR COUNTY USE ONLY
	CENTRAL WISCONSIN ENGINEEKS	Date Received/Inspected
	Signature of Person Doing Work Date Signed	
-	Dale Chambanne 5-14-92	Reviewer/Inspector
	Street or Route // Telephone Number	
(913 GRIMA AVE (715) 359-9408	Followam Necessary

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All abandonment work shall be performed in accordance with the provisions of Chapters NR 111, NR 112 or NR 141, Wis. Admin. Code, whichever is applicable. Also, see instructions on back.

(1)	GENERAL INFORMATION		(2) FACIL	ITY NAME			
		County			(lf Known)		
	Well/Drillhole/Borehole Location	MARATHON			ER TIE ? LI	12-01	1
- -	Locaton	ΙΙΗΚΑΙΗΟΝ				UPIDER	_OMP/ANY
	Nr.			Well Owner			1
	<u>NW</u> 1/4 of <u>NE</u> 1/4 of Sec	; T. <u>28</u> N; R. <u>_</u> W			R TIE ? L	UMBER L	-OMPANY
	(If applicable)		1 /	or Route	0		
	Gov't Lot	Grid Number		ENBERGE			
	Grid Location		City, S	tate, Zip Cod	e	. 9	
	ft. 🗌 N. 🔲 S.,	ft. 🗌 E. 🗌 W.	MAR	ATHON .	W1 5444	18	
	Civil Town Name				Vor Name (If Ap	plicable) W	I Un que Well No.
	CASSEL		TEST	BORING	TB-6	}	-
_	Street Address of Well		1	For Abandon			
			DISCONTINUED USE				
	City, Village			Abandonmen	t		
			4-6-92				
WI	ELL/DRILLHOLE/BOREHOLE	INFORMATION	1	, ,			
(3)	Original Well/Drillhole/Borehole C		(4) Depth t	o Water (Feet) LINKNOWN		
()	.1 ~						Mat Applicable
	(Date) <u>4-8-4</u>	12		2 Piping Rem		Yes No]	
	– {			Removed?		Yes No	
		Construction Report Available? NA		Removed?		Yes No 1	Not Applicable
	Water Well	🗌 Yes 🔲 No	-	Left in Place?		Yes 🔲 No 🤇	
	Drillhole		If No, E	xplain			
	Borehole	1					
			1	-	Below Surface?		⊠ No
	Construction Type:		Did Sea	ling Material	Rise to Surface?	🔀 Yes	□ No
	Drilled Driven	(Sandpoint) Dug	Did Mat	terial Settle A	fter 24 Hours?	🗌 Yes	🔀 No
	Other (Specify)		If Yes	, Was Hole R	etopped?	🗌 Yes	□ No
	· • · · ·		(5) Required	d Method of P	lacing Sealing N	[armia]	
	Formation Type:						
	Unconsolidated Formation	X Bedrock		luctor Pipe-G		Conductor Pipe	-
		-		p Bailer	\square	Other (Explain	
		Casing Diameter (ins.)	(6) Sealing				ring wells and
	(From groundsurface)			Cement Gro		monitoring	well boreholes only
				l-Cement (Con	ncrete) Grout		
	Casing Depth (ft.)			Tele		🔲 Bentoni	te Pellets
			Clay	-Sand Slurry		🔲 Granula	r Bentonite
	Was Well Annular Space Grouted?	🔲 Yes 🖾 No 🔲 Unknown	🗌 🗌 Bent	onite-Sand Sl	uny	🗌 Bentoni	te - Cement Grout
	If Yes, To What Depth?	Feet	🛛 🖾 Chip	ped Bentonite			
			· ·		No. Yards.	1	
$\overline{\mathcal{O}}$	Sealing Materi	al Used	From (Ft.)	To (Ft.)	Sacks Sealant or Volume	Mix Ratio	or Mud Weight
							· · · · · · · · · · · · · · · · · · ·
	CHIPPED BENT	0	Surface	2	0443		
	LAIPPED IDENT	UNITE				<u> </u>	
		1	·				
<u></u>							
			L	<u></u>		l	
(8)	Comments:						
_							
(9)	Name of Person or Firm Doing Seal				DNR OR CO	the second s	
	CENTRAL WISCONSIN E	NGINEERS	Date	Received/Insp	ected	District/	County
	Signature of Person Doing Work	Date Signed					
	Wall Gauface		Revie	ewer/Inspector			
	Street or Route	Telephone Number					
(913 GRAND AVE	(715) 359-9400	Föllö	w-up Necessa	ry		
	City, State, Zip Code	· · ·		***************************************			
	ROTHSCHILD WI	54474			·····		

All abandonment work shall be performed in accordance with the provisions of Chapters NR 111, NR 112 or NR 141, Wis. Admin. Code, whichever is applicable. Also, see instructions on back.

	·				×
(1) GENERAL INFORMATION		1	ITY NAME		
Well/Drillhole/Borehole	County	Origina	al Well Owne	r (lf Known)	\wedge
Location	MARATHON				UMBER COMPANY
		Present	: Well Owner		·
<u>NW</u> 1/4 of <u>NE</u> 1/4 of Sec	1; T. <u>28</u> N; R. <u>5</u>	WEI	SENBERLOE	R LIE & L	UMBER COMPANY
(If applicable)		Street	or Route	_	
Gov't Lot	Grid Number	WEIS	SENBERGE	IN ROAD	
Grid Location			tate, Zip Coo		·····
ft. 🔲 N. 🗍 S.,	ft. 🗍 E. 🗌 W.		LATHON .	W1 5744	18
Civil Town Name				Vor Name (If Ap	
CASSEL			BORING	TB-7	
Street Address of Well			For Abandon		
Steel Address of Wen				. 1	
City, Village			ISCDNTIN Abandonmer		
City, Village		Date of	4-9	<u> </u>	
		/ = -/	12		
WELL/DRILLHOLE/BOREHOLE		(4) Depth t		A	
(3) Original Well/Drillhole/Borehole Construction Completed On			o Water (Feel		
(Date) <u>4-9-</u>	92		k Piping Rem		Yes 🔲 No 🔀 Not Applicable
·····		1	Removed?		Yes 🗌 No 🔀 Not Applicable
Monitoring Well	Construction Report Available? NA	1	Removed?		Yes No Not Applicable
Water Well	Yes No	Casing	Left in Place?	·	″∝ ∏ №
Drillhole		If No, E	xplain		
Borehole	l				
		Was Ca	sing Cut Off	Below Surface?	∏ Yes ⊠No
Construction Type:		1	-	Rise to Surface?	
	(Sandroint) Dug	1	-	fter 24 Hours?	Y ≈ ⊠ №
Other (Specify)	(Sandpoint) 🗌 Dug	1	, Was Hole R		
Formation Type:		(5) Require	d Method of F	lacing Sealing N	laterial
Unconsolidated Formation	X Bedrock		luctor Pipe-G	ravity 🗌 C	Conductor Pipe-Pumped
Onconsolidated Formation	N Bellock	Dun	ip Bailer	\mathbf{X}	Other (Explain) GRAVITY
Total Well Depth (ft.)	Casing Diameter (ins.)	(6) Sealing	Materials		For monitoring wells and
(From groundsurf e)		Nea:	t Cement Gro	ut	monitoring well boreholes only
			l-Cement (Co	ncrete) Grout	0
Casing Depth (ft.)				,	Bentonite Pellets
			-Sand Slurry		Granular Bentonite
Was Well Annular Space Grouted?	🗌 Yes 🔀 No 🔲 Unknown	·	onite-Sand Sl	עדדוו	Bentonite - Cement Grout
If Yes, To What Depth?	Feet		ped Bentonite	•	
(7) Sealing Materi	in Head	From (Ft.)	To (Ft.)	No. Yards, Sacks Sealant	Mix Ratio or Mud Weight
Sealing Materi	lar Used	From (FL)	10 (FL)	or Volume	
		Surface	1	1.443	
CHIPPED BENT	ONITE	Juitace	\neg	1.477	
	1				
			· · · · · · · · · · · · · · · · · · ·		
					
(8) Comments:		I	I		
· · · · · · · · · · · · · · · · · · ·					
(9) Name of Person or Firm Doing Seal	ing Work	(10)*	FOR	DNROROCO	OUNTY USE ONLY
		the second se	Received/Insp		District/County
CENTRAL WISCONSIN E		Date	verenaniud		Dianou County
Signature of Person Doing Work	Date Signed 5-14-92	D	ewer/Inspector	•	
pele Hanforre		Kevi	ewerlinebecto		
Street or Route	Telephone Number (715) 359-9400				
913 GRAND AVE	(115) 559-1400	1.400000000.	w-up Necessa	See Martin States and the States of the	
City, State, Zip Code				V (98.500 SA - 5.4	
ROTHECHILD WI	54474				

ROTHSCHILD

All abandonment work shall be performed in accordance with the provisions of Chapters NR 111, NR 112 or NR 141, Wis. Admin. Code, whichever is applicable. Also, see instructions on back.

715		
(1)		(2) FACILITY NAME
	Well/Drillhole/Borehole County	Original Well Owner (If Known)
	Location MHRATHON	WEISENBERGER TIE ! LUMBER COMPANY
		- Present Well Owner
	<u>NW</u> 1/4 of <u>NE</u> 1/4 of Sec. <u>1</u> ; T. <u>28</u> N; R. <u>5</u>	WEISENBERGER TIE & LUMBER COMPANY
		Street or Route
	(If applicable)	
	Gov't Lot Grid Number	
	Grid Location	City, State, Zip Code
	ft. N. S.,ft. E. W	N. MARATHON, WI 54448
-	Civil Town Name	Facility Well No. and/or Name (If Applicable) WI Unique Well No.
	CASSEL	TEST BORING TB-8
	Street Address of Well	Reason For Abandonment
	Silcer Address of their	
_		DISCONTINUED USE
	City, Village	Date of Abandonment
	·	4-9-92
WE	ELL/DRILLHOLE/BOREHOLE INFORMATION	
(3)	Original Well/Drillhole/Borehole Construction Completed On	(4) Depth to Water (Feet) LINKNO UNN
I	(Date) $4 - 9 - 92$	Pump & Piping Removed? Yes No No Not Applicable
-		
	Monitoring Well Construction Report Available? NA	
	Water Well Yes No	Casing Left in Place? Yes No
	Drillhole	If No, Explain
	Borehole	
		Was Casing Cut Off Below Sur ace? Yes 🕅 No
	Construction Type:	Did Sealing Material Rise to Surface? Xes No
	Drilled Driven (Sandpoint) Dug	Did Material Settle After 24 Hours? Tes 🔽 No
	Other (Specify)	If Yes, Was Hole Retopped? Yes 🗍 No
	Formation Type:	(5) Required Method of Placing Sealing Material
	Unconsolidated Formation X Bedrock	Conductor Pipe-Gravity Conductor Pipe-Pumped
		Dump Bailer X Other (Explain) GRAVITY
	Total Well Depth (ft.) Casing Diameter (ins.)	(6) Sealing Materials For monitoring wells and
	(From groundsurface)	Neat Cement Grout monitoring well boreholes only
	(Sand-Cement (Concrete) Grout
	Casing Death (ft)	Concrete ! Bentonite Pellets
	Casing Depth (fL)	
		Clay-Sand Slurry
	Was Well Annular Space Grouted? 🗌 Yes 🕅 No 🗌 Unknow	
1	If Yes, To What Depth? Feet	Chipped Bentonite
т		No. Yards,
(η)	Sealing Material Used	From (Ft.) To (Ft.) To (Ft.) Sacks Sealant or Volume Mix Ratio or Mud Weight
	CHIPPED BENTONITE	Surface 2.5 $0.94+3$
	LATPPED DENTONITE	6.0 0.1.1
	I	
_		
(8)	Comments:	
(9)	Name of Person or Firm Doing Sealing Work	(10) FOR DNR OR COUNTY USE ONLY
	CENTRAL WISCONSIN ENGINEERS	Date Received/Inspected District/County
	Signature of Person Doing Work Date Signed	
	Adle Fambane 5-14-92	Reviewer/Inspector
	Street or Route // Telephone Number	-
		Entrancia Manager
		Follow-up Necessary
	City, State, Zip Code RDTHSCHILD WI 54474	
	NUTRICIAL NI STUT	

All abandonment work shall be performed in accordance with the provisions of Chapters NR 111, NR 112 or NR 141, Wis. Admin. Code, whichever is applicable. Also, see instructions on back.

T	GENERAL INFORMATION		(2) FACII	ITY NAME			
	Well/Drillhole/Borehole	County	Origina	al Well Owne	r (lf Known)	2	
	Location	MHRATHON	WEI	SENPERCE	ER TIE 2/	UMBER COMPANY	
			Present	t Well Owner		·	
	NW 1/4 of NE 1/4 of Sec.	; T. <u>28</u> N; R. <u>5</u>	WEI	SEN BERLOE	R TIE & L	LMBER COMPANY	
	(If applicable)		Street	or Route			
	Gov't Lot	Grid Number	WEI	SENBERGE	R ROAD		
	Grid Location			state, Zip Coo	le		
	ft. 🔲 N. 🔲 S.,	ft. 🗌 E. 🔲 W.	MAG	ZATHON .	W1 5444	18	
	Civil Town Name	· · · · · · · · · · · · · · · · · · ·	Facility	Well No. and	for Name (If Ap	plicable) WI Unique Well No.	
	LASSEL		TEST	BORING	TB-9		
	Street Address of Well		Reason	For Abandor	1	-	
			DISCONTINUED USE				
	City, Village			Abandonmer			
			4-9-92				
	ELL/DRILLHOLE/BOREHOLE		(<u> </u>				
(3)	Original Well/Drillhole/Borehole C			o Water (Fee			
	(Date) <u>4-9-6</u>	92		& Piping Rem		Yes 🔲 No 🔀 Not Applicable	
			1) Removed?		Yes No Not Applicable	
	Monitoring Well	Construction Report Available? NA	1	Removed?		Yes \square No \boxtimes Not Applicable	
	Water Well	Yes No	-	Left in Place?		Yes 🔲 No 🗍	
	Drillhole		If No, E	xplain			
	Borehole		WeeGe		D.1		
			1	-	Below Surface? Rise to Surface?	☐ ^Y ≈ ⊠No ⊠ Y≈ ∏ No	
	Construction Type:	(Sandmaint) Dug	1	-	fter 24 Hours?	∑ Yes □ № □ Yes ∑ №	
		(Sandpoint) 🔲 Dug	1	s, Was Hole R			
	U Other (Specify)						
	Formation Type:				Placing Sealing M	•	
	Unconsolidated Formation	X Bedrock	=	ductor Pipe-G	· _	Conductor Pipe-Pumped	
	Cheonsondared Polimaton	M Dalick		np Bailer		Other (Explain) GRANTY	
		Casing Diameter (ins.)	(6) Sealing		-	For monitoring wells and	
	(From groundsurface)			t Ceinent Gro		monitoring well boreholes only	
			=	-	ncrete) Grout		
	Casing Depth (ft.)			crete		Bentonite Pellets	
			. — ·	-Sand Slurry		Granular Bentonite	
	Was Well Annular Space Grouted?			tonite-Sand Sl		Bentonite - Cement Grout	
	If Yes, To What Depth?	Feet		ped Bentonite		·	
$\overline{()}$	Sealing Materi	al Used	From (Ft.)	To (Ft.)	No. Yards, Sacks Sealant	Mix Ratio or Mud Weight	
	Seamig Mater		110m (1 t.)	10(1)	or Volume		
	CIL B		Surface	6	1.2 ft3	·	
	CHIPPED BENT	ONITE			1.6 11		
		1					
		· · · · · · · · · · · · · · · · · · ·					
78)	Comments:		I <u></u>			1	
(9)					<u></u>	<u> </u>	
(9)	Name of Person or Firm Doing Seali	ing Work	(10)	FOR	DNRORCO	OUNTY USE ONLY	
$\langle \gamma \rangle$	CENTRAL WISLONSIN E	MAINEEKS		Received/Insp		District/County	
	Signature of Person Doing Work	Date Signed					
		5-14-92	Revi	ewer/Inspector	C	1	
	Street or Route	Telephone Number					
	913 GRAND AVE	(715) 359.9400	Follo	w+up Necessa	ıry		
	City, State, Zin Code						
	ROTHSCIJILIS WI	54474					

913 GRAND AVE

City, State, Zip Code

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Follow-up Necessary

All abandonment work shall be performed in accordance with the provisions of Chapters NR 111, NR 112 or NR 141, Wis. Admin. Code, whichever is applicable. Also, see instructions on back.

(1) GENERAL INFORMATION	(2) FACILITY NAME
Well/Drillhole/Borehole County	Original Well Owner (If Known)
Location MARATHON	WEISENBERGER TIE ! LUMBER COMPANY
	Present Well Owner
<u>NW</u> 1/4 of <u>NE</u> 1/4 of Sec. <u>1</u> ; T. <u>28</u> N; R. <u>5</u> W	WEISENBERGER TIE & LUMBER COMPHNY
(If applicable)	Street or Route
Gov't Lot Grid Number	WEISENBERGEN ROAD
Grid Location	City, State, Zip Code
ft. N. S.,ft. E. W.	MARATHON, WI SY448
Civil Town Name	Facility Well No. and/or Name (If Applicable) WI Unique Well No.
LASSEL	TEST BOZING TB-10
Street Address of Well	Reason For Abandonment
	DISCONTINUED USE
City, Village	Date of Abandonment
	4-9-92
WELL/DRILLHOLE/BOREHOLE INFORMATION	
(3) riginal Well/Drillhole/Borehole Construction Completed n	(4) Depth to Water (Feet) UNKNOWN
(Date) $4 - 9 - 92$	Pump & Piping Removed? 🗌 Yes 🗌 No 🔀 Not Applicable
	Liner(s) Removed? Yes No X Not Applicable
Monitoring Well Construction Report Available? NA	Screen Removed? Yes No Not Applicable
Water Well Yes No	Casing Left in Place? Tes No
Drillhole	If No, Explain
X Borehole	
	Was Casing Cut Off Below Surface? Yes 🛛 No
Construction Type:	Did Sealing Material Rise to Surface? 🛛 🔀 Yes 🔲 No
Drilled Driven (Sandpoint) Dug	Did Material Settle After 24 Hours? 🛛 🗌 Yes 🔀 No
Other (Specify)	If Yes, Was Hole Retopped?
	(5) Required Method of Placing Sealing Material
Formation Type:	
🛛 Unconsolidated Formation 🛛 Bedrock	Conductor Pipe-Gravity Conductor Pipe-Pumped
	Dump Bailer Other (Explain) GRAVITY (6) Sealing Materials For monitoring wells and
Total Well Depth (ft.) Casing Diameter (ins.) (From groundsurface)	
(From groundsurface)	
Contra Dooth (6)	Sand-Cement (Concrete) Grout
Casing Depth (ft.)	Concrete
	Clay-Sand Slurry
Was Well Annular Space Grouted? Yes 🛛 No 🗌 Unknown	Bentonite-Sand Slurry Bentonite - Cement Grout
If Yes, To What Depth? Feet	Chipped Bentonite
(7) Section Manual Hand	From (Ft.) To (Ft.) Sacks Sealant Mix Ratio or Mud Weight
Sealing Material Used	From (Ft.) To (Ft.) Sacks Sealant Mix Ratio or Mud Weight
	Surface 5.5 1.9-473
CHIPPED BENTONITE	Surface 5.5 1.9473
۱ _	
(8) Comments:	
	ومستعدين والمراجع و
(9) Name of Person or Firm Doing Sealing Work	(10) FOR DNR OR COUNTY USE ONLY
CENTRAL WISCONSIN ENGINEERS	Date Received/Inspected District/County
Signature of Person Doing Work Date Signed	
Dell Fampine 5-14-92	Reviewer/Inspector
Street or Route C Telephone Number	
913 GRAND AVE (715) 359.9400	Follow-up Necessary

City, State, Zip Code

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All abandonment work shall be performed in accordance with the provisions of Chapters NR 111, NR 112 or NR 141, Wis. Admin. Code, whichever is applicable. Also, see instructions on back.

715	GENERAL INFORMATION						
(1)			(2) FACILITY NAME Original Well Owner (If Known)				
	Well/Drillhole/Borehole Location	MARATHON MARATHON	WEI	SEN BERGE	ER TIE ? L	UMBER COMPANY	
-			Dracan	WallOumer			
_	<u>NW</u> 1/4 of <u>NE</u> 1/4 of Sec. <u>1</u>	<u>; T. 28 N; R. 5</u> W	WEI	SENBERLOF	RIEIL	UMBER COMPANY	
	(If applicable)			or Route	7.00		
	Grid Location Gov't Lot	Grid Number		EN BEilGE			
	ft. \[N. \[S.,	ft. 🗌 E. 🗌 W.			W1 5444	18	
	Civil Town Name	·	Facility	Well No. and	Vor Name (If Ap	plicable) WI Unique Well No.	
	LASSEL			BORING	TB-11		
	Street Address of Well			For Abandor	4		
	Cie Viller			ISCONTIN			
City, Village			Date of	Abandonmer 4-9	- 92	, •	
WE	LL/DRILLHOLE/BOREHOLE	INFORMATION		· · · ·			
(3)	Original Well/Drillhole/Borehole Co	nstruction Completed On	(4) Depth 1	o Water (Fee	LINKNOWN		
	(Date) $4 - 9 - 9$	2	Pump	k Piping Rem	oved?	les 🔲 No 🔀 Not Applicable	
	· · · · · · · · · · · · · · · · · · ·		1 .	Removed?		$Tes \square No \boxtimes Not Applicable$	
	Monitoring Well	Construction Report Available? NA	1	Removed?		(es 🔲 No 🔀 Not Applicable	
	Water Well	🗆 Yes 🔲 No	-	Left in Place	, D ,	(es No	
	Drillhole		If No, E	xplain			
	Borehole		Was Ca	aina Cut Off	Below Surface?	Yes X No	
	Construction Type:		1	-	Rise to Surface?		
		Sandpoint) 🔲 Dug	1	-	fter 24 Hours?		
	Other (Specify)		1	, Was Hole R			
					Placing Sealing M		
	Formation Type:					•	
	Unconsolidated Formation	🛛 Bedrock	Conductor Pipe-Gravity Conductor Pipe-Pumped				
	Total Well Depth (ft.) Ca	using Diameter (ins.)	(6) Sealing Materials For monitoring wells and				
	(From groundsurface)		-	t Cement Gro	ut	monitoring well boreholes only	
			Sano	l-Cement (Co	ncrete) Grout		
	Casing Depth (ft.)			crete	1	Bentonite Pellets	
				-Sand Slurry	1	Granular Bentonite	
	Was Well Annular Space Grouted?	Yes X No Unknown		tonite-Sand Sl		Bentonite - Cement Grout	
	If Yes, To What Depth?	Feet		ped Bentonit			
\overline{O}	Sealing Materia	l Used	From (Ft.)	To (Ft.)	No. Yards, Sacks Sealant	Mix Ratio or Mud Weight	
P					or Volume	· ·	
	CHIPPED BENTO	NITE	Surface	5,0	1.743		
		ı					
(8)	Comments:			1			
(9)	Name of Person or Firm Doing Sealin				the second s	UNTY USE ONLY	
	CENTRAL WISCONSIN EI		Date	Received/Insp	ected	District/County	
	Signature of Person Doing Work	Date Signed 5-14-92	Revi	ewer/Inspecto	1113 - 773, 20046		
-	Dallahawkann Street or Route U	Telephone Number					
	13 GRAND AVE	(715) 359-9400	Fölle	w-up Necessa	пУ		

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ROTHSCHILD

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All abandonment work shall be performed in accordance with the provisions of Chapters NR 111, NR 112 or NR 141, Wis. Admin. Code, whichever is applicable. Also, see instructions on back.

	(1) GENERAL INFORMATION			(2) FACILITY NAME				
	Well/Drillhole/Borehole Location	County MHRATHON	Onginal Well Owner (If Known), WEISENBERGER TIE ? LUMBER COMPANY					
	NW 1/4 of NE 1/4 of Sec. 1	; T. 28 N; R. 5	Dre	sent Well Oumer		UMBER COMPANY		
	(If applicable) Gov't Lot	Grid Number	Str	EISENBEVLGE	<u> </u>			
	Grid Location			y, State, Zip Cod				
	ft. 🔲 N. 🗌 S.,	ft. 🗌 E. 🔲 W.	L V	ARATHON ,	W1 5444			
	Civil Town Name			ility Well No. and	• • • •			
	Street Address of Well			ST BORING	TB- 12	<u> </u>		
	Street Address of Well		Rea	DISCONTIN	. 1			
	City, Village		Dat	e of Abandonmen	t			
				4-9-92				
	ELL/DRILLHOLE/BOREHOLE							
(3)	Original Well/Drillhole/Borehole C	-	- TY -	oth to Water (Feet	·			
	(Date) <u>4-9-0</u>	12		np & Piping Rem		Tes No Not Applicable		
			1	er(s)Removed? en Removed?		$\begin{array}{c c} Yes & \square & No & \boxtimes & Not Applicable \\ \hline (es & \square & No & \boxtimes & Not Applicable \\ \hline \end{array}$		
	Monitoring Well Water Well	Construction Report Available? NA	1	ing Left in Place?		$\begin{array}{c c} (es & \square & No & \hline & Not Applicable \\ (es & \square & No & & & \\ \end{array}$		
	Drillhole		1	o, Explain				
	Borehole							
			Wa	s Casing Cut Off]	Below Surface?	Yes XNo		
	Construction Type:		1	Sealing Material		🔀 Yes 🔲 No		
		(Sandpoint) 🔲 Dug	Did Material Settle After 24 Hours? Yes X No					
	Other (Specify)		1	Yes, Was Hole R		☐ Yes ☐ №		
	Formation Type:		L'	uired Method of F		•		
	Unconsolidated Formation	Bedrock		Conductor Pipe-G		onductor Pipe-Pumped		
	—	-		Dump Bailer	XC	Other (Explain) GRANITY For monitoring wells and		
	Total Well Depth (ft.) C (From groundsurface)	Casing Diameter (ins.)	(6) Sealing Materials For monitoring wells and monitoring well boreholes only					
	(Tromgroundsurface)			Sand-Cement (Cor		monitoring wen borenoies only		
	Casing Depth (ft.)			Concrete	-	Bentonite Pellets		
			Clay-Sand Slurry Granular Bentonite					
	Was Well Annular Space Grouted?		Bentonite-Sand Slurry Bentonite - Cement Grout					
	If Yes, To What Depth?	Feet		Chipped Bentonite				
0	Sealing Materi	al Used	From (I	Ft.) To (Ft.)	No. Yards, Sacks Sealant or Volume	Mix Ratio or Mud Weight		
	CHIPPED BENT		Surfac	= 5,0	1,7-643	•		
	LATPPED DENT	DNITE						
		1						
	<u></u>							
(8)	Comments:							
(0)								
(9)	Name of Person or Firm Doing Seali	ing Work		10)FOR	DNR OR CO	UNTY USE ONLY		
	CENTRAL WISCONSIN E)ate Received/Insp	ected	District/County		
	Signature of Person Doing Work	Date Signed						
	Palet daw /and	5-14-92	R	eviewer/Inspector				
	Street or Route C	Telephone Number (715) 359-9408			<u></u>			
	<u>913 GRAND</u> AVE City, State, Zip Code			ollow-up Necessa				
			1 I - 1		STANDAG STAND	S MANAGER STORE AND A STORE S		

APPENDIX I

WELL CONSTRUCTION REPORT

	<u></u>
Well Construction Report For	ARA19 State of Wisconsin Department of Natural Resources
WISCONSIN UNIQUE WELL NUMBER	AD + 1.3 Private Water Supply - WS/2
Property Owner Kudi Welsenheiden 17/15	nber 433-2045 IAR 10 1988 Madison, WI 53707
Mailing Address and I and Address and Addres	
City Marathon WI	ate Zip Code Town City Village Fire # (if available)
Marathon WI	54449 of MAFATHON
County Well Location Well County Well Location	mpletion
1 Jahatber W. har when the	M.M. D.D. Y.Y. Subdivision Name Lot # Block #
	2. Mark well location in correct 40-acre
HEEG Well Ofilling 355 Address	parcel of section. Gov't Lot # or $5E^{-}$ /4 of 16^{-} /4 of
5069 C cty 17	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$
City State Zip Code	
Auburndale WI SVAIL	
	of well constructed in 19 S Reason for new, reconstructed, replaced, or rehabilitated
	well?
4. Well serves # of homes and/or SAW MILL High Capaci	Needs Make WATER
	ty Property? 🛛 Yes 🕬 💭 Trilled 🗌 Driven Point 🗌 Jetted 🗌 Other
 Weil Located on Highest Point of Property, Consistent with the Ge Well Located in Floodplain?	neral Layout and Surroundings? Pres Ll No nspout/Yard Hydrant 17. Wastewater Sump
Distance In Feet From Well To Nearest: 10. Privy	7 18. Paved Animal Barn Pen
	dation Drain to Clearwater 19. Animal Yard or Shelter
2. Building Overhang 12. Four 400 3. Septic or Holding Tank 13. Build	dation Drain to Sewer 20. Silo Type ling Dr in 21. Barn Gutter
	st Iron or Plastic Other 22. Manure Pipe Gravity Pressure
	ing Sewer □ Gravity □ Pressure □ Cast Iron or Plastic □ Other
6. Euried Home Heating Oil Tank 🗆 Ca 7. Buried Petroleum Tank 15. Coile	ast Iron or Plastic C' Other 23. Other Manure Storage ctor Sewer Other NR 112 Waste Source
8. Shoreline/Swimming Pool 16. Clear	
6. Drillhole Dimensions Method of constructing upper enlarged	9. Geology From To
From To drillhole. (If applicable ~ more than one Dia. (in.) (ft.) (ft.)	Type, Caving/Noncaving, Color, Hardness, Etc. (it.) (it.)
1. Rotary — Mud Circulation	C clay surface 2
Surface 40 2. Rotary – Air 3. Rotary – Foam	
6 40 145 4. Reverse Rotary	Q- Decomposed 2 30 Q- Gravite 30 145
5. Cable-tool Bit in. dia.	Q- Gravite 30 145
6. Temp. Outer Casing in. dia Removed? Ves No	
If no, explain	
7. Other	
7. Casing, Liner, Screen	
Material, Weight, Specification From To Dia. (in.) Mfg. & Method of Assembly (ft.) (ft.)	
6 St. Steel surface 40	
<u>6</u> St. Steel surface 40	
280 WALL ASTM - A120/53	
	10. Static Water Level 12. Well Is:
Kent Steel	30 ft helen ground employe
Welder Joint	30 ft. below ground surface / in. Below Grade
Itert Steel Uelded Joint Dia. (in.) screen type and material From To	3.0. ft. below ground surface Image: Above Grade 11. Pump Test Developed?
Dia. (in.) screen type and material From To	3.0. ft. below ground surface Image: Above Grade 11. Pump Test Developed? Yes No Pumping Level 145 ft. below surface Disinfected? Yes No
Welset Joint Dia. (in.) screen type and material 8. Grout or Other Sealing Material	3.0. ft. below ground surface 1.1. Pump Test In. Image: Below Grade 11. Pump Test Developed? Yes No Pumping Level 14.5 ft. below surface Disinfected? Yes No Pumping at GPM for hours Capped? Yes No
Weilset Joint Dia. (in.) screen type and material From To 8. Porout or Other Sealing Material # Method Porout From To	3.O. ft. below ground surface 1. Pump Test Above Grade 11. Pump Test Developed? Yes No Pumping Level 145 ft. below surface Disinfected? Yes No Pumping at GPM for hours Capped? Yes No s 13. Were all unused, noncomplying, or unsafe wells properly filled with scalant?
Welded Joint Dia. (in.) screen type and material From To 8. Grout or Other Sealing Material # Method Method From To Kind of Sealing Material (ft.) (ft.) Ceme	3.0. ft. below ground surface 1. Pump Test Above 11. Pump Test Developed? Yes No Pumping Level 14. ft. below surface Disinfected? Yes No State GPM for 2 hours Capped? Yes No 13. Were all unused, noncomplying, or unsafe wells properly filled with scalant? If no, explain 57.1112 Image: Constructor Date Signed
Welded Joint Dia. (in.) screen type and material Screen type and material From Method Point Kind of Sealing Material ft.) Ohill Contract Dhill Contract	3.0. ft. below ground surface ////////////////////////////////////
Weildet Joint Dia. (in.) screen type and material B. Grout or Other Sealing Material Method Method Kind of Sealing Material From Dhill Cc Htrugs Surface 7	3.0. ft. below ground surface 1. Pump Test Above 11. Pump Test Developed? Yes No Pumping Level 145 ft. below surface Disinfected? Yes No Pumping at GPM for _2 hours Capped? Yes No s 13. Were all unused, noncomplying, or unsafe wells properly filled with scalant? No If no, explain _57, 1 Date Signed 14. Signature of Well Constructor Date Signed J. J
Welded Joint Dia. (in.) screen type and material Screen type and material From Method Point Kind of Sealing Material ft.) Ohill Contract Dhill Contract	3.0. ft. below ground surface 1 Above 11. Pump Test in. Below Pumping Level 145 ft. below surface Developed? Yes No Pumping at GPM for _2 hours Disinfected? Yes No s 13. Were all unused, noncomplying, or unsafe wells properly filled with scalant? 14. Signature of Well Constructor Date Signed 14. Signature of Well Constructor BH 3/0/050

: