Superior Water Light & Power
Superior, Wisconsin

Groundwater Monitoring Report
Former SWL&P Manufactured Gas Plant, Superior, Wisconsin

ENSR *International*
April 2002
Document Number 09413-098-200

Superior Water Light & Power Company

April 26, 2002

Ms. Danielle Lancour
Remediation and Redevelopment Program
Wisconsin Department of Natural Resources
Rhinelander, WI 54501

RE: Superior Manufactured Gas Plant - WDNR BRRTS #02-16-275446

Dear Ms. Lancour:

Enclosed are two copies of the Groundwater Monitoring Report for the former Superior Water, Light and Power Company manufactured gas plant in Superior, WI.

The report was prepared by our environmental consultant, ENSR International. The report is for the second round of groundwater samples taken from the wells identified in our Phase II Environmental Report.

SWL&P intends to develop a work plan over the next 6-8 weeks to outline additional investigation at the site.

If you have any questions regarding this report or need additional information, please contact me at 715-395-6288.

Sincerely,

William S Bombich

William S. Bombich
General Manager

encs

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Providing Superior Service

Superior Water Light & Power
Superior, Wisconsin

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1.0 INTRODUCTION

This report presents the results of the second round of groundwater monitoring completed at the Superior Water Light & Power (SWL&P) Former Manufactured Gas Plant (MGP), located at the intersection of Winter and Water Street in Superior, Wisconsin (Site). The first round of groundwater monitoring results were presented in the Phase II Investigation Report, January 2002. The appendicies to this report contain the complete laboratory data report (Appendix A) and ENSR's field notes documenting well stabilization and sample collection (Appendix B)

The groundwater monitoring follows the methodologies outlined in the Site Investigation Work Plan submitted to the Wisconsin Department of Natural Resources (WDNR) in November 2001. The second round of groundwater samples were collected on February 11, 2002.

2.0 METHODOLOGY

2.1 Monitoring Well Gauging

On February 11, 2002, prior to groundwater sampling, groundwater level measurements were collected from all monitoring wells using an interface probe. The depth to groundwater was also gauged on January 8, 2002. The depth to water was recorded and each well was checked for non-aqueous phase liquids (free product) using an interface probe (Heron, Model H.01L). The water level measurements were made from a surveyed measuring point established on the north side of the top of the PVC well casing.

2.2 Groundwater Sampling

Groundwater samples were collected from all seven wells, MW-1 through MW-7, on February 11, 2002. The monitoring wells were purged and sampled in general accordance with the WDNR "Groundwater Sampling Field Manual," September 1996. Purging was conducted on wells MW-5, MW-6 and MW-7 using a peristaltic pump and new dedicated polyethelene tubing utilizing a low-flow purging technique. Samples were collected after water quality readings had stabilized. Water quality was measured with a Hydrolab Quanta meter with a flow through cell for the following parameters: pH, specific conductivity, temperature, oxidation-reduction potential, and dissolved oxygen. Water quality readings were recorded on the groundwater collection logs provided in Appendix B. Samples were collected directly from the tubing into laboratory supplied containers.

Groundwater samples from wells MW-1, MW-2, MW-3 and MW-4 were collected with a peristaltic pump without purging the wells. As discussed in the Phase II report, these wells were screened in a low hydraulic conductivity red clay. It took approximately two months for water to enter the wells. Recharge during purging was not anticipated, so samples of the existing water were collected. Depth to groundwater was measured before and after sampling. The water level measurements confirmed that no recharge occurred after sampling. All samples were stored on ice in a cooler and shipped overnight, under chain-of custody, to EnChem, Inc. of Green Bay, Wisconsin. Samples were analyzed for polyaromatic hydrocarbons (PAH), RCRA metals, total cyanide, and benzene, toluene, ethylbenzene, and xylenes (BTEX).

2.3 Decontamination Procedures

The water level indicator was decontaminated prior to each use with a detergent wash followed by a potable water rinse. All other equipment and supplies used during sampling was disposable and used only on one well. Therefore, no other decontamination was necessary.

3.0 RESULTS

3.1 Hydrogeology

As discussed in the Phase II report, there are two distinct soil types at the Site: a red high-plasticity clay and a fill material consisting primarily of white to dark gray lime-like material. Wells MW-1, MW-2, MW-3 and MW-4 are screened in the red clay. Wells MW-5, MW-6 and MW-7 are screened in the lime-like fill material. Below the lime fill material, red clay was encountered (except in MW-6 where a five foot sand layer was encountered between the lime and clay units).

The wells screened in the lime-like fill material, MW-5, MW-6, and MW-7, have a depth to water gauged at six to ten feet below the ground surface. Groundwater was encountered in the fill material perched above the red clay. No groundwater was encountered during the investigation in the red clay soil and the wells screened in the clay, MW-1 through MW-4, were dry after installation. After approximately two months, groundwater entered the wells screened in the clay. No free product was measured in any of the wells. The gauging data results are summarized in Table 4-1.

The apparent groundwater flow direction in the fill material, based on the limited gauging data, is towards the east. The groundwater flow direction in the clay unit can not be determined based on the gauging data. It is assumed that the overall groundwater flow direction is north towards Lake Superior with possible local variations. The groundwater elevations are illustrated on Figure 4-1 and 4-2.

3.2 Groundwater Sampling Results

On February 11, 2002, groundwater samples were collected from MW-1 through MW-7 for laboratory analysis of BTEX, PAH, RCRA metal, and cyanide. The results of the groundwater sampling are summarized in Table 4-2 and Figure 4-2. The complete groundwater analytical report is included in Appendix A.

The groundwater results were compared to the WDNR groundwater enforcement standards, which are based on the protection of public health (NR 140, Table 1). The analytical results indicate exceedances of the enforcement standard for benzene in wells MW-3, MW-4, MW-6 and MW-7. The concentrations ranged from 10 ug/l in MW-6 to 190,000 ug/l in MW-7. Well MW-7 had exceedances of all BTEX compounds, with a sum of BTEX at 340,100 ug/l. Well MW-4 had a toluene concentration of 19,000 ug/l, which also exceeded the enforcement standard.

Only one PAH, naphthalene, exceeded the enforcement standards. The concentration of naphthalene in MW-7 was 430 ug/l, which is greater than the enforcement standard of 40 ug/l. The PAH concentrations in the other samples did not exceed enforcement standards. The metals and cyanide concentrations did not exceed enforcement standards.

The concentrations of detected compounds in samples MW-5, MW-6 and MW-7 were very similar to the results of the November 2001 sampling event.

3.3 Discussion of Results

The second round of groundwater sampling results, which include data from wells MW-1 through MW-4 that were not sampled previously, support the same interpretation of site data as reported in the Phase II report. The results of the Phase II soil sampling and both groundwater sampling events conducted at the Site indicate there are three general areas where soil and/or groundwater standards are exceeded. These areas have been loosely defined based on the soil type, the types of compounds detected, and their concentrations. Figure 4-4 shows the locations of the three areas and they are discussed below.

- Area 1, located in the eastern portion of the Site, is defined by soil BTEX concentrations that exceed the soil residual contaminant level (RCL). Little or no PAH were detected in the soil samples collected from Area 1. The soil type consisted of red clay. Figure 4-3 shows that boring B-6, trench T8, and well MW-4 are included in Area 1. Soil sampled from Area 1 had significant concentrations of benzene, with lesser concentration of the other BTEX compounds. The groundwater results from MW-4 support the findings of the Phase II: the groundwater had a high concentration of benzene (110,000 ug/l) and lesser concentration of xylene, with little or no PAH.

- Area 2, located in the northeast portion of the Site, had concentrations of both PAH and BTEX in the soil and groundwater that exceeded the RCL and enforcement standards. The soil type in Area 2 consists of the lime-like fill material or other fill overlaying the red clay. Groundwater was sampled from the wells in Area 2. Figure 4-3 shows that wells MW-6 and MW-7 are included in Area 2. The components in the soil and groundwater that exceeded the enforcement standards are all the BTEX compounds and naphthalene.

- Area 3, located in the central portion of the Site, had soil concentrations of PAH and BTEX that exceeded the RCL and groundwater that exceeded the enforcement standard for benzene. The soil type in Area 3 consists of red clay. As shown in Figure 4-3, trench T6, borings B-3 and B-7, and well MW-3 are included in Area 3. Soil from Area 3 exceeded the RCL for several PAH compounds and all the BTEX compounds. The groundwater sampled collected from MW-3 exceeded the enforcement standard for benzene, with a concentration of 21 ug/l. No PAH compounds were detected in the Area 3 groundwater.

3.4 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. In addition, duplicates, method spike/method spike duplicate, and trip blanks were

collected and analyzed. For example, the relative percent difference for BTEX compounds in sample MW-7 and MW-7-dup was 5% or less for all the compounds. The trip blanks were analyzed for BTEX, and no compounds were detected. The complete results for QA/QC samples can be founds in the laboratory analytical report.

4.0 SUMMARY AND CONCLUSIONS

The results of the second round of groundwater monitoring were similar to the results reported in the Phase II report. The compound detected most frequently and with the highest concentrations in the groundwater was benzene. The concentration of benzene exceeded the enforcement standard in four of the seven wells, with concentrations ranging from 10 ug/l to 190,000 ug/l. Two wells had other BTEX compounds that exceeded the enforcement standards: MW-4 exceeded the enforcement standard for xylene and MW-7 exceeded the enforcement standards for all the BTEX compounds. One PAH compound, naphthalene, exceeded the enforcement standard in one well. The sample from MW-7 contained 430 ug/l naphthalene, which exceeded the standard of 40 ug/l. No other samples contained PAH compounds that exceeded the enforcement standards. Cyanide was detected in the groundwater; however, the concentrations were below the enforcement standards (the highest concentration was 12 ug/l). No metals exceeded the enforcement standards.

The results indicate that BTEX are the dominant compounds in concentration and extent at the Site. Only one well had a PAH compound that exceeded the enforcement standard. The former MGP may be the source of PAH and BTEX compounds in the soil and groundwater. However, the prevalence of BTEX compounds in the soil and groundwater suggests a non-MGP source, such as a gasoline release.

Table 4-1
Summary of Monitoring Well Gauging Data
Superior MGP Phase II
Superior Wisconsin

Date: 11/20/01					
Well ID	Ground Elevation [a]	TOC Elevation [b]	Depth to Water [c]	Groundwater Elevation	Hydraulic Conductivity [d]
MW-1	616.2	619.11	Dry	---	---
MW-2	614.2	617.15	Dry	---	---
MW-3	613.9	617.07	Dry	---	---
MW-4	614.0	617.11	Dry	---	---
MW-5	610.1	612.40	9.32	603.08	9.9×10^{-5}
MW-6	611.4	613.74	11.23	602.51	6.2×10^{-4}
MW-7	612.3	614.91	12.72	602.19	3.6×10^{-3}

Date: 12/6/01					
Well ID	Ground Elevation [a]	TOC Elevation [b]	Depth to Water [c]	Groundwater Elevation	Hydraulic Conductivity [d]
MW-1	616.2	619.11	Dry	---	---
MW-2	614.2	617.15	19.26	597.89	---
MW-3	613.9	617.07	Dry	---	---
MW-4	614.0	617.11	Dry	---	---
MW-5	610.1	612.40	7.86	604.54	9.9×10^{-5}
MW-6	611.4	613.74	9.73	604.01	6.2×10^{-4}
MW-7	612.3	614.91	12.31	602.60	3.6×10^{-3}

Date: 1/8/02					
Well ID	Ground Elevation [a]	TOC Elevation [b]	Depth to Water [c]	Groundwater Elevation	Hydraulic Conductivity [d]
MW-1	616.2	619.11	18.79	600.32	---
MW-2	614.2	617.15	15	602.15	---
MW-3	613.9	617.07	13.95	603.12	---
MW-4	614.0	617.11	17.82	599.29	---
MW-5	610.1	612.40	8.96	603.44	9.9×10^{-5}
MW-6	611.4	613.74	11.24	602.50	6.2×10^{-4}
MW-7	612.3	614.91	12.78	602.13	3.6×10^{-3}

Table 4-1
Summary of Monitoring Well Gauging Data
Superior MGP Phase II
Superior Wisconsin

Date: 2/11/02					
Well ID	**Ground Elevation [a]**	**TOC Elevation [b]**	**Depth to Water [c]**	**Groundwater Elevation**	**Hydraulic Conductivity [d]**
MW-1	616.2	619.11	17.22	601.89	---
MW-2	614.2	617.15	12.26	604.89	---
MW-3	613.9	617.07	11.19	605.88	---
MW-4	614.0	617.11	15.44	601.67	---
MW-5	610.1	612.40	9.74	602.66	9.9×10^{-5}
MW-6	611.4	613.74	11.80	601.94	6.2×10^{-4}
MW-7	612.3	614.91	13.44	601.47	3.6×10^{-3}

a. The ground elevation and top of casings were surveyed by Salo Engineering in November 2001. Elevation is given in feet above mean sea level.
b. TOC = top of casing elevation. Elevation is given in feet above mean sea level.
c. Depth to water in feet as measured from the top of casing.
d. Hydraulic conductivity (cm/sec) was measured in November 2001 by conducting slug tests.

Table 4-2
Summary of Groundwater Analytical Results
Superior MGP
Superior, Wisconsin

Analyte	Units	MW-1	MW-2	MW-3	Enforcement Standard [a]
Sampling Date		2/11/2002	2/11/2002	2/11/2002	
Metals					
Arsenic	ug/L	<4.4	<4.4	<4.4	**50**
Barium	ug/L	280	260	180	**2,000**
Cadmium	ug/L	<0.51	<0.51	<0.51	**5**
Chromium	ug/L	1.2	<0.83	<0.83	**100**
Lead	ug/L	<2.1	<2.1	<2.1	**15**
Mercury	ug/L	<0.088	<0.088	<0.088	**2**
Selenium	ug/L	1.7	1.0	2.7	**50**
Silver	ug/L	<1.3	<1.3	<1.3	**50**
Cyanide, total	mg/L	<0.0021	<0.0021	<0.0021	**200**
PAH					
1-Methylnaphthalene	ug/L	<0.027	<0.027	<0.027	**NA** [b]
2-Methylnaphthalene	ug/L	<0.028	<0.028	<0.028	**NA**
Acenaphthene	ug/L	<0.018	<0.018	<0.018	**NA**
Acenaphthylene	ug/L	<0.023	<0.023	<0.023	**NA**
Anthracene	ug/L	<0.020	<0.020	<0.020	**3,000**
Benzo(a)anthracene	ug/L	<0.019	<0.019	<0.019	**NA**
Benzo(a)pyrene	ug/L	<0.012	<0.012	<0.012	**0.2**
Benzo(b)fluoranthene	ug/L	<0.014	<0.014	<0.014	**0.2**
Benzo(g,h,i)perylene	ug/L	<0.015	<0.015	<0.015	**NA**
Benzo(k)fluoranthene	ug/L	<0.013	<0.013	<0.013	**NA**
Chrysene	ug/L	<0.018	<0.018	<0.018	**0.2**
Dibenzo(a,h)anthracene	ug/L	<0.017	<0.017	<0.017	**NA**
Fluoranthene	ug/L	<0.028	<0.028	<0.028	**400**
Fluorene	ug/L	<0.021	<0.021	<0.021	**400**
Indeno(1,2,3-cd)pyrene	ug/L	<0.014	<0.014	<0.014	**NA**
Naphthalene	ug/L	0.21	<0.027	<0.027	**40**
Phenanthrene	ug/L	0.028	<0.019	<0.019	**NA**
Pyrene	ug/L	<0.020	<0.020	<0.020	**250**
BTEX					
Benzene	ug/l	<0.45	<0.45	**21**	**5**
Ethylbenzene	ug/l	<0.82	<0.82	4.8	**700**
Toluene	ug/l	<0.68	<0.68	26	**343**
Xylene, -o	ug/l	<1.7	<1.7	8.5	**620**
Xylenes, -m, -p	ug/l	<0.77	<0.77	44	**620**

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.

Note: Bold results indicate concentrations greater than the enforcement standards.

Table 4-2
Summary of Groundwater Analytical Results
Superior MGP
Superior, Wisconsin

Analyte	Units	MW-4	MW-5	MW-5	Enforcement Standard [a]
Sampling Date		2/11/2002	11/20/2001	2/11/2002	
Metals					
Arsenic	ug/L	<4.4	3.4	4.6	**50**
Barium	ug/L	81	150	90	**2,000**
Cadmium	ug/L	<0.51	0.15	<0.51	**5**
Chromium	ug/L	<0.83	0.60	<0.83	**100**
Lead	ug/L	<2.1	1.4	<2.1	**15**
Mercury	ug/L	<0.088	<0.088	<0.088	**2**
Selenium	ug/L	<0.45	0.65	<0.45	**50**
Silver	ug/L	<1.3	<1.6	<1.3	**50**
Cyanide, total	mg/L	<0.0021	0.0071	0.0065	**200**
PAH					
1-Methylnaphthalene	ug/L	0.055	0.058	<0.027	**NA [b]**
2-Methylnaphthalene	ug/L	0.088	<0.028	<0.028	**NA**
Acenaphthene	ug/L	<0.018	3.8	0.11	**NA**
Acenaphthylene	ug/L	<0.023	0.16	<0.023	**NA**
Anthracene	ug/L	<0.020	0.22	<0.020	**3,000**
Benzo(a)anthracene	ug/L	<0.019	0.053	<0.019	**NA**
Benzo(a)pyrene	ug/L	<0.012	0.023	<0.012	**0.2**
Benzo(b)fluoranthene	ug/L	<0.014	0.022	<0.014	**0.2**
Benzo(g,h,i)perylene	ug/L	<0.015	0.017	<0.015	**NA**
Benzo(k)fluoranthene	ug/L	<0.013	0.014	<0.013	**NA**
Chrysene	ug/L	<0.018	0.037	<0.018	**0.2**
Dibenzo(a,h)anthracene	ug/L	<0.017	<0.017	<0.017	**NA**
Fluoranthene	ug/L	<0.028	1.3	0.030	**400**
Fluorene	ug/L	<0.021	1.2	0.035	**400**
Indeno(1,2,3-cd)pyrene	ug/L	<0.014	<0.014	<0.014	**NA**
Naphthalene	ug/L	0.47	0.2	0.092	**40**
Phenanthrene	ug/L	0.028	0.42	<0.19	**NA**
Pyrene	ug/L	<0.020	1.4	0.039	**250**
BTEX					
Benzene	ug/l	**110,000**	**6.2**	<0.45	**5**
Ethylbenzene	ug/l	<820	<0.82	<0.82	**700**
Toluene	ug/l	**19,000**	2.1	<0.68	**343**
Xylene, -o	ug/l	<1,700	3.0	<1.7	**620**
Xylenes, -m, -p	ug/l	<770	6.1	<0.77	**620**

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.

Note: Bold results indicate concentrations greater than the enforcement standards.

Table 4-2
Summary of Groundwater Analytical Results
Superior MGP
Superior, Wisconsin

Analyte	Units	MW-6	MW-6	Enforcement Standard [a]
Sampling Date		11/20/2001	2/11/2002	
Metals				
Arsenic	ug/L	1.6	<4.4	**50**
Barium	ug/L	440	1,100	**2,000**
Cadmium	ug/L	<0.070	<0.51	**5**
Chromium	ug/L	0.35	<0.83	**100**
Lead	ug/L	<0.39	<2.1	**15**
Mercury	ug/L	<0.088	<0.088	**2**
Selenium	ug/L	6.0	2.7	**50**
Silver	ug/L	<1.6	<1.3	**50**
Cyanide, total	mg/L	<0.0021	<0.0021	**200**
PAH				
1-Methylnaphthalene	ug/L	3.0	5.0	**NA** [b]
2-Methylnaphthalene	ug/L	2.3	3.7	**NA**
Acenaphthene	ug/l	4.8	5.0	**NA**
Acenaphthylene	ug/L	0.26	0.22	**NA**
Anthracene	ug/L	0.96	<0.80	**3,000**
Benzo(a)anthracene	ug/l	0.12	0.083	**NA**
Benzo(a)pyrene	ug/L	0.026	<0.012	**0.2**
Benzo(b)fluoranthene	ug/L	0.022	<0.014	**0.2**
Benzo(g,h,i)perylene	ug/L	0.016	<0.015	**NA**
Benzo(k)fluoranthene	ug/L	0.018	<0.013	**NA**
Chrysene	ug/L	0.095	0.081	**0.2**
Dibenzo(a,h)anthracene	ug/L	<0.017	<0.017	**NA**
Fluoranthene	ug/L	1.1	<1.1	**400**
Fluorene	ug/L	0.76	<0.84	**400**
Indeno(1,2,3-cd)pyrene	ug/L	<0.014	<0.014	**NA**
Naphthalene	ug/L	9.8	34	**40**
Phenanthrene	ug/L	3.1	2.1	**NA**
Pyrene	ug/L	1.2	0.88	**250**
BTEX				
Benzene	ug/l	**5.0**	**10**	**5**
Ethylbenzene	ug/l	1.5	5.8	**700**
Toluene	ug/l	1.6	2.0	**343**
Xylene, -o	ug/l	1.4	2.3	**620**
Xylenes, -m, -p	ug/l	2.2	2.6	**620**

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.

Note: Bold results indicate concentrations greater than the enforcement standards.

Table 4-2
Summary of Groundwater Analytical Results
Superior MGP
Superior, Wisconsin

Analyte	Units	MW-7	MW-7	MW-7-dup	Enforcement Standard [a]
Sampling Date		11/20/2001	2/11/2002	2/11/2002	
Metals					
Arsenic	ug/L	15	15	12	**50**
Barium	ug/L	73	120	100	**2,000**
Cadmium	ug/L	<0.070	0.70	<0.051	**5**
Chromium	ug/L	1.4	1.3	<0.83	**100**
Lead	ug/L	<0.39	2.1	<2.1	**15**
Mercury	ug/L	<0.088	<0.088	<0.088	**2**
Selenium	ug/L	5.3	1.2	1.2	**50**
Silver	ug/L	<1.6	<1.3	<1.3	**50**
Cyanide, total	mg/L	0.012	0.012	0.0093	**200**
PAH					
1-Methylnaphthalene	ug/L	4.7	4.1	3.8	**NA [b]**
2-Methylnaphthalene	ug/L	6.3	5.6	5.2	**NA**
Acenaphthene	ug/L	1.9	2.4	2.0	**NA**
Acenaphthylene	ug/L	3.4	2.8	2.5	**NA**
Anthracene	ug/L	0.75	<0.40	<0.40	**3,000**
Benzo(a)anthracene	ug/L	<0.38	<0.38	<0.38	**NA**
Benzo(a)pyrene	ug/L	<0.24	<0.24	<0.24	**0.2**
Benzo(b)fluoranthene	ug/L	<0.28	<0.28	<0.28	**0.2**
Benzo(g,h,i)perylene	ug/L	<0.30	<0.30	<0.30	**NA**
Benzo(k)fluoranthene	ug/L	<0.26	<0.26	<0.26	**NA**
Chrysene	ug/L	<0.36	<0.36	<0.36	**0.2**
Dibenzo(a,h)anthracene	ug/L	<0.34	<0.34	<0.34	**NA**
Fluoranthene	ug/L	<0.56	<0.56	<0.56	**400**
Fluorene	ug/L	2.2	1.7	1.7	**400**
Indeno(1,2,3-cd)pyrene	ug/L	<0.28	<0.28	<0.28	**NA**
Naphthalene	ug/L	**350**	**430**	**290**	**40**
Phenanthrene	ug/L	1.4	1.2	1.3	**NA**
Pyrene	ug/L	0.62	0.72	0.74	**250**
BTEX					
Benzene	ug/l	**230,000**	**190,000**	**200,000**	**5**
Ethylbenzene	ug/l	**1,900**	**3,600**	**3,700**	**700**
Toluene	ug/l	**130,000**	**120,000**	**120,000**	**343**
Xylene, -o	ug/l	**11,000**	**17,000**	**17,000**	**620**
Xylenes, -m, -p	ug/l	**14,000**	**9,500**	**10,000**	**620**

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.

Note: Bold results indicate concentrations greater than the enforcement standards.

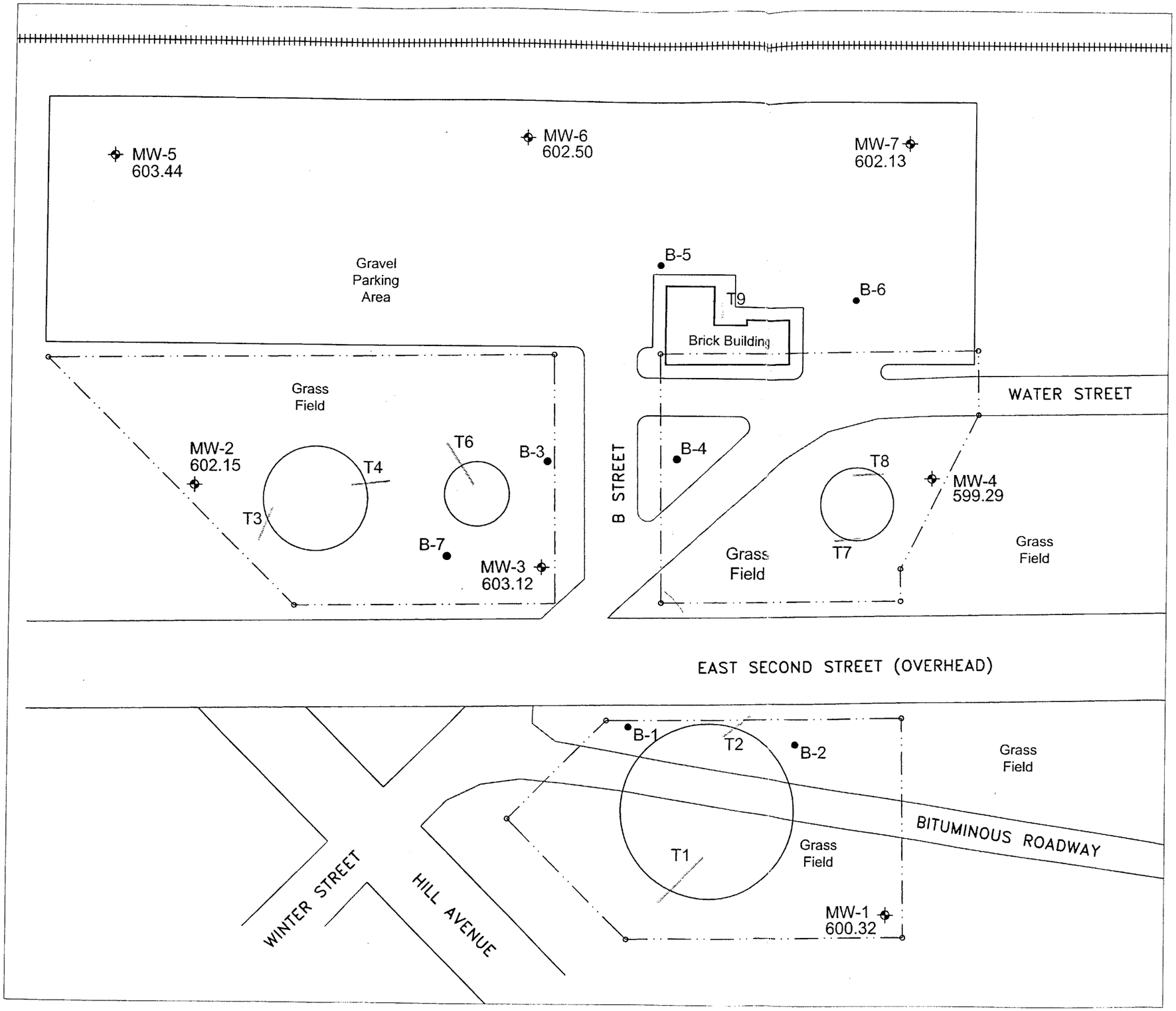
Table 4-5
Summary of Groundwater Analytical Results
Superior MGP Phase II
Superior, Wisconsin

Analyte	Units	MW-5	MW-6	MW-7	Enforcement Standard [a]
Metals					
Arsenic	ug/L	3.4	1.6	15	**50**
Barium	ug/L	150	440	73	**2,000**
Cadmium	ug/L	0.15	<1.0	<1.0	**5**
Chromium	ug/L	0.60	0.35	1.4	**100**
Lead	ug/L	1.4	<5.0	<5.0	**15**
Mercury	ug/L	<0.20	<0.20	<0.20	**2**
Selenium	ug/L	0.65	6.0	5.3	**50**
Silver	ug/L	<50	<50	<50	**50**
Cyanide, total	mg/L	0.0071	<0.010	0.012	**200**
PAH					
1-Methylnaphthalene	ug/L	0.058	3	4.7	**NA** [b]
2-Methylnaphthalene	ug/L	0	2.3	6.3	**NA**
Acenaphthene	ug/L	3.8	4.8	1.9	**NA**
Acenaphthylene	ug/L	0.16	0.26	3.4	**NA**
Anthracene	ug/L	0.22	0.96	0.75	**3,000**
Benzo(a)anthracene	ug/L	0.053	0.12	0	**NA**
Benzo(a)pyrene	ug/L	0.023	0.026	0	**0.2**
Benzo(b)fluoranthene	ug/L	0.022	0.022	0	**0.2**
Benzo(g,h,i)perylene	ug/L	0.017	0.016	0	**NA**
Benzo(k)fluoranthene	ug/L	0.014	0.018	0	**NA**
Chrysene	ug/L	0.039	0.095	0	**0.2**
Dibenzo(a,h)anthracene	ug/L	0	0	0	**NA**
Fluoranthene	ug/L	1.3	1.1	0	**400**
Fluorene	ug/L	1.2	0.76	2.2	**400**
Indeno(1,2,3-cd)pyrene	ug/L	0	0	0	**NA**
Naphthalene	ug/L	0.2	9.8	**350**	**40**
Phenanthrene	ug/L	0.42	3.1	1.7	**NA**
Pyrene	ug/L	1.4	1.2	0.62	**250**
Total PAH		8.9	27.6	371.6	
BTEX					
Benzene	ug/l	**6.2**	**5**	**230,000**	**5**
Ethylbenzene	ug/l	0	1.5	**1,900**	**700**
Toluene	ug/l	2.1	1.6	**130,000**	**343**
Xylene, -o	ug/l	3	1.4	**11,000**	**620**
Xylenes, -m, -p	ug/l	6.1	2.2	**14,000**	**620**
Total BTEX		17.4	11.7	386,900	

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.

Note: Bold results indicate concentrations greater than the enforcement standards.



EXPLANATION:

- Railroad Tracks
- SWL&P Property Boundary
- MW-1 — Monitoring Well Location
- B-2 — Geoprobe Soil Boring Location
- T3 — Test Trench Location
- Former Gas Holder

NOTES:

Groundwater elevations reported in feet above mean sea level.
Depth to groundwater was gauged on 1/8/02.

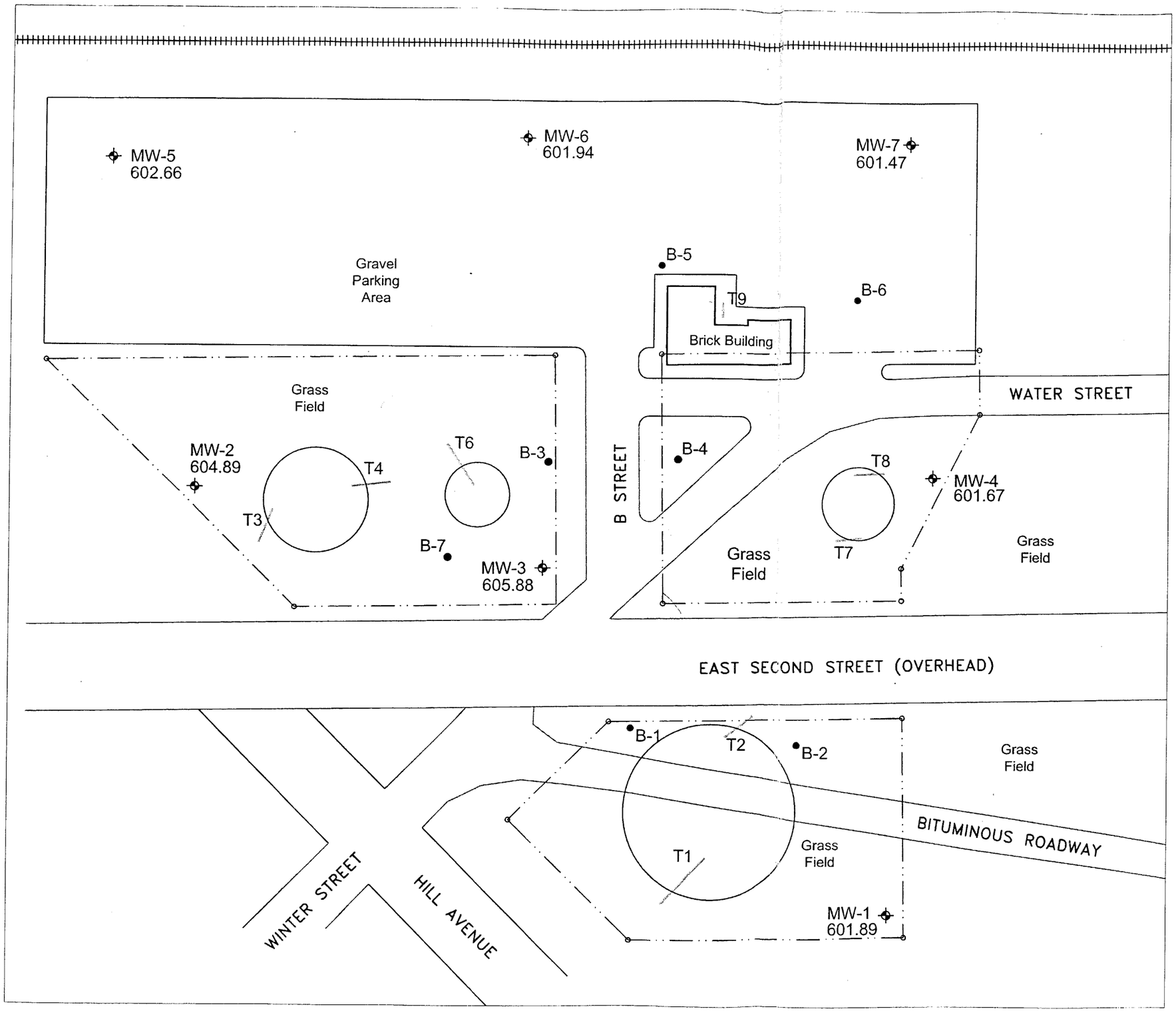
N

APPROXIMATE SCALE
1 INCH = 60 FEET

0 30 60 120

Figure 4-1
1/8/02 GROUNDWATER ELEVATION MAP
Superior Water Light & Power
Former MGP
Superior, Wisconsin

DRAWN: CMB/5802	DATE: March 2001	ENSR INTERNATIONAL
FILE No.: Fig 4-1.dwg	PROJECT: 09413-098	



EXPLANATION:

- Railroad Tracks
- SWL&P Property Boundary
- MW-1 — Monitoring Well Location
- B-2 — Geoprobe Soil Boring Location
- T3 — Test Trench Location
- Former Gas Holder

NOTES:

Groundwater elevations reported in feet above mean sea level.
Depth to groundwater was gauged on 2/11/02.

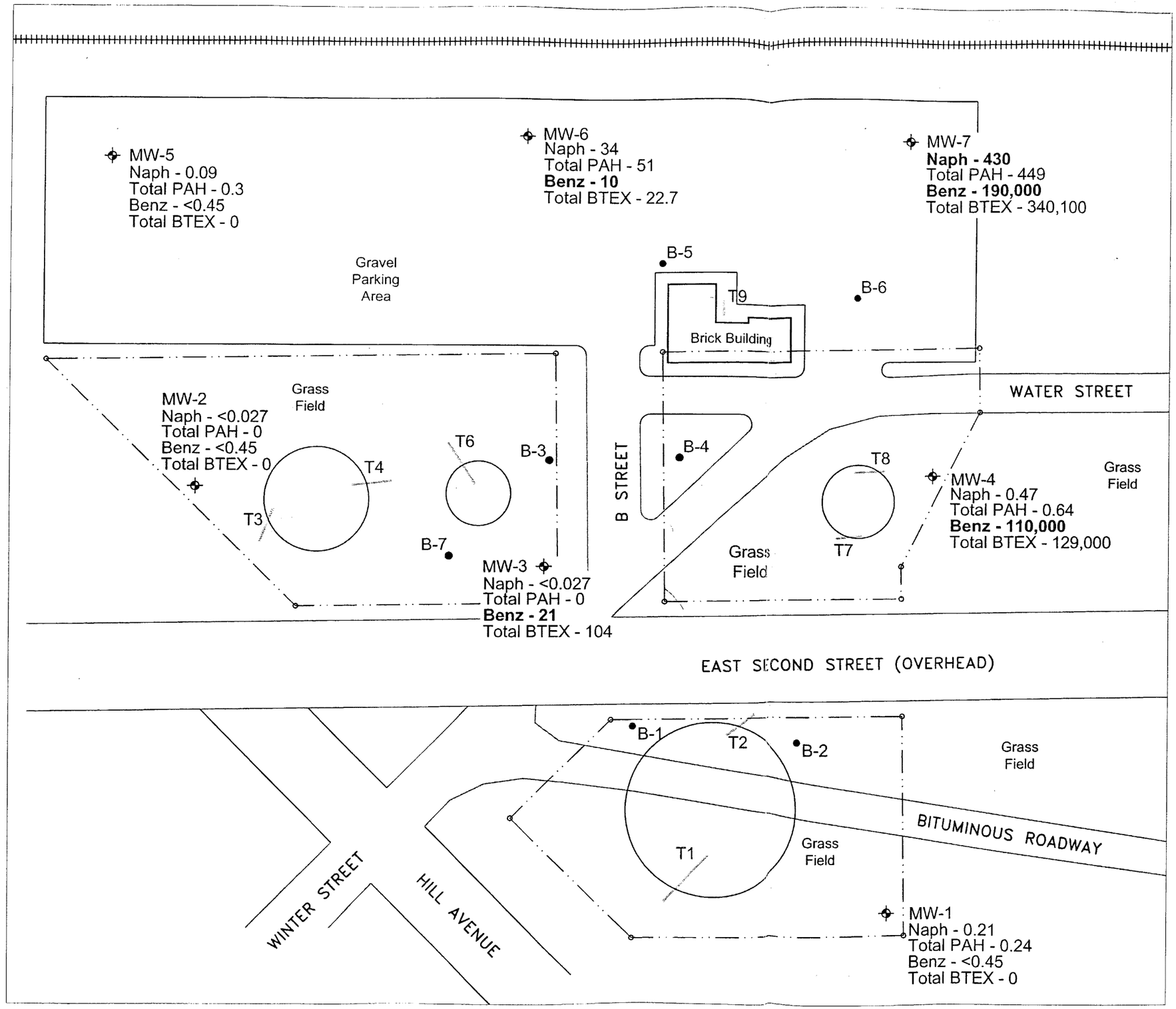
N

APPROXIMATE SCALE
1 INCH = 60 FEET

0 30 60 120

Figure 4-2
2/11/02 GROUNDWATER ELEVATION MAP
Superior Water Light & Power
Former MGP
Superior, Wisconsin

DRAWN: CMB/5802	DATE: March 2001	ENSR INTERNATIONAL
FILE No.: Fig 4-1.dwg	PROJECT: 09413-098	



EXPLANATION:

- Railroad Tracks
- SWL&P Property Boundary
- MW-1 — Monitoring Well Location
- B-2 — Geoprobe Soil Boring Location
- T3 — Test Trench Location
- Former Gas Holder

NOTES:

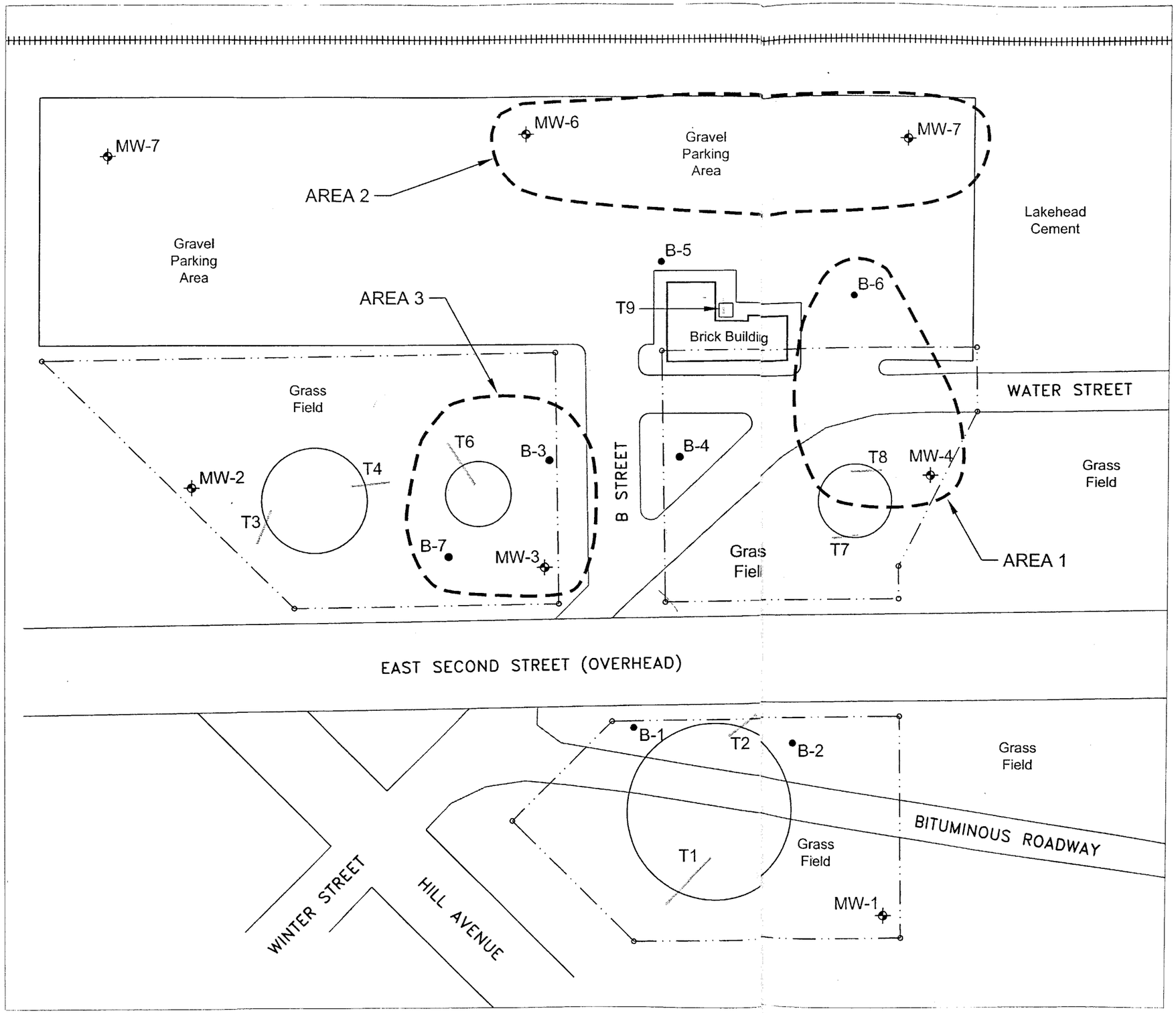
Groundwater analytical results reported in ug/l (parts per billion).
Naph = naphthalene
Total PAH = the sum of all PAH compounds detected in the sample
Benz = benzene
Total BTEX = the sum of benzene, toluene, ethylbenzene, and xylene in the sample
Bold indicates the compound exceeded the corresponding groundwater enforcement standard.
ND = compound was not detected in the sample.
Groundwater samples were collected on 2/11/02.

APPROXIMATE SCALE
1 INCH = 60 FEET

0 30 60 120

Figure 4-3
GROUNDWATER ANALYTICAL RESULTS MAP
Superior Water Light & Power
Former MGP
Superior, Wisconsin

DRAWN: CMB/5802	DATE: March 2001	ENSR INTERNATIONAL
FILE No.: Fig 4-3.dwg	PROJECT: 09413-098	



EXPLANATION:

- Railroad Tracks
- SWL&P Property Boundary
- Boundaries of Areas 1, 2 and 3 as discussed in the Phase II Report
- MW-1 — Monitoring Well Location
- B-2 — Geoprobe Soil Boring Location
- T3 — Test Trench Location
- Former Gas Holder

N

APPROXIMATE SCALE
1 INCH = 60 FEET

0 30 60 120

Figure 4-4
AREAS WITH EXCEEDANCES
Superior Water Light & Power
Former MGP
Superior, Wisconsin

DRAWN: CMB/5802	DATE: March 2002	ENSR INTERNATIONAL
FILE No.: Fig 4-4.dwg	PROJECT: 09413-098	

APPENDIX A

Analytical Report

SWL&P Former MGP
Groundwater Monitoring Report

Corporate Office & Laboratory
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Green Bay, WI 54302
920-469-2436 • FAX: 920-469-8827
800-7-ENCHEM

EN CHEM INC.

Madison Office & Laboratory
525 Science Drive
Madison, WI 53711
608-232-3300 • FAX: 608-233-0502
888-5-ENCHEM

- Analytical Report -

Project Name : SWL & P MGP

Project Number : 09413-098

Client: ENSR CORPORATION

WI DNR LAB ID : 405132750

Sample No.	Field ID	Collection Date	Sample No.	Field ID	Collection Date
820592-001	MW-1	2/11/02			
820592-002	MW-2	2/11/02			
820592-003	MW-3	2/11/02			
820592-004	MW-4	2/11/02			
820592-005	MW-5	2/11/02			
820592-006	MW-6	2/11/02			
820592-009	MW-7	2/11/02			
820592-010	MW-7-DUP	2/11/02			
820592-011	TRIP BLANK	2/11/02			

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

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

I certify that the data contained in this Final Report has been generated and reviewed in accordance with approved methods and Laboratory Standard Operating Procedure. Exceptions, if any, are discussed in the accompanying sample 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.

Approval Signature

02/27/02
Date

En Chem, Inc. Cooler Receipt Log

Batch No. 220592

Project Name or ID SWLP MGP No. of Coolers: 1 Temps: RT

A. Receipt Phase: Date cooler was opened: 2/13/02 By: NJ

	Were samples received on ice? (Must be ≤ 6 C)	(YES)	NO[2]	
2.	Was there a Temperature Blank?	(YES)	NO	
3:	Were custody seals present and intact? (Record on COC)	YES	(NO)	
	Are COC documents present?	(YES)	NO[2]	
5:	Does this Project require quick turn around analysis?	YES	(NO)	
	Is there any sub-work?	(YES)	NO	
7:	Are there any short hold time tests?	(YES)	NO	
:	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

. Check-in Phase: Date samples were Checked-in: 2/13/02 By: NJ

1:	Were all sample containers listed on the COC received and intact?	(YES)	NO[2]	NA
	Sign the COC as received by En Chem. Completed	(YES)	NO	
5:	Do sample labels match the COC?	(YES)	NO[2]	
1:	Check sample pH of preserved samples. (Not VOCs) Completed	YES	NO	(NA)
:	Do samples have correct chemical preservation?	(YES)	NO[2]	NA
6:	Are dissolved parameters field filtered?	YES	NO[2]	(NA)
:	Are sample volumes adequate for tests requested?	(YES)	NO[2]	
8:	Are VOC samples free of bubbles >6mm	(YES)	NO[2]	NA
:	Enter samples into logbook. Completed	(YES)	NO	
10:	Place laboratory sample number on all containers and COC. Completed	(YES)	NO	
1:	Complete Laboratory Tracking Sheet (LTS). Completed	YES	NO	(NA)
12:	Start Nonconformance form.	YES	NO	(NA)
3:	Initiate Subcontracting procedure. Completed	YES	NO	(NA)
14:	Check laboratory sample number on all containers and COC. KEY	(YES)	NO	NA

Short Hold-time tests:

18 Hours or less	7 days
Coliform (6 hrs)	Flashpoint
Hexavalent Chromium (24 Hrs)	TSS
BOD	Total Solids
Nitrite or Nitrate	TDS
Low Level Mercury	Sulfide
Ortho Phosphorus	Free Liquids
Turbidity	Total Volatile Solids
Surfactants	Aqueous Extractable Organics- ALL
Sulfite	Unpreserved VOC's
En Core Preservation	Ash
Color	

Footnotes
1 Notify proper lab group immediately.
2 Complete nonconformance memo.

Rev. 9/5/2001, Attachment to 1-REC-5.
Subject to QA Audit.

Reviewed by/date UW 2/13/02

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

En Chem Inc.

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Lab#:	TestGroupID:	Comment:
820592-	Selenium	A - Analyte is detected in the method blank at a concentration of 0.48 ug/L.
	PAH+-W	D - Analyte value from diluted analysis.
820592-006 MW-6	PAH+-W	* - Duplicate analyses not within control limits.
	PAH+-W	N - Spiked sample recovery not within control limits. This was due to the high concentration of spiked compounds present in the sample.

Documentation of Subcontracted Analysis

Listed below are the labs used for subcontracted analysis and associated FID number.

Code	Laboratory	Wisconsin FID Number
*MD	En Chem Madison	113172950
*GB	En Chem Green Bay	405132750
*SP	En Chem Superior	816079330
*RL	Robert E. Lee	405043870
*NL	Northern Lakes Service	721026460
*SF	Sommer - Frey	241249360
*CT	Commonwealth Tech.	157066030
*QO	Quanterrra - North Canton, OH	999518190
*QP	Quanterra - Pittsburgh, PA	998027800
*KM	Kemron - Merietta, OH	998202040
*ST	Spectrum	
*SUB	Indicates analysis that requires no certification	

En Chem Inc.

Green Bay, WI 54302
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- Analytical Report -

Project Name : SWL & P MGP
Project Number : 09413-098
Field ID : MW-1
Lab Sample Number : 820592-001
WI DNR LAB ID : 405132750

Client : ENSR CORPORATION
Report Date : 2/27/02
Collection Date : 2/11/02
Matrix Type : WATER

Inorganic Results

Test	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Prep Method	Analysis Method	Analyst
Arsenic - Dissolved	< 4.4	4.4	14		ug/L		2/23/02	SW846 6010B	SW846 6010B	*MD
Barium - Dissolved	280	0.11	0.35		ug/L		2/23/02	SW846 6010B	SW846 6010B	*MD
Cadmium - Dissolved	< 0.51	0.51	1.6		ug/L		2/23/02	SW846 6010B	SW846 6010B	*MD
Chromium - Dissolved	1.2	0.83	2.6		ug/L	Q	2/23/02	SW846 6010B	SW846 6010B	*MD
Cyanide, total	< 0.0021	0.0021	0.0067		mg/L		2/21/02	EPA 335.4	EPA 335.4	*MD
Lead - Dissolved	< 2.1	2.1	6.7		ug/L		2/23/02	SW846 6010B	SW846 6010B	*MD
Mercury - Dissolved	< 0.088	0.088	0.28		ug/L		2/15/02	SW846 7470A	SW846 7470A	*MD
Selenium - Dissolved	1.7	0.45	1.4		ug/L	A	2/25/02	EPA 7740	EPA 7740	*MD
Silver - Dissolved	< 1.3	1.3	4.1		ug/L		2/23/02	SW846 6010B	SW846 6010B	*MD

Organic Results

BTEX - WATER — Prep Method: SW846 5030B — Prep Date: 2/13/02 — Analyst: MSB

Analyte	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Analysis Method
a,a,a-Trifluorotoluene	109				%Recov		2/13/02	SW846 M8021B
Benzene	< 0.45	0.45	1.4		ug/l		2/13/02	SW846 M8021B
Ethylbenzene	< 0.82	0.82	2.6		ug/l		2/13/02	SW846 M8021B
Toluene	< 0.68	0.68	2.2		ug/l		2/13/02	SW846 M8021B
Xylenes, -m, -p	< 1.7	1.7	5.4		ug/l		2/13/02	SW846 M8021B
Xylene, -o	< 0.77	0.77	2.5		ug/l		2/13/02	SW846 M8021B

Organic Results

PAH - SEMIVOLATILES — Prep Method: SW846 3510 — Prep Date: 2/14/02 — Analyst: DJB

Analyte	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Analysis Method
2-Fluorobiphenyl	96				%Recov		2/14/02	SW846 8270C
Nitrobenzene-d5	61				%Recov		2/14/02	SW846 8270C
Terphenyl-d14	115				%Recov		2/14/02	SW846 8270C
Acenaphthene	< 0.018	0.018	0.057		ug/L		2/14/02	SW846 8270C
Acenaphthylene	< 0.023	0.023	0.073		ug/L		2/14/02	SW846 8270C
Anthracene	< 0.020	0.020	0.064		ug/L		2/14/02	SW846 8270C
Benzo(a)anthracene	< 0.019	0.019	0.061		ug/L		2/14/02	SW846 8270C

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- Analytical Report -

Project Name : SWL & P MGP

Project Number : 09413-098

Client : ENSR CORPORATION

Field ID : MW-1

Report Date : 2/27/02

Lab Sample Number : 820592-001

Collection Date : 2/11/02

WI DNR LAB ID : 405132750

Matrix Type : WATER

Benzo(a)pyrene	< 0.012	0.012	0.038	ug/L		2/14/02	SW846 8270C
Benzo(b)fluoranthene	< 0.014	0.014	0.045	ug/L		2/14/02	SW846 8270C
Benzo(g,h,i)perylene	< 0.015	0.015	0.048	ug/L		2/14/02	SW846 8270C
Benzo(k)fluoranthene	< 0.013	0.013	0.041	ug/L		2/14/02	SW846 8270C
Indeno(1,2,3-cd)pyrene	< 0.014	0.014	0.045	ug/L		2/14/02	SW846 8270C
Chrysene	< 0.018	0.018	0.057	ug/L		2/14/02	SW846 8270C
Dibenzo(a,h)anthracene	< 0.017	0.017	0.054	ug/L		2/14/02	SW846 8270C
Fluoranthene	< 0.028	0.028	0.089	ug/L		2/14/02	SW846 8270C
Fluorene	< 0.021	0.021	0.067	ug/L		2/14/02	SW846 8270C
2-Methylnaphthalene	< 0.028	0.028	0.089	ug/L		2/14/02	SW846 8270C
1-Methylnaphthalene	< 0.027	0.027	0.086	ug/L		2/14/02	SW846 8270C
Naphthalene	0.21	0.027	0.086	ug/L		2/14/02	SW846 8270C
Phenanthrene	0.028	0.019	0.061	ug/L	Q	2/14/02	SW846 8270C
Pyrene	< 0.020	0.020	0.064	ug/L		2/14/02	SW846 8270C

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- Analytical Report -

Project Name : SWL & P MGP

Project Number : 09413-098

Client : ENSR CORPORATION

Field ID : MW-2

Report Date : 2/27/02

Lab Sample Number : 820592-002

Collection Date : 2/11/02

WI DNR LAB ID : 405132750

Matrix Type : WATER

Inorganic Results

Test	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Prep Method	Analysis Method	Analyst
Arsenic - Dissolved	< 4.4	4.4	14		ug/L		2/23/02	SW846 6010B	SW846 6010B	*MD
Barium - Dissolved	260	0.11	0.35		ug/L		2/23/02	SW846 6010B	SW846 6010B	*MD
Cadmium - Dissolved	< 0.51	0.51	1.6		ug/L		2/23/02	SW846 6010B	SW846 6010B	*MD
Chromium - Dissolved	< 0.83	0.83	2.6		ug/L		2/23/02	SW846 6010B	SW846 6010B	*MD
Cyanide, total	< 0.0021	0.0021	0.0067		mg/L		2/21/02	EPA 335.4	EPA 335.4	*MD
Lead - Dissolved	< 2.1	2.1	6.7		ug/L		2/23/02	SW846 6010B	SW846 6010B	*MD
Mercury - Dissolved	< 0.088	0.088	0.28		ug/L		2/15/02	SW846 7470A	SW846 7470A	*MD
Selenium - Dissolved	1.0	0.45	1.4		ug/L	QA	2/25/02	EPA 7740	EPA 7740	*MD
Silver - Dissolved	< 1.3	1.3	4.1		ug/L		2/23/02	SW846 6010B	SW846 6010B	*MD

Organic Results

BTEX - WATER Prep Method: SW846 5030B Prep Date: 2/13/02 Analyst: MSB

Analyte	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Analysis Method
a,a,a-Trifluorotoluene	108				%Recov		2/13/02	SW846 M8021B
Benzene	< 0.45	0.45	1.4		ug/l		2/13/02	SW846 M8021B
Ethylbenzene	< 0.82	0.82	2.6		ug/l		2/13/02	SW846 M8021B
Toluene	< 0.68	0.68	2.2		ug/l		2/13/02	SW846 M8021B
Xylenes, -m, -p	< 1.7	1.7	5.4		ug/l		2/13/02	SW846 M8021B
Xylene, -o	< 0.77	0.77	2.5		ug/l		2/13/02	SW846 M8021B

Organic Results

PAH - SEMIVOLATILES Prep Method: SW846 3510 Prep Date: 2/14/02 Analyst: DJB

Analyte	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Analysis Method
2-Fluorobiphenyl	53				%Recov		2/14/02	SW846 8270C
Nitrobenzene-d5	48				%Recov		2/14/02	SW846 8270C
Terphenyl-d14	106				%Recov		2/14/02	SW846 8270C
Acenaphthene	< 0.018	0.018	0.057		ug/L		2/14/02	SW846 8270C
Acenaphthylene	< 0.023	0.023	0.073		ug/L		2/14/02	SW846 8270C
Anthracene	< 0.020	0.020	0.064		ug/L		2/14/02	SW846 8270C
Benzo(a)anthracene	< 0.019	0.019	0.061		ug/L		2/14/02	SW846 8270C

En Chem Inc.

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- Analytical Report -

Project Name : SWL & P MGP

Project Number : 09413-098

Client : ENSR CORPORATION

Field ID : MW-2

Report Date : 2/27/02

Lab Sample Number : 820592-002

Collection Date : 2/11/02

WI DNR LAB ID : 405132750

Matrix Type : WATER

Benzo(a)pyrene	< 0.012	0.012	0.038	ug/L	2/14/02	SW846 8270C
Benzo(b)fluoranthene	< 0.014	0.014	0.045	ug/L	2/14/02	SW846 8270C
Benzo(g,h,i)perylene	< 0.015	0.015	0.048	ug/L	2/14/02	SW846 8270C
Benzo(k)fluoranthene	< 0.013	0.013	0.041	ug/L	2/14/02	SW846 8270C
Indeno(1,2,3-cd)pyrene	< 0.014	0.014	0.045	ug/L	2/14/02	SW846 8270C
Chrysene	< 0.018	0.018	0.057	ug/L	2/14/02	SW846 8270C
Dibenzo(a,h)anthracene	< 0.017	0.017	0.054	ug/L	2/14/02	SW846 8270C
Fluoranthene	< 0.028	0.028	0.089	ug/L	2/14/02	SW846 8270C
Fluorene	< 0.021	0.021	0.067	ug/L	2/14/02	SW846 8270C
2-Methylnaphthalene	< 0.028	0.028	0.089	ug/L	2/14/02	SW846 8270C
1-Methylnaphthalene	< 0.027	0.027	0.086	ug/L	2/14/02	SW846 8270C
Naphthalene	< 0.027	0.027	0.086	ug/L	2/14/02	SW846 8270C
Phenanthrene	< 0.019	0.019	0.061	ug/L	2/14/02	SW846 8270C
Pyrene	< 0.020	0.020	0.064	ug/L	2/14/02	SW846 8270C

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- Analytical Report -

Project Name : SWL & P MGP
Project Number : 09413-098
Field ID : MW-3
Lab Sample Number : 820592-003
WI DNR LAB ID : 405132750

Client : ENSR CORPORATION
Report Date : 2/27/02
Collection Date : 2/11/02
Matrix Type : WATER

Inorganic Results

Test	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Prep Method	Analysis Method	Analyst
Arsenic - Dissolved	< 4.4	4.4	14		ug/L		2/23/02	SW846 6010B	SW846 6010B	*MD
Barium - Dissolved	180	0.11	0.35		ug/L		2/23/02	SW846 6010B	SW846 6010B	*MD
Cadmium - Dissolved	< 0.51	0.51	1.6		ug/L		2/23/02	SW846 6010B	SW846 6010B	*MD
Chromium - Dissolved	< 0.83	0.83	2.6		ug/L		2/23/02	SW846 6010B	SW846 6010B	*MD
Cyanide, total	< 0.0021	0.0021	0.0067		mg/L		2/21/02	EPA 335.4	EPA 335.4	*MD
Lead - Dissolved	< 2.1	2.1	6.7		ug/L		2/23/02	SW846 6010B	SW846 6010B	*MD
Mercury - Dissolved	< 0.088	0.088	0.28		ug/L		2/15/02	SW846 7470A	SW846 7470A	*MD
Selenium - Dissolved	2.7	0.45	1.4		ug/L	A	2/25/02	EPA 7740	EPA 7740	*MD
Silver - Dissolved	< 1.3	1.3	4.1		ug/L		2/23/02	SW846 6010B	SW846 6010B	*MD

Organic Results

BTEX - WATER — Prep Method: SW846 5030B — Prep Date: 2/13/02 — Analyst: MSB

Analyte	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Analysis Method
a,a,a-Trifluorotoluene	103				%Recov		2/13/02	SW846 M8021B
Benzene	21	0.45	1.4		ug/l		2/13/02	SW846 M8021B
Ethylbenzene	4.8	0.82	2.6		ug/l		2/13/02	SW846 M8021B
Toluene	26	0.68	2.2		ug/l		2/13/02	SW846 M8021B
Xylenes, -m, -p	8.5	1.7	5.4		ug/l		2/13/02	SW846 M8021B
Xylene, -o	44	0.77	2.5		ug/l		2/13/02	SW846 M8021B

Organic Results

PAH - SEMIVOLATILES — Prep Method: SW846 3510 — Prep Date: 2/14/02 — Analyst: DJB

Analyte	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Analysis Method
2-Fluorobiphenyl	55				%Recov		2/14/02	SW846 8270C
Nitrobenzene-d5	76				%Recov		2/14/02	SW846 8270C
Terphenyl-d14	115				%Recov		2/14/02	SW846 8270C
Acenaphthene	< 0.018	0.018	0.057		ug/L		2/14/02	SW846 8270C
Acenaphthylene	< 0.023	0.023	0.073		ug/L		2/14/02	SW846 8270C
Anthracene	< 0.020	0.020	0.064		ug/L		2/14/02	SW846 8270C
Benzo(a)anthracene	< 0.019	0.019	0.061		ug/L		2/14/02	SW846 8270C

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- Analytical Report -

Project Name : SWL & P MGP

Project Number : 09413-098

Client : ENSR CORPORATION

Field ID : MW-3

Report Date : 2/27/02

Lab Sample Number : 820592-003

Collection Date : 2/11/02

WI DNR LAB ID : 405132750

Matrix Type : WATER

Benzo(a)pyrene	< 0.012	0.012	0.038	ug/L	2/14/02	SW846 8270C
Benzo(b)fluoranthene	< 0.014	0.014	0.045	ug/L	2/14/02	SW846 8270C
Benzo(g,h,i)perylene	< 0.015	0.015	0.048	ug/L	2/14/02	SW846 8270C
Benzo(k)fluoranthene	< 0.013	0.013	0.041	ug/L	2/14/02	SW846 8270C
Indeno(1,2,3-cd)pyrene	< 0.014	0.014	0.045	ug/L	2/14/02	SW846 8270C
Chrysene	< 0.018	0.018	0.057	ug/L	2/14/02	SW846 8270C
Dibenzo(a,h)anthracene	< 0.017	0.017	0.054	ug/L	2/14/02	SW846 8270C
Fluoranthene	< 0.028	0.028	0.089	ug/L	2/14/02	SW846 8270C
Fluorene	< 0.021	0.021	0.067	ug/L	2/14/02	SW846 8270C
2-Methylnaphthalene	< 0.028	0.028	0.089	ug/L	2/14/02	SW846 8270C
1-Methylnaphthalene	< 0.027	0.027	0.086	ug/L	2/14/02	SW846 8270C
Naphthalene	0.10	0.027	0.086	ug/L	2/14/02	SW846 8270C
Phenanthrene	< 0.019	0.019	0.061	ug/L	2/14/02	SW846 8270C
Pyrene	< 0.020	0.020	0.064	ug/L	2/14/02	SW846 8270C

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- Analytical Report -

Project Name : SWL & P MGP

Project Number : 09413-098

Client : ENSR CORPORATION

Field ID : MW-4

Report Date : 2/27/02

Lab Sample Number : 820592-004

Collection Date : 2/11/02

WI DNR LAB ID : 405132750

Matrix Type : WATER

Inorganic Results

Test	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Prep Method	Analysis Method	Analyst
Arsenic - Dissolved	< 4.4	4.4	14		ug/L		2/23/02	SW846 6010B	SW846 6010B	*MD
Barium - Dissolved	81	0.11	0.35		ug/L		2/23/02	SW846 6010B	SW846 6010B	*MD
Cadmium - Dissolved	< 0.51	0.51	1.6		ug/L		2/23/02	SW846 6010B	SW846 6010B	*MD
Chromium - Dissolved	< 0.83	0.83	2.6		ug/L		2/23/02	SW846 6010B	SW846 6010B	*MD
Cyanide, total	< 0.0021	0.0021	0.0067		mg/L		2/21/02	EPA 335.4	EPA 335.4	*MD
Lead - Dissolved	< 2.1	2.1	6.7		ug/L		2/23/02	SW846 6010B	SW846 6010B	*MD
Mercury - Dissolved	< 0.088	0.088	0.28		ug/L		2/15/02	SW846 7470A	SW846 7470A	*MD
Selenium - Dissolved	< 0.45	0.45	1.4		ug/L	A	2/25/02	EPA 7740	EPA 7740	*MD
Silver - Dissolved	< 1.3	1.3	4.1		ug/L		2/23/02	SW846 6010B	SW846 6010B	*MD

Organic Results

BTEX - WATER Prep Method: SW846 5030B Prep Date: 2/13/02 Analyst: MSB

Analyte	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Analysis Method
a,a,a-Trifluorotoluene	95				%Recov		2/14/02	SW846 M8021B
Benzene	110000	450	1400		ug/l		2/14/02	SW846 M8021B
Ethylbenzene	< 820	820	2600		ug/l		2/14/02	SW846 M8021B
Toluene	19000	680	2200		ug/l		2/14/02	SW846 M8021B
Xylenes, -m, -p	< 1700	1700	5400		ug/l		2/14/02	SW846 M8021B
Xylene, -o	< 770	770	2500		ug/l		2/14/02	SW846 M8021B

Organic Results

PAH - SEMIVOLATILES Prep Method: SW846 3510 Prep Date: 2/14/02 Analyst: DJB

Analyte	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Analysis Method
2-Fluorobiphenyl	52				%Recov		2/14/02	SW846 8270C
Nitrobenzene-d5	58				%Recov		2/14/02	SW846 8270C
Terphenyl-d14	104				%Recov		2/14/02	SW846 8270C
Acenaphthene	< 0.018	0.018	0.057		ug/L		2/14/02	SW846 8270C
Acenaphthylene	< 0.023	0.023	0.073		ug/L		2/14/02	SW846 8270C
Anthracene	< 0.020	0.020	0.064		ug/L		2/14/02	SW846 8270C
Benzo(a)anthracene	< 0.019	0.019	0.061		ug/L		2/14/02	SW846 8270C

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- Analytical Report -

Project Name : SWL & P MGP
Project Number : 09413-098
Field ID : MW-4
Lab Sample Number : 820592-004
WI DNR LAB ID : 405132750

Client : ENSR CORPORATION
Report Date : 2/27/02
Collection Date : 2/11/02
Matrix Type : WATER

Benzo(a)pyrene	< 0.012	0.012	0.038	ug/L		2/14/02	SW846 8270C
Benzo(b)fluoranthene	< 0.014	0.014	0.045	ug/L		2/14/02	SW846 8270C
Benzo(g,h,i)perylene	< 0.015	0.015	0.048	ug/L		2/14/02	SW846 8270C
Benzo(k)fluoranthene	< 0.013	0.013	0.041	ug/L		2/14/02	SW846 8270C
Indeno(1,2,3-cd)pyrene	< 0.014	0.014	0.045	ug/L		2/14/02	SW846 8270C
Chrysene	< 0.018	0.018	0.057	ug/L		2/14/02	SW846 8270C
Dibenzo(a,h)anthracene	< 0.017	0.017	0.054	ug/L		2/14/02	SW846 8270C
Fluoranthene	< 0.028	0.028	0.089	ug/L		2/14/02	SW846 8270C
Fluorene	< 0.021	0.021	0.067	ug/L		2/14/02	SW846 8270C
2-Methylnaphthalene	0.088	0.028	0.089	ug/L	Q	2/14/02	SW846 8270C
1-Methylnaphthalene	0.055	0.027	0.086	ug/L	Q	2/14/02	SW846 8270C
Naphthalene	0.47	0.027	0.086	ug/L		2/14/02	SW846 8270C
Phenanthrene	0.028	0.019	0.061	ug/L	Q	2/14/02	SW846 8270C
Pyrene	< 0.020	0.020	0.064	ug/L		2/14/02	SW846 8270C

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- Analytical Report -

Project Name : SWL & P MGP
Project Number : 09413-098
Field ID : MW-5
Lab Sample Number : 820592-005
WI DNR LAB ID : 405132750

Client : ENSR CORPORATION
Report Date : 2/27/02
Collection Date : 2/11/02
Matrix Type : WATER

Inorganic Results

Test	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Prep Method	Analysis Method	Analyst
Arsenic - Dissolved	4.6	4.4	14		ug/L	Q	2/23/02	SW846 6010B	SW846 6010B	*MD
Barium - Dissolved	90	0.11	0.35		ug/L		2/23/02	SW846 6010B	SW846 6010B	*MD
Cadmium - Dissolved	< 0.51	0.51	1.6		ug/L		2/23/02	SW846 6010B	SW846 6010B	*MD
Chromium - Dissolved	< 0.83	0.83	2.6		ug/L		2/23/02	SW846 6010B	SW846 6010B	*MD
Cyanide, total	0.0065	0.0021	0.0067		mg/L	Q	2/21/02	EPA 335.4	EPA 335.4	*MD
Lead - Dissolved	< 2.1	2.1	6.7		ug/L		2/23/02	SW846 6010B	SW846 6010B	*MD
Mercury - Dissolved	< 0.088	0.088	0.28		ug/L		2/15/02	SW846 7470A	SW846 7470A	*MD
Selenium - Dissolved	< 0.45	0.45	1.4		ug/L	A	2/25/02	EPA 7740	EPA 7740	*MD
Silver - Dissolved	< 1.3	1.3	4.1		ug/L		2/23/02	SW846 6010B	SW846 6010B	*MD

Organic Results

BTEX - WATER Prep Method: SW846 5030B Prep Date: 2/13/02 Analyst: MSB

Analyte	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Analysis Method
a,a,a-Trifluorotoluene	108				%Recov		2/14/02	SW846 M8021B
Benzene	< 0.45	0.45	1.4		ug/l		2/14/02	SW846 M8021B
Ethylbenzene	< 0.82	0.82	2.6		ug/l		2/14/02	SW846 M8021B
Toluene	< 0.68	0.68	2.2		ug/l		2/14/02	SW846 M8021B
Xylenes, -m, -p	< 1.7	1.7	5.4		ug/l		2/14/02	SW846 M8021B
Xylene, -o	< 0.77	0.77	2.5		ug/l		2/14/02	SW846 M8021B

Organic Results

PAH - SEMIVOLATILES Prep Method: SW846 3510 Prep Date: 2/14/02 Analyst: DJB

Analyte	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Analysis Method
2-Fluorobiphenyl	47				%Recov		2/14/02	SW846 8270C
Nitrobenzene-d5	69				%Recov		2/14/02	SW846 8270C
Terphenyl-d14	97				%Recov		2/14/02	SW846 8270C
Acenaphthene	0.11	0.018	0.057		ug/L		2/14/02	SW846 8270C
Acenaphthylene	< 0.023	0.023	0.073		ug/L		2/14/02	SW846 8270C
Anthracene	< 0.020	0.020	0.064		ug/L		2/14/02	SW846 8270C
Benzo(a)anthracene	< 0.019	0.019	0.061		ug/L		2/14/02	SW846 8270C

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- Analytical Report -

Project Name : SWL & P MGP

Project Number : 09413-098

Client : ENSR CORPORATION

Field ID : MW-5

Report Date : 2/27/02

Lab Sample Number : 820592-005

Collection Date : 2/11/02

WI DNR LAB ID : 405132750

Matrix Type : WATER

Benzo(a)pyrene	<	0.012	0.012	0.038	ug/L		2/14/02	SW846 8270C
Benzo(b)fluoranthene	<	0.014	0.014	0.045	ug/L		2/14/02	SW846 8270C
Benzo(g,h,i)perylene	<	0.015	0.015	0.048	ug/L		2/14/02	SW846 8270C
Benzo(k)fluoranthene	<	0.013	0.013	0.041	ug/L		2/14/02	SW846 8270C
Indeno(1,2,3-cd)pyrene	<	0.014	0.014	0.045	ug/L		2/14/02	SW846 8270C
Chrysene	<	0.018	0.018	0.057	ug/L		2/14/02	SW846 8270C
Dibenzo(a,h)anthracene	<	0.017	0.017	0.054	ug/L		2/14/02	SW846 8270C
Fluoranthene		0.030	0.028	0.089	ug/L	Q	2/14/02	SW846 8270C
Fluorene		0.035	0.021	0.067	ug/L	Q	2/14/02	SW846 8270C
2-Methylnaphthalene	<	0.028	0.028	0.089	ug/L		2/14/02	SW846 8270C
1-Methylnaphthalene	<	0.027	0.027	0.086	ug/L		2/14/02	SW846 8270C
Naphthalene		0.092	0.027	0.086	ug/L		2/14/02	SW846 8270C
Phenanthrene	<	0.019	0.019	0.061	ug/L		2/14/02	SW846 8270C
Pyrene		0.039	0.020	0.064	ug/L	Q	2/14/02	SW846 8270C

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- Analytical Report -

Project Name : SWL & P MGP
Project Number : 09413-098
Field ID : MW-6
Lab Sample Number : 820592-006
WI DNR LAB ID : 405132750

Client : ENSR CORPORATION
Report Date : 2/27/02
Collection Date : 2/11/02
Matrix Type : WATER

Inorganic Results

Test	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Prep Method	Analysis Method	Analyst
Arsenic - Dissolved	< 4.4	4.4	14		ug/L		2/23/02	SW846 6010B	SW846 6010B	*MD
Barium - Dissolved	1100	0.11	0.35		ug/L		2/23/02	SW846 6010B	SW846 6010B	*MD
Cadmium - Dissolved	< 0.51	0.51	1.6		ug/L		2/23/02	SW846 6010B	SW846 6010B	*MD
Chromium - Dissolved	< 0.83	0.83	2.6		ug/L		2/23/02	SW846 6010B	SW846 6010B	*MD
Cyanide, total	< 0.0021	0.0021	0.0067		mg/L		2/21/02	EPA 335.4	EPA 335.4	*MD
Lead - Dissolved	< 2.1	2.1	6.7		ug/L		2/23/02	SW846 6010B	SW846 6010B	*MD
Mercury - Dissolved	< 0.088	0.088	0.28		ug/L		2/15/02	SW846 7470A	SW846 7470A	*MD
Selenium - Dissolved	2.7	0.90	2.9		ug/L	QA	2/25/02	EPA 7740	EPA 7740	*MD
Silver - Dissolved	< 1.3	1.3	4.1		ug/L		2/23/02	SW846 6010B	SW846 6010B	*MD

Organic Results

BTEX - WATER — Prep Method: SW846 5030B — Prep Date: 2/13/02 — Analyst: MSB

Analyte	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Analysis Method
a,a,a-Trifluorotoluene	104				%Recov		2/13/02	SW846 M8021B
Benzene	10	0.45	1.4		ug/l		2/13/02	SW846 M8021B
Ethylbenzene	5.8	0.82	2.6		ug/l		2/13/02	SW846 M8021B
Toluene	2.0	0.68	2.2		ug/l	Q	2/13/02	SW846 M8021B
Xylenes, -m, -p	2.3	1.7	5.4		ug/l	Q	2/13/02	SW846 M8021B
Xylene, -o	2.6	0.77	2.5		ug/l		2/13/02	SW846 M8021B

Organic Results

PAH - SEMIVOLATILES — Prep Method: SW846 3510 — Prep Date: 2/14/02 — Analyst: DJB

Analyte	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Analysis Method
2-Fluorobiphenyl	66				%Recov		2/14/02	SW846 8270C
Nitrobenzene-d5	96				%Recov		2/14/02	SW846 8270C
Terphenyl-d14	98				%Recov		2/14/02	SW846 8270C
Acenaphthene	5.0	0.72	2.3		ug/L	DN*	2/14/02	SW846 8270C
Acenaphthylene	0.22	0.023	0.073		ug/L		2/14/02	SW846 8270C
Anthracene	< 0.80	0.80	2.5		ug/L	D	2/14/02	SW846 8270C
Benzo(a)anthracene	0.083	0.019	0.061		ug/L		2/14/02	SW846 8270C

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- Analytical Report -

Project Name : SWL & P MGP

Project Number : 09413-098

Client : ENSR CORPORATION

Field ID : MW-6

Report Date : 2/27/02

Lab Sample Number : 820592-006

Collection Date : 2/11/02

WI DNR LAB ID : 405132750

Matrix Type : WATER

Benzo(a)pyrene	< 0.012	0.012	0.038	ug/L		2/14/02	SW846 8270C
Benzo(b)fluoranthene	< 0.014	0.014	0.045	ug/L		2/14/02	SW846 8270C
Benzo(g,h,i)perylene	< 0.015	0.015	0.048	ug/L		2/14/02	SW846 8270C
Benzo(k)fluoranthene	< 0.013	0.013	0.041	ug/L		2/14/02	SW846 8270C
Indeno(1,2,3-cd)pyrene	< 0.014	0.014	0.045	ug/L		2/14/02	SW846 8270C
Chrysene	0.081	0.018	0.057	ug/L		2/14/02	SW846 8270C
Dibenzo(a,h)anthracene	< 0.017	0.017	0.054	ug/L		2/14/02	SW846 8270C
Fluoranthene	< 1.1	1.1	3.5	ug/L	D	2/14/02	SW846 8270C
Fluorene	< 0.84	0.84	2.7	ug/L	D	2/14/02	SW846 8270C
2-Methylnaphthalene	3.7	1.1	3.5	ug/L	DN	2/14/02	SW846 8270C
1-Methylnaphthalene	5.0	1.1	3.5	ug/L	DN	2/14/02	SW846 8270C
Naphthalene	34	2.7	8.6	ug/L	DN	2/15/02	SW846 8270C
Phenanthrene	2.1	0.76	2.4	ug/L	QD	2/14/02	SW846 8270C
Pyrene	0.88	0.80	2.5	ug/L	QD	2/14/02	SW846 8270C

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- Analytical Report -

Project Name : SWL & P MGP

Project Number : 09413-098

Client : ENSR CORPORATION

Field ID : MW-7

Report Date : 2/27/02

Lab Sample Number : 820592-009

Collection Date : 2/11/02

WI DNR LAB ID : 405132750

Matrix Type : WATER

Inorganic Results

Test	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Prep Method	Analysis Method	Analyst
Arsenic - Dissolved	15	4.4	14		ug/L		2/23/02	SW846 6010B	SW846 6010B	*MD
Barium - Dissolved	120	0.11	0.35		ug/L		2/23/02	SW846 6010B	SW846 6010B	*MD
Cadmium - Dissolved	0.70	0.51	1.6		ug/L	Q	2/23/02	SW846 6010B	SW846 6010B	*MD
Chromium - Dissolved	1.3	0.83	2.6		ug/L	Q	2/23/02	SW846 6010B	SW846 6010B	*MD
Cyanide, total	0.012	0.0021	0.0067		mg/L		2/21/02	EPA 335.4	EPA 335.4	*MD
Lead - Dissolved	2.1	2.1	6.7		ug/L	Q	2/23/02	SW846 6010B	SW846 6010B	*MD
Mercury - Dissolved	< 0.088	0.088	0.28		ug/L		2/15/02	SW846 7470A	SW846 7470A	*MD
Selenium - Dissolved	1.2	0.45	1.4		ug/L	QA	2/25/02	EPA 7740	EPA 7740	*MD
Silver - Dissolved	< 1.3	1.3	4.1		ug/L		2/23/02	SW846 6010B	SW846 6010B	*MD

Organic Results

BTEX - WATER Prep Method: SW846 5030B Prep Date: 2/13/02 Analyst: MSB

Analyte	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Analysis Method
a,a,a-Trifluorotoluene	90				%Recov		2/14/02	SW846 M8021B
Benzene	190000	450	1400		ug/l		2/14/02	SW846 M8021B
Ethylbenzene	3600	820	2600		ug/l		2/14/02	SW846 M8021B
Toluene	120000	680	2200		ug/l		2/14/02	SW846 M8021B
Xylenes, -m, -p	17000	1700	5400		ug/l		2/14/02	SW846 M8021B
Xylene, -o	9500	770	2500		ug/l		2/14/02	SW846 M8021B

Organic Results

PAH - SEMIVOLATILES Prep Method: SW846 3510 Prep Date: 2/14/02 Analyst: DJB

Analyte	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Analysis Method
2-Fluorobiphenyl	80				%Recov		2/14/02	SW846 8270C
Nitrobenzene-d5	80				%Recov		2/14/02	SW846 8270C
Terphenyl-d14	108				%Recov		2/14/02	SW846 8270C
Acenaphthene	2.4	0.36	1.1		ug/L		2/14/02	SW846 8270C
Acenaphthylene	2.8	0.46	1.5		ug/L		2/14/02	SW846 8270C
Anthracene	< 0.40	0.40	1.3		ug/L		2/14/02	SW846 8270C
Benzo(a)anthracene	< 0.38	0.38	1.2		ug/L		2/14/02	SW846 8270C

En Chem Inc.

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

- Analytical Report -

Project Name : SWL & P MGP

Project Number : 09413-098

Client : ENSR CORPORATION

Field ID : MW-7

Report Date : 2/27/02

Lab Sample Number : 820592-009

Collection Date : 2/11/02

WI DNR LAB ID : 405132750

Matrix Type : WATER

Benzo(a)pyrene	< 0.24	0.24	0.76	ug/L		2/14/02	SW846 8270C
Benzo(b)fluoranthene	< 0.28	0.28	0.89	ug/L		2/14/02	SW846 8270C
Benzo(g,h,i)perylene	< 0.30	0.30	0.96	ug/L		2/14/02	SW846 8270C
Benzo(k)fluoranthene	< 0.26	0.26	0.83	ug/L		2/14/02	SW846 8270C
Indeno(1,2,3-cd)pyrene	< 0.28	0.28	0.89	ug/L		2/14/02	SW846 8270C
Chrysene	< 0.36	0.36	1.1	ug/L		2/14/02	SW846 8270C
Dibenzo(a,h)anthracene	< 0.34	0.34	1.1	ug/L		2/14/02	SW846 8270C
Fluoranthene	< 0.56	0.56	1.8	ug/L		2/14/02	SW846 8270C
Fluorene	1.7	0.42	1.3	ug/L		2/14/02	SW846 8270C
2-Methylnaphthalene	5.6	0.56	1.8	ug/L		2/14/02	SW846 8270C
1-Methylnaphthalene	4.1	0.54	1.7	ug/L		2/14/02	SW846 8270C
Naphthalene	430	43	140	ug/L	D	2/15/02	SW846 8270C
Phenanthrene	1.2	0.38	1.2	ug/L		2/14/02	SW846 8270C
Pyrene	0.72	0.40	1.3	ug/L	Q	2/14/02	SW846 8270C

En Chem Inc.

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

- Analytical Report -

Project Name : SWL & P MGP
Project Number : 09413-098
Field ID : MW-7-DUP
Lab Sample Number : 820592-010
WI DNR LAB ID : 405132750

Client : ENSR CORPORATION
Report Date : 2/27/02
Collection Date : 2/11/02
Matrix Type : WATER

Inorganic Results

Test	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Prep Method	Analysis Method	Analyst
Arsenic - Dissolved	12	4.4	14		ug/L	Q	2/23/02	SW846 6010B	SW846 6010B	*MD
Barium - Dissolved	100	0.11	0.35		ug/L		2/23/02	SW846 6010B	SW846 6010B	*MD
Cadmium - Dissolved	< 0.51	0.51	1.6		ug/L		2/23/02	SW846 6010B	SW846 6010B	*MD
Chromium - Dissolved	< 0.83	0.83	2.6		ug/L		2/23/02	SW846 6010B	SW846 6010B	*MD
Cyanide, total	0.0093	0.0021	0.0067		mg/L		2/21/02	EPA 335.4	EPA 335.4	*MD
Lead - Dissolved	< 2.1	2.1	6.7		ug/L		2/23/02	SW846 6010B	SW846 6010B	*MD
Mercury - Dissolved	< 0.088	0.088	0.28		ug/L		2/15/02	SW846 7470A	SW846 7470A	*MD
Selenium - Dissolved	1.2	0.45	1.4		ug/L	QA	2/25/02	EPA 7740	EPA 7740	*MD
Silver - Dissolved	< 1.3	1.3	4.1		ug/L		2/23/02	SW846 6010B	SW846 6010B	*MD

Organic Results

BTEX - WATER Prep Method: SW846 5030B Prep Date: 2/13/02 Analyst: MSB

Analyte	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Analysis Method
a,a,a-Trifluorotoluene	89				%Recov		2/14/02	SW846 M8021B
Benzene	200000	450	1400		ug/l		2/14/02	SW846 M8021B
Ethylbenzene	3700	820	2600		ug/l		2/14/02	SW846 M8021B
Toluene	120000	680	2200		ug/l		2/14/02	SW846 M8021B
Xylenes, -m, -p	17000	1700	5400		ug/l		2/14/02	SW846 M8021B
Xylene, -o	10000	770	2500		ug/l		2/14/02	SW846 M8021B

Organic Results

PAH - SEMIVOLATILES Prep Method: SW846 3510 Prep Date: 2/14/02 Analyst: DJB

Analyte	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Analysis Method
2-Fluorobiphenyl	69				%Recov		2/14/02	SW846 8270C
Nitrobenzene-d5	121				%Recov		2/14/02	SW846 8270C
Terphenyl-d14	88				%Recov		2/14/02	SW846 8270C
Acenaphthene	2.0	0.36	1.1		ug/L		2/14/02	SW846 8270C
Acenaphthylene	2.5	0.46	1.5		ug/L		2/14/02	SW846 8270C
Anthracene	< 0.40	0.40	1.3		ug/L		2/14/02	SW846 8270C
Benzo(a)anthracene	< 0.38	0.38	1.2		ug/L		2/14/02	SW846 8270C

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Fax: 920-469-8827

- Analytical Report -

Project Name : SWL & P MGP

Project Number : 09413-098

Client : ENSR CORPORATION

Field ID : MW-7-DUP

Report Date : 2/27/02

Lab Sample Number : 820592-010

Collection Date : 2/11/02

WI DNR LAB ID : 405132750

Matrix Type : WATER

Benzo(a)pyrene	< 0.24	0.24	0.76	ug/L		2/14/02	SW846 8270C
Benzo(b)fluoranthene	< 0.28	0.28	0.89	ug/L		2/14/02	SW846 8270C
Benzo(g,h,i)perylene	< 0.30	0.30	0.96	ug/L		2/14/02	SW846 8270C
Benzo(k)fluoranthene	< 0.26	0.26	0.83	ug/L		2/14/02	SW846 8270C
Indeno(1,2,3-cd)pyrene	< 0.28	0.28	0.89	ug/L		2/14/02	SW846 8270C
Chrysene	< 0.36	0.36	1.1	ug/L		2/14/02	SW846 8270C
Dibenzo(a,h)anthracene	< 0.34	0.34	1.1	ug/L		2/14/02	SW846 8270C
Fluoranthene	< 0.56	0.56	1.8	ug/L		2/14/02	SW846 8270C
Fluorene	1.7	0.42	1.3	ug/L		2/14/02	SW846 8270C
2-Methylnaphthalene	5.2	0.56	1.8	ug/L		2/14/02	SW846 8270C
1-Methylnaphthalene	3.8	0.54	1.7	ug/L		2/14/02	SW846 8270C
Naphthalene	290	22	70	ug/L	D	2/14/02	SW846 8270C
Phenanthrene	1.3	0.38	1.2	ug/L		2/14/02	SW846 8270C
Pyrene	0.74	0.40	1.3	ug/L	Q	2/14/02	SW846 8270C

En Chem Inc.

Green Bay, WI 54302
920-469-2436
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Fax: 920-469-8827

- Analytical Report -

Project Name : SWL & P MGP

Project Number : 09413-098

Field ID : TRIP BLANK

Lab Sample Number : 820592-011

WI DNR LAB ID : 405132750

Client : ENSR CORPORATION

Report Date : 2/27/02

Collection Date : 2/11/02

Matrix Type : WATER

Organic Results

BTEX - WATER Prep Method: SW846 5030B Prep Date: 2/13/02 Analyst: MSB

Analyte	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Analysis Method
a,a,a-Trifluorotoluene	108				%Recov		2/14/02	SW846 M8021B
Benzene	< 0.45	0.45	1.4		ug/l		2/14/02	SW846 M8021B
Ethylbenzene	< 0.82	0.82	2.6		ug/l		2/14/02	SW846 M8021B
Toluene	< 0.68	0.68	2.2		ug/l		2/14/02	SW846 M8021B
Xylenes, -m, -p	< 1.7	1.7	5.4		ug/l		2/14/02	SW846 M8021B
Xylene, -o	< 0.77	0.77	2.5		ug/l		2/14/02	SW846 M8021B

(Please Print Clearly)

Company Name: ENSR

Branch or Location: Mpls, MN

Project Contact: Bill Gregg

Telephone: 952-924-0117

Project Number: 09413-098

Project Name: SWL&P MGP

Project State: Wisconsin

Sampled By (Print): Chris Boehm

EN CHEM INC.

1241 Bellevue St., Suite 9
Green Bay, WI 54302
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Madison, WI 53711
608-232-3300
FAX: 608-233-0502

CHAIN OF CUSTODY

62138

Page 1 of 1

*Preservation Codes
A=None B=HCL C=H2SO4 D=HNO3 E=EnCore F=Methanol G=NaOH
H = Sodium Bisulfate Solution I = Other

P.O. # _____ Quote # _____

Mail Report To: Bill Gregg

Company: ENSR

Address: 4500 Park Glen Road, Suite 210
St. Louis Park, MN 55416

Invoice To: -Same-

Company: _____

Address: _____

Mail Invoice To: -Same-

Data Package Options
(please circle if requested)
Results Only
EnChem Level III (Subject to Surcharge)
EnChem 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

LABORATORY ID (Lab Use Only)	FIELD ID	COLLECTION DATE	COLLECTION TIME	MATRIX	ANALYSES REQUESTED: PAH	BTEX	RCRA Metals	Cyanide				TOTAL # OF BOTTLES SENT	CLIENT COMMENTS	LAB COMMENTS (Lab Use Only)
					FILTERED? (YES/NO): NO	NO	NO	NO						
					PRESERVATION (CODE)*: A	B	A	G						
001	MW-1	2/11/02	1500	W	X	X	X	X				4	Please filter all the RCRA Metals samples at the lab.	
002	MW-2		1545											
003	MW-3		1610											
004	MW-4		1630											
005	MW-5		1645											
006	MW-6		1745											
007	MW-6-MS		1755											
008	MW-6-MSD		1815											
009	MW-7		1840											
010	MW-7-Dup		1850											
011	Trip Blank	—	—		X	X						4		
					CB									

Rush Turnaround Time Requested (TAT) - Prelim
(Rush TAT subject to approval/surcharge)
Date Needed: Standard TAT
Transmit Prelim Rush Results by (circle):
Phone Fax (E-Mail)
Phone #: _____
Fax #: _____
E-Mail Address: bgregg@ensr.com

Samples on HOLD are subject to special pricing and release of liability

Relinquished By:	Date/Time:	Received By:	Date/Time:
Chris Boehm	2/11/02 1900	Scott Marbee	2/12/02 9:00
Scott Marbee	2/12/02 14:00	Dunham	2/12/02 14:00
Dunham	2/13/02 8:15		2/13/02 8:15

En Chem Project No: 820-92

Sample Receipt Temp: RT

Sample Receipt pH (Wet Metals): _____

Cooler Custody Seal Present / Not Present: _____

Intact / Not Intact: _____

APPENDIX B

Groundwater Collection Logs

SWL&P Former MGP
Groundwater Monitoring Report

STABILIZATION TEST

Site S.W.L.P. Date 2/11/02 Well No. MW-1

Pumping Rate (gallons/minute) _____

Type of Pump peristaltic pump

Water Level Before Pumping (nearest 0.01 ft. below top of casing) _____

Approximate Well Location _____

Calculated Volume of Water in Casing _____

Weather Conditions 35° sunny, windy

Time	pH (units)	Temperature-Corrected Conductance (umhos/cm)	Temperature (°C)	Water Level (nearest 0.01 ft.) ORP / DO	Cumulative Volume of Water Removed From Well (measured in gallons)
1515	7.82	2.01	7.70	445 / 87.5%	

Comments:

A. Tarara & C. Boehm sampling

Water level after sampling > 18.72 FT

Sampled well @ 1500

No purge - sample water in well

PAH, BTEX, Cyanide, RCRA Metals - unfiltered

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

Signature

2/11/02
Date

0450

STABILIZATION TEST

Site SWLP Date 2/11/02 Well No. MW-2

Pumping Rate (gallons/minute) _____

Type of Pump peristaltic pump

Water Level Before Pumping (nearest 0.01 ft. below top of casing) _____

Approximate Well Location _____

Calculated Volume of Water in Casing _____

Weather Conditions 35° sunny, windy

Time	pH (units)	Temperature-Corrected Conductance (~~umhos/cm~~)	Temperature (°C)	Water Level (nearest 0.01 ft.) ORP / DO	Cumulative Volume of Water Removed From Well (measured in gallons)
1550	7.04	1.70 mS/cm	7.34	439 8.81 mg/L	
				70.7%	
				mV	

Comments:

A. Tarara & C. Boehm sampling

Sampled well @ 1545

No purge - sampled water in well.

Water Level after sampling = 13.67 Ft

PAH, BTEX, Cyanide, RCRA metals - unfiltered

Well diameter	Gallons per foot of casing
1 1/4"	0.0625
2"	0.163
4"	0.653
5"	1.47
8"	2.61
12"	5.87

Chris Boehm 2/11/02

Signature Date

450

STABILIZATION TEST

Site SWLP Date 2/11/02 Well No. MW-3

Pumping Rate (gallons/minute) _____

Type of Pump peristaltic pump

Water Level Before Pumping (nearest 0.01 ft. below top of casing) _____

Approximate Well Location _____

Calculated Volume of Water in Casing _____

Weather Conditions 35° sunny, windy

Time	pH (units)	Temperature-Corrected Conductance (umhos/cm)	Temperature (°C)	~~Water~~ Level (nearest 0.01 ft.) ORP / DO	Cumulative Volume of Water Removed From Well (measured in gallons)
1615	7.44	1.105	6.71	437 / 6.49	

Comments: A. Tarara & C. Boehm sampling

Sampled well @ 1610

Water level after sampling = 12.53

No purge - sampled directly from well

PAH, BTEX, Cyanide, RCRA Metals - unfiltered

*Well diameter | Gallons per foot of casing

1 1/4"	0.0625
2"	0.163
4"	0.653
5"	1.47
8"	2.61
12"	5.87

Chris Boehm 2/11/02

Signature Date

450

STABILIZATION TEST

Site SWLP Date 2/11/02 Well No. MW-4

Pumping Rate (gallons/minute) _____

Type of Pump peristaltic pump

Water Level Before Pumping (nearest 0.01 ft. below top of casing) _____

Approximate Well Location _____

Calculated Volume of Water in Casing _____

Weather Conditions 35° Sunny, windy

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	7.15	4.21	7.72	1.91 / 346	

Comments:

A. Tarara & C Boehm sampling

Sampled water in well – No Purge

Sampled well @ 1630

Water Level after sampling = 16.85

PAH, BTEX, RCRA Metals, cyanide – unfiltered

Well diameter	Gallons per foot of casing
1/4"	0.0625
2"	0.163
4"	0.653
5"	1.47
6"	2.61
12"	5.87

Signature 2/11/01 Date

SO

STABILIZATION TEST

Site SWLP Date 2/11/02 Well No. MW-5

Pumping Rate (~~gallons/minute~~) 0.125 L/min

Type of Pump peristaltic pump

Water Level Before Pumping (nearest 0.01 ft. below top of casing)

Approximate Well Location

Calculated Volume of Water in Casing

Weather Conditions 35° sunny, windy

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)
~~1638~~		~~X~~ Begin Purging			
1645	7.54	~~0.734~~ 0.777	7.29	0.88 / 258	
1649	7.59	0.746	7.13	0.73 / 255	
1652	7.59	0.745	6.98	0.65 / 252	

Comments:

A. Tarara & C. Boehm sampling

Used Low-flow sampling technique w/peristaltic and flow-through cell.

Collected sample @ 1645 (on COC)

~~FLOW~~ 0.5L/4 min

Water level after sampling 10.40 ft

PAH, Cyanide, BTEX, RCRA Metals - all unfiltered

Well diameter	Gallons per foot of casing
1 1/4"	0.0625
2"	0.163
[illegible]"	0.653
5"	1.47
8"	2.61
12"	5.87

Signature

2/11/02
Date

STABILIZATION TEST

Site SWLP Date 2/11/02 Well No. MW-6

Pumping Rate (gallons/minute) ~~0.125 L/min~~ 0.33 L/min

Type of Pump peristaltic pump

Water Level Before Pumping (nearest 0.01 ft. below top of casing) _____

Approximate Well Location _____

Calculated Volume of Water in Casing _____

Weather Conditions 35° sunny, windy

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)
~~1715~~ 1719	Begin	purging			
1721	11.99	6.11	5.89	4.00 / 248	
1724	12.09	6.24	5.77	1.03 / 245	
1726	12.19	6.57	5.61	1.11 / 241	
1730	12.25	6.74	5.46	0.69 / 235	

Comments:

A. Tarara & C. Boehm sampling
Sampled well @ 1745, and MS @ 1755 + MSD @ 1815
low-flow sampling w/peristaltic + flow-through cell
Water Level after sampling = 11.80

1 L / 3 min

PAH, Cyanide, BTEX, RCRA Metals - All unfiltered

Well diameter	Gallons per foot of casing
1 1/4"	0.0625
2"	0.163
4"	0.653
5"	1.47
8"	2.61
12"	5.87

Chris Boehm 2/11/02
Signature Date

450

STABILIZATION TEST

Site SWLP Date 2/11/02 Well No. MW-7

Pumping Rate (gallons/minute) 0.33 L/min

Type of Pump peristaltic pump

Water Level Before Pumping (nearest 0.01 ft. below top of casing)

Approximate Well Location

Calculated Volume of Water in Casing

Weather Conditions 35° sunny, windy

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)
1807		Begin Purging			
1811	7.80	2.43	7.94	0.86 / 3.0	
1818	7.67	2.41	7.98	0.75 / -2.0	
1822	7.57	2.36	7.91	0.63 / -5	
1825	7.50	2.35	7.90	0.54 / -25	

Comments:

A. Tarara & C. Boehm sampling

Sampled well @ 1840, dup @ 1850

Used Low-flow purging technique w/peristaltic and flow-through cell

Water level after sampling = 13.46

PAH, cyanide, BTEX, RCRA Metals - unfiltered

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

Signature 2/11/02 Date

.50