Superior Water Light & Power
Superior, Wisconsin

ENSR® INTERNATIONAL

Phase II, Part III Site Investigation Report Former Manufactured Gas Plant Superior, Wisconsin

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CONTENTS

CONTENTS (Cont'd)

APPENDICES

LIST OF TABLES

LIST OF FIGURES

1.0 INTRODUCTION

This report presents the results of the Phase II, Part III Site investigation completed in October and November 2004 at the Superior Water Light & Power (SWL&P) Former Manufactured Gas Plant (MGP), located at the intersection of Winter Street and East 1st Street in Superior, Wisconsin (Site). The Site location is shown in Figure 1-1.

The Phase II, Part III investigation followed the scope of work outlined in the November 21, 2003 Recommendations for Further Investigation letter and the methodologies outlined in the Phase II Investigation, Part II Work Plan. The fieldwork for this investigation was completed on October 12 through October 15, 2004 and November 16 and 17, 2004.

1.1 Purpose of Investigation

ENSR conducted a Phase I environmental assessment at the Site for SWL&P in September/October of 2001. The Phase I report indicated that gas was manufactured at the Site for fifteen years, ending in 1904. Areas of the Site that had the potential to contain MGP-related chemicals and/or byproducts were identified as part of the Phase I assessment. ENSR performed a Phase II Site investigation from November 2001 through February 2002. Results of the Phase II indicated areas of the Site contained volatile organic compounds and polyaromatic hydrocarbons (PAH) compounds in the soil above Wisconsin Department of Natural Resources (WDNR) Residual Contaminant Levels (RCL). Groundwater samples contained benzene, toluene, ethylbenzene, and xylene (BTEX) and PAH compounds above the WDNR groundwater enforConcrete standards. South of the Site building, an area contained exclusively volatile organic compounds of unknown origin. Other Site areas contained both PAH and BTEX. The former gas holder tank bases were investigated with a backhoe. MGP wastes were not found in association with the tank bases, but tarry materials were that contained PAH were found in the soil north and west of the former Site building.

A Phase II, Part II Investigation was completed in September 2002 to further delineate the PAH and BTEX in the soil and groundwater. Fingerprinting analytical results indicated the volatile organic compounds found south of the Site building appeared to be a blended solvent or degreaser consisting of primarily benzene and toluene with lesser amounts of ethylbenzene and xylene. In addition, a test trench excavation north of the Site building encountered a clay tile pipe oriented toward the former Superior Bay shoreline that contained tarry material. The tarry material was analyzed using "fingerprinting" techniques and appeared to be carbureted water gas coal tar. The results of the Phase II, Part II investigation indicated additional BTEX and PAH impacts downgradient of the Site.

A sediment investigation was completed in the Superior Bay boat slip and nearby storm sewers in March and April 2003. The sediment results indicated concentrations of PAH similar to typical urban run-off in the storm sewer and boat slip. Thus, the investigation shifted back to soil and groundwater in

upland areas of the Site. The purpose of this Phase II, Part III investigation was to further delineate the off-Site soil and groundwater impacts.

1.2 Scope of Work

The scope of work for this Phase II Part III investigation was outlined in the November 21, 2003 Recommendation for Further Investigation letter, which served as the work plan for this investigation. The Phase II Part III scope of work is summarized below.

The scope consisted of first creating a project health and safely plan and clearing underground utilities at the Site. The field work consisted of installing eight soil borings using a Geoprobe® hydraulically powered percussion drilling method, installing five monitoring wells, and sampling the wells. One soil sample was collected from each soil boring for laboratory analysis. Groundwater samples were collected from temporary wells in the Geoprobe soil borings. After the new monitoring wells were developed, groundwater samples were collected from the five new monitoring wells and from three existing wells. Slug tests were performed on the five new monitoring wells to determine hydraulic conductivity of the formation. Figure 1-2 presents the locations of soil borings and monitoring wells completed for this investigation.

1.3 Site Location and Ownership

The former MGP Site is located northeast of the intersection of Winter Street and East 1st Street in Superior, Wisconsin. The Site occupies a portion of the northwest quarter of Section 13, Township 49 North and Range 14 West (NW ¼ of Sec. 13, T49N, R14W).

Portions of the former MGP property are now owned by SWL&P, the City of Superior, the U.S. Department of Transportation, and CLM, Inc..

The SWL&P owner contact is:

Bill Bombich
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2915 Hill Avenue
Superior, Wisconsin 54880
(715) 395-6288

1.4 Consultant and Contractor Identification

The Site investigation activities were conducted by ENSR Corporation. The contact for this investigation is:

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ENSR *International*
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Subcontractors that provided services for this investigation are identified below.

Laboratory Analytical Services

En Chem, Inc.
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(WDNR Certification 405132750)

Surveying

Salo Engineering
Attn: Dale Berntsen
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Duluth, MN 55802
(218) 727-8796 – phone
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Attn: Jim Dzuby
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2.0 SITE BACKGROUND

2.1 Site Description

A 3,000-square foot brick building, that was an original MGP building reconstructed in 1929, is located on the northeast side of Water Street and East 1st Street, between Water Street and the railroad tracks that roughly parallel the shoreline of Superior Bay. Gravel parking areas surround the building. Several parcels of land adjacent to the building were part of the former MGP property including a vacant grass-covered field to the west of the building where two gas holders were once located. Another larger gas holder was located on the now-vacant property south of the building, immediately south of U.S. Highway 53. A city street and vacant, grass-covered lots are now located where the larger gas holder was situated.

The Site is irregularly shaped consisting of approximately five acres, and is situated approximately two miles from downtown Superior. The area surrounding the Site consists of industrial land along the Superior Bay shoreline and commercial/residential properties further inland. The property east of the Site is a fenced parcel used by Lakehead Concrete Company for storage and a ready mix plant. East of the Site is the City of Superior wastewater treatment plant. North of the Site is a former coal dock that is now owned and operated by CLM, Inc. for the production of lime. Adjacent to the CLM, Inc. dock are two large aboveground storage tanks that formerly contained fuel oil. Commercial and residential properties are located along Winter Street and other city streets south of the Site.

2.2 Site History

The gas plant was built in 1888 and began operations on November 1, 1889. The gas produced was a water gas made by the improved "Springer" process. Two gas holders were initially constructed on the Site: one single lift of 35,000 cubic feet capacity, built in October 1889, and one double lift holder of 250,000 cubic feet capacity, dimensions of 92 ft x 21 ft x 21 ft, completed in October 1891. In 1924, a third gas holder was constructed at the subject property. This 750,000-cubic foot gas holder was located southwest of the former MGP building. A spherical gas holder called the "Horton Sphere" was constructed in 1950.

Gas was produced at the Superior MGP from November 1889 to August 1904. After August 1904, all gas sold by SWL&P was purchased from the Zenith Furnace Company (later known as Interlake, Corporation). The gas purchased from Zenith/Interlake was purified in West Duluth before it was piped to SWL&P's plant in Superior. Therefore, no purifier wastes were generated at the Site after August 1904. The MGP at the Site produced a total of approximately 262,000 MCF (million cubic feet) of gas during its 15-year production history.

In 1929, the gas plant building was rebuilt to its present configuration. Gas purchased from Zenith/Interlake was stored in the gas holders, and pumped and metered from the reconstructed

building. Storage and metering of manufactured gas purchased from Zenith/Interlake continued until natural gas supplies became available in 1959. The 35,000-cubic foot gas holder was removed prior to 1938. The 250,000-cubic foot gas holder was removed between 1940 and 1961. The 750,000-cubic foot gas holder was removed between 1962 and 1966, and the Horton Sphere was removed in 1985.

In 1978, SWL&P sold the former gas plant building and portions of the property to CLM, Inc. The building was gutted, concrete floors were poured over the existing sand floors, and the building has been used for storage since that time.

2.3 Source Areas

The previous investigations identified areas that had elevated levels of PAH and BTEX compounds. The results of the Phase II and Phase II Part II sampling indicated there are three general areas where RCLs/enforConcrete standards are exceeded, as illustrated on Figure 2-1. These areas have been generally defined based on the soil type, the types of compounds detected, and their concentrations. Below is a summary of the three areas:

- **Area 1:** Area 1 is located in a grassy field south of the Site building and south of East 1st Street. The soil encountered in Area 1 consisted of reddish-brown high plasticity clay. Analytical results indicate concentrations of benzene and toluene above the enforConcrete standards in the groundwater and benzene, ethylbenzene, and xylene above RCLs in the soil. Fingerprinting analysis indicated the chemicals were a blended solvent or degreaser consisting primarily of benzene and toluene.

- **Area 2:** Area 2 is located north and east of the Site building in the gravel parking lot. The soil encountered in Area 2 consisted of fill composed of lime-like material, cinders, bricks, and slag which contained groundwater at approximately five to nine feet below ground surface. Beneath the fill was reddish-brown high plasticity clay. The clay elevation sloped down towards the northeast. Analytical results indicated concentrations of BTEX and PAH in the soil and water above cleanup criteria. Fingerprinting results of tarry material in a clay pipe indicated the material is most likely carbureted water gas coal tar, with an unresolved petroleum constituent similar to #5 or #6 fuel oil. BTEX concentrations in Area 2, particularly in the vicinity of MW-7, indicate the custom solvent may also be present in Area 2.

- **Area 3:** Area 3 is located west of the Site building in a grassy field. The soil encountered in Area 3 consisted of reddish-brown high plasticity clay. Analytical results indicated concentrations of BTEX and PAH in the soil above cleanup criteria. Two former gas holders were located in Area 3, with PAH and BTEX impacts present only surrounding the eastern gas holder. Samples downgradient of Area 3, between Area 3 and Area 2, did not contain BTEX or PAH above cleanup criteria. Thus, the majority of impacts in Area 3 have been delineated.

The purpose of this Phase II Part III investigation was to further investigate the downgradient and cross gradient extent of Areas 1 and 2.

2.4 Geologic and Hydrogeologic Setting

The MGP Site is located at an elevation between 610 and 615 feet above mean sea level. The topography of the former MGP is relatively flat with little or no slope. To the northeast of the former MGP, the topography slopes down towards the railroad tracks. The land surface to the North of the railroad tracks is relatively flat with most elevations between 605 and 607 feet above mean sea level. The water elevation in Superior Bay is approximately 601 feet above mean sea level.

Aerial photographs and historic maps of the City of Superior, obtained during the Phase I, indicate the former Lake Superior shoreline was originally located approximately 50 to 75 feet northeast of the MGP building. Water was present between the former shoreline and the railroad track embankment in Superior Bay. By 1905 the area between the former shoreline and the railroad tracks had been filled, and no water was present. Various shoreline development and filling activities continued between 1905 and 1978. The 1978 aerial photo depicts the area north of the railroad tracks in it's current configuration.

The results of the subsurface investigations indicate that there are several soil types encountered in the area:

- Reddish-brown high-plasticity clay;
- Sand and silty sand;
- Fill material consisting primarily of light gray to dark gray lime-like material; and
- Miscellaneous fill, such as bricks, wood, slag, and cinders.

Sandstone bedrock (Keweenawan Formation) may be found beneath the unconsolidated soils. Depth to bedrock is estimated to be from 100 to 200 feet below the ground surface.

Groundwater was encountered in the lime-like material, miscellaneous fill, and sand, above the clay unit, 3 to 10-feet below the ground surface.

3.0 OVERVIEW OF PHASE II INVESTIGATION

3.1 Soil Borings Methodology

On October 12 through 15, 2004 eight Geoprobe borings, B-24 through B-31, and five monitoring well borings, MW-8 through MW-12, were advanced at the Site with a Geoprobe rig by ENSR's subcontractor Matrix Environmental. Borings were completed to a depth ranging from 15 to 20 feet below the ground surface. Soil samples were collected continuously using a 5-foot long, 2-inch diameter sampling spoon with new disposable plastic liners. The soil samples were field screened with a photo-ionization detector (PID), calibrated with 100 parts per million isobutylene, using a headspace screening technique. One soil sample from each boring was submitted to EnChem for BTEX and PAH analysis. The depth of the sample submitted for analysis was selected based on field observations (visible staining) and/or PID field screening results. Soil samples were immediately transferred from the sample sleeve to laboratory supplied containers and placed in an ice-filled cooler. Samples were shipped on ice, under chain-of-custody, to EnChem. Soil borings B-24 through B-31 were abandoned with granular bentonite. Soil boring logs and borehole abandonment forms are included in Appendix A.

3.2 Monitoring Well Construction

Soil borings for MW-8 through MW-12 were completed using the Geoprobe direct push methods outlined in Section 3.1. On October 13 through 15, 2004, after soil borings were complete, 8-inch outside diameter hollow-stem augers were used to over-drill the boring location and install monitoring wells. Monitoring wells were constructed with two-inch diameter 10-foot schedule 40 PVC 0.010" slot screen and solid PVC riser. Wells MW-8, MW-9, and MW-11 were completed above grade with locking steel pro-tops and bumper posts. Wells MW-10 and MW-12 were completed below grade with 12-inch diameter flush-mount steel manhole covers. Well construction details are illustrated on the soil boring logs in Appendix A.

3.3 Monitoring Well Development

On October 15, 2004, monitoring wells MW-8 through MW-12 were developed to ensure the proper hydraulic connectivity with the aquifer. Matrix Environmental staff used a bailer to surge and purge the wells, removing approximately ten well volumes from each well or until the water was clear. Water appeared clear in wells MW-10 through MW-12. Water from wells MW-8 and MW-9 contained silt and became clearer with development, however, the water continued to contain sediment after 10-well volumes were removed.

3.4 Water Level Gauging and Free Product Check

Groundwater level measurements were collected from monitoring wells MW-1 through MW-12 on November 16, 2004 and from temporary wells in borings B-24 through B-31 on October 13 and 14, 2004 with an interface probe. The depth to water was recorded and the wells were checked for light and dense non-aqueous phase liquids (free product). The measurements were made from a surveyed measuring point established on the top of the monitoring well PVC well casing. Groundwater elevations in the temporary wells were measured as depth below the surveyed ground surface.

3.5 Groundwater Sampling

Groundwater samples were collected from borings B-24 through B-31 on October 12 and 14, 2004 and from monitoring wells MW-5 through MW-12 on November 16 and 17, 2004.

3.5.1 Soil Boring Groundwater Sampling

Temporary one-inch PVC wells, with a ten-foot screen, were placed in the soil borings B-24 through B-31. After water levels had stabilized, groundwater samples were collected from the temporary wells using clean disposable tubing with a check valve at the bottom. Groundwater was removed from the temporary wells until it appeared clear. Groundwater was transferred directly into laboratory supplied containers and was placed in an ice-filled cooler. Samples were delivered to En Chem laboratory for BTEX and PAH analysis.

3.5.2 Monitoring Well Sample Collection and Handling

Groundwater samples were collected from wells MW-5 through MW-12. Monitoring wells were purged and sampled in general accordance with the WDNR "Groundwater Sampling Field Manual," September 1996. Purging was conducted using a peristaltic pump and dedicated polyethylene tubing utilizing a low-flow purging technique. Groundwater quality measurements were recorded during purging using a Quanta Hydrolab with a flow-through cell. Groundwater quality parameters included dissolved oxygen, specific conductivity, pH, temperature, and oxidation-reduction potential. Groundwater purging continued until water quality readings had stabilized.

Samples were collected directly from the tubing and placed into laboratory supplied containers. The samples were stored on ice in a cooler delivered under chain-of custody to En Chem. Groundwater samples were analyzed for PAH and BTEX. The groundwater collection logs are included as Appendix B.

3.6 Decontamination Procedures

Drilling and sampling equipment was decontaminated before and between sampling events to prevent potential cross contamination between soil boring locations, soil sampling intervals, and monitoring wells. Sampling equipment, including Geoprobe sampling spoons and interface probe, were decontaminated prior to each use with a detergent wash followed by a potable water rinse. Drilling equipment, such as hollow stem augers, were decontaminated with a steam cleaner and power washer.

3.7 Slug Test Methodology

On November 17, 2004, rising head slug tests were completed on wells MW-8 through MW-12. The slug test consisted of dropping a solid PVC cylinder (slug) beneath the water table and allowing the water levels to return to their pre-test level. The slug was then removed from the well and the changes in water levels were recorded using the MiniTroll transducer and In-situ data logging software. The test was allowed to run until the water levels had again returned to their static level. Water levels returned to static levels about five minutes or less. Data collected from the test was stored on a lap top computer.

Slug test data was analyzed using Aqtesolv 3.5 software and the Bouwer-Rice solution for unconfined aquifers. Slug test results are included as Appendix C. Variable input parameters into Aqtesolv included the saturated thickness of the aquifer, which was assumed to be the saturated fill layer, the total depth of well penetration and test well measurements. Fixed input parameters included casing radius, wellbore radius and screen length.

3.8 Elevation Survey

Upon completion of the field investigation, the elevation and location of soil borings and monitoring wells were surveyed by ENSR's subcontractor Salo Engineering. A copy of the survey is available upon request.

4.0 INVESTIGATION RESULTS

4.1 Results of Geologic/Hydrogeologic Site Investigation

Results Site investigations indicate there are three predominant soil types encountered in the Site vicinity: a red high-plasticity clay, silty sand and sand, and a fill material consisting primarily of white to dark gray lime-like material. There were also small amounts of miscellaneous fill, such as bricks, wood and slag, encountered in several locations.

During the Phase II Part III investigation, lime-like fill material was encountered in the majority of the borings as the uppermost soil type. The thickness of the lime-like material ranged from approximately five-feet thick south of the railroad tracks to one-foot thick or less north of the rail road tracks. Underlying the lime-like material was silty sand along with miscellaneous fill (slag, wood, brick, etc.) in some borings. Underlying the sand unit was reddish-brown high plasticity clay. The clay unit appears to slope northeast and east-northeasterly, towards Superior Bay. Figure 4-1 illustrates surface elevation contours of the clay unit. A detailed description of the soil is included on the boring logs in Appendix A.

Groundwater was encountered in the borings in the sand, silty sand, or fill material above the red clay. Groundwater was encountered approximately three to five-feet below the ground surface in the borings north of the railroad tracks and approximately eight to 11-feet below ground surface in the borings south of the railroad tracks. Depth to groundwater was gauged prior to collecting groundwater samples from the monitoring wells. The gauging data results are summarized in Table 4-1. Groundwater elevation contours are illustrated on Figure 4-2. The apparent groundwater flow direction at the Site appears to be northeast towards Lake Superior.

Results of the slug tests on the new monitoring wells indicate hydraulic conductivity of the aquifer ranged from 1.17 x 10^{-2} centimeters per second (cm/s) in MW-9 to 8.48 x 10^{-3} cm/s in MW-11. Hydraulic conductivity values are summarized on Table 4-1. This range of hydraulic conductivity values is consistent with values for sand and silty sand soil, which are the soil types identified in the wells screened interval.[1] The slug test data for wells MW-5 through MW-7, obtained during the November 2001 Phase II Investigation, were inputted into the updated Aqtesolve software. The hydraulic conductivities obtained by the updated software were slightly different than the values presented in the Phase II report due because of updated data matching capabilities. For example, the hydraulic conductivity of MW-5 changed from 9.9 x 10^{-5} cm/sec to 7.63 x 10^{-5} cm/sec. The updated hydraulic conductivities for wells MW- 5 through MW-7 are included on Table 4-1.

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[1] Groundwater, R. A. Freeze and J. A. Cherry, 1979. Table 2.2, Range of Values of Hydraulic Conductivity and Permeability, lists clean sand as 5 x 10^{-4} to 1 cm/s and silty sand as 10^{-5} to 10^{-1} cm/s

Wells MW-1 through MW-7 are completed in clay or lime-like material and have lower hydraulic conductivities. As illustrated in Figure 4-2, the groundwater hydraulic gradient is steeper in the between these wells. Wells MW-8 through MW-12 are completed in sand or silty sand and have higher hydraulic conductivity and have a flatter hydraulic gradient. For example, south of the former shoreline the hydraulic gradient is approximately 0.04 feet per feet and north of the former shoreline the hydraulic gradient ranges from approximately 0.001 to 0.006 feet per feet.

4.2 Results of Soil Analyses

Laboratory results for BTEX and PAH analyses for soil are summarized in Tables 4-2. The complete En Chem soil analytical report is included as Appendix D. Figure 4-3 provides a summary of the soil analytical results on a Site map.

4.2.1 BTEX Soil Analytical Results

BTEX soil analytical results were compared to the WDNR residual contaminant levels (RCL) based on the protection of groundwater (NR 720, Table 1). These RCLs are based on generic site conditions and were used as a basic soil screening level. The majority of the soil samples were collected between five and eight-feet below the ground surface. Soil samples for analysis were selected based on visual impacts, high PID readings, or just above the inferred groundwater table if there were no indications of impacts. As shown Table 4-2, the chemical that exceeded the RCL most frequently was benzene, with an RCL of 0.0055 milligrams per kilogram (mg/kg). All of the soil samples analyzed as part of this investigation contained concentrations of benzene above the RCL. The concentrations of benzene ranged from 0.044 mg/kg in MW-11 at a depth of 6 to 7 feet to 13,000 mg/kg in B-31 at a depth of 14 to 15 feet. The soil benzene concentrations and the sum of BTEX concentrations are illustrated on Figure 4-3. Figure 4-4 illustrates isoconcentration contours for benzene in soil.

Samples from several borings also exceeded the RCL for ethyl benzene, toluene, and/or xylenes, with the highest concentrations found in boring B-31 on the Lakehead Concrete property and MW-9, which is downgradient of B-31.

4.2.2 PAH Soil Analytical Results

PAH soil analytical results were compared to the WDNR RCL based on the protection of groundwater and the WDNR RCL for the protection of human health from direct contact for industrial sites. The RCLs for PAH compounds are published in the Soil Cleanup Levels for PAHs Interim Guidance, Table 1. RCLs are based on generic site conditions and are considered cleanup guidance. The majority of the soil samples were collected between five and eight feet below the ground surface. As shown in the summary tables, nine of the twelve borings had PAH compounds that exceeded one or more RCL. The PAHs that most commonly exceeded the RCLs were benzo(a)pyrene, acenaphthylene, naphthalene, and phenanthrene. The sum of the PAH concentrations ranged from 0.76 mg/kg in MW-11 at a depth of 6 to 7 feet to 2,565 mg/kg in MW-10 at a depth of 5 to 6 feet. The benzo(a)pyrene, naphthalene, and

total PAH concentrations are illustrated on Figure 4-3. Figure 4-5 illustrates isoconcentration contours for total PAH in soil.

4.3 Results of Groundwater Investigation

Groundwater samples were collected from monitoring wells MW-5 through MW-12 and from borings B-24 through B-31. Groundwater samples were analyzed for PAH and BTEX. Monitoring well and Geoprobe boring groundwater analytical results are summarized in Table 4-3 and Table 4-4, respectively. The complete groundwater analytical report is included in Appendix D.

4.3.1 BTEX Groundwater Analytical Results

The groundwater results were compared to the WDNR groundwater enforConcrete standards (ES), which are based on the protection of public health for drinking water (NR 140, Table 1). The analytical results indicate the most common compound detected above the ES was benzene, with an ES of 5 micrograms per liter (ug/L). The benzene concentration was above the ES in all the groundwater samples except MW-5 and MW-11. The highest concentrations of benzene were detected east to southeast of the Site in B-31 (250,000 ug/L), MW-8 (74,000 ug/L), and MW-9 (54,000 ug/L). Benzene concentration and the sum of BTEX concentrations are illustrated on Figure 4-6. Benzene isoconcentration contours in groundwater are illustrated on Figure 4-7.

Ethylbenzene, toluene and/or xylene concentrations exceeded the ES in four of the eight monitoring wells and four of the eight Geoprobe boring groundwater samples. The samples with the greatest concentrations of BTEX are located east or southeast of the Site and include B-31, MW-8, and MW-9.

4.3.2 PAH Groundwater Analytical Results

PAH groundwater results were compared to the WDNR groundwater ES. The analytical results indicate the most common compounds detected above the ES were benzo(a)pyrene, chrysene, and naphthalene. Several other PAH also exceeded the ES in B-25, B-27, and MW-8. The highest total PAH concentrations occur northeast and east of the Site. The results for well MW-8 indicated concentrations of nine PAH chemicals up to over 300 times higher than their respective solubility limits. This indicates that tarry material was most likely present in the sample. Figure 4-6 illustrates the benzo(a) pyrene, naphthalene, and total PAH concentrations on a Site plan. Figure 4-8 illustrates total PAH isoconcentration contours in groundwater.

4.4 Quality Assurance and Quality Control Samples

Quality assurance and quality control (QA/QC) samples were collected to ensure that accurate and reliable data was obtained for this investigation. The laboratory conducted standard QA\QC procedures. Duplicates and trip blanks were collected and analyzed as discussed in the following sections.

4.4.1 Duplicates

One soil and one groundwater duplicate sample were collected for this investigation. The sample IDs followed by the suffix "dup" represent duplicate samples. The duplicate data was checked to assure that the relative percent difference (RPD) was within an acceptable range. The RPD was calculated using the following equation:

$$RPD = \{ (D_1 - D_2) / [(D_1 + D_2)/2] \} \times 100$$

Where D_1 = First Sample Result
D_2 = Second Sample Result (Duplicate)

Soil sample MW-11 6-7 feet was duplicated. The MW-11 RPD for naphthalene is 98%. The RPD for a BTEX compound was not calculated because the concentrations were below detection limits in one or both samples. Soil RPD can be highly variable for PAH chemicals at MGP sites.

Groundwater sample MW-8 was duplicated. The MW-8 RPD for naphthalene was 108% and the RPD for benzene was 2.7%. The high RPD is most-likely due to the fact that tarry material was present in well MW-8.

4.4.2 Trip blanks

A trip blank sample accompanied the water samples collected for this investigation. Two trip blanks was analyzed for BTEX as part of this investigation. No BTEX was detected in the trip blank samples.

4.5 Discussion of Results

Solvent Impacts

Previous investigations have found high concentrations of a solvent material consisting primarily of benzene and toluene in Area 1, southwest of the Site building. The source or origin of the solvent is unknown. The results of this investigation revealed high concentrations of benzene and toluene in soil and groundwater on Lakehead Concrete property in boring B-31, which may be related to the solvent identified in previous investigations. The solvent is commingled with PAH compounds on the Lakehead Concrete property. Soil and groundwater concentrations of BTEX and PAH extend downgradient towards the City of Superior waste water treatment plant. Data collected from Site investigations to date do not define the downgradient and cross-gradient (northeast and southeast) extent of solvent impacts.

Coal Tar Impacts

Previous fingerprinting analysis have found the PAH chemicals detected in Area 2 are most-likely carbureted water gas coal tar constituents. The purpose of this Phase II Part III investigation was to delineate the downgradient extent of PAH impacts. The investigation results indicate there is tarry material present in the vicinity monitoring well MW-8. Figure 4-9 shows the estimated extent of tarry materials. The figure illustrates that the majority of tarry material identified to date is present at the terminus of the clay pipe and to the southeast of the pipe towards well MW-8. Well MW-8 appears to be located near the historic Superior Bay shoreline. Thus, wastewater discharged from the clay pipe may have resulted in tarry materials accumulating in the area located between the former shoreline and the railroad track embankment. The railroad embankment appears to have acted as a barrier, because tar material was not found on the north side of the railroad tracks.

The extent of the tarry materials has not been fully delineated. There are data gaps northeast of the clay pipe terminus, and south of MW-8 and MW-9. Data collected during the Site investigations to date have not fully delineated the downgradient extent of PAH in the soil and groundwater in the vicinity of the waste water treatment plant.

5.0 SUMMARY

This report presents the results of the Phase II Part III subsurface investigation performed at the Site in October and November 2004. Eight soil borings, B-24 through B-31, and five monitoring wells, MW-8 through MW-12, were advanced at the Site with a Geoprobe rig. Soil samples were collected from the soil borings and monitoring well borings for BTEX and PAH laboratory analysis. Groundwater samples were collected from temporary wells installed in the soil borings and from monitoring wells MW-5 through MW-12. Slug tests were performed on wells MW-8 through MW-12.

Groundwater and the clay soil both slope towards the northeast / east northeasterly. The plume of dissolved BTEX and PAH in the groundwater follow the groundwater flow direction and are found northeast and east of the Site. The dissolved plume appears to be heading towards the City of Superior waste water treatment plant. Data obtained from this Phase II Part III investigation have not delineated the extent of soil and groundwater impacts to the southeast and east of the Site. Additional wells and borings would be needed to determine the extent of impacts.

Tarry materials were observed during the drilling of well MW-8. Chemical concentrations of individual PAH compounds, relative to their solubility limits in water, suggest that tarry materials are present in the vicinity of MW-8. No floating or sinking non-aqueous phase liquids were detected during the gauging event in any of the monitoring wells. The extent of tarry materials appears to be from the terminus of the clay pipe to the southeast towards MW-8, in the area between the former shoreline and the railroad embankment. However, the extent of tarry material is not fully delineated. Additional borings between the railroad tracks and the clay pipe, and on the Lakehead Concrete property, would be needed to determine the extent of tarry material.

In summary, the new data collected for this investigation provide a better description of the site hydrogeology and subsurface concentrations of BTEX and PAH. However, additional soil and groundwater sampling and analysis are needed to delineate the extent of tarry materials and dissolved chemical concentrations. ENSR is preparing a Work Plan for Phase II, Part IV, for submittal under separate cover, to provide the additional data.

TABLES

Superior Water Light and Power MGP
Phase II, Part III
Superior, Wisconsin
March 2005

Table 4-1
Groundwater Elevation Data and Hydraulic Conductivity
Superior MGP Phase II Part III
Superior Wisconsin

Well ID	Ground Elevation [a]	Measuring Point Elevation [b]	Depth to Water [c]	Groundwater Elevation[b]	Hydraulic Conductivity [d]
MW-1	616.2	619.11	6.48	612.63	Clay[e]
MW-2	614.2	617.15	4.69	612.46	Clay
MW-3	613.9	617.07	5.67	611.40	Clay
MW-4	614.0	617.11	5.98	611.13	Clay
MW-5	610.1	612.40	7.06	605.34	7.63×10^{-5}
MW-6	611.4	613.74	9.67	604.07	3.07×10^{-3}
MW-7	612.3	614.91	11.16	603.75	7.79×10^{-3}
MW-8	612	615.17	11.73	603.44	3.26×10^{-3}
MW-9	608.7	611.38	8.39	602.99	1.17×10^{-2}
MW-10	606.5	606.08	3.19	602.89	7.46×10^{-3}
MW-11	607.0	609.89	7.43	602.46	8.48×10^{-3}
MW-12	607.9	607.64	5.18	602.46	3.28×10^{-3}

Groundwater elevations were measured on 11/16/04 with an interface probe.

a. The ground surface and top of casings elevations were surveyed by Salo Engineering in November 2004. Elevation is given in feet above mean sea level.
b. Elevation is given in feet above mean sea level.
c. Depth to water in feet as measured below top of casing.
d. Hydraulic conductivity (cm/sec) was determined in November 2001 and November 2004 by conducting slug tests.
e. Wells screened in high plasticity clay. Estimated hydraulic conductivity is less than 10^{-6} cm/sec.

Analyte	B-24 5-6 Ft	B-25 7-8 Ft	B- 2(6-7 F	MW-12 4-5 Ft	WDNR Soil Cleanup Standards	
PAH					RCL Groundwater[a]	RCL Direct Contact[a]
1-Methylnaphthalene	0.44	**72**	0.19	0.036	23	70,000
2-Methylnaphthalene	0.59	**99**	0.11	0.055	20	40,000
Acenaphthene	0.071	**94**	0.23	0.013	38	60,000
Acenaphthylene	0.019	**5.2**	<0.00	0.028	0.7	360
Anthracene	0.096	40	0.02	0.047	3,000	30,000
Benzo(a)anthracene	0.084	**20**	0.02	0.11	17	3.9
Benzo(a)pyrene	0.058	**15**	0.02	0.12	48	0.39
Benzo(b)fluoranthene	0.048	**6.5**	<0.01	0.088	360	3.9
Benzo(ghi)perylene	0.025	7.5	0.01	0.069	6,800	39
Benzo(k)fluoranthene	0.044	8.9	<0.01	0.094	870	39
Chrysene	0.096	19	0.02	0.120	37	390
Dibenz(a,h)anthracene	<0.0084	**1.7**	<0.00	0.015	38	0.39
Fluoranthene	0.015	46	0.43	0.210	500	40,000
Fluorene	0.056	33	0.05	0.012	100	40,000
Indeno(1,2,3-cd)pyrene	0.019	5.2	0.01	0.059	680	3.9
Naphthalene	**0.50**	**200**	**0.43**	0.056	0.4	110
Phenanthrene	0.52	**130**	0.10	0.160	1.8	390
Pyrene	0.19	63	0.05	0.170	8,700	30,000
Sum of PAH	2.9	866	1.7	1.46	NE	NE[b]
VOC					RCL Groundwater[c]	Direct Contact[d]
Benzene	**0.130**	**2.2**	**3.3**	**1.2**	0.0055	1.1
Ethylbenzene	0.048	**42**	<0.02	<0.028	2.9	NE
Toluene	0.27	1.3	<0.02	0.42	1.5	NE
Xylene, -o	0.11	**16**	<0.02	0.038	4.1[e]	NE
Xylenes, -m, -p	0.19	**29**	<0.05	0.07	4.1[e]	NE

Results are reported in parts per million, or milligrams per kil
Bold indicates results above WDNR soil cleanup standards.

a. Residual Contaminant Level for PAH compounds in soil Groundv
b. NE means RCL is not established.
c. Residual Contaminant Level for protection of groundwater, Table
d. Protection of Human Health from Direct Contact with Contaminat
e. The RCL for xylene is 4,100 ug/kg for the sum of all xylenes.

Table 4-3
Summary of Monitoring Well Groundwater Analytical Results
Phase II, Part III
Superior MGP
Superior, Wisconsin

Analyte	MW-5	MW-5	MW-5	MW-5	Enforcement Standard [a]
Sampling Date	11/20/2001	2/11/2002	9/18/2002	11/17/2004	
PAH					
1-Methylnaphthalene	0.058	<0.027	0.19	0.15	**NA** [b]
2-Methylnaphthalene	<0.028	<0.028	0.15	0.068	**NA**
Acenaphthene	3.8	0.11	0.43	0.44	**NA**
Acenaphthylene	0.16	<0.023	<0.023	<0.039	**NA**
Anthracene	0.22	<0.020	0.059	0.046	**3,000**
Benzo(a)anthracene	0.053	<0.019	<0.019	<0.039	**NA**
Benzo(a)pyrene	0.023	<0.012	<0.012	<0.036	**0.2**
Benzo(b)fluoranthene	0.022	<0.014	<0.014	<0.036	**0.2**
Benzo(g,h,i)perylene	0.017	<0.015	<0.015	<0.041	**NA**
Benzo(k)fluoranthene	0.014	<0.013	<0.013	<0.039	**NA**
Chrysene	0.037	<0.018	<0.018	<0.033	**0.2**
Dibenzo(a,h)anthracene	<0.017	<0.017	<0.017	<0.044	**NA**
Fluoranthene	1.3	0.030	0.051	0.035	**400**
Fluorene	1.2	0.035	0.24	0.24	**400**
Indeno(1,2,3-cd)pyrene	<0.014	<0.014	<0.014	<0.034	**NA**
Naphthalene	0.2	0.092	1.3	0.72	**40**
Phenanthrene	0.42	<0.19	0.22	0.16	**NA**
Pyrene	1.4	0.039	0.039	<0.033	**250**
Sum PAH	8.924	0.306	2.679	1.859	**NA**
VOC					
1,2,4-Trimethylbenzene	---[c]	---	<0.69	---	**480**[d]
1,3,5-Trimethylbenzene	---	---	<0.64	---	**480**[d]
Benzene	**6.2**	<0.45	0.99	1.2	**5**
Ethylbenzene	<0.82	<0.82	<0.53	<0.4	**700**
Toluene	2.1	<0.68	<0.84	1.4	**1,000**
Xylene, -o	3.0	<1.7	<0.73	<0.36	**10,000**[e]
Xylenes, -m, -p	6.1	<0.77	<1.1	<0.74	**10,000**[e]
Sum BTEX	17.4	---	0.99	2.6	**NA**

Table 4-3
Summary of Monitoring Well Groundwater Analytical Results
Phase II, Part III
Superior MGP
Superior, Wisconsin

Analyte	MW-6	MW-6	MW-6	MW-6-dup	MW-6	Enforcement Standard
Sampling Date	11/20/2001	2/11/2002	9/18/2002	9/18/2002	11/17/2004	
PAH						
1-Methylnaphthalene	3.0	5.0	2.5	2.1	11.0	**NA**
2-Methylnaphthalene	2.3	3.7	1.6	1.3	8.0	**NA**
Acenaphthene	4.8	5.0	4.5	3.9	13.0	**NA**
Acenaphthylene	0.26	0.22	<0.92	<0.92	0.49	**NA**
Anthracene	0.96	<0.80	<0.8	<0.8	0.69	**3,000**
Benzo(a)anthracene	0.12	0.083	<0.76	<0.76	<0.39	**NA**
Benzo(a)pyrene	0.026	<0.012	<0.48	<0.48	<0.36	**0.2**
Benzo(b)fluoranthene	0.022	<0.014	<0.56	<0.56	<0.36	**0.2**
Benzo(g,h,i)perylene	0.016	<0.015	<0.6	<0.6	<0.41	**NA**
Benzo(k)fluoranthene	0.018	<0.013	<0.52	<0.52	<0.39	**NA**
Chrysene	0.095	0.081	<0.72	<0.72	<0.33	**0.2**
Dibenzo(a,h)anthracene	<0.017	<0.017	<0.68	<0.68	<0.44	**NA**
Fluoranthene	1.1	<1.1	<1.1	<1.1	1.6	**400**
Fluorene	0.76	<0.84	<0.84	<0.84	1.6	**400**
Indeno(1,2,3-cd)pyrene	<0.014	<0.014	<0.56	<0.56	<0.34	**NA**
Naphthalene	9.8	34	12.0	10.0	**91.0**	**40**
Phenanthrene	3.1	2.1	3.4	3.8	3.8	**NA**
Pyrene	1.2	0.88	1.1	1.2	0.8	**250**
Sum PAH	27.577	51.1	25.1	22.3	131.9	**NA**
VOC						
1,2,4-Trimethylbenzene	---	---	0.8	0.81	---	**480**
1,3,5-Trimethylbenzene	---	---	<0.64	<0.64	---	**480**
Benzene	**5.0**	**10**	3.1	3.1	**17**	**5**
Ethylbenzene	1.5	5.8	1.1	1.2	21	**700**
Toluene	1.6	2.0	0.84	0.85	2.6	**1,000**
Xylene, -o	1.4	2.3	<0.73	<0.73	7.6	**10,000**
Xylenes, -m, -p	2.2	2.6	<1.1	<1.1	4	**10,000**
Sum BTEX	11.7	22.7	5.04	5.15	52.2	**NA**

Table 4-3
Summary of Monitoring Well Groundwater Analytical Results
Phase II, Part III
Superior MGP
Superior, Wisconsin

Analyte	MW-7	MW-7	MW-7-dup	MW-7	MW-7	Enforcement Standard
Sampling Date	11/20/2001	2/11/2002	2/11/2002	9/18/2002	11/17/2004	
PAH						
1-Methylnaphthalene	4.7	4.1	3.8	10	<8.1	**NE**
2-Methylnaphthalene	6.3	5.6	5.2	13	<9.1	**NE**
Acenaphthene	1.9	2.4	2.0	5.4	<7.8	**NE**
Acenaphthylene	3.4	2.8	2.5	<4.6	<7.8	**NE**
Anthracene	0.75	<0.40	<0.40	<4	<7.1	**3,000**
Benzo(a)anthracene	<0.38	<0.38	<0.38	<3.8	<7.9	**NE**
Benzo(a)pyrene	<0.24	<0.24	<0.24	<2.4	<7.3	**0.2**
Benzo(b)fluoranthene	<0.28	<0.28	<0.28	<2.8	<7.2	**0.2**
Benzo(g,h,i)perylene	<0.30	<0.30	<0.30	<3	<8.3	**NE**
Benzo(k)fluoranthene	<0.26	<0.26	<0.26	<2.6	<7.8	**NE**
Chrysene	<0.36	<0.36	<0.36	<3.6	<6.6	**0.2**
Dibenzo(a,h)anthracene	<0.34	<0.34	<0.34	<3.4	<8.9	**NE**
Fluoranthene	<0.56	<0.56	<0.56	<5.6	<6.7	**400**
Fluorene	2.2	1.7	1.7	<4.2	<8.8	**400**
Indeno(1,2,3-cd)pyrene	<0.28	<0.28	<0.28	<2.8	<6.9	**NE**
Naphthalene	**350**	**430**	**290**	**490**	**180**	**40**
Phenanthrene	1.4	1.2	1.3	6.7	<8.2	**NE**
Pyrene	0.62	0.72	0.74	<4	<6.6	**250**
Sum PAH	371.27	448.52	307.24	525.1	180	**NA**
VOC						
1,2,4-Trimethylbenzene	---	---	---	**770**	---	**480**
1,3,5-Trimethylbenzene	---	---	---	<640	---	**480**
Benzene	**230,000**	**190,000**	**200,000**	**110,000**	**46,000**	**5**
Ethylbenzene	**1,900**	**3,600**	**3,700**	**6,100**	**2,100**	**700**
Toluene	**130,000**	**120,000**	**120,000**	**64,000**	**15,000**	**1,000**
Xylene, -o	**11,000**	**17,000**	**17,000**	4,800	1,600	**10,000**
Xylenes, -m, -p	**14,000**	9,500	**10,000**	**18,000**	5,400	**10,000**
Sum BTEX	386,900	340,100	350,700	202,900	70,100	**NA**

Results are reported in micrograms per liter or parts per billion.
Bold results indicate concentrations greater than the enforcement standards.

Table 4-3
Summary of Monitoring Well Groundwater Analytical Results
Phase II, Part III
Superior MGP
Superior, Wisconsin

Analyte	MW-8	MW-8 DUP	MW-9	MW-10	MW-11	MW-12	Enforcement Standard	Solubility Limits
Sampling Date	11/16/2004	11/16/2004	11/16/2004	11/16/2004	11/16/2004	11/16/2004		
PAH								
1-Methylnaphthalene	690	3,300	100	84	10	53	**NE**	NA
2-Methylnaphthalene	830	3,900	110	5	1.3	12	**NE**	25,400
Acenaphthene	1,000	5,200	100	75	8.4	51	**NE**	7,400
Acenaphthylene	130	<770	<19	<1.9	<0.39	<3.1	**NE**	NA
Anthracene	520	2,800	<18	4.1	<0.35	3.9	**3,000**	73
Benzo(a)anthracene	300	1,600	<20	<2.0	<0.39	<3.1	**NE**	14
Benzo(a)pyrene	**230**	**1,200**	<18	<1.8	<0.36	<2.9	**0.2**	3.8
Benzo(b)fluoranthene	<110	<720	<18	<1.8	<0.36	<2.9	**0.2**	NA
Benzo(g,h,i)perylene	<130	<830	<21	<2.1	<0.41	<3.3	**NE**	NA
Benzo(k)fluoranthene	140	<770	<19	<1.9	<0.39	<3.1	**NE**	NA
Chrysene	**290**	**1,600**	<16	<1.6	<0.33	<2.6	**0.2**	22
Dibenzo(a,h)anthracene	<140	<880	<22	<2.2	<0.44	<3.5	**NE**	NA
Fluoranthene	**790**	**4,400**	<16	5.3	<0.33	3	**400**	275
Fluorene	**410**	**2,100**	31	18	1.2	11	**400**	1,980
Indeno(1,2,3-cd)pyrene	<110	<680	<17	<1.7	<0.34	<2.7	**NE**	NA
Naphthalene	**1,400**	**4,700**	**310**	36	19	13	**40**	3,170
Phenanthrene	1,900	10,000	78	31	1	18	**NE**	1,290
Pyrene	**1,000**	**5,300**	<16	6.1	<0.33	3.5	**250**	135
Sum PAH	9,630	46,100	729	264.5	40.9	168.4	**NA**	NA
VOC								
Benzene	**74,000**	**72,000**	**54,000**	**9,900**	0.95	**4,000**	**5**	1,780,000
Ethylbenzene	**980**	**880**	**870**	340	0.56	<10	**700**	150,000
Toluene	**51,000**	**48,000**	**13,000**	34	<3.6	<8.9	**1,000**	500,000
Xylene, -o	**6,500**	**5,600**	780	100	3.90	<9	**10,000**	170,000
Xylenes, -m, -p	**14,000**	**12,000**	2,700	<37	1.70	<19	**10,000**	156,000
Sum BTEX	146,480	138,480	71,350	10,374	7	4,000	**NA**	

Results are reported in micrograms per liter or parts per billion.
Bold results indicate concentrations greater than the enforcement standards.

a. The Wisconsin Department of Natural Resources Groundwater Enforcement Standards for the protection of public health (NR 140, Table 1).
b. No enforcement standard exists for this compound.
c. --- = Sample was not analyzed for this parameter.
d. The enforcement standard is 480 ug/L for the sum of 1,2,4-Trimethylbenzene and 1,3,5-Trimethylbenzene concentrations.
e. The enforcement standard is 10,000 ug/L for the sum of all xylene concentrations.

Table 4-4
Summary of Geoprobe Groundwater Analytical Results
Superior MGP Phase II, Part III
Superior, Wisconsin

Analyte	B-24	B-25	B-26	B-27	B-28	B-29	B-30	B-31	Enforcement Standard [a]
Sampling Date	10/12/2004	10/12/2004	10/12/2004	10/12/2004	10/12/2004	10/12/2004	10/12/2004	10/14/2004	
PAH									
1-Methylnaphthalene	9	380	5.1	340	55	17	190	13	**NA** [b]
2-Methylnaphthalene	4.1	510	1.1	170	23	7.7	150	21	**NA**
Acenaphthene	6.8	590	3.6	540	59	17	160	4.9	**NA**
Acenaphthylene	<0.44	<88	<0.41	88	3.5	<2.7	3.7	4.9	**NA**
Anthracene	<0.40	200	0.71	300	6.2	2.70	13	<96	**3,000**
Benzo(a)anthracene	<0.45	130	0.49	210	<3.2	<2.7	4	<84	**NA**
Benzo(a)pyrene	<0.41	**96**	<0.39	**160**	<3.0	<2.5	**3.7**	<58	**0.2**
Benzo(b)fluoranthene	<0.41	**51**	<0.38	**74**	<3.0	<2.5	<2.6	<48	**0.2**
Benzo(g,h,i)perylene	<0.47	<94	<0.44	83	<3.4	<2.9	<3.0	<25	**NA**
Benzo(k)fluoranthene	<0.44	<88	<0.41	94	<3.2	<2.7	<2.8	<44	**NA**
Chrysene	<0.37	**140**	**0.56**	**210**	**2.8**	**2.7**	**5.2**	**1.9**	**0.2**
Dibenzo(a,h)anthracene	<0.50	16	<0.47	23	<3.6	<3.1	<3.2	<8.4	**NA**
Fluoranthene	<0.38	320	1.5	**460**	6.7	5.6	11	3.7	**400**
Fluorene	1.5	200	0.8	220	17	4.9	29	2.6	**400**
Indeno(1,2,3-cd)pyrene	<0.39	44	<0.37	64	<2.8	<2.4	<2.4	<19	**NA**
Naphthalene	16	**1,200**	1.9	**340**	**96**	**47**	**1,100**	**750**	**40**
Phenanthrene	1.7	900	3.4	970	40	12	56	6.1	**NA**
Pyrene	<0.37	420	1.8	**600**	8	7.8	15	5	**250**
Sum of PAH	39	5,197	21	4,946	317	124	1,741	813	**NA**
BTEX									
Benzene	**7.8**	**11,000**	**6,100**	**27,000**	**1,300**	**1,300**	**42,000**	**250,000**	**5**
Ethylbenzene	2.2	280	<20	410	100	52	600	**2,600**	**700**
Toluene	0.83	<18	<18	**3,500**	340	**720**	**540**	**130,000**	**1,000**
Xylene, -o	5.5	88	<18	**370**	90	81	230	**15,000**	**10,000**[c]
Xylenes, -m, -p	3.1	130	<37	**480**	220	210	<150	**22,000**	**10,000**[c]
Sum of BTEX	19	11,498	6,100	31,760	2,050	2,363	43,370	419,600	NA

Results are reported in micrograms per liter or parts per billion.
Bold results indicate concentrations greater than the enforcement standards.

a. The Wisconsin Department of Natural Resources Groundwater Enforcement Standards for the protection of public health (NR 140, Table 1).
b. No enforcement standard exists for this compound.
c. The enforcement standard is 10,000 ug/L for the sum of all xylene concentrations.

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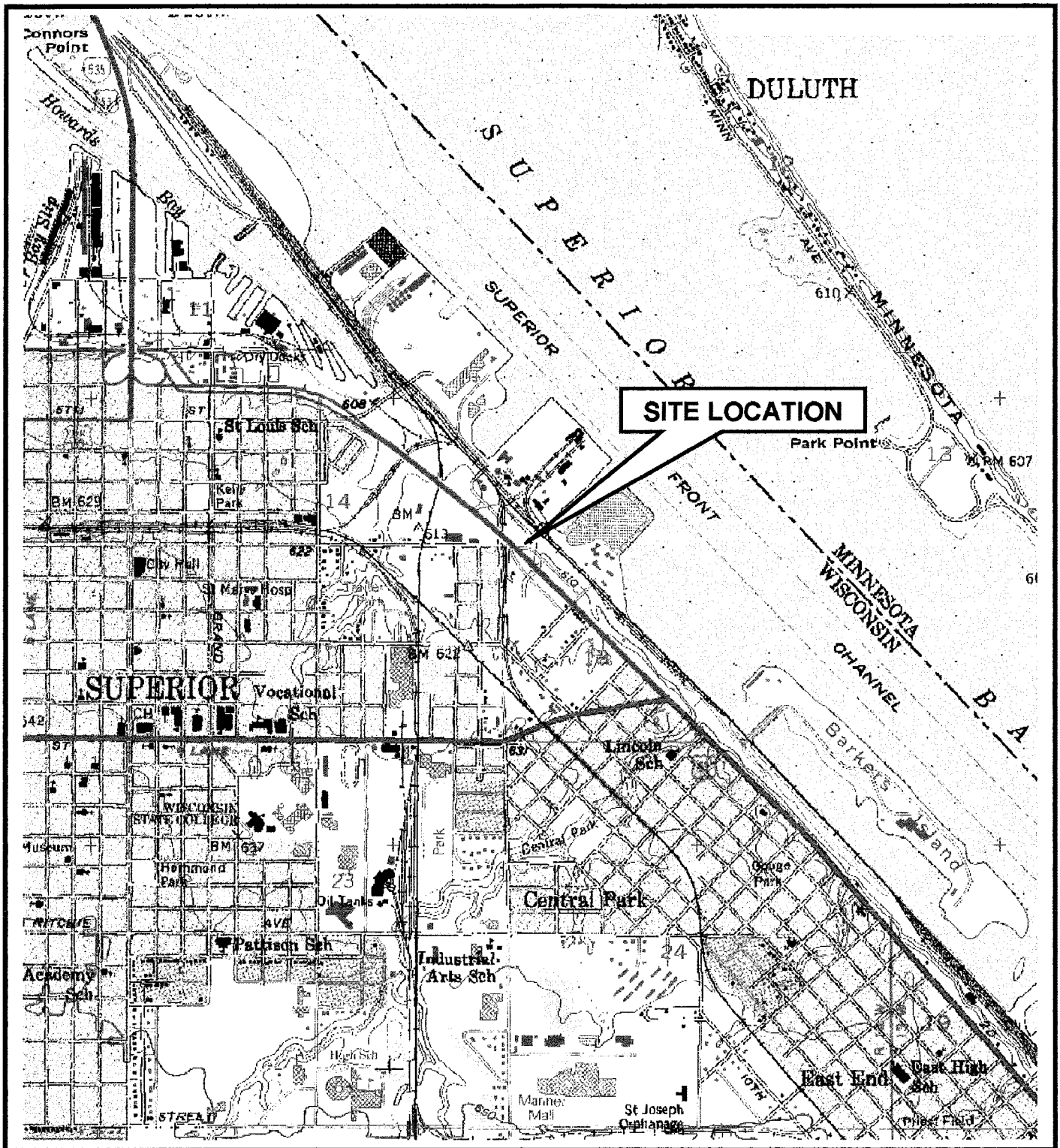
FIGURES

Superior Water Light and Power MGP
Phase II, Part III
Superior, Wisconsin
March 2005



SOURCE: USGS 7½ Minute Topographic Quadrangle from DeLorme Superior, Wisconsin, 1993

SCALE

0 1/4 1/2 1 MILE

N

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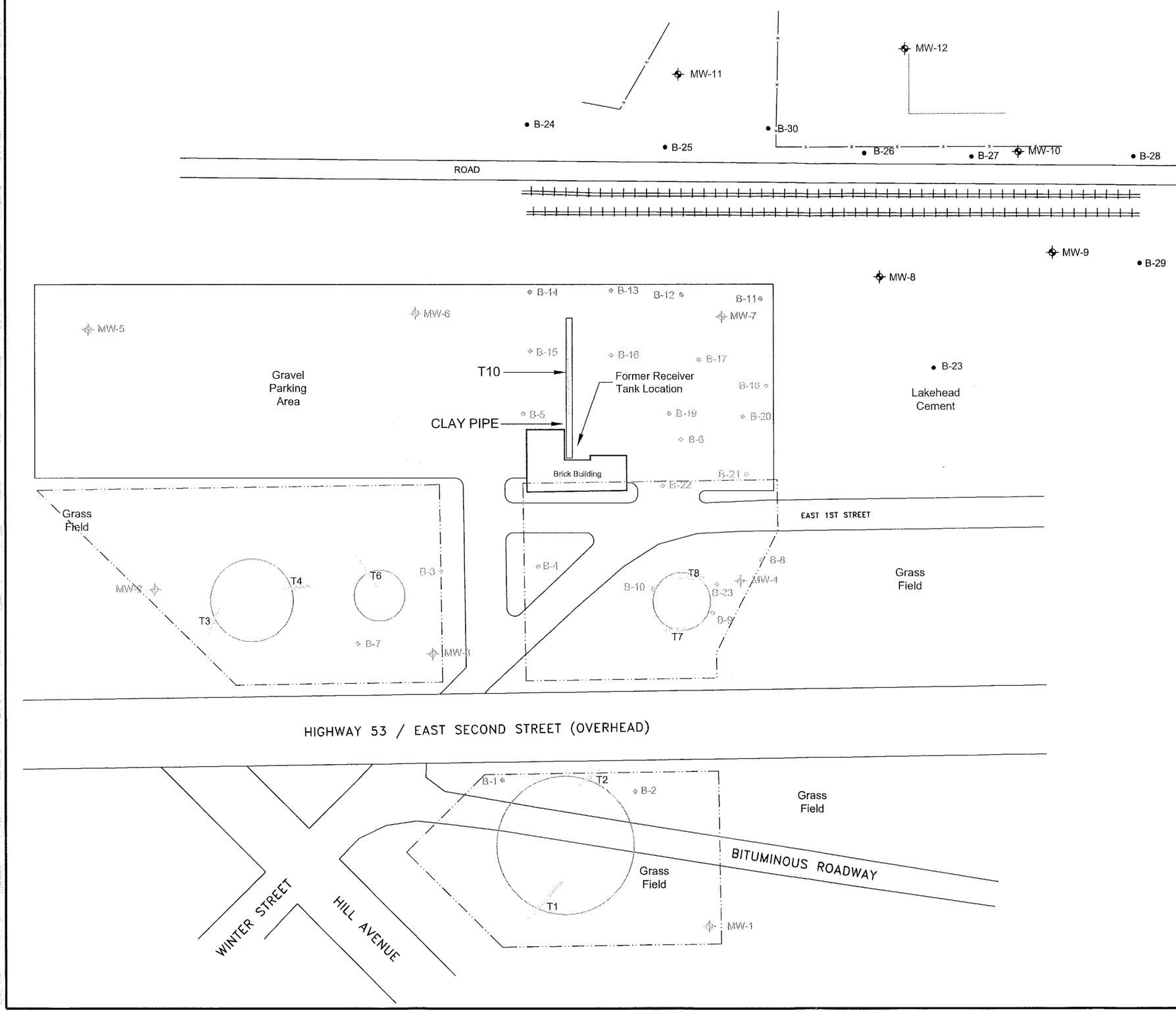
Figure 1-1

SITE LOCATION MAP

Superior Water Light & Power Former MGP
Superior, Wisconsin

PREPARED BY: CMB	DATE: Nov 2002	PROJECT NO: 09413-098	REV: 0
FILE NO.: FIG1-1.doc	CHECKED: WMG		



EXPLANATION:

	SWL&P Property Boundary
B-24	Phase II Part III Geoprobe Soil Boring Location (Oct 2004)
B-2	Previous Geoprobe Soil Boring Location (Nov 2001 and Sept 2002)
MW-8	Monitoring Well (Installed Oct 2004)
MW-7	Monitoring Well (Installed Nov 2001)
T1	Test Trench (Completed Nov 2001 and Sept 2002)
	Former Gas Holder

Notes:

Borings B-1 through B-11 were completed in Nov 2001 (Phase II).
Borings B-12 through B-23 were completed in Sept 2002 (Phase II, Part II).
Borings B-24 through B-31 were completed in Oct 2004 (Phase II, Part III).
Wells MW-1 through MW-7 were installed in Nov 2001.
Wells MW-8 through MW-12 were installed in October 2004.
Trenches T1 to T4 and T-6 to T-9 were completed in Nov 2001.
Trench T10 was completed in Sept 2002.

Source:

Survey of SWL&P property, borings, wells, and trenches performed by Salo Engineering dated 12/10/04.
ENSR field observations.

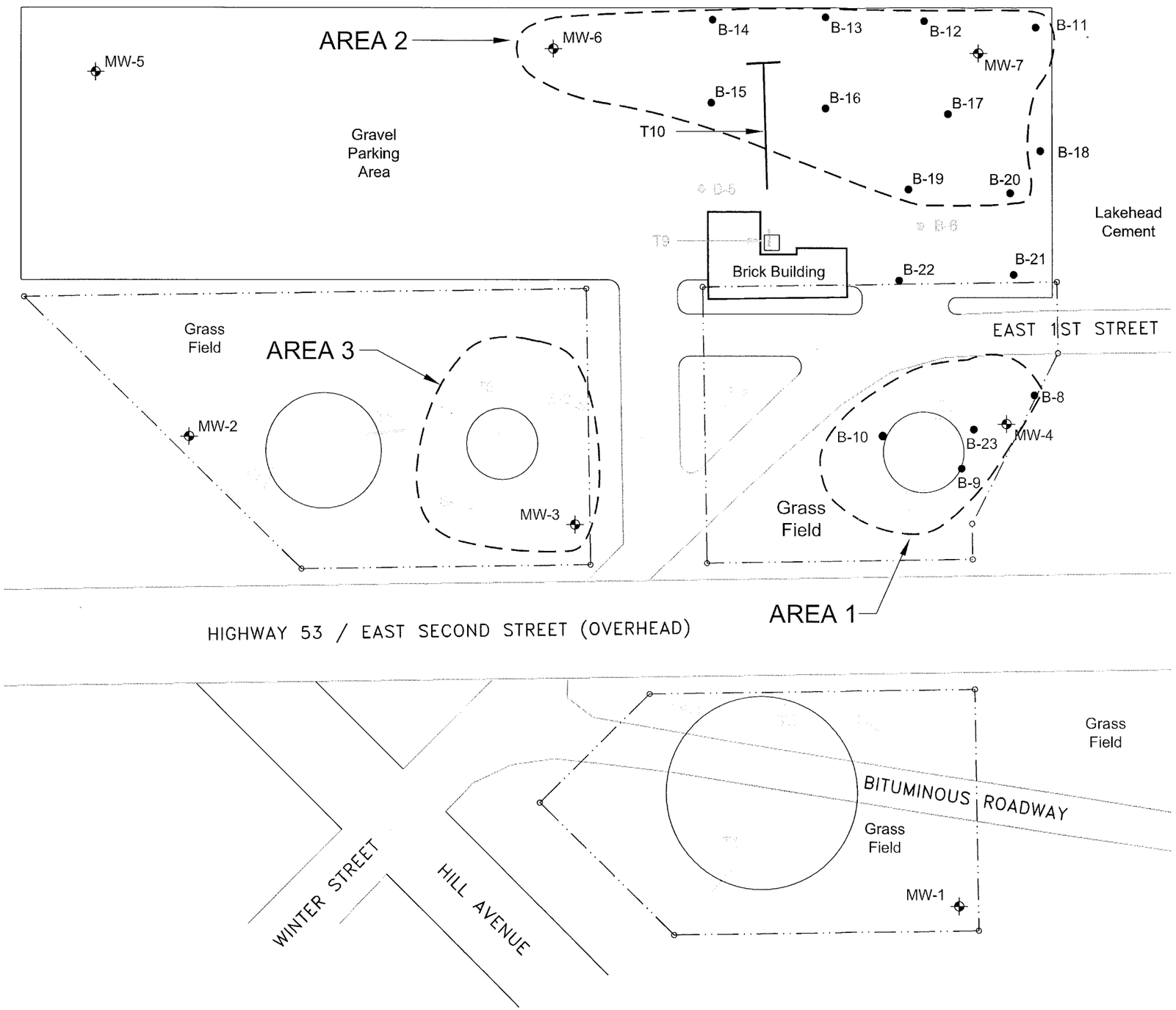
N

APPROXIMATE SCALE
1 INCH = 75 FEET

0 75 150

Figure 1-2
SITE PLAN
Phase II Part III Investigation
Superior Water Light & Power
Former MGP
Superior, Wisconsin

DRAWN: AC/09480	DATE: January 2005	ENSR INTERNATIONAL
FILE No.: Fig 1-2.dwg	PROJECT: 09413-098	



EXPLANATION:

- Railroad Tracks
- SWL&P Property Boundary
- B-2 — Previous Geoprobe Soil Boring Location (Nov 2001 and Sept 2002)
- MW-1 — Monitoring Well Location
- T10 — Test Trench Location (Nov 2001 and Sept 2002)
- Former Gas Holder

NOTES:

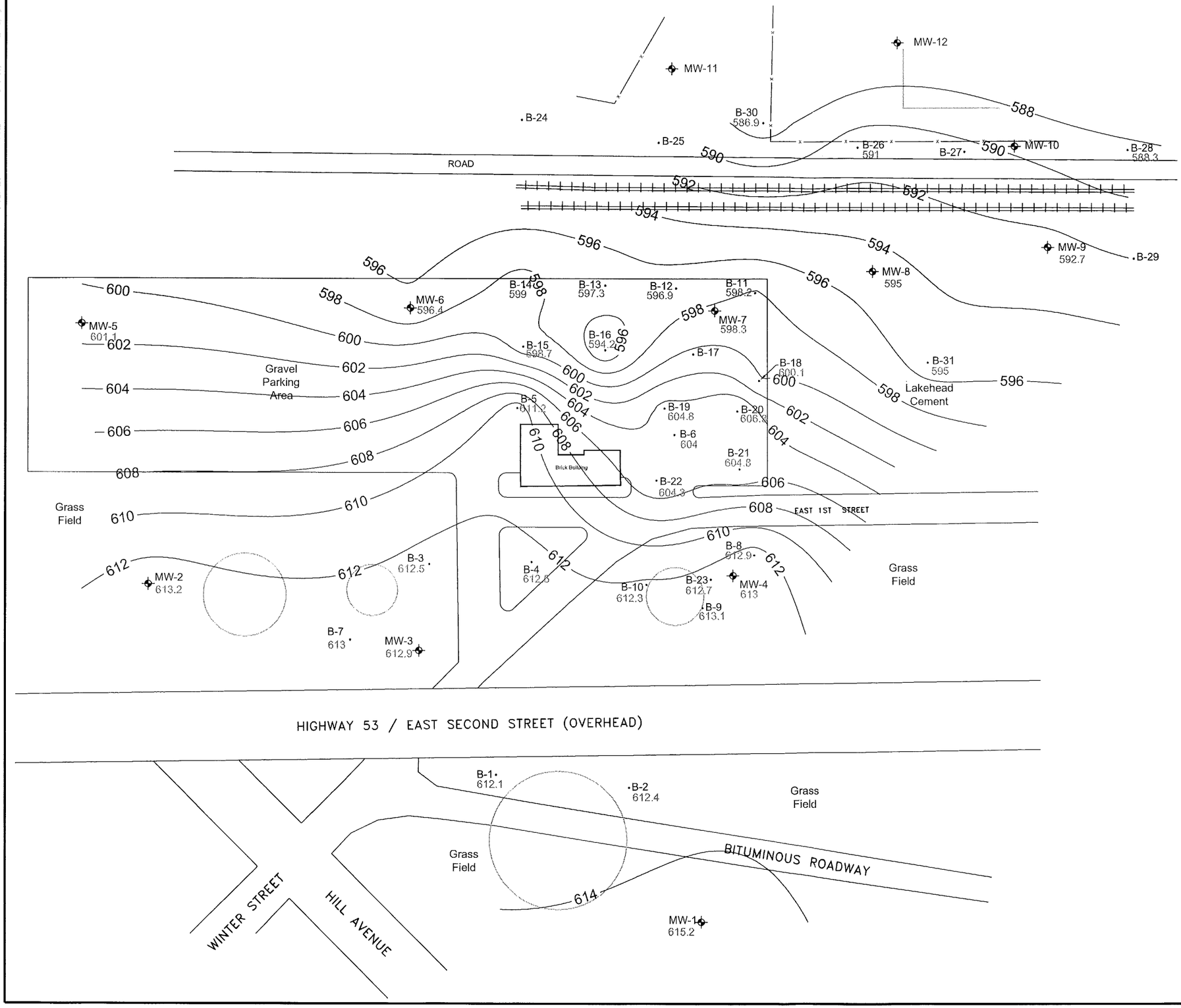
Areas are based on data obtained during the Nov 2001 Phase II and the Sept 2002 Phase II Part II

APPROXIMATE SCALE
1 INCH = 60 FEET

0 30 60 120

Figure 2-1
AREAS WITH SOIL AND GROUNDWATER REGULATORY EXCEEDANCES
Superior Water Light & Power
Former MGP
Superior, Wisconsin

DRAWN: AC/09480	DATE: January 2005	ENSR INTERNATIONAL
FILE No.: Fig 2-1.dwg	PROJECT: 09413-098	



EXPLANATION:

- ● B-12 — Geoprobe Soil Boring with Clay Elevation
- ⊕ MW-7 — Monitoring Well with Clay Elevation
- Former Gas Holder
- 588 — Estimated Clay Soil Elevation Contour

Notes:

Clay formation elevations are estimated based on soil encountered in borings and are in feet above mean sea level.
Only borings that encountered clay have elevations listed by the boring.

N

APPROXIMATE SCALE
1 INCH = 75 FEET

0 75 150

Figure 4-1
CLAY FORMATION ELEVATION CONTOUR MAP
Phase II Part III Investigation
Superior Water Light & Power
Former MGP
Superior, Wisconsin

DRAWN: AC/09480	DATE: January 2005	ENSR INTERNATIONAL
FILE No.: Fig 4-2.dwg	PROJECT: 09413-098	

INFERRED
GROUNDWATER FLOW
DIRECTION

MW-11
602.46

MW-12
602.46

B-24

B-30

B-25

B-26

B-27

MW-10
602.89

B-28

ROAD

603

603

MW-9
602.99

B-29

MW-8
603.44

604

B-14

B-13

B-12

B-11

MW-6
604.07

604

MW-7
603.75

MW-5
605.34

605

B-16

B-15

B-17

605

B-18

B-31

Gravel
Parking
Area

606

B-5

B-19

606

B-20

Lakehead
Cement

607

B-6

607

B-21

608

Brick Building

B-22

608

609

EAST 1ST STREET

609

610

B-8

Grass
Field

610

B-3

B-4

611

MW-4
611.13

Grass
Field

B-10

B-23

B-9

MW-2
612.46

B-7

MW-3
611.40

611

612

612

HIGHWAY 53 / EAST SECOND STREET (OVERHEAD)

B-1

B-2

Grass
Field

Grass
Field

BITUMINOUS ROADWAY

WINTER STREET

HILL AVENUE

MW-1
612.63

EXPLANATION:

- B-12 — Geoprobe Soil Boring
- MW-7 — Monitoring Well with Groundwater Elevation
- Former Gas Holder
- 603 — Estimated Groundwater Elevation Contour

Notes:

Groundwater elevations were measured on November 16, 2004 and are in feet above mean sea level.

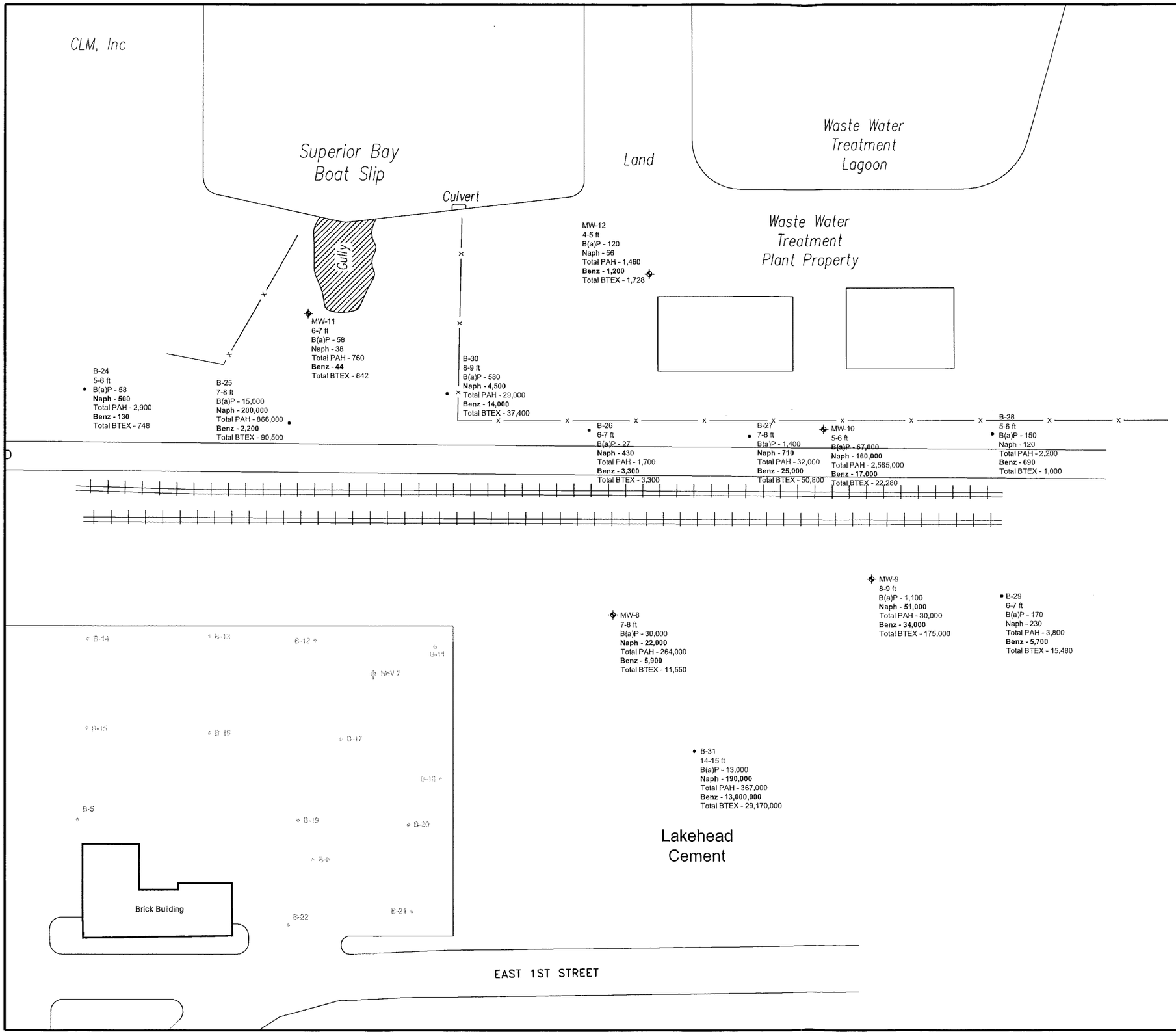
N

APPROXIMATE SCALE
1 INCH = 75 FEET

0 75 150

Figure 4-2
GROUNDWATER ELEVATION CONTOUR MAP
Phase II Part III Investigation
Superior Water Light & Power
Former MGP
Superior, Wisconsin

DRAWN: AC/09480	DATE: January 2005	ENSR INTERNATIONAL
FILE No.: Fig 4-2.dwg	PROJECT: 09413-098	



EXPLANATION:

● B-24	Geoprobe Soil Boring with Soil Analytical Data (Oct 2004)
● B-2	Previous Geoprobe Soil Boring Location (Nov 2001 and Sept 2002)
⊕ MW-8	Monitoring Well Location with Soil Analytical Data (Oct 2004)
⊕ MW-7	Monitoring Well Location (Nov 2001)

Notes:

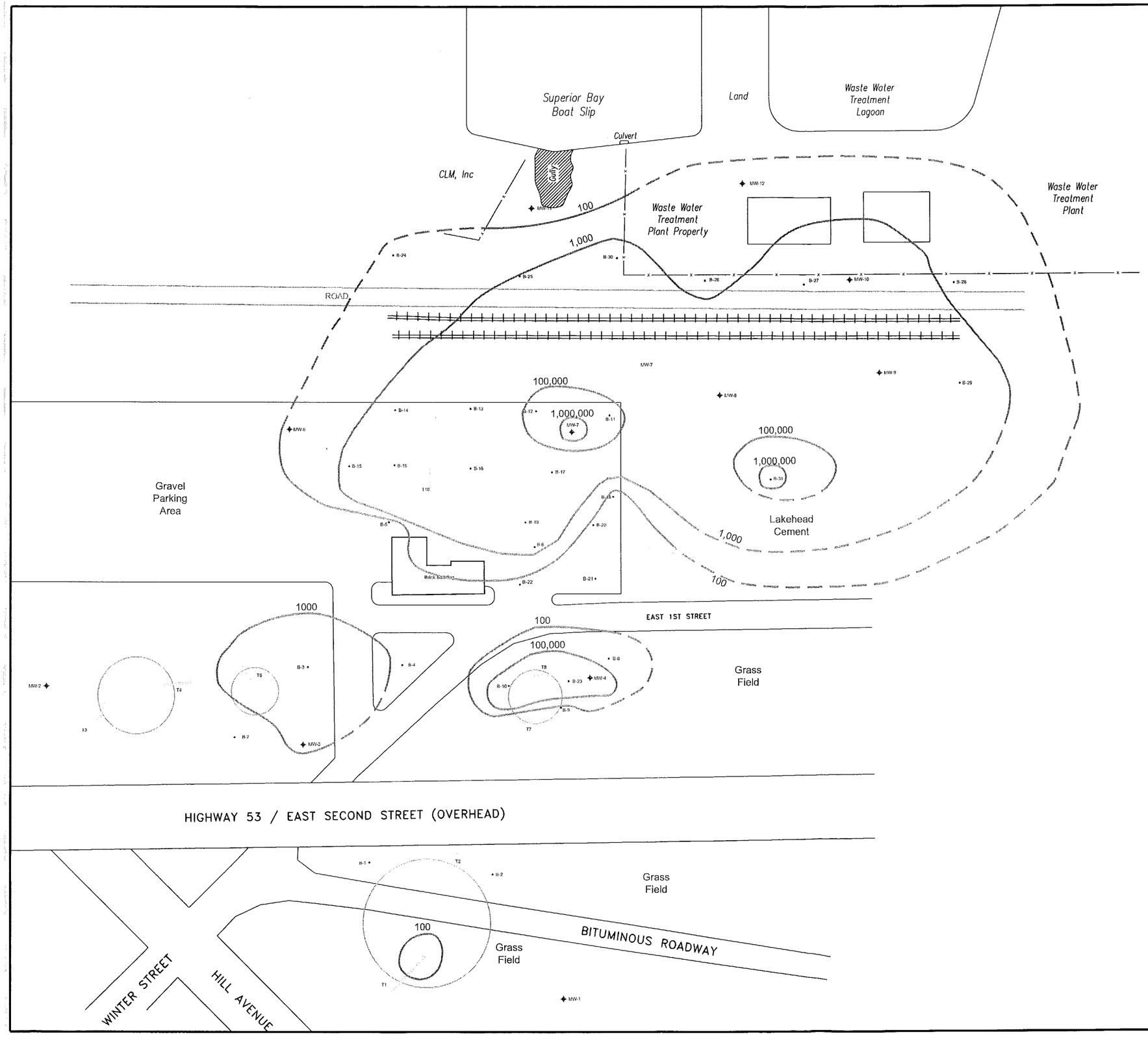
Soil analytical results reported in ug/kg (parts per billion) with sampling depth in feet below the ground surface.
B(a)P = benzo(a)pyrene
Naph = naphthalene
Total PAH = the sum of all PAH compounds detected in the sample
Benz = benzene
Total BTEX = the sum of benzene, toluene, ethylbenzene, and xylenes concentrations detected in the sample
Bold result indicates the compound exceeds the corresponding residual contaminant level.
Soil samples were collected in October 2004.

APPROXIMATE SCALE
1 INCH = 50 FEET

0 25 50 100

Figure 4-3
SUMMARY OF SOIL ANALYTICAL RESULTS
Phase II Part III Investigation
Superior Water Light & Power
Former MGP
Superior, Wisconsin

DRAWN: CMB/5802	DATE: Dec 2005	ENSR INTERNATIONAL
FILE No.: Fig 4-3.dwg	PROJECT: 09413-098	



EXPLANATION:

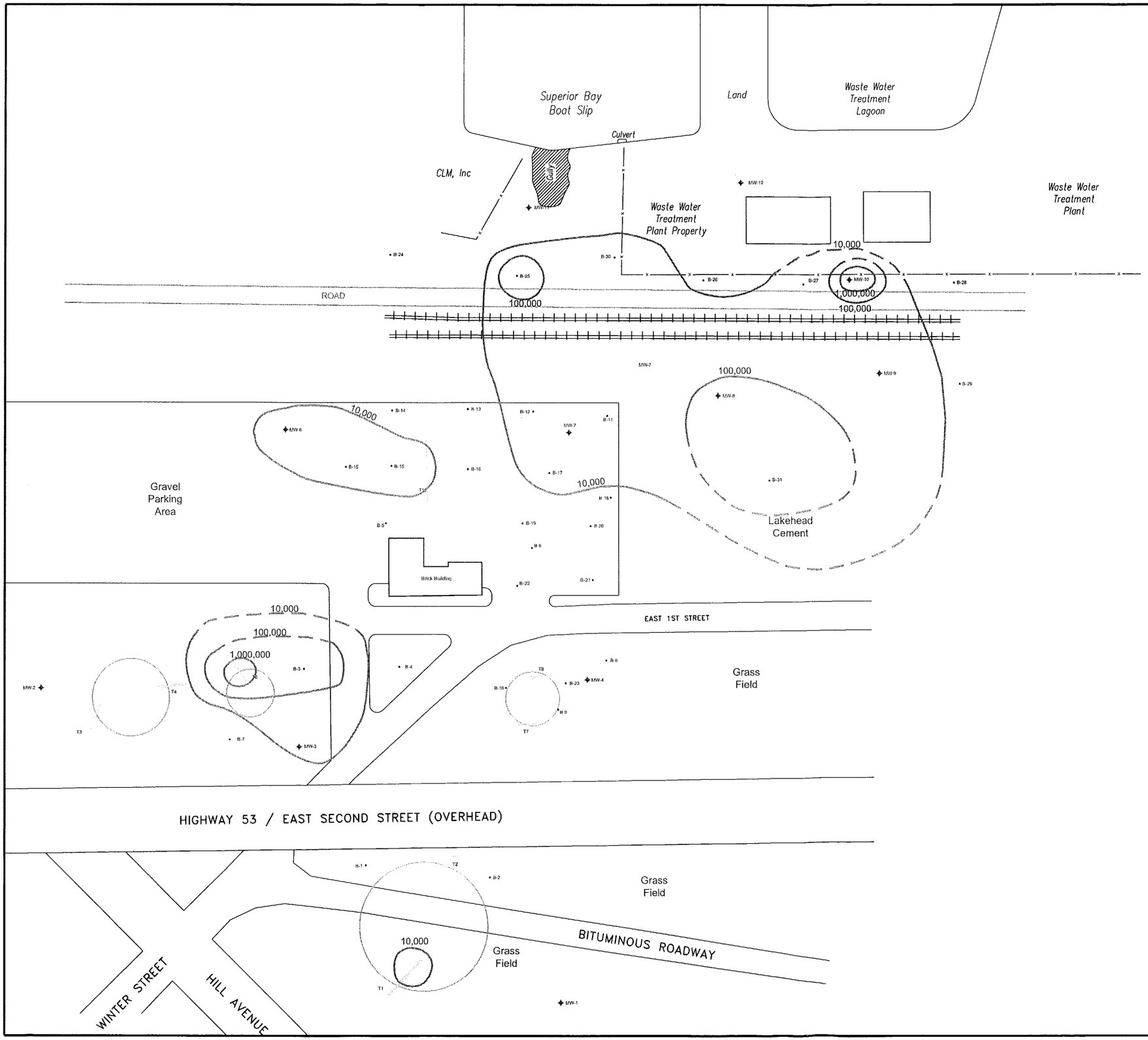
- B-12 — Geoprobe Soil Boring Location
- MW-7 — Monitoring Well Location
- T3 — Test Trench Location
- Former Gas Holder
- 100 — Estimated extent of benzene in soil with concentrations in micrograms per kilogram or parts per billion

APPROXIMATE SCALE
1 INCH = 80 FEET

0 40 80 160

Figure 4-4
BENZENE ISOCONCENTRATIONS IN SOIL
Phase II Part III Investigation
Superior Water Light & Power
Former MGP
Superior, Wisconsin

DRAWN: AC/09480	DATE: January 2005	ENSR INTERNATIONAL
FILE No.: Fig 4-4.dwg	PROJECT: 09413-098	



EXPLANATION:

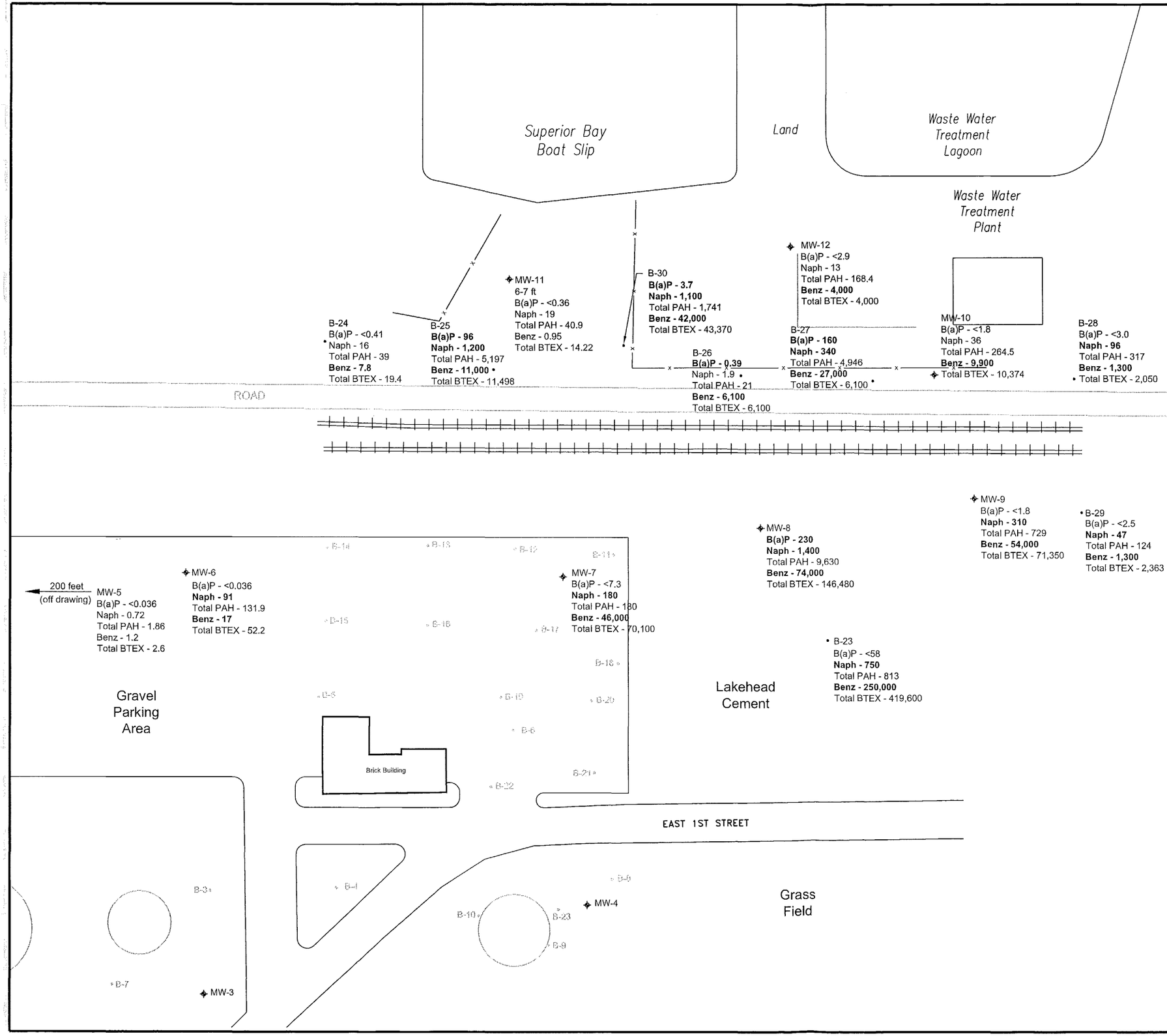
- ● B-12 — Geoprobe Soil Boring Location
- ✦ MW-7 — Monitoring Well Location
- T3 — Test Trench Location
- Former Gas Holder
- 10,000 — Estimated extent of total PAH (sum of all PAH concentrations in sample) in soil with concentrations in micrograms per kilogram or parts per billion

APPROXIMATE SCALE
1 INCH = 80 FEET

0 40 80 160

Figure 4-5
TOTAL PAH ISOCONCENTRATIONS IN SOIL
Phase II Part III Investigation
Superior Water Light & Power
Former MGP
Superior, Wisconsin

DRAWN: AC/09480	DATE: January 2005	ENSR INTERNATIONAL
FILE No.: Fig 4-4.dwg	PROJECT: 09413-098	



EXPLANATION:

- ● B-24 — Geoprobe Soil Boring with Groundwater Analytical Results
- B-2 — Previous Geoprobe Soil Boring
- ⌖ MW-7 — Monitoring Well Location with Groundwater Analytical Results
- Former Gas Holder

Notes:

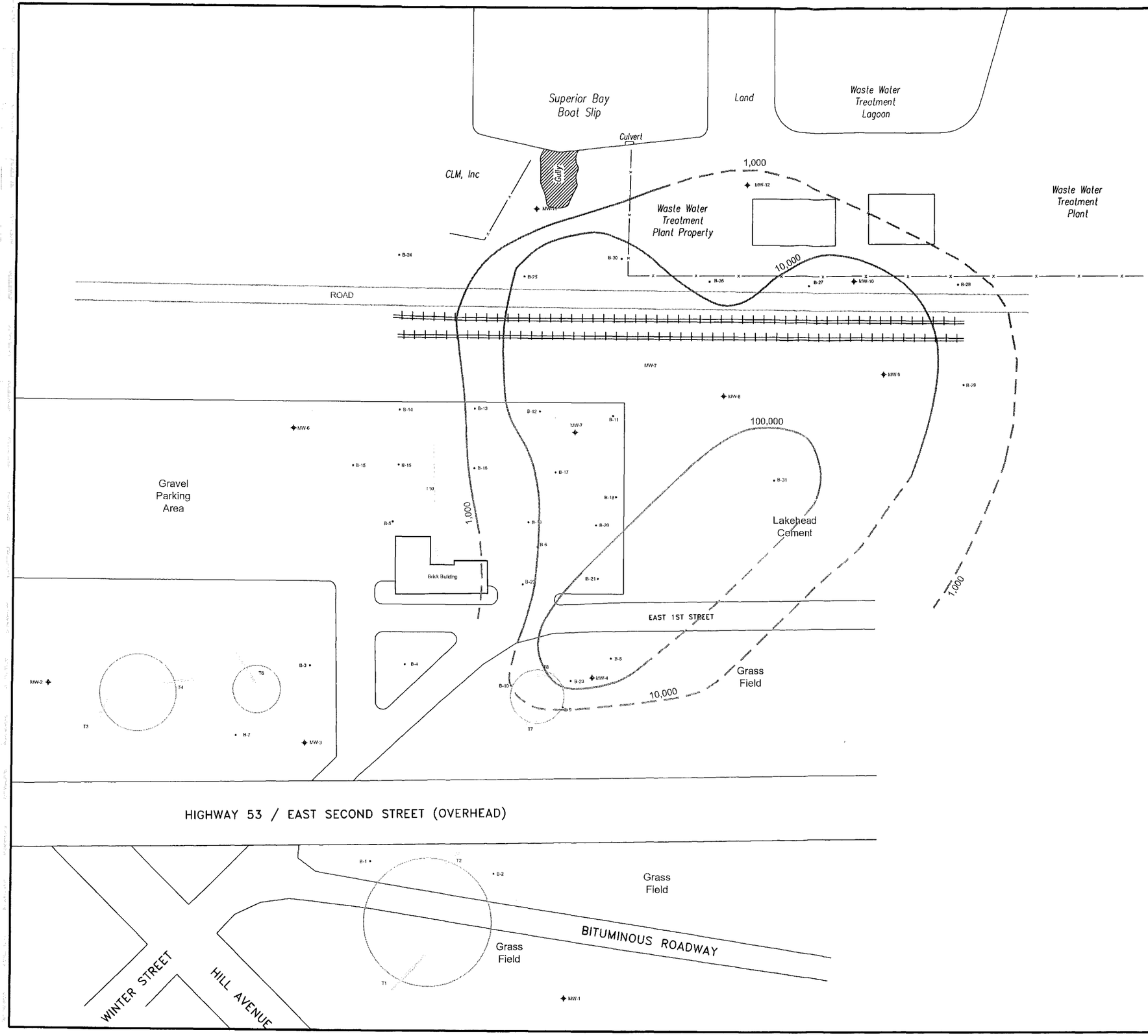
Groundwater analytical results reported in ug/L (parts per billion). Groundwater samples were collected in Nov 2004.
B(a)P = benzo(a)pyrene
Naph = naphthalene
Total PAH = the sum of all PAH compounds detected in the sample
Benz = benzene
Total VBTEX = the sum of benzene, toluene, ethylbenzene, and xylenes detected in the sample
Bold result indicates the compound exceeds the corresponding enforcement standard.

APPROXIMATE SCALE
1 INCH = 60 FEET

0 30 60 120

Figure 4-6
SUMMARY OF GROUNDWATER ANALYTICAL RESULTS
Phase II Part III Investigation
Superior Water Light & Power
Former MGP
Superior, Wisconsin

DRAWN: AC/09480	DATE: Januaury 2005	ENSR INTERNATIONAL
FILE No.: Fig 4-6.dwg	PROJECT: 09413-098	



EXPLANATION:

● B-12	Geoprobe Soil Boring Location
⊕ MW-7	Monitoring Well Location
T3	Test Trench Location
	Former Gas Holder
10,000	Estimated extent of benzene in groundwater with concentrations in micrograms per liter or parts per billion

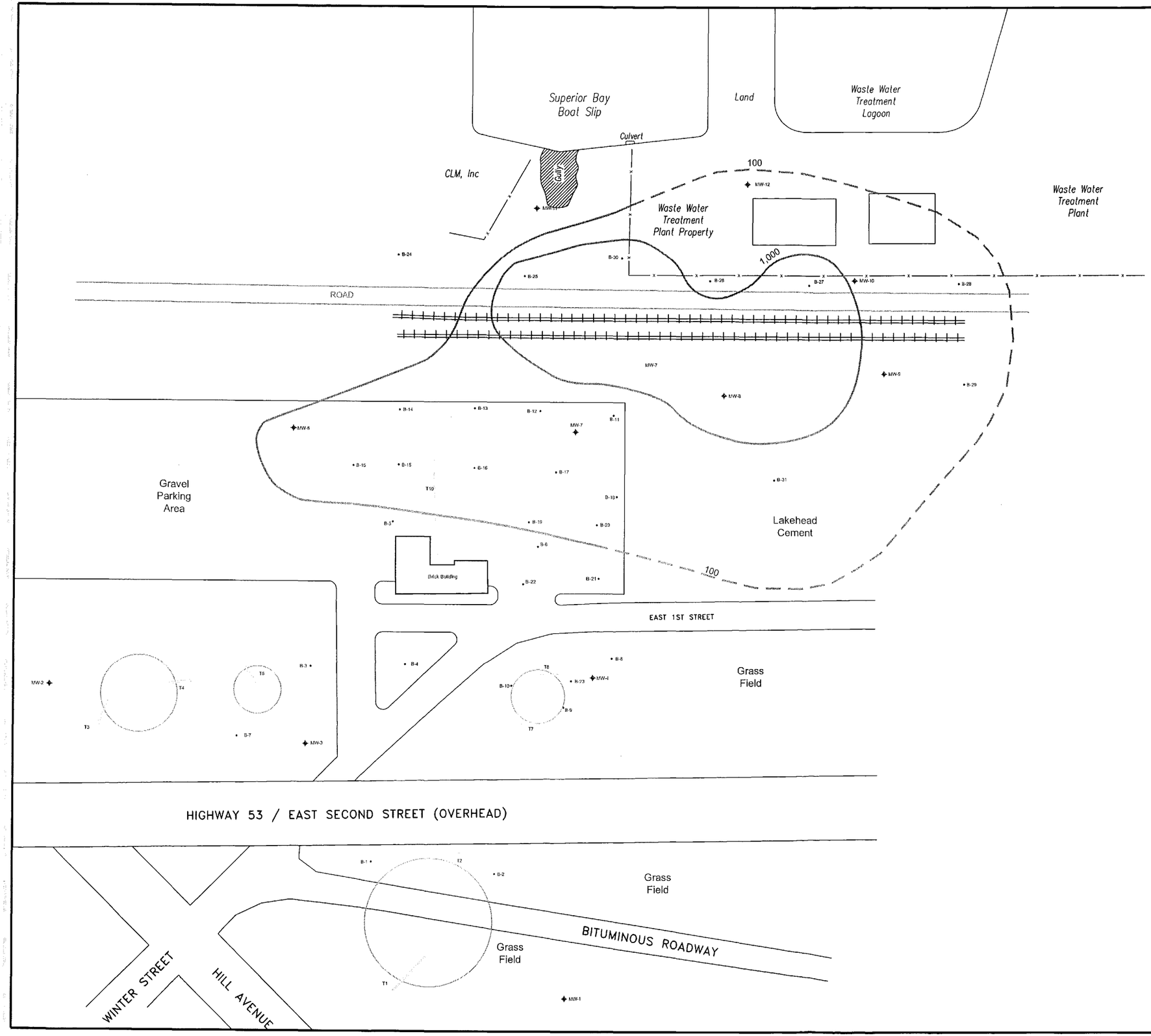
N

APPROXIMATE SCALE
1 INCH = 80 FEET

0 40 80 160

Figure 4-7
BENZENE ISOCONCENTRATIONS IN GROUNDWATER
Phase II Part III Investigation
Superior Water Light & Power
Former MGP
Superior, Wisconsin

DRAWN: AC/09480	DATE: January 2005	ENSR INTERNATIONAL
FILE No.: Fig 4-4.dwg	PROJECT: 09413-098	



EXPLANATION:

- B-12 — Geoprobe Soil Boring Location
- MW-7 — Monitoring Well Location
- T3 — Test Trench Location
- Former Gas Holder
- 10,000 — Estimated extent of total PAH (sum of all PAH chemicals in sample) in groundwater with concentrations in micrograms per liter or parts per billion

N

APPROXIMATE SCALE
1 INCH = 80 FEET

0 40 80 160

Figure 4-8
TOTAL PAH ISOCONCENTRATIONS IN GROUNDWATER
Phase II Part III Investigation
Superior Water Light & Power
Former MGP
Superior, Wisconsin

DRAWN: AC/09480	DATE: January 2005	ENSR INTERNATIONAL
FILE No.: Fig 4-4.dwg	PROJECT: 09413-098	

MW-11

B-24

B-30

B-25

B-26

B-27

MW-1

ROAD

MW-8

B-14

B-13

B-12

B-11

MW-6

MW-7

B-15

B-16

B-17

B-18

B-23

Lakehead
Cement

B-5

B-19

B-20

CLAY PIPE

B-6

Brick Building

B-22

B-21

WATER STREET

B STREET

B-3

B-4

B-8

B-10

B-23

MW-4

B-9

Grass
Field

EXPLANATION:

B-12	Geoprobe Soil Boring
MW-7	Monitoring Well Location
	Estimated Extent of Tarry Materials in Soil

N

APPROXIMATE SCALE
1 INCH = 40 FEET

0 20 40 80

Figure 4-9
APPROXIMATE EXTENT OF TARRY MATERIAL IN SOIL
Phase II Part III Investigation
Superior Water Light & Power
Former MGP
Superior, Wisconsin

DRAWN: AC/09480	DATE: Januaury 2005	ENSR INTERNATIONAL
FILE No.: Fig 4-9.dwg	PROJECT: 09413-098	

ENSR INTERNATIONAL

APPENDIX A

Boring Logs and Borehole Abandonment Forms

Superior Water Light and Power MGP
Phase II, Part III
Superior, Wisconsin
March 2005

State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION

Route To: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☑ Other ☐

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
SWL&P Phase II Part III		B-24

Boring Drilled By: Name of crew chief (first, last) and Firm	Date Drilling Started	Date Drilling Completed	Drilling Method
Guy Paquette, Matrix Environmental, LLC	10/12/04	10/12/04	Geoprobe Track Rig

WI Unique Well No.	DNR Well ID No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
			602.72	606.52	2 inch

Local Grid Orgin ☐ (estimated) ☐ or Boring Location ☑	Lat	Local Grid Location
State Plane	Long	N ☐ E ☐ S ☐ W ☐

Facility ID	County	County Code	Civil Town/City/or Village
	Douglas		Superior

Sample Number	Sample Type	Sample Length Att. Recovered (ft)	Blow Counts	Depth In Feet	Soil/ Rock Description	U.S.C.S.	Graphic	Well	PID/FID	Soil Properties: Compressive	Moisture	Liquid	Plasticity	P 200	RQD/
1	GP	2.5		1–5	Black slag-like material with fines, loose, crumbly, dry, no odor.	Fill			3.3						
2	GP	2.1		5–10	3 inch layer wood chips and slag, black, wet, petroleum-like odor. Fine sand with fines,well sorted, brown, wet, petroleum odor.	SP			40.4						5-6 Ft Soil Sample
3	GP	5.0		10–15					64						
				15–17	END OF BORING-15 FEET Note- Hole collapsed at 10 ft										

I herby certify that the information on this form is true and the correct to the best of my knowledge

Signature	Firm
Chris Bail Carter	ENSR Corporation 4500 Park Glen Rd Ste 210 St. Louis Park, MN 55416

This form is authorized by Chapters 281,283,289,292,293,295, and 299, Wis. Stats. Completion of thes form is mandatory. Failure to file this form may result in forfeiture of between $10 and $25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. NOTE: See instructions for more information, including where the completed form should be sent.

State of Wisconsin
Department of Natural Resources
PO Box 7921, Madison WI 53707-7921

Well / Drillhole / Borehole Abandonment

Form 3300-005 (R 10/03)

Notice: Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between $10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

Route to:
☐ Drinking Water ☐ Watershed/Wastewater ☐ Waste Management ☒ Remediation/Redevelopment ☐ Other: _____

1. General Information

WI Unique Well No. _____ | DNR Well ID No. | County: Douglas

Common Well Name: GP-24 | Gov't Lot # (if applicable)

¼ / ¼ | ¼ | Section | Township N | Range E ☐ W ☐

Grid Location: Feet N ☐ S ☐ | Feet E ☐ W ☐ | ☐ Local Grid Origin ☐ (estimated) OR ☐ Well Location

Latitude: DEG MIN SEC N | Longitude: DEG MIN SEC W

Reason For Abandonment: Temporary Boring | WI Unique Well No. of Replacement We: _____

2. Facility / Owner Information

Facility Name: Superior Water Light & Power

Facility ID | License/Permit/Monitoring No | City, Village or Town: Superior

Street Address of Well: Winter / Water Street

Present Well Owner: Superior Water Light & Power | Original Well Owner

Street Address or Route of Owner: Water Street

City: Superior | State: WI | ZIP Code

3. Well / Drillhole / Borehole Information

☐ Monitoring Well
☐ Water Well
☒ Borehole / Drillhole

Original Construction Date: 10/12/04
If a Well Construction Report is available, please attach.

Construction Type:
☐ Drilled ☐ Driven (Sandpoint) ☐ Dug
☒ Other (specify): Direct Push

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth From Groundsurface (ft.): 15' | Casing Diameter (in.): 1"

Lower Drillhole Diameter (in.): NA | Casing Depth (ft.): NA

Was well annular space grouted? ☐ Yes ☐ No ☒ ~~Unknown~~ NA

If yes, to what depth (feet)? NA | Depth to Water (feet): ≈15'

4. Pump, Liner, Screen, Casing & Sealing Material

Pump and piping removed?	☐ Yes	☐ No	☒ N/A
Liner(s) removed?	☐ Yes	☐ No	☒ N/A
Screen removed?	☒ Yes	☐ No	☐ N/A
Casing left in place?	☐ Yes	☒ No	☐ N/A
Was casing cut off below surface?	☐ Yes	☐ No	☒ N/A
Did sealing material rise to surface?	☒ Yes	☐ No	☐ N/A
Did material settle after 24 hours?	☐ Yes	☒ No	☐ N/A
If yes, was hole retopped?	☐ Yes	☐ No	☐ N/A
If bentonite chips were used, were they hydrated with water from a known safe source?	☐ Yes	☐ No	☒ N/A

Required Method of Placing Sealing Material
☐ Conductor Pipe-Gravity ☒ Conductor Pipe-Pumped
☐ Screened & Poured (Bentonite Chips) ☐ Other (Explain): _____

Sealing Materials
☐ Neat Cement Grout ☐ Clay-Sand Slurry (11 lb./gal. wt.)
☐ Sand-Cement (Concrete) Grout ☐ Bentonite-Sand Slurry " "
☐ Concrete ☐ Bentonite Chips

For Monitoring Wells and Monitoring Well Boreholes Only:
☐ Bentonite Chips ☐ Bentonite - Cement Grout
☒ Granular Bentonite ☐ Bentonite - Sand Slurry

5. Material Used To Fill Well / Drillhole

	From (ft.)	To (ft.)	No. Yards, Sacks Sealant or Volume (circle one)	Mix Ratio or Mud Weight
Bentonite Grout	Surface	15-20'	1.5' hole = 0.9 gal/ft	25% Solids

6. Comments

7. Supervision of Work

Name of Person or Firm Doing Sealing Work: Matrix Environmental, LLC | Date of Abandonment: 10/14/04

Street or Route: 8631 Jefferson Highway | Telephone Number: (763) 424-4803

City: Osseo | State: MN | ZIP Code: 55369 | Signature of Person Doing Work | Date Signed: 1/20/05

DNR Use Only
Date Received | Noted By
Comments

State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION

Route To: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☑ Other ☐

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
SWL&P Phase II Part III		B-25

Boring Drilled By: Name of crew chief (first, last) and Firm	Date Drilling Started	Date Drilling Completed	Drilling Method
Guy Paquette, Matrix Environmental, LLC	10/12/04	10/12/04	Geoprobe Track Rig

WI Unique Well No.	DNR Well ID No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
			602.57	606.17	2 inch

Local Grid Orgin ☐ (estimated) ☐ or Boring Location ☑	Lat	Local Grid Location
State Plane	Long	N ☐ E ☐ S ☐ W ☐

Facility ID	County	County Code	Civil Town/City/or Village
	Douglas		Superior

Sample Number	Sample Type	Sample Length Att. & Recovered (ft)	Blow Counts	Depth In Feet	Soil/ Rock Description	U.S.C.S.	Graphic	Well	PID/FID	Soil Properties: Compressive	Moisture	Liquid	Plasticity	P 200	RQD/
1	GP	2.2		1–5	Topsoil and grass. Fill composed of wood chips, slag-like material, fines and lime-like material, brown, moist, no odor.	Fill			5.5						
2	GP	4.6		5–10	Fine sand with fines, well sorted, brown, wet, tar odor. 2 inch clay layer and 4 inch wood chip layer, sheen, strong odor at 8 feet. Same as above, with sheen.	SP			5.5; 5.3						7-8 ft Soil Sample
3	GP	4.4		10–15					56.3; 224						
4	GP	4.6		15–19					121; 57						
				19–20	Fine sand with fines,well sorted, brown, wet, sheen, tar odor.	SW									
				20–21	END OF BORING-20 FEET										

I herby certify that the information on this form is true and the correct to the best of my knowledge

Signature	Firm
Chris Beck Cole	ENSR Corporation 4500 Park Glen Rd Ste 210 St. Louis Park, MN 55416

State of Wisconsin
Department of Natural Resources
PO Box 7921, Madison WI 53707-7921

Well / Drillhole / Borehole Abandonment

Form 3300-005 (R 10/03)

Notice: Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between $10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

Route to:
☐ Drinking Water ☐ Watershed/Wastewater ☐ Waste Management ☒ Remediation/Redevelopment ☐ Other: _____

1. General Information

WI Unique Well No. _____ | DNR Well ID No. | County: Douglas

Common Well Name: GP-25 | Gov't Lot # (if applicable)

¼ / ¼ | ¼ | Section | Township N | Range ☐ E ☐ W

Grid Location: Feet ☐ N ☐ S | Feet ☐ E ☐ W | ☐ Local Grid Origin ☐ (estimated) OR ☐ Well Location

Latitude: DEG MIN SEC N | Longitude: DEG MIN SEC W

Reason For Abandonment: Temporary Boring | WI Unique Well No. of Replacement We: _____

2. Facility / Owner Information

Facility Name: Superior Water Light & Power

Facility ID | License/Permit/Monitoring No | City, Village or Town: Superior

Street Address of Well: Winter / Water Street

Present Well Owner: Superior Water Light & Power | Original Well Owner

Street Address or Route of Owner: Water Street

City: Superior | State: WI | ZIP Code

3. Well / Drillhole / Borehole Information

☐ Monitoring Well
☐ Water Well
☒ Borehole / Drillhole

Original Construction Date: 10/12/04

If a Well Construction Report is available, please attach.

Construction Type:
☐ Drilled ☐ Driven (Sandpoint) ☐ Dug
☒ Other (specify): Direct Push

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth From Groundsurface (ft.): 20' | Casing Diameter (in.): 1"

Lower Drillhole Diameter (in.): NA | Casing Depth (ft.): NA

Was well annular space grouted? ☐ Yes ☐ No ☒ ~~Unknown~~ NA

If yes, to what depth (feet)? NA | Depth to Water (feet): ≈15'

4. Pump, Liner, Screen, Casing & Sealing Material

Pump and piping removed?	☐ Yes	☐ No	☒ N/A
Liner(s) removed?	☐ Yes	☐ No	☒ N/A
Screen removed?	☒ Yes	☐ No	☐ N/A
Casing left in place?	☐ Yes	☒ No	☐ N/A
Was casing cut off below surface?	☐ Yes	☐ No	☒ N/A
Did sealing material rise to surface?	☒ Yes	☐ No	☐ N/A
Did material settle after 24 hours?	☐ Yes	☒ No	☐ N/A
If yes, was hole retopped?	☐ Yes	☐ No	☐ N/A
If bentonite chips were used, were they hydrated with water from a known safe source?	☐ Yes	☐ No	☒ N/A

Required Method of Placing Sealing Material
☐ Conductor Pipe-Gravity ☒ Conductor Pipe-Pumped
☐ Screened & Poured (Bentonite Chips) ☐ Other (Explain): _____

Sealing Materials
☐ Neat Cement Grout ☐ Clay-Sand Slurry (11 lb./gal. wt.)
☐ Sand-Cement (Concrete) Grout ☐ Bentonite-Sand Slurry " "
☐ Concrete ☐ Bentonite Chips

For Monitoring Wells and Monitoring Well Boreholes Only:
☐ Bentonite Chips ☐ Bentonite - Cement Grout
☒ Granular Bentonite ☐ Bentonite - Sand Slurry

5. Material Used To Fill Well / Drillhole

From (ft.)	To (ft.)	No. Yards, Sacks Sealant or Volume (circle one)	Mix Ratio or Mud Weight
Surface	15-20'	1.5' of hole = 0.9 gal/ft	25% Solids

Bentonite Grout

6. Comments

7. Supervision of Work

Name of Person or Firm Doing Sealing Work: Matrix Environmental, LLC | Date of Abandonment: 10/14/04

Street or Route: 6631 Jefferson Highway | Telephone Number: (763) 424-4803

City: Osseo | State: MN | ZIP Code: 55369 | Signature of Person Doing Work | Date Signed: 1/20/05

DNR Use Only

Date Received | Noted By

Comments

State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION

Route To: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☑ Other ☐

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
SWL&P Phase II Part III		B-26

Boring Drilled By: Name of crew chief (first, last) and Firm	Date Drilling Started	Date Drilling Completed	Drilling Method
Guy Paquette, Matrix Environmental, LLC	10/12/04	10/12/04	Geoprobe Track Rig

WI Unique Well No.	DNR Well ID No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
			602.78	605.98	2 inch

Local Grid Orgin ☐ (estimated) ☐ or Boring Location ☑	Lat / Long	Local Grid Location
State Plane		N ☐ S ☐ E ☐ W ☐

Facility ID	County	County Code	Civil Town/City/or Village
	Douglas		Superior

Sample Number	Sample Type	Sample Length Att. & Recovered (ft)	Blow Counts	Depth In Feet	Soil/ Rock Description	U.S.C.S.	Graphic	Well	PID/FID	Soil Properties: Compressive	Moisture	Liquid	Plasticity	P 200	RQD/
1	GP	2.3		1	Topsoil and grass. Slag-like material, black, loose, crumbly, moist, no odor.				3.1						
2	GP	2.0		5	Mixed Fill consisting of: 2 inch thick layer wet slag and wood. 6 inch layer fine sand. 6 inch layer silt. 4 inch layer wood. 6 inch sand layer, no odor, wet.	Fill			49.8						6-7 ft Soil Sample
3	GP	3.5		10	Fine sand, well sorted, brown, wet, slight odor.	SP			37.4						
				13	Clay with sand and wood chip layers, wet brown, no odor.	CH/SP									
4	GP	1.0		15	Clay, stiff, wet, brown, no odor.	CH			3.1						
				20	END OF BORING-20 FEET										

I herby certify that the information on this form is true and the correct to the best of my knowledge

Signature	Firm
Chris Buck Cole	ENSR Corporation 4500 Park Glen Rd Ste 210 St. Louis Park, MN 55416

State of Wisconsin
Department of Natural Resources
PO Box 7921, Madison WI 53707-7921

Well / Drillhole / Borehole Abandonment

Form 3300-005 (R 10/03)

Notice: Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between $10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

Route to:
☐ Drinking Water ☐ Watershed/Wastewater ☐ Waste Management ☒ Remediation/Redevelopment ☐ Other: _____

1. General Information

WI Unique Well No. _____ | DNR Well ID No. | County: Douglas

Common Well Name: GP-26 | Gov't Lot # (if applicable)

¼ / ¼ | ¼ | Section | Township: N | Range: ☐ E ☐ W

Grid Location: Feet ☐ N ☐ S | Feet ☐ E ☐ W | ☐ Local Grid Origin ☐ (estimated) OR ☐ Well Location

Latitude: DEG MIN SEC N | Longitude: DEG MIN SEC W

Reason For Abandonment: Temporary Boring | WI Unique Well No. of Replacement We: _____

2. Facility / Owner Information

Facility Name: Superior Water Light & Power

Facility ID | License/Permit/Monitoring No | City, Village or Town: Superior

Street Address of Well: Winter/Water Street

Present Well Owner: Superior Water Light & Power | Original Well Owner

Street Address or Route of Owner: Water Street

City: Superior | State: WI | ZIP Code

3. Well / Drillhole / Borehole Information

☐ Monitoring Well
☐ Water Well
☒ Borehole / Drillhole

Original Construction Date: 10/12/04

If a Well Construction Report is available, please attach.

Construction Type:
☐ Drilled ☐ Driven (Sandpoint) ☐ Dug
☒ Other (specify): Direct Push

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth From Groundsurface (ft.): 20' | Casing Diameter (in.): 1"

Lower Drillhole Diameter (in.): NA | Casing Depth (ft.): NA

Was well annular space grouted? ☐ Yes ☐ No ☒ Unknown NA

If yes, to what depth (feet)? NA | Depth to Water (feet): ≈15'

4. Pump, Liner, Screen, Casing & Sealing Material

Pump and piping removed?	☐ Yes	☐ No	☒ N/A
Liner(s) removed?	☐ Yes	☐ No	☒ N/A
Screen removed?	☒ Yes	☐ No	☐ N/A
Casing left in place?	☐ Yes	☒ No	☐ N/A
Was casing cut off below surface?	☐ Yes	☐ No	☒ N/A
Did sealing material rise to surface?	☒ Yes	☐ No	☐ N/A
Did material settle after 24 hours?	☐ Yes	☒ No	☐ N/A
If yes, was hole retopped?	☐ Yes	☐ No	☐ N/A
If bentonite chips were used, were they hydrated with water from a known safe source?	☐ Yes	☐ No	☒ N/A

Required Method of Placing Sealing Material
☐ Conductor Pipe-Gravity ☒ Conductor Pipe-Pumped
☐ Screened & Poured (Bentonite Chips) ☐ Other (Explain): _____

Sealing Materials
☐ Neat Cement Grout ☐ Clay-Sand Slurry (11 lb./gal. wt.)
☐ Sand-Cement (Concrete) Grout ☐ Bentonite-Sand Slurry " "
☐ Concrete ☐ Bentonite Chips

For Monitoring Wells and Monitoring Well Boreholes Only:
☐ Bentonite Chips ☐ Bentonite - Cement Grout
☒ Granular Bentonite ☐ Bentonite - Sand Slurry

5. Material Used To Fill Well / Drillhole

	From (ft.)	To (ft.)	No. Yards, Sacks Sealant or Volume (circle one)	Mix Ratio or Mud Weight
Bentonite Grout	Surface	15-20'	1.5' of hole = 0.9 gal/ft	25% Solids

6. Comments

7. Supervision of Work

Name of Person or Firm Doing Sealing Work: Matrix Environmental, LLC | Date of Abandonment: 10/14/04

Street or Route: 8631 Jefferson Highway | Telephone Number: (763) 424-4803

City: Osseo | State: MN | ZIP Code: 55369 | Signature of Person Doing Work | Date Signed: 1/20/05

DNR Use Only

Date Received | Noted By

Comments

State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION

Route To: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☑ Other ☐

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
SWL&P Phase II Part III		B-27

Boring Drilled By: Name of crew chief (first, last) and Firm	Date Drilling Started	Date Drilling Completed	Drilling Method
Guy Paquette, Matrix Environmental, LLC	10/12/04	10/12/04	Geoprobe Track Rig

WI Unique Well No.	DNR Well ID No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
			602.83	605.73	2 inch

Local Grid Orgin ☐ (estimated) ☐ or Boring Location ☑	Lat	Local Grid Location
State Plane	Long	N ☐ E ☐ S ☐ W ☐

Facility ID	County	County Code	Civil Town/City/or Village
	Douglas		Superior

Sample Number	Sample Type	Sample Length Att. & Recovered (ft)	Blow Counts	Depth In Feet	Soil/ Rock Description	U.S.C.S.	Graphic	Well	PID/FID	Soil Properties: Compressive	Moisture	Liquid	Plasticity	P 200	RQD/
				1	Lime-like material, gray, moist, no odor.										
1	GP	3.2		2	Slag-like material, black, loose, crumbly, no odor, moist.	Fill			3.6						
				3											
				4											
				5	Same as above, but wet with wood, sheen and odor.										
				6											
2	GP	2.8		7	Fine sand with fines, well sorted, brown, wet, odor.				903						7-8 Ft Soil Sample
				8											
				9											
				10	Same as above, but sheen and strong odor.										
				11											
3	GP	2.9		12					1161						
				13		SP									
				14											
				15											
				16											
4	GP	0.0		17	No recovery.				NA						
				18											
				19											
				20	END OF BORING-20 FEET										
				21											

I herby certify that the information on this form is true and the correct to the best of my knowledge

Signature	Firm
Chris Buck Carl	ENSR Corporation 4500 Park Glen Rd Ste 210 St. Louis Park, MN 55416

State of Wisconsin
Department of Natural Resources
PO Box 7921, Madison WI 53707-7921

Well / Drillhole / Borehole Abandonment

Form 3300-005 (R 10/03)

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Route to:
☐ Drinking Water ☐ Watershed/Wastewater ☐ Waste Management ☒ Remediation/Redevelopment ☐ Other: _____

1. General Information

WI Unique Well No. — — — — — —
DNR Well ID No.
County: Douglas
Common Well Name: GP-27
Gov't Lot # (if applicable)
¼ / ¼ | ¼ | Section | Township N | Range ☐ E ☐ W
Grid Location: Feet ☐ N ☐ S | Feet ☐ E ☐ W | ☐ Local Grid Origin ☐ (estimated) OR ☐ Well Location
Latitude: DEG MIN SEC N
Longitude: DEG MIN SEC W
Reason For Abandonment: Temporary Boring
WI Unique Well No. of Replacement We: — — — — — —

2. Facility / Owner Information

Facility Name: Superior Water Light & Power
Facility ID | License/Permit/Monitoring No | City, Village or Town: Superior
Street Address of Well: Winter/Water Street
Present Well Owner: Superior Water Light & Power | Original Well Owner
Street Address or Route of Owner: Water Street
City: Superior | State: WI | ZIP Code

3. Well / Drillhole / Borehole Information

☐ Monitoring Well
☐ Water Well
☒ Borehole / Drillhole
Original Construction Date: 10/12/04
If a Well Construction Report is available, please attach.

Construction Type:
☐ Drilled ☐ Driven (Sandpoint) ☐ Dug
☒ Other (specify): Direct Push

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth From Groundsurface (ft.): 20'
Casing Diameter (in.): 1"
Lower Drillhole Diameter (in.): NA
Casing Depth (ft.): NA

Was well annular space grouted? ☐ Yes ☐ No ☒ Unknown NA
If yes, to what depth (feet)? NA
Depth to Water (feet): ≈15'

4. Pump, Liner, Screen, Casing & Sealing Material

Pump and piping removed?	☐ Yes	☐ No	☒ N/A
Liner(s) removed?	☐ Yes	☐ No	☒ N/A
Screen removed?	☒ Yes	☐ No	☐ N/A
Casing left in place?	☐ Yes	☒ No	☐ N/A
Was casing cut off below surface?	☐ Yes	☐ No	☒ N/A
Did sealing material rise to surface?	☒ Yes	☐ No	☐ N/A
Did material settle after 24 hours?	☐ Yes	☒ No	☐ N/A
If yes, was hole retopped?	☐ Yes	☐ No	☐ N/A
If bentonite chips were used, were they hydrated with water from a known safe source?	☐ Yes	☐ No	☒ N/A

Required Method of Placing Sealing Material
☐ Conductor Pipe-Gravity ☒ Conductor Pipe-Pumped
☐ Screened & Poured (Bentonite Chips) ☐ Other (Explain): _____

Sealing Materials
☐ Neat Cement Grout ☐ Clay-Sand Slurry (11 lb./gal. wt.)
☐ Sand-Cement (Concrete) Grout ☐ Bentonite-Sand Slurry " "
☐ Concrete ☐ Bentonite Chips

For Monitoring Wells and Monitoring Well Boreholes Only:
☐ Bentonite Chips ☐ Bentonite - Cement Grout
☒ Granular Bentonite ☐ Bentonite - Sand Slurry

5. Material Used To Fill Well / Drillhole

Material	From (ft.)	To (ft.)	No. Yards, Sacks Sealant or Volume (circle one)	Mix Ratio or Mud Weight
Bentonite Grout	Surface	15-20'	1.5' of hole = 0.9 gal/ft	25% Solids

6. Comments

7. Supervision of Work

Name of Person or Firm Doing Sealing Work: Matrix Environmental, LLC
Date of Abandonment: 10/14/04
Street or Route: 6631 Jefferson Highway
Telephone Number: (763) 424-4803
City: Osseo | State: MN | ZIP Code: 55369
Signature of Person Doing Work:
Date Signed: 1/20/05

DNR Use Only
Date Received | Noted By
Comments

State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION

Route To: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☑ Other ☐

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
SWL&P Phase II Part III		B-28

Boring Drilled By: Name of crew chief (first, last) and Firm	Date Drilling Started	Date Drilling Completed	Drilling Method
Guy Paquette, Matrix Environmental, LLC	10/12/04	10/12/04	Geoprobe Track Rig

WI Unique Well No.	DNR Well ID No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
			602.84	607.84	2 inch

Local Grid Orgin ☐ (estimated) ☐ or Boring Location ☑	Lat / Long	Local Grid Location
State Plane		N ☐ S ☐ E ☐ W ☐

Facility ID	County	County Code	Civil Town/City/or Village
	Douglas		Superior

Sample Number	Sample Type	Sample Length Att. & Recovered (ft)	Blow Counts	Depth In Feet	Soil/ Rock Description	U.S.C.S.	Graphic	Well	PID/FID	Soil Properties: Compressive	Moisture	Liquid	Plasticity	P 200	RQD/
1	GP	2.6		1–5	Lime-like material, gray, crumbly, moist, no odor. / Fine sand, well sorted, brown, moist to wet at 5 feet, slight odor.	Fill			3.0						
2	GP	2.0		5–10					15.6						5-6 Ft Soil Sample
3	GP	4.0		10–15		SP			29.4						
4	GP	4.8		15–18					33.8						
				18–19	Sand, poorly sorted, brown/gray, wet, slight odor.	SW									
				19–20	Clay, moist, brown, stiff, no odor.	CH									
				20–21	END OF BORING-20 FEET										

I herby certify that the information on this form is true and the correct to the best of my knowledge

Signature	Firm
Chris Buelow	ENSR Corporation 4500 Park Glen Rd Ste 210 St. Louis Park, MN 55416

State of Wisconsin
Department of Natural Resources
PO Box 7921, Madison WI 53707-7921

Well / Drillhole / Borehole Abandonment

Form 3300-005 (R 10/03)

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Route to:
☐ Drinking Water ☐ Watershed/Wastewater ☐ Waste Management ☒ Remediation/Redevelopment ☐ Other: _____

1. General Information

WI Unique Well No. _____ | DNR Well ID No. | County: Douglas

Common Well Name: GP-28 | Gov't Lot # (if applicable)

¼ / ¼ | ¼ | Section | Township N | Range ☐ E ☐ W

Grid Location: Feet ☐ N ☐ S | Feet ☐ E ☐ W | ☐ Local Grid Origin ☐ (estimated) OR ☐ Well Location

Latitude: DEG MIN SEC N | Longitude: DEG MIN SEC W

Reason For Abandonment: Temporary Boring | WI Unique Well No. of Replacement We: _____

2. Facility / Owner Information

Facility Name: Superior Water Light & Power

Facility ID | License/Permit/Monitoring No | City, Village or Town: Superior

Street Address of Well: Winter/Water Street

Present Well Owner: Superior Water Light & Power | Original Well Owner

Street Address or Route of Owner: Water Street

City: Superior | State: WI | ZIP Code

3. Well / Drillhole / Borehole Information

☐ Monitoring Well
☐ Water Well
☒ Borehole / Drillhole

Original Construction Date: 10/12/04

If a Well Construction Report is available, please attach.

Construction Type:
☐ Drilled ☐ Driven (Sandpoint) ☐ Dug
☒ Other (specify): Direct Push

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth From Groundsurface (ft.): 20' | Casing Diameter (in.): 1"

Lower Drillhole Diameter (in.): NA | Casing Depth (ft.): NA

Was well annular space grouted? ☐ Yes ☐ No ☒ Unknown NA

If yes, to what depth (feet)? NA | Depth to Water (feet): ≈15'

4. Pump, Liner, Screen, Casing & Sealing Material

Pump and piping removed?	☐ Yes	☐ No	☒ N/A
Liner(s) removed?	☐ Yes	☐ No	☒ N/A
Screen removed?	☒ Yes	☐ No	☐ N/A
Casing left in place?	☐ Yes	☒ No	☐ N/A
Was casing cut off below surface?	☐ Yes	☐ No	☒ N/A
Did sealing material rise to surface?	☒ Yes	☐ No	☐ N/A
Did material settle after 24 hours?	☐ Yes	☒ No	☐ N/A
If yes, was hole retopped?	☐ Yes	☐ No	☐ N/A
If bentonite chips were used, were they hydrated with water from a known safe source?	☐ Yes	☐ No	☒ N/A

Required Method of Placing Sealing Material
☐ Conductor Pipe-Gravity ☒ Conductor Pipe-Pumped
☐ Screened & Poured (Bentonite Chips) ☐ Other (Explain): _____

Sealing Materials
☐ Neat Cement Grout ☐ Clay-Sand Slurry (11 lb./gal. wt.)
☐ Sand-Cement (Concrete) Grout ☐ Bentonite-Sand Slurry " "
☐ Concrete ☐ Bentonite Chips

For Monitoring Wells and Monitoring Well Boreholes Only:
☐ Bentonite Chips ☐ Bentonite - Cement Grout
☒ Granular Bentonite ☐ Bentonite - Sand Slurry

5. Material Used To Fill Well / Drillhole

From (ft.)	To (ft.)	No. Yards, Sacks Sealant or Volume (circle one)	Mix Ratio or Mud Weight
Bentonite Grout			
Surface	15-20'	1.5' hole = 0.9 gal/ft	25% Solids

6. Comments

7. Supervision of Work

Name of Person or Firm Doing Sealing Work: Matrix Environmental, LLC | Date of Abandonment: 10/14/04

Street or Route: 6631 Jefferson Highway | Telephone Number: (763) 424-4803

City: Osseo | State: MN | ZIP Code: 55369 | Signature of Person Doing Work | Date Signed: 1/20/05

DNR Use Only

Date Received | Noted By

Comments

State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION

Route To: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☑ Other ☐

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
SWL&P Phase II Part III		B-29

Boring Drilled By: Name of crew chief (first, last) and Firm	Date Drilling Started	Date Drilling Completed	Drilling Method
Guy Paquette, Matrix Environmental, LLC	10/12/04	10/12/04	Geoprobe Track Rig

WI Unique Well No.	DNR Well ID No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
			603.73	609.23	2 inch

Local Grid Orgin ☐ (estimated) ☐ or Boring Location ☑	Lat	Local Grid Location
State Plane	Long	N☐ E☐ S☐ W☐

Facility ID	County	County Code	Civil Town/City/or Village
	Douglas		Superior

Sample Number	Sample Type	Sample Length Att. & Recovered (ft)	Blow Counts	Depth In Feet	Soil/ Rock Description	U.S.C.S.	Graphic	Well	PID/FID	Soil Properties: Compressive	Moisture	Liquid	Plasticity	P 200	RQD/
				0	Topsoil and grass										
1	GP	4.7		1–5	Lime-like material, gray, moist, no odor.	Fill			3.2						
2	GP	3.9		5–9	Slag-like material, brown, loose, wet at 7 feet, slight odor. Wood chips, wet, slight odor.				3.9 47.7						6-7 Ft Soil Sample
3	GP	3.2		9–15	Fine sand with fines, well sorted, dark brown, wet, slight odor.	SP			77.4						
4	GP	4.5		15–20	Same as above, but with brick pieces.				50.2 29.0						
				20	END OF BORING-20 FEET										

I herby certify that the information on this form is true and the correct to the best of my knowledge

Signature	Firm
Chris Baack	ENSR Corporation 4500 Park Glen Rd Ste 210 St. Louis Park, MN 55416

State of Wisconsin
Department of Natural Resources
PO Box 7921, Madison WI 53707-7921

Well / Drillhole / Borehole Abandonment

Form 3300-005 (R 10/03)

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Route to:
☐ Drinking Water ☐ Watershed/Wastewater ☐ Waste Management ☒ Remediation/Redevelopment ☐ Other: _____

1. General Information

WI Unique Well No.: _ _ _ _ _ _ _ | DNR Well ID No.: | County: Douglas

Common Well Name: GP-29 | Gov't Lot # (if applicable):

¼ / ¼ | ¼ | Section | Township: N | Range: ☐ E ☐ W

Grid Location: Feet ☐ N ☐ S | Feet ☐ E ☐ W | ☐ Local Grid Origin ☐ (estimated) OR ☐ Well Location

Latitude: DEG MIN SEC N | Longitude: DEG MIN SEC W

Reason For Abandonment: Temporary Boring | WI Unique Well No. of Replacement We: _ _ _ _ _ _ _

2. Facility / Owner Information

Facility Name: Superior Water Light & Power

Facility ID | License/Permit/Monitoring No | City, Village or Town: Superior

Street Address of Well: Winter/Water Street

Present Well Owner: Superior Water Light & Power | Original Well Owner

Street Address or Route of Owner: Water Street

City: Superior | State: WI | ZIP Code

3. Well / Drillhole / Borehole Information

☐ Monitoring Well
☐ Water Well
☒ Borehole / Drillhole

Original Construction Date: 10/12/04

If a Well Construction Report is available, please attach.

Construction Type:
☐ Drilled ☐ Driven (Sandpoint) ☐ Dug
☒ Other (specify): Direct Push

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth From Groundsurface (ft.): 20' | Casing Diameter (in.): 1"

Lower Drillhole Diameter (in.): NA | Casing Depth (ft.): NA

Was well annular space grouted? ☐ Yes ☐ No ☒ Unknown NA

If yes, to what depth (feet)? NA | Depth to Water (feet): ≈15'

4. Pump, Liner, Screen, Casing & Sealing Material

Pump and piping removed?	☐ Yes	☐ No	☒ N/A
Liner(s) removed?	☐ Yes	☐ No	☒ N/A
Screen removed?	☒ Yes	☐ No	☐ N/A
Casing left in place?	☐ Yes	☒ No	☐ N/A
Was casing cut off below surface?	☐ Yes	☐ No	☒ N/A
Did sealing material rise to surface?	☒ Yes	☐ No	☐ N/A
Did material settle after 24 hours?	☐ Yes	☒ No	☐ N/A
If yes, was hole retopped?	☐ Yes	☐ No	☐ N/A
If bentonite chips were used, were they hydrated with water from a known safe source?	☐ Yes	☐ No	☒ N/A

Required Method of Placing Sealing Material
☐ Conductor Pipe-Gravity ☒ Conductor Pipe-Pumped
☐ Screened & Poured (Bentonite Chips) ☐ Other (Explain): _____

Sealing Materials
☐ Neat Cement Grout ☐ Clay-Sand Slurry (11 lb./gal. wt.)
☐ Sand-Cement (Concrete) Grout ☐ Bentonite-Sand Slurry " "
☐ Concrete ☐ Bentonite Chips

For Monitoring Wells and Monitoring Well Boreholes Only:
☐ Bentonite Chips ☐ Bentonite - Cement Grout
☒ Granular Bentonite ☐ Bentonite - Sand Slurry

5. Material Used To Fill Well / Drillhole

From (ft.)	To (ft.)	No. Yards, Sacks Sealant or Volume (circle one)	Mix Ratio or Mud Weight
Surface	15-20'	1.5' of hole = 0.9 gal/ft	25% Solids

Bentonite Grout

6. Comments

7. Supervision of Work

Name of Person or Firm Doing Sealing Work: Matrix Environmental, LLC | Date of Abandonment: 10/14/04

Street or Route: 8631 Jefferson Highway | Telephone Number: (763) 424-4803

City: Osseo | State: MN | ZIP Code: 55369 | Signature of Person Doing Work | Date Signed: 1/20/05

DNR Use Only

Date Received | Noted By | Comments

State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION

Route To: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☑ Other ☐

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
SWL&P Phase II Part III		B-30

Boring Drilled By: Name of crew chief (first, last) and Firm	Date Drilling Started	Date Drilling Completed	Drilling Method
Guy Paquette, Matrix Environmental, LLC	10/12/04	10/12/04	Geoprobe Track Rig

WI Unique Well No.	DNR Well ID No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
			602.24	605.94	2 inch

Local Grid Orgin ☐ (estimated) ☐ or Boring Location ☑	Lat	Local Grid Location
State Plane	Long	N ☐ E ☐ S ☐ W ☐

Facility ID	County	County Code	Civil Town/City/or Village
	Douglas		Superior

Sample Number	Sample Type	Sample Length Att. & Recovered (ft)	Blow Counts	Depth In Feet	Soil/ Rock Description	U.S.C.S.	Graphic	Well	PID/FID	Soil Properties: Compressive	Moisture	Liquid	Plasticity	P 200	RQD/
				0	Topsoil and grass.										
1	GP	2.5		1–5	Slag-like material, black, crumbly, dry, no odor.	Fill			12.6						
2	GP	4.1		5–10	Fine sand, well sorted, brown, wet. 2 inch wood chip and slag layer, wet, dark gray, sheen and odor.	SP			659						8-9 Ft Soil Sample
3	GP	5.0		10–14					171						
				14–15	Fine to coarse sand, poorly graded, brown, wet, odor.	SW									
4	GP	5.0		15–18	Silty fine sand, well sorted, brown, wet, odor.	SM			39.8						
				18–19	Sand, poorly sorted, brown, wet.	SP									
				19–20	Clay, brown, stiff, wet.	CH									
				20–21	END OF BORING-20 FEET										

I herby certify that the information on this form is true and the correct to the best of my knowledge

Signature	Firm
Chris Bark Cole	ENSR Corporation 4500 Park Glen Rd Ste 210 St. Louis Park, MN 55416

State of Wisconsin
Department of Natural Resources
PO Box 7921, Madison WI 53707-7921

Well / Drillhole / Borehole Abandonment

Form 3300-005 (R 10/03)

Notice: Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between $10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

Route to: ☐ Drinking Water ☐ Watershed/Wastewater ☐ Waste Management ☒ Remediation/Redevelopment ☐ Other: _____

1. General Information

WI Unique Well No. _____ | DNR Well ID No. | County: Douglas

Common Well Name: GP-30 | Gov't Lot # (if applicable)

¼ / ¼ | ¼ | Section | Township: N | Range: ☐ E ☐ W

Grid Location: Feet ☐ N ☐ S | Feet ☐ E ☐ W | ☐ Local Grid Origin ☐ (estimated) OR ☐ Well Location

Latitude: DEG MIN SEC N | Longitude: DEG MIN SEC W

Reason For Abandonment: Temporary Boring | WI Unique Well No. of Replacement We: _____

2. Facility / Owner Information

Facility Name: Superior Water Light & Power

Facility ID | License/Permit/Monitoring No | City, Village or Town: Superior

Street Address of Well: Water/Water Street

Present Well Owner: Superior Water Light & Power | Original Well Owner

Street Address or Route of Owner: Water Street

City: Superior | State: WI | ZIP Code

3. Well / Drillhole / Borehole Information

☐ Monitoring Well
☐ Water Well
☒ Borehole / Drillhole

Original Construction Date: 10/12/04

If a Well Construction Report is available, please attach.

Construction Type:
☐ Drilled ☐ Driven (Sandpoint) ☐ Dug
☒ Other (specify): Direct Push

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth From Groundsurface (ft.): 20' | Casing Diameter (in.): 1"

Lower Drillhole Diameter (in.): NA | Casing Depth (ft.): NA

Was well annular space grouted? ☐ Yes ☐ No ☒ ~~Unknown~~ NA

If yes, to what depth (feet)? NA | Depth to Water (feet): ≈15'

4. Pump, Liner, Screen, Casing & Sealing Material

Pump and piping removed?	☐ Yes	☐ No	☒ N/A
Liner(s) removed?	☐ Yes	☐ No	☒ N/A
Screen removed?	☒ Yes	☐ No	☐ N/A
Casing left in place?	☐ Yes	☒ No	☐ N/A
Was casing cut off below surface?	☐ Yes	☐ No	☒ N/A
Did sealing material rise to surface?	☒ Yes	☐ No	☐ N/A
Did material settle after 24 hours?	☐ Yes	☒ No	☐ N/A
If yes, was hole retopped?	☐ Yes	☐ No	☐ N/A
If bentonite chips were used, were they hydrated with water from a known safe source?	☐ Yes	☐ No	☒ N/A

Required Method of Placing Sealing Material
☐ Conductor Pipe-Gravity ☒ Conductor Pipe-Pumped
☐ Screened & Poured (Bentonite Chips) ☐ Other (Explain): _____

Sealing Materials
☐ Neat Cement Grout ☐ Clay-Sand Slurry (11 lb./gal. wt.)
☐ Sand-Cement (Concrete) Grout ☐ Bentonite-Sand Slurry " "
☐ Concrete ☐ Bentonite Chips

For Monitoring Wells and Monitoring Well Boreholes Only:
☐ Bentonite Chips ☐ Bentonite - Cement Grout
☒ Granular Bentonite ☐ Bentonite - Sand Slurry

5. Material Used To Fill Well / Drillhole

	From (ft.)	To (ft.)	No. Yards, Sacks Sealant or Volume (circle one)	Mix Ratio or Mud Weight
Bentonite Grout	Surface	15-20'	1.5' x hole = 0.9 gal/ft	25% Solids

6. Comments

7. Supervision of Work

Name of Person or Firm Doing Sealing Work: Matrix Environmental, LLC | Date of Abandonment: 10/14/04

Street or Route: 8631 Jefferson Highway | Telephone Number: (763) 424-4803

City: Osseo | State: MN | ZIP Code: 55369 | Signature of Person Doing Work | Date Signed: 1/20/05

DNR Use Only

Date Received | Noted By

Comments

State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION

Route To: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☑ Other ☐

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
SWL&P Phase II Part III		B-31

Boring Drilled By: Name of crew chief (first, last) and Firm	Date Drilling Started	Date Drilling Completed	Drilling Method
Guy Paquette, Matrix Environmental, LLC	10/14/04	10/14/04	Geoprobe Track Rig

WI Unique Well No.	DNR Well ID No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
			601.47	612.47	2 inch

Local Grid Orgin ☐ (estimated) ☐ or Boring Location ☑	Lat	Local Grid Location
State Plane	Long	N ☐ E ☐ S ☐ W ☐

Facility ID	County	County Code	Civil Town/City/or Village
	Douglas		Superior

Sample Number	Sample Type	Sample Length Att. & Recovered (ft)	Blow Counts	Depth In Feet	Soil/ Rock Description	U.S.C.S.	Graphic	Well	PID/FID	Soil Properties: Compressive	Moisture	Liquid	Plasticity	P 200	RQD/
1	GP	4.8		1–5	Lime-like material, gray, moist, no odor.	Fill			8.7						
2	GP	4.7		5–10	Same as above, but with red-brown gravely clay layer, 4 inches thick, moist, no odor.				109						
3	GP	3.8		10–15	Wet gravel at 11 feet.				2786						
				14	Peat-like material and wood, dark brown, moist, strong odor.	PT			9999						14-15 Ft Soil Sample
4	GP	4.7		15–19	Fine sand with fines/silty sand, dark brown, well sorted, wet, strong odor.	SP/SM			1849						
				18–19	Clay with trace sand and gravel, red-brown, moist, stiff, strong odor.	CH			73.3						
				20–21	END OF BORING-20 FEET										

I herby certify that the information on this form is true and the correct to the best of my knowledge

Signature	Firm
Chris Buck Cer	ENSR Corporation 4500 Park Glen Rd Ste 210 St. Louis Park, MN 55416

State of Wisconsin
Department of Natural Resources
PO Box 7921, Madison WI 53707-7921

Well / Drillhole / Borehole Abandonment

Form 3300-005 (R 10/03)

Notice: Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between $10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

Route to:
☐ Drinking Water ☐ Watershed/Wastewater ☐ Waste Management ☒ Remediation/Redevelopment ☐ Other: _____

1. General Information

WI Unique Well No. _____ DNR Well ID No. _____ County: Douglas

Common Well Name: GP-31 Gov't Lot # (if applicable)

¼ / ¼ ¼ Section Township N Range ☐ E ☐ W

Grid Location: Feet ☐ N ☐ S Feet ☐ E ☐ W ☐ Local Grid Origin ☐ (estimated) OR ☐ Well Location

Latitude: DEG MIN SEC N Longitude: DEG MIN SEC W

Reason For Abandonment: Temporary Boring WI Unique Well No. of Replacement We: _____

2. Facility / Owner Information

Facility Name: Superior Water Light & Power

Facility ID License/Permit/Monitoring No City, Village or Town: Superior

Street Address of Well: Winter/Water Street

Present Well Owner: Superior Water Light & Power Original Well Owner

Street Address or Route of Owner: Water Street

City: Superior State: WI ZIP Code

3. Well / Drillhole / Borehole Information

☐ Monitoring Well ☐ Water Well ☒ Borehole / Drillhole

Original Construction Date: 10/14/04

If a Well Construction Report is available, please attach.

Construction Type:
☐ Drilled ☐ Driven (Sandpoint) ☐ Dug ☒ Other (specify): Direct Push

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth From Groundsurface (ft.): 20' Casing Diameter (in.): 1"

Lower Drillhole Diameter (in.): NA Casing Depth (ft.): NA

Was well annular space grouted? ☐ Yes ☐ No ☒ Unknown NA

If yes, to what depth (feet)? NA Depth to Water (feet): ≈15'

4. Pump, Liner, Screen, Casing & Sealing Material

Pump and piping removed?	☐ Yes	☐ No	☒ N/A
Liner(s) removed?	☐ Yes	☐ No	☒ N/A
Screen removed?	☒ Yes	☐ No	☐ N/A
Casing left in place?	☐ Yes	☒ No	☐ N/A
Was casing cut off below surface?	☐ Yes	☐ No	☒ N/A
Did sealing material rise to surface?	☒ Yes	☐ No	☐ N/A
Did material settle after 24 hours?	☐ Yes	☒ No	☐ N/A
If yes, was hole retopped?	☐ Yes	☐ No	☐ N/A
If bentonite chips were used, were they hydrated with water from a known safe source?	☐ Yes	☐ No	☒ N/A

Required Method of Placing Sealing Material
☐ Conductor Pipe-Gravity ☒ Conductor Pipe-Pumped
☐ Screened & Poured (Bentonite Chips) ☐ Other (Explain): _____

Sealing Materials
☐ Neat Cement Grout ☐ Clay-Sand Slurry (11 lb./gal. wt.)
☐ Sand-Cement (Concrete) Grout ☐ Bentonite-Sand Slurry " "
☐ Concrete ☐ Bentonite Chips

For Monitoring Wells and Monitoring Well Boreholes Only:
☐ Bentonite Chips ☐ Bentonite - Cement Grout
☒ Granular Bentonite ☐ Bentonite - Sand Slurry

5. Material Used To Fill Well / Drillhole

	From (ft.)	To (ft.)	No. Yards, Sacks Sealant or Volume (circle one)	Mix Ratio or Mud Weight
Bentonite Grout	Surface	15-20'	1.5' of hole = 0.99 gal/ft	25% Solids

6. Comments

7. Supervision of Work

Name of Person or Firm Doing Sealing Work: Matrix Environmental, LLC

Date of Abandonment: 10/14/04

Street or Route: 8631 Jefferson Highway

Telephone Number: (763) 424-4803

City: Osseo State: MN ZIP Code: 55369

Signature of Person Doing Work:

Date Signed: 1/20/05

DNR Use Only

Date Received Noted By

Comments

State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION

Route To: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☑ Other ☐

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
SWL&P Phase II Part III	MW-8	MW-8

Boring Drilled By: Name of crew chief (first, last) and Firm	Date Drilling Started	Date Drilling Completed	Drilling Method
Guy Paquette, Matrix Environmental, LLC	10/14/04	10/14/04	HSA

WI Unique Well No.	DNR Well ID No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
JP798		MW-8	603.44	612.00	8 inch

Local Grid Orgin ☐ (estimated) ☐ or Boring Location ☑	Lat	Local Grid Location
State Plane	Long	N ☐ E ☐ S ☐ W ☐

Facility ID	County	County Code	Civil Town/City/or Village
	Douglas		Superior

Sample Number	Sample Type	Sample Length Att. & Recovered (ft)	Blow Counts	Depth In Feet	Soil/ Rock Description	U.S.C.S.	Graphic	Well	PID/FID	Soil Properties: Compressive	Moisture	Liquid	Plasticity	P 200	RQD/
				0	**Ground Surface**										
1	GP	4.0		0–5	Mixed fill, lime-like material, sand, gravel, coal and fines, brown and gray, moist, no odor.	Fill			21.1						
2	GP	4.3		5–10	Wet at 8 feet.				7.0 7.5						7-8 ft Soil Sample
3	GP	4.0		10–15	Fine to coarse sand with fines, red-brown, wet, slight sheen, strong odor.	SP		2" Slot 10 Screen	50 1461						
4	GP	1.2		15–20	Same as above, but gray, very strong odor, tarry material, very wet and loose. Clay, red-brown, moist, stiff, strong odor.	CH			2000						
				20	END OF BORING-20 FEET										

I herby certify that the information on this form is true and the correct to the best of my knowledge

Signature	Firm
Chris Bock Cat	ENSR Corporation 4500 Park Glen Rd Ste 210 St. Louis Park, MN 55416

State of Wisconsin
Department of Natural Resources

Route to: Watershed/Wastewater ☐ Waste Management ☐ Remediation/Redevelopment ☐ Other ☐ _____

MONITORING WELL CONSTRUCTION

Form 4400-113A Rev. 7-98

Facility/Project Name: Superior Water Light & Power	Local Grid Location of Well: _____ ft. ☐N ☐S _____ ft. ☐E ☐W	Well Name: MW-8
Facility License, Permit or Monitoring No.	Local Grid Origin ☐ (estimated: ☐) or Well Location ☐ Lat. ° ' " Long. ° ' " or	Wis. Unique Well No.: JP798 / DNR Well ID No.
Facility ID	St. Plane _____ ft. N, _____ ft. E. S/C/N	Date Well Installed: 10/14/2004 (m m d d y y y y)
Type of Well: Well Code ____/____	Section Location of Waste/Source: ____1/4 of ____1/4 of Sec. ____, T. ____ N, R. ____ ☐E ☐W	Well Installed By: Name (first, last) and Firm: Guy Paquette, Matrix Environmental
Distance from Waste/Source _____ ft. / Enf. Stds. Apply ☐	Location of Well Relative to Waste/Source: u ☐ Upgradient s ☐ Sidegradient d ☐ Downgradient n ☐ Not Known / Gov. Lot Number: _____	

A. Protective pipe, top elevation _____ ft. MSL

B. Well casing, top elevation _____ ft. MSL

C. Land surface elevation _____ ft. MSL

D. Surface seal, bottom _____ ft. MSL or _____ ft.

12. USCS classification of soil near screen:
GP ☐ GM ☐ GC ☐ GW ☐ SW ☐ SP ☐
SM ☐ SC ☐ ML ☐ MH ☐ CL ☐ CH ☐
Bedrock ☐

13. Sieve analysis performed? ☐ Yes ☐ No

14. Drilling method used: Rotary ☐ 50 / Hollow Stem Auger ☐ 41 / Other ☐ _____

15. Drilling fluid used: Water ☐ 02 / Air ☐ 01 / Drilling Mud ☐ 03 / None ☐ 99

16. Drilling additives used? ☐ Yes ☐ No

Describe _____

17. Source of water (attach analysis, if required):

_____

E. Bentonite seal, top 4 ft. MSL or _____ ft.

F. Fine sand, top _____ ft. MSL or _____ ft.

G. Filter pack, top 5.5 ft. MSL or _____ ft.

H. Screen joint, top 7 ft. MSL or _____ ft.

I. Well bottom 17.2 ft. MSL or _____ ft.

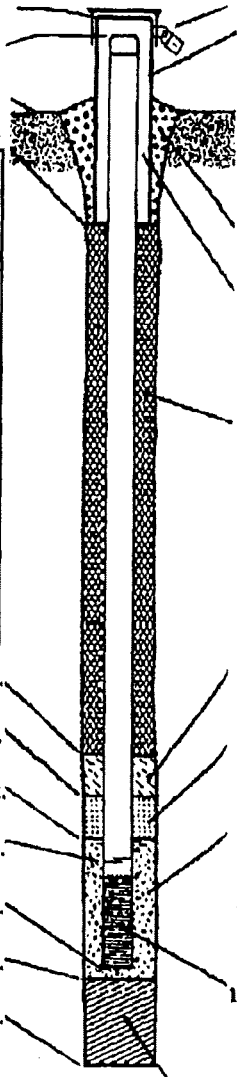
J. Filter pack, bottom 17.2 ft. MSL or _____ ft.

K. Borehole, bottom 17.2 ft. MSL or _____ ft.

L. Borehole, diameter 8.25 in.

M. O.D. well casing _____ in.

N. I.D. well casing 2 in.



1. Cap and lock? ☒ Yes ☐ No

2. Protective cover pipe:
a. Inside diameter: 6 in.
b. Length: 7 ft.
c. Material: Steel — Steel ☒ 04 / Other ☐ _____
d. Additional protection? ☐ Yes ☐ No
If yes, describe: _____

3. Surface seal: Portland cement — Bentonite ☐ 30 / Concrete ☐ 01 / Other ☒ _____

4. Material between well casing and protective pipe: Portland cement — Bentonite ☐ 30 / Other ☒ _____

5. Annular space seal: a. Granular/Chipped Bentonite ☐ 33
b. _____ Lbs/gal mud weight . . . Bentonite-sand slurry ☐ 35
c. _____ Lbs/gal mud weight . . . . . Bentonite slurry ☐ 31
d. _____ % Bentonite . . . . . Bentonite-cement grout ☐ 50
e. _____ Ft^3 volume added for any of the above
f. How installed: Tremie ☐ 01 / Tremie pumped ☐ 02 / Gravity ☐ 08

6. Bentonite seal: a. Bentonite granules ☐ 33
b. ☐1/4 in. ☒3/8 in. ☐1/2 in. Bentonite chips ☒ 32
c. _____ Other ☐ _____

7. Fine sand material: Manufacturer, product name & mesh size
a. None
b. Volume added _____ ft^3

8. Filter pack material: Manufacturer, product name & mesh size
a. Red Flint
b. Volume added _____ ft^3 3 bags

9. Well casing: Flush threaded PVC schedule 40 ☒ 23 / Flush threaded PVC schedule 80 ☐ 24 / Other ☐ _____

10. Screen material: Flush threaded PVC
a. Screen type: Factory cut ☒ 11 / Continuous slot ☐ 01 / Other ☐ _____
b. Manufacturer _____
c. Slot size: 0.010 in.
d. Slotted length: 10 ft.

11. Backfill material (below filter pack): None ☒ 14 / Other ☐ _____

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature	Firm
Guy Paquette	Matrix Environmental, LLC

Please complete both Forms 4400-113A and 4400-113B and return them to the appropriate DNR office and bureau. Completion of these reports is required by chs. 160, 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291, 292, 293, 295, and 299, Wis. Stats., failure to file these forms may result in a forfeiture of between $10 and $25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on these forms is not intended to be used for any other purpose. NOTE: See the instructions for more information, including where the completed forms should be sent.

State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION

Route To: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☑ Other ☐

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
SWL&P Phase II Part III	MW-9	MW-9

Boring Drilled By: Name of crew chief (first, last) and Firm	Date Drilling Started	Date Drilling Completed	Drilling Method
Guy Paquette, Matrix Environmental, LLC	10/12/04	10/12/04	HSA

WI Unique Well No.	DNR Well ID No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
JP799		MW-9	602.99	608.7	8 inch

Local Grid Orgin ☐ (estimated) ☐ or Boring Location ☑	Lat	Local Grid Location
State Plane	Long	N ☐ E ☐ S ☐ W ☐

Facility ID	County	County Code	Civil Town/City/or Village
	Douglas		Superior

Sample Number	Sample Type	Sample Length Att. & Recovered (ft)	Blow Counts	Depth In Feet	Soil/ Rock Description	U.S.C.S.	Graphic	Well	PID/FID	Soil Properties: Compressive	Moisture	Liquid	Plasticity	P 200	RQD/
				-3 -2 -1											
				0	**Ground Surface**										
1	GP	4.2		1 2 3 4	Topsoil and grass. Lime-like material, gray, moist, no odor.	Fill			1.9						
2	GP	2.8		5 6 7 8	Sand with gravel and fines, poorly sorted, brown to gray, moist, odor.	SW			326						8-9 ft Soil Sample
				9	Wood chips, wet, sheen, strong odor.	Fill									
3	GP	3.2		10 11 12 13 14	Fine sand with fines, well sorted, brown, strong odor, sheen at 13-14 feet.	SP		2" Slot 10 Screen	554						
4	GP	4.4		15 16 17 18 19	Fine to coarse sand with trace gravel, sheen and odor, wet. Clay, stiff, brown, wet.	SW CH			549 420						
				20 21	END OF BORING-20 FEET										

I herby certify that the information on this form is true and the correct to the best of my knowledge

Signature	Firm
Chris Beck Cole	ENSR Corporation 4500 Park Glen Rd Ste 210 St. Louis Park, MN 55416

This form is authorized by Chapters 281,283,289,292,293,295, and 299, Wis. Stats. Completion of thes form is mandatory. Failure to file this form may result in forfeiture of between $10 and $25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. NOTE: See instructions for more information, including where the completed form should be sent.

State of Wisconsin
Department of Natural Resources

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☐ Other ☐ _____

MONITORING WELL CONSTRUCTION

Form 4400-113A Rev. 7-98

Facility/Project Name: Superior Water Light & Power	Local Grid Location of Well: _____ ft. ☐N. ☐S. _____ ft. ☐E. ☐W.	Well Name: MW-9
Facility License, Permit or Monitoring No.	Local Grid Origin ☐ (estimated: ☐) or Well Location ☐ Lat. ___ ° ___ ' ___ " Long. ___ ° ___ ' ___ " or	Wis. Unique Well No.: JP799 / DNR Well ID No.: ___
Facility ID: ___	St. Plane _____ ft. N, _____ ft. E. S/C/N	Date Well Installed: 10/14/2009 (m m d d y y y y)
Type of Well: Well Code ___/___	Section Location of Waste/Source: ___ 1/4 of ___ 1/4 of Sec. ___, T. ___ N, R. ___ ☐E ☐W	Well Installed By: Name (first, last) and Firm: Guy Paquette, Matrix Environmental
Distance from Waste/Source _____ ft. / Enf. Stds. Apply ☐	Location of Well Relative to Waste/Source: u ☐ Upgradient s ☒ Sidegradient d ☐ Downgradient n ☐ Not Known	Gov. Lot Number: ___

A. Protective pipe, top elevation _____ ft. MSL

B. Well casing, top elevation _____ ft. MSL

C. Land surface elevation _____ ft. MSL

D. Surface seal, bottom _____ ft. MSL or _____ ft.

12. USCS classification of soil near screen:
GP ☐ GM ☐ GC ☐ GW ☐ SW ☐ SP ☐
SM ☒ SC ☐ ML ☐ MH ☐ CL ☐ CH ☐
Bedrock ☐

13. Sieve analysis performed? ☐ Yes ☒ No

14. Drilling method used: Rotary ☐ 50 / Hollow Stem Auger ☒ 41 / Other ☐ _____

15. Drilling fluid used: Water ☐ 02 / Air ☐ 01 / Drilling Mud ☐ 03 / None ☒ 99

16. Drilling additives used? ☐ Yes ☒ No
Describe _____

17. Source of water (attach analysis, if required):
Superior Municipal Water

E. Bentonite seal, top 4 ft. MSL or _____ ft.

F. Fine sand, top _____ ft. MSL or _____ ft.

G. Filter pack, top 5 ft. MSL or _____ ft.

H. Screen joint, top 6 ft. MSL or _____ ft.

I. Well bottom 17 ft. MSL or _____ ft.

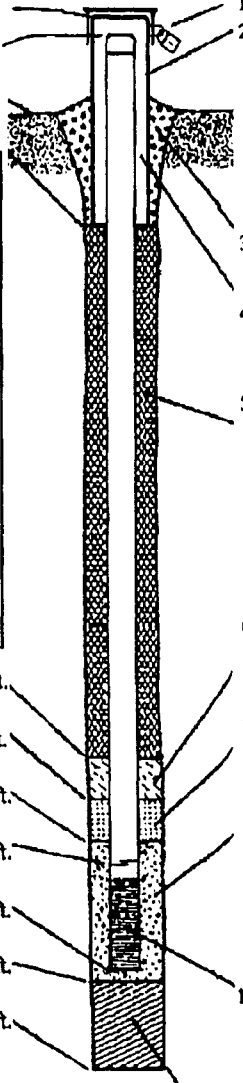
J. Filter pack, bottom 17 ft. MSL or _____ ft.

K. Borehole, bottom 17 ft. MSL or _____ ft.

L. Borehole, diameter 8.25 in.

M. O.D. well casing ____ in.

N. I.D. well casing 2 in.



1. Cap and lock? ☒ Yes ☐ No

2. Protective cover pipe:
a. Inside diameter: 6 in.
b. Length: 7 ft.
c. Material: Steel ☒ 04 / Other ☐ ___
d. Additional protection? ☒ Yes ☐ No
If yes, describe: Bumper Posts (3)

3. Surface seal: Bentonite ☐ 30 / Concrete ☐ 01 / Other ☒ ___
Portland cement

4. Material between well casing and protective pipe: Bentonite ☐ 30 / Other ☒ ___
Portlan cement

5. Annular space seal: a. Granular/Chipped Bentonite ☐ 33
b. ___ Lbs/gal mud weight . . . Bentonite-sand slurry ☐ 35
c. ___ Lbs/gal mud weight . . . . . Bentonite slurry ☐ 31
d. ___ % Bentonite . . . . . Bentonite-cement grout ☐ 50
e. ___ Ft^3 volume added for any of the above
f. How installed: Tremie ☐ 01 / Tremie pumped ☐ 02 / Gravity ☐ 08

6. Bentonite seal: a. Bentonite granules ☐ 33
b. ☐1/4 in. ☒3/8 in. ☐1/2 in. Bentonite chips ☒ 32
c. _____ Other ☐ ___

7. Fine sand material: Manufacturer, product name & mesh size
a. _____
b. Volume added _____ ft^3

8. Filter pack material: Manufacturer, product name & mesh size
a. _____
b. Volume added _____ ft^3 4 Bags

9. Well casing: Flush threaded PVC schedule 40 ☒ 23 / Flush threaded PVC schedule 80 ☐ 24 / Other ☐ ___

10. Screen material: Flush threaded PVC
a. Screen type: Factory cut ☒ 11 / Continuous slot ☐ 01 / Other ☐ ___
b. Manufacturer _____
c. Slot size: 0.010 in.
d. Slotted length: 10 ft.

11. Backfill material (below filter pack): None ☒ 14 / Other ☐ ___

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature: [signature] Firm: Matrix Environmental, LLC

Please complete both Forms 4400-113A and 4400-113B and return them to the appropriate DNR office and bureau. Completion of these reports is required by chs. 160, 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291, 292, 293, 295, and 299, Wis. Stats., failure to file these forms may result in a forfeiture of between $10 and $25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on these forms is not intended to be used for any other purpose. NOTE: See the instructions for more information, including where the completed forms should be sent.

State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION

Route To: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☑ Other ☐

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
SWL&P Phase II Part III	MW-10	MW-10

Boring Drilled By: Name of crew chief (first, last) and Firm	Date Drilling Started	Date Drilling Completed	Drilling Method
Guy Paquette, Matrix Environmental, LLC	10/13/04	10/13/04	HSA

WI Unique Well No.	DNR Well ID No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
JP797		MW-10	602.89	606.5	8 inch

Local Grid Orgin ☐ (estimated) ☐ or Boring Location ☑	Lat / Long	Local Grid Location
State Plane		N ☐ E ☐ S ☐ W ☐

Facility ID	County	County Code	Civil Town/City/or Village
	Douglas		Superior

Sample Number	Sample Type	Sample Length Att. & Recovered (ft)	Blow Counts	Depth In Feet	Soil/ Rock Description	U.S.C.S.	Graphic	Well	PID/FID	Soil Properties: Compressive	Moisture	Liquid	Plasticity	P 200	RQD/
1	GP	2.0		1–5	Lime-like material, gray, moist, no odor. Mixed sand and gravel, black slag and coal, crumbly, moist, no odor.	Fill			6						
2	GP	2.1		5–10	Fine sand with silt, brown, wet, slight sheen and odor, woodchip layer at five feet with sheen.			2" Slot 10 Screen	128						5-6 ft Soil Sample
3	GP	4.1		10–15	Same as above, but no woodchips, slight sheen and strong odor.	SP			435						
4	GP	3.2		15–20					941						
				20–21	END OF BORING-20 FEET										

I herby certify that the information on this form is true and the correct to the best of my knowledge

Signature	Firm
Chris Mark Cole	ENSR Corporation 4500 Park Glen Rd Ste 210 St. Louis Park, MN 55416

State of Wisconsin
Department of Natural Resources

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☐ Other ☐ _____

MONITORING WELL CONSTRUCTION

Form 4400-113A Rev. 7-98

Facility/Project Name: Superior Water Light + Power	Local Grid Location of Well: _____ ft. ☐N. ☐S. _____ ft. ☐E. ☐W.	Well Name: MW-10
Facility License, Permit or Monitoring No.	Local Grid Origin ☐ (estimated: ☐) or Well Location ☐ Lat. ___ ° ___ ' _____ " Long. ___ ° ___ ' _____ " or	Wis. Unique Well No.: JP797 / DNR Well ID No.: ___
Facility ID: _ _ _ _ _ _ _ _	St. Plane _____ ft. N, _____ ft. E. S/C/N	Date Well Installed: 10/13/2004 (m m d d y y y y)
Type of Well: Well Code ___/___	Section Location of Waste/Source: ___ 1/4 of ___ 1/4 of Sec. ___, T. ___ N, R. ___ ☐E ☐W	Well Installed By: Name (first, last) and Firm: Guy Paquette / Matrix Environmental
Distance from Waste/Source _____ ft. / Enf. Stds. Apply ☐	Location of Well Relative to Waste/Source: u ☐ Upgradient s ☐ Sidegradient d ☐ Downgradient n ☐ Not Known	Gov. Lot Number: _____

A. Protective pipe, top elevation _____ ft. MSL

B. Well casing, top elevation _____ ft. MSL

C. Land surface elevation _____ ft. MSL

D. Surface seal, bottom _____ ft. MSL or _____ ft.

12. USCS classification of soil near screen:
GP ☐ GM ☒ GC ☐ GW ☐ SW ☐ SP ☐
SM ☒ SC ☐ ML ☐ MH ☐ CL ☐ CH ☐
Bedrock ☐

13. Sieve analysis performed? ☐ Yes ☒ No

14. Drilling method used: Rotary ☐ 50
Hollow Stem Auger ☒ 41
Other ☐ _____

15. Drilling fluid used: Water ☐ 02 Air ☐ 01
Drilling Mud ☐ 03 None ☒ 99

16. Drilling additives used? ☐ Yes ☒ No
Describe _____

17. Source of water (attach analysis, if required):
Superior Municipal H_2O

E. Bentonite seal, top 1.5 ft. MSL or _____ ft.

F. Fine sand, top _____ ft. MSL or _____ ft.

G. Filter pack, top 2.5 ft. MSL or _____ ft.

H. Screen joint, top 3 ft. MSL or _____ ft.

I. Well bottom 13 ft. MSL or _____ ft.

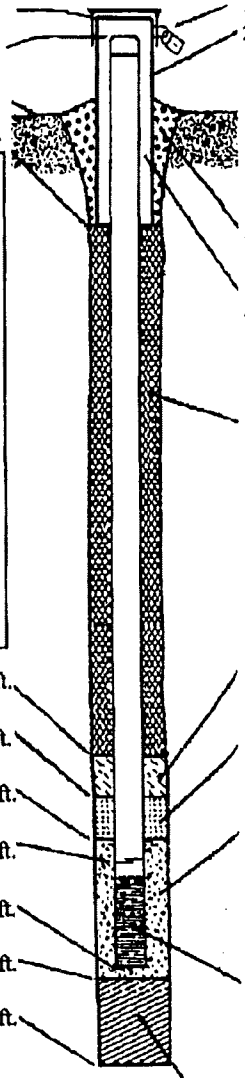
J. Filter pack, bottom 13 ft. MSL or _____ ft.

K. Borehole, bottom 13 ft. MSL or _____ ft.

L. Borehole, diameter 8.25 in.

M. O.D. well casing _____ in.

N. I.D. well casing 2 in.



1. Cap and lock? Flush mount ☐ Yes ☐ No

2. Protective cover pipe:
a. Inside diameter: 8 in.
b. Length: 2 ft.
c. Material: Steel ☒ 04 Other ☐
Steel
d. Additional protection? ☐ Yes ☐ No
If yes, describe: _____

3. Surface seal: Bentonite ☐ 30 Concrete ☒ 01 Other ☐
Portland cement

4. Material between well casing and protective pipe: Bentonite ☐ 30 Other ☒
Portland cement

5. Annular space seal: a. Granular/Chipped Bentonite ☒ 33
b. _____ Lbs/gal mud weight . . . Bentonite-sand slurry ☐ 35
c. _____ Lbs/gal mud weight . . . . . Bentonite slurry ☐ 31
d. _____ % Bentonite . . . . . Bentonite-cement grout ☐ 50
e. _____ Ft^3 volume added for any of the above
f. How installed: Tremie ☐ 01 Tremie pumped ☐ 02 Gravity ☒ 08

6. Bentonite seal: a. Bentonite granules ☐ 33
b. ☐1/4 in. ☒3/8 in. ☐1/2 in. Bentonite chips ☒ 32
c. _____ Other ☐

7. Fine sand material: Manufacturer, product name & mesh size
a. None
b. Volume added _____ ft^3

8. Filter pack material: Manufacturer, product name & mesh size
a. Red Flint
b. Volume added _____ ft^3 2 bags

9. Well casing: Flush threaded PVC schedule 40 ☒ 23 Flush threaded PVC schedule 80 ☐ 24 Other ☐
_____

10. Screen material: Flushe threaded PVC
a. Screen type: Factory cut ☒ 11 Continuous slot ☐ 01 Other ☐
_____
b. Manufacturer _____
c. Slot size: 0.010 in.
d. Slotted length: 10 ft.

11. Backfill material (below filter pack): None ☒ 14 Other ☐
_____

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature: Guy Paquette Firm: Matrix Environmental, LLC

Please complete both Forms 4400-113A and 4400-113B and return them to the appropriate DNR office and bureau. Completion of these reports is required by chs. 160, 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291, 292, 293, 295, and 299, Wis. Stats., failure to file these forms may result in a forfeiture of between $10 and $25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on these forms is not intended to be used for any other purpose. NOTE: See the instructions for more information, including where the completed forms should be sent.

State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION

Route To: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☑ Other ☐

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
SWL&P Phase II Part III	MW-11	MW-11

Boring Drilled By: Name of crew chief (first, last) and Firm	Date Drilling Started	Date Drilling Completed	Drilling Method
Guy Paquette, Matrix Environmental, LLC	10/13/04	10/13/04	HSA

WI Unique Well No.	DNR Well ID No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
JP796		MW-11	602.46	608.9	8 inch

Local Grid Orgin ☐ (estimated) ☐ or Boring Location ☑	Lat	Local Grid Location
State Plane	Long	N ☐ E ☐ S ☐ W ☐

Facility ID	County	County Code	Civil Town/City/or Village
	Douglas		Superior

Sample Number	Sample Type	Sample Length Att. & Recovered (ft)	Blow Counts	Depth In Feet	Soil/ Rock Description	U.S.C.S.	Graphic	Well	PID/FID	Soil Properties: Compressive	Moisture	Liquid	Plasticity	P 200	RQD/
				0	**Ground Surface**										
1	GP	3.2		0–3	Lime-like material, gray, moist, no odor. Black coal and slag-like material, crumbly, slightly moist, no odor.	Fill			2.1						
2	GP	4.1		3–10	Fine sand with fines and organic silt layers 1 to 3 inches thick, well sorted, wet, no odor, brown.	SP-SM			7.6						6-7 ft Soil Sample
3	GP	3.8		10–15	Same as above, but no silt layers	SP			13.1						
4	GP	5.0		15–20	Fine to coarse sand, poorly sorted, brown, wet, no odor.	SW			8.8						
				20	END OF BORING-20 FEET										

Well detail: 2" Slot 10 Screen

I herby certify that the information on this form is true and the correct to the best of my knowledge

Signature	Firm
Chris Bock	ENSR Corporation 4500 Park Glen Rd Ste 210 St. Louis Park, MN 55416

State of Wisconsin
Department of Natural Resources

Route to: Watershed/Wastewater ☐ Waste Management ☐ Remediation/Redevelopment ☐ Other ☐ _____

MONITORING WELL CONSTRUCTION

Form 4400-113A Rev. 7-98

Facility/Project Name: Superior Water Light & Power	Local Grid Location of Well: _____ ft. ☐N. ☐S. _____ ft. ☐E. ☐W.	Well Name: MW-11
Facility License, Permit or Monitoring No.	Local Grid Origin ☐ (estimated: ☐) or Well Location ☐ Lat. ° ' " Long. ° ' " or	Wis. Unique Well No.: JP796 / DNR Well ID No.: ____
Facility ID: ____	St. Plane _____ ft. N, _____ ft. E. S/C/N	Date Well Installed: 10/13/2004 (m m d d y y y y)
Type of Well: Well Code ____/____	Section Location of Waste/Source: ____ 1/4 of ____ 1/4 of Sec. ____, T. ____ N, R. ____ ☐E ☐W	Well Installed By: Name (first, last) and Firm: Guy Paquette, Matrix Environmental, LLC
Distance from Waste/Source _____ ft. / Enf. Stds. Apply ☐	Location of Well Relative to Waste/Source: u ☐ Upgradient s ☒ Sidegradient d ☐ Downgradient n ☐ Not Known	Gov. Lot Number: ____

A. Protective pipe, top elevation _____ ft. MSL

B. Well casing, top elevation _____ ft. MSL

C. Land surface elevation _____ ft. MSL

D. Surface seal, bottom _____ ft. MSL or _____ ft.

12. USCS classification of soil near screen:
GP ☐ GM ☐ GC ☐ GW ☐ SW ☐ SP ☐
SM ☒ SC ☐ ML ☐ MH ☐ CL ☐ CH ☐
Bedrock ☐

13. Sieve analysis performed? ☐ Yes ☒ No

14. Drilling method used: Rotary ☐ 50 / Hollow Stem Auger ☒ 41 / Other ☐ _____

15. Drilling fluid used: Water ☐ 02 / Air ☐ 01 / Drilling Mud ☐ 03 / None ☒ 99

16. Drilling additives used? ☐ Yes ☒ No

Describe _____

17. Source of water (attach analysis, if required):
Superior Municipal H_2O

E. Bentonite seal, top 3 ft. MSL or _____ ft.

F. Fine sand, top _____ ft. MSL or _____ ft.

G. Filter pack, top 3.5 ft. MSL or _____ ft.

H. Screen joint, top 3.5 ft. MSL or _____ ft.

I. Well bottom 13.5 ft. MSL or _____ ft.

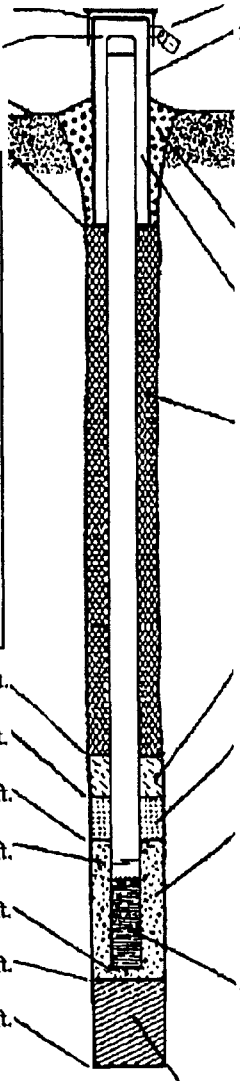
J. Filter pack, bottom 13.5 ft. MSL or _____ ft.

K. Borehole, bottom 13.5 ft. MSL or _____ ft.

L. Borehole, diameter 8.25 in.

M. O.D. well casing 2.25 in.

N. I.D. well casing 2 in.



1. Cap and lock? ☒ Yes ☐ No

2. Protective cover pipe:
a. Inside diameter: 6 in.
b. Length: 7 ft.
c. Material: Steel ☒ 04 / Other ☐ ____
d. Additional protection? ☐ Yes ☒ No
If yes, describe: _____

3. Surface seal: Bentonite ☐ 30 / Concrete ☒ 01 / Other ☐ ____
Portland cement

4. Material between well casing and protective pipe: Bentonite ☐ 30 / Other ☒ ____
Portland cement

5. Annular space seal: a. Granular/Chipped Bentonite ☒ 33
b. _____ Lbs/gal mud weight . . . Bentonite-sand slurry ☐ 35
c. _____ Lbs/gal mud weight . . . . . Bentonite slurry ☐ 31
d. _____ % Bentonite . . . . . Bentonite-cement grout ☐ 50
e. _____ Ft^3 volume added for any of the above 1/4 bag
f. How installed: Tremie ☐ 01 / Tremie pumped ☐ 02 / Gravity ☒ 08

6. Bentonite seal: a. Bentonite granules ☐ 33
b. ☐1/4 in. ☒3/8 in. ☐1/2 in. Bentonite chips ☒ 32
c. _____ Other ☐ ____

7. Fine sand material: Manufacturer, product name & mesh size
a. None
b. Volume added _____ ft^3 2 bags

8. Filter pack material: Manufacturer, product name & mesh size
a. Red Flint
b. Volume added _____ ft^3 3 bags

9. Well casing: Flush threaded PVC schedule 40 ☒ 23 / Flush threaded PVC schedule 80 ☐ 24 / Other ☐ ____

10. Screen material: Flush threaded PVC
a. Screen type: Factory cut ☒ 11 / Continuous slot ☐ 01 / Other ☐ ____
b. Manufacturer _____
c. Slot size: 0.010 in.
d. Slotted length: 10 ft.

11. Backfill material (below filter pack): None ☒ 14 / Other ☐ ____

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature: Guy Paquette Firm: Matrix Environmental, LLC

Please complete both Forms 4400-113A and 4400-113B and return them to the appropriate DNR office and bureau. Completion of these reports is required by chs. 160, 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291, 292, 293, 295, and 299, Wis. Stats., failure to file these forms may result in a forfeiture of between $10 and $25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on these forms is not intended to be used for any other purpose. NOTE: See the instructions for more information, including where the completed forms should be sent.

State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION

Route To: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☑ Other ☐

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
SWL&P Phase II Part III	MW-12	MW-12

Boring Drilled By: Name of crew chief (first, last) and Firm	Date Drilling Started	Date Drilling Completed	Drilling Method
Guy Paquette, Matrix Environmental, LLC	10/15/04	10/15/04	HSA

WI Unique Well No.	DNR Well ID No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
JP800		MW-12	602.46	607.9	8 inch

Local Grid Orgin ☐ (estimated) ☐ or Boring Location ☑	Lat / Long	Local Grid Location
State Plane		N ☐ S ☐ E ☐ W ☐

Facility ID	County	County Code	Civil Town/City/or Village
	Douglas		Superior

Sample Number	Sample Type	Sample Length Att. & Recovered (ft)	Blow Counts	Depth In Feet	Soil/ Rock Description	U.S.C.S.	Graphic	Well	PID/FID	Soil Properties: Compressive	Moisture	Liquid	Plasticity	P 200	RQD/
1	GP	4.2		1–5	Mixed sand and gravel, moist, brown, no odor. Silty fine sand, brown, moist, well sorted, no odor.	SW			4.6						4-5 ft Soil Sample
2	GP	2.2		5–10	Same as above, but wet at 6 feet.	SM		2" Slot 10 Screen	4.3						
3	GP	2.6		10–15					6.4						
4	GP	1.5		15–20					3.4						
				20	END OF BORING-20 FEET										

I herby certify that the information on this form is true and the correct to the best of my knowledge

Signature	Firm
	ENSR Corporation 4500 Park Glen Rd Ste 210 St. Louis Park, MN 55416

State of Wisconsin
Department of Natural Resources

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☐ Other ☐ _____

MONITORING WELL CONSTRUCTION
Form 4400-113A Rev. 7-98

Facility/Project Name: Superior Water Light & Power
Facility License, Permit or Monitoring No.:
Facility ID:
Type of Well — Well Code: 1
Distance from Waste/Source: _____ ft. | Enf. Stds. Apply ☐

Local Grid Location of Well: _____ ft. ☐N. ☐S. _____ ft. ☐E. ☐W.
Local Grid Origin ☐ (estimated: ☐) or Well Location ☐
Lat. _____ ° _____ ' _____ " Long. _____ ° _____ ' _____ " or
St. Plane _____ ft. N, _____ ft. E. S/C/N
Section Location of Waste/Source: _____ 1/4 of _____ 1/4 of Sec. _____, T. _____ N, R. _____ ☐E ☐W
Location of Well Relative to Waste/Source: u ☐ Upgradient s ☒ Sidegradient d ☐ Downgradient n ☐ Not Known
Gov. Lot Number: _____

Well Name: MW-12
Wis. Unique Well No.: JP800 | DNR Well ID No.: _____
Date Well Installed: 10/15/2004 (m m d d y y y y)
Well Installed By: Name (first, last) and Firm
Guy Paquette
Matrix Environmental

A. Protective pipe, top elevation _____ ft. MSL
B. Well casing, top elevation _____ ft. MSL
C. Land surface elevation _____ ft. MSL
D. Surface seal, bottom _____ ft. MSL or _____ ft.

12. USCS classification of soil near screen:
GP ☐ GM ☐ GC ☐ GW ☐ SW ☐ SP ☐
SM ☐ SC ☐ ML ☐ MH ☐ CL ☐ CH ☐
Bedrock ☐

13. Sieve analysis performed? ☐ Yes ☐ No

14. Drilling method used: Rotary ☐ 50 | Hollow Stem Auger ☒ 41 | Other ☐ _____

15. Drilling fluid used: Water ☐ 02 | Air ☐ 01 | Drilling Mud ☐ 03 | None ☒ 99

16. Drilling additives used? ☐ Yes ☒ No
Describe _____

17. Source of water (attach analysis, if required):
Superior Municipal Water

E. Bentonite seal, top 1.5 ft. MSL or _____ ft.
F. Fine sand, top _____ ft. MSL or _____ ft.
G. Filter pack, top 2.5 ft. MSL or _____ ft.
H. Screen joint, top 4 ft. MSL or _____ ft.
I. Well bottom 14 ft. MSL or _____ ft.
J. Filter pack, bottom 14 ft. MSL or _____ ft.
K. Borehole, bottom 14 ft. MSL or _____ ft.
L. Borehole, diameter 8.25 in.
M. O.D. well casing _____ in.
N. I.D. well casing 2 in.

1. Cap and lock? ☐ Yes ☒ No
2. Protective cover pipe: Flush mount
a. Inside diameter: _____ in.
b. Length: _____ ft.
c. Material: _____ Steel ☐ 04 | Other ☐
d. Additional protection? ☐ Yes ☒ No
If yes, describe: _____
3. Surface seal: Portland cement | Bentonite ☐ 30 | Concrete ☐ 01 | Other ☒
4. Material between well casing and protective pipe: Portland cement | Bentonite ☐ 30 | Other ☒
5. Annular space seal: a. Granular/Chipped Bentonite ☐ 33
b. _____ Lbs/gal mud weight . . . Bentonite-sand slurry ☐ 35
c. _____ Lbs/gal mud weight . . . . . Bentonite slurry ☐ 31
d. _____ % Bentonite . . . . . Bentonite-cement grout ☐ 50
e. _____ Ft^3 volume added for any of the above
f. How installed: Tremie ☐ 01 | Tremie pumped ☐ 02 | Gravity ☐ 08
6. Bentonite seal: a. Bentonite granules ☐ 33
b. ☐1/4 in. ☒3/8 in. ☐1/2 in. Bentonite chips ☒ 32
c. _____ Other ☐
7. Fine sand material: Manufacturer, product name & mesh size
a. _____
b. Volume added _____ ft^3
8. Filter pack material: Manufacturer, product name & mesh size
a. Red Flint
b. Volume added _____ ft^3 4 bags
9. Well casing: Flush threaded PVC schedule 40 ☒ 23 | Flush threaded PVC schedule 80 ☐ 24 | Other ☐ _____
10. Screen material: Flush threaded PVC
a. Screen type: Factory cut ☒ 11 | Continuous slot ☐ 01 | Other ☐ _____
b. Manufacturer _____
c. Slot size: 0.010 in.
d. Slotted length: 10 ft.
11. Backfill material (below filter pack): None ☒ 14 | Other ☐ _____

I hereby certify that the information on this form is true and correct to the best of my knowledge.
Signature: Guy Paquette | Firm: Matrix Environmental, LLC

Please complete both Forms 4400-113A and 4400-113B and return them to the appropriate DNR office and bureau. Completion of these reports is required by chs. 160, 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291, 292, 293, 295, and 299, Wis. Stats., failure to file these forms may result in a forfeiture of between $10 and $25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on these forms is not intended to be used for any other purpose. NOTE: See the instructions for more information, including where the completed forms should be sent.

ENSR INTERNATIONAL

APPENDIX B

Groundwater Collection Logs

Superior Water Light and Power MGP
Phase II, Part III
Superior, Wisconsin
March 2005

STABILIZATION TEST

Site SWLP MGP Date 1/17/04 Well No. MW-5

Pumping Rate (gallons/minute) 0.9 L/min

Type of Pump Peristaltic

Water Level Before Pumping (nearest 0.01 ft. below top of casing) ~~20.34~~ 7.06 Well Depth 20.34

Approximate Well Location North of MGP building

Calculated Volume of Water in Casing 13.28 Ft x 0.163 = 2.16 gallons

Weather Conditions overcast, 50°

Time	pH (units)	Temperature-Corrected Conductance (umhos/cm)	Temperature (°C)	Water Level (nearest 0.01 ft.) DO ORP	Cumulative Volume of Water Removed From Well (measured in gallons)
1650	9.42	0.786	10.31	4.93 141	OL
~~1701~~	7.54	1.320	10.11	~~1.84~~ 1.71 136	4.5
1704	7.31	1.371	10.11	~~3.88~~ 1.62 133	7.2
1710	7.33	1.412	10.13	0.74 121	12.6
1714	7.35	1.426	10.11	0.27 113	16.2

Comments: Analyzed for PAH + BTEX

Well diameter	Gallons per foot of casing
1 1/4"	0.0625
2"	0.163
4"	0.653
6"	1.47
8"	2.61
12"	5.87

Chris Boeck 1/17/04

Signature Date

MR00450

STABILIZATION TEST

Site SWLP MGP Date 11/17/04 Well No. MW-6

Pumping Rate (gallons/minute) 0.9 L/min

Type of Pump Peristaltic

Water Level Before Pumping (nearest 0.01 ft. below top of casing) 9.67 Well Depth 20.34

Approximate Well Location North of MGP building

Calculated Volume of Water in Casing 10.67 x 0.163 = 1.74

Weather Conditions

Time	pH (units)	Temperature-Corrected Conductance (umhos/cm)	Temperature (°C)	Water Level (nearest 0.01 ft.) DO ORP	Cumulative Volume of Water Removed From Well (measured in gallons)
1630	12.19	7.19	10.27	3.01 139	0L
1634	12.17	7.70	10.49	0.65 131	3.6L
1637	12.15	8.11	10.42	0.39 128	6.3L
1640	12.15	8.31	10.40	0.27 126	9 L

Comments: Analyzed for BTEX + PAH

Well diameter	Gallons per foot of casing
1 1/4"	0.0625
2"	0.163
4"	0.653
6"	1.47
8"	2.61
12"	5.87

Chris Boeh Cole 11/17/04

Signature Date

990450

STABILIZATION TEST

Site SWLP MGP Date 11/17/04 Well No. MW-7

Pumping Rate (gallons/minute) .9 L/min

Type of Pump Peristaltic

Water Level Before Pumping (nearest 0.01 ft. below top of casing) 11.16 Well Depth 20.30

Approximate Well Location Northeast of MGP building

Calculated Volume of Water in Casing 9.14 x 0.163 = 1.49

Weather Conditions

Time	pH (units)	Temperature-Corrected Conductance (umhos/cm)	Temperature (°C)	Water Level (nearest 0.01 ft.) DO ORP	Cumulative Volume of Water Removed From Well (measured in gallons)
1600	6.74	1.74	9.28	2.81 226	0L
1604	8.66	1.76	10.04	0.56 177	3.6L
1607	8.99	1.93	10.05	0.25 151	6.3L
1612	8.97	1.991	10.03	0.19 137	10.8L
1616	8.93	1.87	10.04	0.17 125	14.4L

Comments: Analyzed for BTEX + PAH

lt. yellowish color

Well diameter	Gallons per foot of casing
1 1/4"	0.0625
2"	0.163
4"	0.653
6"	1.47
8"	2.61
12"	5.87

Chris Beck Cole 11/17/04

Signature Date

190450

STABILIZATION TEST

Site SWLP MGP Date 11/16/04 Well No. MW-8

Pumping Rate (gallons/minute) .9L/min

Type of Pump Peristaltic

Water Level Before Pumping (nearest 0.01 ft. below top of casing) 11.73 Well Depth 18.34

Approximate Well Location North of Lakehead Concrete

Calculated Volume of Water in Casing 6.61 x 0.163 = 1.08 gal

Weather Conditions overcast, 50°

Time	pH (units)	Temperature-Corrected Conductance (umhos/cm)	Temperature (°C)	Water Level (nearest 0.01 ft.) DO ORP	Cumulative Volume of Water Removed From Well (measured in gallons)
1628	12.54	6.71	9.67	1.10 -30	0L
1630	12.47	6.15	9.80	0.26 -39	2.7L
1634	12.48	6.57	9.87	0.09 -46	6.3L
1637	12.51	7.13 15	9.88	0.05 -50	9L
1640	12.52	7.46	9.89	0.05 -55	11.7L
1642	12.54	7.60	9.89	0.04 -57	13.5L

Comments: Analyzed for BTEX + PAH

minor sheen, dk brown, slight odor

Well diameter	Gallons per foot of casing
1 1/4"	0.0625
2"	0.163
4"	0.653
6"	1.47
8"	2.61
12"	5.87

Chris Boehn Carlson 11/16/04

Signature Date

700450

STABILIZATION TEST

Site SWLP MGP Date 11/16/04 Well No. MW-9

Pumping Rate (gallons/minute) ~9L

Type of Pump Perstaltic

Water Level Before Pumping (nearest 0.01 ft. below top of casing) 8.39 Well Depth 20.00

Approximate Well Location North of Lakehead

Calculated Volume of Water in Casing 11.61 x 0.163 = 1.89 gal

Weather Conditions overcast, 50°

Time	pH (units)	Temperature-Corrected Conductance (umhos/cm)	Temperature (°C)	Water Level (nearest 0.01 ft.) DO ORP	Cumulative Volume of Water Removed From Well (measured in gallons)
1541	10.26	1.72	10.24	0.16 -164	0L
1545	11.97	2.22	11.05	0.02 -213	3.6L
1549	11.86	2.20	11.08	0.02 -191	7.2L
1552	11.85	2.19	11.07	0.02 -182	9.9L

Comments: Analyzed PAH + BTEX

Sheen, dark brown, slight odor

Well diameter	Gallons per foot of casing
1 1/4"	0.0625
2"	0.163
4"	0.653
6"	1.47
8"	2.61
12"	5.87

Chris Bock Carlson 11/16/04

Signature Date

MP00450

STABILIZATION TEST

Site SWLP MOP Date 11/16/04 Well No. MW-10

Pumping Rate (gallons/minute) .9 L/min

Type of Pump Peristaltic

Water Level Before Pumping (nearest 0.01 ft. below top of casing) 3.19 Well Depth 11.57

Approximate Well Location South of WWTP screen building

Calculated Volume of Water in Casing ~~sout~~ 8.38 x 0.163 = 1.37 gal.

Weather Conditions overcast, 50°

Time	pH (units)	Temperature-Corrected Conductance (umhos/cm)	Temperature (°C)	Water Level (nearest 0.01 ft.) DO ORP	Cumulative Volume of Water Removed From Well (measured in gallons)
1517	7.84	1.097	9.52	0.40 120	0L
1520	7.03	1.042	9.85	0.09 78	2.7L
1524	6.90	1.041	9.92	0.06 22	6.3L
1527	6.89	1.039	9.93	0.05 -9	9.0L

Comments: Analyzed for PAH + BTEX

slight sheen and odor.

Well diameter	Gallons per foot of casing
1 1/4"	0.0625
2"	0.163
4"	0.653
6"	1.47
8"	2.61
12"	5.87

Chris Beeler Cahn 11/16/04

Signature Date

"990450

STABILIZATION TEST

Site SWLP MGP Date 11/16/04 Well No. MW-11

Pumping Rate (gallons/minute) ~.9 L/min

Type of Pump Perstaltic

Water Level Before Pumping (nearest 0.01 ft. below top of casing) 7.43 Well Depth 14.38

Approximate Well Location Superior Bay Boat slip

Calculated Volume of Water in Casing 6.95 x 0.163 = 1.13 gal

Weather Conditions overcast, 50°

Time	pH (units)	Temperature-Corrected Conductance (umhos/cm)	Temperature (°C)	Water Level (nearest 0.01 ft.) DO	Water Level (nearest 0.01 ft.) ORP	Cumulative Volume of Water Removed From Well (measured in gallons)
1449	7.66	1.48	10.17	1.53	140	0
1452	6.77	1.453	10.31	0.13	145	2.7 L
1456	6.45	1.442	10.29	0.08	155	6.3 L
1459	6.40	1.447	10.30	0.08	157	9 L
1601	6.39	1.440	10.30	0.08	158	10.8L

Comments: Analyzed for PAH + BTEX

Well diameter	Gallons per foot of casing
1 1/4"	0.0625
2"	0.163
4"	0.653
6"	1.47
8"	2.61
12"	5.87

Chris Beck Cahn 11/16/04

Signature Date

990450

STABILIZATION TEST

Site SWLP MGP Date 11/16/04 Well No. MW-12

Pumping Rate (gallons/minute) .9 L/min

Type of Pump Peristaltic

Water Level Before Pumping (nearest 0.01 ft. below top of casing) 5.18 Well Depth 12.78

Approximate Well Location Near WWTP lagoon

Calculated Volume of Water in Casing 7.60 x 0.163 = 1.24

Weather Conditions overcast, 50°

Time	pH (units)	Temperature-Corrected Conductance (umhos/cm) mS/cm	Temperature (°C)	Water Level (nearest 0.01 ft.) DO mg/L ORP mV	Cumulative Volume of Water Removed From Well (measured in gallons)
1418	6.21	1.52	10.57	3.11 226	0 L
1423	6.44	1.54	10.67	0.32 201	4.5 L
1427	6.48	1.54	10.66	0.18 187	8.1 L
1431	6.49	1.52	10.65	0.15 177	11.7 L

Comments: Analyzed for BTEX + PAH

Well diameter	Gallons per foot of casing
1 1/4"	0.0625
2"	0.163
4"	0.653
6"	1.47
8"	2.61
12"	5.87

Chris Beck Gale 11/16/04

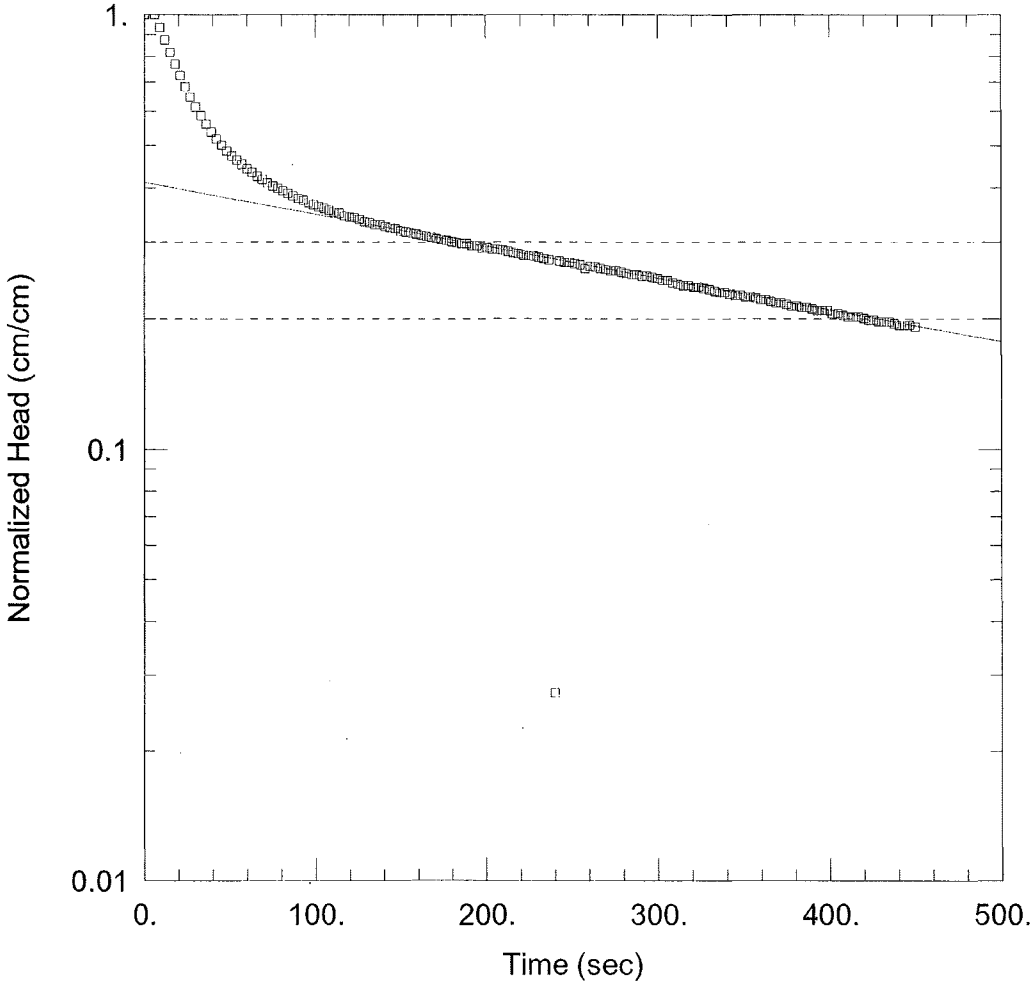
Signature Date

100450

APPENDIX C

Slug Test Results

Superior Water Light and Power MGP
Phase II, Part III
Superior, Wisconsin
March 2005



WELL TEST ANALYSIS

Data Set: J:\Projects\09413 Misc Projects\09413-098 Superior MGP\Slug Tests\MW-5.aqt
Date: 12/22/04 Time: 14:17:43

PROJECT INFORMATION

Company: ENSR
Client: SWL&P
Project: 09413-098
Location: Superior, WI
Test Well: MW-5
Test Date: 11/20/01

AQUIFER DATA

Saturated Thickness: 322. cm Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-5)

Initial Displacement: 57.4 cm
Total Well Penetration Depth: 533. cm
Casing Radius: 2.62 cm
Static Water Column Height: 322. cm
Screen Length: 305. cm
Wellbore Radius: 2.62 cm

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 7.625E-5 cm/sec
y0 = 23.64 cm

Data Set: J:\Projects\09413 Misc Projects\09413-098 Superior MGP\Slug Tests\MW-5.aqt
Date: 12/22/04
Time: 14:17:51

PROJECT INFORMATION

Company: ENSR
Client: SWL&P
Project: 09413-098
Location: Superior, WI
Test Date: 11/20/01
Test Well: MW-5

AQUIFER DATA

Saturated Thickness: 322. cm
Anisotropy Ratio (Kz/Kr): 1.

SLUG TEST WELL DATA

Test Well: : MW-5

X Location: 0. cm
Y Location: 0. cm

Initial Displacement: 57.4 cm
Static Water Column Height: 322. cm
Casing Radius: 2.62 cm
Wellbore Radius: 2.62 cm
Well Skin Radius: 2.62 cm
Screen Length: 305. cm
Total Well Penetration Depth: 533. cm

No. of Observations: 149

Observation Data

Time (sec)	Displacement (cm)	Time (sec)	Displacement (cm)
6.	57.4	231.	15.9
9.	53.7	234.	15.8
12.	50.2	237.	15.7
15.	47.	240.	1.57
18.	44.2	243.	15.6
21.	41.6	246.	15.5
24.	39.2	249.	15.5
27.	37.1	252.	15.4
30.	35.2	255.	15.3
33.	33.7	258.	15.
36.	32.2	261.	15.2
39.	30.9	264.	15.1
42.	29.8	267.	15.
45.	28.8	270.	14.9
48.	27.9	273.	14.8
51.	27.2	276.	14.8
54.	26.6	279.	14.7
57.	26.	282.	14.6
60.	25.4	285.	14.5
63.	24.9	288.	14.5
66.	24.4	291.	14.4
69.	24.	294.	14.4
72.	23.6	297.	14.3
75.	23.2	300.	14.2
78.	22.9	303.	14.1
81.	22.6	306.	14.1
84.	22.3	309.	13.9

Time (sec)	Displacement (cm)	Time (sec)	Displacement (cm)
87.	22.	312.	13.8
90.	21.7	315.	13.7
93.	21.5	318.	13.7
96.	21.2	321.	13.6
99.	21.	324.	13.6
102.	20.8	327.	13.5
105.	20.6	330.	13.4
108.	20.4	333.	13.3
111.	20.2	336.	13.2
114.	20.1	339.	13.2
117.	19.8	342.	13.1
120.	19.7	345.	13.
123.	19.6	348.	13.
126.	19.4	351.	12.9
129.	19.2	354.	12.9
132.	19.1	357.	12.8
135.	18.9	360.	12.7
138.	18.9	363.	12.7
141.	18.7	366.	12.6
144.	18.6	369.	12.5
147.	18.5	372.	12.5
150.	18.3	375.	12.4
153.	18.2	378.	12.3
156.	18.1	381.	12.3
159.	18.	384.	12.2
162.	17.9	387.	12.2
165.	17.8	390.	12.1
168.	17.7	393.	12.
171.	17.6	396.	12.
174.	17.5	399.	12.
177.	17.4	402.	11.8
180.	17.3	405.	11.8
183.	17.2	408.	11.7
186.	17.1	411.	11.6
189.	17.1	414.	11.6
192.	16.9	417.	11.6
195.	16.9	420.	11.5
198.	16.7	423.	11.4
201.	16.7	426.	11.4
204.	16.6	429.	11.3
207.	16.6	432.	11.3
210.	16.5	435.	11.3
213.	16.4	438.	11.2
216.	16.3	441.	11.1
219.	16.2	444.	11.1
222.	16.1	447.	11.1
225.	16.	450.	11.
228.	16.		

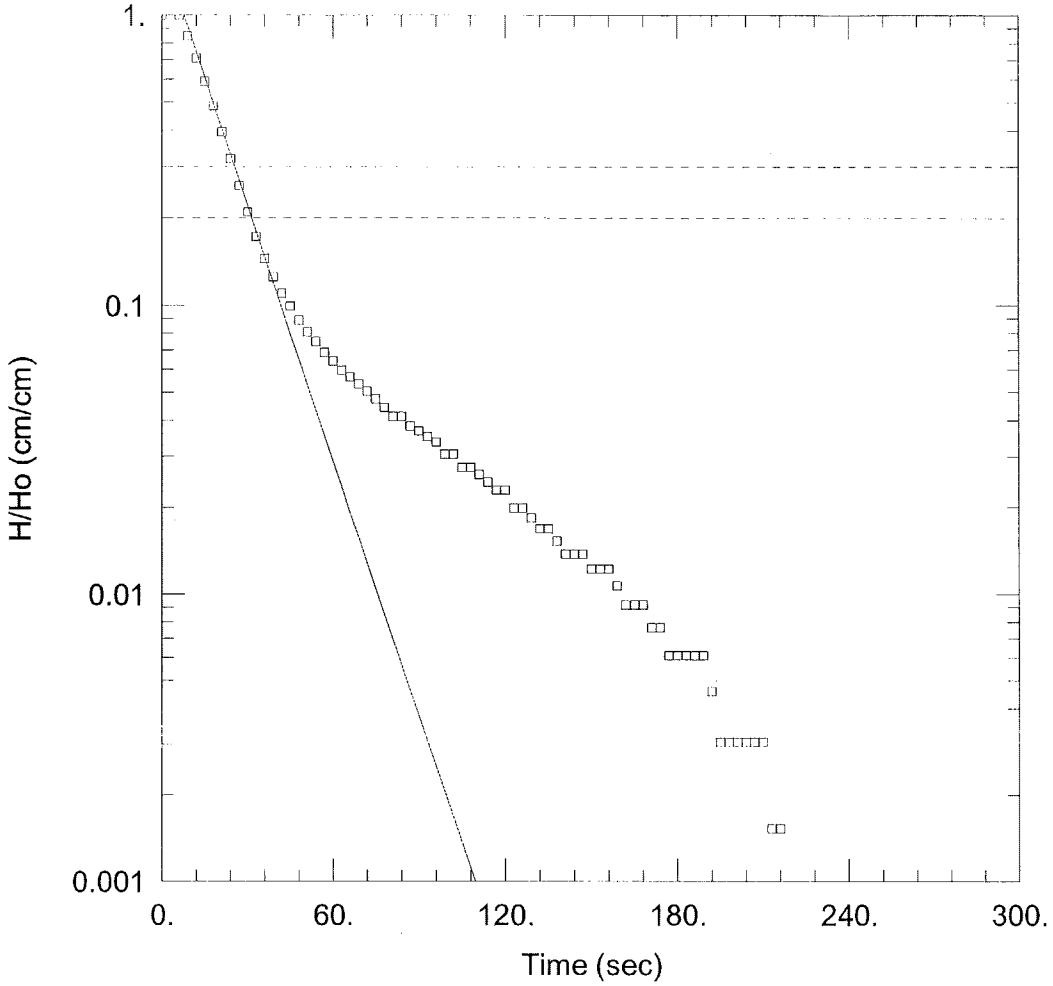
SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
Shape Factor: 4.025

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
K	7.625E-5	cm/sec
y0	23.64	cm



SUPERIOR SLUG MW-6

Data Set: J:\Projects\09413 Misc Projects\09413-098 Superior MGP\Slug Tests\MW-6.aqt
Date: 12/22/04 Time: 13:02:28

PROJECT INFORMATION

Company: ENSR
Client: Superior MGP
Project: 9413-098-200
Location: Superior, WI
Test Well: MW-6
Test Date: 11/20/01

AQUIFER DATA

Saturated Thickness: 262. cm Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-6)

Initial Displacement: 65.4 cm
Total Well Penetration Depth: 533. cm
Casing Radius: 2.62 cm
Static Water Column Height: 262. cm
Screen Length: 305. cm
Wellbore Radius: 2.62 cm
Gravel Pack Porosity: 0.35

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 0.003071 cm/sec
y0 = 110.1 cm

Data Set: J:\Projects\09413 Misc Projects\09413-098 Superior MGP\Slug Tests\MW-6.aqt
Title: Superior Slug MW-6
Date: 12/22/04
Time: 13:02:35

PROJECT INFORMATION

Company: ENSR
Client: Superior MGP
Project: 9413-098-200
Location: Superior, WI
Test Date: 11/20/01
Test Well: MW-6

AQUIFER DATA

Saturated Thickness: 262. cm
Anisotropy Ratio (Kz/Kr): 1.

SLUG TEST WELL DATA

Test Well: : MW-6

X Location: 0. cm
Y Location: 0. cm

Initial Displacement: 65.4 cm
Static Water Column Height: 262. cm
Casing Radius: 2.62 cm
Wellbore Radius: 2.62 cm
Well Skin Radius: 2.62 cm
Screen Length: 305. cm
Total Well Penetration Depth: 533. cm
Corrected Casing Radius (Bouwer-Rice Method): 2.62 cm
Gravel Pack Porosity: 0.35

No. of Observations: 71

Observation Data

Time (sec)	Displacement (cm)	Time (sec)	Displacement (cm)
6.	65.4	114.	1.6
9.	55.3	117.	1.5
12.	46.5	120.	1.5
15.	38.7	123.	1.3
18.	31.8	126.	1.3
21.	25.9	129.	1.2
24.	20.9	132.	1.1
27.	16.9	135.	1.1
30.	13.7	138.	1.
33.	11.3	141.	0.9
36.	9.5	144.	0.9
39.	8.2	147.	0.9
42.	7.2	150.	0.8
45.	6.5	153.	0.8
48.	5.8	156.	0.8
51.	5.3	159.	0.7
54.	4.9	162.	0.6
57.	4.5	165.	0.6
60.	4.2	168.	0.6
63.	3.9	171.	0.5
66.	3.7	174.	0.5
69.	3.5	177.	0.4
72.	3.3	180.	0.4
75.	3.1	183.	0.4

Time (sec)	Displacement (cm)	Time (sec)	Displacement (cm)
78.	2.9	186.	0.4
81.	2.7	189.	0.4
84.	2.7	192.	0.3
87.	2.5	195.	0.2
90.	2.4	198.	0.2
93.	2.3	201.	0.2
96.	2.2	204.	0.2
99.	2.	207.	0.2
102.	2.	210.	0.2
105.	1.8	213.	0.1
108.	1.8	216.	0.1
111.	1.7		

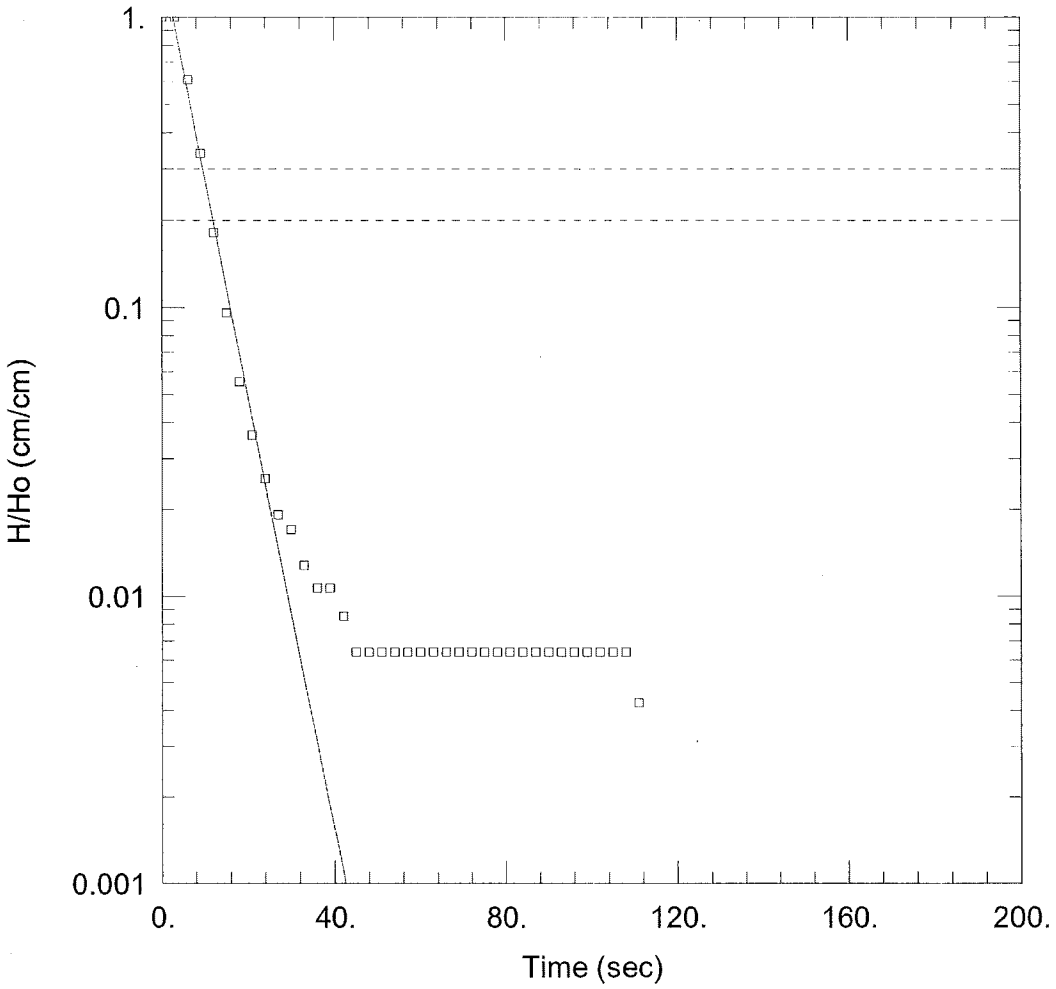
SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
Shape Factor: 4.025

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
K	0.003071	cm/sec
y0	110.1	cm



SUPERIOR SLUG MW-7

Data Set: J:\...\Superior Slug MW-7.aqt
Date: 12/22/04 Time: 14:25:29

PROJECT INFORMATION

Company: ENSR
Client: Superior MGP
Project: 9413-098-200
Location: Superior, WI
Test Well: MW-7
Test Date: 11/20/01

AQUIFER DATA

Saturated Thickness: 210. cm Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-7)

Initial Displacement: 46.9 cm
Total Well Penetration Depth: 518. cm
Casing Radius: 2.62 cm
Static Water Column Height: 210. cm
Screen Length: 305. cm
Wellbore Radius: 2.62 cm

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.007789 cm/sec y0 = 72.49 cm

Data Set: J:\Projects\09413 Misc Projects\09413-098 Superior MGP\Phase II Documents\Superior Slug MW-7.a
Title: Superior Slug MW-7
Date: 12/22/04
Time: 14:25:39

PROJECT INFORMATION

Company: ENSR
Client: Superior MGP
Project: 9413-098-200
Location: Superior, WI
Test Date: 11/20/01
Test Well: MW-7

AQUIFER DATA

Saturated Thickness: 210. cm
Anisotropy Ratio (Kz/Kr): 1.

SLUG TEST WELL DATA

Test Well: : MW-7

X Location: 0. cm
Y Location: 0. cm

Initial Displacement: 46.9 cm
Static Water Column Height: 210. cm
Casing Radius: 2.62 cm
Wellbore Radius: 2.62 cm
Well Skin Radius: 2.62 cm
Screen Length: 305. cm
Total Well Penetration Depth: 518. cm

No. of Observations: 37

Observation Data

Time (sec)	Displacement (cm)	Time (sec)	Displacement (cm)
3.	46.9	60.	0.3
6.	28.6	63.	0.3
9.	15.9	66.	0.3
12.	8.5	69.	0.3
15.	4.5	72.	0.3
18.	2.6	75.	0.3
21.	1.7	78.	0.3
24.	1.2	81.	0.3
27.	0.9	84.	0.3
30.	0.8	87.	0.3
33.	0.6	90.	0.3
36.	0.5	93.	0.3
39.	0.5	96.	0.3
42.	0.4	99.	0.3
45.	0.3	102.	0.3
48.	0.3	105.	0.3
51.	0.3	108.	0.3
54.	0.3	111.	0.2
57.	0.3		

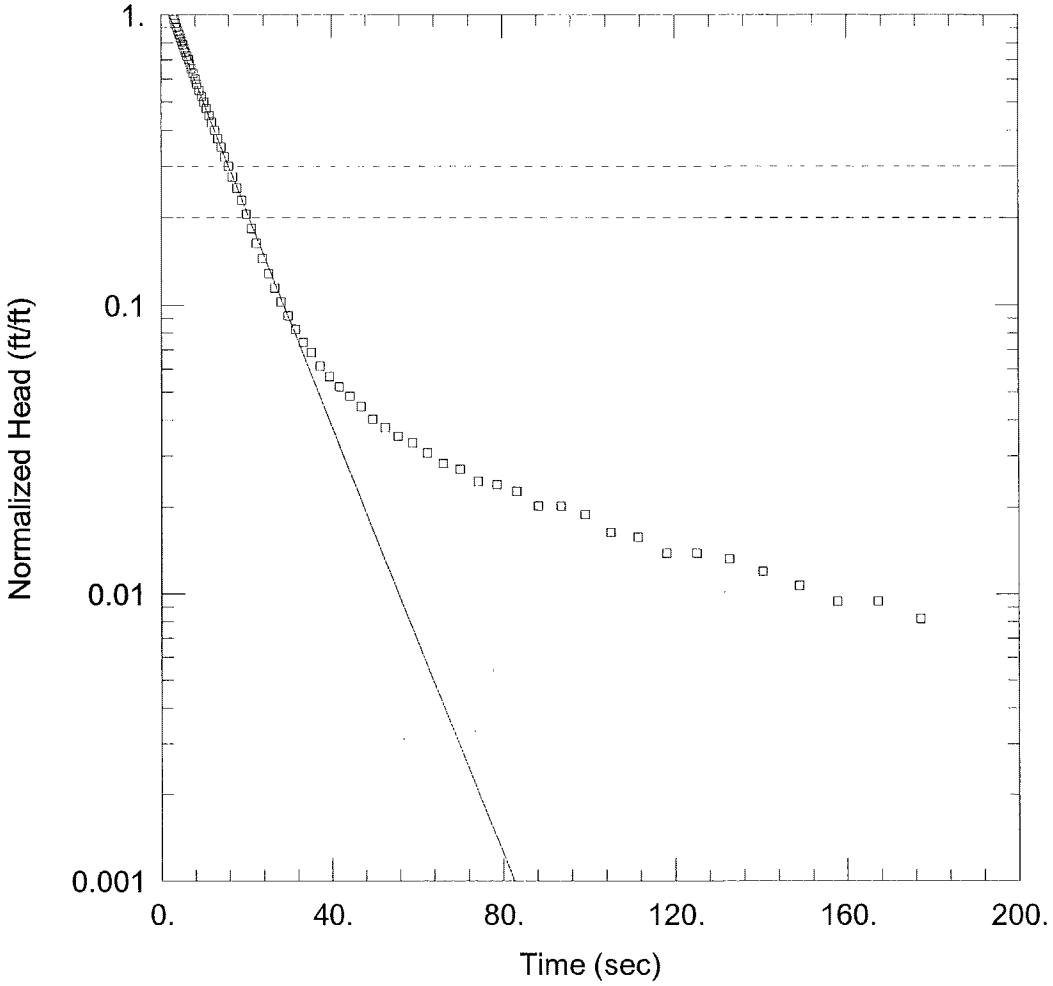
SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
Shape Factor: 4.007

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
K	0.007789	cm/sec
y0	72.49	cm



WELL TEST ANALYSIS

Data Set: J:\Projects\09413 Misc Projects\09413-098 Superior MGP\Slug Tests\Data\MW-8.aqt
Date: 12/22/04 Time: 14:28:29

PROJECT INFORMATION

Company: ENSR
Client: SWL&P
Project: 09413-098-600
Location: Superior, WI
Test Well: MW-8
Test Date: 11/17/04

AQUIFER DATA

Saturated Thickness: 6.56 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-8)

Initial Displacement: -1.591 ft
Total Well Penetration Depth: 6.56 ft
Casing Radius: 0.086 ft
Static Water Column Height: 8.52 ft
Screen Length: 10. ft
Wellbore Radius: 0.086 ft
Gravel Pack Porosity: 0.35

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.003264 cm/sec
y0 = -1.854 ft

Data Set: J:\Projects\09413 Misc Projects\09413-098 Superior MGP\Slug Tests\Data\MW-8.aqt
Date: 12/22/04
Time: 14:28:37

PROJECT INFORMATION

Company: ENSR
Client: SWL&P
Project: 09413-098-600
Location: Superior, WI
Test Date: 11/17/04
Test Well: MW-8

AQUIFER DATA

Saturated Thickness: 6.56 ft
Anisotropy Ratio (Kz/Kr): 1.

SLUG TEST WELL DATA

Test Well: : MW-8

X Location: 0. ft
Y Location: 0. ft

Initial Displacement: -1.591 ft
Static Water Column Height: 8.52 ft
Casing Radius: 0.086 ft
Wellbore Radius: 0.086 ft
Well Skin Radius: 0.086 ft
Screen Length: 10. ft
Total Well Penetration Depth: 6.56 ft
Corrected Casing Radius (Bouwer-Rice Method): 0.086 ft
Gravel Pack Porosity: 0.35

No. of Observations: 71

Observation Data

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
2.7	-1.591	25.2	-0.204
3.	-1.531	26.7	-0.182
3.3	-1.482	28.2	-0.163
3.6	-1.439	29.8	-0.146
3.9	-1.397	31.5	-0.131
4.2	-1.359	33.3	-0.118
4.5	-1.32	35.2	-0.109
4.8	-1.286	37.3	-0.098
5.1	-1.251	39.5	-0.09
5.4	-1.214	41.8	-0.083
5.7	-1.18	44.3	-0.077
6.	-1.148	46.9	-0.071
6.4	-1.116	49.7	-0.064
6.7	-1.073	52.6	-0.06
7.1	-1.036	55.7	-0.056
7.5	-0.999	59.	-0.053
8.	-0.956	62.5	-0.049
8.4	-0.916	66.2	-0.045
8.9	-0.873	70.1	-0.043
9.5	-0.832	74.3	-0.039
10.	-0.797	78.7	-0.038
10.6	-0.757	83.4	-0.036
11.3	-0.716	88.4	-0.032
11.9	-0.677	93.7	-0.032
12.6	-0.636	99.3	-0.03

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
13.4	-0.597	105.2	-0.026
14.2	-0.556	111.5	-0.025
15.	-0.516	118.1	-0.022
15.9	-0.479	125.1	-0.022
16.8	-0.44	132.6	-0.021
17.8	-0.402	140.5	-0.019
18.9	-0.365	148.9	-0.017
20.	-0.327	157.8	-0.015
21.2	-0.292	167.2	-0.015
22.4	-0.26	177.2	-0.013
23.8	-0.23		

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
Shape Factor: 3.387

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
K	0.003264	cm/sec
y0	-1.854	ft

In-Situ Inc. MiniTroll Pro

Report generated: 11/24/04 14:55:00
Report from file: ...\SN09993 2004-11-17 141609 MW-8.bin
Win-Situ Version 4.50

Serial number: 00009993
Firmware Version 3.09
Unit name: MiniTROLL

Test name: MW-8

Test defined on: 11/17/04 14:15:44
Test started on: 11/17/04 14:16:09
Test stopped on: N/A N/A
Test extracted on: N/A N/A

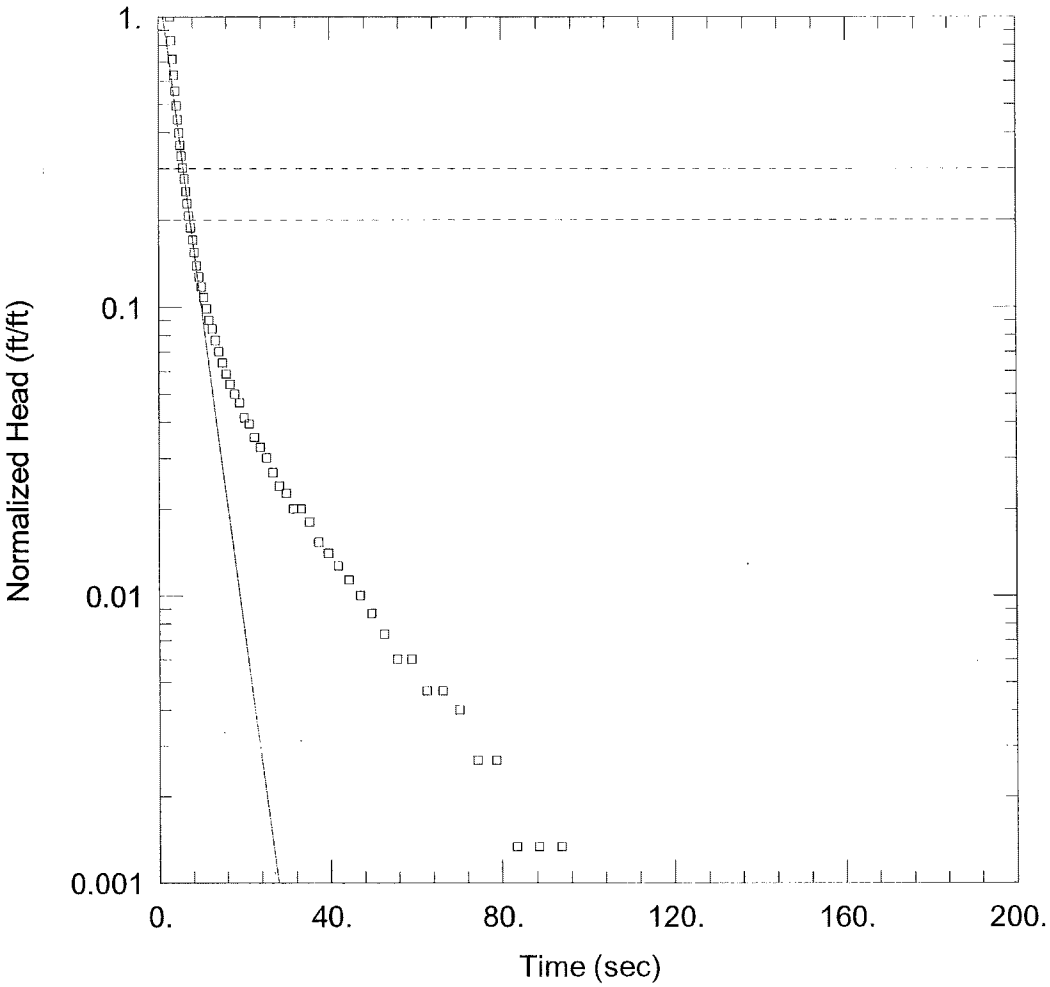
Data gathered using Logarithmic testing
  Maximum time between data points: 600.0 Seconds.
  Number of data samples: 80

TOTAL DATA SAMPLES 80

Channel number [2]
  Measurement type: Pressure
  Channel name: Pressure
  Sensor Range: 30 PSIG.
  Specific gravity: 1.000
  Mode: Surface
  User-defined reference: 0.000 Feet H2O
  Referenced on: test start
  Pressure head at reference: 5.928 Feet H2O

Date	Time	ET (sec)	Chan[2] Pressure Feet H2O
11/17/04	14:16:09	0.0	0.000
11/17/04	14:16:09	0.3	0.005
11/17/04	14:16:10	0.6	0.007
11/17/04	14:16:10	0.9	0.009
11/17/04	14:16:10	1.2	0.011
11/17/04	14:16:10	1.5	-0.755
11/17/04	14:16:11	1.8	-0.666
11/17/04	14:16:11	2.1	-0.927
11/17/04	14:16:11	2.4	-1.458
11/17/04	14:16:12	2.7	-1.591
11/17/04	14:16:12	3.0	-1.531
11/17/04	14:16:12	3.3	-1.482
11/17/04	14:16:13	3.6	-1.439
11/17/04	14:16:13	3.9	-1.397
11/17/04	14:16:13	4.2	-1.359
11/17/04	14:16:13	4.5	-1.320
11/17/04	14:16:14	4.8	-1.286
11/17/04	14:16:14	5.1	-1.251
11/17/04	14:16:14	5.4	-1.214
11/17/04	14:16:15	5.7	-1.180
11/17/04	14:16:15	6.0	-1.148
11/17/04	14:16:15	6.4	-1.116
11/17/04	14:16:16	6.7	-1.073
11/17/04	14:16:16	7.1	-1.036
11/17/04	14:16:16	7.5	-0.999
11/17/04	14:16:17	8.0	-0.956
11/17/04	14:16:17	8.4	-0.916
11/17/04	14:16:18	8.9	-0.873
11/17/04	14:16:18	9.5	-0.832
11/17/04	14:16:19	10.0	-0.797
11/17/04	14:16:20	10.6	-0.757
11/17/04	14:16:20	11.3	-0.716

11/17/04	14:16:21	11.9	-0.677
11/17/04	14:16:22	12.6	-0.636
11/17/04	14:16:22	13.4	-0.597
11/17/04	14:16:23	14.2	-0.556
11/17/04	14:16:24	15.0	-0.516
11/17/04	14:16:25	15.9	-0.479
11/17/04	14:16:26	16.8	-0.440
11/17/04	14:16:27	17.8	-0.402
11/17/04	14:16:28	18.9	-0.365
11/17/04	14:16:29	20.0	-0.327
11/17/04	14:16:30	21.2	-0.292
11/17/04	14:16:31	22.4	-0.260
11/17/04	14:16:33	23.8	-0.230
11/17/04	14:16:34	25.2	-0.204
11/17/04	14:16:36	26.7	-0.182
11/17/04	14:16:37	28.2	-0.163
11/17/04	14:16:39	29.8	-0.146
11/17/04	14:16:40	31.5	-0.131
11/17/04	14:16:42	33.3	-0.118
11/17/04	14:16:44	35.2	-0.109
11/17/04	14:16:46	37.3	-0.098
11/17/04	14:16:48	39.5	-0.090
11/17/04	14:16:51	41.8	-0.083
11/17/04	14:16:53	44.3	-0.077
11/17/04	14:16:56	46.9	-0.071
11/17/04	14:16:59	49.7	-0.064
11/17/04	14:17:02	52.6	-0.060
11/17/04	14:17:05	55.7	-0.056
11/17/04	14:17:08	59.0	-0.053
11/17/04	14:17:11	62.5	-0.049
11/17/04	14:17:15	66.2	-0.045
11/17/04	14:17:19	70.1	-0.043
11/17/04	14:17:23	74.3	-0.039
11/17/04	14:17:28	78.7	-0.038
11/17/04	14:17:32	83.4	-0.036
11/17/04	14:17:37	88.4	-0.032
11/17/04	14:17:43	93.7	-0.032
11/17/04	14:17:48	99.3	-0.030
11/17/04	14:17:54	105.2	-0.026
11/17/04	14:18:00	111.5	-0.025
11/17/04	14:18:07	118.1	-0.022
11/17/04	14:18:14	125.1	-0.022
11/17/04	14:18:22	132.6	-0.021
11/17/04	14:18:29	140.5	-0.019
11/17/04	14:18:38	148.9	-0.017
11/17/04	14:18:47	157.8	-0.015
11/17/04	14:18:56	167.2	-0.015
11/17/04	14:19:06	177.2	-0.013



WELL TEST ANALYSIS

Data Set: J:\Projects\09413 Misc Projects\09413-098 Superior MGP\Slug Tests\Data\MW-9.aqt
Date: 12/22/04 Time: 14:29:45

PROJECT INFORMATION

Company: ENSR
Client: SWL&P
Project: 09413-098
Location: Superior, WI
Test Well: MW-9
Test Date: 11/17/04

AQUIFER DATA

Saturated Thickness: 11.85 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-9)

Initial Displacement: -1.497 ft
Total Well Penetration Depth: 17.3 ft
Casing Radius: 0.086 ft
Static Water Column Height: 11.85 ft
Screen Length: 10. ft
Wellbore Radius: 0.086 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.01172 cm/sec
y0 = -1.99 ft

Data Set: J:\Projects\09413 Misc Projects\09413-098 Superior MGP\Slug Tests\Data\MW-9.aqt
Date: 12/22/04
Time: 14:29:54

PROJECT INFORMATION

Company: ENSR
Client: SWL&P
Project: 09413-098
Location: Superior, WI
Test Date: 11/17/04
Test Well: MW-9

AQUIFER DATA

Saturated Thickness: 11.85 ft
Anisotropy Ratio (Kz/Kr): 1.

SLUG TEST WELL DATA

Test Well: : MW-9

X Location: 0. ft
Y Location: 0. ft

Initial Displacement: -1.497 ft
Static Water Column Height: 11.85 ft
Casing Radius: 0.086 ft
Wellbore Radius: 0.086 ft
Well Skin Radius: 0.086 ft
Screen Length: 10. ft
Total Well Penetration Depth: 17.3 ft

No. of Observations: 69

Observation Data

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
2.7	-1.497	23.8	-0.049
3.	-1.241	25.2	-0.045
3.3	-1.069	26.7	-0.04
3.6	-0.944	28.2	-0.036
3.9	-0.832	29.8	-0.034
4.2	-0.739	31.5	-0.03
4.5	-0.662	33.3	-0.03
4.8	-0.597	35.2	-0.027
5.1	-0.541	37.3	-0.023
5.4	-0.496	39.5	-0.021
5.7	-0.451	41.8	-0.019
6.	-0.414	44.3	-0.017
6.4	-0.375	46.9	-0.015
6.7	-0.341	49.7	-0.013
7.1	-0.309	52.6	-0.011
7.5	-0.281	55.7	-0.009
8.	-0.255	59.	-0.009
8.4	-0.231	62.5	-0.007
8.9	-0.208	66.2	-0.007
9.5	-0.19	70.1	-0.006
10.	-0.176	74.3	-0.004
10.6	-0.162	78.7	-0.004
11.3	-0.148	83.4	-0.002
11.9	-0.135	88.4	-0.002
12.6	-0.126	93.7	-0.002
13.4	-0.115	99.3	0.
14.2	-0.105	105.2	0.

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
15.	-0.096	111.5	0.002
15.9	-0.088	118.1	0.002
16.8	-0.081	125.1	0.004
17.8	-0.075	132.6	0.004
18.9	-0.07	140.5	0.004
20.	-0.062	148.9	0.004
21.2	-0.059	157.8	0.006
22.4	-0.053		

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
Shape Factor: 4.018

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
K	0.01172	cm/sec
y0	-1.99	ft

In-Situ Inc. MiniTroll Pro

Report generated: 11/24/04 15:15:18
Report from file: ...\SN09993 2004-11-17 140250 MW-9.bin
Win-Situ Version 4.50

Serial number: 00009993
Firmware Version 3.09
Unit name: MiniTROLL

Test name: MW-9

Test defined on: 11/17/04 13:59:22
Test started on: 11/17/04 14:02:50
Test stopped on: N/A N/A
Test extracted on: N/A N/A

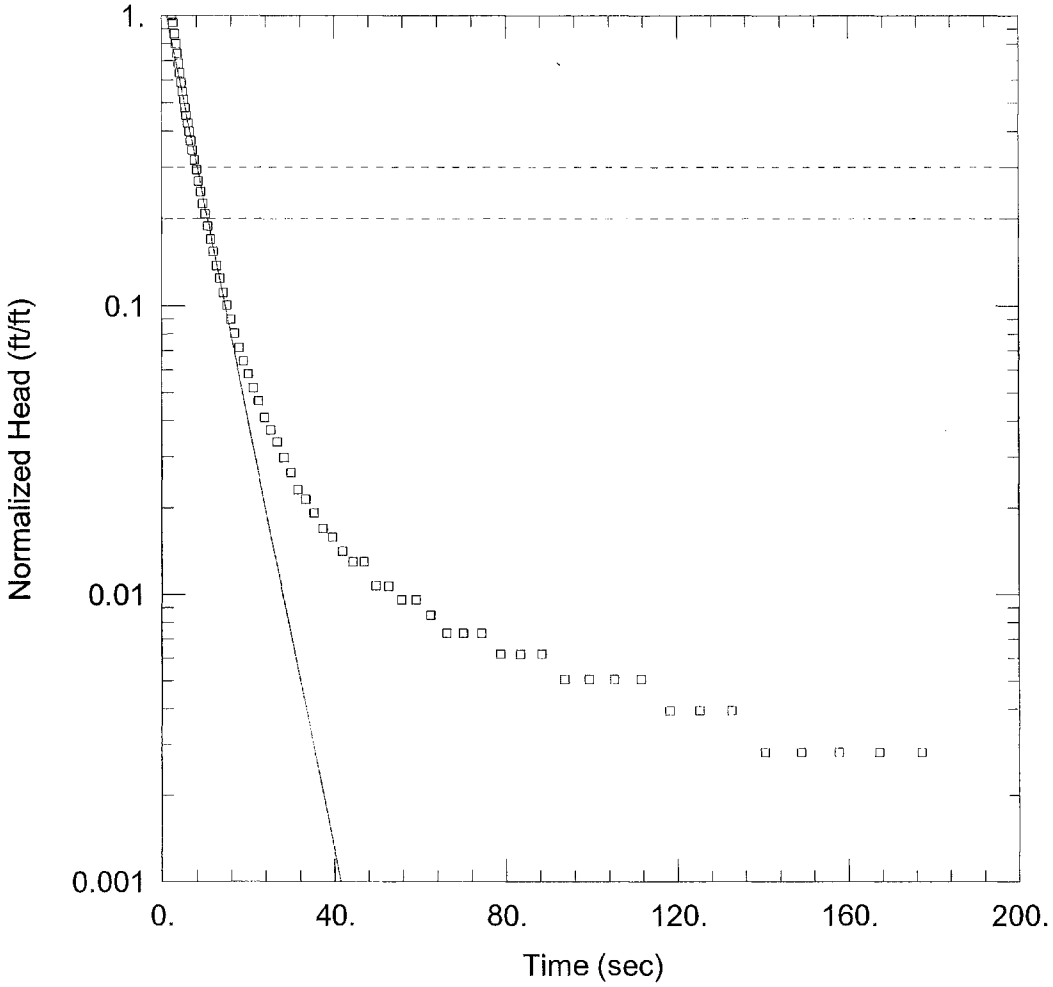
Data gathered using Logarithmic testing
  Maximum time between data points: 600.0 Seconds.
  Number of data samples: 78

TOTAL DATA SAMPLES 78

Channel number [2]
  Measurement type: Pressure
  Channel name: Pressure
  Sensor Range: 30 PSIG.
  Specific gravity: 1.000
  Mode: Surface
  User-defined reference: 0.000 Feet H2O
  Referenced on: test start
  Pressure head at reference: 7.970 Feet H2O

Date	Time	ET (sec)	Chan[2] Pressure Feet H2O
11/17/04	14:02:50	0.0	0.000
11/17/04	14:02:50	0.3	0.007
11/17/04	14:02:50	0.6	-0.165
11/17/04	14:02:51	0.9	-0.518
11/17/04	14:02:51	1.2	-0.591
11/17/04	14:02:51	1.5	-0.574
11/17/04	14:02:51	1.8	-1.116
11/17/04	14:02:52	2.1	-1.109
11/17/04	14:02:52	2.4	-1.391
11/17/04	14:02:52	2.7	-1.497
11/17/04	14:02:53	3.0	-1.241
11/17/04	14:02:53	3.3	-1.069
11/17/04	14:02:53	3.6	-0.944
11/17/04	14:02:54	3.9	-0.832
11/17/04	14:02:54	4.2	-0.739
11/17/04	14:02:54	4.5	-0.662
11/17/04	14:02:54	4.8	-0.597
11/17/04	14:02:55	5.1	-0.541
11/17/04	14:02:55	5.4	-0.496
11/17/04	14:02:55	5.7	-0.451
11/17/04	14:02:56	6.0	-0.414
11/17/04	14:02:56	6.4	-0.375
11/17/04	14:02:56	6.7	-0.341
11/17/04	14:02:57	7.1	-0.309
11/17/04	14:02:57	7.5	-0.281
11/17/04	14:02:58	8.0	-0.255
11/17/04	14:02:58	8.4	-0.231
11/17/04	14:02:59	8.9	-0.208
11/17/04	14:02:59	9.5	-0.190
11/17/04	14:03:00	10.0	-0.176
11/17/04	14:03:00	10.6	-0.162
11/17/04	14:03:01	11.3	-0.148

11/17/04	14:03:02	11.9	-0.135
11/17/04	14:03:02	12.6	-0.126
11/17/04	14:03:03	13.4	-0.115
11/17/04	14:03:04	14.2	-0.105
11/17/04	14:03:05	15.0	-0.096
11/17/04	14:03:06	15.9	-0.088
11/17/04	14:03:06	16.8	-0.081
11/17/04	14:03:07	17.8	-0.075
11/17/04	14:03:09	18.9	-0.070
11/17/04	14:03:10	20.0	-0.062
11/17/04	14:03:11	21.2	-0.059
11/17/04	14:03:12	22.4	-0.053
11/17/04	14:03:13	23.8	-0.049
11/17/04	14:03:15	25.2	-0.045
11/17/04	14:03:16	26.7	-0.040
11/17/04	14:03:18	28.2	-0.036
11/17/04	14:03:19	29.8	-0.034
11/17/04	14:03:21	31.5	-0.030
11/17/04	14:03:23	33.3	-0.030
11/17/04	14:03:25	35.2	-0.027
11/17/04	14:03:27	37.3	-0.023
11/17/04	14:03:29	39.5	-0.021
11/17/04	14:03:31	41.8	-0.019
11/17/04	14:03:34	44.3	-0.017
11/17/04	14:03:37	46.9	-0.015
11/17/04	14:03:39	49.7	-0.013
11/17/04	14:03:42	52.6	-0.011
11/17/04	14:03:45	55.7	-0.009
11/17/04	14:03:49	59.0	-0.009
11/17/04	14:03:52	62.5	-0.007
11/17/04	14:03:56	66.2	-0.007
11/17/04	14:04:00	70.1	-0.006
11/17/04	14:04:04	74.3	-0.004
11/17/04	14:04:08	78.7	-0.004
11/17/04	14:04:13	83.4	-0.002
11/17/04	14:04:18	88.4	-0.002
11/17/04	14:04:23	93.7	-0.002
11/17/04	14:04:29	99.3	0.000
11/17/04	14:04:35	105.2	0.000
11/17/04	14:04:41	111.5	0.002
11/17/04	14:04:48	118.1	0.002
11/17/04	14:04:55	125.1	0.004
11/17/04	14:05:02	132.6	0.004
11/17/04	14:05:10	140.5	0.004
11/17/04	14:05:19	148.9	0.004
11/17/04	14:05:27	157.8	0.006



WELL TEST ANALYSIS

Data Set: J:\Projects\09413 Misc Projects\09413-098 Superior MGP\Slug Tests\Data\MW-10.aqt
Date: 12/22/04 Time: 14:30:42

PROJECT INFORMATION

Company: ENSR
Client: SWL&P
Project: 09413-098
Location: Superior
Test Well: MW-10
Test Date: 11/17/04

AQUIFER DATA

Saturated Thickness: 9.92 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-10)

Initial Displacement: -1.774 ft
Total Well Penetration Depth: 13.5 ft
Casing Radius: 0.086 ft
Static Water Column Height: 9.92 ft
Screen Length: 10. ft
Wellbore Radius: 0.086 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.007463 cm/sec
y0 = -2.149 ft

Data Set: J:\Projects\09413 Misc Projects\09413-098 Superior MGP\Slug Tests\Data\MW-10.aqt
Date: 12/22/04
Time: 14:30:48

PROJECT INFORMATION

Company: ENSR
Client: SWL&P
Project: 09413-098
Location: Superior
Test Date: 11/17/04
Test Well: MW-10

AQUIFER DATA

Saturated Thickness: 9.92 ft
Anisotropy Ratio (Kz/Kr): 1.

SLUG TEST WELL DATA

Test Well: : MW-10

X Location: 0. ft
Y Location: 0. ft

Initial Displacement: -1.774 ft
Static Water Column Height: 9.92 ft
Casing Radius: 0.086 ft
Wellbore Radius: 0.086 ft
Well Skin Radius: 0.086 ft
Screen Length: 10. ft
Total Well Penetration Depth: 13.5 ft

No. of Observations: 72

Observation Data

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
2.4	-1.774	23.8	-0.073
2.7	-1.679	25.2	-0.066
3.	-1.537	26.7	-0.06
3.3	-1.419	28.2	-0.053
3.6	-1.312	29.8	-0.047
3.9	-1.213	31.5	-0.041
4.2	-1.127	33.3	-0.038
4.5	-1.047	35.2	-0.034
4.8	-0.972	37.3	-0.03
5.1	-0.911	39.5	-0.028
5.4	-0.853	41.8	-0.025
5.7	-0.802	44.3	-0.023
6.	-0.756	46.9	-0.023
6.4	-0.707	49.7	-0.019
6.7	-0.657	52.6	-0.019
7.1	-0.61	55.7	-0.017
7.5	-0.563	59.	-0.017
8.	-0.522	62.5	-0.015
8.4	-0.477	66.2	-0.013
8.9	-0.438	70.1	-0.013
9.5	-0.399	74.3	-0.013
10.	-0.367	78.7	-0.011
10.6	-0.333	83.4	-0.011
11.3	-0.301	88.4	-0.011
11.9	-0.273	93.7	-0.009
12.6	-0.244	99.3	-0.009
13.4	-0.221	105.2	-0.009

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
14.2	-0.197	111.5	-0.009
15.	-0.178	118.1	-0.007
15.9	-0.159	125.1	-0.007
16.8	-0.142	132.6	-0.007
17.8	-0.127	140.5	-0.005
18.9	-0.114	148.9	-0.005
20.	-0.103	157.8	-0.005
21.2	-0.092	167.2	-0.005
22.4	-0.083	177.2	-0.005

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
Shape Factor: 3.86

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
K	0.007463	cm/sec
y0	-2.149	ft

In-Situ Inc. MiniTroll Pro

Report generated: 11/24/04 15:16:33
Report from file: ...\SN09993 2004-11-17 115759 MW-10 Test #1.bin
Win-Situ Version 4.50

Serial number: 00009993
Firmware Version 3.09
Unit name: MiniTROLL

Test name: MW-10 Test #1

Test defined on: 11/17/04 11:57:24
Test started on: 11/17/04 11:57:59
Test stopped on: N/A N/A
Test extracted on: N/A N/A

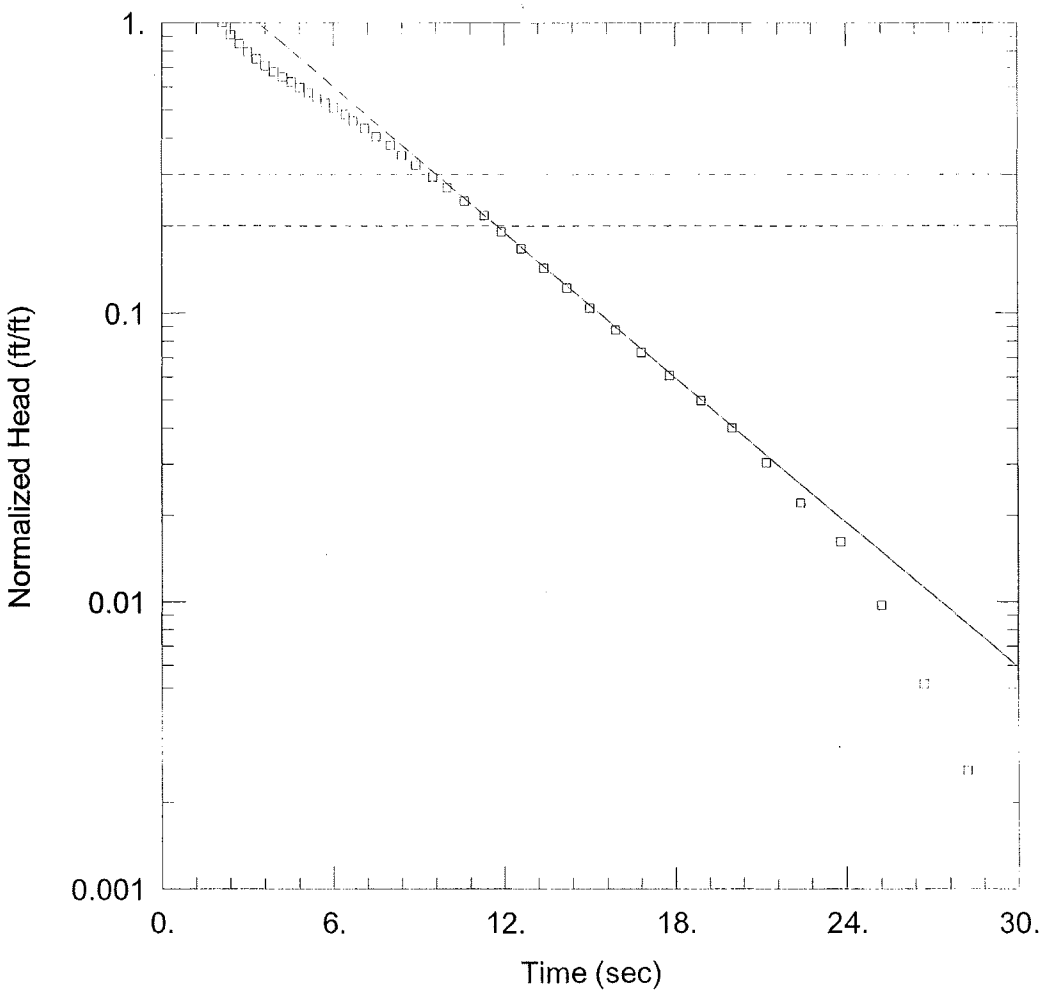
Data gathered using Logarithmic testing
  Maximum time between data points: 600.0 Seconds.
  Number of data samples: 80

TOTAL DATA SAMPLES 80

Channel number [2]
  Measurement type: Pressure
  Channel name: Pressure
  Sensor Range: 30 PSIG.
  Specific gravity: 1.000
  Mode: Surface
  User-defined reference: 0.000 Feet H2O
  Referenced on: test start
  Pressure head at reference: 6.902 Feet H2O

Date	Time	ET (sec)	Chan[2] Pressure Feet H2O
11/17/04	11:57:59	0.0	0.000
11/17/04	11:58:00	0.3	0.007
11/17/04	11:58:00	0.6	0.011
11/17/04	11:58:00	0.9	0.011
11/17/04	11:58:01	1.2	-0.602
11/17/04	11:58:01	1.5	-1.041
11/17/04	11:58:01	1.8	-0.340
11/17/04	11:58:02	2.1	-1.249
11/17/04	11:58:02	2.4	-1.774
11/17/04	11:58:02	2.7	-1.679
11/17/04	11:58:02	3.0	-1.537
11/17/04	11:58:03	3.3	-1.419
11/17/04	11:58:03	3.6	-1.312
11/17/04	11:58:03	3.9	-1.213
11/17/04	11:58:04	4.2	-1.127
11/17/04	11:58:04	4.5	-1.047
11/17/04	11:58:04	4.8	-0.972
11/17/04	11:58:05	5.1	-0.911
11/17/04	11:58:05	5.4	-0.853
11/17/04	11:58:05	5.7	-0.802
11/17/04	11:58:05	6.0	-0.756
11/17/04	11:58:06	6.4	-0.707
11/17/04	11:58:06	6.7	-0.657
11/17/04	11:58:07	7.1	-0.610
11/17/04	11:58:07	7.5	-0.563
11/17/04	11:58:07	8.0	-0.522
11/17/04	11:58:08	8.4	-0.477
11/17/04	11:58:08	8.9	-0.438
11/17/04	11:58:09	9.5	-0.399
11/17/04	11:58:09	10.0	-0.367
11/17/04	11:58:10	10.6	-0.333
11/17/04	11:58:11	11.3	-0.301

11/17/04	11:58:11	11.9	-0.273
11/17/04	11:58:12	12.6	-0.244
11/17/04	11:58:13	13.4	-0.221
11/17/04	11:58:14	14.2	-0.197
11/17/04	11:58:14	15.0	-0.178
11/17/04	11:58:15	15.9	-0.159
11/17/04	11:58:16	16.8	-0.142
11/17/04	11:58:17	17.8	-0.127
11/17/04	11:58:18	18.9	-0.114
11/17/04	11:58:19	20.0	-0.103
11/17/04	11:58:21	21.2	-0.092
11/17/04	11:58:22	22.4	-0.083
11/17/04	11:58:23	23.8	-0.073
11/17/04	11:58:25	25.2	-0.066
11/17/04	11:58:26	26.7	-0.060
11/17/04	11:58:28	28.2	-0.053
11/17/04	11:58:29	29.8	-0.047
11/17/04	11:58:31	31.5	-0.041
11/17/04	11:58:33	33.3	-0.038
11/17/04	11:58:35	35.2	-0.034
11/17/04	11:58:37	37.3	-0.030
11/17/04	11:58:39	39.5	-0.028
11/17/04	11:58:41	41.8	-0.025
11/17/04	11:58:44	44.3	-0.023
11/17/04	11:58:46	46.9	-0.023
11/17/04	11:58:49	49.7	-0.019
11/17/04	11:58:52	52.6	-0.019
11/17/04	11:58:55	55.7	-0.017
11/17/04	11:58:58	59.0	-0.017
11/17/04	11:59:02	62.5	-0.015
11/17/04	11:59:06	66.2	-0.013
11/17/04	11:59:09	70.1	-0.013
11/17/04	11:59:14	74.3	-0.013
11/17/04	11:59:18	78.7	-0.011
11/17/04	11:59:23	83.4	-0.011
11/17/04	11:59:28	88.4	-0.011
11/17/04	11:59:33	93.7	-0.009
11/17/04	11:59:39	99.3	-0.009
11/17/04	11:59:45	105.2	-0.009
11/17/04	11:59:51	111.5	-0.009
11/17/04	11:59:57	118.1	-0.007
11/17/04	12:00:04	125.1	-0.007
11/17/04	12:00:12	132.6	-0.007
11/17/04	12:00:20	140.5	-0.005
11/17/04	12:00:28	148.9	-0.005
11/17/04	12:00:37	157.8	-0.005
11/17/04	12:00:47	167.2	-0.005
11/17/04	12:00:57	177.2	-0.005



WELL TEST ANALYSIS

Data Set: J:\Projects\09413 Misc Projects\09413-098 Superior MGP\Slug Tests\Data\MW-11.aqt
Date: 12/22/04 Time: 14:33:34

PROJECT INFORMATION

Company: ENSR
Client: SWL&P
Project: 09413-098
Location: Superior, WI
Test Well: MW-11
Test Date: 11/17/04

AQUIFER DATA

Saturated Thickness: 10.07 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-11)

Initial Displacement: -1.546 ft
Total Well Penetration Depth: 14.5 ft
Casing Radius: 0.086 ft
Static Water Column Height: 10.07 ft
Screen Length: 10. ft
Wellbore Radius: 0.086 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.008477 cm/sec
y0 = -2.958 ft

Data Set: J:\Projects\09413 Misc Projects\09413-098 Superior MGP\Slug Tests\Data\MW-11.aqt
Date: 12/22/04
Time: 14:33:40

PROJECT INFORMATION

Company: ENSR
Client: SWL&P
Project: 09413-098
Location: Superior, WI
Test Date: 11/17/04
Test Well: MW-11

AQUIFER DATA

Saturated Thickness: 10.07 ft
Anisotropy Ratio (Kz/Kr): 1.

SLUG TEST WELL DATA

Test Well: : MW-11

X Location: 0. ft
Y Location: 0. ft

Initial Displacement: -1.546 ft
Static Water Column Height: 10.07 ft
Casing Radius: 0.086 ft
Wellbore Radius: 0.086 ft
Well Skin Radius: 0.086 ft
Screen Length: 10. ft
Total Well Penetration Depth: 14.5 ft

No. of Observations: 41

Observation Data

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
2.1	-1.546	9.5	-0.455
2.4	-1.406	10.	-0.418
2.7	-1.307	10.6	-0.376
3.	-1.228	11.3	-0.335
3.3	-1.159	11.9	-0.294
3.6	-1.098	12.6	-0.258
3.9	-1.049	13.4	-0.221
4.2	-1.006	14.2	-0.189
4.5	-0.969	15.	-0.161
4.8	-0.926	15.9	-0.135
5.1	-0.888	16.8	-0.113
5.4	-0.855	17.8	-0.094
5.7	-0.819	18.9	-0.077
6.	-0.787	20.	-0.062
6.4	-0.748	21.2	-0.047
6.7	-0.711	22.4	-0.034
7.1	-0.67	23.8	-0.025
7.5	-0.627	25.2	-0.015
8.	-0.586	26.7	-0.008
8.4	-0.541	28.2	-0.004
8.9	-0.5		

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
Shape Factor: 3.906

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
K	0.008477	cm/sec
y0	-2.958	ft

In-Situ Inc. MiniTroll Pro

Report generated: 11/24/04 15:15:54
Report from file: ...\SN09993 2004-11-17 134307 MW-11.bin
Win-Situ Version 4.50

Serial number: 00009993
Firmware Version 3.09
Unit name: MiniTROLL

Test name: MW-11

Test defined on: 11/17/04 13:42:48
Test started on: 11/17/04 13:43:07
Test stopped on: N/A N/A
Test extracted on: N/A N/A

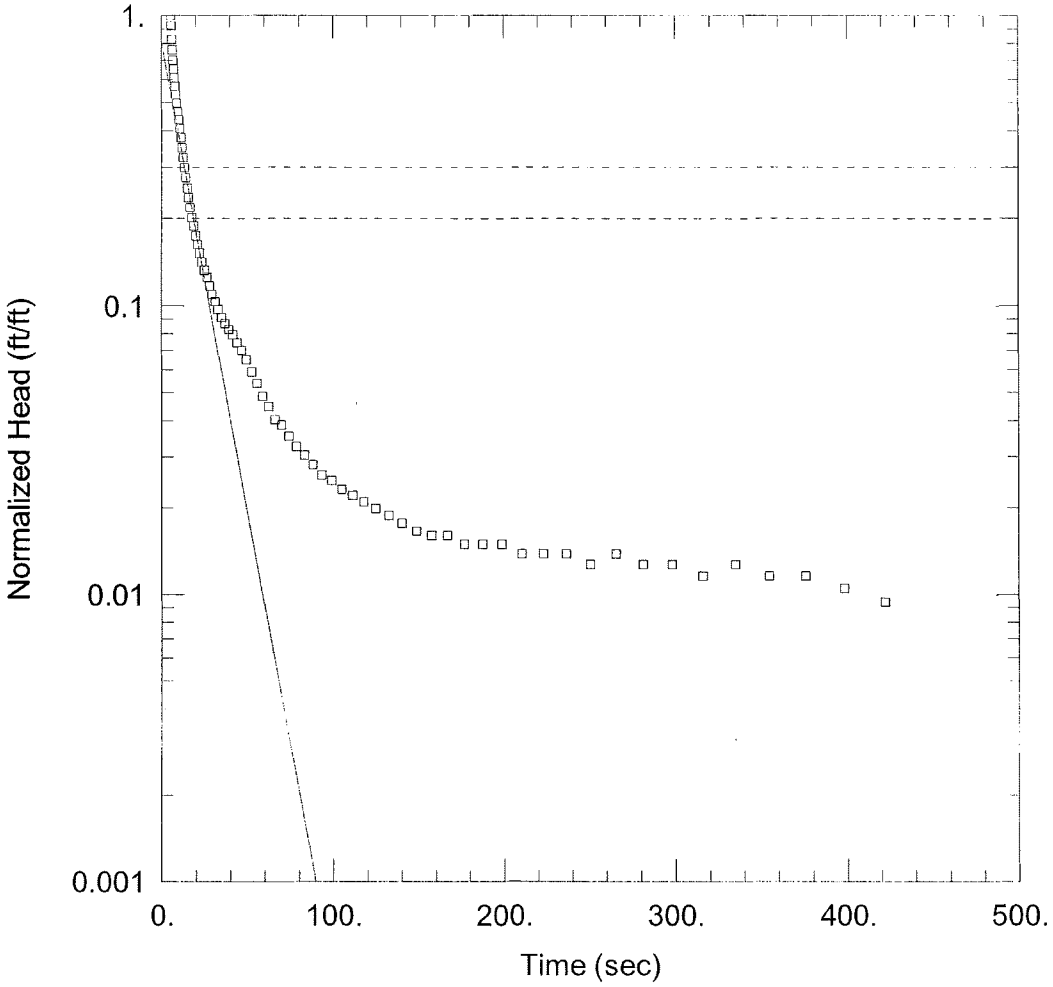
Data gathered using Logarithmic testing
Maximum time between data points: 600.0 Seconds.
Number of data samples: 84

TOTAL DATA SAMPLES 84

Channel number [2]
Measurement type: Pressure
Channel name: Pressure
Sensor Range: 30 PSIG.
Specific gravity: 1.000
Mode: Surface
User-defined reference: 0.000 Feet H2O
Referenced on: test start
Pressure head at reference: 7.149 Feet H2O

Date	Time	ET (sec)	Chan[2] Pressure Feet H2O
11/17/04	13:43:07	0.0	0.000
11/17/04	13:43:07	0.3	0.005
11/17/04	13:43:07	0.6	-0.056
11/17/04	13:43:08	0.9	-1.067
11/17/04	13:43:08	1.2	-0.324
11/17/04	13:43:08	1.5	-1.045
11/17/04	13:43:09	1.8	-1.153
11/17/04	13:43:09	2.1	-1.546
11/17/04	13:43:09	2.4	-1.406
11/17/04	13:43:09	2.7	-1.307
11/17/04	13:43:10	3.0	-1.228
11/17/04	13:43:10	3.3	-1.159
11/17/04	13:43:10	3.6	-1.098
11/17/04	13:43:11	3.9	-1.049
11/17/04	13:43:11	4.2	-1.006
11/17/04	13:43:11	4.5	-0.969
11/17/04	13:43:12	4.8	-0.926
11/17/04	13:43:12	5.1	-0.888
11/17/04	13:43:12	5.4	-0.855
11/17/04	13:43:12	5.7	-0.819
11/17/04	13:43:13	6.0	-0.787
11/17/04	13:43:13	6.4	-0.748
11/17/04	13:43:13	6.7	-0.711
11/17/04	13:43:14	7.1	-0.670
11/17/04	13:43:14	7.5	-0.627
11/17/04	13:43:15	8.0	-0.586
11/17/04	13:43:15	8.4	-0.541
11/17/04	13:43:16	8.9	-0.500
11/17/04	13:43:16	9.5	-0.455
11/17/04	13:43:17	10.0	-0.418
11/17/04	13:43:17	10.6	-0.376
11/17/04	13:43:18	11.3	-0.335

11/17/04	13:43:19	11.9	-0.294
11/17/04	13:43:19	12.6	-0.258
11/17/04	13:43:20	13.4	-0.221
11/17/04	13:43:21	14.2	-0.189
11/17/04	13:43:22	15.0	-0.161
11/17/04	13:43:23	15.9	-0.135
11/17/04	13:43:24	16.8	-0.113
11/17/04	13:43:25	17.8	-0.094
11/17/04	13:43:26	18.9	-0.077
11/17/04	13:43:27	20.0	-0.062
11/17/04	13:43:28	21.2	-0.047
11/17/04	13:43:29	22.4	-0.034
11/17/04	13:43:30	23.8	-0.025
11/17/04	13:43:32	25.2	-0.015
11/17/04	13:43:33	26.7	-0.008
11/17/04	13:43:35	28.2	-0.004
11/17/04	13:43:36	29.8	0.001
11/17/04	13:43:38	31.5	0.005
11/17/04	13:43:40	33.3	0.007
11/17/04	13:43:42	35.2	0.007
11/17/04	13:43:44	37.3	0.009
11/17/04	13:43:46	39.5	0.009
11/17/04	13:43:48	41.8	0.009
11/17/04	13:43:51	44.3	0.007
11/17/04	13:43:54	46.9	0.007
11/17/04	13:43:56	49.7	0.007
11/17/04	13:43:59	52.6	0.005
11/17/04	13:44:02	55.7	0.005
11/17/04	13:44:06	59.0	0.004
11/17/04	13:44:09	62.5	0.002
11/17/04	13:44:13	66.2	-0.000
11/17/04	13:44:17	70.1	-0.000
11/17/04	13:44:21	74.3	-0.002
11/17/04	13:44:25	78.7	-0.002
11/17/04	13:44:30	83.4	-0.004
11/17/04	13:44:35	88.4	-0.006
11/17/04	13:44:40	93.7	-0.009
11/17/04	13:44:46	99.3	-0.011
11/17/04	13:44:52	105.2	-0.011
11/17/04	13:44:58	111.5	-0.013
11/17/04	13:45:05	118.1	-0.015
11/17/04	13:45:12	125.1	-0.017
11/17/04	13:45:19	132.6	-0.018
11/17/04	13:45:27	140.5	-0.020
11/17/04	13:45:36	148.9	-0.022
11/17/04	13:45:44	157.8	-0.024
11/17/04	13:45:54	167.2	-0.026
11/17/04	13:46:04	177.2	-0.026
11/17/04	13:46:14	187.8	-0.028
11/17/04	13:46:26	199.0	-0.030
11/17/04	13:46:38	210.9	-0.032
11/17/04	13:46:50	223.5	-0.031



WELL TEST ANALYSIS

Data Set: J:\Projects\09413 Misc Projects\09413-098 Superior MGP\Slug Tests\Data\MW-12.aqt
Date: 12/22/04 Time: 14:34:48

PROJECT INFORMATION

Company: ENSR
Client: SWL&P
Project: 09413-098
Location: Superior, WI
Test Well: MW-12
Test Date: 11/17/04

AQUIFER DATA

Saturated Thickness: 8.8 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-12)

Initial Displacement: -1.811 ft
Total Well Penetration Depth: 14.3 ft
Casing Radius: 0.086 ft
Static Water Column Height: 8.8 ft
Screen Length: 10. ft
Wellbore Radius: 0.086 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.003275 cm/sec
y0 = -1.463 ft

Data Set: J:\Projects\09413 Misc Projects\09413-098 Superior MGP\Slug Tests\Data\MW-12.aqt
Date: 12/22/04
Time: 14:34:53

PROJECT INFORMATION

Company: ENSR
Client: SWL&P
Project: 09413-098
Location: Superior, WI
Test Date: 11/17/04
Test Well: MW-12

AQUIFER DATA

Saturated Thickness: 8.8 ft
Anisotropy Ratio (Kz/Kr): 1.

SLUG TEST WELL DATA

Test Well: : MW-12

X Location: 0. ft
Y Location: 0. ft

Initial Displacement: -1.811 ft
Static Water Column Height: 8.8 ft
Casing Radius: 0.086 ft
Wellbore Radius: 0.086 ft
Well Skin Radius: 0.086 ft
Screen Length: 10. ft
Total Well Penetration Depth: 14.3 ft

No. of Observations: 77

Observation Data

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
5.4	-1.811	49.7	-0.118
5.7	-1.666	52.6	-0.107
6.	-1.496	55.7	-0.098
6.4	-1.378	59.	-0.088
6.7	-1.271	62.5	-0.081
7.1	-1.185	66.2	-0.073
7.5	-1.103	70.1	-0.07
8.	-1.032	74.3	-0.064
8.4	-0.967	78.7	-0.059
8.9	-0.903	83.4	-0.055
9.5	-0.847	88.4	-0.051
10.	-0.793	93.7	-0.047
10.6	-0.739	99.3	-0.045
11.3	-0.687	105.2	-0.042
11.9	-0.636	111.5	-0.04
12.6	-0.587	118.1	-0.038
13.4	-0.542	125.1	-0.036
14.2	-0.501	132.6	-0.034
15.	-0.46	140.5	-0.032
15.9	-0.427	148.9	-0.03
16.8	-0.395	157.8	-0.029
17.8	-0.365	167.2	-0.029
18.9	-0.341	177.2	-0.027
20.	-0.316	187.8	-0.027
21.2	-0.294	199.	-0.027
22.4	-0.275	210.9	-0.025
23.8	-0.256	223.5	-0.025

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
25.2	-0.24	236.8	-0.025
26.7	-0.227	250.9	-0.023
28.2	-0.212	265.8	-0.025
29.8	-0.198	281.6	-0.023
31.5	-0.187	298.4	-0.023
33.3	-0.176	316.2	-0.021
35.2	-0.165	335.	-0.023
37.3	-0.157	354.9	-0.021
39.5	-0.15	376.	-0.021
41.8	-0.144	398.4	-0.019
44.3	-0.135	422.1	-0.017
46.9	-0.127		

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
Shape Factor: 3.897

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
K	0.003275	cm/sec
y0	-1.463	ft

In-Situ Inc. MiniTroll Pro

Report generated: 11/24/04 15:16:14
Report from file: ...\SN09993 2004-11-17 122021 MW-12.bin
Win-Situ Version 4.50

Serial number: 00009993
Firmware Version 3.09
Unit name: MiniTROLL

Test name: MW-12

Test defined on: 11/17/04 12:19:31
Test started on: 11/17/04 12:20:21
Test stopped on: N/A N/A
Test extracted on: N/A N/A

Data gathered using Logarithmic testing
Maximum time between data points: 600.0 Seconds.
Number of data samples: 95

TOTAL DATA SAMPLES 95

Channel number [2]
Measurement type: Pressure
Channel name: Pressure
Sensor Range: 30 PSIG.
Specific gravity: 1.000
Mode: Surface
User-defined reference: 0.000 Feet H2O
Referenced on: test start
Pressure head at reference: 7.234 Feet H2O

Date	Time	ET (sec)	Chan[2] Pressure Feet H2O
11/17/04	12:20:21	0.0	0.000
11/17/04	12:20:22	0.3	0.007
11/17/04	12:20:22	0.6	0.009
11/17/04	12:20:22	0.9	0.013
11/17/04	12:20:23	1.2	0.012
11/17/04	12:20:23	1.5	0.012
11/17/04	12:20:23	1.8	0.014
11/17/04	12:20:24	2.1	0.012
11/17/04	12:20:24	2.4	0.014
11/17/04	12:20:24	2.7	0.014
11/17/04	12:20:24	3.0	0.014
11/17/04	12:20:25	3.3	0.014
11/17/04	12:20:25	3.6	0.014
11/17/04	12:20:25	3.9	0.001
11/17/04	12:20:26	4.2	0.208
11/17/04	12:20:26	4.5	-1.410
11/17/04	12:20:26	4.8	-1.105
11/17/04	12:20:27	5.1	-1.060
11/17/04	12:20:27	5.4	-1.811
11/17/04	12:20:27	5.7	-1.666
11/17/04	12:20:27	6.0	-1.496
11/17/04	12:20:28	6.4	-1.378
11/17/04	12:20:28	6.7	-1.271
11/17/04	12:20:29	7.1	-1.185
11/17/04	12:20:29	7.5	-1.103
11/17/04	12:20:29	8.0	-1.032
11/17/04	12:20:30	8.4	-0.967
11/17/04	12:20:30	8.9	-0.903
11/17/04	12:20:31	9.5	-0.847
11/17/04	12:20:31	10.0	-0.793
11/17/04	12:20:32	10.6	-0.739
11/17/04	12:20:33	11.3	-0.687

11/17/04	12:20:33	11.9	-0.636
11/17/04	12:20:34	12.6	-0.587
11/17/04	12:20:35	13.4	-0.542
11/17/04	12:20:36	14.2	-0.501
11/17/04	12:20:36	15.0	-0.460
11/17/04	12:20:37	15.9	-0.427
11/17/04	12:20:38	16.8	-0.395
11/17/04	12:20:39	17.8	-0.365
11/17/04	12:20:40	18.9	-0.341
11/17/04	12:20:41	20.0	-0.316
11/17/04	12:20:43	21.2	-0.294
11/17/04	12:20:44	22.4	-0.275
11/17/04	12:20:45	23.8	-0.256
11/17/04	12:20:47	25.2	-0.240
11/17/04	12:20:48	26.7	-0.227
11/17/04	12:20:50	28.2	-0.212
11/17/04	12:20:51	29.8	-0.198
11/17/04	12:20:53	31.5	-0.187
11/17/04	12:20:55	33.3	-0.176
11/17/04	12:20:57	35.2	-0.165
11/17/04	12:20:59	37.3	-0.157
11/17/04	12:21:01	39.5	-0.150
11/17/04	12:21:03	41.8	-0.144
11/17/04	12:21:06	44.3	-0.135
11/17/04	12:21:08	46.9	-0.127
11/17/04	12:21:11	49.7	-0.118
11/17/04	12:21:14	52.6	-0.107
11/17/04	12:21:17	55.7	-0.098
11/17/04	12:21:20	59.0	-0.088
11/17/04	12:21:24	62.5	-0.081
11/17/04	12:21:28	66.2	-0.073
11/17/04	12:21:32	70.1	-0.070
11/17/04	12:21:36	74.3	-0.064
11/17/04	12:21:40	78.7	-0.059
11/17/04	12:21:45	83.4	-0.055
11/17/04	12:21:50	88.4	-0.051
11/17/04	12:21:55	93.7	-0.047
11/17/04	12:22:01	99.3	-0.045
11/17/04	12:22:07	105.2	-0.042
11/17/04	12:22:13	111.5	-0.040
11/17/04	12:22:20	118.1	-0.038
11/17/04	12:22:27	125.1	-0.036
11/17/04	12:22:34	132.6	-0.034
11/17/04	12:22:42	140.5	-0.032
11/17/04	12:22:50	148.9	-0.030
11/17/04	12:22:59	157.8	-0.029
11/17/04	12:23:09	167.2	-0.029
11/17/04	12:23:19	177.2	-0.027
11/17/04	12:23:29	187.8	-0.027
11/17/04	12:23:40	199.0	-0.027
11/17/04	12:23:52	210.9	-0.025
11/17/04	12:24:05	223.5	-0.025
11/17/04	12:24:18	236.8	-0.025
11/17/04	12:24:32	250.9	-0.023
11/17/04	12:24:47	265.8	-0.025
11/17/04	12:25:03	281.6	-0.023
11/17/04	12:25:20	298.4	-0.023
11/17/04	12:25:38	316.2	-0.021
11/17/04	12:25:56	335.0	-0.023
11/17/04	12:26:16	354.9	-0.021
11/17/04	12:26:37	376.0	-0.021
11/17/04	12:27:00	398.4	-0.019
11/17/04	12:27:24	422.1	-0.017

ENSR INTERNATIONAL

APPENDIX D

Soil and Groundwater Laboratory Analytical Report

Superior Water Light and Power MGP
Phase II, Part III
Superior, Wisconsin
March 2005

EN CHEM

A Division of Pace Analytical Services, Inc.

1241 Bellevue Street, Suite 9
Green Bay, WI 54302
920-469-2436, Fax: 920-469-8827

Analytical Report Number: 853671

Client: ENSR-MN
Project Name: SWL & P
Project Number: 09413-098

Lab Contact: Laurie Woelfel

Lab Sample Number	Field ID	Matrix	Collection Date
853671-001	MW-5	WATER	11/17/04
853671-002	MW-6	WATER	11/17/04
853671-003	MW-7	WATER	11/17/04
853671-004	MW-8	WATER	11/16/04
853671-005	MW-8 DUP	WATER	11/16/04
853671-006	MW-9	WATER	11/16/04
853671-007	MW-10	WATER	11/16/04
853671-008	MW-11	WATER	11/16/04
853671-009	MW-12	WATER	11/16/04
853671-010	TRIP BLANK	WATER	11/16/04

I certify that the data contained in this Final Report has been generated and reviewed in accordance with approved methods and Laboratory Standard Operating Procedure. Exceptions, if any, are discussed in the accompanying sample comments. Release of this final report is authorized by Laboratory management, as is verified by the following signature. Reported results shall not be reproduced, except in full, without the written approval of the lab. The sample results relate only to the analytes of interest tested.

Laurie Woelfel
Approval Signature

12/1/04
Date

En Chem

A Division of Pace Analytical Services, Inc.

Analytical Report Number: 853671

1241 Bellevue Street
Green Bay, WI 54302
920-469-2436

Client : ENSR-MN
Project Name : SWL & P
Project Number : 09413-098
Field ID : MW-6

Matrix Type : WATER
Collection Date : 11/17/04
Report Date : 12/01/04
Lab Sample Number : 853671-002

BTEX

Prep Date: 11/22/04

Analyte	Result	LOD	LOQ	EQL	Dil.	Units	Code	Anl Date	Prep Method	Anl Method
Benzene	17	0.14	0.46		1	ug/L		11/22/04	SW846 5030B	SW846 M8021
Ethylbenzene	21	0.40	1.3		1	ug/L		11/22/04	SW846 5030B	SW846 M8021
Toluene	2.6	0.36	1.2		1	ug/L		11/22/04	SW846 5030B	SW846 M8021
Xylene, o	7.6	0.36	1.2		1	ug/L		11/22/04	SW846 5030B	SW846 M8021
Xylenes, m + p	4.0	0.74	2.5		1	ug/L		11/22/04	SW846 5030B	SW846 M8021
a,a,a-Trifluorotoluene	100				1	%Recov		11/22/04	SW846 5030B	SW846 M8021

BTEX BLANK

Prep Date: 11/22/04

Analyte	Result	LOD	LOQ	EQL	Dil.	Units	Code	Anl Date	Prep Method	Anl Method
BTEX Blank ID	1536-65				1					

PAH/ PNA

Prep Date: 11/23/04

Analyte	Result	LOD	LOQ	EQL	Dil.	Units	Code	Anl Date	Prep Method	Anl Method
1-Methylnaphthalene	11	4.0	13		200	ug/L	QD	11/30/04	SW846 3510C	8270C-SIM
2-Methylnaphthalene	8.0	0.45	1.5		20	ug/L		11/24/04	SW846 3510C	8270C-SIM
Acenaphthene	13	3.9	13		200	ug/L	D	11/30/04	SW846 3510C	8270C-SIM
Acenaphthylene	0.49	0.39	1.3		20	ug/L	Q	11/24/04	SW846 3510C	8270C-SIM
Anthracene	0.69	0.35	1.2		20	ug/L	Q	11/24/04	SW846 3510C	8270C-SIM
Benzo(a)anthracene	< 0.39	0.39	1.3		20	ug/L		11/24/04	SW846 3510C	8270C-SIM
Benzo(a)pyrene	< 0.36	0.36	1.2		20	ug/L		11/24/04	SW846 3510C	8270C-SIM
Benzo(b)fluoranthene	< 0.36	0.36	1.2		20	ug/L		11/24/04	SW846 3510C	8270C-SIM
Benzo(ghi)perylene	< 0.41	0.41	1.4		20	ug/L		11/24/04	SW846 3510C	8270C-SIM
Benzo(k)fluoranthene	< 0.39	0.39	1.3		20	ug/L		11/24/04	SW846 3510C	8270C-SIM
Chrysene	< 0.33	0.33	1.1		20	ug/L		11/24/04	SW846 3510C	8270C-SIM
Dibenz(a,h)anthracene	< 0.44	0.44	1.5		20	ug/L		11/24/04	SW846 3510C	8270C-SIM
Fluoranthene	0.77	0.33	1.1		20	ug/L	Q	11/24/04	SW846 3510C	8270C-SIM
Fluorene	1.6	0.44	1.5		20	ug/L		11/24/04	SW846 3510C	8270C-SIM
Indeno(1,2,3-cd)pyrene	< 0.34	0.34	1.1		20	ug/L		11/24/04	SW846 3510C	8270C-SIM
Naphthalene	91	4.5	15		200	ug/L	D	11/30/04	SW846 3510C	8270C-SIM
Phenanthrene	3.8	0.41	1.4		20	ug/L		11/24/04	SW846 3510C	8270C-SIM
Pyrene	0.76	0.33	1.1		20	ug/L	Q	11/24/04	SW846 3510C	8270C-SIM
Nitrobenzene-d5	0				20	%Recov	D	11/24/04	SW846 3510C	8270C-SIM
2-Fluorobiphenyl	0				20	%Recov	D	11/24/04	SW846 3510C	8270C-SIM
Terphenyl-d14	0				20	%Recov	D	11/24/04	SW846 3510C	8270C-SIM

PAH/PNA BLANK

Prep Date: 11/23/04

Analyte	Result	LOD	LOQ	EQL	Dil.	Units	Code	Anl Date	Prep Method	Anl Method
PAH Blank ID	1550-29				1					

En Chem

A Division of Pace Analytical Services, Inc.

Analytical Report Number: 853671

1241 Bellevue Street
Green Bay, WI 54302
920-469-2436

Client : ENSR-MN
Project Name : SWL & P
Project Number : 09413-098
Field ID : MW-8

Matrix Type : WATER
Collection Date : 11/16/04
Report Date : 12/01/04
Lab Sample Number : 853671-004

BTEX

Prep Date: 11/22/04

Analyte	Result	LOD	LOQ	EQL	Dil.	Units	Code	Anl Date	Prep Method	Anl Method
Benzene	74000	34	110		250	ug/L		11/22/04	SW846 5030B	SW846 M8021
Ethylbenzene	980	100	330		250	ug/L		11/22/04	SW846 5030B	SW846 M8021
Toluene	51000	89	300		250	ug/L		11/22/04	SW846 5030B	SW846 M8021
Xylene, o	6500	90	300		250	ug/L		11/22/04	SW846 5030B	SW846 M8021
Xylenes, m + p	14000	190	620		250	ug/L		11/22/04	SW846 5030B	SW846 M8021
a,a,a-Trifluorotoluene	96				1	%Recov		11/22/04	SW846 5030B	SW846 M8021

BTEX BLANK

Prep Date: 11/22/04

Analyte	Result	LOD	LOQ	EQL	Dil.	Units	Code	Anl Date	Prep Method	Anl Method
BTEX Blank ID	1536-65				1					

PAH/ PNA

Prep Date: 11/23/04

Analyte	Result	LOD	LOQ	EQL	Dil.	Units	Code	Anl Date	Prep Method	Anl Method
1-Methylnaphthalene	690	130	430		800	ug/L		11/30/04	SW846 3510C	8270C-SIM
2-Methylnaphthalene	830	140	480		800	ug/L		11/30/04	SW846 3510C	8270C-SIM
Acenaphthene	1000	120	410		800	ug/L		11/30/04	SW846 3510C	8270C-SIM
Acenaphthylene	130	120	410		800	ug/L	Q	11/30/04	SW846 3510C	8270C-SIM
Anthracene	520	110	380		800	ug/L		11/30/04	SW846 3510C	8270C-SIM
Benzo(a)anthracene	300	130	420		800	ug/L	Q	11/30/04	SW846 3510C	8270C-SIM
Benzo(a)pyrene	230	120	390		800	ug/L	Q	11/30/04	SW846 3510C	8270C-SIM
Benzo(b)fluoranthene	< 110	110	380		800	ug/L		11/30/04	SW846 3510C	8270C-SIM
Benzo(ghi)perylene	< 130	130	440		800	ug/L		11/30/04	SW846 3510C	8270C-SIM
Benzo(k)fluoranthene	140	120	410		800	ug/L	Q	11/30/04	SW846 3510C	8270C-SIM
Chrysene	290	100	350		800	ug/L	Q	11/30/04	SW846 3510C	8270C-SIM
Dibenz(a,h)anthracene	< 140	140	470		800	ug/L		11/30/04	SW846 3510C	8270C-SIM
Fluoranthene	790	110	350		800	ug/L		11/30/04	SW846 3510C	8270C-SIM
Fluorene	410	140	460		800	ug/L	Q	11/30/04	SW846 3510C	8270C-SIM
Indeno(1,2,3-cd)pyrene	< 110	110	360		800	ug/L		11/30/04	SW846 3510C	8270C-SIM
Naphthalene	1400	140	480		800	ug/L		11/30/04	SW846 3510C	8270C-SIM
Phenanthrene	1900	130	430		800	ug/L		11/30/04	SW846 3510C	8270C-SIM
Pyrene	1000	100	350		800	ug/L		11/30/04	SW846 3510C	8270C-SIM
Nitrobenzene-d5	0				800	%Recov	D	11/30/04	SW846 3510C	8270C-SIM
2-Fluorobiphenyl	0				800	%Recov	D	11/30/04	SW846 3510C	8270C-SIM
Terphenyl-d14	0				800	%Recov	D	11/30/04	SW846 3510C	8270C-SIM

PAH/PNA BLANK

Prep Date: 11/23/04

Analyte	Result	LOD	LOQ	EQL	Dil.	Units	Code	Anl Date	Prep Method	Anl Method
PAH Blank ID	1550-29				1					

En Chem

A Division of Pace Analytical Services, Inc.

Analytical Report Number: 853671

1241 Bellevue Street
Green Bay, WI 54302
920-469-2436

Client : ENSR-MN
Project Name : SWL & P
Project Number : 09413-098
Field ID : MW-9

Matrix Type : WATER
Collection Date : 11/16/04
Report Date : 12/01/04
Lab Sample Number : 853671-006

BTEX

Prep Date: 11/22/04

Analyte	Result	LOD	LOQ	EQL	Dil.	Units	Code	Anl Date	Prep Method	Anl Method
Benzene	54000	34	110		250	ug/L		11/22/04	SW846 5030B	SW846 M8021
Ethylbenzene	870	100	330		250	ug/L		11/22/04	SW846 5030B	SW846 M8021
Toluene	13000	89	300		250	ug/L		11/22/04	SW846 5030B	SW846 M8021
Xylene, o	780	90	300		250	ug/L		11/22/04	SW846 5030B	SW846 M8021
Xylenes, m + p	2700	190	620		250	ug/L		11/22/04	SW846 5030B	SW846 M8021
a,a,a-Trifluorotoluene	98				1	%Recov		11/22/04	SW846 5030B	SW846 M8021

BTEX BLANK

Prep Date: 11/22/04

Analyte	Result	LOD	LOQ	EQL	Dil.	Units	Code	Anl Date	Prep Method	Anl Method
BTEX Blank ID	1536-65				1					

PAH/ PNA

Prep Date: 11/23/04

Analyte	Result	LOD	LOQ	EQL	Dil.	Units	Code	Anl Date	Prep Method	Anl Method
1-Methylnaphthalene	100	20	66		1000	ug/L		11/30/04	SW846 3510C	8270C-SIM
2-Methylnaphthalene	110	23	76		1000	ug/L		11/30/04	SW846 3510C	8270C-SIM
Acenaphthene	100	19	65		1000	ug/L		11/30/04	SW846 3510C	8270C-SIM
Acenaphthylene	< 19	19	64		1000	ug/L		11/30/04	SW846 3510C	8270C-SIM
Anthracene	< 18	18	59		1000	ug/L		11/30/04	SW846 3510C	8270C-SIM
Benzo(a)anthracene	< 20	20	65		1000	ug/L		11/30/04	SW846 3510C	8270C-SIM
Benzo(a)pyrene	< 18	18	60		1000	ug/L		11/30/04	SW846 3510C	8270C-SIM
Benzo(b)fluoranthene	< 18	18	60		1000	ug/L		11/30/04	SW846 3510C	8270C-SIM
Benzo(ghi)perylene	< 21	21	69		1000	ug/L		11/30/04	SW846 3510C	8270C-SIM
Benzo(k)fluoranthene	< 19	19	64		1000	ug/L		11/30/04	SW846 3510C	8270C-SIM
Chrysene	< 16	16	55		1000	ug/L		11/30/04	SW846 3510C	8270C-SIM
Dibenz(a,h)anthracene	< 22	22	73		1000	ug/L		11/30/04	SW846 3510C	8270C-SIM
Fluoranthene	< 16	16	55		1000	ug/L		11/30/04	SW846 3510C	8270C-SIM
Fluorene	31	22	73		1000	ug/L	Q	11/30/04	SW846 3510C	8270C-SIM
Indeno(1,2,3-cd)pyrene	< 17	17	57		1000	ug/L		11/30/04	SW846 3510C	8270C-SIM
Naphthalene	310	22	75		1000	ug/L		11/30/04	SW846 3510C	8270C-SIM
Phenanthrene	78	20	68		1000	ug/L		11/30/04	SW846 3510C	8270C-SIM
Pyrene	< 16	16	54		1000	ug/L		11/30/04	SW846 3510C	8270C-SIM
Nitrobenzene-d5	0				1000	%Recov	D	11/30/04	SW846 3510C	8270C-SIM
2-Fluorobiphenyl	0				1000	%Recov	D	11/30/04	SW846 3510C	8270C-SIM
Terphenyl-d14	0				1000	%Recov	D	11/30/04	SW846 3510C	8270C-SIM

PAH/PNA BLANK

Prep Date: 11/23/04

Analyte	Result	LOD	LOQ	EQL	Dil.	Units	Code	Anl Date	Prep Method	Anl Method
PAH Blank ID	1550-29				1					

En Chem

A Division of Pace Analytical Services, Inc.

Analytical Report Number: 853671

1241 Bellevue Street
Green Bay, WI 54302
920-469-2436

Client : ENSR-MN
Project Name : SWL & P
Project Number : 09413-098
Field ID : MW-11

Matrix Type : WATER
Collection Date : 11/16/04
Report Date : 12/01/04
Lab Sample Number : 853671-008

BTEX

Prep Date: 11/23/04

Analyte	Result	LOD	LOQ	EQL	Dil.	Units	Code	Anl Date	Prep Method	Anl Method
Benzene	0.95	0.14	0.46		1	ug/L		11/23/04	SW846 5030B	SW846 M8021
Ethylbenzene	0.56	0.40	1.3		1	ug/L	Q	11/23/04	SW846 5030B	SW846 M8021
Toluene	< 0.36	0.36	1.2		1	ug/L		11/23/04	SW846 5030B	SW846 M8021
Xylene, o	3.9	0.36	1.2		1	ug/L		11/23/04	SW846 5030B	SW846 M8021
Xylenes, m + p	1.7	0.74	2.5		1	ug/L	Q	11/23/04	SW846 5030B	SW846 M8021
a,a,a-Trifluorotoluene	101				1	%Recov		11/23/04	SW846 5030B	SW846 M8021

BTEX BLANK

Prep Date: 11/22/04

Analyte	Result	LOD	LOQ	EQL	Dil.	Units	Code	Anl Date	Prep Method	Anl Method
BTEX Blank ID	1536-65				1					

PAH/ PNA

Prep Date: 11/23/04

Analyte	Result	LOD	LOQ	EQL	Dil.	Units	Code	Anl Date	Prep Method	Anl Method
1-Methylnaphthalene	10	1.0	3.3		50	ug/L	D	11/30/04	SW846 3510C	8270C-SIM
2-Methylnaphthalene	1.3	0.45	1.5		20	ug/L	Q	11/24/04	SW846 3510C	8270C-SIM
Acenaphthene	8.4	0.39	1.3		20	ug/L		11/24/04	SW846 3510C	8270C-SIM
Acenaphthylene	< 0.39	0.39	1.3		20	ug/L		11/24/04	SW846 3510C	8270C-SIM
Anthracene	< 0.35	0.35	1.2		20	ug/L		11/24/04	SW846 3510C	8270C-SIM
Benzo(a)anthracene	< 0.39	0.39	1.3		20	ug/L		11/24/04	SW846 3510C	8270C-SIM
Benzo(a)pyrene	< 0.36	0.36	1.2		20	ug/L		11/24/04	SW846 3510C	8270C-SIM
Benzo(b)fluoranthene	< 0.36	0.36	1.2		20	ug/L		11/24/04	SW846 3510C	8270C-SIM
Benzo(ghi)perylene	< 0.41	0.41	1.4		20	ug/L		11/24/04	SW846 3510C	8270C-SIM
Benzo(k)fluoranthene	< 0.39	0.39	1.3		20	ug/L		11/24/04	SW846 3510C	8270C-SIM
Chrysene	< 0.33	0.33	1.1		20	ug/L		11/24/04	SW846 3510C	8270C-SIM
Dibenz(a,h)anthracene	< 0.44	0.44	1.5		20	ug/L		11/24/04	SW846 3510C	8270C-SIM
Fluoranthene	< 0.33	0.33	1.1		20	ug/L		11/24/04	SW846 3510C	8270C-SIM
Fluorene	1.2	0.44	1.5		20	ug/L	Q	11/24/04	SW846 3510C	8270C-SIM
Indeno(1,2,3-cd)pyrene	< 0.34	0.34	1.1		20	ug/L		11/24/04	SW846 3510C	8270C-SIM
Naphthalene	19	1.1	3.7		50	ug/L	D	11/30/04	SW846 3510C	8270C-SIM
Phenanthrene	1.0	0.41	1.4		20	ug/L	Q	11/24/04	SW846 3510C	8270C-SIM
Pyrene	< 0.33	0.33	1.1		20	ug/L		11/24/04	SW846 3510C	8270C-SIM
Nitrobenzene-d5	0				20	%Recov	D	11/24/04	SW846 3510C	8270C-SIM
2-Fluorobiphenyl	0				20	%Recov	D	11/24/04	SW846 3510C	8270C-SIM
Terphenyl-d14	0				20	%Recov	D	11/24/04	SW846 3510C	8270C-SIM

PAH/PNA BLANK

Prep Date: 11/23/04

Analyte	Result	LOD	LOQ	EQL	Dil.	Units	Code	Anl Date	Prep Method	Anl Method
PAH Blank ID	1550-29				1					

En Chem

A Division of Pace Analytical Services, Inc.

Analytical Report Number: 853671

1241 Bellevue Street
Green Bay, WI 54302
920-469-2436

Client : ENSR-MN
Project Name : SWL & P
Project Number : 09413-098
Field ID : TRIP BLANK

Matrix Type : WATER
Collection Date : 11/16/04
Report Date : 12/01/04
Lab Sample Number : 853671-010

BTEX

Prep Date: 11/23/04

Analyte		Result	LOD	LOQ	EQL	Dil.	Units	Code	Anl Date	Prep Method	Anl Method
Benzene	<	0.14	0.14	0.46		1	ug/L		11/23/04	SW846 5030B	SW846 M8021
Ethylbenzene	<	0.40	0.40	1.3		1	ug/L		11/23/04	SW846 5030B	SW846 M8021
Toluene	<	0.36	0.36	1.2		1	ug/L		11/23/04	SW846 5030B	SW846 M8021
Xylene, o	<	0.36	0.36	1.2		1	ug/L		11/23/04	SW846 5030B	SW846 M8021
Xylenes, m + p	<	0.74	0.74	2.5		1	ug/L		11/23/04	SW846 5030B	SW846 M8021
a,a,a-Trifluorotoluene		101				1	%Recov		11/23/04	SW846 5030B	SW846 M8021

BTEX BLANK

Prep Date: 11/22/04

Analyte	Result	LOD	LOQ	EQL	Dil.	Units	Code	Anl Date	Prep Method	Anl Method
BTEX Blank ID	1536-65				1					

Qualifier Codes

Flag	Applies To	Explanation
A	Inorganic	Analyte is detected in the method blank. Method blank criteria is evaluated to the laboratory method detection limit. Additionally, method blank acceptance may be based on project specific criteria or determined from analyte concentrations in the sample and are evaluated on a sample by sample basis.
B	Inorganic	The analyte has been detected between the method detection limit and the reporting limit.
B	Organic	Analyte is present in the method blank. Method blank criteria is evaluated to the laboratory method detection limit. Additionally, method blank acceptance may be based on project specific criteria or determined from analyte concentrations in the sample and are evaluated on a sample by sample basis.
C	All	Elevated detection limit.
D	All	Analyte value from diluted analysis or surrogate result not applicable due to sample dilution.
E	Inorganic	Estimated concentration due to matrix interferences. During the metals analysis the serial dilution failed to meet the established control limits of 0-10%. The sample concentration is greater than 50 times the IDL for analysis done on the ICP or 100 times the IDL for analysis done on the ICP-MS. The result was flagged with the E qualifier to indicate that a physical interference was observed.
E	Organic	Analyte concentration exceeds calibration range.
F	Inorganic	Due to potential interferences for this analysis by Inductively Coupled Plasma techniques (SW-846 Method 6010), this analyte has been confirmed by and reported from an alternate method.
F	Organic	Surrogate results outside control criteria.
H	All	Preservation, extraction or analysis performed past holding time.
HF	Inorganic	This test is considered a field parameter, and the recommended holding time is 15 minutes from collection. The analysis was performed in the laboratory beyond the recommended holding time.
J	Inorganic	The analyte has been detected between the method detection limit and the reporting limit.
J	Organic	Concentration detected is greater than the method detection limit but less than the reporting limit.
K	Inorganic	Sample received unpreserved. Sample was either preserved at the time of receipt or at the time of sample preparation.
K	Organic	Detection limit may be elevated due to the presence of an unrequested analyte.
L	All	Elevated detection limit due to low sample volume.
M	Organic	Sample pH was greater than 2
N	All	Spiked sample recovery not within control limits.
O	Organic	Sample received overweight.
P	Organic	The relative percent difference between the two columns for detected concentrations was greater than 40%.
Q	All	The analyte has been detected between the limit of detection (LOD) and limit of quantitation (LOQ). The results are qualified due to the uncertainty of analyte concentrations within this range.
S	Organic	The relative percent difference between quantitation and confirmation columns exceeds internal quality control criteria. Because the result is unconfirmed, it has been reported as a non-detect with an elevated detection limit.
U	All	The analyte was not detected at or above the reporting limit.
V	All	Sample received with headspace.
W	All	A second aliquot of sample was analyzed from a container with headspace.
X	All	See Sample Narrative.
&	All	Laboratory Control Spike recovery not within control limits.
*	All	Precision not within control limits.
<	All	The analyte was not detected at or above the reporting limit.
1	Inorganic	Dissolved analyte or filtered analyte greater than total analyte; analyses passed QC based on precision criteria.
2	Inorganic	Dissolved analyte or filtered analyte greater than total analyte; analyses failed QC based on precision criteria.
3	Inorganic	BOD result is estimated due to the BOD blank exceeding the allowable oxygen depletion.
4	Inorganic	BOD duplicate precision not within control limits. Due to the 48 hour holding time for this test, it is not practical to reanalyze and try to correct the deficiency.
5	Inorganic	BOD result is estimated due to insufficient oxygen depletion. Due to the 48 hour holding time for this test, it is not practical to reanalyze and try to correct the deficiency.
6	Inorganic	BOD laboratory control sample not within control limits. Due to the 48 hour holding time for this test, it is not practical to reanalyze and try to correct the deficiency.
7	Inorganic	BOD result is estimated due to complete oxygen depletion. Due to the 48 hour holding time for this test, it is not practical to reanalyze and try to correct the deficiency.

En Chem, Inc. Cooler Receipt Log

Batch No. P53671

Project Name or ID _____ No. of Coolers: 1 Temps: 3 °C / ROI

A. Receipt Phase: Date cooler was opened: 11/19/04 **By:** L. Williams

1: Were samples received on ice? (Must be ≤ 6 C)	YES	NO[2]	NA
2. Was there a Temperature Blank?	YES	NO	
3: Were custody seals present and intact on cooler? (Record on COC)	YES	NO	
4: Are COC documents present?	YES	NO[2]	
5: Does this Project require quick turn around analysis?	YES	NO	
6: Is there any sub-work?	YES	NO	
7: Are there any short hold time tests?	YES	NO	
8: Are any samples nearing expiration of hold-time? (Within 2 days)	YES[1]	NO	Contacted by/Who_____
9: Do any samples need to be Filtered or Preserved in the lab?	YES[1]	NO	Contacted by/Who_____

B. Check-in Phase: Date samples were Checked-in: 11/19/04 **By:** L. Williams

1: Were all sample containers listed on the COC received and intact?	YES	NO[2]	NA
2: Sign the COC as received by En Chem. Completed	YES	NO	
3: Do sample labels match the COC?	YES	NO[2]	
4: Completed pH check on preserved samples.. *(This statement does not apply to water: VOC, O&G, TOC, DRO, Total Rec. Phenolics)*	YES	NO	NA
5: Do samples have correct chemical preservation? *(This statement does not apply to water: VOC, O&G, TOC, DRO, Total Rec. Phenolics)*	YES	NO[2]	NA
6: Are dissolved parameters field filtered?	YES	NO[2]	NA
7: Are sample volumes adequate for tests requested?	YES	NO[2]	
8: Are VOC samples free of bubbles >6mm	YES	NO[2]	NA
9: Enter samples into logbook. Completed	YES	NO	
10: Place laboratory sample number on all containers and COC. Completed	YES	NO	
11: Complete Laboratory Tracking Sheet (LTS). Completed	YES	NO	NA
12: Start Nonconformance form.	YES	NO	NA
13: Initiate Subcontracting procedure. Completed	YES	NO	NA
14: Check laboratory sample number on all containers and COC. SVM	YES	NO	NA

Short Hold-time tests:

24 Hours or less	48 Hours	7 days	Footnotes
Coliform	BOD	Ash	1 Notify proper lab group immediately.
Corrosivity = pH	Color	Aqueous Extractable Organics- ALL	2 Complete nonconformance memo.
Dissolved Oxygen	Nitrite or Nitrate	Flashpoint	
Hexavalent Chromium	Ortho Phosphorus	Free Liquids	
HPC	Surfactants	Sulfide	
Ferrous Iron	Turbidity	TDS	
Eh	En Core Preservation	TSS	
Odor	Power stop preservation	Total Solids	
Residual Chlorine		TVS	
Sulfite		TVSS	
		Unpreserved VOC's	

Rev. 2/05/04, Attachment to 1-REC-5.
Subject to QA Audit.

Reviewed by/date LW 11/19/04

p:/everyone/forms/samplereceiving/crl.doc

EN CHEM

A Division of Pace Analytical Services, Inc.

1241 Bellevue Street, Suite 9
Green Bay, WI 54302
920-469-2436, Fax: 920-469-8827

Analytical Report Number: 852367

Client: ENSR-MN
Project Name: SWL&P MGP
Project Number: 09413-098

Lab Contact: Laurie Woelfel

Lab Sample Number	Field ID	Matrix	Collection Date
852367-001	MW-11-6-7	SOIL	10/13/04
852367-002	MW-11-6-7-DUP	SOIL	10/13/04
852367-003	MW-10-5-6	SOIL	10/13/04
852367-004	GP23-14-15	SOIL	10/14/04
852367-005	GP23	WATER	10/14/04
852367-006	MW-8-7-8	SOIL	10/14/04
852367-007	MW-12-4-5	SOIL	10/15/04

I certify that the data contained in this Final Report has been generated and reviewed in accordance with approved methods and Laboratory Standard Operating Procedure. Exceptions, if any, are discussed in the accompanying sample comments. Release of this final report is authorized by Laboratory management, as is verified by the following signature. Reported results shall not be reproduced, except in full, without the written approval of the lab. The sample results relate only to the analytes of interest tested.

Laurie Woelfel
Approval Signature

10/28/04
Date

En Chem, Inc.

A Division of Pace Analytical Services, Inc.

Analytical Report Number: 852367

1241 Bellevue Street
Green Bay, WI 54302
920-469-2436

Client : ENSR-MN
Project Name : SWL&P MGP
Project Number : 09413-098
Field ID : MW-11-6-7-DUP

Matrix Type : SOIL
Collection Date : 10/13/04
Report Date : 10/26/04
Lab Sample Number : 852367-002

INORGANICS

Test	Result	LOD	LOQ	EQL	Dil.	Units	Code	Anl Date	Prep Method	Anl Method
Percent Solids	74.7				1	%		10/20/04	SM 2540G M	SM 2540G M

BTEX

Prep Date: 10/21/04

Analyte	Result	LOD	LOQ	EQL	Dil.	Units	Code	Anl Date	Prep Method	Anl Method
Benzene	< 33	33	80		50	ug/kg		10/22/04	5035/5030B	SW846 M8021
Ethylbenzene	< 33	33	80		50	ug/kg		10/22/04	5035/5030B	SW846 M8021
Toluene	120	33	80		50	ug/kg		10/22/04	5035/5030B	SW846 M8021
Xylene, o	< 33	33	80		50	ug/kg		10/22/04	5035/5030B	SW846 M8021
Xylenes, m + p	< 33	33	80		50	ug/kg		10/22/04	5035/5030B	SW846 M8021
a,a,a-Trifluorotoluene	101				1	%Recov		10/22/04	5035/5030B	SW846 M8021

BTEX BLANK

Prep Date: 10/21/04

Analyte	Result	LOD	LOQ	EQL	Dil.	Units	Code	Anl Date	Prep Method	Anl Method
BTEX Blank ID	1530-72				1					

PAH/PNA

Prep Date: 10/20/04

Analyte	Result	LOD	LOQ	EQL	Dil.	Units	Code	Anl Date	Prep Method	Anl Method
1-Methylnaphthalene	4.6	3.1	10		1	ug/Kg	Q	10/20/04	SW846 3545	8270C-SIM
2-Methylnaphthalene	4.8	4.3	14		1	ug/Kg	Q	10/20/04	SW846 3545	8270C-SIM
Acenaphthene	27	2.1	7.1		1	ug/Kg		10/20/04	SW846 3545	8270C-SIM
Acenaphthylene	< 7.5	7.5	25		1	ug/Kg		10/20/04	SW846 3545	8270C-SIM
Anthracene	8.5	2.9	9.6		1	ug/Kg	Q	10/20/04	SW846 3545	8270C-SIM
Benzo(a)anthracene	19	17	56		1	ug/Kg	Q	10/20/04	SW846 3545	8270C-SIM
Benzo(a)pyrene	19	13	45		1	ug/Kg	Q	10/20/04	SW846 3545	8270C-SIM
Benzo(b)fluoranthene	< 11	11	37		1	ug/Kg		10/20/04	SW846 3545	8270C-SIM
Benzo(ghi)perylene	10	7.4	25		1	ug/Kg	Q	10/20/04	SW846 3545	8270C-SIM
Benzo(k)fluoranthene	< 15	15	49		1	ug/Kg		10/20/04	SW846 3545	8270C-SIM
Chrysene	18	15	51		1	ug/Kg	Q	10/20/04	SW846 3545	8270C-SIM
Dibenz(a,h)anthracene	< 4.4	4.4	15		1	ug/Kg		10/20/04	SW846 3545	8270C-SIM
Fluoranthene	39	13	42		1	ug/Kg	Q	10/20/04	SW846 3545	8270C-SIM
Fluorene	4.0	1.8	5.9		1	ug/Kg	Q	10/20/04	SW846 3545	8270C-SIM
Indeno(1,2,3-cd)pyrene	7.8	7.1	24		1	ug/Kg	Q	10/20/04	SW846 3545	8270C-SIM
Naphthalene	13	3.3	11		1	ug/Kg		10/20/04	SW846 3545	8270C-SIM
Phenanthrene	8.3	7.5	25		1	ug/Kg	Q	10/20/04	SW846 3545	8270C-SIM
Pyrene	51	17	56		1	ug/Kg	Q	10/20/04	SW846 3545	8270C-SIM
Nitrobenzene-d5	54				1	%Recov		10/20/04	SW846 3545	8270C-SIM
2-Fluorobiphenyl	61				1	%Recov		10/20/04	SW846 3545	8270C-SIM
Terphenyl-d14	77				1	%Recov		10/20/04	SW846 3545	8270C-SIM

PAH/PNA BLANK

Prep Date: 10/20/04

Analyte	Result	LOD	LOQ	EQL	Dil.	Units	Code	Anl Date	Prep Method	Anl Method
PAH Blank ID	1454-24				1			10/20/04		

En Chem, Inc.

A Division of Pace Analytical Services, Inc.

Analytical Report Number: 852367

1241 Bellevue Street
Green Bay, WI 54302
920-469-2436

Client : ENSR-MN
Project Name : SWL&P MGP
Project Number : 09413-098
Field ID : GP23-14-15

Matrix Type : SOIL
Collection Date : 10/14/04
Report Date : 10/26/04
Lab Sample Number : 852367-004

INORGANICS

Test	Result	LOD	LOQ	EQL	Dil.	Units	Code	Anl Date	Prep Method	Anl Method
Percent Solids	46.9				1	%		10/20/04	SM 2540G M	SM 2540G M

BTEX

Prep Date: 10/21/04

Analyte	Result	LOD	LOQ	EQL	Dil.	Units	Code	Anl Date	Prep Method	Anl Method
Benzene	1.3E+7	27000	64000		25000	ug/kg		10/22/04	SW846 5030B	SW846 M8021
Ethylbenzene	170000	27000	64000		25000	ug/kg		10/22/04	SW846 5030B	SW846 M8021
Toluene	1.1E+7	27000	64000		25000	ug/kg		10/22/04	SW846 5030B	SW846 M8021
Xylene, o	2.1E+6	27000	64000		25000	ug/kg		10/22/04	SW846 5030B	SW846 M8021
Xylenes, m + p	2.9E+6	53000	130000		25000	ug/kg		10/22/04	SW846 5030B	SW846 M8021
a,a,a-Trifluorotoluene	94				1	%Recov		10/22/04	SW846 5030B	SW846 M8021

BTEX BLANK

Prep Date: 10/21/04

Analyte	Result	LOD	LOQ	EQL	Dil.	Units	Code	Anl Date	Prep Method	Anl Method
BTEX Blank ID	1530-72				1					

PAH/PNA

Prep Date: 10/20/04

Analyte	Result	LOD	LOQ	EQL	Dil.	Units	Code	Anl Date	Prep Method	Anl Method
1-Methylnaphthalene	6100	780	2600		80	ug/Kg		10/21/04	SW846 3545	8270C-SIM
2-Methylnaphthalene	11000	1100	3700		80	ug/Kg		10/21/04	SW846 3545	8270C-SIM
Acenaphthene	3400	540	1800		80	ug/Kg		10/21/04	SW846 3545	8270C-SIM
Acenaphthylene	15000	1900	6300		80	ug/Kg		10/21/04	SW846 3545	8270C-SIM
Anthracene	9500	730	2400		80	ug/Kg		10/21/04	SW846 3545	8270C-SIM
Benzo(a)anthracene	9600	4200	14000		80	ug/Kg	Q	10/21/04	SW846 3545	8270C-SIM
Benzo(a)pyrene	13000	3400	11000		80	ug/Kg		10/21/04	SW846 3545	8270C-SIM
Benzo(b)fluoranthene	8900	2800	9300		80	ug/Kg	Q	10/21/04	SW846 3545	8270C-SIM
Benzo(ghi)perylene	14000	1900	6300		80	ug/Kg		10/21/04	SW846 3545	8270C-SIM
Benzo(k)fluoranthene	8900	3800	13000		80	ug/Kg	Q	10/21/04	SW846 3545	8270C-SIM
Chrysene	13000	3900	13000		80	ug/Kg		10/21/04	SW846 3545	8270C-SIM
Dibenz(a,h)anthracene	2000	1100	3800		80	ug/Kg	Q	10/21/04	SW846 3545	8270C-SIM
Fluoranthene	17000	3200	11000		80	ug/Kg		10/21/04	SW846 3545	8270C-SIM
Fluorene	2300	450	1500		80	ug/Kg		10/21/04	SW846 3545	8270C-SIM
Indeno(1,2,3-cd)pyrene	9100	1800	6000		80	ug/Kg		10/21/04	SW846 3545	8270C-SIM
Naphthalene	190000	840	2800		80	ug/Kg		10/21/04	SW846 3545	8270C-SIM
Phenanthrene	15000	1900	6400		80	ug/Kg		10/21/04	SW846 3545	8270C-SIM
Pyrene	29000	4200	14000		80	ug/Kg		10/21/04	SW846 3545	8270C-SIM
Nitrobenzene-d5	0				80	%Recov	D	10/21/04	SW846 3545	8270C-SIM
2-Fluorobiphenyl	0				80	%Recov	D	10/21/04	SW846 3545	8270C-SIM
Terphenyl-d14	0				80	%Recov	D	10/21/04	SW846 3545	8270C-SIM

PAH/PNA BLANK

Prep Date: 10/20/04

Analyte	Result	LOD	LOQ	EQL	Dil.	Units	Code	Anl Date	Prep Method	Anl Method
PAH Blank ID	1454-24				1			10/20/04		

En Chem, Inc.

A Division of Pace Analytical Services, Inc.

Analytical Report Number: 852367

1241 Bellevue Street
Green Bay, WI 54302
920-469-2436

Client : ENSR-MN
Project Name : SWL&P MGP
Project Number : 09413-098
Field ID : MW-8-7-8

Matrix Type : SOIL
Collection Date : 10/14/04
Report Date : 10/26/04
Lab Sample Number : 852367-006

INORGANICS

Test	Result	LOD	LOQ	EQL	Dil.	Units	Code	Anl Date	Prep Method	Anl Method
Percent Solids	59.9				1	%		10/20/04	SM 2540G M	SM 2540G M

BTEX

Prep Date: 10/21/04

Analyte	Result	LOD	LOQ	EQL	Dil.	Units	Code	Anl Date	Prep Method	Anl Method
Benzene	5900	42	100		50	ug/kg		10/22/04	5035/5030B	SW846 M8021
Ethylbenzene	730	42	100		50	ug/kg		10/22/04	5035/5030B	SW846 M8021
Toluene	3200	42	100		50	ug/kg		10/22/04	5035/5030B	SW846 M8021
Xylene, o	620	42	100		50	ug/kg		10/22/04	5035/5030B	SW846 M8021
Xylenes, m + p	1100	42	100		50	ug/kg		10/22/04	5035/5030B	SW846 M8021
a,a,a-Trifluorotoluene	97				1	%Recov		10/22/04	5035/5030B	SW846 M8021

BTEX BLANK

Prep Date: 10/21/04

Analyte	Result	LOD	LOQ	EQL	Dil.	Units	Code	Anl Date	Prep Method	Anl Method
BTEX Blank ID	1530-72				1					

PAH/PNA

Prep Date: 10/20/04

Analyte	Result	LOD	LOQ	EQL	Dil.	Units	Code	Anl Date	Prep Method	Anl Method
1-Methylnaphthalene	9000	150	510		20	ug/Kg		10/21/04	SW846 3545	8270C-SIM
2-Methylnaphthalene	12000	220	720		20	ug/Kg		10/21/04	SW846 3545	8270C-SIM
Acenaphthene	13000	110	350		20	ug/Kg		10/21/04	SW846 3545	8270C-SIM
Acenaphthylene	9900	370	1200		20	ug/Kg		10/21/04	SW846 3545	8270C-SIM
Anthracene	10000	140	480		20	ug/Kg		10/21/04	SW846 3545	8270C-SIM
Benzo(a)anthracene	13000	830	2800		20	ug/Kg		10/21/04	SW846 3545	8270C-SIM
Benzo(a)pyrene	30000	670	2200		20	ug/Kg		10/21/04	SW846 3545	8270C-SIM
Benzo(b)fluoranthene	15000	550	1800		20	ug/Kg		10/21/04	SW846 3545	8270C-SIM
Benzo(ghi)perylene	13000	370	1200		20	ug/Kg		10/21/04	SW846 3545	8270C-SIM
Benzo(k)fluoranthene	15000	740	2500		20	ug/Kg		10/21/04	SW846 3545	8270C-SIM
Chrysene	17000	760	2500		20	ug/Kg		10/21/04	SW846 3545	8270C-SIM
Dibenz(a,h)anthracene	3300	220	740		20	ug/Kg		10/21/04	SW846 3545	8270C-SIM
Fluoranthene	18000	630	2100		20	ug/Kg		10/21/04	SW846 3545	8270C-SIM
Fluorene	4000	89	300		20	ug/Kg		10/21/04	SW846 3545	8270C-SIM
Indeno(1,2,3-cd)pyrene	10000	350	1200		20	ug/Kg		10/21/04	SW846 3545	8270C-SIM
Naphthalene	22000	160	550		20	ug/Kg		10/21/04	SW846 3545	8270C-SIM
Phenanthrene	22000	380	1300		20	ug/Kg		10/21/04	SW846 3545	8270C-SIM
Pyrene	28000	830	2800		20	ug/Kg		10/21/04	SW846 3545	8270C-SIM
Nitrobenzene-d5	0				20	%Recov	D	10/21/04	SW846 3545	8270C-SIM
2-Fluorobiphenyl	0				20	%Recov	D	10/21/04	SW846 3545	8270C-SIM
Terphenyl-d14	0				20	%Recov	D	10/21/04	SW846 3545	8270C-SIM

PAH/PNA BLANK

Prep Date: 10/20/04

Analyte	Result	LOD	LOQ	EQL	Dil.	Units	Code	Anl Date	Prep Method	Anl Method
PAH Blank ID	1454-24				1			10/20/04		

Qualifier Codes

Flag	Applies To	Explanation
A	Inorganic	Analyte is detected in the method blank. Method blank criteria is evaluated to the laboratory method detection limit. Additionally, method blank acceptance may be based on project specific criteria or determined from analyte concentrations in the sample and are evaluated on a sample by sample basis.
B	Inorganic	The analyte has been detected between the method detection limit and the reporting limit.
B	Organic	Analyte is present in the method blank. Method blank criteria is evaluated to the laboratory method detection limit. Additionally, method blank acceptance may be based on project specific criteria or determined from analyte concentrations in the sample and are evaluated on a sample by sample basis.
C	All	Elevated detection limit.
D	All	Analyte value from diluted analysis or surrogate result not applicable due to sample dilution.
E	Inorganic	Estimated concentration due to matrix interferences. During the metals analysis the serial dilution failed to meet the established control limits of 0-10%. The sample concentration is greater than 50 times the IDL for analysis done on the ICP or 100 times the IDL for analysis done on the ICP-MS. The result was flagged with the E qualifier to indicate that a physical interference was observed.
E	Organic	Analyte concentration exceeds calibration range.
F	Inorganic	Due to potential interferences for this analysis by Inductively Coupled Plasma techniques (SW-846 Method 6010), this analyte has been confirmed by and reported from an alternate method.
F	Organic	Surrogate results outside control criteria.
H	All	Preservation, extraction or analysis performed past holding time.
HF	Inorganic	This test is considered a field parameter, and the recommended holding time is 15 minutes from collection. The analysis was performed in the laboratory beyond the recommended holding time.
J	Inorganic	The analyte has been detected between the method detection limit and the reporting limit.
J	Organic	Concentration detected is greater than the method detection limit but less than the reporting limit.
K	Inorganic	Sample received unpreserved. Sample was either preserved at the time of receipt or at the time of sample preparation.
K	Organic	Detection limit may be elevated due to the presence of an unrequested analyte.
L	All	Elevated detection limit due to low sample volume.
M	Organic	Sample pH was greater than 2
N	All	Spiked sample recovery not within control limits.
O	Organic	Sample received overweight.
P	Organic	The relative percent difference between the two columns for detected concentrations was greater than 40%.
Q	All	The analyte has been detected between the limit of detection (LOD) and limit of quantitation (LOQ). The results are qualified due to the uncertainty of analyte concentrations within this range.
S	Organic	The relative percent difference between quantitation and confirmation columns exceeds internal quality control criteria. Because the result is unconfirmed, it has been reported as a non-detect with an elevated detection limit.
U	All	The analyte was not detected at or above the reporting limit.
V	All	Sample received with headspace.
W	All	A second aliquot of sample was analyzed from a container with headspace.
X	All	See Sample Narrative.
&	All	Laboratory Control Spike recovery not within control limits.
*	All	Precision not within control limits.
<	All	The analyte was not detected at or above the reporting limit.
1	Inorganic	Dissolved analyte or filtered analyte greater than total analyte; analyses passed QC based on precision criteria.
2	Inorganic	Dissolved analyte or filtered analyte greater than total analyte; analyses failed QC based on precision criteria.
3	Inorganic	BOD result is estimated due to the BOD blank exceeding the allowable oxygen depletion.
4	Inorganic	BOD duplicate precision not within control limits. Due to the 48 hour holding time for this test, it is not practical to reanalyze and try to correct the deficiency.
5	Inorganic	BOD result is estimated due to insufficient oxygen depletion. Due to the 48 hour holding time for this test, it is not practical to reanalyze and try to correct the deficiency.
6	Inorganic	BOD laboratory control sample not within control limits. Due to the 48 hour holding time for this test, it is not practical to reanalyze and try to correct the deficiency.
7	Inorganic	BOD result is estimated due to complete oxygen depletion. Due to the 48 hour holding time for this test, it is not practical to reanalyze and try to correct the deficiency.

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

BLKV 1530-72

Lab Name: ENCHEM INC.-GREEN BAY Contract:

Lab Code: ENCHEMGB Case No.: SAS No.: SDG No.: GRO7-102104

Matrix: (soil/water) SOIL Lab Sample ID: BLKV 1530-72

Sample wt/vol: 10.0 (g/mL) G Lab File ID: 007F0201

Level: (low/med) MED Date Received: _____

% Moisture: not dec. _____ Date Analyzed: 10/21/04

GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 50.0

Soil Extract Volume: 10(mL) Soil Aliquot Volume: 1000(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
1634-04-4	Methyl tert-butyl ether	25.00	U
71-43-2	Benzene	25.00	U
108-88-3	Toluene	25.00	U
100-41-4	Ethylbenzene	25.00	U
108-38-3	m/p-Xylene	50.00	U
95-47-6	o-Xylene	25.00	U
108-67-8	1,3,5-Trimethylbenzene	25.00	U
95-63-6	1,2,4-Trimethylbenzene	25.00	U
91-20-3	Naphthalene	30.98	
----------	Total Xylenes	75.00	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

BLKK 1548-79

Lab Name: EN CHEM INC. - GREEN BAY Contract:

Lab Code: ENCHEMGB Case No.: SAS No.: SDG No.: GRO2-102104

Matrix: (soil/water) WATER Lab Sample ID: BLKK 1548-79

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 007F0101

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ Date Analyzed: 10/21/04

GC Column: DB-624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
1634-04-4	Methyl tert-butyl ether	1.000	U
71-43-2	Benzene	1.000	U
108-88-3	Toluene	1.000	U
100-41-4	Ethylbenzene	1.000	U
108-38-3	m/p-Xylene	2.000	U
95-47-6	o-Xylene	1.000	U
108-67-8	1,3,5-Trimethylbenzene	1.000	U
95-63-6	1,2,4-Trimethylbenzene	1.000	U
91-20-3	Naphthalene	1.000	U
----------	Total Xylenes	3.000	U

PAH Sand Blank
Anal by: aro
Anal date-10/20/2004
Blank #1454-24

	LOD	LOQ	REPORTED RESULT	UNITS	QUALIFIER	INIT RES	WEIGHT	CALC RES
Acenaphthene	1.59	25	ND	ug/kg		0	0.02	0
Acenaphthylene	5.58	25	ND	ug/kg		0	0.02	0
Anthracene	2.15	25	ND	ug/kg		0	0.02	0
Benzo(a)anthracene	12.44	25	ND	ug/kg		0	0.02	0
Benzo(a)pyrene	10.08	25	ND	ug/kg		0	0.02	0
Benzo(b)fluoranthene	8.20	25	ND	ug/kg		0	0.02	0
Benzo(g,h,i)perylene	5.56	25	ND	ug/kg		0	0.02	0
Benzo(k)fluoranthene	11.02	25	ND	ug/kg		0	0.02	0
Chrysene	11.44	25	ND	ug/kg		0	0.02	0
Dibenzo(a,h)anthracene	3.32	25	ND	ug/kg		0	0.02	0
Fluoranthene	9.50	25	ND	ug/kg		0	0.02	0
Fluorene	1.33	25	ND	ug/kg		0	0.02	0
Indeno(1,2,3-c,d)pyrene	5.30	25	ND	ug/kg		0	0.02	0
1-Methylnaphthalene	2.29	25	ND	ug/kg		0	0.02	0
2-Methylnaphthalene	3.24	25	ND	ug/kg		0	0.02	0
Naphthalene	2.45	25	ND	ug/kg		0	0.02	0
Phenanthrene	5.64	25	ND	ug/kg		0	0.02	0
Pyrene	12.44	25	ND	ug/kg		0	0.02	0
Nitobenzene-d5			74.1	% recov			1	74.1
2-Fluorobiphenyl			71.5	% recov			1	71.47
Terphenyl-d14			76.2	% recov			1	76.15

En Chem, Inc.

A Division of Pace Analytical Services, Inc.

Analytical Report Number: 852196

1241 Bellevue Street
Green Bay, WI 54302
920-469-2436

Client : ENSR-MN
Project Name : SWL&P
Project Number : 09413-098
Field ID : GP30-8-9

Matrix Type : SOIL
Collection Date : 10/12/04
Report Date : 10/26/04
Lab Sample Number : 852196-002

INORGANICS

Test	Result	LOD	LOQ	EQL	Dil.	Units	Code	Anl Date	Prep Method	Anl Method
Percent Solids	76.4				1	%		10/15/04	SM 2540G M	SM 2540G M

BTEX

Prep Date: 10/21/04

Analyte	Result	LOD	LOQ	EQL	Dil.	Units	Code	Anl Date	Prep Method	Anl Method
Benzene	14000	260	630		400	ug/kg		10/21/04	SW846 5030B	SW846 M8021
Ethylbenzene	16000	260	630		400	ug/kg		10/21/04	SW846 5030B	SW846 M8021
Toluene	< 200	200	480		400	ug/kg		10/21/04	SW846 5030B	SW846 M8021
Xylene, o	5900	260	630		400	ug/kg		10/21/04	SW846 5030B	SW846 M8021
Xylenes, m + p	1500	520	1300		400	ug/kg		10/21/04	SW846 5030B	SW846 M8021
a,a,a-Trifluorotoluene	92				1	%Recov		10/21/04	SW846 5030B	SW846 M8021

PAH/PNA

Prep Date: 10/19/04

Analyte	Result	LOD	LOQ	EQL	Dil.	Units	Code	Anl Date	Prep Method	Anl Method
1-Methylnaphthalene	2200	30	100		10	ug/Kg		10/25/04	SW846 3545	8270C-SIM
2-Methylnaphthalene	2800	42	140		10	ug/Kg		10/25/04	SW846 3545	8270C-SIM
Acenaphthene	3500	21	69		10	ug/Kg		10/25/04	SW846 3545	8270C-SIM
Acenaphthylene	200	73	240		10	ug/Kg	Q	10/25/04	SW846 3545	8270C-SIM
Anthracene	1800	28	94		10	ug/Kg		10/25/04	SW846 3545	8270C-SIM
Benzo(a)anthracene	790	160	540		10	ug/Kg		10/25/04	SW846 3545	8270C-SIM
Benzo(a)pyrene	580	130	440		10	ug/Kg		10/25/04	SW846 3545	8270C-SIM
Benzo(b)fluoranthene	230	110	360		10	ug/Kg	Q	10/25/04	SW846 3545	8270C-SIM
Benzo(ghi)perylene	240	73	240		10	ug/Kg		10/25/04	SW846 3545	8270C-SIM
Benzo(k)fluoranthene	360	140	480		10	ug/Kg	Q	10/25/04	SW846 3545	8270C-SIM
Chrysene	760	150	500		10	ug/Kg		10/25/04	SW846 3545	8270C-SIM
Dibenz(a,h)anthracene	61	43	140		10	ug/Kg	Q	10/25/04	SW846 3545	8270C-SIM
Fluoranthene	1900	120	410		10	ug/Kg		10/25/04	SW846 3545	8270C-SIM
Fluorene	1200	17	58		10	ug/Kg		10/25/04	SW846 3545	8270C-SIM
Indeno(1,2,3-cd)pyrene	180	69	230		10	ug/Kg	Q	10/25/04	SW846 3545	8270C-SIM
Naphthalene	4500	32	110		10	ug/Kg		10/25/04	SW846 3545	8270C-SIM
Phenanthrene	5200	74	250		10	ug/Kg		10/25/04	SW846 3545	8270C-SIM
Pyrene	2400	160	540		10	ug/Kg		10/25/04	SW846 3545	8270C-SIM
Nitrobenzene-d5	38				10	%Recov		10/25/04	SW846 3545	8270C-SIM
2-Fluorobiphenyl	42				10	%Recov		10/25/04	SW846 3545	8270C-SIM
Terphenyl-d14	52				10	%Recov		10/25/04	SW846 3545	8270C-SIM

En Chem, Inc.

A Division of Pace Analytical Services, Inc.

Analytical Report Number: 852196

1241 Bellevue Street
Green Bay, WI 54302
920-469-2436

Client : ENSR-MN
Project Name : SWL&P
Project Number : 09413-098
Field ID : GP26-6-7

Matrix Type : SOIL
Collection Date : 10/12/04
Report Date : 10/26/04
Lab Sample Number : 852196-004

INORGANICS

Test	Result	LOD	LOQ	EQL	Dil.	Units	Code	Anl Date	Prep Method	Anl Method
Percent Solids	57.6				1	%		10/15/04	SM 2540G M	SM 2540G M

BTEX

Prep Date: 10/21/04

Analyte	Result	LOD	LOQ	EQL	Dil.	Units	Code	Anl Date	Prep Method	Anl Method
Benzene	3300	43	100		50	ug/kg		10/21/04	SW846 5030B	SW846 M8021
Ethylbenzene	< 25	25	60		50	ug/kg		10/21/04	SW846 5030B	SW846 M8021
Toluene	< 25	25	60		50	ug/kg		10/21/04	SW846 5030B	SW846 M8021
Xylene, o	< 25	25	60		50	ug/kg		10/21/04	SW846 5030B	SW846 M8021
Xylenes, m + p	< 50	50	120		50	ug/kg		10/21/04	SW846 5030B	SW846 M8021
a,a,a-Trifluorotoluene	95				1	%Recov		10/21/04	SW846 5030B	SW846 M8021

PAH/PNA

Prep Date: 10/19/04

Analyte	Result	LOD	LOQ	EQL	Dil.	Units	Code	Anl Date	Prep Method	Anl Method
1-Methylnaphthalene	190	4.0	13		1	ug/Kg		10/19/04	SW846 3545	8270C-SIM
2-Methylnaphthalene	110	5.6	19		1	ug/Kg		10/19/04	SW846 3545	8270C-SIM
Acenaphthene	230	2.8	9.2		1	ug/Kg		10/19/04	SW846 3545	8270C-SIM
Acenaphthylene	< 9.7	9.7	32		1	ug/Kg		10/19/04	SW846 3545	8270C-SIM
Anthracene	24	3.7	12		1	ug/Kg		10/19/04	SW846 3545	8270C-SIM
Benzo(a)anthracene	22	22	72		1	ug/Kg	Q	10/19/04	SW846 3545	8270C-SIM
Benzo(a)pyrene	27	17	58		1	ug/Kg	Q	10/19/04	SW846 3545	8270C-SIM
Benzo(b)fluoranthene	< 14	14	47		1	ug/Kg		10/19/04	SW846 3545	8270C-SIM
Benzo(ghi)perylene	15	9.6	32		1	ug/Kg	Q	10/19/04	SW846 3545	8270C-SIM
Benzo(k)fluoranthene	< 19	19	64		1	ug/Kg		10/19/04	SW846 3545	8270C-SIM
Chrysene	24	20	66		1	ug/Kg	Q	10/19/04	SW846 3545	8270C-SIM
Dibenz(a,h)anthracene	< 5.8	5.8	19		1	ug/Kg		10/19/04	SW846 3545	8270C-SIM
Fluoranthene	43	16	55		1	ug/Kg	Q	10/19/04	SW846 3545	8270C-SIM
Fluorene	54	2.3	7.7		1	ug/Kg		10/19/04	SW846 3545	8270C-SIM
Indeno(1,2,3-cd)pyrene	12	9.2	31		1	ug/Kg	Q	10/19/04	SW846 3545	8270C-SIM
Naphthalene	430	4.3	14		1	ug/Kg		10/19/04	SW846 3545	8270C-SIM
Phenanthrene	100	9.8	33		1	ug/Kg		10/19/04	SW846 3545	8270C-SIM
Pyrene	53	22	72		1	ug/Kg	Q	10/19/04	SW846 3545	8270C-SIM
Nitrobenzene-d5	52				1	%Recov		10/19/04	SW846 3545	8270C-SIM
2-Fluorobiphenyl	44				1	%Recov		10/19/04	SW846 3545	8270C-SIM
Terphenyl-d14	53				1	%Recov		10/19/04	SW846 3545	8270C-SIM

En Chem, Inc.

A Division of Pace Analytical Services, Inc.

Analytical Report Number: 852196

1241 Bellevue Street
Green Bay, WI 54302
920-469-2436

Client : ENSR-MN
Project Name : SWL&P
Project Number : 09413-098
Field ID : MW-9-8-9

Matrix Type : SOIL
Collection Date : 10/12/04
Report Date : 10/26/04
Lab Sample Number : 852196-006

INORGANICS

Test	Result	LOD	LOQ	EQL	Dil.	Units	Code	Anl Date	Prep Method	Anl Method
Percent Solids	76.8				1	%		10/15/04	SM 2540G M	SM 2540G M

BTEX

Prep Date: 10/21/04

Analyte	Result	LOD	LOQ	EQL	Dil.	Units	Code	Anl Date	Prep Method	Anl Method
Benzene	34000	130	310		200	ug/kg		10/21/04	SW846 5030B	SW846 M8021
Ethylbenzene	31000	130	310		200	ug/kg		10/21/04	SW846 5030B	SW846 M8021
Toluene	1000	130	310		200	ug/kg		10/21/04	SW846 5030B	SW846 M8021
Xylene, o	24000	130	310		200	ug/kg		10/21/04	SW846 5030B	SW846 M8021
Xylenes, m + p	85000	260	620		200	ug/kg		10/21/04	SW846 5030B	SW846 M8021
a,a,a-Trifluorotoluene	92				1	%Recov		10/21/04	SW846 5030B	SW846 M8021

PAH/PNA

Prep Date: 10/19/04

Analyte	Result	LOD	LOQ	EQL	Dil.	Units	Code	Anl Date	Prep Method	Anl Method
1-Methylnaphthalene	1400	15	50		5	ug/Kg		10/21/04	SW846 3545	8270C-SIM
2-Methylnaphthalene	1600	21	70		5	ug/Kg		10/21/04	SW846 3545	8270C-SIM
Acenaphthene	1600	10	34		5	ug/Kg		10/21/04	SW846 3545	8270C-SIM
Acenaphthylene	790	36	120		5	ug/Kg		10/21/04	SW846 3545	8270C-SIM
Anthracene	1300	14	47		5	ug/Kg		10/21/04	SW846 3545	8270C-SIM
Benzo(a)anthracene	1300	81	270		5	ug/Kg		10/21/04	SW846 3545	8270C-SIM
Benzo(a)pyrene	1100	66	220		5	ug/Kg		10/21/04	SW846 3545	8270C-SIM
Benzo(b)fluoranthene	660	53	180		5	ug/Kg		10/21/04	SW846 3545	8270C-SIM
Benzo(ghi)perylene	720	36	120		5	ug/Kg		10/21/04	SW846 3545	8270C-SIM
Benzo(k)fluoranthene	780	72	240		5	ug/Kg		10/21/04	SW846 3545	8270C-SIM
Chrysene	1400	74	250		5	ug/Kg		10/21/04	SW846 3545	8270C-SIM
Dibenz(a,h)anthracene	150	22	72		5	ug/Kg		10/21/04	SW846 3545	8270C-SIM
Fluoranthene	2700	62	210		5	ug/Kg		10/21/04	SW846 3545	8270C-SIM
Fluorene	830	8.6	29		5	ug/Kg		10/21/04	SW846 3545	8270C-SIM
Indeno(1,2,3-cd)pyrene	500	34	110		5	ug/Kg		10/21/04	SW846 3545	8270C-SIM
Naphthalene	5100	16	53		5	ug/Kg		10/21/04	SW846 3545	8270C-SIM
Phenanthrene	4300	37	120		5	ug/Kg		10/21/04	SW846 3545	8270C-SIM
Pyrene	3800	81	270		5	ug/Kg		10/21/04	SW846 3545	8270C-SIM
Nitrobenzene-d5	52				5	%Recov		10/21/04	SW846 3545	8270C-SIM
2-Fluorobiphenyl	52				5	%Recov		10/21/04	SW846 3545	8270C-SIM
Terphenyl-d14	69				5	%Recov		10/21/04	SW846 3545	8270C-SIM

En Chem, Inc.

A Division of Pace Analytical Services, Inc.

1241 Bellevue Street
Green Bay, WI 54302
920-469-2436

Analytical Report Number: 852196

Client : ENSR-MN
Project Name : SWL&P
Project Number : 09413-098
Field ID : GP28-5-6

Matrix Type : SOIL
Collection Date : 10/12/04
Report Date : 10/26/04
Lab Sample Number : 852196-008

INORGANICS

Test	Result	LOD	LOQ	EQL	Dil.	Units	Code	Anl Date	Prep Method	Anl Method
Percent Solids	82.0				1	%		10/15/04	SM 2540G M	SM 2540G M

BTEX

Prep Date: 10/21/04

Analyte	Result	LOD	LOQ	EQL	Dil.	Units	Code	Anl Date	Prep Method	Anl Method
Benzene	690	30	73		50	ug/kg		10/21/04	SW846 5030B	SW846 M8021
Ethylbenzene	63	30	73		50	ug/kg	Q	10/21/04	SW846 5030B	SW846 M8021
Toluene	100	30	73		50	ug/kg		10/21/04	SW846 5030B	SW846 M8021
Xylene, o	64	30	73		50	ug/kg	Q	10/21/04	SW846 5030B	SW846 M8021
Xylenes, m + p	90	61	150		50	ug/kg	Q	10/21/04	SW846 5030B	SW846 M8021
a,a,a-Trifluorotoluene	97				1	%Recov		10/21/04	SW846 5030B	SW846 M8021

PAH/PNA

Prep Date: 10/20/04

Analyte	Result	LOD	LOQ	EQL	Dil.	Units	Code	Anl Date	Prep Method	Anl Method
1-Methylnaphthalene	140	2.8	9.3		1	ug/Kg		10/21/04	SW846 3545	8270C-SIM
2-Methylnaphthalene	82	4.0	13		1	ug/Kg		10/21/04	SW846 3545	8270C-SIM
Acenaphthene	170	1.9	6.4		1	ug/Kg		10/21/04	SW846 3545	8270C-SIM
Acenaphthylene	72	6.8	23		1	ug/Kg		10/21/04	SW846 3545	8270C-SIM
Anthracene	82	2.6	8.7		1	ug/Kg		10/21/04	SW846 3545	8270C-SIM
Benzo(a)anthracene	100	15	51		1	ug/Kg		10/21/04	SW846 3545	8270C-SIM
Benzo(a)pyrene	150	12	41		1	ug/Kg		10/21/04	SW846 3545	8270C-SIM
Benzo(b)fluoranthene	89	10	33		1	ug/Kg		10/21/04	SW846 3545	8270C-SIM
Benzo(ghi)perylene	100	6.8	23		1	ug/Kg		10/21/04	SW846 3545	8270C-SIM
Benzo(k)fluoranthene	97	13	45		1	ug/Kg		10/21/04	SW846 3545	8270C-SIM
Chrysene	110	14	47		1	ug/Kg		10/21/04	SW846 3545	8270C-SIM
Dibenz(a,h)anthracene	17	4.0	13		1	ug/Kg		10/21/04	SW846 3545	8270C-SIM
Fluoranthene	190	12	39		1	ug/Kg		10/21/04	SW846 3545	8270C-SIM
Fluorene	73	1.6	5.4		1	ug/Kg		10/21/04	SW846 3545	8270C-SIM
Indeno(1,2,3-cd)pyrene	77	6.5	22		1	ug/Kg		10/21/04	SW846 3545	8270C-SIM
Naphthalene	120	3.0	10		1	ug/Kg		10/21/04	SW846 3545	8270C-SIM
Phenanthrene	330	6.9	23		1	ug/Kg		10/21/04	SW846 3545	8270C-SIM
Pyrene	180	15	51		1	ug/Kg		10/21/04	SW846 3545	8270C-SIM
Nitrobenzene-d5	66				1	%Recov		10/21/04	SW846 3545	8270C-SIM
2-Fluorobiphenyl	67				1	%Recov		10/21/04	SW846 3545	8270C-SIM
Terphenyl-d14	73				1	%Recov		10/21/04	SW846 3545	8270C-SIM

En Chem, Inc.

A Division of Pace Analytical Services, Inc.

Analytical Report Number: 852196

1241 Bellevue Street
Green Bay, WI 54302
920-469-2436

Client : ENSR-MN
Project Name : SWL&P
Project Number : 09413-098
Field ID : GP-25

Matrix Type : WATER
Collection Date : 10/12/04
Report Date : 10/26/04
Lab Sample Number : 852196-010

BTEX

Prep Date: 10/16/04

Analyte		Result	LOD	LOQ	EQL	Dil.	Units	Code	Anl Date	Prep Method	Anl Method
Benzene		11000	6.9	23		50	ug/L		10/16/04	SW846 5030B	SW846 M8021
Ethylbenzene		280	20	67		50	ug/L		10/16/04	SW846 5030B	SW846 M8021
Toluene	<	18	18	60		50	ug/L		10/16/04	SW846 5030B	SW846 M8021
Xylene, o		88	18	60		50	ug/L		10/16/04	SW846 5030B	SW846 M8021
Xylenes, m + p		130	37	120		50	ug/L		10/16/04	SW846 5030B	SW846 M8021
a,a,a-Trifluorotoluene		94				1	%Recov		10/16/04	SW846 5030B	SW846 M8021

PAH/ PNA

Prep Date: 10/19/04

Analyte		Result	LOD	LOQ	EQL	Dil.	Units	Code	Anl Date	Prep Method	Anl Method
1-Methylnaphthalene		380	91	300		4000	ug/L	D	10/20/04	SW846 3510C	8270C-SIM
2-Methylnaphthalene		510	100	340		4000	ug/L	D	10/20/04	SW846 3510C	8270C-SIM
Acenaphthene		590	88	290		4000	ug/L	D	10/20/04	SW846 3510C	8270C-SIM
Acenaphthylene	<	88	88	290		4000	ug/L	D	10/20/04	SW846 3510C	8270C-SIM
Anthracene		200	80	270		4000	ug/L	QD	10/20/04	SW846 3510C	8270C-SIM
Benzo(a)anthracene		130	89	300		4000	ug/L	QD	10/20/04	SW846 3510C	8270C-SIM
Benzo(a)pyrene		96	83	280		4000	ug/L	QD	10/20/04	SW846 3510C	8270C-SIM
Benzo(b)fluoranthene		51	2.0	6.8		100	ug/L		10/19/04	SW846 3510C	8270C-SIM
Benzo(ghi)perylene	<	94	94	310		4000	ug/L	D	10/20/04	SW846 3510C	8270C-SIM
Benzo(k)fluoranthene	<	88	88	290		4000	ug/L	D	10/20/04	SW846 3510C	8270C-SIM
Chrysene		140	75	250		4000	ug/L	QD	10/20/04	SW846 3510C	8270C-SIM
Dibenz(a,h)anthracene		16	2.5	8.4		100	ug/L		10/19/04	SW846 3510C	8270C-SIM
Fluoranthene		320	75	250		4000	ug/L	D	10/20/04	SW846 3510C	8270C-SIM
Fluorene		200	99	330		4000	ug/L	QD	10/20/04	SW846 3510C	8270C-SIM
Indeno(1,2,3-cd)pyrene		44	1.9	6.5		100	ug/L		10/19/04	SW846 3510C	8270C-SIM
Naphthalene		1200	100	340		4000	ug/L	D	10/20/04	SW846 3510C	8270C-SIM
Phenanthrene		900	93	310		4000	ug/L	D	10/20/04	SW846 3510C	8270C-SIM
Pyrene		420	74	250		4000	ug/L	D	10/20/04	SW846 3510C	8270C-SIM
Nitrobenzene-d5		0				100	%Recov	D	10/19/04	SW846 3510C	8270C-SIM
2-Fluorobiphenyl		0				100	%Recov	D	10/19/04	SW846 3510C	8270C-SIM
Terphenyl-d14		0				100	%Recov	D	10/19/04	SW846 3510C	8270C-SIM

En Chem, Inc.

A Division of Pace Analytical Services, Inc.

Analytical Report Number: 852196

1241 Bellevue Street
Green Bay, WI 54302
920-469-2436

Client : ENSR-MN
Project Name : SWL&P
Project Number : 09413-098
Field ID : GP-26

Matrix Type : WATER
Collection Date : 10/12/04
Report Date : 10/26/04
Lab Sample Number : 852196-012

BTEX

Prep Date: 10/18/04

Analyte		Result	LOD	LOQ	EQL	Dil.	Units	Code	Anl Date	Prep Method	Anl Method
Benzene		6100	6.9	23		50	ug/L		10/18/04	SW846 5030B	SW846 M8021
Ethylbenzene	<	20	20	67		50	ug/L		10/18/04	SW846 5030B	SW846 M8021
Toluene	<	18	18	60		50	ug/L		10/18/04	SW846 5030B	SW846 M8021
Xylene, o	<	18	18	60		50	ug/L		10/18/04	SW846 5030B	SW846 M8021
Xylenes, m + p	<	37	37	120		50	ug/L		10/18/04	SW846 5030B	SW846 M8021
a,a,a-Trifluorotoluene		96				1	%Recov		10/18/04	SW846 5030B	SW846 M8021

PAH/ PNA

Prep Date: 10/14/04

Analyte		Result	LOD	LOQ	EQL	Dil.	Units	Code	Anl Date	Prep Method	Anl Method
1-Methylnaphthalene		5.1	0.43	1.4		20	ug/L		10/15/04	SW846 3510C	8270C-SIM
2-Methylnaphthalene		1.1	0.49	1.6		20	ug/L	Q	10/15/04	SW846 3510C	8270C-SIM
Acenaphthene		3.6	0.42	1.4		20	ug/L		10/15/04	SW846 3510C	8270C-SIM
Acenaphthylene	<	0.41	0.41	1.4		20	ug/L		10/15/04	SW846 3510C	8270C-SIM
Anthracene		0.71	0.38	1.3		20	ug/L	Q	10/15/04	SW846 3510C	8270C-SIM
Benzo(a)anthracene		0.49	0.42	1.4		20	ug/L	Q	10/15/04	SW846 3510C	8270C-SIM
Benzo(a)pyrene	<	0.39	0.39	1.3		20	ug/L		10/15/04	SW846 3510C	8270C-SIM
Benzo(b)fluoranthene	<	0.38	0.38	1.3		20	ug/L		10/15/04	SW846 3510C	8270C-SIM
Benzo(ghi)perylene	<	0.44	0.44	1.5		20	ug/L		10/15/04	SW846 3510C	8270C-SIM
Benzo(k)fluoranthene	<	0.41	0.41	1.4		20	ug/L		10/15/04	SW846 3510C	8270C-SIM
Chrysene		0.56	0.35	1.2		20	ug/L	Q	10/15/04	SW846 3510C	8270C-SIM
Dibenz(a,h)anthracene	<	0.47	0.47	1.6		20	ug/L		10/15/04	SW846 3510C	8270C-SIM
Fluoranthene		1.5	0.35	1.2		20	ug/L		10/15/04	SW846 3510C	8270C-SIM
Fluorene		0.80	0.47	1.6		20	ug/L	Q	10/15/04	SW846 3510C	8270C-SIM
Indeno(1,2,3-cd)pyrene	<	0.37	0.37	1.2		20	ug/L		10/15/04	SW846 3510C	8270C-SIM
Naphthalene		1.9	0.48	1.6		20	ug/L		10/15/04	SW846 3510C	8270C-SIM
Phenanthrene		3.4	0.44	1.5		20	ug/L		10/15/04	SW846 3510C	8270C-SIM
Pyrene		1.8	0.35	1.2		20	ug/L		10/15/04	SW846 3510C	8270C-SIM
Nitrobenzene-d5		0				20	%Recov	D	10/15/04	SW846 3510C	8270C-SIM
2-Fluorobiphenyl		0				20	%Recov	D	10/15/04	SW846 3510C	8270C-SIM
Terphenyl-d14		0				20	%Recov	D	10/15/04	SW846 3510C	8270C-SIM

En Chem, Inc.

A Division of Pace Analytical Services, Inc.

Analytical Report Number: 852196

1241 Bellevue Street
Green Bay, WI 54302
920-469-2436

Client : ENSR-MN
Project Name : SWL&P
Project Number : 09413-098
Field ID : GP-28

Matrix Type : WATER
Collection Date : 10/12/04
Report Date : 10/26/04
Lab Sample Number : 852196-014

BTEX

Prep Date: 10/18/04

Analyte	Result	LOD	LOQ	EQL	Dil.	Units	Code	Anl Date	Prep Method	Anl Method
Benzene	1300	1.4	4.6		10	ug/L		10/18/04	SW846 5030B	SW846 M8021
Ethylbenzene	100	4.0	13		10	ug/L		10/18/04	SW846 5030B	SW846 M8021
Toluene	340	3.6	12		10	ug/L		10/18/04	SW846 5030B	SW846 M8021
Xylene, o	90	3.6	12		10	ug/L		10/18/04	SW846 5030B	SW846 M8021
Xylenes, m + p	220	7.4	25		10	ug/L		10/18/04	SW846 5030B	SW846 M8021
a,a,a-Trifluorotoluene	96				1	%Recov		10/18/04	SW846 5030B	SW846 M8021

PAH/ PNA

Prep Date: 10/14/04

Analyte	Result	LOD	LOQ	EQL	Dil.	Units	Code	Anl Date	Prep Method	Anl Method
1-Methylnaphthalene	55	3.3	11		100	ug/L		10/15/04	SW846 3510C	8270C-SIM
2-Methylnaphthalene	23	3.8	13		100	ug/L		10/15/04	SW846 3510C	8270C-SIM
Acenaphthene	59	3.2	11		100	ug/L		10/15/04	SW846 3510C	8270C-SIM
Acenaphthylene	3.5	3.2	11		100	ug/L	Q	10/15/04	SW846 3510C	8270C-SIM
Anthracene	6.2	2.9	9.7		100	ug/L	Q	10/15/04	SW846 3510C	8270C-SIM
Benzo(a)anthracene	< 3.2	3.2	11		100	ug/L		10/15/04	SW846 3510C	8270C-SIM
Benzo(a)pyrene	< 3.0	3.0	10		100	ug/L		10/15/04	SW846 3510C	8270C-SIM
Benzo(b)fluoranthene	< 3.0	3.0	9.9		100	ug/L		10/15/04	SW846 3510C	8270C-SIM
Benzo(ghi)perylene	< 3.4	3.4	11		100	ug/L		10/15/04	SW846 3510C	8270C-SIM
Benzo(k)fluoranthene	< 3.2	3.2	11		100	ug/L		10/15/04	SW846 3510C	8270C-SIM
Chrysene	2.8	2.7	9.0		100	ug/L	Q	10/15/04	SW846 3510C	8270C-SIM
Dibenz(a,h)anthracene	< 3.6	3.6	12		100	ug/L		10/15/04	SW846 3510C	8270C-SIM
Fluoranthene	6.7	2.7	9.1		100	ug/L	Q	10/15/04	SW846 3510C	8270C-SIM
Fluorene	17	3.6	12		100	ug/L		10/15/04	SW846 3510C	8270C-SIM
Indeno(1,2,3-cd)pyrene	< 2.8	2.8	9.4		100	ug/L		10/15/04	SW846 3510C	8270C-SIM
Naphthalene	96	7.4	25		200	ug/L	D	10/19/04	SW846 3510C	8270C-SIM
Phenanthrene	40	3.4	11		100	ug/L		10/15/04	SW846 3510C	8270C-SIM
Pyrene	8.0	2.7	9.0		100	ug/L	Q	10/15/04	SW846 3510C	8270C-SIM
Nitrobenzene-d5	0				100	%Recov	D	10/15/04	SW846 3510C	8270C-SIM
2-Fluorobiphenyl	0				100	%Recov	D	10/15/04	SW846 3510C	8270C-SIM
Terphenyl-d14	0				100	%Recov	D	10/15/04	SW846 3510C	8270C-SIM

En Chem, Inc.

A Division of Pace Analytical Services, Inc.

Analytical Report Number: 852196

1241 Bellevue Street
Green Bay, WI 54302
920-469-2436

Client : ENSR-MN
Project Name : SWL&P
Project Number : 09413-098
Field ID : TRIP BLANK

Matrix Type : WATER
Collection Date : 10/12/04
Report Date : 10/26/04
Lab Sample Number : 852196-016

BTEX

Prep Date: 10/18/04

Analyte		Result	LOD	LOQ	EQL	Dil.	Units	Code	Anl Date	Prep Method	Anl Method
Benzene	<	0.14	0.14	0.46		1	ug/L		10/18/04	SW846 5030B	SW846 M8021
Ethylbenzene	<	0.40	0.40	1.3		1	ug/L		10/18/04	SW846 5030B	SW846 M8021
Toluene	<	0.36	0.36	1.2		1	ug/L		10/18/04	SW846 5030B	SW846 M8021
Xylene, o	<	0.36	0.36	1.2		1	ug/L		10/18/04	SW846 5030B	SW846 M8021
Xylenes, m + p	<	0.74	0.74	2.5		1	ug/L		10/18/04	SW846 5030B	SW846 M8021
a,a,a-Trifluorotoluene		102				1	%Recov		10/18/04	SW846 5030B	SW846 M8021

En Chem, Inc.

A Division of Pace Analytical Services, Inc.

Analysis Summary by Laboratory

1241 Bellevue Street
Green Bay, WI 54302

1090 Kennedy Avenue
Kimberly, WI 54136

Test Group Name	852196-001	852196-002	852196-003	852196-004	852196-005	852196-006	852196-007	852196-008	852196-009	852196-010	852196-011	852196-012	852196-013	852196-014	852196-015	852196-016
BTEX	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
PAH/ PNA									G	G	G	G	G	G	G	
PAH/PNA	G	G	G	G	G	G	G	G								
PERCENT SOLIDS	G	G	G	G	G	G	G	G								

Wisconsin Certification	
G = En Chem Green Bay	405132750 / DATCP: 105 000444
K = En Chem Kimberly	445134030
S = En Chem Superior	Not Applicable
C = Subcontracted Analysis	

PACE ANALYTICAL SERVICES, INC.
Corporate Headquarters
1700 Elm Street
Minneapolis, MN 55414

TEL: (612) 607-1700
FAX: (612) 607-6444

www.pacelabs.com

Pace Analytical purchases the laboratory operations of En Chem, Inc. in Green Bay and Kimberly, Wisconsin.

Effective October 1, 2004, En Chem is now a division of Pace Analytical Services. Pace Analytical/En Chem will continue to operate service centers in Madison, Superior and Mosinee, Wisconsin – and also in Chicago and Minneapolis.

By combining the leading laboratories in Minnesota and Wisconsin, Pace Analytical and En Chem can provide the best and broadest scope of services to you, our valued customers.

Pace Analytical has retained most of En Chem's employees, including senior management at both locations. The Green Bay and Kimberly labs will operate under the direction of Bruce Warden, Pace's General Manager in Minnesota. Pace plans to coordinate work between Minnesota and Wisconsin laboratories to enhance both the quality of service and the type of services offered in the market place.

This acquisition will not disrupt any service work you currently have with En Chem or any future projects you have scheduled. Your contact person(s) at En Chem will remain the same. Please direct any questions you have regarding the acquisition to your En Chem Sales Rep or Project Manager, or feel free to contact Bill Blau, Corporate Marketing Manager at Pace, with any of your concerns: (612) 607-6355.

We sincerely appreciate your patience and understanding during this transition, and we look forward to providing you with exceptional service in the future.

EN CHEM

A Division of Pace Analytical Services, Inc.

(Please Print Legibly)

Company Name: ENSR Corp
Branch or Location: MN
Project Contact: Bill Gregg
Telephone: 952-924-8117
Project Number: 09413-098
Project Name: SWL+P
Project State: WI
Sampled By (Print): Chris Boehm Carlson
PO #:

EN CHEM INC.
...chemistry for the environment.

1241 Bellevue St., Suite 9
Green Bay, WI 54302
920-469-2436
Fax 920-469-8827

CHAIN OF CUSTODY

No. 125294

Quote #:
Mail Report To: Chris Boehm Carlson
Company: ENSR
Address: 4500 Park Glen Rd, Suite 210
St. Louis Park, MN 55416
Invoice To: - Same -
Company:
Address:
Mail Invoice To:

Data Package Options - (please circle if requested)
Sample Results Only (no QC)
EPA Level II (Subject to Surcharge)
EPA Level III (Subject to Surcharge)
EPA Level IV (Subject to Surcharge)

Regulatory Program: UST, RCRA, SDWA, NPDES, CERCLA

Matrix Codes: W=Water, S=Soil, A=Air, C=Charcoal, B=Biota, Sl=Sludge

*Preservation Codes: A=None, B=HCL, C=H2SO4, D=HNO3, E=EnCore, F=Methanol, G=NaOH, H=Sodium Bisulfate Solution, I=Sodium Thiosulfate, J=Other

LABORATORY ID (Lab Use Only)	FIELD ID	COLLECTION DATE	COLLECTION TIME	MATRIX	FILTERED? (YES/NO)	PRESERVATION (CODE)*	ANALYSES REQUESTED: BTEX	PAH	Dry Weight	TOTAL # OF BOTTLES SENT	CLIENT COMMENTS	LAB COMMENTS (Lab Use Only)
001	GP24-5-6	10/12/04	1045	S		F	X	X	X	3		1-402; 1-802; 1-202 M
002	GP30-8-9		1140			A						
003	GP25-7-8		215			A						
004	GP26-6-7		1400									
005	GP27-7-8		1440									
006	MW-9-8-9		1630									
007	GP29-6-7		1700									
008	GP28-5-6		1520									
009	GP24		1750	W			X	X		4		1-1L amber; 3-40ml C
010	GP-25		1808									
011	GP-30		1815									
012	GP-26		1820									

Rush Turnaround Time Requested (TAT) - Prelim
(Rush TAT subject to approval/surcharge)
Date Needed: Standard
Transmit Prelim Rush Results by (circle):
Phone Fax E-Mail
Phone #:
Fax #:
E-Mail Address: CBoehm@ensr.com

Samples on HOLD are subject to special pricing and release of liability

Relinquished By:	Date/Time:	Received By:	Date/Time:
[signature]	10/13/04 7:00	[signature]	10/13/04 0790
[signature]	10/13/04 13:00	[signature]	10/13/04 13:00
[signature]	10/14/04 8:00	[signature]	10/14/04 8:00

En Chem Project No. 252196
Sample Receipt Temp. 2.01
Sample Receipt pH (Wet/Metals) NA
Cooler Custody Seal
Present / Not Present
Intact / Not Intact

Version 4.0: 07/03