# **Existing Conditions Report**

Former Minocqua Cleaners St. Germaine Street State Lead Site Minocqua, Wisconsin 54548

MSA Project No. 213132 WDNR BRRTS # 02-44-000052

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"Your Trusted Partner"

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#### **EXECUTIVE SUMMARY**

The purpose of this report is to document existing conditions at the Former Minocqua Cleaners State Lead Site and recent activities performed from May 2004 to December 1, 2005. MSA Professional Services, Inc. (MSA) was retained by the Wisconsin Department of Natural Resources (WDNR) to evaluate the operation of the existing groundwater extraction system, and assess the current status of the contaminant plume at the site. The following activities were performed:

- Cleaning and redevelopment of well B-13 and performing a pump test on the well
- Installed three piezometers at the site (wells B-13A, B-13 B, and B-8A). In addition, well B-4 was abandoned, and new locks and cap were installed on the wells, as needed.
- Redevelopment of extraction wells EXW-2 and EXW-5.
- Collected three rounds of groundwater samples from the monitoring and extraction wells.
- Collected one air sample event from the five vapor probes installed in July 2005.
- Previously evaluated the system flow meters and obtained flow meter replacement information.

The following were findings and conclusions of the activities performed at the site:

#### Well Development

- Well B-13 was successfully redeveloped and the pump test estimated the transmissivity of the water table aquifer to be approximately 14,100 gpd/ft.
- The redevelopment of wells EXW-2 and EXW-5 resulted in much sand entering the wells during pumping. Sand and gravel up to 1-inch diameter was entering well EXW-5 during pumping, suggesting some type of screen damage is likely present in the extraction wells.

#### **Soil Samples Results**

- No VOCs were detected in samples B-13B, 10 to 12 ft, B-13B, 37 to 39 ft bgs, or B-13A drill cuttings.
- At B-13B, 5 to 7 ft, 0.076 mg/kg tetrachloroethene (PCE) was detected. This concentration exceeds the EPA's generic soil screening level (SSL) for the migration to groundwater pathway.
- The soil sample from boring B-8A, 20 to 22 ft, contained 36 mg/kg p-isopropyltoluene (p-cymene). P-isopropyltoluene was detected at well B-8A, in the December 2004 (0.76 μg/L) and March 2005 (2.9 μg/L) groundwater samples, but was not detected in the August 2005 groundwater sample. It has not been detected in samples from the Lakeland Sanitary District (LSD) municipal water supply Well #3.

#### **Air Sample Results**

• No VOCs were detected in the air samples collected from the five vapor probes.

#### Hydrogeology

- The groundwater flow direction at the water table was southeast in December 2004 and March 2005, and varied slightly depending on the LSD pumping schedule at the municipal wells. Downward vertical hydraulic gradients were typically measured at the well nests during these periods.
- The groundwater flow direction observed at the medium piezometers (i.e. screened from 55 to 60 ft bgs) varied from west-northwest in December 2004, to the south in March 2005
- The groundwater flow direction at the deep piezometers (i.e. screened from 85 to 90 ft bgs) was to the northeast toward LSD well #3 in December 2004, and to the south in March 2005.

#### **Groundwater Plume Evaluation**

- The PCE concentration in the source area has decreased from 8000 μg /L at well MW-18 in January 1994 to 470 ug/L at well MW-18 in August 2005.
- Currently, the data shows two separate contaminant plumes at the water table with ES exceedances. One plume is located near the source area and has ES exceedances of PCE, cis-1,2-dichloroethene, TCE, and vinyl chloride. The second plume is centered near well B-2B and contains ES exceedances of PCE and TCE.
- The plume in the source area appears to be expanding, based on ES exceedances at well B-3A. The expansion of the plume may be related to lower water table elevations in 2005.
- The contaminant plume near well nest B-2B/B-2A contains PAL exceedances of PCE and TCE, and extends to the municipal Well #3.
- Vertical hydraulic gradients at well nest B-1B/B-1A increased from -0.0025 ft/ft in March 2005, when Well #3 was not pumping, to -0.01 ft/ft in December 2004 when Well #3 was pumping. The strong vertical gradient created by the municipal well pumping results in a greater hydraulic drive in the downward migration of PCE and TCE at piezometer B-2A and Well #3.
- No ES or PAL exceedances were detected in piezometers screened from 85 to 90 ft bgs.
- Municipal Well #4 is less susceptible to impacts because it is cased to 69 ft, compared to 47 ft at well LSD Well #3.

#### **Flowmeters**

• The manufacturer (Badger Meter) no longer supports the existing flow meters at the site. The existing groundwater data indicates that continued groundwater pumping might not be warranted from some extraction wells. Therefore, MSA recommends that flow meter replacement be determined after it is decided if groundwater pumping will be continued at the specific extraction wells. Recommended replacement flow meter information (provided this is performed) is presented in Appendix G.

The following recommendations are based on the results of the evaluation presented above.

- Evaluate the feasibility of treatment of the PCE and PCE plume at well nest B-2B/B-A with remedial options such as Enhanced Reductive Dechlorination (ERD) to remediate the impact to municipal Well #3.
- Continue groundwater extraction at extraction well EXW-4 because it is located within the plume that is impacting municipal well LSD #3.
- Because of the low contaminant concentrations at wells EXW-2 (no detects in March and August 2005) and EXW-5 (1.6 μg/L PCE, 9 μg/L TCE, and 2.7 μg/L vinyl chloride) in March 2005, rehabilitation of the compromised screens at these extraction wells may not be necessary at this time. MSA recommends obtaining and reviewing additional site monitoring information prior to proceeding with extraction well repair.
- Continued groundwater monitoring should be performed to aid in the evaluation of remedial options in the source area. Possible remedial alternatives for the plume in the source area should include options such as natural attenuation, ERD treatment, and further evaluation of groundwater extraction from wells B-13, EXW-1, and EXW-5.

#### INTRODUCTION AND BACKGROUND

#### INTRODUCTION

The purpose of this report is to document the existing conditions and recent activities performed at the Former Minocqua Cleaners State Lead Site. The report documents site activities performed from May 2004 to December 1, 2005. MSA Professional Services, Inc. (MSA) was retained by the Wisconsin Department of Natural Resources (WDNR) to evaluate the operation of the existing groundwater extraction system, and assess the current status of the contaminant plume. The scope of work performed by MSA and documented in this report is presented in detail below.

The site background and the results of prior contaminant assessments are presented below. The prior site information and the results of the recent activities were used to assess the effectiveness of the remediation actions performed to date. This information will also be used to plan future remedial activities for the site

#### PROJECT BACKGROUND

The general site location is shown on Figure 1. The site is located in the SW ¼, NE ¼, and the NW ¼, SE ¼, Sec 14, T39N, R6E in the Town of Minocqua, Oneida County, WI.

Groundwater contamination with perchloroethylene (PCE) was first detected in July 1, 1984 at Lakeland Sanitary District (LSD) water supply Well No. 3. The well was subsequently closed to public usage on August 7, 1984, after 24 ug/L PCE was detected by the WDNR during routine testing of the well water. In response to this situation, the LSD used Well #4 to meet the water demand. In July, August, September and October 1985, low concentrations of PCE (less than or equal to 0.6 ug/L) were detected in Well #4.

Two likely contamination sources were identified in the area, an old landfill and an abandoned Laundromat and dry cleaner business near the municipal wells. In 1985, STS Consulting Ltd (STS) began an assessment of the contamination. Wells B-1 to B-8 were installed as initial activities. It was determined the former dry cleaner business was the major source of the PCE. Figure 2 shows the location of the former dry cleaner business, Wells #3 and #4, and the approximate limits of an old neighborhood refuse landfill.

In June 1986 three additional wells (B-9 to B11) were installed and sampled by STS. In 1987, a groundwater extraction remediation system was installed consisting of four extraction wells, EXW-1 to EXW-4, and an aeration cascade with discharge to the lake. Figure 3 shows the locations of the monitoring and extractions wells, and the approximate extent of the PCE plume in 1987.

In 1989, extraction well EXW-5 and monitoring wells MW-16 to MW-18 were installed, and a soil vapor extraction (SVE) system was designed to address contaminated soil located at the former dry cleaner parcel. The SVE system was installed in 1990, and was subsequently operated and dismantled. The groundwater extraction system is still operable, although several extraction wells have experienced significant pumping problems since at least December 2003. Most recently, wells EXW-2, EXW-4, and EXW-5 have been operated and have also experienced problems resulting in periodic well operation and/or shut-down of the individual wells.

#### **SCOPE OF WORK**

The following scope of services was performed by MSA following approval by the WDNR on October 21, 2004.

- Three new piezometer-monitoring wells (B-13A, B-13 B, and B-8A) were installed during the week of November 8, 2004 to assess vertical migration from the source area, and assess contaminant conditions at depth in the aquifer.
- MSA oversaw the redevelopment of well B-13 to address bio-fouling during the week of November 8, 2004, during the same mobilization as the piezometer installations. Following the well cleaning, a small-scale pump test (about three pumping hours) was performed on well B-13 to obtain data to determine the suitability of well B-13 as an extraction well.
- Monitoring wells with observed problems such as caps and locks were repaired. Well B-4 had a damaged steel protector pipe and well was abandoned.
- MSA collected three rounds of groundwater samples for the purpose of establishing the current plume status. The sample events occurred on December 8 and 9, 2004, March 23 and 24, 2005, and August 31 and September 1, 2005. The groundwater sampling was performed using the sampling plan presented in the project correspondence dated September 17, 2004.
- MSA oversaw the redevelopment of wells EXW-2 and EXW-5 on the week of December 6, 2004. The well rehabilitation of extraction wells EXW-2 and EXW-5 was performed in an attempt to increase declining pump rates at these wells.
- MSA evaluated the current equipment and provided recommendations for replacement flow meters.
- MSA evaluated the monitoring data and the current plume status. Remedial strategies were given preliminary evaluation based on the current plume concentrations and the extent of contamination, and are presented below.

- MSA resurveyed the TOC of wells B-1, B-1A, B-1B, B-2, B-2A, B-3, B-3, B-8, B-8A, B-10, B-11, B-12, B-13, B-13A, B-13B, MW15, and MW17 on May 5, 2005. The bolt on the top of the fire hydrant was used as the benchmark of 1603.56, as shown on the basemap.
- Air samples were collected from the vapor probes on August 31, 2005.

#### RESULTS

#### WELL REDEVELOPMENT

Well B-13 was redeveloped by Boart Longyear in November 2004 using CETCO well rehabilitation chemicals LBA, and SC-200. The chemicals were added to the well, surged using a 4-inch diameter surge block, and then the chemicals remained in the well overnight. On the following day the well was pumped and redeveloped with discharge into a nearby Lakeland Sanitary District sanitary sewer. The well development form is in Appendix A.

Wells EXW-2 and EXW-5 were redeveloped in December 2004 by Boart Longyear. CETCO well rehabilitation chemicals (i.e.SC-200, LBA, DPA) were added to both wells. This chemical process involved applying a surfactant to the well, followed by acid-based chemicals. The chemicals stayed in the wells for approximately 36 hours. Following the recommended waiting period, the wells were surged and pumped to remove the suspended material and development water from the well. The redevelopment pumping process produced low pH (acid) water with suspended solids and was disposed into a nearby Lakeland Sanitary District sanitary sewer.

Approximately 2,000 gallons of water was pumped from well EXW-2, however much sand entered the well during pumping. When well EXW-5 was pumped, sand and gravel up to 1 inch in diameter entered the well. It appears the integrity of the screens of both of these wells is compromised. The well development forms are in Appendix A.

#### **PUMP TEST**

A pump test was performed on well B13 after the well was redeveloped. The pump test was performed to determine the transmissivity of the aquifer. Transmissivity is the rate at which water flows through a vertical strip of aquifer. This information was used to evaluate the feasibility of converting well B13 into an extraction well

Well B-13 was used as the pump well and the observation well. A 3-inch diameter Grundfos® pump was installed into well B-13. Water levels were measured in well B-13 using an electronic water level indicator. The pump rate was measured using a flow meter attached to the pump. The water was pumped to a nearby sanitary sewer. The pump test was conducted for 3 hours and 7 minutes. The pumping rate varied from 30 gpm at the start of the test, to 20 gpm at the end of the 3-hour test. The average pumping rate was 21.9 gpm. The drawdown stabilized after 10 minutes at approximately 5.59 ft., and after 92 minutes it decreased slightly to 5.61 ft. The well recovery data collected after the completion of the pumping was used to determine the transmissivity.

Using the equation:  $T=(264 * Q)/\Delta S$ , where, T=Transmissivity, Q=pumping rate, and  $\Delta S=$  change in drawdown, the transmissivity was estimated to be 14,100 gpd/ft. The pump test recovery data is in Appendix B. The relatively high transmissivity value indicates Well B-13 was successfully redeveloped and the well could potentially be used as an extraction well.

#### WELL INSTALLATION

On November 8 to 15, 2004, three new piezometer-monitoring wells (B-13A, B-13 B, and B-8A) were installed and developed by Boart Longyear. Two piezometers (B-13A screened at 55 to 60 ft., and B-13B screened at 85 to 90 ft.) were installed near existing well B-13, and one piezometer (B-8A screened at 55 to 60 ft.) was installed near existing well B-8. The new piezometers were installed at depths similar to the other piezometers in the monitoring system at the site, with shallow wells at screened at the water table (about 30 ft. ground surface (bgs)), medium piezometers screened at 55 to 60 ft. bgs, and deep piezometers screened at 85 to 90 ft. bgs. A round of groundwater levels were obtained from the monitoring wells. The locations of the new wells are shown on Figure 4.

In addition, well B-4 was abandoned because it was previously damaged. New locks were installed on six wells with broken or missing locks. New PVC caps were installed on the ten wells that had the PVC caps missing inside their protector pipes. The soil boring logs, well construction forms, and well development forms are in Appendix A.

#### **SOIL SAMPLING**

Soil samples were collected from boring B-13B at 5-7 ft bgs, 10 to 12 ft bgs, and at 37 to 39 ft bgs. Soil samples were also collected from the B-13A drill cuttings, and from boring B-8A at 20 to 22 ft bgs. The soil samples were collected to determine the disposal requirements for the soil cuttings from the boreholes. The soil samples were analyzed for VOCs. No organic vapors were detected in the soil cuttings from borings B13-A and B-13B. Therefore, the soil cuttings were not drummed, but were placed on the Minocqua Cleaners property and covered with plastic.

Table 1 presents the results of the soil sample analyses. No VOCs were detected in samples B-13B 10 to 12 ft, B-13B 37 to 39 ft bgs, or B-13A drill cuttings.

At B-13B 5 to 7 ft, 0.076 mg/kg tetrachloroethene (PCE) was detected. This sample was collected at the unsaturated/saturated soil interface. No cleanup standards have been established by the WDNR for this compound. The EPA's generic soil screening level (SSL) for this compound for the migration to groundwater pathway is 0.06 mg/Kg. The soil sample laboratory report is in Appendix C. The soil cuttings from this boring are on the Minocqua Cleaners property and covered with plastic.

The soil sample collected from boring B-8A, at 20 to 22 ft, contained ethylbenzene (0.031 mg/kg) and toluene (0.2 mg/kg) at concentrations below the NR 720 generic residual contaminant levels (GRCLs). The soil sample collected from boring B-8A at 20 to 22 ft also contained 36 mg/kg p-isopropyltoluene (p-cymene). No soil cleanup standards are established by the WDNR, and no SSLs are established by the EPA for this compound. P-isopropyltoluene was not detected in the groundwater samples from well B-8, which was screened at the same depth the soil sample was collected. Similarly, p-isopropyltoluene was not detected in Municipal Well #3. However, p-isopropyltoluene was detected at well B-8A (screened at 55 to 60 ft bgs)

on December 6, 2004 (0.76  $\mu$ g/L), and on March 22, 2005 (2.9  $\mu$ g/L), but was not detected in the August 31, 2005 sample. No NR 140 enforcement standard (ES) or preventive action limit (PAL) are established for this compound.

#### **VAPOR PROBE SAMPLING**

Five vapor probes (VP-1 to VP-5) were installed by Geiss, Inc. on July 8, 2005. The well construction forms documenting the construction of the vapor probes are in Appendix D. The approximate locations are shown the figure in Appendix D.

Air samples were collected from the probes using charcoal tubes on August 31, 2005. The air samples were analyzed for Total VOCs. No VOCs were detected in the air samples.

#### **GEOLOGY & HYDROGEOLOGY**

The subsurface geology at the site consists primarily of glacial outwash material to approximately 75 ft below ground surface (bgs). The glacial outwash material was described as brown fine to medium sand with trace gravel. At depths greater than 75 ft bgs, fine to coarse sand with varying amounts of gravel and cobbles were encountered. Two geologic cross sections are in Appendix E. One cross section shows from the source area to Municipal Well #3. The second cross shows from the source area to Municipal Well #4. Cross sections from the Remedial Action Design (STS 1990) are also in Appendix E.

Table 2 presents the groundwater elevation data. MSA collected water level measurements on June 29, 2004, November 9, 2004, December 6, 2004, March 22 and 23, 2005, and August 31 and September 1, 2005. The pumping schedule for Municipal Well #3 on these dates is in Appendix F, along with the Municipal Well #3 and #4 Well Construction Reports. Pumping would alternate as needed between Municipal Wells #3 and #4. Water demand increases during the summer months, which results in the municipal wells pumping more often during that time period.

Figure 5 shows the groundwater flow direction at the water table on December 6, 2004. The groundwater flow is to the southeast from the former dry cleaner property. There was a cone of depression associated with the pumping of Municipal Well #3, which resulted in groundwater flowing northeast from Well B-2B toward Municipal Well #3. A similar groundwater flow pattern was seen on November 9, 2004.

Figure 6 shows the groundwater flow direction at the water table on March 22 and 23, 2005, when Municipal Well #3 was pumping 5 hours on March 22, but was not during the sampling period on March 23. Groundwater flow was to the southeast, toward well nest B-2B, and toward Municipal Well #3. The groundwater flow was similar to the December 2004 flow direction, except there was a smaller cone of depression around Well #3. The groundwater flow pattern on

August 31, 2005 was to the southeast, toward well nest B-2B, with no influence from Well #3, as it was not pumping during the sampling period.

Figure 7 shows the potentiometric surface on December 6, 2004 of the medium piezometers, screened from approximately 55 to 60 ft. bgs. The groundwater flow was from Well B-3 to the east-northeast toward the source area, and to the west-southwest toward Well #3. There were downward gradients at each of the well nests, except at wells B5/B9, which had an upward gradient of approximately 0.09 ft/ft. It is likely this upward gradient is in response to rising water levels after Well #4 was shut off.

Figure 8 shows the potentiometric surface of the medium peizometers on March 22 and 23, 2005. The groundwater flow was to the south. There were downward gradients at each of the well nests. This southern groundwater flow direction was also seen at the deep piezometers, screened from 85 to 90 ft. bgs, during the March 2005 sample round. There were downward gradients at well nests B-13A/B and B-1/B-1A, and a slight upward gradient (0.003 ft/ft) at B-2/B-2A. The groundwater flow pattern in the medium piezometers (60 ft bgs) in August 2005 was also to the south.

Figure 9 shows the potentiometric surface of the deep piezometers, screened from 85 to 90 ft. bgs, on December 6, 2004. The groundwater flow was to the northeast toward Well #3, which was pumping at the time. Well #3 is screened from 47 to 87 ft. bgs. There were downward gradients at the three deep well nests. The groundwater flow direction was similar in the deep piezometers during the March 2005 and August 2005 sampling rounds.

#### **EVALUATION OF GROUNDWATER PLUME DATA**

A series of three groundwater samples was collected from Well B-13 during the pump test. Sample B-13-1 was collected 37 minutes after the pump test started. Sample B-13-2 was collected after 95 minutes. Sample B-13-3 was collected after 124 minutes. The sample analytical results are in Table 3. The concentrations of the cis-1,2-dichloroethene (520 to 550  $\mu$ g/L), trans-1,2-dichloroethene (9.1 to 11  $\mu$ g/L), PCE (330 to 380  $\mu$ g/L), trichloroethene (TCE, 300 to 330  $\mu$ g/L), and vinyl chloride (32 to 38  $\mu$ g/L) remained relatively stable during the pump test.

Table 3 presents the groundwater sample analytical results. NR 140 enforcement standard (ES) exceedances of PCE, and one or more of its breakdown compounds cis-1,2-dichloroethene, TCE, and vinyl chloride were detected at water table wells B-2B, B-3A, B-13, MW-17, MW-18, MW-19, and EXW-5. No ES exceedances were detected in the recent samples from the two downgradient extraction wells, or the piezometers.

NR 140 Preventive Action Limits (PAL) exceedances were detected at medium piezometer B-2A for PCE (1.2, 0.64, and 0.74  $\mu$ g/L) and TCE (2.3, 1.0, and 1.1  $\mu$ g/L) in December 2004, March 2005, and August 2005, respectively. This contamination is at the depth Well #3 is screened. Well #3 is screened from 47 to 87 ft. bgs. Concentrations of PCE (1.4 and 0.93  $\mu$ g/L) and TCE

(2.7 and 2.2  $\mu$ g/L) detected at Well #3 exceeded the PAL during the December 2004 and March 2005 sampling rounds. In August 2005, only TCE (1.1  $\mu$ g/L) exceeded the PAL, though the PCE (0.48  $\mu$ g/L) concentration detected was below the PAL of 0.5  $\mu$ g/L.

#### PCE Plume

There were two separate PCE plumes during the December 2004, the March 2005, and the August 2005 sampling rounds. Figure 10 shows the PCE iso-concentration contours for the March 2005 sampling round, which was similar to what was seen in December 2004 and August 2005. One of the two PCE plumes originated from the source area, and the second plume originated near well B-2A.

The PCE plume near the source area had the highest PCE concentrations detected at Well MW-19 in December 2004 (71  $\mu$ g/L) and in March 2005 (250  $\mu$ g/L), and at Well MW-18 in August 2005 (470  $\mu$ g/L). The plume extended west to Well B-3A, where PCE was not detected in December 2004, but was detected at Well B-3A in March 2005 (0.74  $\mu$ g/L) and August 2005 (11  $\mu$ g/L). The PCE plume did not extend to well nest B-8/B-8A, where PCE was not detected.

In the August 2005 sample round at Well B-3A, PCE (11  $\mu$ g/L) exceeded the ES for the first time in more than 5 years. The concentrations of TCE (30  $\mu$ g/L) and vinyl chloride (8.3  $\mu$ g/L) also exceeded the ES. It appears the expansion of the plume to the east was a result of the dry summer and lower groundwater levels. The water table elevations in the 2005 sample rounds were approximately a foot lower than the 2004 elevations. This suggests that prolonged low water table conditions may result in additional impacts to LSD Well #3. Additional monitoring should be performed to evaluate the need to operate extraction well EXW-1 to remediate the expanding plume.

A separate plume was centered around well nest B-2B/B-2A and appeared to flow toward LSD Well #3 (0.64  $\mu$ g/L PCE) during the December 2004, March 2005, and August 2005 sample rounds. Figure 10 presents the PCE iso-concentration contours for the March 2005 sample rounds, which is representative of the other sample rounds. The PCE concentrations detected at well B-2B (water table well) during the three samples rounds were 9.1, 9.0, and 3.1  $\mu$ g/L. PCE concentrations exceeding the PAL were detected at extraction well EXW-4 (0.87  $\mu$ g/L) during the March 2005 sample round. PCE was also detected in Well #3 during the three sample rounds, 0.64 0.93, and 0.48  $\mu$ g/L. The cone of depression formed during the pumping of Well #3 appears to draw PCE to the water supply well from southwest. This correlates with the groundwater flow direction during the December 2004 sampling round (refer to Figure 5).

#### TCE Plume

Figure 11 shows the TCE iso-concentration contours for the March 2005 sampling round. There were also two separate TCE plumes exceeding the ES during the December 2004, March 2005 sample rounds. The highest TCE concentrations were detected at Well B-13 (150 ug/L), located downgradient of the source in December 2005, Well B-19 (92 µg/L) in March 2005, and Well

and EXW-2 in December 2004 and March 2005, where TCE either was not detected or the TCE concentrations were less than the ES. However, TCE exceeded the ES at well B-3A (30  $\mu$ g/L) in the August 2005 sample, suggesting the plume may have expanded in response to the lower water levels.

A separate TCE plume was detected at well B-2B (15 ug/L) and appeared to flow toward Well #3 (2.2 ug/L TCE). TCE was also detected at extraction well EXW-4 (1.2 ug/L) in March 2005.

#### Other PCE Breakdown Products

Vinyl chloride was only detected at wells MW-17, MW-18, EXW-5, and B-13, and B-3A, which were located near and directly downgradient of the source. Similarly, ES exceedances of cis-1,2-dichloroethene were only detected at wells MW-17, MW-18, MW-19, and B-13.

#### Discussion

The PCE and TCE plumes centered near well nest B-2B/B-2A are likely the result of downgradient migration from the source area. The well nest was within the 1987 plume (refer to Figure 3) and is likely a remnant of the original plume. This plume appears to be separated from the source area because of the effectiveness of the remediation system, which has significantly reduced the size of the plume and the contaminant concentrations within the plume. The residual contamination near well nest B-2B/B-2A appears beyond the range of influence of the current remediation system.

Downward hydraulic gradients caused by pumping Well #3 resulted in the PCE and TCE impacts at piezometer B-2A and the Well #3. The downward hydraulic gradients measured at well nest B-2B/B-2A was -0.01 ft/ft in December 2004 when well LSD #3 was pumping, compared to -0.0025 in March 2005, when it was not pumping. The stronger vertical gradient during the pumping would result in the downward migration of PCE and TCE documented at Well B-2A and Well #3.

#### **FLOWMETERS**

The existing flow meters are 6-inch Prop meter manufactured by Badger Meter. MSA contacted Badger Meter and they indicated this model meter is no longer manufactured or supported. MSA evaluated replacement flow meters and the recommended flow meter for this application (i.e., dissolved contamination in the pumped water) is a mag or vortex flow meter with stainless steel internals. A replacement prop meter (i.e., Sparling 6 inch) for the contaminated water application is available, but is more expensive than the mag or vortex models. Recommended replacement flow meter information (if this is performed) is presented in Appendix F. However, the existing groundwater data indicates that continued groundwater pumping may not be warranted from these extraction wells. Therefore, it is recommended that specifications for the

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flow meters be determined after it is determined groundwater pumping will be continued at the specific extraction wells.

In addition, the extraction well EXW-5 does not have a working sampling faucet, which should be installed.

#### CONCLUSIONS

The following conclusions are based on the scope of work performed and the evaluation of the contaminant plume:

#### Well Development

- Monitoring Well B-13 was successfully redeveloped. The pump test performed after the well development estimated the transmissivity to be 14,100 gpd/ft.
- The redevelopment of wells EXW-2 and EXW-5 resulted in much sand entering the wells. When well EXW-5 was pumped, sand and gravel up to 1 inch in diameter was entering the well. The integrity of both these well screens appear compromised.

#### Soil Samples Results

- No VOCs were detected in samples B-13B 10 to 12 ft bgs, B-13B 37 to 39 ft bgs, or B-13A drill cuttings.
- At B-13B 5 to 7 ft, 0.076 mg/kg tetrachloroethene (PCE) was detected, which exceeds the EPA's generic soil screening level (SSL) for the migration to groundwater pathway of 0.06 mg/Kg. This sample was collected at the unsaturated/saturated soil interface.
- The soil sample from boring B-8A, 20 to 22 ft, contained 36 mg/kg p-isopropyltoluene (p-cymene). No WDNR cleanup standards are established and no EPA SSLs are established for this compound. This sample was collected from organic soil beneath the former landfill. At well B-8A, p-isopropyltoluene was detected in the December 2004 (0.76 μg/L) and March 2005 (2.9 μg/L) groundwater samples.

#### Hydrogeology

- Groundwater flow at the water table was to the southeast in December 2004 and March 2005, and varied slightly with the municipal pumping schedule. Downward gradients were typically measured at wells nests during these periods.
- The groundwater flow at the medium piezometers (screened from 55 to 60 ft bgs) varied in response to the pumping regimes of Wells #3 and #4. Groundwater flow was to the west-northwest in December 2004 to the south in March 2005.
- The groundwater flow at the deep piezometers (screened from 85 to 90 ft bgs) varied in response to the pumping regimes of Wells #3 and #4. Groundwater flow was to the northeast in December 2004, and to the south in March 2005.

## Evaluation of Groundwater Plume Data

- The current extent of the contaminant plume has decreased when compared to the 1987 data (refer to Figures 3 and 8). The PCE concentration in the source area decreased from 8000 μg/L at well MW-18 in January 1994 to 250 μg/L at well MW-19 in March 2005.
- There are currently two separate contaminant plumes at the water table. One plume is located near the source area, and has ES exceedances of PCE, and one or more of its breakdown compounds cis-1,2-dichloroethene, TCE, and vinyl chloride. The second plume centered near Well B-2B contains ES exceedances of PCE and TCE, and extends to municipal Well #3.
- Although the overall contaminant plume has decreased from 1987 concentrations, localized areas of concern are observed in the monitoring data. For example, ES exceedances of PCE, TCE, and vinyl chloride were detected at well B-3A in September 2005 for the first time since before June 2000.
- Vertical hydraulic gradients at well nest B-1B/B-1A increased from -0.0025 ft/ft in March 2005, when Well #3 was not pumping, to -0.01 ft/ft in December 2004 when Well #3 was pumping. The stronger vertical gradient during the pumping resulted in the downward migration of PCE and TCE toward Well #3.
- No ES or PAL exceedances were detected in the deep piezometers screened from 85 to 90 ft bgs.
- Municipal Well #4 is less susceptible to impacts because it is cased to 69 ft, compared to 47 ft at Municipal Well #3.

#### RECOMMENDATIONS

The following recommendations are based on the results of the evaluation present above.

- The operation of groundwater extraction well EXW-4 should be continued because it is located within the plume that is impacting municipal Well #3. Low concentrations of PCE and its breakdown products were detected in the March 2005 samples from this well. This well was pumped at 80 gpm in January 2005. The operation of this extraction well provides low cost remediation of the groundwater of the contaminant plume until additional remedial actions are evaluated.
- Rehabilitation of the compromised screens at wells EXW-2 and EXW-5 are not recommended at this time due to the low contaminant concentrations at wells EXW-2 (no detects in March 2005) and EXW-5 (1.6 µg/L PCE, 9 µg/L TCE, and 2.7 µg/L vinyl chloride) in March 2005). Continued groundwater monitoring should be performed to evaluate if additional groundwater pumping is warranted.
- A remedial options cost analysis should be performed to compare the costs of remedial alternatives including natural attenuation of the source area, the use of Enhanced Reductive Dechlorination (ERD) to remediate the groundwater in source area, and continued groundwater pumping with rehabilitation the extraction wells EXW-2 and EXW-5. The feasibility of the treatment of the PCE and PCE plume at well nest B-2B/B-2A with remedial options such as ERD should be evaluated. Because this plume is relatively small and is impacting Municipal Well #3, treatment to reduce contaminant concentrations in the plume should remain a priority.
- Additional monitoring and evaluation of groundwater pumping at well EXW-1 should be performed based on the expansion of the plume to well B-3A.
- If additional groundwater pumping is required near the source area, the use of shallower extraction wells should be evaluated, based on the lack of contaminant concentrations in piezometers near the source area. Shallower extraction wells would remove more water from the upper layers of the aquifer where contamination exists. The existing extraction wells appear to be pumping relatively low level contaminated groundwater from deeper in the aquifer. Options may include the conversion of well B-13 to a shallow extraction well, and the use of a liner in well EXW-5 (which currently has a damaged screen) to remove shallow water from the aquifer.

**TABLES** 

Table 1
Soil Sample Analytical Results
Former Minocqua Cleaners
Germain Street, Minocqua, WI

Location			Tetrachloro ethene	Ethyl- benzene	Toluene	p-Isopropyl toluene
EPA SSL NR 720 GR	CL's		0.06	13 2.9	12 1.5	
B-13B B-13B B-13B B-13A B-8A	5 to 7 10 to 12 37 to 39 Soil Cuttings 20 to 22	8-Nov-04 8-Nov-04 10-Nov-04 11-Nov-04 12-Nov-04	0.076 <0.014 <0.015 <0.018 <0.015	<0.0076 <0.0073 <0.008 <0.0095 0.031	<0.0076 <0.0073 <0.008 <0.0095 0.2	<0.014 <0.014 <0.013 <0.015 36

All soil concentrations are in mg/Kg.

Depths are in feet below ground surface.

SSL indicates Soil Screening Level

GRCL indicates generic residual contaminant level

Values in BOLD exceed a NR 720 GRCLs or EPA SSL.

Table 2
Summary Groundwater Elevations
Minocqua Cleaners
Minocqua, WI

Well Number Screen Length Ground Surface Top of Casing Top of Screen DATE 09-Nov-04 06-Dec-04 22-Mar-05 31-Aug-05	B-1 5 1605.78 1606.48 1525.08 Depth Elevation 29.52 1576.96 29.71 1576.77 25.57 1580.91 25.63 1580.85	B-1A 5 1605.91 1606.66 1554.1 Depth Elevation 26.11 1580.55 26.39 1580.27 25.61 1581.05 25.68 1580.98	B-1B 15 1606.12 1606.92 1586.02 Depth Elevation 26.13 1580.79 26.4 1580.52 25.86 1581.06 25.94 1580.98	B-2 5 1603.22 1604 1518.22 Depth Elevation 23.42 1580.58 23.78 1580.22 23.61 1580.39 23.61 1580.39	B-2A 5 1602.92 1603.52 1547.92 Depth Elevation 22.82 1580.7 23.16 1580.36 23.2 1580.32 23.22 1580.3	B-2B 15 1602.97 1603.68 1584.27 Depth Elevation 22.25 1581.43 22.28 1581.4 22.81 1580.87 22.83 1580.85	B-3 5 1603.72 1605.16 1548.72 Depth Elevation 22.49 1582.67 22.81 1582.35 23.81 1581.35 23.21 1581.95	B-3A 15 1603.86 1605.42 1587.86 Depth Elevation 22.71 1582.71 22.92 1582.5 23.88 1581.54 23.62 1581.8
Well Number Screen Length Ground Surface Top of Casing Top of Screen DATE 09-Nov-04 06-Dec-04	B-5 15 1598.01 1600.24 1588.21 Depth Elevation 16.94 1583.3 17.08 1583.16	20.4 1582.46 20.48 1582.38	B-8A 5 1600.86 1603.37 Depth Elevation	B-9 5 1600.99 1603.05 1546 Depth Elevation 16.34 1586.71 16.64 1586.41	B-10 5 1600.29 1601.25 1554.5 Depth Elevation 19.08 1582.17 19.11 1582.14	B-11 10 1600.56 1601.44 1575.06 Depth Elevation 19.22 1582.22 19.15 1582.29	B-12 25 1604.38 1604 1589.1 Depth Elevation 21.98 1582.02 21.81 1582.19	
23-Mar-05 31-Aug-05 Well Number Screen Length Ground Surface Top of Casing Top of Screen DATE	B-13 25 1594.58 1596.7 1585.1 Depth Elevation	21.43 1581.43 21.77 1581.09 B-13A 5 1593.91 1596.33 1538.9 Depth Elevation	22.29 1581.08 22.37 1581 B-13B 5 1594.1 1596.16 1509.1 Depth Elevation	B-15 25 1598.85 1601.77 1583.35 Depth Elevation	MW-17 10 1591.1 1591.8 1586.1 Depth Elevation	MW-18 10 1590.9 1591.42 1585.9 Depth Elevation	MW-19 10 1591.3 1591.73 1586.3 Depth Elevation	
09-Nov-04 06-Dec-04 23-Mar-05 31-Aug-05	13.18 1583.52 13.28 1583.42 14.24 1582.46 14.17 1582.53	14.11 1582.22 15.08 1581.25 14.77 1581.56	13.68 1582.48 14.92 1581.24 14.48 1581.68	18.36 1583.41 18.41 1583.36	8.35 1583.45 8.69 1583.11 9.63 1582.17 9.49 1582.31	8.14 1583.28 8.46 1582.96 9.5 1581.92 9.29 1582.13	8.47 1583.26 8.84 1582.89 9.88 1581.85 9.53 1582.2	·

Note:

Datum for Measurements is Mean Sea Level (MSL)

Elevations for TOC of wells B-1, B-1A, B-1B, B-2, B-2A, B-3, B-3A, B-8A, B-8A, B-10, B-12, MW15, MW17

were resurveyed on May 5, 2005. The bolt on the fire hydrant was the benchmark of 1603.56, as shown on basemap.

TABLE 3 Groundwater Sample Analytical Results Minocqua Cleaners Minocqua, WI

Analyte	Sampling Date	Cis-1,2- Dichloroethylene	Trans-1,2- Dichloroethylene	Tetrachloro- ethene	Trichloro ethene	Vinyl Chloride	GW Elevation	pH Elevation	DO	Redox	Conductivi
ES		70	100	5	5	0.2					
PAL		7	20	0.5	0.5	0.02					
D 1	12/01/99	NID.	NID	MD	) ID	).III)					
B-1 (90')	11/01/03	ND	ND ND	ND ND	ND ND	ND					
(30)	12/06/04	ND <0.5	<0.4	עא <0.5	<0.6	ND <0.3	1576.77	9 6 0	1.20	126	200.0
	03/22/05	<0.50	< 0.60	<0.4				8.68	1.29	126	309.9
	08/31/05	<0.60	<0.60	<0.4	<0.15 <0.15	<0.12 <0.12	1580.91 1580.85	8.47 7.21	1.43 1.06	145 147	336.5 399.2
	02/14/06	<0.60	<0.60	<0.4	<0.15	<0.12	1580.85	7.6	1.4	149	398.9
					-						
B-1A	12/06/04	<0.5	<0.4	<0.5	<0.6	<0.3	1580,27	8.44	1.08	173	463.4
(60')	03/22/05	<0.60	< 0.60	<0.4	<0.15	< 0.12	1581.05	8.23	1.88	138	399.7
	08/31/05	<0.60	< 0.60	<0.4	< 0.15	< 0.12	1580.98	6.7	2.26	274	348
	02/14/06	<0,60	< 0.60	<0.4	<0.15	<0.12	1580.96	7.3	1.7	157	348.2
B-1B	12/06/04	<0.5	<0.4	<0.5	<0.6	<0.3	1580.52	8.52	1,84	171	406.5
(27')	03/22/05	<0.60	< 0.60	<0.4	<0.15	<0.12	1581.06	8.32 8.83	1.41	152	436.8
(21)	08/31/05	<0.60	<0.60	<0.4	<0.15	<0.12	1580.98	6.69	1.4	277	374.4
	02/14/06	<0.60	< 0.60	<0.4	<0.15	<0.12	1580.94	7.29	1.32	161	392
	02/14/00		10,00		-0.15	V.12	1500.51	7,27	1.52	101	
B-2	12/06/04	<0.5	<0.4	<0.5	<0.6	<0.3	1580.22	8.86	1.07	157	153
(90')	03/22/05	<0,60	<0.60	< 0.4	<0.15	< 0.12	1580.39	8,92	1.49	150	155.7
	08/31/05	< 0.60	< 0.50	<0.4	< 0.15	< 0.12	1580.39	7,56	1.95	1.64	140.1
	02/14/06	<0.60	<0.60	<0.4	<0.15	<0.12	1580.39	7.89	1.94	155	142
B-2A	12/06/04	0.5	<0.4	1.2	2.3	<0,3	1580.36	8.62	1.15	166	204.3
(60')	03/22/05	<0,60	<0.60	0.64	1.0	< 0.12	1580.32	8.71	1.85	147	205,3
	08/31/05	<0.60	<0.60	0.74	1.1	<0.12	1580,3	7.2	1.84	153	196.6
	02/14/06	<0.60	<0.60	<0.4	0.35	<0.12	1580.34	7.65	1.53	156	202.7
B-2B	12/06/04	6.1	<0.4	9.1	15	<0.3	1581.4	8.4	1.88	169	221,5
(23')	03/22/05	4.7	<0,6	9.0	15	< 0.12	1580.87	8.15	1.61	173	206.7
(· )	08/31/05	1.9	< 0.60	3.1	6,3	<0.12	1580,85	6,47	2.52	207	143.1
	02/14/06	1.9	<0,60	3.3	5.4	<0.12	1580.83	7.11	1.26	164	165.4
			· · · · · · · · · · · · · · · · · · ·								
B-3	06/01/00	ND	ND	ND	ND	ND					
(60')	11/01/03	ND	ND	ND	ND	ND				••	240
	12/07/04	<0.5	<0.4	<0.5	<0.6	<0.3	1582.35	9.17	1.16	58	250
	03/23/05	<0.6	<0.6	<0.4	<0.15	<0.12	1581.35	8.81	1.64	128	190.2
	09/01/05	<0.6	<0.6	<0.4	<0.15	<0.12	1581.95	7.61	0.51	242 159	179.5 182,9
(dup)	02/15/06 02/15/06	<0.6 <0,6	<0.6 <0.6	<0.4 <0.4	<0.15 1.8	<0.12 <0.12	1581.84	8.12	1.43	139	102,7
B-3A	06/01/00	ND	ND	<0.28>	ND	ND					
(32')	11/01/03	ND	ND	<0.70>	ND	ND					
	12/07/04	<0.5	<0.4	<0.5	<0.6	<0.3	1582,5	8,88	1.38	50	324
	03/23/05	1	<0,6	0.74	1.2	<0.12	1581.54	7.38	1.95	342	245
	09/01/05	61	2.1	11	30	8,3	1581.8	6.94	1.68	257	250.8
	02/15/06	39	2,9	6.1	16	4.8	1581.74	7.68	1.61	158	254.3
B-5	12/06/04	<0.5	<0.4	<0.5	<0.6	<0.3	1583,16	8,06	1.23	177	235.8
(20')	, 2, 00, 07	·v.~	·v.1	-0.5							
B-8	12/06/04	<0.5	<0.4	<0.5	<0.6	<0,3	1582.38	8.2	0.86	-36	642.1
(30')	03/22/05	<0.60	< 0.60	<0.4	< 0.15	<0.12	1581.43	8.17	1.37	-36	631.6
	08/31/05	<0.60	< 0.60	<0.4	<0.15	<0.12	1581.09	6.52	1.55	137	472.8
	02/14/06	<0.60	<0.60	<0.4	< 0.15	< 0.12	1581.56	6.89	1.48	145	566.4

TABLE 3
Groundwater Sample Analytical Results
Minocqua Cleaners
Minocqua, WI

ES PAL  B-8A 12/0 (62') 03/2 08/3 02/1  B-9 (62')  B-10 12/0 (52')  B-11 12/0 (77)  B-12 12/0 (42')  B-13 11/0 06/0 01/0 06/0 01/0 06/0 01/0 06/0 01/0 06/0 01/0 06/0 01/0 06/0 01/0 06/0 01/0 06/0 01/0 06/0 01/0 06/0 01/0 06/0 01/0 06/0 01/0 01	Date  2/06/04  3/22/05  3/31/05  2/14/06  2/06/04  2/07/04  2/07/04  1/01/93  1/01/94  1/01/95  5/01/96  5/01/96  1/01/97  1/01/98  1/01/98	70 7 <0.5 <0.60 <0.60 <0.60 <0.60 <0.5 <0.5 <0.5 <0.5 <0.5 <1.5 <1.5 <1.5 <1.5 <1.5 <1.5 <1.5 <1	100   20   20     20     20     20     20     20     20     20   20     20	ethene 5 0.5 <0.5 <0.4 <0.4 <0.4 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5  470 nd 200 320 510 950 590 590 1100 1100	<ul> <li>ethene</li> <li>5</li> <li>0.5</li> <li>&lt;0.6</li> <li>&lt;0.15</li> <li>&lt;0.15</li> <li>0.34</li> <li>&lt;0.6</li> <li>&lt;0.6</li> <li>&lt;0.6</li> <li>&lt;20.6</li> <li>&lt;20.6<!--</th--><th><ul> <li>0.2</li> <li>0.3</li> <li>0.12</li> <li>0.12</li> <li>0.12</li> <li>0.3</li> <li>20.12</li> <li>12</li> <li>20.12</li> <li>12</li> <li>20.12</li> <li>20.3</li> <li>210</li> <li>2</li></ul></th><th>1581.02 1581.08 1581 1580.93 1586.41 1582.14 1582.29</th><th>8.83 8.88 7.22 7.56 8.42 9.36 8.98</th><th>1.32 1.44 1.98 1.95 1.04 1.03</th><th>117 -56 109 163 165 123 119</th><th>444.5 394.1 271.5 269.3 158.9 166 276.4</th></li></ul>	<ul> <li>0.2</li> <li>0.3</li> <li>0.12</li> <li>0.12</li> <li>0.12</li> <li>0.3</li> <li>20.12</li> <li>12</li> <li>20.12</li> <li>12</li> <li>20.12</li> <li>20.3</li> <li>210</li> <li>2</li></ul>	1581.02 1581.08 1581 1580.93 1586.41 1582.14 1582.29	8.83 8.88 7.22 7.56 8.42 9.36 8.98	1.32 1.44 1.98 1.95 1.04 1.03	117 -56 109 163 165 123 119	444.5 394.1 271.5 269.3 158.9 166 276.4
B-8A 12/0 (62') 03/2 08/3 02/1  B-9 12/0 (52')  B-10 12/0 (52')  B-11 12/0 (7/2)  B-13 11/0 (7/2) 01/0 01/0 06/0 01/0 01/0 06/0 01/0 01/0	8/22/05 8/31/05 8/31/05 2/14/06 2/06/04 2/07/04 2/07/04 2/07/04 1/01/93 1/01/94 1/01/95 5/01/96 5/01/96 6/01/97 0/01/97 1/01/98	<0.5 <0.60 <0.60 <0.60 <0.5 <0.5 <0.5 <0.5 <10.5 <0.5 <180 14 290 230 200 210 53 1100	<0.4 <0.60 <0.60 <0.60 <0.4 <0.4 <0.4 <0.4 <4.5 nd nd nd nd nd nd nd nd	<0.5 <0.4 <0.4 <0.4 <0.5 <0.5 <0.5 <0.5 <470 nd 200 320 510 950 590 1100	<0.6 <0.15 <0.15 0.34 <0.6 <0.6 <0.6 <20.6  290 nd 210 22 210 210 200 160 49	<0.3 <0.12 <0.12 <0.12 <0.12 <0.3 <0.3 <0.3 <0.3  32 nd 210 22 210 210 200 160	1581.08 1581 1580.93 1586.41 1582.14	8.88 7.22 7.56 8.42 9.36	1.44 1.98 1.95 1.04 1.03	-56 109 163 165 123	394.1 271.5 269.3 158.9 166
(62')   03/2   08/3   02/1	8/22/05 8/31/05 8/31/05 2/14/06 2/06/04 2/07/04 2/07/04 2/07/04 1/01/93 1/01/94 1/01/95 5/01/96 5/01/96 6/01/97 0/01/97 1/01/98	<0.60 <0.60 <0.60 <0.5 <0.5 <0.5 <0.5 <10.5 <180 14 290 230 200 210 53 1100	<0.60 <0.60 <0.60 <0.4 <0.4 <0.4 <0.4 <4.5 nd nd nd nd nd nd	<0.4 <0.4 <0.4 <0.5 <0.5 <0.5 <0.5 <470 nd 200 320 510 950 590 1100	<0.15 <0.15 0.34 <0.6 <0.6 <0.6 <20.6  290 nd 210 22 210 210 200 160 49	<0.12 <0.12 <0.12 <0.12 <0.3  <0.3  <0.3  <0.3  32 nd 210 22 210 210 200 160	1581.08 1581 1580.93 1586.41 1582.14	8.88 7.22 7.56 8.42 9.36	1.44 1.98 1.95 1.04 1.03	-56 109 163 165 123	394.1 271.5 269.3 158.9 166
B-9 12/0 (62')  B-10 12/0 (52')  B-11 12/0 (42')  B-13 11/0 (25') 01/0 07/0 01/0 06/0 01/0 06/0 01/0 06/0 01/0 06/0 01/0 06/0 01/0 06/0 01/0 06/0 01/0 01	2/06/04 2/06/04 2/07/04 2/07/04 2/07/04 1/01/93 1/01/94 1/01/95 5/01/96 5/01/96 1/01/97 1/01/97 1/01/98 1/01/98	<0.60 <0.60 <0.5 <0.5 <0.5 <0.5 <180 180 14 290 230 200 210 53 1100	<0.60 <0.60 <0.4 <0.4 <0.4 <0.4 4.5 nd nd nd nd nd nd	<0.4 <0.4 <0.5 <0.5 <0.5 <0.5 470 nd 200 320 510 950 590 1100	<0.15 0.34  <0.6  <0.6  <0.6  <0.6  290 nd 210 22 210 210 200 160 49	<0.12 <0.12 <0.12 <0.3 <0.3 <0.3 <0.3 20 210 210 210 200 160	1581 1580.93 1586.41 1582.14	7.22 7.56 8.42 9.36 8.98	1.98 1.95 1.04 1.03	109 163 165 123	271.5 269.3 158.9 166 276.4
B-9 12/0 (62')  B-10 12/0 (52')  B-11 12/0 (42')  B-13 11/0 (25') 01/0 07/0 01/0 06/0 01/0 06/0 01/0 06/0 01/0 06/0 01/0 06/0 01/0 06/0 01/0 06/0 01/0 06/0 01/0 06/0 01/0 06/0 01/0 01	2/04/06 2/06/04 2/07/04 2/07/04 2/07/04 1/01/93 1/01/94 1/01/95 5/01/96 5/01/96 1/01/97 1/01/97 1/01/98 1/01/98	<0.60 <0.5 <0.5 <0.5 <0.5 <0.5  310 nd 180 14 290 230 200 210 53 1100	<0.4 <0.4 <0.4 <0.4 <40.4 4.5 nd nd nd nd nd nd nd nd	<0.4 <0.5 <0.5 <0.5 <0.5 <0.5  470 nd 200 320 510 950 590 1100	<0.6 <0.6 <0.6 <0.6 <0.6  290 nd 210 220 210 200 160 49	<0.12 <0.3 <0.3 <0.3 <0.3  <0.3  20.3  210 220 210 200 160	1580.93 1586.41 1582.14 1582.29	7.56 8.42 9.36 8.98	1.95 1.04 1.03	163 165 123	269.3 158.9 166 276.4
B-9 12/0 (62')  B-10 12/0 (52')  B-11 12/0 (42')  B-12 12/0 (42')  B-13 11/0 06/0 01/0 06/0 01/0 06/0 01/0 06/0 01/0 06/0 01/0 06/0 01/0 06/0 01/0 06/0 01/0 06/0 01/0 01	2/06/04 2/07/04 2/07/04 2/07/04 1/01/93 1/01/94 1/01/95 5/01/96 5/01/96 1/01/97 1/01/97 1/01/98 1/01/98	<0.5 <0.5 <0.5 <0.5 <10.5 310 nd 180 14 290 230 200 210 53 1100	<0.4 <0.4 <0.4 <0.4  4.5 nd nd nd nd nd nd nd nd	<0.5 <0.5 <0.5 <0.5 <470 nd 200 320 510 950 590 1100	<0.6 <0.6 <0.6 <0.6  290 nd 210 22 210 210 200 160 49	<0.3 <0.3 <0.3 <0.3 <0.3 32 nd 210 22 210 210 200 160	1586.41 1582.14 1582.29	9.36 8.98	1.04	165 123 119	158.9 166 276.4
(62')   B-10   12/0   (52')   B-11   12/0   (27')   B-12   12/0   (42')   B-13   11/0   (25')   01/0   06/0   01/0   06/0   01/0   06/0   01/0   06/0   01/0   06/0   01	2/07/04 2/07/04 2/07/04 1/01/93 1/01/94 1/01/95 5/01/95 5/01/96 5/01/96 5/01/97 1/01/98 1/01/98	<0.5 <0.5 <0.5 310 nd 180 14 290 230 200 210 53 1100	<0.4 <0.4 <0.4  4.5 nd nd nd nd nd nd nd nd	<0.5 <0.5 <0.5 470 nd 200 320 510 950 590 1100	<0.6 <0.6 <0.6  290 nd 210 22 210 210 200 160 49	<0.3 <0.3 <0.3 <0.3 32 nd 210 22 210 210 200 160	1582.14 1582.29	9,36 8.98	1,03	123	166 276.4
(52')  B-11 12/0 (27')  B-12 12/0 (42')  B-13 11/0 07/0 01/0 06/0 01/0 06/0 01/0 06/0 01/0 06/0 01/0 06/0 01/0 06/0 01/0 06/0 01/0 06/0 01/0 06/0 01/0 06/0 01/0 06/0 01/0 01	2/07/04 2/07/04 1/01/93 1/01/94 7/01/95 5/01/95 5/01/96 6/01/97 0/01/97 1/01/98 1/01/98	<0.5  <0.5  310 nd 180 14 290 230 200 210 53 1100	<0.4 <0.4 4.5 nd	<0.5  <0.5  470 nd 200 320 510 950 590 1100	<0.6  <0.6  290 nd 210 22 210 210 200 160 49	<0.3 <0.3 32 nd 210 22 210 210 200 160	1582.29	8.98	1.33	119	276.4
(27)  B-12	2/07/04 1/01/93 1/01/94 1/01/95 5/01/95 5/01/96 6/01/96 1/01/97 1/01/98 1/01/98	<0.5  310  nd  180  14  290  230  200  210  53  1100	<0.4  4.5 nd nd nd nd nd nd nd	<0.5  470 nd 200 320 510 950 590 1100	<0.6  290 nd 210 22 210 210 200 160 49	<0.3  32 nd 210 22 210 210 200 160					
(42')  B-13 11/0 (25') 01/0 01/0 06/0 01/0 06/0 11/0 06/0 01/0 11/0 06/0 01/0 12/0 06/0 12/0 Pump test 11/0 Pump test 11/0	1/01/93 1/01/94 7/01/94 1/01/95 5/01/95 1/01/96 6/01/96 1/01/97 0/01/97 1/01/98	310 nd 180 14 290 230 200 210 53 1100	4.5 nd nd nd nd 24 nd nd	470 nd 200 320 510 950 590 590	290 nd 210 22 210 210 200 160 49	32 nd 210 22 210 210 200 160	1583.31	8.95	1.26	127	1731
(25') 01/0 07/0 01/0 06/0 01/0 06/0 01/0 04/0 11/0 06/0 06/0 01/0 12/0 06/0 12/0 06/0 11/0 Pump test 11/0 Pump test 11/0	L/01/94 7/01/94 L/01/95 5/01/96 5/01/96 L/01/97 D/01/97 L/01/98	nd 180 14 290 230 200 210 53 1100	nd nd nd nd <i>24</i> nd nd	nd 200 320 510 950 590 590	nd 210 22 210 210 200 160 49	nd 210 22 210 210 200 160					
(25') 01/0 07/0 01/0 01/0 06/0 01/0 06/0 01/0 04/0 11/0 06/0 01/0 01/0 06/0 01/0 12/0 06/0 12/0 06/0 12/0 Pump test 11/0 Pump test 11/0	L/01/94 7/01/94 L/01/95 5/01/96 5/01/96 L/01/97 D/01/97 L/01/98	nd 180 14 290 230 200 210 53 1100	nd nd nd nd <i>24</i> nd nd	nd 200 320 510 950 590 590	nd 210 22 210 210 200 160 49	nd 210 22 210 210 200 160					
07/0 01/0 06/0 01/0 06/0 01/0 01/0 04/0 11/0 06/0 01/0 01/0 01/0 12/0 06/0 12/0 06/0 12/0 Pump test 11/0 Pump test 11/0	1/01/95 5/01/95 1/01/96 5/01/96 1/01/97 0/01/97 1/01/98	14 290 230 200 210 53 1100	nd nd <i>24</i> nd nd nd	320 510 950 590 590 1100	22 210 210 200 160 49	22 210 210 200 160					
06/0 01/0 06/0 01/0 10/0 10/0 04/0 11/0 06/0 06/0 01/0 12/0 06/0 12/0 11/0 Pump test 11/0 Pump test 11/0	5/01/95 1/01/96 5/01/96 1/01/97 0/01/97 1/01/98	290 230 200 210 53 1100	nd <i>24</i> nd nd nd	510 950 590 590 1100	210 210 200 160 49	210 210 200 160					
01/0 06/0 01/0 10/0 04/0 11/0 06/0 01/0 12/0 06/0 12/0 11/0 Pump test 11/0 Pump test 11/0	1/01/96 5/01/96 1/01/97 0/01/97 1/01/98 1/01/98	230 200 210 53 1100	<i>24</i> nd nd nd	950 590 590 1100	210 200 160 49	210 200 160					
06/0 01/0 10/0 04/0 11/0 06/0 01/0 12/0 06/0 12/0 11/0 Pump test 11/0 Pump test 11/0	5/01/96 1/01/97 D/01/97 4/01/98 1/01/98	200 210 53 1100	nđ nđ nd	590 590 1100	200 160 49	200 160					
01/0 10/0 04/0 11/0 06/0 06/0 01/0 12/0 06/0 12/0 11/0 Pump test 11/0 Pump test 11/0	1/01/97 0/01/97 1/01/98 1/01/98	210 53 1100	nd nd	590 1100	160 49	160					1
10/0 04/0 11/0 06/0 06/0 01/0 12/0 000 12/0 11/0 Pump test 11/0 Pump test 11/0	0/01/97 1/01/98 1/01/98	<i>53</i> 1100	nd	1100	49						
04/0 11/0 06/0 06/0 01/0 12/0 06/0 12/0 11/0 Pump test 11/0 Pump test 11/0	1/01/98 1/01/98	1100				49					
11/0 06/0 06/0 01/0 12/0 06/0 12/0 11/0 Pump test 11/0 Pump test 11/0	1/01/98		nd	1100							
06/0 06/0 01/0 12/0 06/0 12/0 11/0 Pump test 11/0 Pump test 11/0		527			1100	1100					
06/0 01/0 12/0 06/0 12/0 11/0 Pump test 11/0 Pump test 11/0			nd	1100	28	28					
01/0 12/0 06/0 12/0 11/0 Pump test 11/0 Pump test 11/0	5/01/99	520	nd	420	360	360					
12/0 06/0 12/0 11/0 Pump test 11/0 Pump test 11/0	5/01/00	15	nd	510	13	13					
06/0 12/0 11/0 Pump test 11/0 Pump test 11/0	1/01/01	1000	14	1000	830	830				,	
12/0 11/0 Pump test 11/0 Pump test 11/0	2/01/01	68	nd	320	47	47					
11/0 Pump test 11/0 Pump test 11/0	5/01/02	52	nd	580	44	44					
Pump test 11/0 Pump test 11/0	2/01/02	510	nd	290	190	190					
Pump test 11/0	/03/03	400	nd	460	260	260	1500.50				
	1/09/04	530	10	370	330	35	1583.52				
I Pump test 11/0	1/09/04	520	9.1	330	300	32	1577.79				
	1/09/04	550	11	380	320	38	1577.8	0.47	1.40	88	442
	2/08/04	310	6,6	48	150	13	1583.42	8.47	1.48 1.58		
	3/23/05	49	4.8 6.1	29 37	29	2.7	1582,46 1582,53	9.1 6.87		141 180	311 224.7
	9/01/05 2/15/06	30 49	<6.0	92	25 20	0.59 <1.2	1582.45	7.23	1.12 1.14	157	251
											_
	2/08/04	1.5	<0.4	<0.5	<0.6	<0.3	1582,22	9.12	1.45	64	2,46,4
	3/23/05	0,95	<0.6	<0.4	< 0.15	< 0.12	1581.25	9.38	1.36	141	191.5
t .	9/01/05	1	<0.6	<0.4	2.6	<0.12	1581.56	7.58	0.67	148	160
02/1	2/15/06	1	<0.60	0.62	2.8	<0.12	1581.43	7.73	1.75	156	150.6
B-13B 12/0	2/08/04	0,92	<0.4	<0.5	<0.6	<0,3	1582,48	9,34	1.25	44	497.8
1	3/23/05	<0.6	<0.6	<0.4	< 0.15	< 0.12	1581.24	8.4	1.77	173	197.8
		<0.6	<0,6	<0.4	<0.15	<0.12	1581,68	7.57	1.41	253	144
02/1	9/01/05	<0.6	<0.6	<0.4	< 0.15	<0.12	1581.51	8.18	1.3	156	151.9

TABLE 3
Groundwater Sample Analytical Results
Minocqua Cleaners
Minocqua, WI

	Sampling	Cis-1,2-	Trans-1,2-	Tetrachloro-		Vinyl	GW	pН	DO	Redox	Conductivit
Analyte	Date	Dichloroethylene	Dichloroethylene	ethene	ethene		Elevation	Elevation			
ES		70	100	5	5	0.2					
PAL		7	20	0,5	0.5	0.02				-	
B-15 (42')	.12/07/04	<0.5	<0.4	<0.5	<0.6	<0.3	1583.36	8.73	1.19	136	410.9
EXW-2	06/01/00	4.3	ND	3.2	7.9	<0.16>					
	01/01/01	4	<0.18>	3.4	7.3	< 0.18>					
	12/01/01	4.5	ND	5.6	8.6	ND					
	06/01/02	4.9	<0.21>	1.9	7.3	ND					
	12/01/02	5	ND	1.2	5.3	ND					
	11/01/03	6.8	ND	3.4	6,9	0.53					
	12/06/04	5.2	< 0.4	1.9	4.5	< 0.3					
	03/23/05	<0.6	< 0.6	<0.4	< 0.15	< 0.12		9.03	1.56	-64	775,3
	09/01/05	<0.6	<0.6	< 0.4	< 0.15	< 0.12		7.46	1.15	19	562.3
	02/15/06	<3,0	<3.0	<2.0	<0.75	<0.6		7.47	1.92	151	730.9
EXW-4	03/22/05	0.78	<0,6	0.87	1.2	<0.12					<u> </u>
	09/01/05	<0.6	<0.6	<0.4	<0.15	<0.12					
EXW-5	11/01/93	32	ND	48	48	ND					
	01/01/94	ND	ND	48	48	ND					
	07/01/94	6.2	ND	6.7	ND	14					
	01/01/95	35	ND	32	57	ND					
	06/01/95	ND	ND	96	110	19					
	01/01/96	18	ND	17	19	ND					
	06/01/96	28	1,7	2.4	20	ND					
	01/01/97	59	3,8	28	36	ND					
	10/01/97	68	ND	36	49	ND					
	04/01/98	58	ND	31	33	ND					
	11/01/98	110	ND	38	54	ND					
	06/01/99	150	ND	<9.3>	24	ND					
	12/01/99	2,5	ND	<0.42>	0.98	ND					
	06/01/00	160	1.6	19	32	ND					
	01/01/01	16	<0,29>	5.8	10	ND					
	12/01/01	19	ND	5.6	8.6	ND					
	06/02/02	54	ND	11	24	3,3					
	12/01/02	57	ND	8.6	18	ND					
	12/06/04	61	<0.4	<1.0	<1.2	11					
	03/23/05	38	<1.2	1.6	9	2.7		8.97	1.14	<b>-7</b> 2	417.5
	09/01/05	29	<0.6	< 0.40	0.48	2.1		7.16	1.06	64	112,7
	02/15/06	33	<0.6	0.42	1.2	4,5		7.41	1.9	150	112.8

TABLE 3
Groundwater Sample Analytical Results
Minocqua Cleaners
Minocqua, WI

Analyte	Sampling Date	Cis-1,2- Dichloroethylene	Trans-1,2- Dichloroethylene	Tetrachioro- ethene	Trichloro ethene	Vinyl Chloride	GW Elevation	pH Elevation	DO	Redox	Conductivit
ES		70	100	5	5	0.2					
PAL		7	20	0.5	0.5	0.02					
MW-16	11/01/93	ND	ND	ND	ND	ND					
	01/01/94	ND	ND	ND	ND	ND					
	07/01/94	ND	ND	ND	ND	ND					
	01/01/95	ND	ND	ND	ND	ND					
	06/01/95	ND	ND	ND	ND	0.71					
	01/01/96	ND	ND	ND	ND	ND					
	06/06/96	ND	1.3	ND	ND	ND					
	01/01/97	ND	ND	ND	ND	ND					
	10/01/97	ND	ND	0.54	ND						
	04/01/98	ND	ND	1	ND	ND					
	11/01/98	ND	ND	ND	ND	ND					
	06/01/99	Well Disappeared									
NAW 17	11/01/02	220	2.6	22	40	1.0	<u>,                                      </u>				
MW-17	11/01/93	230	3.5	23	40 50	1.2					
(18')	01/01/94	400	ND	40	58	ND					
	07/01/94	380	ND	44	40	ND					
	01/01/95	12	ND	0.53	112	ND					
	06/01/95	ND	ND	380	53	12					
	01/01/96	180	40	32	31	ND					
	06/06/96	290	13	80	40	6.7					
	01/01/97	860	7	33	53	3.2					
	10/01/97	270									
	04/01/98	84	ND	11	9.4	ND					
	11/01/98	290	4.5	24	37	2.8					
	06/01/99	170	ND	<9.7>	23	ND					
	12/01/99	420	ND	ND	26	ND					
	06/01/00	220	ND	ND	ND	ND					
	01/01/01	270	<7.0>	ND	<8.7>	<4.4>					
	12/01/01	200	<5.0>	<5.2>	<4.8>	ND					
	06/01/02	180	<5.7	9.4	8.9	ND					
	12/01/02	230	ND	<13>	43	<5.1>					
	11/01/03	390	<13>	ND	ND	ND				22	220
	12/07/04	220	7,5	6.8	14	4.7	1583.11	8.64	1.46	-32	230
	03/23/05	84	3.4	7.8	6.7	2.6	1582.17	8.9	1.76	16	252.4
	09/01/05	330	9.1	1.4	5	23	1582.31	6.65	1.78	204	240
	02/15/06	140	4.6	4.3	1.9	2.9	1582.12	7.32	1.75	153	196.4

TABLE 3
Groundwater Sample Analytical Results
Minocqua Cleaners
Minocqua, WI

	Sampling	Cis-1,2-	Trans-1,2-	Tetrachloro-	Trichloro	Vinyl	GW	pН	DO	Redox	Conductivity
Analyte	Date	Dichloroethylene	Dichloroethylene	ethene	ethene		Elevation	Elevation			
ES		70	100	5	5	0.2					
PAL		7	20	0.5	0.5	0.02				_	
MW-18	11/01/93	44	0.93	2200	200	ND					
(17')	01/01/94	ND	ND	8000	530	ND					
	07/01/94	15	ND	75	13	ND					
	01/01/95	6,3	ND	4.2	21	ND					
	06/01/95	ND (7	ND	4.1	1600	950					
	01/01/96	6.7	ND	110	100	ND					
	06/06/96	3.9	ND	51 500	34	ND					
	01/01/97	16	ND	500	130	ND					
	10/01/97	20	ND	290	150	ND					
	04/01/98	3,3	ND	37	13	ND					
	11/01/98	24	0.84	41	43	ND					
	06/01/99	19	ND	5.1	28	ND					
	12/01/99	Not Sampled because						•			
	06/01/00	220	3,3	4.9	43	1.7					
	01/01/01	9.9	ND	34	76	ND					
	12/01/01	<0.50	ND	3.4	1.8	ND					
	06/01/02	1	ND	5.2	3.6	ND					
	12/01/02	1.9	ND	6.5	6	1.2					
	11/01/03	1.3	ND	1.6	1.1	ND					
	12/07/04	1.1	<0.4	5.7	2	0.43	1582.96	8.41	1.33	42	475.8
	03/22/05	1.6	<0.6	4.5	2.9	0.66	1581.92	8.69	1.98	52	479.8
	08/31/05	670	7.7	470	2700	1.3	1582,13	6.5	1.11	292	328
	02/14/06	2.9	<0.6	6.8	7.7	0.39	1581.88	7.25	1.93	158	280.7
		<u> </u>									
MW-19	11/01/93	35	0.65	2.3	12	ND					
(17')	01/01/94	15	ND	18	9	ND					
	07/01/94	360	1.5	53	110	ND					
	01/01/95	ND	ND	16	9.4	0.9					
	06/01/95	ND	ND	680	630	1700					
	01/01/96	4,1	ND	11	170	ND					
	06/06/96	64	72	230	37	ND					
	01/01/97	13	ND	39	11	ND					
	10/01/97	150	5.5	54	50	ND					
	04/01/98	120	2.8	42	38	ND					
	11/01/98	200	5	45	83	ND					
	06/01/99	390	ND	280	210	ND					
	12/01/99	450	ND	52	120	ND					
	06/01/00	580	<7.4>	140	160	ND					
	01/01/01	<0.33>	ND	1.6	< 0.35>	ND					
	12/01/01	0.91	ND	8.4	1.2	ND					
	06/01/02	93	ND	67	23	ND					
	12/01/02	55	ND	35	16	ND					
	11/01/03	14	ND	3.4	11	ND					
	12/07/04	68	0,64	71	20	< 0.3	1582.89	8.85	1.89	-8	262.7
	03/23/05	250	3.6	250	92	<0,24	1581.85	8.84	1.95	27	461.8
	09/01/05	320	<12	41	95	<2.4	1582.2	6.47	1.91	307	185.3
	02/15/06	220	<12	45	66	<2.4	1581.85	7.26	1.38	159	190.3
	54, ,0,00	I									

TABLE 3
Groundwater Sample Analytical Results
Minocqua Cleaners
Minocqua, WI

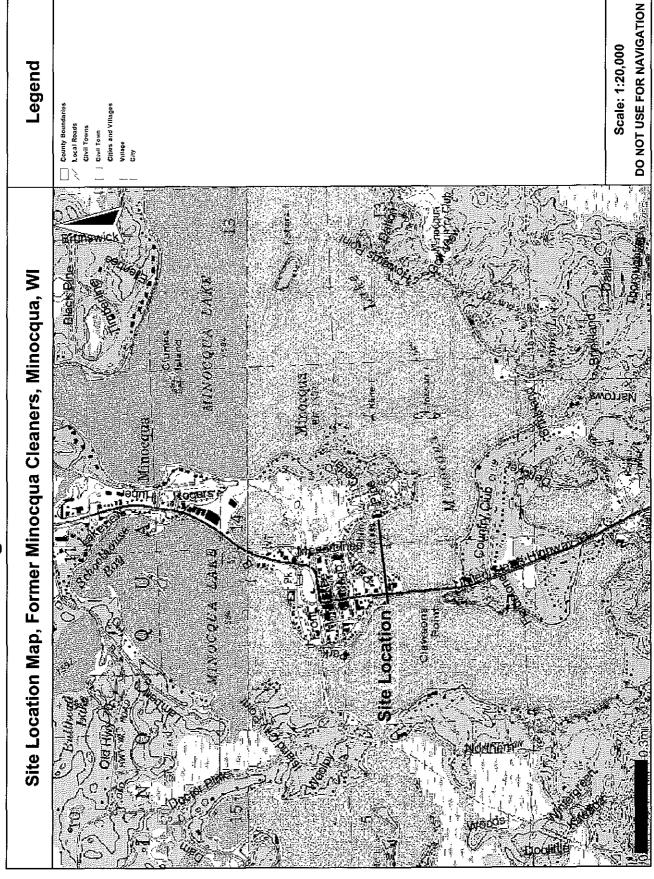
Analyte	Sampling Date	Cis-1,2- Dichloroethylene	Trans-1,2- Dichloroethylene	Tetrachloro- ethene	Trichloro ethene	Vinyl Chloride	GW I Elevation Elev	)H vation	DO	Redox	Conductivity
ES		70 7	100	5	5	0.2					
PAL LSD	07/09/84	<del></del> -	20 <1.0	0.5 <1.0	0.5 <1.0	0.02	sampled by	Lakeland	en		
Well-3	08/07/84		~1.0	62	4		sampled by				
11011-3	08/21/84			12	<1.0		sampled by				
•	05/27/86		<1.0	<1.0	<1.0	<7.0	sampled by				
	06/09/86		<1.0	<1,0	<1.0	<7.0	sampled by				
	10/19/87		<0.1	<0.1	<0.1		sampled by				
	06/25/90	<0.5	< 0.5	< 0.2	< 0.2	< 0.2	sampled by				
	02/27/91	<0.5	< 0.5	< 0.5	< 0.2	< 0.2	sampled by				
	06/28/91	<0.5	<05	<0.5	<0.2	< 0.2	sampled by	Lakeland	SD		
	03/22/92	< 0.5	< 0.5	<0.5	<0.2	< 0.2	sampled by	Lakeland	SD		
	06/10/92	< 0.5	<0.5	<0.5	<0.2	< 0.2	sampled by	Lakeland	SD		
	09/30/02	<0.5	<0.5	<0.5	<0.2	< 0.2	sampled by	Lakeland	SD		
	11/10/93	<0.1	<0.1	<0.5	< 0.5	< 0.2	sampled by	Lakeland	SD		
	07/06/94	<0.1	< 0.1	< 0.2	<0.1	< 0.2	sampled by	Lakeland	SD		
	08/15/95	0.5	<0.1	2.8	2.1	< 0.2	sampled by	Lakeland	SD		
	03/25/96	0.87	<0.1	<i>3.4</i>	3.6	< 0.2	sampled by	Lakeland	SD		
	06/01/96	0.67	ND	3.1	3.4	ND					
	06/07/96	0.67	<0.1	3. I	3.4	<0.2	sampled by				
	08/27/96	0.5	<0.1	<0.2	2.2	<0.2	sampled by				
	12/16/96	0.24	1.0>	0.9	1	< 0.2	sampled by	Lakeland	SD		
	01/01/97	ND	ND	1.5	1.4	ND					
	03/03/97	0.16	<0.1	0.52	0.46	< 0.2	sampled by				
	06/02/97	0.11	<0.1	0.33	0.34	< 0.2	sampled by				
	09/12/97	<0.1	<0.1	0.17	0.16	<0.2	sampled by	Lakeland	SD		
	10/01/97	ND	ND	1.5	0.32	ND					
	12/11/97	1.0>	<0.1	0.13	0.16	<0.2	sampled by				
	03/03/98	<0.1	<0.1	<0.2	<0.1	<0.2	sampled by				
	06/25/98	<0.1	<0.1	<0.2 <0.1 <0.2 sampled by Lakeland SD	SD						
	09/01/98	ND	ND	ND	ND	ND			~~		
	09/22/98	<0.1	<0.1	<0.2	<0.1	<0.2	sampled by	Lakeland	SD		
	11/01/98	ND	ND	0.17	0.19	ND		- 1 1 1	ar.		
	12/14/98	1.0>	<0.1	<0.2	<0.1	<0.2	sampled by				
	03/16/99	<0.1	<0.1	<0.2	<0.1	<0.2	sampled by	Lakeland	ชบ		
	06/01/99	ND	ND	ND	ND	ND					
	12/01/99	ND	ND	<0.26>	ND	ND <0.7	enmand de la company	T akaland	cD.		
	01/25/00	<0.1	<0.1	<0.2	<0.1	<0.2	sampled by	Lakeland	SD		
	06/01/00	ND	ND	ND	<0.17>	ND					
	01/01/01	ND	<0.41>	<0.43>	ND 0.33	ND	somewhad bu	Lakaland	en.		
	01/24/01	<0.1	<0.1	0.35 <0.23>	0.32 <0.31>	<0.2 ND	sampled by	Lakeland	טט		
	12/01/01	ND <0.1	ND	<0.23	0.18	<0.2	sampled by	Lokaland	en.		
	02/05/02 06/02/02	ND	<0.1 ND	<0.23>	<0.38>	ND	sampled by	Lakcianu	ענ		
	12/02/02	<0.44>	ND	0.56	1.2	ND					
	03/11/03	<0.1	<0.1	<0.2	0.77	<0.2	sampled by	Lakeland	SD		
	07/30/03	0.75	<0.1	0.66	1.7	<0.2	sampled by				
	11/01/03	[0.59]	ND	0.59	1.4	ND	sampicu oy	Lakolaiki	OD.		
	11/26/03	0.55	<0.37	0.63	1.4	<0.12	sampled by	Lakeland	SD		
	03/01/04	0.78	<0.1	0.71	1.7	<0.12	sampled by				
	03/01/04	0.73	<0.1	0.59	1.4	<0.2	sampled by				
	08/24/04	0.47	<0.1	0.44	1	<0.2	sampled by				
	11/03/04	0.95	<0.1	0.93	2	<0.2	sampled by				
	12/06/04	0.61	<0.4	0.64	1	<0.3	Jampieu Oy				
	02/14/05	1.7	<0.17	1.8	3.6	<0.17	sampled by	Lakeland	SD		
	03/09/05	1.7	<0.17	1.4	2.7	<0.17	sampled by				
	03/23/05	1.3	<0.6	0.93	2.2	<0.12			3.41	291	308.3
	04/25/05	0.87	<0.17	0.85	1.7	< 0.17	sampled by				
	08/09/05	[0.57]	<0.58	[0.46]	1	<0.54	sampled by				
	09/01/05	< 0.60	< 0.60	0.48	1.1	<0.12			2.22	234	278,7
	02/15/05	<0.6	<0.6	<0.4	< 0.15	<0.12			2.49	156	284.8
	V-41 L-21 V-2	~0.0	<0.17	1.1	2	0.17	sampled by				

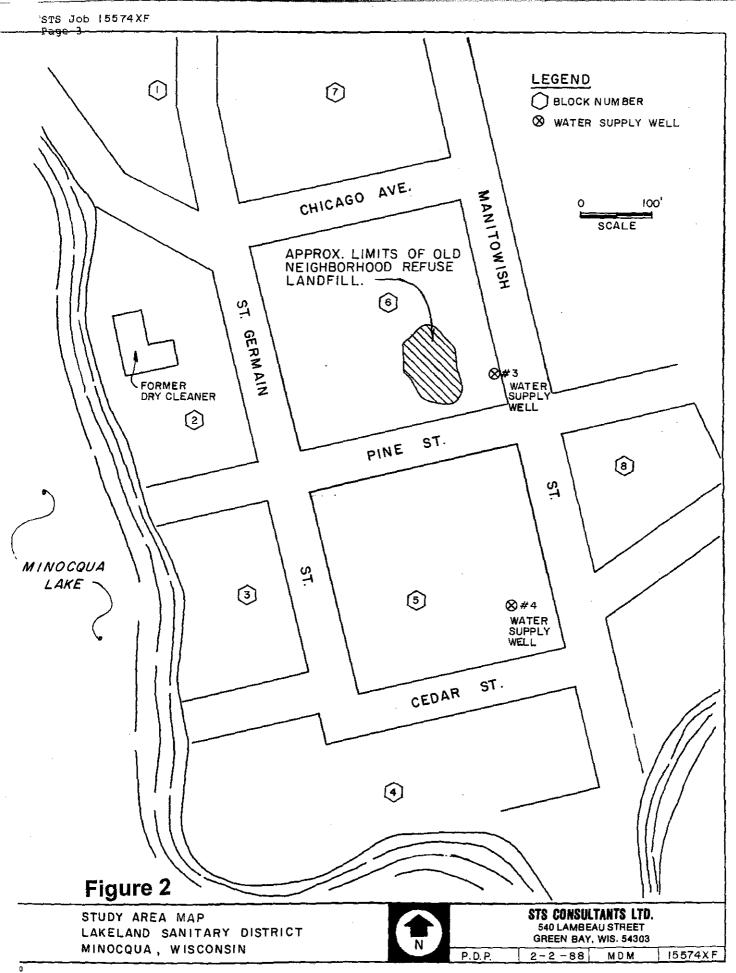
# TABLE 3 Groundwater Sample Analytical Results Minocqua Cleaners Minocqua, WI

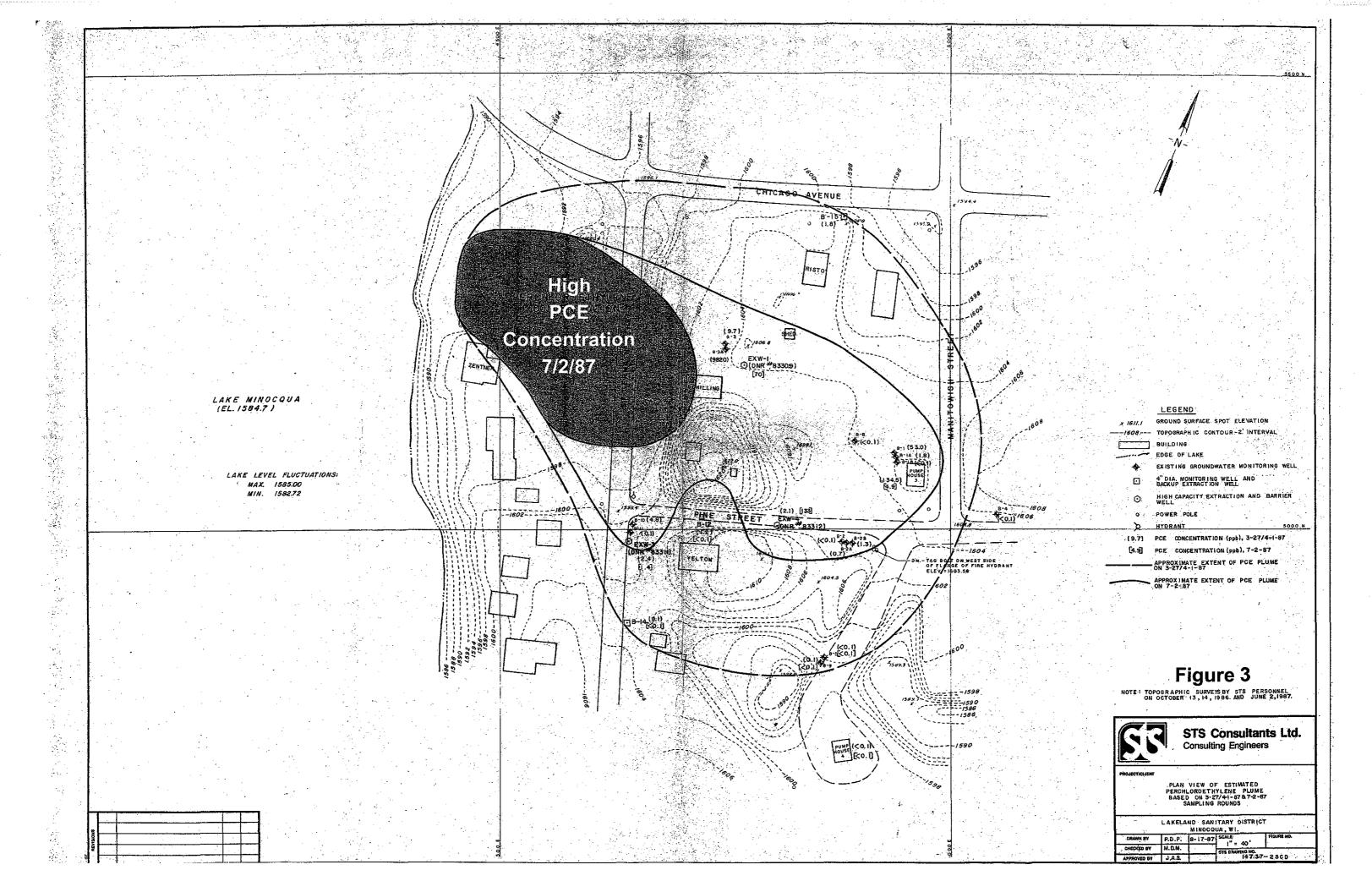
,	Sampling	Cis-1,2-	Trans-1,2-	Tetrachloro-	Trichloro	Vinyl	GW	pĦ	DO	Redox	Conductivity
Analyte	Date	Dichloroethylene	Dichloroethylene	ethene	<u>ethe</u> ne	Chloride	Elevation	Elevation			
ES		70	100	5	5	0.2					
PAL		7	20	0.5	0.5	0.02					
GW	Mar-96			3.6	5.2						
Outfall	Jun-96			4.6	4,9						
ŀ	Sep-96			5.6	nd						
	Dec-96			2.5	3.9						
1	Mar-97			2.4	nd						
	Jul-97			2.6	4.3						
i i	Sep-97	1		3.6	nd						
!	Dec-97			2.1	4.3						
ł	Mar-98			1.8	nd						
	Jun-98			1.6	2.7						
	Sep-98			1.2	nd						
	Dec-98			1.6	2.7						
1	Mar-99			1.5	nd						
1	Jun-99	1		1.3	2.4						
Į	Sep-99			1.4	nd						
	Dec-99			I	2.7						
	Apr-00			0.96	nd						
	Jun-00	ŀ		I.I	3						
	Sep-00			2.5	nd						
Į	Dec-00	Į.		1.8	3.8						
	Mar-01			1.6	nd						
1	Jun-01			3	4.4						
	Oct-01			1.2	nd						
İ	Dec-01			I.I	2.5						
	Mar-02			I.I	2.5						
	Jun-02			1	2.8						
	Sep-02	1		0.6	1.3						
	Dec-04			0.34	1.2						
1											

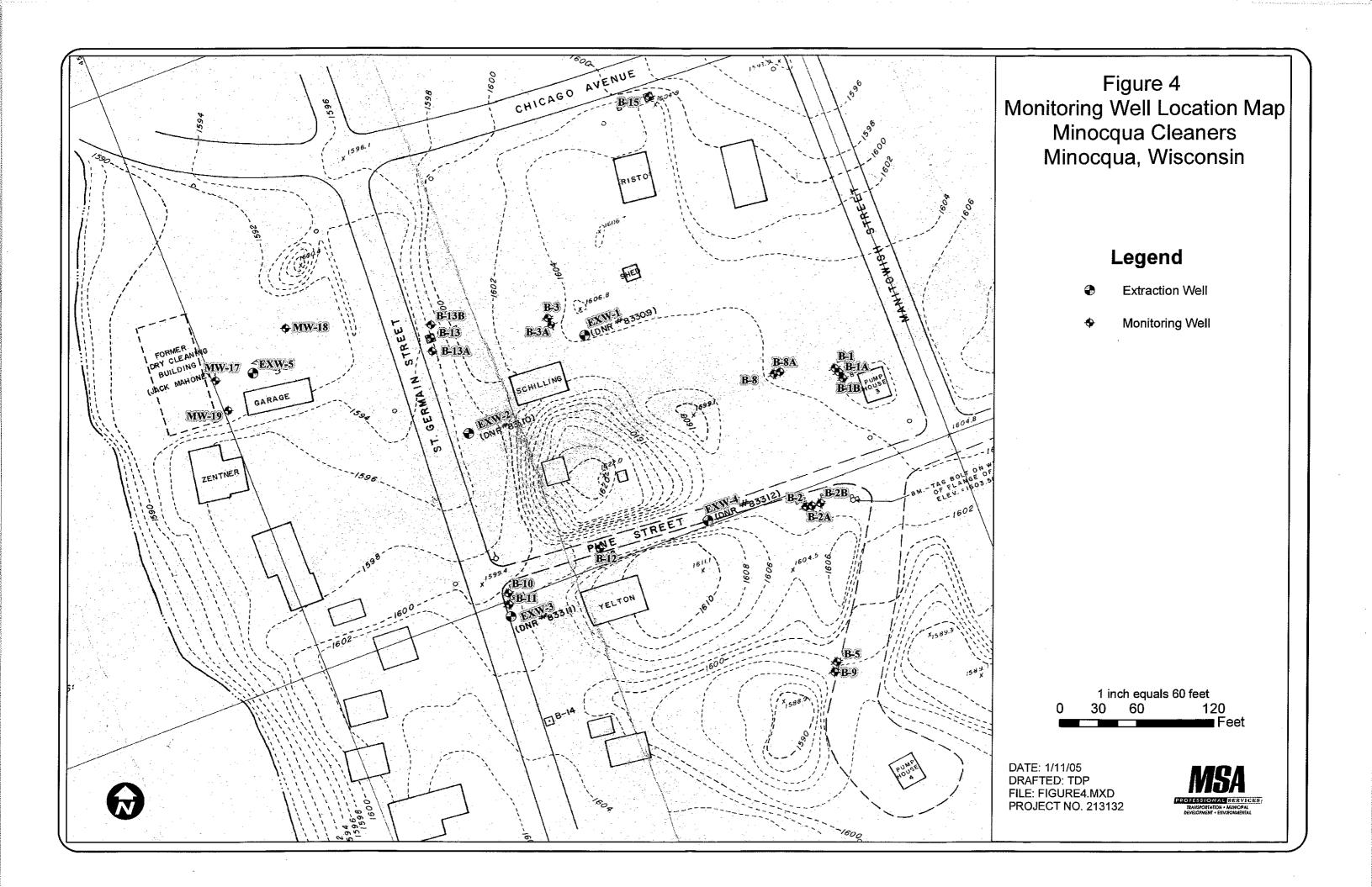
**FIGURES** 

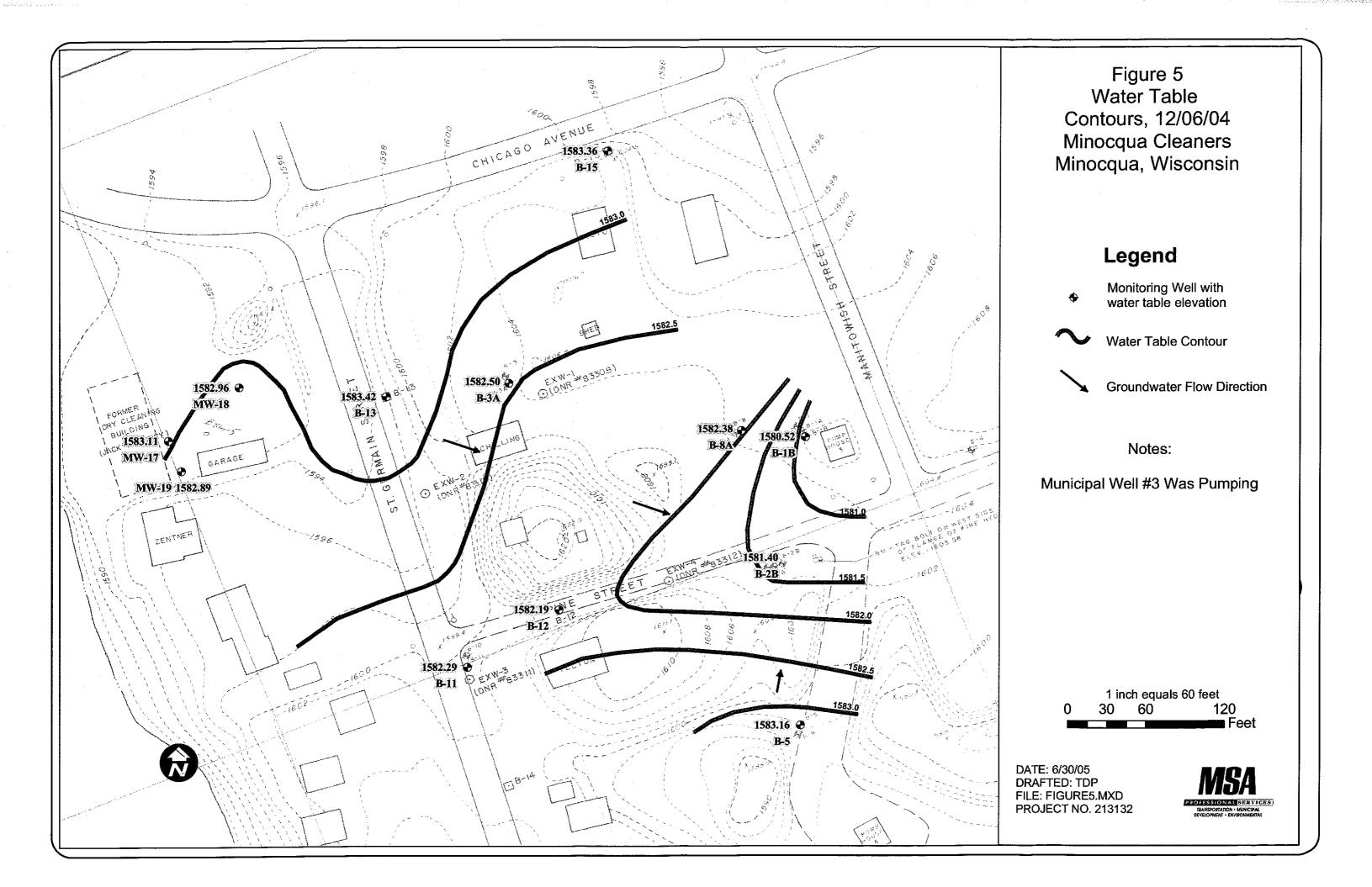
Figure 1

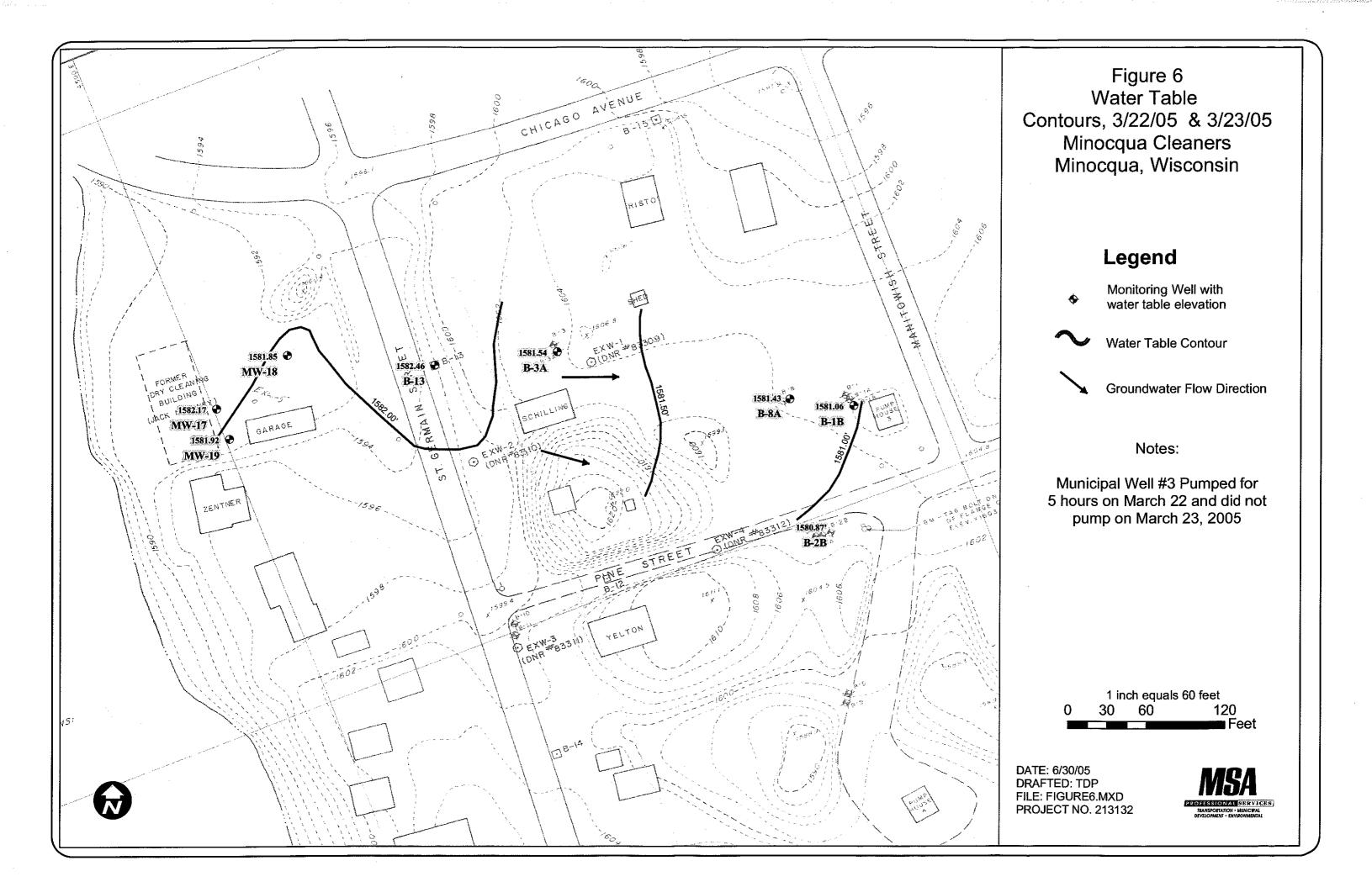


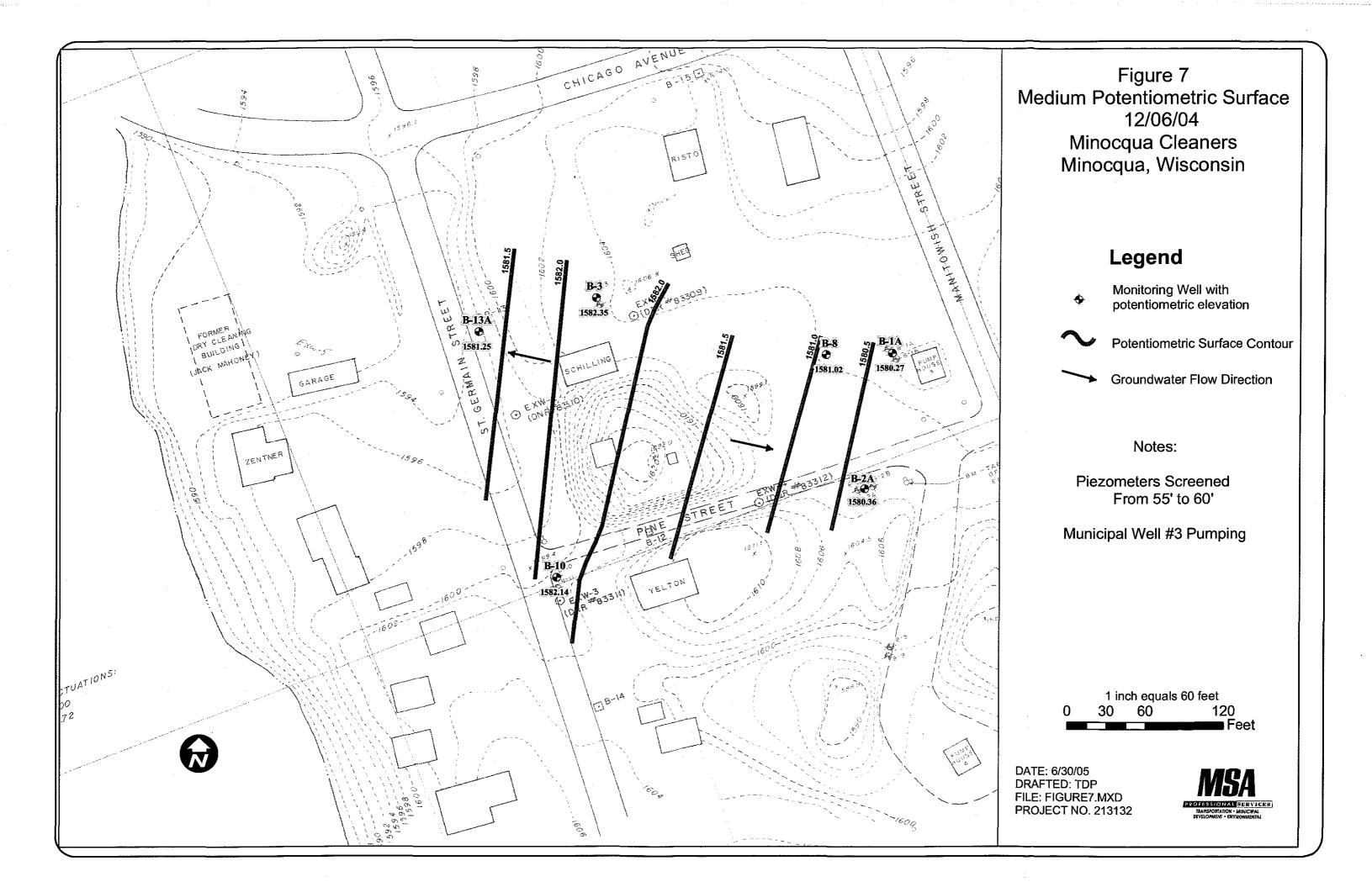


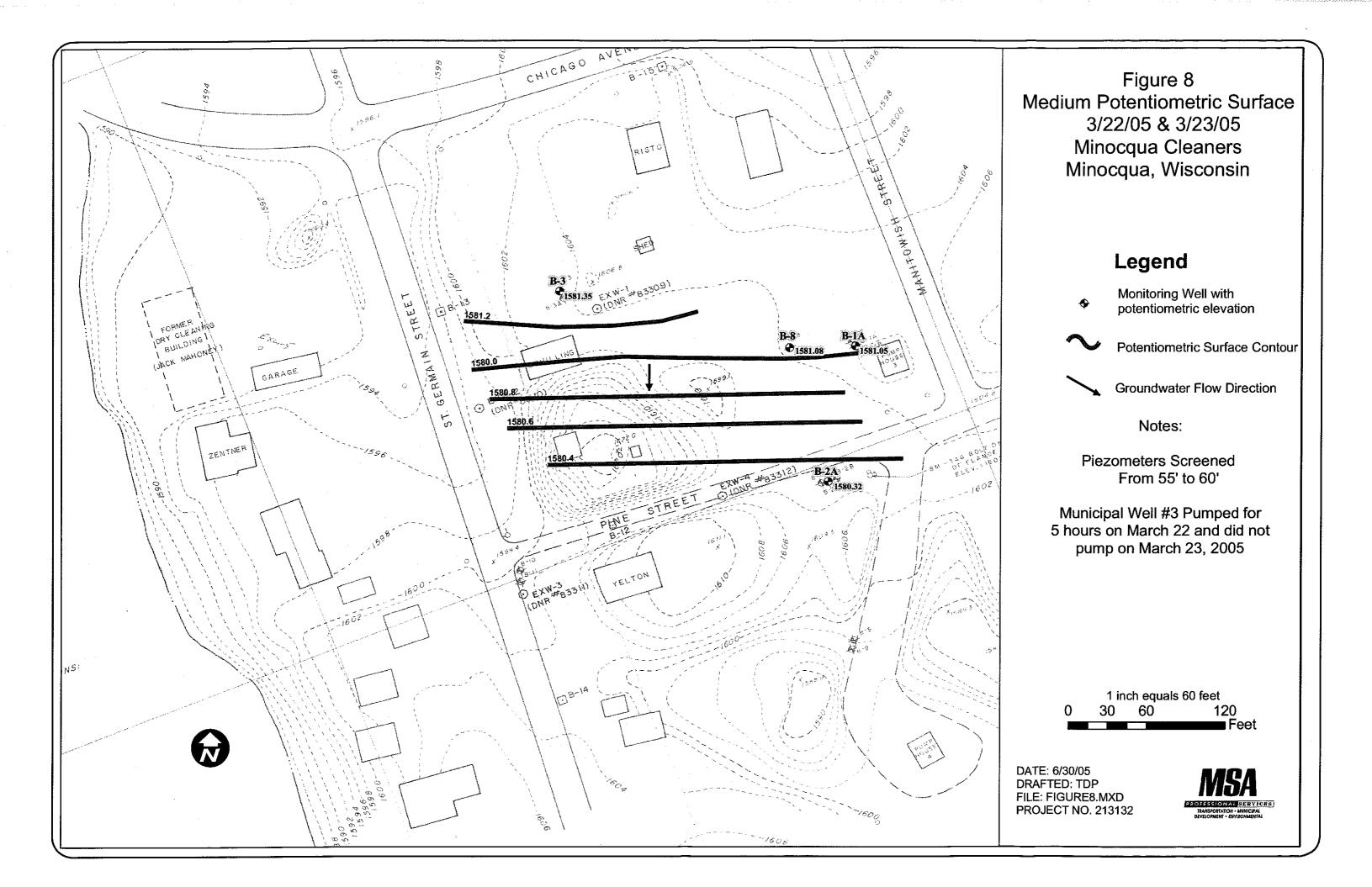


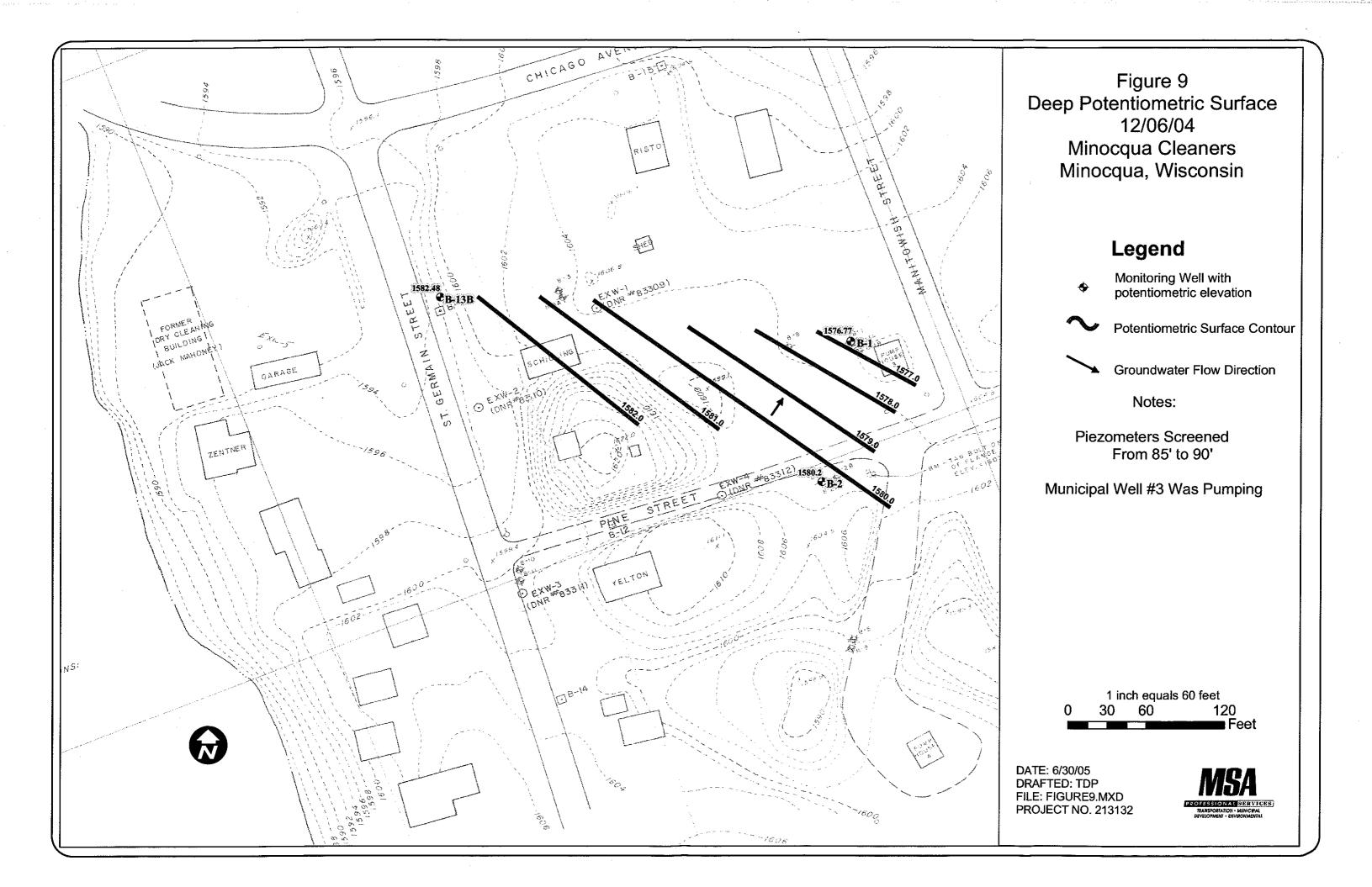


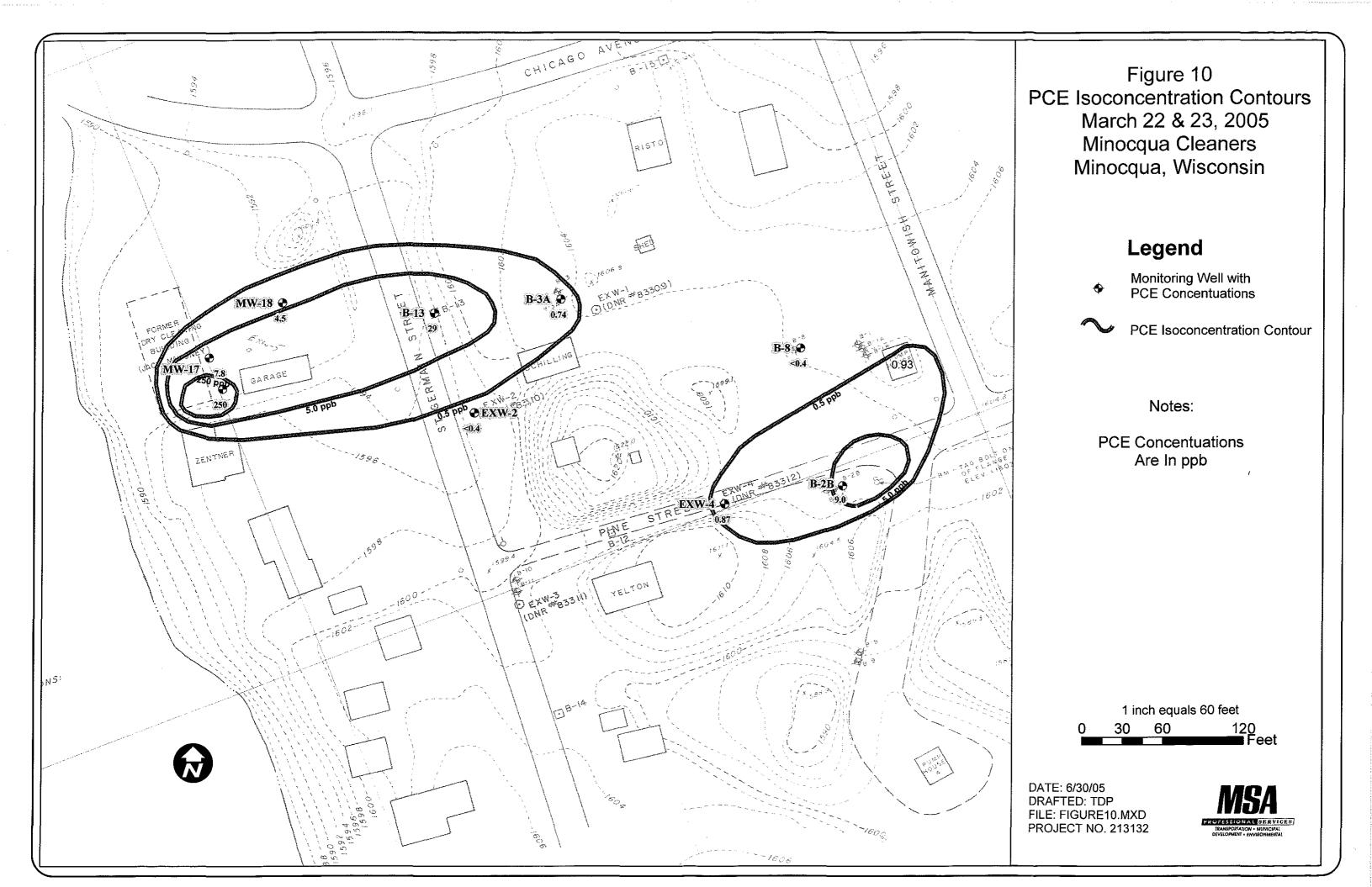


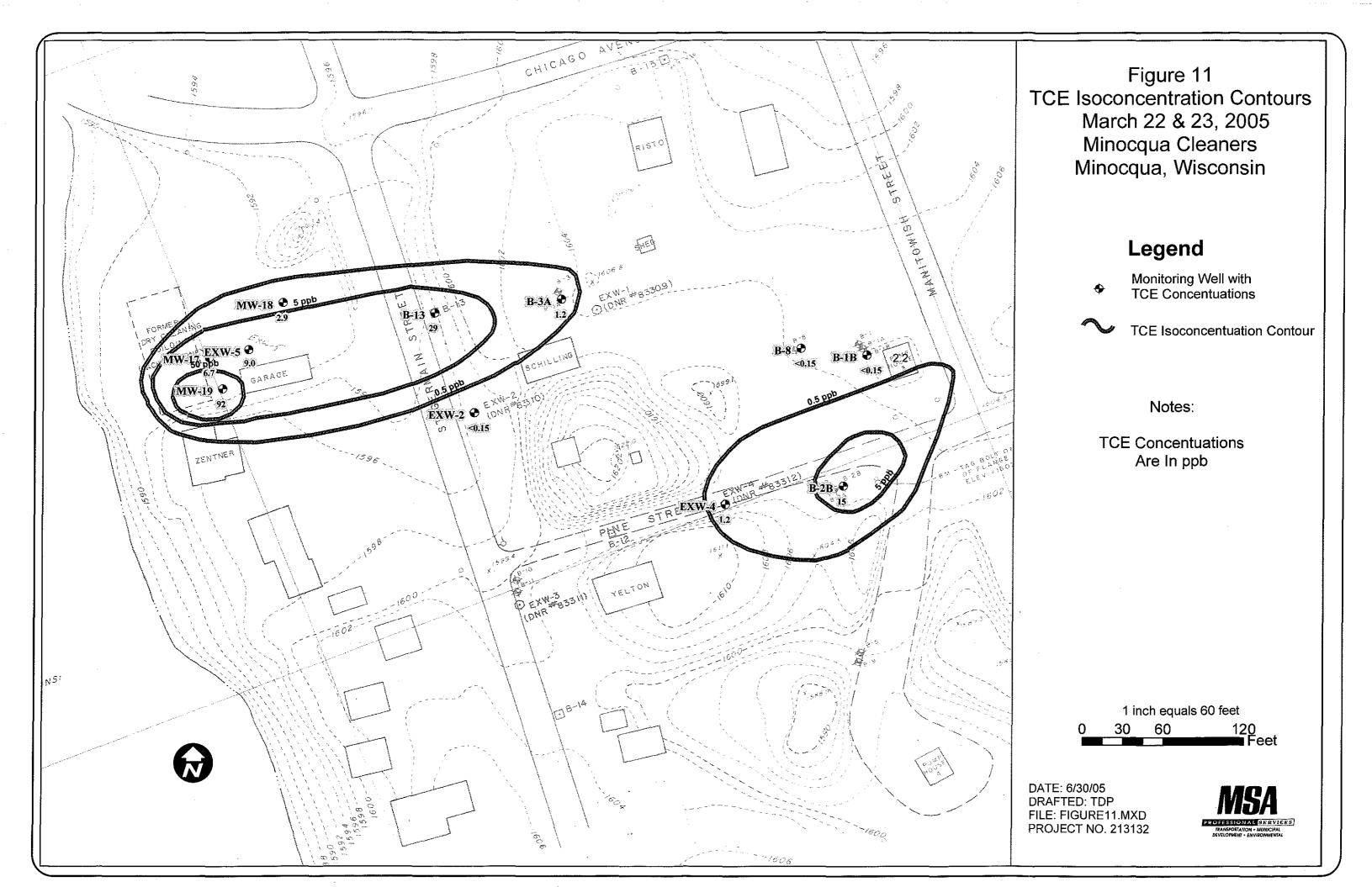












## APPENDIX A

Soil Boring Logs Well Abandonment Forms Monitoring Well Construction Forms Monitoring Well Development Forms

### WELL/DRILLHOLE/BOREHOLE ABANDONMENT Form 3300-5B Rev. 4-97

All abandonment work shall be performed in accordance with the provisions of Chapters NR 811, NR 812 or 141, Wis. Admin. Code, whichever is applicable.

Code, wholever is approasie.	
(1) GENERAL INFORMATION	(2) FACILITY NAME Minocqua Cleaners
Well/Drillhole/Borehole County	Original Well Owner (If Known)
Location B-4 Oneida	
	Present Well Owner
1/4 of 1/4 of Sec ; T N; R \bigsim W_	Minocqua Cleaners
(If Applicable)	Street or Route
Gov't Lot Grid Number	
Grid Location Grid Number	City, State, Zip Code
ft. \[ \scale \text{N}, \[ \scale \text{S}, \] ft. \[ \scale \text{E}. \[ \scale \text{W}. \]	Minocqua, WI
Civil Town Name	Facility Well No. and/or Name (If Applicable) WI Unique Well No.
	B-4
Street Address of Well	Reason For Abandonment
	Broken
City, Village	Date of Abandonment
· · · · · · · · · · · · · · · · · · ·	11/16/04
Minocqua WELL/DRILLHOLE/BOREHOLE INFORMATION	11/10/04
	12.0
(3) Original Well/Drillhole/Borehole Construction Completed On	(4) Depth to Water (Feet) 12.0
(Date)	Pump & Piping Removed?
(= 10)	Liner(s) Removed?
Monitoring Well Construction Report Available?	Screen Removed?
☐ Water Well ☐ Yes ☐ No	Casing Left in Place? Yes No
Drillhole	1
	If No, Explain
Borehole	
	Was Casing Cut Off Below Surface? Yes No
Construction Type:	Did Sealing Material Rise to Surface?  Yes  No
☐ Driven (Sandpoint) ☐ Dug	Did Material Settle After 24 Hours? Yes No
Other (Specify)	If Yes, Was Hole Retopped?
Formation Tomas	(5) Required Method of Placing Sealing Material
Formation Type:	Conductor Pipe - Gravity Conductor Pipe - Pumped
☐ Unconsolidated Formation ☐ Bedrock	Dump Bailer Other (Explain)
Total Well Depth (ft) 34.0 Casing Diameter (in.) 2.00	
	(6) Sealing Materials For monitoring wells and
(From groundsurface) Casing Depth (ft.) 24.0	Neat Cement Grout monitoring well boreholes only
	Sand-Cement (Concrete) Grout
Lower Drillhole Diameter (in.)	Concrete Bentonite Pellets
	Clay-Sand Slurry Granular Bentonite
Was Well Annular Space Grouted? Yes No Unknown	☐ Bentonite-Sand Slurry ☐ Bentonite-Cement Grout
If Yes, To What Depth? Feet	Chipped Bentonite
	Chipper Denomic
(7) Sealing Material Used	From (Ft.) To (Ft.) Mix Ratio or Mud Weight
ocamie ivactiai Osta	rrom (r.) 10 (r.)
Bentonite Chips	Surface 34.0 1 Bag
(9) Comments	
(8) Comments	
(9) Name of Person or Firm Doing Sealing Work	(10) FOR DNR OR COUNTY USE ONLY
- "	
Boart Longyear Company	Date Received/Inspected District/County
Signature of Person Doing Work Date Signed	
12-9-04	Reviewer/Inspector Complying Work
Street or Route Telephone Number	Noncomplying Work
101 Alderson Street 715-359-7090	Follow-up Necessary
City, State, Zip Code	
Schofield WI 54476	

## SOIL BORING LOG INFORMATION

Form 4400-122 Rev. 5-97

•			Ro	ute To:		/Wastewater   on/Redevelopment	3	Waste Other	_	gement								
						•									Pag	ge 1	of	4
	y/Proje							License	/Permi	t/Monite	oring N	umber		Boring		er		
	ocqua Drille			me and n	ame of crew	chief)		Date Dr	illing S	Started		Da	te Drill	ing Cor	npleted	B-3		ing Method
									_					-	_		&	6" Mud
Boa	rt Lor iique W	igyea	ar - P.	Dickins	son Well ID No.	Common Well h	Jome	Final St		2/200		Curfoo	e Eleva	1/12/	2004	ĪD.		Diameter
WIUI	uque w	en N	Э.	DINK	WEII ID NO.	B-8A	vame	rmai Si		aler Lev MSL	/ei	Suriac		non et MS	L	ВС		Inches
_		on or	Local G	rid Origi	n (Chec	k if estimated:	)	١.,		0	1	11	Local (			(If appl		
State !				4		S/C/N		Lat.		0				т.				□ E Feet □ W
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San	nple		1											Soil	Prop	erties		
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'pe	Att ered	Cour	In F			Geologic Origin For ach Major Unit			S	.2	E	B	ressir	ıre 1t		ity		ents
Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth In Feet		a.	ach Major Onit			uscs	Graphic Log	Well Diagram	PID/FID	Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
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hereb	y certif	y that	the info	rmation o	on this form is	s true and correct to	the bes	t of my l	cnowle	dge.								

Firm Boart Longyear Company 101 Alderson Street Schofield, WI 54476

Tel: 715-359-7090 Fax: 715-355-5715

This form is authorized by Chapters 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats. Completions of this 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 be used for any other purpose. NOTE: See instructions for more information, including where the completed form should be sent.

Sample   Soil/Rock Description   And Geologic Origin For Each Major Unit   Soil Properties   Soil Pr	of 4
And Geologic Origin For Each Major Unit  S S N D 24 28 - 15 - 14 - 14 - 14 - 17 - 17 - 17 - 17 - 17	
3 SS	P 200 RQD/ Comments
-22 -23 -24 -24 -25 -26 -27 -28 -29 -30 -31	P 2 RQ CO

Boring	, Numl	er	B-8.	Use only as an attachment to Form 4400-1	22.								ige 3	of	4
Sam								T			Soi	l Prop	erties		
Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	uscs	Graphic	Well	Diagram	PID/FID	Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
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# **SOIL BORING LOG INFORMATION SUPPLEMENT** Form 4400-122A Rev. 5-97

Boring Nun	iber	B-8	A Use only as an attachment to Form 4400-	122.	т			<del>,                                     </del>				of	4
Sample	-							ļ	Soil	Prop	erties		
Number and Type Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	uscs	Graphic Log	Well Diagram	PID/FID	Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
		-53 -54 -55 -56 -57 -58 -60 -61 -62	EOB 62.0' Well Set 60.0'										

State of Wisconsin Department of Natural Resources Route To:	Watershed/W Remediation/l	astewater   Redevelopment	Waste Man	4504410411	MONITORING WELL CONST Form 4400-113A Rev. 6		CTION
Facility/Project Name	Local Grid Lo	cation of Well			Well Name		
Minocqua Cleaners	ĺ	ft. 🗆 N.	ft.	□ E. □ W	B-8A		
Minocqua Cleaners Facility License, Permit or Monitoring No.	Grid Origin Lo	ocation "	(Check i	f estimated: [])	Wis. Unique Well No DNR Wel	Nur	nber
Facility ID	i				Date Well Installed		
				II. E. 3/C/N			
3410-2190 Type of Well	Section Locati	on of Waste/Sou	irce	FJE :	Well Installed By: (Person's Nat	ne ar	nd Firm
••	1/4 of_	1/4 of Sec.	, T	N, R 🗆 W	Weli Installed By: (Person's Nat G. Jones		
Well Code 12/pz Distance Well Is From Waste/Source	Troomnon or in	OII INDIGENO DO 11	(C)(C) DO GEOO		G. Jones		
Doundom	u 🗆 Upgrad	gradient n 🗆	Sidegradient		Boart Longyear		
A. Protective pipe, top elevation				Cap and lock?	<u> </u>	=== es □	No
	ft. MSL	11		Protective cover	pipe:		1.0 in.
<u> </u>	ئ ft. MSL	1.1		b. Length:	,	$\frac{1}{7}$	7.0 ft.
		<u> </u>	1	c. Material:	Stee		0 4
D. Surface seal, bottom ft. MSI	or1.0_ ft.				Othe	r 🗆	
12. USC classification of soil near screen:			X	d. Additional pro			No
GP GMG GC GWG S' SMG SC GML MHG C				if yes, describe	D		2.0
Bedrock□	EG CITE		□ \ \ 3.	Surface seal:	Bentonit Concret		
13. Sieve analysis attached? ☐ Yes	□ No				Othe		
			\ \ <sub>4</sub>	Material between	well casing and protective pipe:	د.ا ۱	
14. Drilling method used: Rotar Hollow Stem Auge	•	l	· 🕅	iviatoriai between	Bentonit	e 🗆	3.0
Mud Rotary Otho	er 🛛 💮				Sand Other		
Ville			<b>—</b>	Annular space se			
15. Drilling fluid used: Water □ 0 2 A	ir □01				at. a. Grandial Bentonit and weight. Bentonite-sand slurr		
Drilling Mud □ 0 3 Nor					and weight Bentonite slurr		
		ĺ 👹			nite Bentonite-cement grou		
16. Drilling additives used? ☐ Yes	⊠ No		IXXI		volume added for any of the above		
			∭ f	. How installed	: Tremi	e 🗆	0.1
Describe					Tremie pumpe	d⊠	02
17. Source of water (attach analysis):					Gravit	y 🛘	0.8
		[ <b>※</b>	6.	Bentonite seal:	a. Bentonite granule	s 🛛	3 3
		' <b></b>			3/8 in. □ 1/2 in. Bentonite pellet		
E. Bentonite seal, top ft. MSL	or <u>46.0</u>				Othe		
F. Fine sand, top ft. MSL	or 51.0	ft.	7.	Fine sand materia	al: Manufacturer, product name a #7 Badger	.nd m	nesh siz
	V2	/ 🖓		b. Volume added	ft³		<b>2</b>
G. Filter pack, top ft. MSL	or53.0		.8.	Filter pack mater	ial: Manufacturer, product name	and 1	mesh si
				a	#40 Badger		
H. Screen joint, top ft. MSL	or <u>55.0</u>	ft. —		b. Volume added	ft <sup>3</sup>		
			] / 9.	Well casing:	Flush threaded PVC schedule 4	0 🗆	23
I. Well bottom ft. MSL	ог60.0	n	31		Flush threaded PVC schedule 8	) 🛭	24
			10.		Othe	r 🗆	
J. Filter pack, bottom ft. MSL	or <u>62.0</u>	ft.	]10.	Screen material:	PVC		
	^			a. Screen Type:	Factory cu		
K. Borehole, bottom ft. MSL	or <u>62.0</u>	ft			Continuous slo		2000 - Hall
			<b>※</b>		Othe	r 🗆	
L. Borehole, diameter 6.0 in.		V//		b. Manufacturer	Boart Longyear		10
				c. Slot size:			10 in.
M. O.D. well casing $\frac{2.37}{}$ in.				d. Slotted length			5.0 ft.
104			`11.	Backfill material	• /		14
N. I.D. well casing 1.94 in.					Othe	r 🗆	
I hereby certify that the information on this	form is true and	Correct to the be	est of my knowle	dge	<u> </u>		
Signatur			ngyear Compa		Tel: 71:		
1 1 W	j	Dom: DO	научи сошра	ury	101. /1.	ノーコンフ	/- I U J U

Please complete both Forms 4400-113A and 4400-113B and return 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 condut involved. Personnally 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.

City/State/Zip:

# MONITORING WELL DEVELOPMENT Form 4400-113B Rev. 6-97

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emediation/Redevel		Ott	ier 🗀	1277 17	<del></del>		
	County			Well		0.4	
				<u> </u>			
umber	1 .	W	s. Unique Well Nu	mber	DNR Weil	I Number	
	1 44						<del></del>
□ Ye:	; ⊠ No			Befor	e Development	After Deve	lopment
		11.	Depth to Water				
			(from top of	а	20.65 ft		21.50 ft.
□ 4	1		well casing)				
□ 6	1						
□ 4	2		Date	b.	11/16/2004	11/16	/2004
□ 6	2	1					
mped □ 7	0						
□ 2	0		Time	c.	08:00 am	09:3	30 am
	0						
□ 5	1	12.	Sediment in well		inches	•	inches
			bottom				
🛛		13.	Water clarity			Clear ⊠ 2	-
						Turbid □ 2	5
	90 min.			(Desci	ribe)	(Describe)	
				Bro	wn Cloudy	Clear	
) 6	2.8 ft.						
1	.94 in.						
1							
, 3	7.3 cal						
_	7.5 gui.	rean	i in ie animin – enia		ad d 11 do at as 1	lidto fooilie.	
		rm	in it arining naid:	s were us	ed and well is at sor	nd waste racinty	
11	U.U gal.	1,4	T-+-1		A		
		14.	<del>-</del>		mg/I		mg/l
	gal.						
<del></del>	<del></del>	15.	COD		mg/l		mg/l
		16.	Well developed by	: Person	's Name and Firm		
☐ Yes	□ No		G Ione	c			
			Boart L	ongyea	r		
t:							
E.							
	rs	County   County Code   44	County   C	County   Code   Wis. Unique Well Nu   44   Wis	County   Code   Wis. Unique Well Number   A4   Wis. Unique Well Number   Before   11. Depth to Water (from top of well casing)   A 1	County   Code   Wis. Unique Well Number   DNR Well	County   C

Firm:

Boart Longyear Company

# MONITORING WELL DEVELOPMENT Form 4400-113B Rev. 6-97

Route To:	Watershed/Wastewate		Waste Management				
Facility/Project Name	Remediation/Redevel	County	Other 🗌	Weli Name		<del></del>	
	1040	County	Oneida	well Name		-13	
Minocqua Clear Facility License, Permit or Monitoring	Number	County Code	Oneida   Wis. Unique Well Nu	mher	DNR Well		
		44					
1. Can this well be purged dry?	☐ Yes	⊠ No	11. Depth to Water	Before De	velopment	After Dev	elopment
Well development method:     surged with bailer and bailed     surged with bailer and pumped	□ 4 □ 6		(from top of well casing)	a.	12.92 ft.		18.90 ft.
surged with block and bailed surged with block and pumped	□ 4 ⊠ 6	2 2	Date	ъ. 11/0	8/2004	11/0	8/2004
surged with block, bailed, and p compressed air bailed only pumped only	Dumped ☐ 7 ☐ 2 ☐ 1 ☐ 5	0	Time	c. 11	:00 am	03:	00 pm
pumped slowly other See "Comments"	□ 5 □ 5 □ ■	0	bottom  13. Water clarity		1 0 1 5		2 0 2 5
3. Time spent developing well	5	720 min.		(Describe)  Cloudy E		(Describe)  Clear	
4. Depth of well (from top of well casi		7.7 ft.					
5. Inside diameter of well	4	.00 in.					
<ol> <li>Volume of water in filter pack and w casing</li> </ol>	vell 1	3.1 gal.	Fill in if drilling fluids	were used and	well is at soli	id waste facilit	v·
7. Volume of water removed from well	273	0.0 gal.	14. Total suspended	, ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	mg/l		mg/l
8. Volume of water added (if any)		gal.	solids				
9. Source of water added			15. COD		mg/l		mg/l
		<u>_</u>	16. Well developed by	: Person's Nam	e and Firm		
10. Analysis performed on water added	i? 🗆 Yes	□ No	P. Dick	inson			
(If yes, attach results)			Boart L	ongyear			
17. Additional comments on developm Development Times Also II Also Includes: Added 1.5 ( Pumped to develop well - 3	nclude: 11/9/04 S Gal. LBA. Surged	1 hour. Bail	M.; End: 3:00 P.M. led out sand. Added	. Description			hod
Facility Address or Owner/Responsible	Party Address		I hereby certify that the knowledge.	e above inform	ation is true a	nd correct to the	ne best of my
Name:				KITI	M		
Firm:	-		Signature: Print Name: ROA	I THAL	PCKFK	2	
				Longyear C	ompany		
					<u>-</u>		

### SOIL BORING LOG INFORMATION

Form 4400-122 Rev. 5-97

Route To: Watershed/Wastewater Remediation/Redevelopment									Waste Management  Other											
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	ty/Proje								I	icense	/Permi	t/Moni	toring 1	Vumb	ег .	Borin	g Numl		124	
	nocqua g Drille			me and n	ame of	crew ch	ief)		- Ir	Date Di	rilling S	Started			Date Dril	ling Co	mnlete		13A	lina Metsod
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Boa	art Lo	ngyea	r - P. ]	Dickins								1/200				11/11	/2004			otary
WI U	nique W	/eli No		DNR V	Well ID	No.	1	n Well Nan	ne F	inal St	atic W		vel	Surf	ace Elev			В		Diameter
Parin	a I acat	ion or I	oool G	rid Origi		(Chaole		3-13A ed: □ )		•	Feet	MSL		<u> </u>		et MS Grid Lo		//f anni		Inches
	g Locat. Plane	ion or i	Jocai G	ata Origi	i i	(CHeck		си. [] ) /С/N		Lat.		0		•	Local	GNG L			.icabie)	•
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Facili	ty ID				County	<del>,</del>		- <b>,</b>	Co	unty C		Civil	Town/(	City/ c	r Village			•		
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Sar	nple														ļ	Soi	l Prop	erties		
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Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth In Feet			Eac	h Major (	J <b>nit</b>			SCS	Graphic Log	Well Diagram	PID/FID	Compressive Strength	Moisture Content	Liquid	Plasticity Index	8	RQD/ Comments
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Signat	ure	/	V					Firm B	oart i	Long lerson	year ( Street	Comp Schofie	any eld, WI	5447	6					715-359-7090 715 <b>-</b> 355-5715

This form is authorized by Chapters 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats. Completions of this 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 be used for any other purpose. NOTE: See instructions for more information, including where the completed form should be sent.

	g Numt	er	B-1	3A	Use only	as an attac	hment t	to Form 4	1400-1	22.				<del> </del>		Pa	ge 2	of	4
San	ple													ļ	Soil	Prop	erties		
Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth In Feet		And Geo	ck Descrip logic Origi Major Uni	in For			uscs	Graphic Log	Well Diagram	PID/FID	Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
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Boring Number	B-1	3A Use only as an attachment to Form 440	0-122.							ge 3	of	4
Sample								Soil	Prope	erties		
Number and Type Length Att. & Recovered (in) Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	uscs	Graphic Log	Well Diagram	PID/FID	Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
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Boring	g Numb	ег	B-13	3A Use only as an attachment to Form 4400-	122.							ge 4	of	4
San										Soil	Prop	erties		
Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
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State of Wisconsin								
Department of Natural Resources Route To:	Watershed/Waste Remediation/Red	evelopment 🗌	Waste Man Other □		MONITORING WEI Form 4400-113A	LL CONSTR Rev. 6-9		TION
Facility/Project Name	Local Grid Locati	on of Well			Well Name			
Minocqua Cleaners	ft	: :: S	ft.	5 w	B-1	3A		
Facility License, Permit or Monitoring No.	Grid Origin Locat	ion ' Lon	(Check i	if estimated: [])	Wis. Unique Well No	DNR Well 1	Vum	iber
Facility ID	1				Date Well Installed	·		
•	St. Plane Section Location			_ II. E. S/C/N	}	/2004		
Type of Well	Jocetton Location	or waster source		□E	Well Installed By: (Po	erson's Nam	e an	d Firm
Well Code 12/pz	1/4 of	_ 1/4 of Sec	T	N, R W	Well Installed By: (Po	kinson		
Distance Well Is From Waste/Source	Location of Well u Dpgradien		e/Source degradient		1. Dici	Milliour		
Boundary ft.					_ Boart Le	ongyear		
A. Protective pipe, top elevation	fi MSI —	<u> </u>	-1.	Cap and lock?		⊠ Yes		No
				Protective cover	pipe:			
B. Well casing, top elevation	ft. MSL -		'\	a. Inside diamete			4.	<u>.0</u> in.
C. Land surface elevation 1553.	9/ ft. MSL <			b. Length:		_	7.	<u>0</u> ft.
			Seattle-Atte	c. Material:		Steel	$\boxtimes$	0 4
D. Surface seal, bottom ft. MSI	orft.		No. 200.21 Van 200.21					
12. USC classification of soil near screen:	-	**************************************	A CANCAR		tection?			No
GP GMC GCC GWC S		<u> </u>		If yes, describe	) <u> </u>			
SM SC ML MHC C	L CHC	<b>**</b>	3.	Surface seal:		Bentonite		
1	□No					Concrete	_	
13. Sieve analysis attached? ☐ Yes	ł		\.				Ļ	
14. Drilling method used: Rotar	•		`4.	Material between	well casing and protec		_	
Hollow Stem Aug					Cond	Bentonite		
Mud Rotary Other	er 🖾 🏯 📗				Sand	Other	M	
			5.	Annular space se	al: a. Granula	r Bentonite		3 3
15. Drilling fluid used: Water 02 A	1				nud weight . Bentonite-			
Drilling Mud □ 0 3 Nor	ie 1199				nud weight Bent			
16. Drilling additives used? ☐ Yes	⊠No				nite Bentonite-ce			50
10. Dinning additives deci:	23110		×		volume added for any			
Describe			f	How installed		Tremie	_	-
17. Source of water (attach analysis):					Tren	nie pumped		
17. Boules of Mater (action analysis).			3			Gravity		0.8
		₩ ₩	<sub>,</sub> 6.	Bentonite seal:		ite granules		
			/		3/8 in. □ 1/2 in. Bento			
E. Bentonite seal, top ft. MSL	or <u>45.5</u> ft.	、 ※ ※		C		Other		
			<b>)</b> / / <sup>7.</sup>	Fine sand materia	al: Manufacturer, prod	uct name and	d me	esh siz
F. Fine sand, top ft. MSL	or51.5 ft. \			a	#7 Badger			
		\ \\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	¥ /	b. Volume added		,		
G. Filter pack, top ft. MSL	or $_{-}$ 52.5 ft. >			Filter pack mater	ial: Manufacturer, pro-	duct name ar	nd n	nesh si
			1 /	a	#40 Badger		_	
H. Screen joint, top ft. MSL	or <u>55.0</u> ft	— <del>           </del>		b. Volume added	ft	ļ		
			9.	Well casing:	Flush threaded PVC s	schedule 40		23
I. Well bottom ft. MSL	or <u>60.0</u> ft. \				Flush threaded PVC s			Same and the same
-						Other		
J. Filter pack, bottom ft. MSL	or <u>61.0</u> ft. ~	<u>/                                 </u>	10.	Screen material:	PVC			
		7/////		a. Screen Type:		Factory cut	X	11
K. Borehole, bottom ft. MSL	or <u>61.0</u> ft. >	\ \\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	1		Cont	tinuous slot		0.1
						Other		
L. Borehole, diameter in.		V/////	<u> </u>	b. Manufacturer	Boart Longyeau			
				c. Slot size:				<u>0</u> in.
M. O.D. well casing 2.37 in.				d. Slotted length			<u>5</u> .	.0_ ft.
<del></del> "			<u>`</u> 11.	Backfill material	(below filter pack):	None		
N. I.D. well casing 1.94 in.					<u> </u>	Other		
I hereby certify that the information on this.	form is true and co	rrect to the best of	f my knowle	dge.				
Signatur				inv		Tel: 715-	3 59.	7090

101 Alderson Street Schofield, WI 54476

Fax: 715-357-5715

Please complete both Forms 4400-113A and 4400-113B and return 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 condut involved. Personnally 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.

# MONITORING WELL DEVELOPMENT Form 4400-113B Rev. 6-97

	I/Wastewat		Waste Management			
	on/Redevel		Other 🗌	1557 10 N.T.		
Facility/Project Name		County		Well Nam		124
Minocqua Cleaners Facility License, Permit or Monitoring Number		County Code	Oneida Wis. Unique Well Nu		DNR Well	13A
Facility License, Permit of Monitoring Number		1 -	wis. Unique wen Nu	imber	DNK Weii	Number
		44	<del> </del> -			
1. Can this well be purged dry?	☐ Yes	s ⊠ No	11. Depth to Water	Before D	evelopment	After Development
2. Well development method:			(from top of	a.	10.98 ft.	10.98 ft.
surged with bailer and bailed	□ 4	1	well casing)	u.	10170 10	10170 1.
surged with bailer and pumped	⊠ 6	1				
surged with block and bailed	□ 4	2	Date	b. 11/	12/2004	11/12/2004
surged with block and pumped	□ 6	2				
surged with block, bailed, and pumped	7	0.				
compressed air	□ 2	0	Time	c. 0	3:00 pm	05:00 pm
bailed only		0			•	•
pumped only	□ 5	1	12. Sediment in well		inches	inches
pumped slowly	☐ 5	0	bottom			
other			13. Water clarity	Clear □ Turbid ⊠		Clear ⊠ 20 Turbid □ 25
3. Time spent developing well		120 min.		(Describe)		(Describe)
3. Time spone developing wen	•	120 11111.		Muddy	Brown	Clear
4. Depth of well (from top of well casing)	6	2.4 ft.			<u> </u>	•
	_					
5. Inside diameter of well	1	.94 in.				
	_		and the same of th		*****	
6. Volume of water in filter pack and well						,11, , 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,
casing	4	5.5 gal.				
			Fill in if drilling fluids	s were used ar	nd well is at sol	id waste facility:
7. Volume of water removed from well	10	0.0 gal.				•
7. Volume of water removed from wen	10	0.0 gai.	14. Total suspended		mg/l	mg/l
8. Volume of water added (if any)		gal.	solids		****	
8. Volume of water added (if any)		gai.				
9. Source of water added			15. COD		mg/l	mg/l
7. Source of water added						
			16. Well developed by	: Person's Na	me and Firm	
10. Analysis performed on water added?	☐ Yes	□ No				
(If yes, attach results)			J. Flam	inio		
(-2 ),,			Boart L	ongyear		
17 Additional comments on development:	··-		1			
17. Additional comments on development:						
Facility Address or Owner/Responsible Party Add	ress		I hereby certify that the knowledge.	ne above infor	mation is true a	nd correct to the best of my
Name:			idiomiouge.	Sa		
Firm:			Signature:	M-7	un	
				1 THAI	ACKER	•
Street:			Print Name: \(\sum_{\infty}\)	<u> </u>	<i>4 10104</i>	
City/State/Zip:			Firm: Boart	Longyear	Company	

### SOIL BORING LOG INFORMATION

Fax: 715-355-5715

Form 4400-122 Rev. 5-97

			Ro	ute To:	Watershed/		vater   velopment		Waste Other	Mana,	gemen	t [								
					Remediane	III Rede	velopment 🖂		Outer	Ч							D.	age 1	of	5
Facili	ty/Proje	ct Nan	ne	····		<del></del>			License	/Permi	t/Mon	ito	ring N	umbe	<u> </u>	Borin	g Num		01	<u> </u>
	nocqua															ļ			13B	
Borin	g Drille	d By (	Firm na	me and n	ame of crew of	hief)			Date Di	rilling S	Started	i		E	ate Dr	illing Co	omplete	d		hina Method
Bo	art Lor	igvea	ır - P.	Dickins	son					11/3	8/200	)4				11/8	/2004			6" Mud otary
	nique W				Well ID No.	Con	mon Well Nam	e	Final St				el .	Surfa	ice Ele			В		Diameter
<u> </u>							B-13B			Feet	MSL	,				eet M				Inches
		on or	Local G	rid Origi	in (Chec	k if esti	mated: [] )		Lat.		٥		•	(1	Loca	l Grid L			licable)	
State	Plane 1/4	of	1	/4 of Sec	ction .	Т	S/C/N N, R		Lon	σ.	0			п		Fe	et 🔲			□ E Feet □ W
Facili	ly ID				County			C	ounty C		Civil	To	own/C	ity/ o	r Villaş					
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Sar	nple															Soi	1 Prop	erties	1	!
	& (ii)	ts:	<del> </del>				Description								စ္					
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Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth In Feet		E	ach Ma	jor Unit			SC	Graphic 1 of	20	Well Diagram	PID/FID	Compressive	Moisture Content	Liquid	Plasticity Index	P 200	RQD/ Comments
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Signat					on this torm is	uut dii	Firm Bo					101	ns/	···					Tal	715-359-7090
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This form is authorized by Chapters 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats. Completions of this 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 be used for any other purpose. NOTE: See instructions for more information, including where the completed form should be sent.

101 Alderson Street Schofield, WI 54476

Borin	g Numl	ег	B-1	3B Use only as an attachment to Form 4400-1	22.	<u></u>						ge 2	of	5
San	nple									Soi	Prop	erties		
Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	nscs	Graphic	Well Diagram	PID/FID	Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
6 SS	24 3	6 4 3 3	13		Ω		M C	ď	S	W	7	<u>q</u>	Ā	
7 SS	24 3	7 4 1 2	-23 -24 -25 -26 -27 -28 -30 -31							W	A CONTRACTOR OF THE PROPERTY O			

Borin	g Numl	ег	B-1	3B Use only as an attachment to Form 4400-1	22.							ge 3	of	5
San	nple									Soil	Prop	erties		
Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	uscs	Graphic	Well Diagram	PID/FID	Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
8 SS	24	8 5 7	-33 -34 -35 -36 -37 -38 -40 -41 -42 -43							W				
ss V	24	9 7 10 12	-44 -45 -46 -47 -48 -49 -50							W				

Borin	g Numl	er	B-1	3B Use only as an attachment to Form 4400-1	22.					<u> </u>		ge 4	of	5
San	nple									Soil	Prop	erties		
Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	nscs	Graphic Log	Well Diagram	PID/FID	Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
10 SS	24 14	14 13 21 25	-53 -54 -55 -56 -57 -58 -60 -61							W				
11 SS	24 14	10 8 16 10	-63 -64 -65 -66 -67 -68 -70							W			_ :	

Borin	g Numl	рег	B-1	3B Use only as an attachment to Form 4400-	122.							ge 5	of	5
San	nple									Soil	Prop	erties		
Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
12 SS	24 14	9 14 14 17	-73 -74 -75 -76 -77 -78 -79 -80							W				
13 SS	24 10	24 19 23 25		EOB 91.0' Well Set 90.0'						w				

State of Wisconsin Department of Natural Resources Route To:	Watershed/Wastewater Remediation/Redevelo		aste Management ☐ her ☐	MONITORING WELL Form 4400-113A	L CONSTRUCTION Rev. 6-97
Facility/Project Name	Local Grid Location of	f Well		Well Name	
Minocqua Cleaners	1 - 1	N.	n □E.	R-1	3B
Facility License, Permit or Monitoring No.	Grid Origin Location	5.	ft. DE. (Check if estimated: D)	Wis. Unique Well Noll	ONR Well Number
<b>3</b>	Lat ° '	" Long		1	
Facility ID				TS 4 YYY 21 T 4 11 1	
3410-2190	St. Plane	_ ft. N,	ft. E. S/C/N	1	2004
Type of Well	Section Location of Wa		ПĒ	Well Installed By: (Pe	
Wall Code 12/mg	1/4 of 1/4 Location of Well Relat	of Sec, T	N, R ☐ ₩	7	
Well Code 12/pz Distance Well Is From Waste/Source	Location of Well Relat	ive to Waste/Sou	ırce	P. Dick	inson
Doundary	u □ Upgradient			Boart Lo	mavear
	d Downgradient		1. Cap and lock?	Boat Bo	⊠ Yes □ No
A. Protective pipe, top elevation		-	2. Protective cover	nin a	M Ies II NO
B. Well casing, top elevation 1596./6	11. MSL	+1			4.0_ in.
ICALI			a. Inside diamete	я.	
C. Land surface elevation	ft. MSL		b. Length:	•	
D. Surface seal, bottom ft. MSI	or 3.0 ft. 3.0		c. Material:		Steel ⊠ 04
			TO COVE of Additional and		
12. USC classification of soil near screen:			d. Additional pro	ofection? e:	☐ Yes ⊠ No
GP GMG GC GWG SY SM SC ML MHG C	WO SPO (		if yes, describ		
Bedrock□	Lu Chu		3. Surface seal:		Bentonite 🖾 3 0
	m Nr.				Concrete   0 1
13. Sieve analysis attached? ☐ Yes	1		<b>\</b>		
14. Drilling method used: Rotar			`4. Material between	n well casing and protect	
Hollow Stem Auge	er ⊠ 4 1			0 1	Bentonite   30
Mud Rotary Othe	r ⊠ 🌉 📗			Sand	Other 🛛 🚉
		₩ ₩	5. Annular space se	eal; a. Granular	Bentonite 🔲 33
15. Drilling fluid used: Water □02 A				nud weight . Bentonite-s	
Drilling Mud □ 0 3 Nor	ie □99			nud weight Bento	
				nite Bentonite-cei	
16. Drilling additives used? ☐ Yes	⊠ No			volume added for any o	
			f. How installed	-	Tremie 🗆 01
Describe				Trem	ie pumped 🖾 02
17. Source of water (attach analysis):					Gravity □ 08
			6. Bentonite seal:	a Rentonit	te granules  33
			,	3/8 in. □ 1/2 in. Benton	
E. Bentonite seal, top ft. MSL	or76.0ft.			5/6 III. 🗀 1/2 III. DOMOI	
E. Bentonite seal, top ft. MSL	orn.		/	al: Manufacturer, produ	
P.P	. 210 .			#7 Badger	of Hame and Mosti siz
F. Fine sand, top ft. MSL	or n.	\ <b>Ø Ø</b> /			
	92.0	\ M M /	<i>?</i> '	1 ft <sup>3</sup>	r a company and a
G. Filter pack, top ft. MSL	or <del>03.0</del> ft.	相材	· ·	rial: Manufacturer, prod	
	050		/ a		
H. Screen joint, top ft. MSL	or85.0 ft	\ II	b. Volume added		
· ·	24.5		<ol><li>Well casing:</li></ol>	Flush threaded PVC se	
I. Well bottom ft. MSL	or90.0 ft. <			Flush threaded PVC so	
					Other 🖂 🚉
J. Filter pack, bottom ft. MSL	or 91.0 ft.		10. Screen material:	PVC	
•		1111111	a. Screen Type:	I	Factory cut 🖾 11
K. Borehole, bottom ft. MSL	or 91.0 ft.				inuous slot 🔲 0 1
					Other 🗆 💹
L. Borehole, diameter 6.0 in.			b. Manufacturer	× . *	
Missing Manager		\	c. Slot size:		
M. O.D. well casing 2.37 in.		`	d. Slotted length	ı:	
W. O.D. Worl casing III.			_	(below filter pack):	None ⊠ 14
N. I.D. well casing 1.94 in.			Duoniii iliatoila	Costo ii ziitor paonj.	Other 🗆 🍱
N. I.D. well casing 1.94 in.					
TI I TO I LATE THE OF THE STATE OF	C	4. 4b. b4. C	· les audad		
I hereby certify that the information on this	12:				
Signatur		oart Longyear			Tel: 715-359-7090
	101	1 Alderson Street	Schofield, WI 54476		Fax: 715-355-5715

101 Alderson Street Schofield, WI 54476

Fax: 715-355-571

Please complete both Forms 4400-113B and 4400-113B and return 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 condut involved. Personnally 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.

L	DEV	ELUPIMEN.	Ł
	Pev	6.07	

	Vatershed/Wastewate		Waste Management ☐ Other ☐				
Facility/Project Name	emediation/Redevel	County	Other 🗆	Well Nar	ne.		
Minocqua Cleane	ra	Country	Oneida	,, our rank		13B	
Facility License, Permit or Monitoring N	umber	County Code	Wis. Unique Well Nu	mber	DNR Well		
		44					
1. Can this well be purged dry?	☐ Yes	⊠ No	11. Depth to Water	Before D	evelopment	After De	velopment
2. Well development method:			(from top of	a,	14.97 ft.		14.97 ft.
surged with bailer and bailed	□ 4	1	well casing)	a,	14.57 10.		14.77 16,
surged with bailer and pumped	⊠ 6						
surged with block and bailed	□ 4:		Date	b. 11 <i>/</i>	/12/2004	11/	12/2004
surged with block and pumped	□ 6:	2					
surged with block, bailed, and pur	mped 🗆 7	0	•				
compressed air	□ 20	0	Time	c. 1	2:00 pm	0:	3:00 pm
bailed only	□ 10	0			•		-
pumped only	□ 5	1	12. Sediment in well		inches		inches
pumped slowly	□ 50		bottom				
other	🛚 💆		13. Water clarity	Clear ☐ Turbid ☑		Clear ⊠ Turbid □	2 0 2 5
3. Time spent developing well	1	80 min.		(Describe) Slightly	y Muddy	(Describe) Clear	
4. Depth of well (from top of well casing	) 93	3.4 ft.					
5. Inside diameter of well	1.	.94 in.					
6. Volume of water in filter pack and wel		~ 4					
casing	69	9.4 gal.					
			Fill in if drilling fluids	s were used a	nd well is at soli	id waste facil	ity:
7. Volume of water removed from well	110	0.0 gal.					
			14. Total suspended		mg/l		mg/l
8. Volume of water added (if any)		gal.	solids				
9. Source of water added			15. COD		mg/l		mg/l
			16. Well developed by	: Person's Na	ame and Firm		
10. Analysis performed on water added?	☐ Yes	□ No	J. Flami				
(If yes, attach results)							
			Boart L	ongyear			
17. Additional comments on developmen	t;						
Facility Address or Owner/Responsible P	arty Address		T				
active Address of Owner/Responsible 1	arty Address		I hereby certify that th	e above infor	mation is true a	nd correct to	the best of my
Name:			knowledge.				
				M -	T. I.A.		
Firm:			Signature:	1-1			<del></del>
			RAN	THAIL	ACKER		
Street:	<del></del>		Print Name: <u>ACM</u>		Comment		<del></del>
City/State/Zip:	<del></del>	<del></del>	Firm: Boart	Longyear	<u>company</u>		

Route To:

Watershed/Wastewater

# **MONITORING WELL DEVELOPMENT** Form 4400-113B Rev. 6-97

Remediati	on/Redevel	opment 🗌	Other					
Facility/Project Name	.,	County	*****	Well	Name			
Minocqua Cleaners			Oneida				W-5	
Facility License, Permit or Monitoring Number		County Code 44	Wis. Unique Well Nu	mber		DNR Well	Number	
Can this well be purged dry?	☐ Yes			Befor	re Deve	lonment	After De	evelopment
1. Cut this work to purged dry:	L 103	<b>2</b> 10	11. Depth to Water		io Bovo	Topinone	THUI D	- VOIOPINOITE
2. Well development method:			(from top of	a.		9.30 ft.		9.30 ft.
surged with bailer and bailed	□ 4	1	well casing)					
surged with bailer and pumped	□ 6	1						
surged with block and bailed	□ 4		Date	b.	12/07/	2004	12/	07/2004
surged with block and pumped	⊠ 6							
surged with block, bailed, and pumped						•		<b>7.00</b>
compressed air	□ 2 -	-	Time	C.	12:30	) pm	0	5:00 pm
bailed only			10.01					
pumped only	□ 5	.*	12. Sediment in well bottom			inches		inches
pumped slowly	5 		13. Water clarity	Class	. 🗆 .	٥	Class M	2.0
other	_ 🛭 🖺		15. Water clarity	Clear	· □ l id 🖾 l		Clear ⊠ Turbid □	20
	,			(Desc			(Describe)	23
3. Time spent developing well	=	375 min.		,	•		•	
4 Double of well (from ton of well assisted)	4	0.4 ft.		_1 til	rbid Bro	own	Clear	<del></del>
4. Depth of well (from top of well casing)	4	U.4 II.					ī	
5. Inside diameter of well	8	.00 in.						
6. Waluma afavotas in filter week and well						<del></del>		
Volume of water in filter pack and well casing	2.	7.5 gal.						
	_		Fill in if drilling fluids	5 13/PTP 116	ed and w	ell is at sol	id waste faci	litse
7. Volume of water removed from well	200	0.0 gal.	I in in it writing have	s were us	oca ana w	cii is at soi	id wasto idoi	iny.
7. Volume of water removed from wen	200	O.O gai.	14. Total suspended			mg/l		mg/l
8. Volume of water added (if any)		gal.	solids					
o. Formite of white habbe (if may)		<b>8</b>						
9. Source of water added		<del>_</del>	15. COD			mg/l		mg/l
			16. Well developed by	: Person	ı's Name	and Firm		
10. Analysis performed on water added?	☐ Yes	□ No						
(If yes, attach results)			R. Radi	(e				
			Boart L	ongyea	ar			
17. Additional comments on development:								
Development Times Also Include:			A.M., End: 1:30 P.	.M. Sa	nd at 29	9.2'. Bail	led 1/2 of	drum of
sand & gravel out after pumping san	d at 33.0'	•						
Facility Address or Owner/Responsible Party Add	ress		I hereby certify that th	ne above	informati	on is true a	and correct to	the best of my
			knowledge.	10 400 10		011 15 11 11 11		,
Name:			4	, ,	*			
Firm:			Signature:		TU			
Street:			Print Name: FOX	1/r	2010	ker		
City/State/Zip:				Longy	ear Con	npanv		
Спуючаю/гір.			Pini: Bout	<u>~0115)</u>	- COI			

NOTE: See instructions for more information including a list of county codes and well type codes.

Waste Management

## MONITORING WELL DEVELOPMENT Form 4400-113B Rev. 6-97

	rshed/Wastewate		Waste Management	]		
	diation/Redevel	-	Other 🗌			
Facility/Project Name		County		Well N		T. A
Minocqua Cleaners			Oneida			<u>W-2</u>
Facility License, Permit or Monitoring Numb	er 	County Code 44	Wis. Unique Well Nu	mber	DNR Well	Number
1. Can this well be purged dry?	☐ Yes	: ⊠ No	11. Depth to Water	Before	Development	After Development
Well development method:     surged with bailer and bailed	□ 4	1	(from top of well casing)	a.	14.30 ft.	14.30 ft.
surged with bailer and pumped surged with block and bailed	□ 6 □ 4	2	Date	b. 3	12/07/2004	12/07/2004
surged with block and pumped surged with block, bailed, and pumped compressed air	⊠ 6 d □ 7 □ 2	0	Time	c.	07:30 am	12:30 pm
bailed only pumped only	□ 1 □ 5		12. Sediment in well		inches	inches
pumped slowly other	□ 5 □ <u>□</u>		bottom 13. Water clarity	Clear Turbid	□ 10 ⊠ 15	Clear ⊠ 20 Turbid □ 25
3. Time spent developing well	1	300 min.		(Descril	_	(Describe) Clear
4. Depth of well (from top of well casing)	8	3.8 ft.				
5. Inside diameter of well	10	.00 in.				
6. Volume of water in filter pack and well casing	6	1.5 gal.				
7. Volume of water removed from well	200	0.0 gal.	Fill in if drilling fluid  14. Total suspended	s were use	d and well is at sol mg/l	id waste facility:
8. Volume of water added (if any)		gal.	solids		·	
9. Source of water added			15. COD		mg/l	mg/l
			16. Well developed by	: Person's	Name and Firm	
10. Analysis performed on water added? (If yes, attach results)	☐ Yes	□ No	R. Radl	кe		
(11) -0,			Boart L	ongyear	•	
17. Additional comments on development:  Development Times Also Includ A.M.; 12/10/04 Start: 1:40 P.M.,						A.M., End: 10:30
Facility Address or Owner/Responsible Party	Address			ne above ir	nformation is true a	and correct to the best of my
Name:	·····		knowledge.	· -		
Firm:			Signature:		, July	
Street:			Print Name:	$n \parallel r$	NOCKEL	
City/State/Zip:			Firm: Boart	Longye	ar Company	

APPENDIX B

**Pump Test Data** 

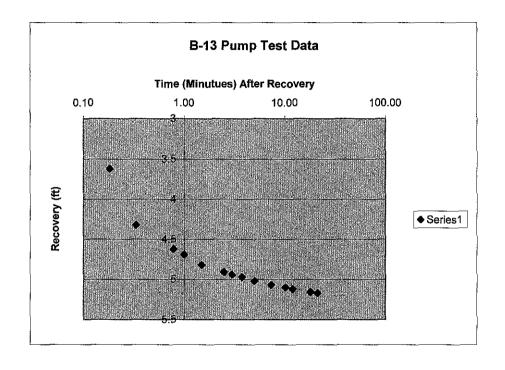
## B-13 Pump Test Recovery Data Former Minocqua Cleaners Minocqua, WI

Test Date:

11/9/2004

### **Pumping Well Data**

Recovery Time	Recovery Time	Drawdown	Recovery		
(Seconds)	(Minutes)	(Feet)	(Feet)		
0	0	5.36	0		
11	0.18	1.74	3.62		
20	0.33	1.04	4.32		
47	0.78	0.74	4.62		
60	1	0.67	4.69		
90	1.5	0.54	4.82		
150	2.5	0.45	4.91		
180	3	0.42	4.94		
225	3.75	0.39	4.97		
300	5	0.34	5.02		
440	7.33	0.29	5.07		
610	10.17	0.26	5.1		
720	12.00	0.24	5.12		
1080	18.00	0.2	5.16		
1270	21.17	0.19	5.17		



Formula

 $T = 264 * Q/^S$ 

Q = Pump Rate

^S = Change in Drawdown over one log cycle

Q = Average Pumping rate was 21.9 gpm

T = 264 \* 21.9 gpm/0.41ft

T = 14101.46 gpd/ft

 $^{S} = 0.41 \text{ ft}$ 

## APPENDIX C

**Laboratory Reports - Soil** 



1230 Lange Court Baraboo, WI 53913-3109 Phone: (800) 228-3012

Fax: (608) 356-2766 www.ctlaboratories.com

### **ANALYTICAL REPORT**

Page 1 of 12

MSA PROFESSIONAL SERVICES KEN GRADALL 1230 SOUTH BLVD BARABOO, WI 53913 Project Name: MINOQUA CLEANERS

Contract #: 1362 Project #: 213132 Folder #: 44141 Purchase Order #:

Arrival Temperature: See COC

Report Date: 11/17/2004 Date Received: 11/15/2004

Reprint Date:

CTI LAB#: 285763	Sample Description:	B-13B 5-7					Sampled:	11/8	3/2004 1500
Analyte	Result Units	LOD	LOQ	Dilution	Qualifier	Prep Date	Analysis Date	Analyst	: Method
Inorganic Results									
Solids, Percent	91.9 %	N/A	N/A	1.0	1		11/15/2004	CJB	EPA 5030A
Organic Results									
Acetone	<0.33 mg/kg	0.33	1.2	1.0	•	11/15/2004	11/16/2004	GRB	EPA 8260B
Benzene	<0.0054 mg/kg	0.0054	0.018	1.0	•	11/15/2004	11/16/2004	GRB	EPA 8260B
Bromobenzene	<0.014 mg/kg	0.014	0.048	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Bromochloromethane	<0.015 mg/kg	0.015	0.051	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Bromodichloromethane	<0.015 mg/kg	0.015	0.051	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Bromoform	<0.015 mg/kg	0.015	0.052	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Bromomethane	<0.024 mg/kg	0.024	0.082	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
2-Butanone	<0.23 mg/kg	0.23	0.74	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
n-Butylbenzene	<0.0087 mg/kg	0.0087	0.028	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
sec-Butylbenzene	<0.0076 mg/kg	0.0076	0.026	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
tert-Butylbenzene	<0.0087 mg/kg	0.0087	0.029	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Carbon disulfide	<0.032 mg/kg	0.032	0.11	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Carbon tetrachloride	<0.0098 mg/kg	0.0098	0.034	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Chlorobenzene	<0.013 mg/kg	0.013	0.045	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Dibromochloromethane	<0.0065 mg/kg	0.0065	0.023	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Chloroethane	<0.017 mg/kg	0.017	0.057	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Chloroform	<0.0098 mg/kg	0.0098	0.032	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Chloromethane	<0.012 mg/kg	0.012	0.039	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
2-Chlorotoluene	<0.0054 mg/kg	0.0054	0.018	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1-Chlorotoluene	<0.011 mg/kg	0.011	0.037	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,2-Dibromo-3-chloropropane	<0.015 mg/kg	0.015	0.050	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B

WI DNR Lab Certification Number: 157066030 DATCP Certification Number: 105-000289 LA NELAP Certification Number: 04091





MSA PROFESSIONAL SERVICES

Project Name: MINOQUA CLEANERS

Project #: 213132

Contract #: 1362 Folder #: 44,141

Page 2 of 12

CTI LAB#: 285763	Sample Description:	B-13B 5-7'					Sampled:	11/8	/2004	1500
Analyte	Result Units	LOD	LOQ	Dilution	Qualifier	Prep Date	Analysis Date	Analyst	Metho	od ·
1,2-Dibromoethane	<0.014 mg/kg	0.014	0.049	1.0		11/15/2004	11/16/2004	GRB	EPA 82	60B
Dibromomethane	<0.0098 mg/kg	0.0098	0.032	1.0		11/15/2004	11/16/2004	GRB	EPA 82	60B
1,2-Dichlorobenzene	<0.0054 mg/kg	0.0054	0.016	1.0		11/15/2004	11/16/2004	GRB	EPA 82	60B
1,3-Dichlorobenzene	<0.012 mg/kg	0.012	0.038	1.0		11/15/2004	11/16/2004	GRB	EPA 82	60B
1,4-Dichlorobenzene	<0.0098 mg/kg	0.0098	0.032	1.0		11/15/2004	11/16/2004	GRB	EPA 82	60B
Dichlorodifluoromethane	<0.014 mg/kg	0.014	0.045	1.0		11/15/2004	11/16/2004	GRB	EPA 82	60B
1,1-Dichloroethane	<0.014 mg/kg	0.014	0.048	- 1.0		11/15/2004	11/16/2004	GRB	EPA 82	60B
1,2-Dichloroethane	<0.0087 mg/kg	0.0087	0.026	1.0		11/15/2004	11/16/2004	GRB	EPA 82	60B
1,1-Dichloroethene	<0.014 mg/kg	0.014	0.046	1.0		11/15/2004	11/16/2004	GRB	EPA 82	60B
sis-1,2-Dichloroethene	<0.012 mg/kg	0.012	0.041	1.0		11/15/2004	11/16/2004	GRB	EPA 82	60B
rans-1,2-Dichloroethene	<0.017 mg/kg	0.017	0.058	1.0		11/15/2004	11/16/2004	GRB	EPA 82	60B
1,2-Dichloropropane	<0.0076 mg/kg	0.0076	0.026	1.0		11/15/2004	11/16/2004	GRB	EPA 82	60B
1,3-Dichloropropane	<0.012 mg/kg	0.012	0.039	1.0		11/15/2004	11/16/2004	GRB	EPA 82	60B
2,2-Dichloropropane	<0.011 mg/kg	0.011	0.037	1.0		11/15/2004	11/16/2004	GRB	EPA 82	60B
1,1-Dichtoropropene	<0.014 mg/kg	0.014	0.047	1.0		11/15/2004	11/16/2004	GRB	EPA 82	60B
sis-1,3-Dichloropropene	<0.016 mg/kg	0.016	0.054	1.0		11/15/2004	11/16/2004	GRB	EPA 82	60B
rans-1,3-Dichloropropene	<0.0098 mg/kg	0.0098	0.030	1.0		11/15/2004	11/16/2004	GRB	EPA 82	60B
Diisopropyl ether	<0.0087 mg/kg	0.0087	0.030	1.0		11/15/2004	11/16/2004	GRB	EPA 82	60B
Ethylbenzene	<0.0076 mg/kg	0.0076	0.026	1.0		11/15/2004	11/16/2004	GRB	EPA 82	60B
łexachlorobutadiene	<0.014 mg/kg	0.014	0.047	1.0		11/15/2004	11/16/2004	GRB	EPA 82	60B
2-Hexanone	<0.21 mg/kg	0,21	0.71	1.0		11/15/2004	11/16/2004	GRB	EPA 82	60B
sopropylbenzene	<0.012 mg/kg	0.012	0.039	1.0		11/15/2004	11/16/2004	GRB	EPA 82	60B
-Isopropyltoluene	<0.014 mg/kg	0.014	0.047	1.0		11/15/2004	11/16/2004	GRB	EPA 82	60B
Methyl tert-butyl ether	<0.0065 mg/kg	0.0065	0.020	1.0		11/15/2004	11/16/2004	GRB	EPA 82	60B
-Methyl-2-pentanone	<0.13 mg/kg	0.13	0.45	1.0		11/15/2004	11/16/2004	GRB	EPA 82	60B
lethylene chloride	<0.027 mg/kg	0.027	0.088	1.0		11/15/2004	11/16/2004	GRB	EPA 82	60B
laphthalene	<0.013 mg/kg	0.013	0.041	1.0		11/15/2004	11/16/2004	GRB	EPA 82	60B
-Propylbenzene	<0.0054 mg/kg	0.0054	0.017	1.0		11/15/2004	11/16/2004	GRB	EPA 82	60B
Styrene	<0.0087 mg/kg	0.0087	0.027	1.0		11/15/2004	11/16/2004	GRB	EPA 82	60B
,1,1,2-Tetrachloroethane	<0.013 mg/kg	0.013	0.044	1.0		11/15/2004	11/16/2004	GRB	EPA 82	60B
,1,2,2-Tetrachloroethane	<0.0087 mg/kg	0.0087	0.028	1.0		11/15/2004	11/16/2004	GRB	EPA 82	60B
etrachloroethene	0.076 mg/kg	0.014	0.046	1.0		11/15/2004	11/16/2004	GRB	EPA 82	60B
etrahydrofuran	<0.17 mg/kg	0.17	0.58	1.0		11/15/2004	11/16/2004	GR8	EPA 82	60B
oluene	<0.0076 mg/kg	0.0076	0.025	1.0		11/15/2004	11/16/2004	GRB	EPA 82	60B
,2,3-Trichlorobenzene	<0.014 mg/kg	0.014	0.048	1.0		11/15/2004	11/16/2004	GRB	EPA 82	60B
,2,4-Trichlorobenzene	<0.012 mg/kg	0.012	0.041	1.0		11/15/2004	11/16/2004	GRB	EPA 82	
,1,1-Trichloroethane	<0.0098 mg/kg	0.0098	0.034	1.0		11/15/2004 1		GRB	EPA 826	60B

WI DNR Lab Certification Number: 157066030 DATCP Certification Number: 105-000289 LA NELAP Certification Number: 04091





MSA PROFESSIONAL SERVICES

Project Name: MINOQUA CLEANERS

Project #: 213132

Contract #: 1362 Folder #: 44,141

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CTI LAB#: 285763	Sample Description:	B-13B 5-7*					Sampled:	11/8	/2004 1500
Analyte	Result Units	LOD	LOQ	Dilution	Qualifier	Prep Date	Analysis Date	Analyst	Method
1,1,2-Trichloroethane	<0.013 mg/kg	0.013	0.040	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Trichloroethene	<0.016 mg/kg	0.016	0.053	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Frichlorofluoromethane	<0.011 mg/kg	0.011	0.035	1.0	-	11/15/2004	11/16/2004	GRB	EPA 8260B
1,2,3-Trichforopropane	<0.018 mg/kg	0.018	0.061	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,2,4-Trimethylbenzene	<0.0087 mg/kg	0.0087	0.029	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,3,5-Trimethylbenzene	<0.0087 mg/kg	0.0087	0.026	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
/inyl chloride	<0.012 mg/kg	0.012	0.038	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
n & p-Xylene	<0.021 mg/kg	0.021	0.067	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
p-Xylene	<0.013 mg/kg	0.013	0.045	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
CTI LAB#: 285764	Sample Description:	B-13B 10-12		· ,,			Sampled:	11/8	/2004 1515
	•					Prep	Analysis		
Analyte	Result Units	LOD	LOQ	Dilution	Qualifier	Date	Date	Analyst	Method
norganic Results Solids, Percent	95.7 %	N/A	N/A	1.0			11/15/2004	CJB	EPA 5030A
olids, Fercent	95.7 76	IN/A	IWA	1.0			11/15/2004	CJB	EPA 3030A
Organic Results	•								
Acetone	<0.31 mg/kg	0.31	1.1	1.0	1	11/15/2004	11/16/2004	GRB	EPA 8260B
Benzene	<0.0052 mg/kg	0.0052	0.018	1.0	1	11/15/2004	11/16/2004	GRB	EPA 8260B
Bromobenzene	<0.014 mg/kg	0.014	0.046	1.0	1	1/15/2004	11/16/2004	GRB	EPA 8260B
dromochloromethane	<0.015 mg/kg	0.015	0.049	1.0	1	11/15/2004	11/16/2004	GRB	EPA 8260B
Fromodichloromethane	<0.015 mg/kg	0.015	0.049	1.0	1	1/15/2004	11/16/2004	GRB	EPA 8260B
Promoform	<0.015 mg/kg	0.015	0.050	1.0	1	11/15/2004	11/16/2004	GRB	EPA 8260B
romomethane	<0.023 mg/kg	0.023	0.078	1.0	1	1/15/2004	1/16/2004	GRB	EPA 8260B
-Butanone	<0.22 mg/kg	0.22	0.71	1.0	1	1/15/2004	11/16/2004	GRB	EPA 8260B
-Butylbenzene	<0.0084 mg/kg	0.0084	0.027	1.0	1	1/15/2004	1/16/2004	GRB	EPA 8260B
ec-Butylbenzene	<0.0073 mg/kg	0.0073	0.025	1.0	. 1	1/15/2004 :	1/16/2004	GRB	EPA 8260B
ert-Butylbenzene	<0.0084 mg/kg	0.0084	0.028	1.0	1	1/15/2004	1/16/2004	GRB	EPA 8260B
arbon disulfide	<0.030 mg/kg	0.030	0.10	1.0	1	1/15/2004	1/16/2004	GRB	EPA 8260B
arbon tetrachloride	<0.0094 mg/kg	0.0094	0.032	1.0	1	1/15/2004 1	1/16/2004	GRB	EPA 8260B
hlorobenzene	<0.013 mg/kg	0.013	0.043	1.0	1	1/15/2004 1	1/16/2004		EPA 8260B
ibromochloromethane	<0.0063 mg/kg	0.0063	0.022	1.0		1/15/2004 1			EPA 8260B
hloroethane	<0.017 mg/kg	0.017	0.054	1.0		1/15/2004 1			EPA 8260B
hloroform	<0.0094 ma/ka	0.0094	0.030	1.0	7	1/15/2004 1	1/16/2004	GRB	EPA 8260B
hloroform hloromethane	<0.0094 mg/kg <0.011 mg/kg	0.0094 0.011	0.030	1.0 1.0		1/15/2004 1 1/15/2004 1			EPA 8260B EPA 8260B

WI DNR Lab Certification Number: 157066030 DATCP Certification Number: 105-000289 LA NELAP Certification Number: 04091

0.036

1.0

11/15/2004 11/16/2004

**GRB** 

0.010

<0.010 mg/kg



**EPA 8260B** 

4-Chlorotoluene



Project Name: MINOQUA CLEANERS

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CTEL AP#	005704	Comple Description		D 400 40 45				<del></del> -	Comments t	4.810	10004 **	C45
CTI LAB#:	285764	Sample Description	n:	B-13B 10-12'		<del> </del>	<del></del>		Sampled:	11/8	/2004 1	515
Analyte		Result	Units	LOD	LOQ	Dilution	Qualifier	Prep Date	Analysis Date	Analyst	Method	
1,2-Dibromo-3-chlorope	ropane	<0.015 n	ng/kg	0.015	0.048	1.0		11/15/2004	11/16/2004	GRB	EPA 8260	В
1,2-Dibromoethane		<0.014 n	ng/kg	0.014	0.047	1.0		11/15/2004	11/16/2004	GRB	EPA 8260	В
Dibromomethane		<0.0094 n	ng/kg	0.0094	0.030	1.0		11/15/2004	11/16/2004	GRB	EPA 8260	В
1,2-Dichlorobenzene		<0.0052 n	ng/kg	0.0052	0.016	1.0		11/15/2004	11/16/2004	GRB	EPA 8260	В.
1,3-Dichlorobenzene		<0.011 n	ng/kg	0.011	0.037	1.0		11/15/2004	11/16/2004	GRB	EPA 8260	В
1,4-Dichlorobenzene	•	<0.0094 n	ng/kg	0.0094	0.030	1.0		11/15/2004	11/16/2004	GRB	EPA 8260	В
Dichlorodifluoromethan	ne	<0.014 n	ng/kg	0.014	0.043	1.0		11/15/2004	11/16/2004	GRB	EPA 8260	В
1,1-Dichloroethane		<0.014 n	ng/kg	0.014	0.046	1.0		11/15/2004	11/16/2004	GRB	EPA 8260	В
1,2-Dichloroethane		<0.0084 п	ng/kg	0.0084	0.025	1.0		11/15/2004	11/16/2004	GRB	EPA 8260	В
1,1-Dichloroethene		<0.014 n	ng/kg	0.014	0.044	1.0		11/15/2004	11/16/2004	GRB	EPA 8260	В
cis-1,2-Dichloroethene		<0.011 m	ng/kg	0.011	0.040	1.0		11/15/2004	11/16/2004	GRB	EPA 8260	В
trans-1,2-Dichloroether	ne	<0.017 m	ng/kg	0.017	0.055	1.0		11/15/2004	11/16/2004	GRB	EPA 8260	В
1,2-Dichloropropane		<0.0073 m	ng/kg	0.0073	0.025	1.0		11/15/2004	1.1/16/2004	GRB	EPA 8260	В
1,3-Dichloropropane		<0.011 n	ng/kg	0.011	0.038	1.0		11/15/2004	11/16/2004	GRB	EPA 8260	В
2,2-Dichloropropane		<0.010 m	ng/kg	0.010	0.036	1.0		11/15/2004	11/16/2004	GRB	EPA 8260	8
1,1-Dichloropropene		<0.014 m	ng/kg	0.014	0.045	1.0		11/15/2004	11/16/2004	GRB	EPA 8260	В
cis-1,3-Dichloropropend	9	<0.016 m	ng/kg	0.016	0.052	1.0		11/15/2004	11/16/2004	GRB	EPA 8260	8
trans-1,3-Dichloroprope	ene	<0.0094 m	ng/kg	0.0094	0.029	1.0		11/15/2004	11/16/2004	GRB	EPA 8260	В
Diisopropyl ether		<0.0084 m	ng/kg	0.0084	0.029	1.0		11/15/2004	11/16/2004	GRB	EPA 8260	В
Ethylbenzene		<0.0073 m	ng/kg	0.0073	0.025	1.0		11/15/2004	11/16/2004	GRB	EPA 8260	В
Hexachlorobutadiene		<0.014 m	ng/kg	0.014	0.045	1.0		11/15/2004	11/16/2004	GRB	EPA 8260	В
2-Hexanone		<0.20 m	ng/kg	0.20	0.68	1.0		11/15/2004	11/16/2004	GRB	EPA 8260	В
Isopropylbenzene		<0.011 m	ng/kg	0.011	0.038	1.0		11/15/2004	11/16/2004	GRB	EPA 8260	В
p-Isopropyltoluene		<0.014 m	ng/kg	0.014	0.045	1.0		11/15/2004	11/16/2004	GRB	EPA 8260	В
Methyl tert-butyl ether		<0.0063 m	ng/kg	0.0063	0.019	1.0		11/15/2004	11/16/2004	GRB	EPA 8260	В
4-Methyl-2-pentanone		<0.13 m	ng/kg	0.13	0.43	1.0		11/15/2004	11/16/2004	GRB	EPA 8260	В
Methylene chloride		<0.026 m	ng/kg	0.026	0.085	1.0		11/15/2004 1	11/16/2004	GRB	EPA 8260I	В
Naphthalene		<0.013 m	ng/kg	0.013	0.040	1.0		11/15/2004	11/16/2004	GRB	EPA 8260	В
n-Propylbenzene		<0.0052 m	ng/kg	0.0052	0.017	1.0		11/15/2004 1	11/16/2004	GRB	EPA 82601	В
Styrene		<0.0084 m	ig/kg	0.0084	0.026	1.0		11/15/2004 1	11/16/2004	GRB	EPA 8260	В
1,1,1,2-Tetrachloroetha	ne	<0.013 m	ng/kg	0.013	0.042	1.0		11/15/2004 1	11/16/2004	GRB	EPA 8260I	В
1,1,2,2-Tetrachloroetha	ne	<0.0084 m	ng/kg	0.0084	0.027	1.0		11/15/2004 1	11/16/2004	GRB	EPA 8260	В
Tetrachloroethene		<0.014 m	ng/kg	0.014	0.044	1.0		11/15/2004 1	11/16/2004	GRB	EPA 8260l	В
Tetrahydrofuran		<0.17 m	ıg/kg	0.17	0.55	1.0		11/15/2004 1	11/16/2004	GRB	EPA 8260	В
Toluene		<0.0073 m	ıg/kg	0.0073	0.024	1.0		11/15/2004 1	11/16/2004	GRB	EPA 8260I	В
1,2,3-Trichlorobenzene		<0.014 m	ıg/kg	0.014	0.046	1.0		11/15/2004 1	11/16/2004	GRB	EPA 8260	В
1,2,4-Trichlorobenzene		<0.011 m	ıg/kg	0.011	0.040	1.0		11/15/2004 1	11/16/2004	GRB	EPA 8260	В





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CTI LAB#: 285764	Sample Description:	B-13B 10-12'					Sampled:	11/8	/2004 1515
Analyte	Result Units	LOD	ŁOQ	Dilution	Qualifier	Prep Date	Analysis Date	Analyst	Method
1,1,1-Trichloroethane	<0.0094 mg/kg	0.0094	0.032	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,1,2-Trichloroethane	<0.013 mg/kg	0.013	0.039	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Trichloroethene	<0.016 mg/kg	0.016	0.051	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Trichlorofluoromethane	<0.010 mg/kg	0.010	0.033	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,2,3-Trichloropropane	<0.018 mg/kg	0.018	0.059	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,2,4-Trimethylbenzene	<0.0084 mg/kg	0.0084	0.028	1.0	•	11/15/2004	11/16/2004	GRB	EPA 8260B
1,3,5-Trimethylbenzene	<0.0084 mg/kg	0.0084	0.025	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Vinyl chloride	<0.011 mg/kg	0.011	0.037	1:0		11/15/2004	11/16/2004	GRB	EPA 8260B
m & p-Xylene	<0.020 mg/kg	0.020	0.065	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
o-Xylene	<0.013 mg/kg	0.013	0.043	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
CTI LAB#: 285765	Sample Description:	B-13B 37-39'		<u> </u>			Sampled:	11/10	)/2004 0930
Analyte	Result Units	LOD	LOQ	Dilution	Qualifier	Prep Date	Analysis Date	Analyst	Method
						·			
Inorganic Results									-
Solids, Percent	87.8 %	N/A	N/A	1.0		•	11/15/2004	CJB	EPA 5030A
Organic Results									
Acetone	<0.34 mg/kg	0.34	1.3	1.0	1	11/15/2004	11/16/2004	GRB	EPA 8260B
Benzene	<0.0057 mg/kg	0.0057	0.019	1.0	1	11/15/2004	11/16/2004	GRB	EPA 8260B
Bromobenzene	<0.015 mg/kg	0.015	0.050	1.0	1	11/15/2004	11/16/2004	GRB:	EPA 8260B
Bromochloromethane	<0.016 mg/kg	0.016	0.054	1.0	1	11/15/2004	11/16/2004	GRB	EPA 8260B
Bromodichloromethane	<0.016 mg/kg	0.016	0.054	1.0	1	1/15/2004	11/16/2004	GRB	EPA 8260B
Bromoform	<0.016 mg/kg	0.016	0.055	1.0	1	11/15/2004	11/16/2004	GRB	EPA 8260B
Bromomethane	<0.025 mg/kg	0.025	0.085	1.0	1	1/15/2004	11/16/2004	GRB	EPA 8260B
2-Butanone	<0.24 mg/kg	0.24	0.77	1.0	1	11/15/2004	11/16/2004	GRB	EPA 8260B
n-Butylbenzene	<0.0091 mg/kg	0.0091	0.030	1.0	1	1/15/2004	11/16/2004	GRB	EPA 8260B
sec-Butylbenzene	<0.0080 mg/kg	0.0080	0.027	1.0	1	11/15/2004	11/16/2004	GRB	EPA 8260B
tert-Butylbenzene	<0.0091 mg/kg	0.0091	0.031	1.0	1	1/15/2004 1	1/16/2004	GRB.	EPA 8260B
Carbon disulfide	<0.033 mg/kg	0.033	0.11	1.0	1	1/15/2004 1	11/16/2004	GRB	EPA 8260B
Carbon tetrachloride	<0.010 mg/kg	0.010	0.035	1.0	1	1/15/2004 1	1/16/2004	GRB	EPA 8260B
Chlorobenzene	<0.014 mg/kg	0.014	0.047	1.0	1	1/15/2004 1	11/16/2004	GRB	EPA 8260B
Dibromochloromethane	<0.0068 mg/kg	0.0068	0.024	1.0	1	1/15/2004 1	1/16/2004	GRB	EPA 8260B
Chloroethane	<0.018 mg/kg	0.018	0.059	1.0	1	1/15/2004 1	11/16/2004	GRB	EPA 8260B
Chloroform	<0.010 mg/kg	0.010	0.033	1.0	1	1/15/2004 1	1/16/2004	GRB	EPA 8260B
Chloromethane	<0.013 mg/kg	0.013	0.041	1.0	1	1/15/2004 1	1/16/2004	GRB	EPA 8260B
2-Chiorotoluene	<0.0057 mg/kg	0.0057	0.019	1.0	1	1/15/2004 1	1/16/2004	GRB	EPA 8260B



# CTLaboratories

MSA PROFESSIONAL SERVICES

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CTI LAB#: 285765	Sample Description:	B-13B 37-39'					Sampled:	11/1	0/2004 0930
Analyte	Result Units	LOD	LOQ	Dilution (	Qualifier	Prep Date	Analysis Date	Analyst	Method
4-Chlorotoluene	<0.011 mg/kg	0.011	0.039	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,2-Dibromo-3-chloropropane	<0.016 mg/kg	0.016	0.052	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,2-Dibromoethane	<0.015 mg/kg	0.015	0.051	1.0	-	11/15/2004	11/16/2004	GRB	EPA 8260B
Dibromomethane	<0.010 mg/kg	0.010	0.033	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,2-Dichlorobenzene	<0.0057 mg/kg	0.0057	0.017	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,3-Dichlorobenzene	<0.013 mg/kg	0.013	0.040	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,4-Dichlorobenzene	<0.010 mg/kg	0.010	0.033	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Dichlorodifluoromethane	<0.015 mg/kg	0.015	0.047	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,1-Dichloroethane	<0.015 mg/kg	0.015	0.050	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,2-Dichloroethane	<0.0091 mg/kg	0.0091	0.027	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,1-Dichloroethene	<0.015 mg/kg	0.015	0.048	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
cis-1,2-Dichloroethene	<0.013 mg/kg	0.013	0.043	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
trans-1,2-Dichloroethene	<0.018 mg/kg	0.018	0.060	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,2-Dichloropropane	<0.0080 mg/kg	0.0080	0.027	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,3-Dichloropropane	<0.013 mg/kg	0.013	0.041	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
2,2-Dichloropropane	<0.011 mg/kg	0.011	0.039	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,1-Dichloropropene	<0.015 mg/kg	0.015	0.049	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
cis-1,3-Dichloropropene	<0.017 mg/kg	0.017	0.057	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
trans-1,3-Dichloropropene	<0.010 mg/kg	0.010	0.032	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Diisopropyl ether	<0.0091 mg/kg	0.0091	0.032	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Ethylbenzene	<0.0080 mg/kg	0.0080	0.027	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Hexachlorobutadiene	<0.015 mg/kg	0.015	0.049	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
2-Hexanone	<0.22 mg/kg	0.22	0.74	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Isopropylbenzene	<0.013 mg/kg	0.013	0.041	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
p-Isopropyltoluene	<0.015 mg/kg	0.015	0.049	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Methyl tert-butyl ether	<0.0068 mg/kg	0.0068	0.021	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
4-Methyl-2-pentanone	<0.14 mg/kg	0.14	0.47	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Methylene chloride	<0.028 mg/kg	0.028	0.092	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Naphthalene	<0.014 mg/kg	0.014	0.043	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
n-Propylbenzene	<0.0057 mg/kg	0.0057	0.018	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Styrene	<0.0091 mg/kg	0.0091	0.028	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,1,1,2-Tetrachloroethane	<0.014 mg/kg	0.014	0.046	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,1,2,2-Tetrachloroethane	<0.0091 mg/kg	0.0091	0.030	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Tetrachloroethene	<0.015 mg/kg	0.015	0.048	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Tetrahydrofuran	<0.18 mg/kg	0.18	0.60	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Toluene	<0.0080 mg/kg	0.0080	0.026	1.0	•	11/15/2004 1	11/16/2004	GRB	EPA 8260B
1,2,3-Trichlorobenzene	<0.015 mg/kg	0.015	0.050	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B





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CTI LAB#:	285765	Sample Descripti	ion:	B-13B 37-39'					Sampled:	11/10	0/2004. 0930
Analyte		Result	Units	LOD	LOQ	Dilution	Qualifier	Prep Date	Analysis Date	Analyst	Method
1,2,4-Trichlorobenzene		<0.013	mg/kg	0.013	0.043	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,1,1-Trichloroethane		<0.010	mg/kg	0.010	0.035	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,1,2-Trichloroethane		<0.014	mg/kg	0.014	0.042	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Trichloroethene		<0.017	mg/kg	0.017	0.056	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Trichlorofluoromethane		<0.011	mg/kg	0.011	0.036	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,2,3-Trichloropropane		<0.019	mg/kg	0.019	0.064	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,2,4-Trimethylbenzene	)	<0.0091	mg/kg	0.0091	0.031	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,3,5-Trimethylbenzene	)	<0.0091	mg/kg	0.0091	0.027	1.0		11/15/2004	11/16/2004	GRB ·	EPA 8260B
Vinyl chloride		<0.013	mg/kg	0.013	0.040	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
m & p-Xylene		<0.022	mg/kg	0.022	0.071	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
o-Xylene		<0.014	mg/kg	0.014	0.047	1.0	÷	11/15/2004	11/16/2004	GRB	EPA 8260B
CTI LAB#: 2	285766	Sample Descripti	on:	B-13A DRILL CL	ITTINGS				Sampled:	11/11	/2004 1800
Analyte		Result	Units	LOD	LOQ	Dilution	Qualifier	Prep Date	Analysis Date	Analyst	Method
norganic Results											
Solids, Percent		73.5	%	N/A	N/A	1.0		1	11/15/2004	CJB	EPA 5030A
Organic Results											
Acetone		<0.41	mg/kg	0.41	1.5	1.0		11/15/2004 1	1/16/2004	GRB	EPA 8260B
Benzene		~n nnee									
Bromobenzene		~0.0000	mg/kg	0.0068	0.023	1.0		11/15/2004 1	1/16/2004	GRB	EPA 8260B
		<0.018	• •	0.0068 0.018	0.023 0.060			11/15/2004 1 11/15/2004 1			EPA 8260B EPA 8260B
3romochloromethane			mg/kg			1.0			11/16/2004	GRB	
		<0.018	mg/kg mg/kg	0.018	0.060	1.0 1.0		11/15/2004 1	11/16/2004	GRB GRB	EPA 8260B
Bromodichloromethane		<0.018 <0.019	mg/kg mg/kg mg/kg	0.018 0.019	0.060 0.064	1.0 1.0 1.0		11/15/2004 1 11/15/2004 1	1/16/2004 1/16/2004 1/16/2004	GRB GRB GRB	EPA 8260B EPA 8260B
Bromodichloromethane Bromoform		<0.018 <0.019 <0.019	mg/kg mg/kg mg/kg mg/kg	0.018 0.019 0.019	0.060 0.064 0.064	1.0 1.0 1.0 1.0		11/15/2004 1 11/15/2004 1 11/15/2004 1	11/16/2004 11/16/2004 11/16/2004 11/16/2004	GRB GRB GRB GRB	EPA 8260B EPA 8260B EPA 8260B
Bromodichloromethane Bromoform Bromomethane		<0.018 <0.019 <0.019 <0.019	mg/kg mg/kg mg/kg mg/kg mg/kg	0.018 0.019 0.019 0.019	0.060 0.064 0.064 0.065	1.0 1.0 1.0 1.0		11/15/2004 1 11/15/2004 1 11/15/2004 1 11/15/2004 1	11/16/2004 11/16/2004 11/16/2004 11/16/2004 11/16/2004	GRB GRB GRB GRB	EPA 8260B EPA 8260B EPA 8260B EPA 8260B
Bromodichloromethane Bromoform Bromomethane Butanone		<0.018 <0.019 <0.019 <0.019 <0.030	mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg	0.018 0.019 0.019 0.019 0.030	0.060 0.064 0.064 0.065 0.10	1.0 1.0 1.0 1.0 1.0		11/15/2004 1 11/15/2004 1 11/15/2004 1 11/15/2004 1 11/15/2004 1	1/16/2004 1/16/2004 1/16/2004 1/16/2004 1/16/2004 1/16/2004	GRB GRB GRB GRB GRB	EPA 8260B EPA 8260B EPA 8260B EPA 8260B
Bromodichloromethane Bromoform Bromomethane P-Butanone Brutylbenzene		<0.018 <0.019 <0.019 <0.019 <0.030 <0.29	mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg	0.018 0.019 0.019 0.019 0.030 0.29	0.060 0.064 0.064 0.065 0.10 0.93	1.0 1.0 1.0 1.0 1.0 1.0		11/15/2004 1 11/15/2004 1 11/15/2004 1 11/15/2004 1 11/15/2004 1	11/16/2004 11/16/2004 11/16/2004 11/16/2004 11/16/2004 11/16/2004	GRB GRB GRB GRB GRB GRB	EPA 8260B EPA 8260B EPA 8260B EPA 8260B EPA 8260B
Bromochloromethane Bromodichloromethane Bromoform Bromomethane 2-Butanone n-Butylbenzene sec-Butylbenzene ert-Butylbenzene		<0.018 <0.019 <0.019 <0.019 <0.030 <0.29 <0.011	mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg	0.018 0.019 0.019 0.019 0.030 0.29 0.011	0.060 0.064 0.065 0.10 0.93 0.035	1.0 1.0 1.0 1.0 1.0 1.0		11/15/2004 1 11/15/2004 1 11/15/2004 1 11/15/2004 1 11/15/2004 1 11/15/2004 1	1/16/2004 1/16/2004 1/16/2004 1/16/2004 1/16/2004 1/16/2004 1/16/2004 1/16/2004	GRB GRB GRB GRB GRB GRB GRB	EPA 8260B EPA 8260B EPA 8260B EPA 8260B EPA 8260B EPA 8260B

WI DNR Lab Certification Number: 157066030 DATCP Certification Number: 105-000289 LA NELAP Certification Number: 04091

0.13

0.042

0.056

0.029

0.071

0.039

0.049

1.0

1.0

1.0

1.0

1.0

1.0

1.0

11/15/2004 11/16/2004

11/15/2004 11/16/2004

11/15/2004 11/16/2004

11/15/2004 11/16/2004

11/15/2004 11/16/2004

11/15/2004 11/16/2004

11/15/2004 11/16/2004

**GRB** 

**GRB** 

GRB

**GRB** 

GRB

**GRB** 

**GRB** 

0.039

0.012

0.016

0.0082

0.022

0.012

0.015



**EPA 8260B** 

**EPA 8260B** 

**EPA 8260B** 

**EPA 8260B** 

EPA 8260B

EPA 8260B

**EPA 8260B** 

<0.039 mg/kg

<0.012 mg/kg

<0.016 mg/kg

<0.0082 mg/kg

<0.022 mg/kg

<0.012 mg/kg

<0.015 mg/kg

Carbon disulfide

Chlorobenzene

Chloroethane

Chloromethane

Chloroform

Carbon tetrachloride

Dibromochloromethane



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CTI LAB#. 285766	Sample Description:	B-13A DRILL C	UTTINGS				Sampled:	11/11	1/2004 1800
Analyte	Result Units	LOD	LOQ	Dilution	Qualifier	Prep Date	Analysis Date	Analyst	Method
2-Chlorotoluene	<0.0068 mg/kg	0.0068	0.023	1.0		11/15/2004 1	1/16/2004	GRB	EPA 8260B
4-Chlorotoluene	<0.014 mg/kg	0.014	0.046	1.0	:	11/15/2004 1	1/16/2004	GRB	EPA 8260B
1,2-Dibromo-3-chloropropane	<0.019 mg/kg	0.019	0.063	1.0		11/15/2004 1	1/16/2004	GRB	EPA 8260B
1,2-Dibromoethane	<0.018 mg/kg	0.018	0.061	1.0		11/15/2004 1	11/16/2004	GRB	EPA 8260B
Dibromomethane	<0.012 mg/kg	0.012	0.039	1.0		11/15/2004 1	1/16/2004	GRB:	EPA 8260B
1,2-Dichlorobenzene	<0.0068 mg/kg	0.0068	0.020	1.0		11/15/2004 1	1/16/2004	GRB	EPA 8260B
1,3-Dichlorobenzene	<0.015 mg/kg	0.015	0.048	1.0		11/15/2004 1	1/16/2004	GRB	EPA 8260B
1,4-Dichlorobenzene	<0.012 mg/kg	0.012	0.039	1.0		11/15/2004 1	1/16/2004	GRB	EPA 8260B
Dichlorodifluoromethane	<0.018 mg/kg	0.018	0.056	1.0		11/15/2004 1	1/16/2004	GRB	EPA 8260B
1,1-Dichloroethane	<0.018 mg/kg	0.018	0.060	1.0		11/15/2004 1	1/16/2004	GRB	EPA 8260B
1,2-Dichloroethane	<0.011 mg/kg	0.011	0.033	1.0		11/15/2004 1	1/16/2004	GRB	EPA 8260B
1,1-Dichloroethene	<0.018 mg/kg	0.018	0.057	1.0		11/15/2004 1	1/16/2004	GRB	EPA 8260B
cis-1,2-Dichloroethene	<0.015 mg/kg	0.015	0.052	1.0		11/15/2004 1	1/16/2004	GRB	EPA 8260B
trans-1,2-Dichloroethene	<0.022 mg/kg	0.022	0.072	1.0		11/15/2004 1	1/16/2004	GRB	EPA 8260B
1,2-Dichloropropane	<0.0095 mg/kg	0.0095	0.033	1.0		11/15/2004 1	1/16/2004	GRB	EPA 8260B
1,3-Dichloropropane	<0.015 mg/kg	0.015	0.049	1,0		11/15/2004 1	1/16/2004	GRB	EPA 8260B
2,2-Dichloropropane	<0.014 mg/kg	0.014	0.046	1.0		11/15/2004 1	1/16/2004	GRB	EPA 8260B
1,1-Dichloropropene	<0.018 mg/kg	0.018	0.059	1.0		11/15/2004 1	1/16/2004	GRB	EPA 8260B
cls-1,3-Dichloropropene	<0.020 mg/kg	0.020	0.068	1.0		11/15/2004 1	1/16/2004	GRB	EPA 8260B
trans-1,3-Dichloropropene	<0.012 mg/kg	0.012	0.038	1.0		11/15/2004 1	1/16/2004	GRB	EPA 8260B
Diisopropyl ether	<0.011 mg/kg	0.011	0.038	1.0		11/15/2004 1	1/16/2004	GRB	EPA 8260B
Ethylbenzene	<0.0095 mg/kg	0.0095	0.033	1.0		11/15/2004 1	1/16/2004	GRB	EPA 8260B
Hexachlorobutadiene	<0.018 mg/kg	0.018	0.059	1.0		11/15/2004 1	1/16/2004	GRB	EPA 8260B
2-Hexanone	<0.26 mg/kg	0.26	0.88	1.0		11/15/2004 1	1/16/2004	GRB	EPA 8260B
Isopropylbenzene	<0.015 mg/kg	0.015	0.049	1.0		11/15/2004 1	1/16/2004	GRB	EPA 8260B
p-Isopropyltoluene	<0.018 mg/kg	0.018	0.059	1.0		11/15/2004 1	1/16/2004	GRB	EPA 8260B
Methyl tert-butyl ether	<0.0082 mg/kg	0.0082	0.024	1.0		11/15/2004 1	1/16/2004	GRB	EPA 8260B
4-Methyl-2-pentanone	<0.16 mg/kg	0.16	0.56	1.0		11/15/2004 1	1/16/2004	GRB	EPA 8260B
Methylene chloride	<0.034 mg/kg	0.034	0.11	1.0		11/15/2004 1	1/16/2004	GRB	EPA 8260B
Naphthalene	<0.016 mg/kg	0.016	0.052	1.0		11/15/2004 1	1/16/2004	GRB	EPA 8260B
n-Propylbenzene	<0.0068 mg/kg	0.0068	0.022	1.0		11/15/2004 1	1/16/2004	GRB	EPA 8260B
Styrene	<0.011 mg/kg	0.011	0.034	1.0		11/15/2004 1	1/16/2004	GRB	EPA 8260B
1,1,1,2-Tetrachloroethane	<0.016 mg/kg	0.016	0.054	1.0		11/15/2004.1	1/16/2004	GRB	EPA 8260B
1,1,2,2-Tetrachloroethane	<0.011 mg/kg	0.011	0.035	1.0	•	11/15/2004 1	1/16/2004	GRB	EPA 8260B
Tetrachloroethene	<0.018 mg/kg	0.018	0.057	1.0	•	11/15/2004 1	1/16/2004	GRB	EPA 8260B
[etrahydrofuran	<0.22 mg/kg	0.22	0.72	1.0		11/15/2004 1	1/16/2004	GRB	EPA 8260B
l'oluene	<0.0095 mg/kg	0.0095	0.031	1.0		11/15/2004 1	1/16/2004	GRB	EPA 8260B





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	Sample Description:	B-13A DRILL C	UTTINGS			Sampled:	11/11	/2004 1800
Analytė	Result Units	LOD	LOQ	Dilution (	Prep Qualifier Date	Analysis Date	Analyst	Method .
1,2,3-Trichlorobenzene	<0.018 mg/kg	0.018	0.060	1.0	11/15/2004	11/16/2004	GRB	EPA 8260B
1,2,4-Trichlorobenzene	<0.015 mg/kg	0.015	0.052	1.0	11/15/2004	11/16/2004	GRB	EPA 8260B
1,1,1-Trichloroethane	<0.012 mg/kg	0.012	0.042	1.0	11/15/2004	11/16/2004	GRB	EPA 8260B
1,1,2-Trichloroethane	<0.016 mg/kg	0.016	0.050	1.0	11/15/2004	11/16/2004	GRB	EPA 8260B
Trichloroethene	<0.020 mg/kg	0.020	0.067	1.0	11/15/2004	11/16/2004	GRB	EPA 8260B
Trichlorofluoromethane	<0.014 mg/kg	0.014	0.044	1.0	11/15/2004	11/16/2004	GRB	EPA 8260B
1,2,3-Trichloropropane	<0.023 mg/kg	0.023	0.076	1.0	11/15/2004	11/16/2004	GRB	EPA 8260B
1,2,4-Trimethylbenzene	<0.011 mg/kg	0.011	0.037	1.0	11/15/2004	11/16/2004	GRB	EPA 8260B
1,3,5-Trimethylbenzene	<0.011 mg/kg	0.011	0.033	1.0	11/15/2004	11/16/2004	GRB	EPA 8260B
Vinyt chloride	<0.015 mg/kg	0.015	0.048	1.0	11/15/2004	11/16/2004	GRB	EPA 8260B
m & p-Xylene	<0.026 mg/kg	0.026	0.084	1.0	11/15/2004	11/16/2004	GRB	EPA 8260B
o-Xylene	<0.016 mg/kg	0.016	0.056	1.0.	11/15/2004	11/16/2004	GRB	EPA 8260B
CTI LAB#. 285767	Sample Description:	B-8A 20-22				Sampled:	11/12	2/2004 1315
Analyte	Result Units	LOD	LOQ	Dilution (	Prep Qualifier Date	Analysis Date	Analyst	Method
Inorganic Results		•						
Solids, Percent	85.0 %	N/A	N/A	1.0		11/15/2004	CJB	EPA 5030A
Organic Results								
Analama								
Acetone	<0.35 mg/kg	0.35	1.3	1.0	11/15/2004	11/16/2004	GRB	EPA 8260B
Benzene	<0.35 mg/kg <0.0059 mg/kg	0.35 0.0059	1.3 0.020	1.0 1.0	11/15/2004 11/15/2004			EPA 8260B EPA 8260B
						11/16/2004		
Benzene	<0.0059 mg/kg	0.0059	0.020	1.0	11/15/2004	11/16/2004 11/16/2004	GRB GRB	EPA 8260B
Benzene Bromobenzene	<0.0059 mg/kg <0.015 mg/kg	0.0059 0.015	0.020 0.052	1.0 1.0	11/15/2004 11/15/2004	11/16/2004 11/16/2004 11/16/2004	GRB GRB GRB	EPA 8260B EPA 8260B
Benzene Bromobenzene Bromochloromethane	<0.0059 mg/kg <0.015 mg/kg <0.016 mg/kg	0.0059 0.015 0.016	0.020 0.052 0.055	1.0 1.0 1.0	11/15/2004 11/15/2004 11/15/2004	11/16/2004 11/16/2004 11/16/2004 11/16/2004	GRB GRB GRB GRB	EPA 8260B EPA 8260B EPA 8260B
Benzene Bromobenzene Bromochloromethane Bromodichloromethane	<0.0059 mg/kg <0.015 mg/kg <0.016 mg/kg <0.016 mg/kg	0.0059 0.015 0.016 0.016	0.020 0.052 0.055 0.055	1.0 1.0 1.0 1.0	11/15/2004 11/15/2004 11/15/2004 11/15/2004	11/16/2004 11/16/2004 11/16/2004 11/16/2004 11/16/2004	GRB GRB GRB GRB GRB	EPA 8260B EPA 8260B EPA 8260B EPA 8260B
Benzene Bromobenzene Bromochloromethane Bromodichloromethane Bromoform	<0.0059 mg/kg <0.015 mg/kg <0.016 mg/kg <0.016 mg/kg <0.016 mg/kg	0.0059 0.015 0.016 0.016 0.016	0.020 0.052 0.055 0.055 0.056	1.0 1.0 1.0 1.0	11/15/2004 11/15/2004 11/15/2004 11/15/2004	11/16/2004 11/16/2004 11/16/2004 11/16/2004 11/16/2004	GRB GRB GRB GRB GRB	EPA 8260B EPA 8260B EPA 8260B EPA 8260B EPA 8260B
Benzene Bromobenzene Bromochloromethane Bromodichloromethane Bromoform Bromomethane	<0.0059 mg/kg <0.015 mg/kg <0.016 mg/kg <0.016 mg/kg <0.016 mg/kg <0.026 mg/kg	0.0059 0.015 0.016 0.016 0.016 0.026	0.020 0.052 0.055 0.055 0.056 0.088	1.0 1.0 1.0 1.0 1.0	11/15/2004 11/15/2004 11/15/2004 11/15/2004 11/15/2004	11/16/2004 11/16/2004 11/16/2004 11/16/2004 11/16/2004 11/16/2004 11/16/2004	GRB GRB GRB GRB GRB GRB	EPA 8260B EPA 8260B EPA 8260B EPA 8260B EPA 8260B
Benzene Bromobenzene Bromochloromethane Bromodichloromethane Bromoform Bromomethane 2-Butanone	<0.0059 mg/kg <0.015 mg/kg <0.016 mg/kg <0.016 mg/kg <0.016 mg/kg <0.026 mg/kg <0.25 mg/kg	0.0059 0.015 0.016 0.016 0.016 0.026	0.020 0.052 0.055 0.055 0.056 0.088 0.80	1.0 1.0 1.0 1.0 1.0 1.0	11/15/2004 11/15/2004 11/15/2004 11/15/2004 11/15/2004 11/15/2004	11/16/2004 11/16/2004 11/16/2004 11/16/2004 11/16/2004 11/16/2004 11/16/2004	GRB GRB GRB GRB GRB GRB GRB	EPA 8260B EPA 8260B EPA 8260B EPA 8260B EPA 8260B EPA 8260B
Benzene Bromobenzene Bromochloromethane Bromodichloromethane Bromoform Bromomethane 2-Butanone n-Butylbenzene	<0.0059 mg/kg <0.015 mg/kg <0.016 mg/kg <0.016 mg/kg <0.016 mg/kg <0.026 mg/kg <0.25 mg/kg <0.0094 mg/kg	0.0059 0.015 0.016 0.016 0.016 0.026 0.25 0.0094	0.020 0.052 0.055 0.055 0.056 0.088 0.80	1.0 1.0 1.0 1.0 1.0 1.0 1.0	11/15/2004 11/15/2004 11/15/2004 11/15/2004 11/15/2004 11/15/2004 11/15/2004	11/16/2004 11/16/2004 11/16/2004 11/16/2004 11/16/2004 11/16/2004 11/16/2004 11/16/2004	GRB GRB GRB GRB GRB GRB GRB	EPA 8260B EPA 8260B EPA 8260B EPA 8260B EPA 8260B EPA 8260B EPA 8260B
Benzene Bromobenzene Bromochloromethane Bromodichloromethane Bromoform Bromomethane 2-Butanone n-Butylbenzene sec-Butylbenzene	<0.0059 mg/kg <0.015 mg/kg <0.016 mg/kg <0.016 mg/kg <0.016 mg/kg <0.026 mg/kg <0.025 mg/kg <0.0094 mg/kg <0.0082 mg/kg	0.0059 0.015 0.016 0.016 0.026 0.25 0.0094 0.0082	0.020 0.052 0.055 0.055 0.056 0.088 0.80 0.030	1.0 1.0 1.0 1.0 1.0 1.0 1.0	11/15/2004 11/15/2004 11/15/2004 11/15/2004 11/15/2004 11/15/2004 11/15/2004 11/15/2004	11/16/2004 11/16/2004 11/16/2004 11/16/2004 11/16/2004 11/16/2004 11/16/2004 11/16/2004 11/16/2004	GRB GRB GRB GRB GRB GRB GRB GRB	EPA 8260B EPA 8260B EPA 8260B EPA 8260B EPA 8260B EPA 8260B EPA 8260B EPA 8260B
Benzene Bromobenzene Bromochloromethane Bromodichloromethane Bromoform Bromomethane 2-Butanone n-Butylbenzene sec-Butylbenzene tert-Butylbenzene	<0.0059 mg/kg <0.015 mg/kg <0.016 mg/kg <0.016 mg/kg <0.016 mg/kg <0.026 mg/kg <0.025 mg/kg <0.0094 mg/kg <0.0082 mg/kg <0.0094 mg/kg	0.0059 0.015 0.016 0.016 0.016 0.026 0.25 0.0094 0.0082 0.0094	0.020 0.052 0.055 0.055 0.056 0.088 0.80 0.030 0.028	1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0	11/15/2004 11/15/2004 11/15/2004 11/15/2004 11/15/2004 11/15/2004 11/15/2004 11/15/2004 11/15/2004	11/16/2004 11/16/2004 11/16/2004 11/16/2004 11/16/2004 11/16/2004 11/16/2004 11/16/2004 11/16/2004 11/16/2004	GRB GRB GRB GRB GRB GRB GRB GRB GRB	EPA 8260B EPA 8260B EPA 8260B EPA 8260B EPA 8260B EPA 8260B EPA 8260B EPA 8260B EPA 8260B
Benzene Bromobenzene Bromochloromethane Bromodichloromethane Bromoform Bromomethane 2-Butanone n-Butylbenzene sec-Butylbenzene tert-Butylbenzene Carbon disulfide	<0.0059 mg/kg <0.015 mg/kg <0.016 mg/kg <0.016 mg/kg <0.016 mg/kg <0.026 mg/kg <0.025 mg/kg <0.0094 mg/kg <0.0094 mg/kg <0.0094 mg/kg <0.0094 mg/kg	0.0059 0.015 0.016 0.016 0.026 0.25 0.0094 0.0082 0.0094 0.034	0.020 0.052 0.055 0.055 0.056 0.088 0.80 0.030 0.028 0.032	1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0	11/15/2004 11/15/2004 11/15/2004 11/15/2004 11/15/2004 11/15/2004 11/15/2004 11/15/2004 11/15/2004 11/15/2004	11/16/2004 11/16/2004 11/16/2004 11/16/2004 11/16/2004 11/16/2004 11/16/2004 11/16/2004 11/16/2004 11/16/2004	GRB GRB GRB GRB GRB GRB GRB GRB GRB GRB	EPA 8260B EPA 8260B EPA 8260B EPA 8260B EPA 8260B EPA 8260B EPA 8260B EPA 8260B EPA 8260B EPA 8260B
Benzene Bromobenzene Bromochloromethane Bromodichloromethane Bromoform Bromomethane 2-Butanone n-Butylbenzene sec-Butylbenzene tert-Butylbenzene Carbon disulfide Carbon tetrachloride	<0.0059 mg/kg <0.015 mg/kg <0.016 mg/kg <0.016 mg/kg <0.016 mg/kg <0.026 mg/kg <0.025 mg/kg <0.0094 mg/kg <0.0082 mg/kg <0.0094 mg/kg <0.0094 mg/kg <0.0094 mg/kg <0.0094 mg/kg	0.0059 0.015 0.016 0.016 0.016 0.026 0.25 0.0094 0.0082 0.0094 0.034 0.011	0.020 0.052 0.055 0.055 0.056 0.088 0.80 0.030 0.028 0.032 0.11	1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0	11/15/2004 11/15/2004 11/15/2004 11/15/2004 11/15/2004 11/15/2004 11/15/2004 11/15/2004 11/15/2004 11/15/2004 11/15/2004	11/16/2004 11/16/2004 11/16/2004 11/16/2004 11/16/2004 11/16/2004 11/16/2004 11/16/2004 11/16/2004 11/16/2004 11/16/2004	GRB GRB GRB GRB GRB GRB GRB GRB GRB GRB	EPA 8260B EPA 8260B EPA 8260B EPA 8260B EPA 8260B EPA 8260B EPA 8260B EPA 8260B EPA 8260B EPA 8260B EPA 8260B
Benzene Bromobenzene Bromochloromethane Bromodichloromethane Bromoform Bromomethane 2-Butanone n-Butylbenzene sec-Butylbenzene tert-Butylbenzene Carbon disulfide Chlorobenzene	<0.0059 mg/kg <0.015 mg/kg <0.016 mg/kg <0.016 mg/kg <0.016 mg/kg <0.026 mg/kg <0.025 mg/kg <0.0094 mg/kg <0.0094 mg/kg <0.0094 mg/kg <0.0094 mg/kg <0.011 mg/kg <0.014 mg/kg	0.0059 0.015 0.016 0.016 0.026 0.25 0.0094 0.0082 0.0094 0.034 0.011	0.020 0.052 0.055 0.055 0.056 0.088 0.80 0.030 0.028 0.032 0.11 0.036 0.048	1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0	11/15/2004 11/15/2004 11/15/2004 11/15/2004 11/15/2004 11/15/2004 11/15/2004 11/15/2004 11/15/2004 11/15/2004 11/15/2004 11/15/2004	11/16/2004 11/16/2004 11/16/2004 11/16/2004 11/16/2004 11/16/2004 11/16/2004 11/16/2004 11/16/2004 11/16/2004 11/16/2004 11/16/2004 11/16/2004	GRB GRB GRB GRB GRB GRB GRB GRB GRB GRB	EPA 8260B EPA 8260B EPA 8260B EPA 8260B EPA 8260B EPA 8260B EPA 8260B EPA 8260B EPA 8260B EPA 8260B EPA 8260B EPA 8260B EPA 8260B



# CTLaboratories

MSA PROFESSIONAL SERVICES

Project Name: MINOQUA CLEANERS

Project #: 213132

Contract #: 1362 Folder #: 44,141

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CTI LAB#: 285767	Sample Description:	B-8A 20-22					Sampled:	11/1:	2/2004	1315
Analyte	Result Units	LOD	LOQ	Dilution	Qualifier	Prep Date	Analysis Date	Analyst	Metho	ıd
Chloromethane	<0.013 mg/kg	0.013	0.042	1.0		11/15/2004	11/16/2004	GRB	EPA 82	60B
2-Chlorotoluene	<0.0059 mg/kg	0.0059	0.020	1.0		11/15/2004	11/16/2004	GRB	EPA 82	60B
4-Chlorotoluene	<0.012 mg/kg	0.012	0.040	1.0		11/15/2004	11/16/2004	GRB	EPA 82	60B
1,2-Dibromo-3-chloropropane	<0.016 mg/kg	0.016	0.054	1.0		11/15/2004	11/16/2004	GRB	EPA 82	60B
1,2-Dibromoethane	<0.015 mg/kg	0.015	0.053	1.0		11/15/2004	11/16/2004	GRB	EPA 82	60B
Dibromomethane	<0.011 mg/kg	0.011	0.034	1.0		11/15/2004	11/16/2004	GRB	EPA 82	60B
1,2-Dichlorobenzene	<0.0059 mg/kg	0.0059	0.018	1.0		11/15/2004	11/16/2004	GRB	EPA 82	60B
1,3-Dichlorobenzene	<0.013 mg/kg	0.013	0.041	1.0		11/15/2004	11/16/2004	GRB	EPÁ 82	60B
1,4-Dichlorobenzene	<0.011 mg/kg	0.011	0.034	1.0		11/15/2004	11/16/2004	GRB	EPA 82	60B
Dichlorodifluoromethane	<0.015 mg/kg	0.015	0.048	1.0		11/15/2004	11/16/2004	GRB	EPA 82	60B
1,1-Dichloroethane	<0.015 mg/kg	0.015	0.052	1.0		11/15/2004	11/16/2004	GRB	EPA 82	60B
1,2-Dichloroethane	<0.0094 mg/kg	0.0094	0.028	1.0	•	11/15/2004	11/16/2004	GRB	EPA 82	60B
1,1-Dichloroethene	<0.015 mg/kg	0.015	0.049	1.0		11/15/2004	11/16/2004	GRB	EPA 82	60B
cis-1,2-Dichloroethene	<0.013 mg/kg	0.013	0.045	1.0		11/15/2004	11/16/2004	GRB	EPA 82	60B
trans-1,2-Dichloroethene	<0.019 mg/kg	0.019	0.062	1.0		11/15/2004	11/16/2004	GRB	EPA 82	60B
1,2-Dichloropropane	<0.0082 mg/kg	0.0082	0.028	1.0		11/15/2004	11/16/2004	GRB	EPA 82	60B
1,3-Dichloropropane	<0.013 mg/kg	0.013	0.042	1.0		11/15/2004	11/16/2004	GRB	EPA 82	60B
2,2-Dichloropropane	<0.012 mg/kg	0.012	0.040	1.0		11/15/2004	11/16/2004	GRB	EPA 82	60B
1,1-Dichloropropene	<0.015 mg/kg	0.015	0.050	1.0		11/15/2004	11/16/2004	GRB	EPA 82	60B
cis-1,3-Dichloropropene	<0.018 mg/kg	0.018	0.059	1.0		11/15/2004	11/16/2004	GRB	EPA 82	60B
trans-1,3-Dichloropropene	<0.011 mg/kg	0.011	0.033	1.0	•	11/15/2004	11/16/2004	GRB	EPA 82	60B
Diisopropyl ether	<0.0094 mg/kg	0.0094	0.033	1.0	-	11/15/2004	11/16/2004	GRB	EPA 82	60B
Ethylbenzene	0.031 mg/kg	0.0082	0.028	1.0		11/15/2004	11/16/2004	GRB	EPA 82	60B
Hexachlorobutadiene	<0.015 mg/kg	0.015	0.050	1.0	1	11/15/2004	11/16/2004	GRB	EPA 82	60B
2-Hexanone	<0.22 mg/kg	0.22	0.76	1.0	1	11/15/2004	11/16/2004	GRB	EPA 82	60B
Isopropylbenzene	<0.013 mg/kg	0.013	0.042	1.0	1	11/15/2004	11/16/2004	GRB	EPA 82	60B
p-Isopropyitoluene	36 mg/kg	1.5	5.0	100.0	,	11/15/2004	11/16/2004	GRB <sup>-</sup>	EPA 82	60B
Methyl tert-butyl ether	<0.0070 mg/kg	0.0070	0.021	1.0	1	11/15/2004	11/16/2004	GRB	EPA 82	60B
4-Methyl-2-pentanone	<0.14 mg/kg	0.14	0.48	1.0	1	11/15/2004	11/16/2004	GRB	EPA 82	60B
Methylene chloride	0.032 mg/kg	0.029 *	0.095	1.0	1	11/15/2004	11/16/2004	GRB	EPA 82	60B
Naphthalene	<0.014 mg/kg	0.014	0.045	1.0	1	11/15/2004	11/16/2004	GRB	EPA 82	60B
n-Propylbenzene	<0.0059 mg/kg	0.0059	0.019	1.0	1	1/15/2004	11/16/2004	GRB	EPA 82€	60B
Styrene	<0.0094 mg/kg	0.0094	0.029	1.0		11/15/2004 <sup>-</sup>		GRB	EPA 82	60B
1,1,1,2-Tetrachloroethane	<0.014 mg/kg	0.014	0.047	1.0			11/16/2004	GRB	EPA 82	
1,1,2,2-Tetrachloroethane	<0.0094 mg/kg	0.0094	0.030	1.0		11/15/2004		GRB	EPA 82	
Tetrachloroethene	<0.015 mg/kg	0.015	0.049	1.0		1/15/2004		GŔB	EPA 826	
Tetrahydrofuran	<0.19 mg/kg	0.19	0.62	1.0		1/15/2004		GRB	EPA 820	
, oddinydrordian	-o. ra myny	0.13	0.02	1.0	'	,, 2.004	/ IUIZUUT	J1 (U	L. A. OZ.	





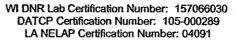
Project Name: MINOQUA CLEANERS

Project #: 213132

Contract #: 1362 Folder #: 44,141

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CTI LAB#: 285767	Sample Description:	B-8A 20-22					Sampled:	11/12	11/12/2004 1315		
nalyte_	Result Units	LOD	LOQ	Dilution	Qualifier	Prep Date	Analysis Date	Analyst	Method		
oluene	0.20 mg/kg	0.0082	0.027	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B		
2,3-Trichlorobenzene	<0.015 mg/kg	0.015	0.052	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B		
2,4-Trichlorobenzene	<0.013 mg/kg	0.013	0.045	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B		
1,1-Trichloroethane	<0.011 mg/kg	0.011	0.036	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B		
1,2-Trichloroethane	<0.014 mg/kg	0.014	0.043	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B		
ichloroethene	<0.018 mg/kg	0.018	0.057	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B		
ichlorofluoromethane	<0.012 mg/kg	0.012	0.038	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B		
2,3-Trichloropropane	<0.020 mg/kg	0.020	0.066	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B		
2,4-Trimethylbenzene	<0.0094 mg/kg	0.0094	0.032	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B		
3,5-Trimethylbenzene	<0.0094 mg/kg	0.0094	0.028	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B		
nyl chloride	<0.013 mg/kg	0.013	0.041	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B		
& p-Xylene	<0.022 mg/kg	0.022	0.073	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B		
Xylene	<0.014 mg/kg	0.014	0.048	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B		







Project Name: MINOQUA CLEANERS

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Notes regarding entire Chain of Custody:

Notes: \* Indicates Value in between LOD and LOQ.

All samples were received intact and properly preserved unless otherwise noted. The results reported relate only to the samples tested. This report shall not be reproduced, except in full, without written approval of this laboratory. The Chain of Custody is attached.

This report satisfies the requirements of your project but has not been prepared to comply with NELAP reporting requirements.

Submitted by:

#### QC Qualifiers

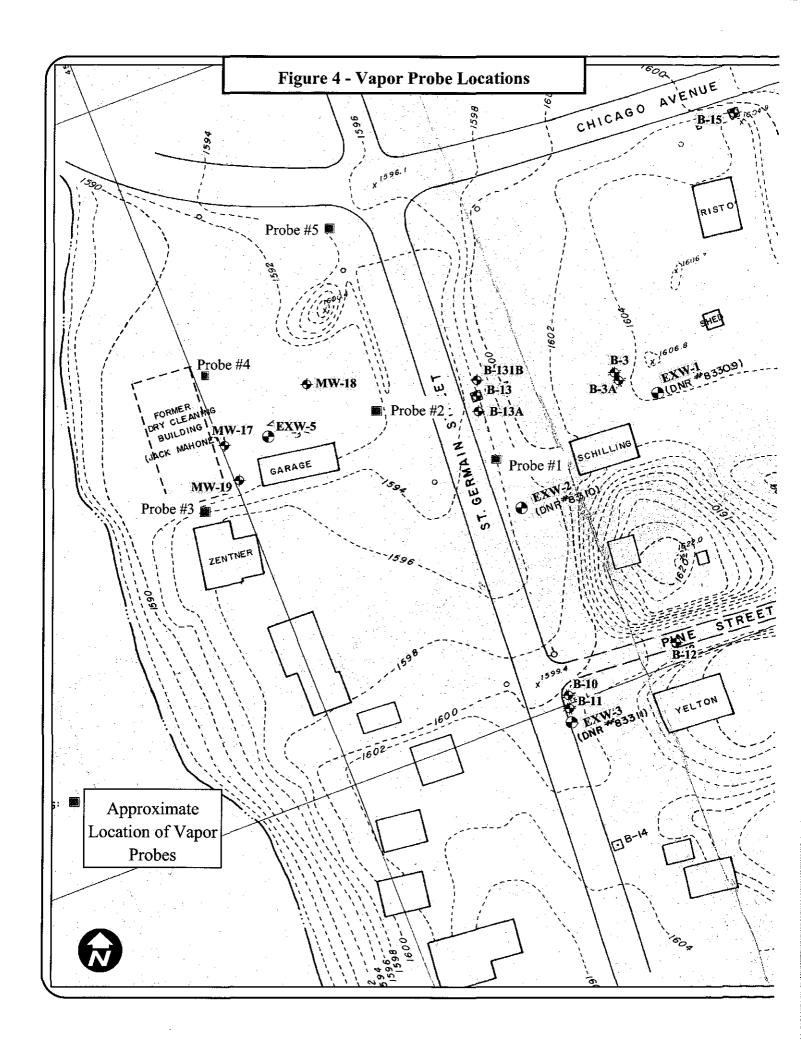
Α	Analyte averaged calibration criteria within acceptable limits.
В	Analyte detected in associated Method Blank.
С	Toxicity present in BOD sample.
Ð	Diluted Out.
E	Safe, No Total Coliform detected.
F	Unsafe, Total Coliform detected, no E. Coli detected.
G	Unsafe, Total Coliform detected and E. Coli detected.
H	Holding time exceeded.
J	Estimated value.
Ĺ	Significant peaks were detected outside the chromatographic window.
M	Matrix spike and/or Matrix Spike Duplicate recovery outside acceptance limits.
N	Insufficient BOD oxygen depletion.
0	Complete BOD oxygen depletion.
₽	Concentration of analyte differs more than 40% between primary and confirmation analysis.
Q	Laboratory Control Sample outside acceptance limits.
R	See Narrative at end of report.
S	Surrogate standard recovery outside acceptance limits due to apparent matrix effects.
T	Sample received with improper preservation or temperature.
V	Raised Quantitation or Reporting Limit due to limited sample amount or dilution for matrix background interference.
W	Sample amount received was below program minimum.
Х	Analyte exceeded calibration range.
Υ	Replicate/Duplicate precision outside acceptance limits.
Z	Calibration criteria exceeded.



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Project Contact: Len Gradal'					**************************************	***** FESS CLEA	****** IONA NERS	** ***********************************	<b>松松時 帕科</b> 被秘号 帕 <b>刘</b>	Ice Ter Init	230 Lan 08-356- w Prese	ge Cou 2760 ww.ctl er.t ature	Tel. aborat	aboo, V Fx 608- priss co es 7. E August ne 116	356-27 m N Q	V66 V0	Con Add City Invo Add City PO	npany lress: /Statoice T lress: /Sta	y: W 12 te/Zi te/Zi	15 A 30 ip: 13 460-	500	74 Blod. 600, WA 53	
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### APPENDIX D

**Vapor Probe Construction Forms** 



State of Wisconsia Department of Natural Resources		atershed/Wastowater		agement [	MONITORING WE Form 4400-113A	LL CONSTRUCTION Rev. 7-98
Part of the N		mediation/Redevelopm		<del></del>		
Facility/Project Name		ocal Grid Location of V	_t □ S		Well Name	i
Minocada Crzw				ft. □W.	V.F.	10000 10 010 37
Facility License, Permit or Mon		ocu Ona Ongin 📋 (	Long.	Well Location []		o. DNR Well ID No.
Facility ID	1	t. Planeection of Was	n. N	fl. E. S/C/N	Date Well Installed	210812005
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Well Code	ļ <sub>=</sub>		€ SccT		GEISS	
	. Stds.	ocation of Well Relativ u Upgradient	e to Waste/Source • Sidegradient	Gov. Lot Number		0
Source n Ap		d D Downgradient		1	VIEFF	MUNIS
A. Protective pipe, top elevation		ft MSL		. Cap and lock?		X Yes   No
B. Well casing, top elevation		ft.MSL		2. Protective cover p a. Inside diameter		in.
C. Land surface elevation		ft. MSL	ا الم	b. Length:		f. Steel 🖂 04
D. Surface seal, bottom	ft. MSL	or _0.0_ n.		c. Material:		Steel 🖸 04 Onher 🖸 🌋
12, USCS classification of soil	near screen;	****	A Market	d. Additional pro	tection?	☐ Yes ☐ No
GP GM GC GC G			用 11//	If yes, describe	# <u> </u>	Bentumite 14 30
Bedrock 🗆				Surface scal:		Concrete C 01
13. Sieve analysis performed?	⊓Ye	s II No				Other D
14. Drilling method used:		v □ 50		Material between	well casing and proto	****
_	w Stem Aug	- 1		t, itsulation care-sale.	Man during Street	Bentonite 🖾 30
DIRECT Push	Oth	er 🕦				Other 🗆 👑
PERS. S. I. S. P. I.	•			. Annular space ser	a. Granuler/Chia	sped Bentonite 2 33
15. Drilling fluid used: Water	□-02 A	ár □ 01		i ramigua apare se	and weight Benton	
Drilling Mud		ns 100 99			and weight Be	
		<b>,</b>		4 % Benton	ite Bernonite	-cement grout [] 50
16. Drilling additives used?	☐ Ye	s Bell No			volume added for an	
				How installed:		Tremie 🔲 01
Describe	<del></del>					emic pumped 🖸 02
17. Source of water (attach snat	ysis, if require	;d):				Gravity 2 08
		<b>1</b>	6	Bentonite seal:	a. Bente	mite granules M 33
		- 4		b, 🖂 1/4 in. 🖂	3/8 in. 🛮 1/2 in. 🖁	entonite chips 🏻 32
E Bentonite seal, top	ft_MSL	or <b>4.0</b> ft.		· c.		Other D
F. Fine sund, top	_ ft. MSL		7	Fine sand materia	d: Manufacturer, proc REd Flix	het pame & mesh size
G. Filter pack, top	ft. MSL	6 a		b. Volume added	The second second	n3
		- / <b>\</b>		. Filter pack materi	al: Manufacturer, pro-	duct name & mesh size
H. Screen joint, top	_ ft, MSL	or		b. Volume added		<u>/</u>
I. Well bottom	_ ft MSL	#_10ft.	9	. Well casing:	Flush threaded PVC	schedule 40 🗷 2.3 schedule 80 🔲 2.4
J. Filter pack, bottom	_ it. MSL (			. Screen material:		VC Other D
K. Borchole, battam	_ft.MSL	x_[0ft.		a. Screen type:		Factory cut 20 11
L. Borehole, diameter	6 in.			*		Other 🗆 🍱
M. O.D. well casing	5_ in.		<b>\</b>	b. Manufacturer c. Slot size: d. Slotted length:	CENTURY	0. <i>O i</i> in.
N. I.D. well casing	O in.		,	<del>~</del> − − − − − − − − − − − − − − − − − − −	(below filter pack):	None 14
I hereby county that the informati	on on this for		the best of my know	dedge.		
Signature J. 7. A	mm.	Fum	52155 I	Lc.		
7	<del> </del>					140,000

Please complete both Pouns 4400-113A and 4400-113B and return them to the appropriate DNR affice 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., faiture 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 tent.

State of Wisconsin Department of Natural Resources Route to:	Watershed/Wastewater	Waste Management	MONITORING WELL CONSTRUCTS Form 4400-113A Rev. 7-98	ION
		Other		
Facility/Project Name MINOCOUA CLEAUSES	Local Grid Location of Well	A DE	Well Name VP - 2	
Pacility Licente, Permit or Monitoring No.	Local Grid Origin (Castimate	d II) or Well ocation II	Wis. Unique Well No. DNR Well ID No.	a
s started Standards a secreta on Transitionaling with	Lat Lo	ng.	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	~•
Facility ID	St. Planeft. N,	•	Date Well Installed 7,08,200	7
	Section Location of Waste/Source	B	mmddvyv	<u>Ý</u> .
Type of Well	1/4 of 1/4 of Sec.		Well Installed By: Name (first, last) and I	inn
Well Code	Location of Well Relative to Was	te/Source Gov. Lot Number	<u> 62133 Juc.</u>	
Distance from Waste/ Enf. Stds. Source ft. Apply	u 🖸 Upgradient s 🗍 🤄	Sidegradient Vot Known	JEFF Auxis	
A. Protective pipe, top elevation	n.MSL	1. Cap and lock?	Y Yes D N	0
B. Well casing, top elevation	ft.MSL	2. Protective cover :	• '	in
•	a Mer	b. Length:	·	<u>.                                    </u>
C. Land surface elevation	ft_MSL	C. Mauerial:	Steel [3] C	34
D. Surface seal, bottom ft. MS	Lor Con San San San San San San San San San Sa		Other 🗆 🖔	100
12. USCS classification of soil near screen		d. Additional pro	ection?	0
OP D GM D GC D GW D S	W L SP L	If yes, describe		
SM SC ML MH C	TO CHO!	3, Surface seal:		3 0
		3. 22. 22. 22. 2	***************************************	1
	res 🗆 No		Other []	<b></b>
	ancy □ 50	4. Material between	well casing and protective pipe:	
DIRECT PUSA O	ger [ 41 ]		Bentonite [] 3	) U 2555
DIKECI PASK O	ther 🗹	<u> </u>	Other 🗆 🚆	3
15. Drilling fluid used: Water [] 0 2	Air □ 01	5. Annular space se		5
	Inne 24 99	bLbe/gal n	ton working.	بر 1 5
		CLbs/gal n	The horizon and a series and a	0
16. Drilling additives used?	es KLNo		volume added for my of the above	U
		M	791	<b>9</b> 1
Describe		f How installed:		2
17. Source of water (attach analysis, if requ	ired):			8
		6. Bentonite seal:	a. Benicatite granules 2 3	3
		b. □1,4 in. □:	3/8 in. □1/2 in. Bentonite chips □ 3	2
E. Bentonite seal, topft. MS	Lor <b>9.9</b> ft.	/	Other []	***
		7 Fine send meteria	l: : Manufagturer, product name & mesh sk	7£
F. Fine sand, top	- or ir.		30 RED FLINT	<b>8</b> 5
A. 1503	Lox 6' AL	A /		200
G. Filter pack, top n. MSI	-a	b. Volume added	The state of the s	
H. Screen joint, top ft. MS	or 5' a	8. Filler pack materi	al: Manufacturer, product name & mesh s	<b>226</b> 数
		h Volume added	R <sup>3</sup>	
I. Well bozzon ft. MS)	Lor 10 ft.	9. Well casing:		3
			Flush threaded PVC schedule 80 📋 2	4
J. Filter pack, bottom ft. MSI	a f		Other D	*
	18/	10. Screen material:	Sch 40 PUC 3	*
K. Borehole, bottom	orA	a. Screen type:		1.
20		🖟 e ili e ili 🤏 e ili e	Continuous slot 🔲 0	1
L. Borehole, diameter 2.0 in.		<b>\</b>	Other 🛚 🖠	<u> </u>
1.5		b. Manufacturer	CENTURY 0.01:	
M. O.D. well casing in.		c. Slot size:	*** - <u></u>	ш. А
1.0	. The state of the	d. Sloued length:		4
N. I.D. well casing in.		11. Backfill material (	below filter pack): None (4. 1 Other []	<b>*</b>
I hereby certify that the information on this	form is true and correct to the best	of my knowledge.	Crusis Ld &	<del>=</del>
Signature	Firm	<u> </u>		_
dit. Ammi		155 INC.		
7	11973	- TAIR office and known Committee	ice of these reports is required by the 160 281.	

Please complete both Forms 4400-113A and 4400-113B and return them to the appropriate DNR office and bureau. Completion of these reports it required by chr. 160, 281, 283, 293, 292, 293, 295, and 299, Wis. Stats., and ch. NR 141. Wis. Adm. Code. in accordance with chr. 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 thould be rem.

State of Wisconsia Department of Natural Resources Route to: Watershed/V	/astewater   Waste Mar		MONITORING WELL CONSTRUCTION
	Redevelopment Other		Form 4400-113A Rev. 7-98
	Location of Wall		Well Name
MINOCOUN CLEANERS -	t. 🖂 Š	^ B.	VP-3
Pacility License, Permit or Monitoring No. [Local Grid	Origin 🔲 (estimated: 🛄 ) or	Well Location	Wis. Umique Well No.  DNR Well ID No.
Lat	Long	, ii	
CSta. ID			Date Well Installed 7,08,2005
Dr. Hame —		fl. E. S/C/N	07,08,2005
Type of Well Section Loc	ation of Waste/Source	n e	<u> </u>
140	f, 1/4 of Sec, T	_N.R	Well Installed By: Name (first, last) and Firm
Well Code / Location of	Well Relative to Waste/Source	Gov. Lot Number	
Distance from Waste/ Enf. Stds. u Upg	radient s 🗌 Sidegradien	l)	JEFF Amis
Sourceft. Apply _ d Dov	rngradient : n 🔲 Not Known		The same of the sa
A. Protective pipe, top elevation ft. 1	ASL —	1. Cap and lock?	XX Yes 🗋 No
B Well essine ton elevation ft.		2. Protective cover pi	pe:
B. Well casing, top elevation		a. Inside diameter:	in_
C. Land surface elevation ft. h	AST.	b. Length:	ft.
		c. Material:	Steel 🛅 04
D. Surface seal, bottom ft. MSL or O	一个 等级 计		Other 🗆 🤍
12, USCS classification of soil near screen:		d. Additional prote	
OP I GMI OCI GWI SW I SP		If yes, describe:	
SM C SC MLC MHC CL CH		it yes, describe:	Bentanite 2 30
Bedrock 🗆		3. Surface scal:	
13. Sieve snalysis performed?			Concrete C 01
			Other 🖸 🌉
14. Drilling method used: Rotary D 5 0		4. Material between w	vell casing and protective pipe:
DIZECT Push Other B	· · · · · · · · <b>188 889</b> .		Bentonite 🗆 3.0
Dizzel Push Other B			Other 🛘 🎇
. <b>1</b>	<b>22 23</b>	5. Annular space scal	a: Granular/Chipped Bentonite 🔼 33
15. Drilling fluid used: Water □ 02 Air □ 01		bLbs/gal mv	id weight Bentomite-smd slurry [] 35
Drilling Mud 🖂 03 None 🗗 99	0001 K001	cLbs/gal mu	id weight Bensonite slurry [] 31
			Bentonite-cement grout [ 50
16. Drilling additives used?   Yes  No			volume added for any of the above
		f. How installed:	Tremie 🛘 01
Describe		I' LICA Miscrisere	Tramic pumped [] 02
17. Source of water (attach analysis, if required):			Gravity 27 0 g
			a. Beniumite granules 23 3
	👹 👹 '	5. Bentonite soul:	<del> </del>
0.5	2. 🗯 🖼	b. 1/4 in. 113/	
E. Bentonite seal, topft. MSL or Cab		C	Other 🛘 💥
		I Charand maradal	Manufacturer, product name & mesh size
F. Fine rand, top ft. MSL or			<i></i>
		4270	O KED Pliv!
G. Filter pack, top fr. MSL or 15	_a_ \\	b. Volume added	n³
			: Manufacturer, product name & mesh size
H. Screen joint, top ft. MSL or _ 5_		. # 30	
		b. Volume added	
I. Well bottom ft. MSL or 3 : 5		). Well casing:	Plush threaded PVC schedule 40 图 23
As an opposite			Physh threaded PVC schedule 80 [] 24
J. Filter pack, bottom ft. MSL or 3.3	(4)		Other 🛚 💥
J. Filter pack, bottom ft. MSL or			Seh 40 PUC
K. Borehole, bottom ft. MSL or 5.5	Δ Ι	). Screen material: 🔃	2000
K. Borehole, bottomft_MSLor	- "	a. Screen type:	Factory cut 💆 11
L. Borchole, dismeter 20 in.		*	Continuous slot 🔲 0 1
L. Borehole, diameter in.			Other 🗆 🎉
1	$\mathbf{A}$	b. Manufacturer	CENTURY
M. O.D. well easing in.	The state of the s	c. Slot size:	0. 01 in.
3 21	· · · · · · · · · · · · · · · · · · ·	d Slotted length:	_ <b></b> #.
N. I.D. well casing in.	11	, Backfill material (b	elow filter pack): None 2 14
		· <u></u>	Other 🖸 🌉
I hereby certify that the information on this form is true	and correct to the best of my know	vledge.	
	Desired to the second s		
Signature P. F. A	GEISS	INC.	
- Hillman	1	<u> ۲۷ – ۲</u>	

Please complete both Forms 4400-113A and 4400-113B and return them to the appropriate DNR inffice and bureau. Corapletion 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 forfeigne 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.

		Waste Management	MONITORING WELL CONSTRUCTION Form 4400-113A Rev. 7-98
Facility/Project Name	Remediation/Redevelopment ( ) ( Local Grid Location of Well ( ) N	Other	Well Name
MINOCOLA CLEANERS	1		<i>VP-4</i>
Facility License, Permit or Monitoring No.	Local Orid Origin [] { estimated:	: []) or Well Location []	Wis, Unique Wellino. DNR Well ID No.
77 - 17 - 77	CatLong		
Facility ID	St. Planc ft. N.	fl. E. S/C/N	Date Well Installed 7/08/2005
	Section Location of Waste/Source		
Type of Well	1/4 of 1/4 of Sec	tn.r	Well Installed By: Name (first, last) and Firm
Well Code/	Location of Well Relative to Waste		GEISS INC.
Distance from Waste/ Enf. Stds. Source ft. Apply	u 🗆 Upgradient — s 🗀 Sie d 🗀 Downgradient — n 🗀 No	degradient ot Known	JEFF ANN'S
A. Protective pipe, top elevation	ft_MSL	I. Cap and lock?	¥ Yes □ No
B. Well casing, top elevation	n. MSL	2. Protective cover p	•
	-	a. Inside diameter	
C. Land surface elevation	fLMSL	b. Longth:	Steel FI 04
D. Surface seal, bottom	La O.O n を語り	c. Material:	Other 🗆 💥
12. USCS classification of soil near screen	1 % 171 114	d. Additional pro-	
GP D OM D OC D OW D S		If yes, describe	•
Bedrock []		3. Surface scal:	Bentonite A 30
	(es □ No		Concrete D 01
1	1 1842 1950	· · · · · · · · · · · · · · · · · · ·	Other D
14. Drilling method used: Rot	ary □ 50	4. Mascrial between	well casing and protective pipe:
DIRECT Push of			Bentonite 🖸 30
DIRECT FASK O	her 🗷 🧱		Other 🖸 🌉
12 mm o		5. Annular space sea	a. Granular/Chipped Bentonite 27 3 3
15. Drilling fluid used: Water □ 0.2 Drilling Mud □ 0.3	Air 🖸 01	bLbs/gal m	and weight Bentonite sand slurry [] 35
Tarimin R Given C1 0.2 V	Tome #27 99	cLbe/gal m	ad weight Bentonite slurry [] 31
16. Drilling additives used?	es MINo		ne, Bentonine-cement grout 🗆 50
10. Drilling scientives peed:	es an Ivo	eFı <sup>3</sup>	volume added for any of the above
D3		f. How installed:	
Describe		Ţ.,÷	Tremie pumped 🛛 02
17. Source of water (attach analysis, if requ	red):		Gravity 26 08
		6. Bentonite seal:	a. Bentonite granules 👺 3 3
		b. □1/4 im. □3	V8 in. □1/2 in. Bentonite chips □ 32
E. Bentonite scal, topft. MST	or Uru ft. B	/	Other []
			: Manufacturer product name & mesh size
F. Frince sand, top ft. MSI	- orft.	. rino sand makeria	
		/	30 KEU PILVI
G. Filter pack, top fr. MSl	- 07111   11	b. Volume added	
		8. Filter pack materi	il: Manufacturer, product name & mesh size
H. Screen joint, top ft. MSI	or_(2IL	- 45	30 KEd FINI
i i i i i i i i i i i i i i i i i i i		b. Volume added	
I. Well bottomft_ MSI	. orft.	9. Well casing:	Flush threaded PVC schedule 40 27 23
			Flush threaded PVC schedule 80 🖸 24
J. Filter pack, bottom fr. MSI	. or t.		C-6 UA PVC
	7,	10. Screen material:	<u> </u>
K. Borchole, bottom	ortt	a. Screen type:	Factory cut. Ed. 1 1
0.0			Continuous slot 🔘 01
L. Borehole, diameter 2:0 in.			Other 🛘 🎬
بر د	<u>.</u>	b. Manufacturer	CENTURY
M. O.D. well casing in.		c. Slot size:	0. <u>O</u> in.
₩		d. Should length:	_2_ft.
N. I.D. well casing / O in.		11. Backfill material (	below filter pack): None 21 14
		· · · · · · · · · · · · · · · · · · ·	Other 🛘 🌋
I hereby certify that the information on this l	orm is true and correct to the best o	f my knowledge.	
Signature	Pina		
J.F. Armer	681	55 INC.	

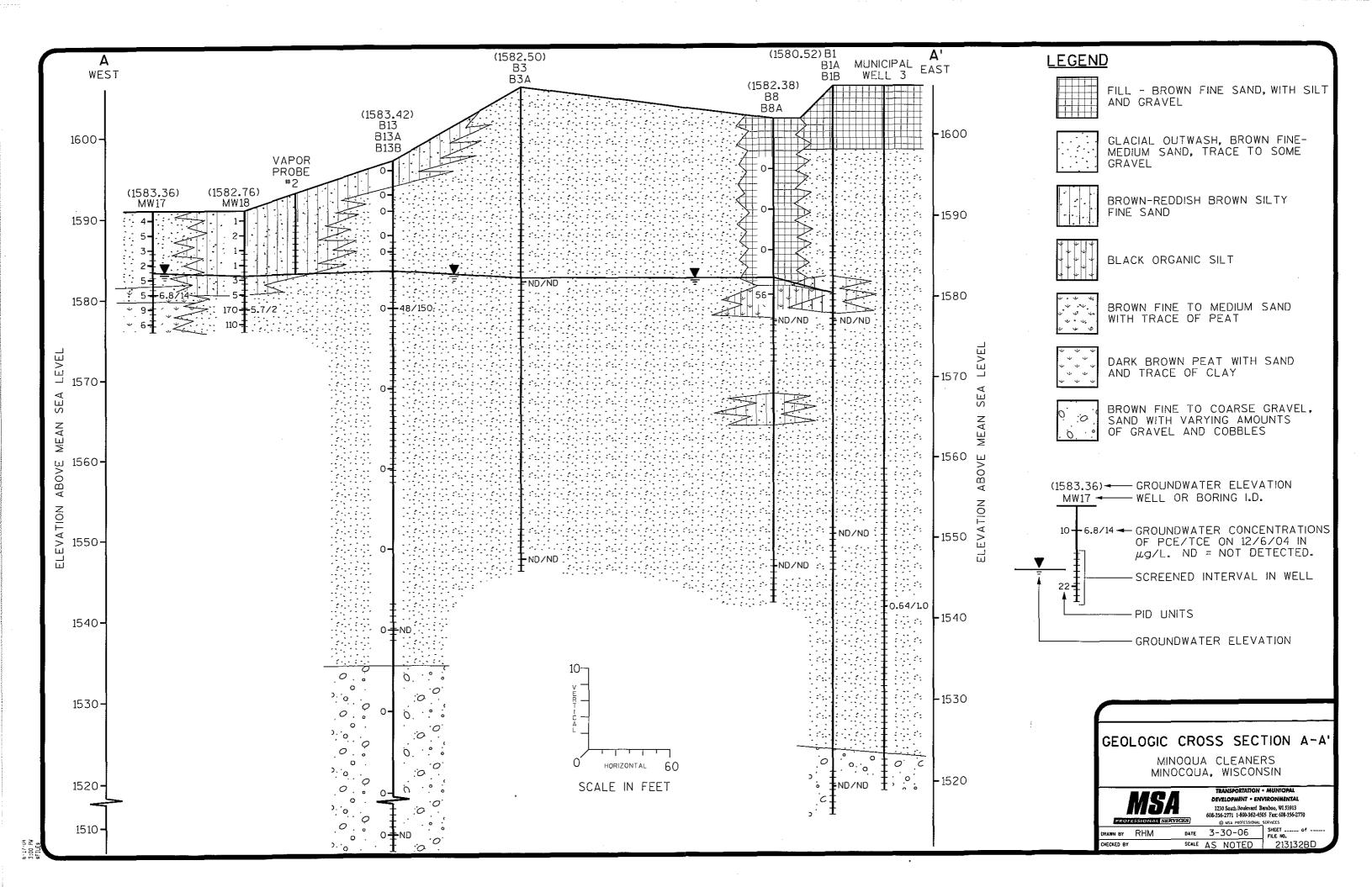
Please complete both Forms 4400-113B and return them to the repropriate DNR office and bureau. Completion of these reports is required by chs. 160, 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code: In accordance with chs. 281, 289, 291, 292, 293, 295, and 299, Wis. Stats., faiture 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.

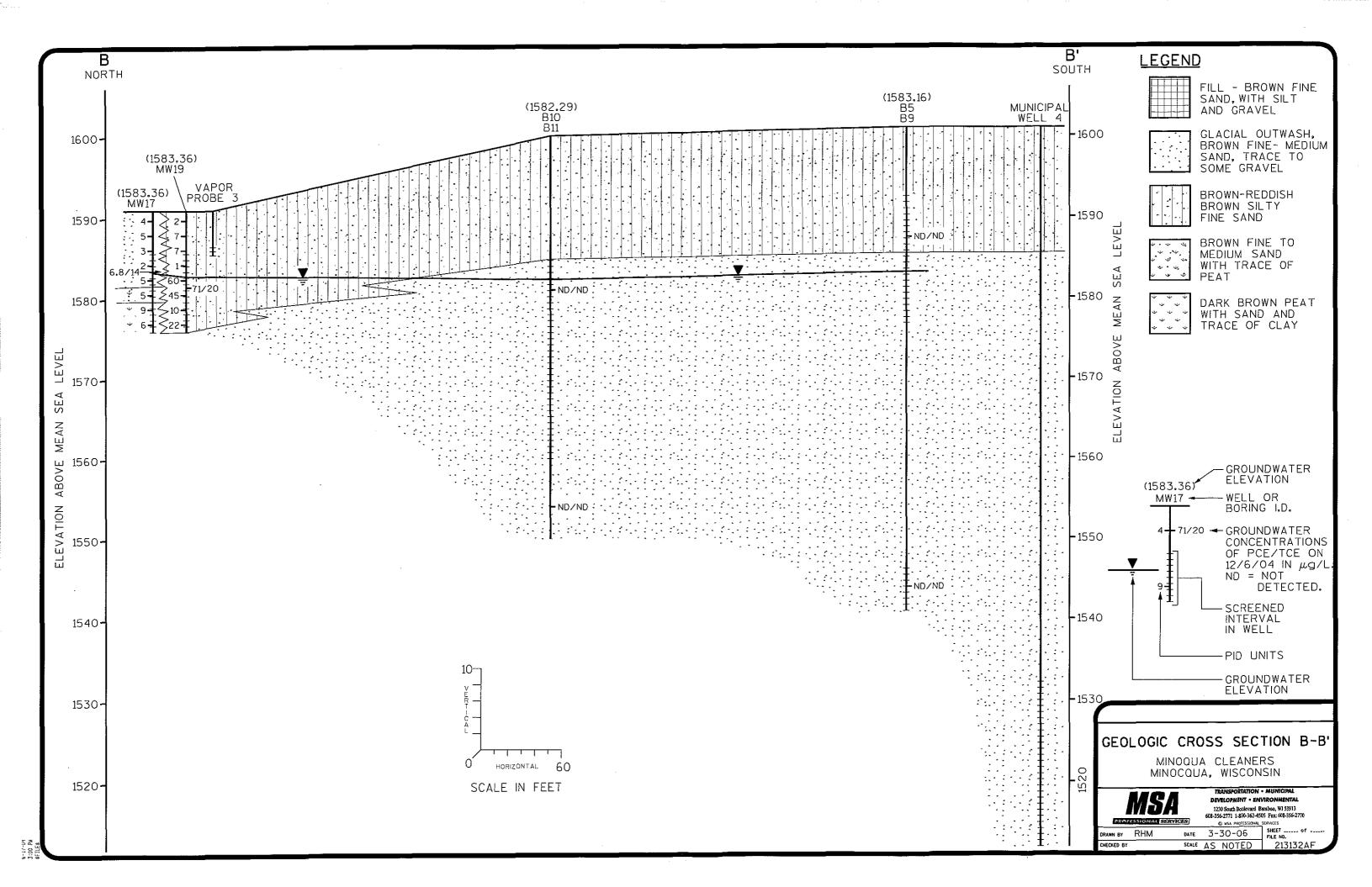
	Watershed/Wastewater	Waste Manage		MONITORING WE	LL CONSTRUCTION
Facility/Project Name	Remediation/Redevelopment Local Grid Location of Well ft.	Other			
	FOCET CALG FOCETION OF MOR	□n.	^ 🗀 🖫 🕽	Well Name	مسم
MINOCYUA CLEANERS	II.	□ S	r □w.	<u> </u>	<i></i>
Facility License, Permit or Monitoring No.	Local Grid Origin   (estic	mated: □ ) or We	eli Location 🔲	Wis. Unique Well No	).  ONR WOLLD No.
	Lat	*Long	or		
Facility ID	<u> </u>	N.	R.E. S/C/N	Date Well Installed	7.19.2005
	Section Location of Waste/Se		16 24 070717		1174 9555
Type of Well	]	•	R 76	Well Installed By: N	ame (first, last) and Firm
Well Code /	1/4 of1/4 of Sec		K,L W	GEISS	tuc
Distance from Waste/   Enf. Stds.	Location of Well Relative to	Waste/Source G	ov. Lot Number		
	1 ***	☐ Sidegradient		Teff	Amis
	d 🖸 Downgradient n				
A. Protective pipe, top elevation	ft. MSL		ap and lock?	•	Yes D No
D 327-01	n MSL		rotective cover pi	pe:	
B. Well casing, top elevation			Inside diameter:		in.
C. Land surface elevation	fr. MSL	h b	Length:	-	ft.
_		CANONI C.	Material:		Steel 🔲 04
D. Surface seal, bostom ft. MS	Lor CL n washing				Other 🛘 🚟
12, USCS classification of soil near screen		1.15(4) 55	Additional prote	ation?	☐ Yes ☐ No
	W I SP I		If yes, describe:		m
SM SC MLD MHD			it yes, describe	<del></del>	Bentonite M 30
Bedrock []		3.50	urface scal:		
13. Sieve analysis performed?	Yes □ No				Concrete U 01
	1 <b>188</b>	<b>88</b> -		<del></del>	Other D
	acry □ 50 [28	4. M	iatorial between w	cli casing and protec	- · · · · · · · · · · · · · · · · · · ·
DiRECT Push O	uger 🛚 4 1				Bentonite 🔲 3.0
DIKECT Push o	ther 20 💮			:	Other 🛘 🌃
		5 4	onvier energ scale	a. Granular/Chip	oed Bentonite K 33
15. Drilling fluid used: Water 1 0 2	Air□01		ببحده منصوره عبيبورين بنعد أمشمة آ	Anniahe Rentoni	to-sand slurry 35
	Tome JE 99 🗮	· · · ·	Cooper mo	d weight.	nionite slurry [] 31
		C			cement grout [] 50
16. Drilling additives used?	res 🏂 No 🐯	€ 4 —			
1.		c		rotume udded for any	
Describe		£.	How installed:	·	Tremie 🛮 01
17. Source of water (attach analysis, if requ				Tre	anic pumped 🛛 02
1. Soutce of Agret farmers supplying it tedft	ner):	<b>183</b>			Gravity Eff 08
		6 Be	entonito seal:	a. Bento	mite granules 🙀 33
		ъ.	□1/4 in. □3/4	Bia. □1/2 in. Be	entonite chips [] 32
E. Bentonite seal, ton ft. MSI	Lor OLO ft.				Other []
				10 00	
F-Fine sund, top ft. MSI	or a 💮 👹	7. Fi	ne sund material:	Manufacturer, prod	uct name & mesh size
	· · · · · · · · · · · · · · · · · · ·		42	O REd FL	INT
A 450				<u> </u>	. 3
G. Filter pack, top fr. MS	-04-1正		Volume added		14
	コノ 一国	8.月	lter pack material	Manufactures, poor	fuct name & mesh size
H. Screen joint, top ft. MSI	or _ & ft.		Q.	SUKEd P	7 W 🚟
	ニーノ 間		Volume added		h.3
I. Well bouom ft. MSI	Lor_ft_			Plush threaded PVC s	chedule 40 🕱 23
	/ \			Flush threaded PVC :	
I. Filter pack, bottom ft. MSI	or ft.				Other 🛮 🎎
An Antonia Remain standard on the control of the co		100-	reen material:	Seh 40	PUC 🚟
K. Borchole, bottom ft. MSI	~ 7 A	2019 · · · · · · · · · · · · · · · · · · ·	· 7.7	<u></u>	Factory cut 🗹 11
K. Borchole, bottom ft. MSI	***		Screen type:	·	
L. Borchole, diameter 2.0 in.				CON	
L. Borehole, diameter in.					Other 🛛 🎇
1.4		<b>\</b> b.	Manufacumer		
M. O.D. well easing		<b>\</b> c.	Slot size:		0 01 in
	-	\ d.	Slotted length:		<u>&amp;</u> ft.
N. I.D. well casing 1.0 in.	•	11.R±	ckfill material (b	elow filter pack):	None 🗗 14
		****	aramana araman <del>a aramana Afri</del>	A A STORY OF THE STORY	Other 🗖 🎎
I hereby certify that the information on this i	corn is town and accept to the	hett of my knowled	06		***
	Fre-1	100	<del></del>		
Signature L. F. Homei	Fine Gr	iss INC			
T. June			<del> </del>		

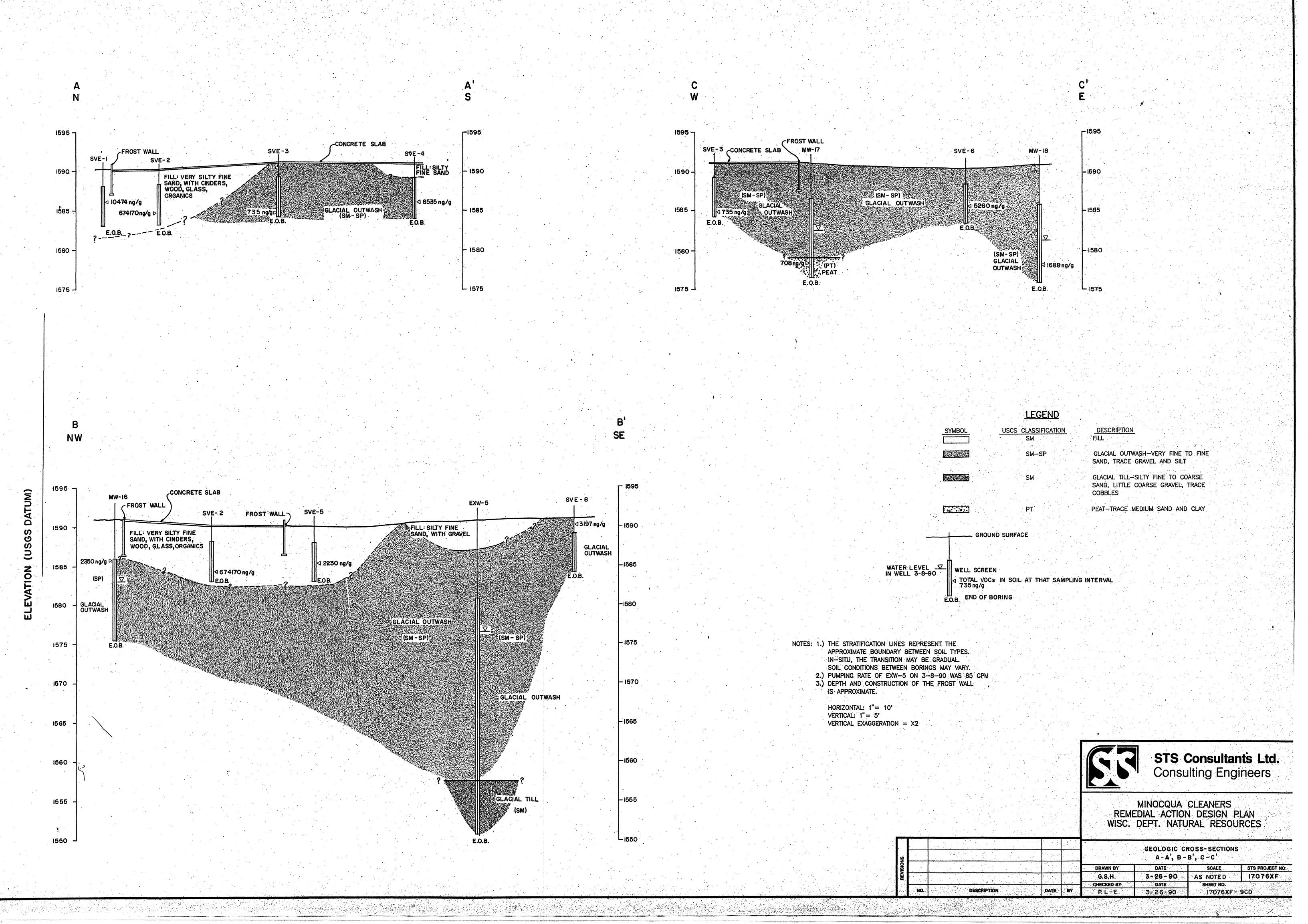
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### APPENDIX E

**Geologic Cross Sections** 







#### APPENDIX F

Municipal Well #3 and #4 Well Construction Reports

FEB 14th + 15th

#3 RAN From 9:00pm on

the 14th to 2:00 mm on the

15th RAN FOR 10 minutes

when Sampling on the

15 th

#### **FAX**

#### LAKELAND SANITARY DISTRICT NO. 1 8780 MORGAN ROAD MINOCQUA, WI 54548-9797

PHONE: 715-356-4454 FAX: 715-358-8830 E-MAIL: <u>www.sandist@nnex.net</u>

FROM: Row Gro	Н	
TO: <u></u>		
DATE: 3/28/06	TIME:	
NUMBER OF PAGES:	1	
	(INCLUDING COVER LETTER)	

# **MESSAGE**

Dec 6th, 2004
#3 well RAN From 7:00 Am - 2:00 pm
Dec 7th, 2004
#3 Well RAN From 6:00 Am - 12:15 pm
MARCH 22 ND 2005
#3 well ran from 9:00 am - 2:00 pm
MARCH 23 RD 2005
# 3 well ran from 4:00 pm - 8:00 pm
August 31st - Sept 1st 2005
#3 RAN FROM 4:30 pm 8-31 to

## **FAX**

#### LAKELAND SANITARY DISTRICT NO. 1 8780 MORGAN ROAD MINOCQUA, WI 54548-9797

PHONE: 715-356-4454 FAX: 715-358-8830 E-MAIL: <u>www.sandist@nnex.net</u>

FROM: Ron (	7 200th		
TO: Ken			
DATE: 4/3/06		TIME:	والمساور وال
NUMBER OF PAGES:	1		
	(INC	LUDING COVER LETT	ER)

# **MESSAGE**

# 4 well

Feb 6th + 7th 2004 # 4 didn'y Run.

The on # 3 well may have been wrong

these are the correct Numbers.

MARCH 22ND, 2005- # 3 didn't run. #4 9:00 Am - 2:30 pm.

MARCH 23RD #3 - 3:00 Am - 9:00 Am. #4-4:00 pm - 8:30 pm

- · August 31, 2005 #4 4:30 Am 11:00 Am.
- · Sep+ 15+ \_ #4 10:00 am 5:15 pm.
- · FEB 14 th 2006 \$4-7.30 am 12:50 pm
- . FeB 15th \_ I don't have the Chart, probably from around

  Noon 6:00 pm.

# Department of Natural Resources

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## **Well Construction Reports**



WI Unique Well No:

BG531

High Capacity Well No:

83300 Northern

County Well Location: County:

Oneida

**DNR Region:** Muni Type:

Constructor:

Т

Municipality:

MINOCQUA

Completion Date:

01/01/1963 mm/dd/yyyy LAYNE CHRISTENSEN COMPANY

**DNR Received Date: Constructor Address:** 

W229 N5005 DUPLAINVI Constructor City:

**PEWAUKEE** 

**Constructor State:** 

Constructor Zip:

Status:

New Well

Original Year:

53072

Replacement Reason: Replacement WI Well No:

Previous WI Well No: **Construction Type:** 

1

Other Const. Type:

Category:

# Services:

Municipal/Community

Well Depth:

Facility Type:

95 ft **Highest Point on Property:** 

Rotary - Mud Circulation:

In Floodplain: Rotary - Air:

Rotary - Foam:

Reverse Rotary:

Cable Tool Bit:

Cable Bit Diameter:

**Temp Outer Casing:** 

**Temp Casing Diameter:** 

Temp Casing Removed:

Why not removed?:

Other Drilling method:

Other Drilling Description:

Screen Diameter: 20 inches 47 feet

**Screen Description:** 

Screen From:

Screen To:

Sealant Method:

Static Water level:

Pumping level:

39 feet

Pumping at:

27 feet 250

in

in

Pumping units:

Minutes

For:

0 Hour(s)

87 feet

Well Starting Depth:

0 inches

Developed: Capped:

Disinfected:

Proper Seal:

Contractor Signed on:

Seal Description:

Geologic Log Number:

Rig Operator Signed on: Common Well Number:

**ON31** 

003

Calculated Specific Capacity: 20.8

**DNR Facility ID:** 

744011620 Well Name: MANITOWISH STREET WELL #3

Water Quantity Comments:

**REHABBED IN 1977** 

Water Quality Comments:

**Drilling Difficulty:** 

Other Driller Comments:

**Exception Areas:** Landfill **Exception Area Comments:** 

# **Distances in Feet to Nearest Objects**

No Records returned

Download

# **Drillhole Dimensions**

Diameter (in)	From Depth (ft.)	To Depth (ft.)
46	0	47
19	47	95

Download

# Casing & Liner

Diameter (inches)	Description	From Depth (ft.)	To Depth (ft.)
30		0	47
20		0	47

Download

#### **Grout or Other Sealant Materials**

Kind of Sealing Material	From Depth (ft.)	To Depth (ft.)	Amount Units
CEMENT	0	47	

Download

# Geology

Geology	Geology Description	Driller's Description	USGS Code	From Depth (feet)	To Depth (feet)
Y-	Sand & Gravel;	SAND @ GRAVEL		0	75
G-	Gravel/Cobbles/Boulders/Stones;	GRAVEL		75	95

Download

# Samples

No Records returned

Download

- Abandonment (0 Rows)
- Variances (0 Rows)
- Rehabilitation/Redevelopment (0 Rows)
- Return Links
  - o DNR Drinking Water System
- · Other DNR information on this Well
  - o Public Water Supply System
  - o High Capacity Well Data
  - o Groundwater Retrieval Network Data



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#### **Department of Natural Resources**

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# **Well Construction Reports**

WI Unique Well No:

BG532

High Capacity Well No:

83301

**County Well Location:** 

Oneida

**DNR Region:** Muni Type:

Northern

Municipality:

County:

MINOCQUA Completion Date:

06/30/1982 mm/dd/yyyy

**DNR Received Date:** 

Constructor:

MILLER WELL AND PUMP CO

**Constructor Address:** 

**Constructor State:** 

Constructor Zip:

Constructor City:

Status:

New Well

Original Year:

Replacement Reason: Replacement WI Well No: Previous WI Well No:

**Construction Type:** Category:

Other Const. Type: Well Depth:

90 ft

# Services:

Municipal/Community

Facility Type:

In Floodplain:

**Highest Point on Property: Rotary - Mud Circulation:** 

Rotary - Foam: Rotary - Air:

in

in

Reverse Rotary:

Cable Tool Bit:

Cable Bit Diameter:

**Temp Outer Casing:** 

Temp Casing Diameter:

Temp Casing Removed:

Why not removed?:

Other Drilling method:

Other Drilling Description:

Screen Diameter:

20 inches

**Screen Description:** 

Static Water level:

89 feet

SS SCREEN Screen From:

69 feet

Screen To:

18 feet

Sealant Method: Pumping level:

48 feet

Pumping at:

800

Pumping units:

Minutes

For:

24 Hour(s)

Well Starting Depth:

0 inches

Developed:

Disinfected:

Capped:

Proper Seal:

**Seal Description:** 

Contractor Signed on: Geologic Log Number:

Rig Operator Signed on:

Common Well Number:

004

Calculated Specific Capacity: 26.7

**DNR Facility ID:** 

744011620

Well Name:

CEDAR & MANITOWISH STREETS WELL #4

Water Quality Comments:

Water Quantity Comments: Other Driller Comments:

**Drilling Difficulty: Exception Areas:** 

Landfill

**Exception Area Comments:** 

# **Distances in Feet to Nearest Objects**

No Records returned

Download

## **Drillhole Dimensions**

Diameter (in)	From Depth (ft.)	To Depth (ft.)
36	0	90

Download

# Casing & Liner

Diameter (inches)	Description	From Depth (ft.)	To Depth (ft.)
30		0	61
20		1.5	69

Download

#### **Grout or Other Sealant Materials**

Kind of Sealing Material	From Depth (ft.)	To Depth (ft.)	Amount Units
CEMENT	0	61	

Download

# Geology

Geology	Geology Description	Driller's Description	USGS Code	From Depth (	(feet)	To Depth (feet)
Y-	Sand & Gravel;	SAND @ GRAVEL			0	90

Download

# **Samples**

No Records returned

Download

- Abandonment (0 Rows)
- Variances (0 Rows)
- Rehabilitation/Redevelopment (0 Rows)
- · Other DNR information on this Well
  - o Public Water Supply System
  - o High Capacity Well Data
  - o Groundwater Retrieval Network Data

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### APPENDIX G

Flow Meter Information



North Pole Reps 4452 Slater Rd

Eagan, MN 55122

Phone: 651-882-5190

Cell: 612-703-1063

FAX: 651-882-5190

www.northpolereps.com

Date

July 19, 2004

Quotation No.

04-0719-51

Reference

Terms

Flow Meter - MSA

30 Days (upon approved

credit)

Kristi Du Bois P.E. MSA Professional Services, Inc. 1230 South Boulevard Baraboo, WI 53913

**Estimated Delivery** 

2 Weeks ARO

Item	Qty	Part No.	Description	Unit Price	Ext. Price
1	1	FM656	FLOW METER REPLACEMENT  Sparling MAG Flow Meter 6", TEFZEL liner (solvent compatible) Model FM656, 40-400 gpm Totalizer and Current Flow readings	\$3,397.00	\$3,397.00
1	1	SMC100M	Sparling EX Delta Flow Meter, Vortex Model 4" size, 40-400 gpm. Note: Pipe reducer needed for this flow meter, will provide accurate flows. Totalizer and Current Flow readings	\$2,475.00	\$2,475.00
			Shipping and Handling Estimated	\$30.00	\$30.00
			WE DO APPRECIATE THE OPPORTUNITY TO WORK WITH YOU ON THIS PROJECT!		

This Quotation is valid for 90 Days

Ву:		
	Jeff Petricka	
	Owner-Sr. Sales Engineer	



North Pole Reps

4452 Slater Rd

Cell:

Eagan, MN 55122

Phone: 651-882-5190

FAX: 651-882-5190

www.northpolereps.com

612-703-1063

Toshiba has been marketing Electromagnetic Flowmeters (Magmeter) since the late 1960's. Toshiba magmeters are the result of a wealth of experience and engineering expertise. We have won accolades in all areas of the industry. A full lineup of products covering meter size from 2.5mm(1/10inch) to 3000mm(120inch), as well as various liner materials to accommodate diverse fluids. This makes fluid measurements possible in almost any application.

Toshiba, a recognized leader in flowmeter technology, introduces the LF400 Series Magnetic Flowmeters. These cost-effective flowmeters combine superior noise immunity with high purity ceramic detection unit liners, allowing precise measurement in a wide range of applications.

62 Model Price; Stainless Steel Internals, Local Display, Price \$3,395





# North Pole Reps

4452 Slater Rd

Eagan, MN 55122

Phone: 651-882-5190

Cell: 612-703-1063

FAX: 651-882-5190

#### www.northpolereps.com

#### **FLOW METER OPTIONS 6"**



The Ultra Mag is a non-intrusive electromagnetic flow meter with unique lining technology. Here are the product specifications and design features for the Ultra Mag:

- Accuracy of +/-0.5% of actual flow
- Repeatability of +/-0.05%
- Rangeability from 0.2 FPS to 49 FPS
- Non-intrusive measurement
- NSF-approved, fusion-bonded epoxy liner: the UltraLiner
- Full field coil for greater accuracy over a wider flow range.
- Microprocessor-based signal converter for hard-to-reach areas
- · Pre-programmed and pre-calibrated to user's specific applications
- Meter is wet calibrated in NIST traceable calibration facility
- Test mode and self-diagnostics
- Hart Protocol compatible
- Forward and reverse flow outputs and totalization
- CSA approved
- Line sizes from 2" to 48"

#### 6" Model Quoted Price: \$3,010

6" line, flow 40-400 gpm, local totalizer. 4 weeks delivery



#### **Fixed Length Insertion Magmeter**

No moving parts to wear out Dedicated fittings for

simplicity

Retainer clip automatically sets correct depth

> Meter extends only about 1/8 of pipe diameter, minimizing potential for clogging with debris

Low-flow performance and accuracy superior to any mechanical flow sensor

Simple pulse train output can be used with any processing module, or sent directly to a PLC

Available for pipe sizes 1" to 8", in brass, 316 stainless, and PVC

6" Model Quoted Price \$1,440.00

316 SST Body, Viton O-Rings, PVDF Insulator, Ductile Iron Saddle, Wall Mount Indicator Totalizer, PC3 Power Supply. 2 weeks for delivery