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Mr. Jason Chan
Minnesota Pollution Control Agency
1601 Minnesota Dr.
Brainerd, MN 56401

Subject: Groundwater Monitoring Reports (DeZurik Lagoon No. 3 and City of Sartell Landfill)

Dear Mr. Chan:

On behalf of the City of Sartell, URS is submitting the attached DeZurik Hazardous Waste Lagoon No. 3 2000 Annual Groundwater Monitoring Report and City of Sartell 2000 Annual Groundwater Monitoring Report for your records.

If you should have any questions regarding this information please feel free to contact me at (612) 373-6881.

Sincerely,

Dean Stockwell
Project Manager

DDS:dds

Attachments

cc: Robert Therres – City of Sartell
Lee Walz – DeZurik
Keith Sowada – International Paper (City of Sartell Report Only)

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FINAL REPORT

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MPCA - BRAINERD
BAXTER, MN

**2000 ANNUAL GROUNDWATER
MONITORING REPORT**

**DEZURIK HAZARDOUS WASTE
LAGOON NO. 3**

Prepared for
DeZurik
250 Riverside Avenue North
Sartell, Minnesota 56377

January 30, 2001

URS Corporation

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Executive Summary

This Annual Groundwater Monitoring Report (Report) was prepared for the DeZurik Hazardous Waste Landfill Lagoon No. 3 (Facility) located in Sartell, Minnesota. The Report was prepared in accordance with the terms of the landfill permit. Groundwater monitoring was performed during two sampling events in 2000. Sampling consisted of collection of groundwater samples from five monitoring wells. Samples were analyzed for total metals, dissolved metals and inorganic parameters during both rounds.

According to laboratory results and the statistical analysis, the target contaminants for the Facility (arsenic, barium, cadmium, lead, and selenium) were not detected above background concentrations in 2000. Overall, the monitoring well network is in good condition and correctly placed to monitor potential releases from the Facility.

1.1 BACKGROUND

This background information was obtained from the reissued Part B Permit Application submitted by RMT, Inc. and approved by the MPCA in September of 1994. DeZurik Hazardous Waste Lagoon No. 3 (Facility) is located in the northwest corner of the City of Sartell, Minnesota and is approximately 0.2 acres in size (Figure 1). The Facility is contained within the limits of the City of Sartell Landfill. Sludges were disposed of from various DeZurik operations in the Facility. The Facility was closed in 1987 with a multi-layer 6-foot cover system.

1.2 PURPOSE AND SCOPE

This report presents the sampling results from the two groundwater monitoring events performed in 2000. Sampling was performed in accordance with Part B of the permit and is discussed in detail in Section 2.2.1. The 2000 groundwater monitoring results were compared to historical data for the Facility and to state and federal water quality standards.

This annual report incorporates information that was included in the semiannual report presented to the MPCA in July 2000, and also includes the following information:

- A narrative describing the effects that the Facility is exerting on surrounding groundwater quality and any changes made to or maintenance needed in the monitoring network;
- A description of sampling dates and procedures;
- Results of appropriate statistical procedures;
- Water level monitoring data and potentiometric maps for each sampling event;
- Calculation of groundwater flow velocities;
- Laboratory analytical reports;
- Graphs showing concentration versus time for target parameters historically detected above background levels in groundwater; and
- Summary tables showing laboratory analysis and water elevation data for each well sampled to date.

2.1 HYDROGEOLOGIC SETTING

A detailed description of the geology and hydrogeology of the site is provided in the Part B Permit Application (RMT, Inc., 1994). The information below has been summarized from the application.

The general geology of the area in which the Facility is located consists of unconsolidated glacial deposits (approximately 80 to 100 feet) that overlie Precambian granitic bedrock. Previous studies indicated there are three geologic/hydrogeologic units underneath the Facility that affect groundwater movement and flow. The surficial unit consists of silty fine-grained sands that soil borings indicate are approximately 15 feet thick. Outwash deposits are contained below the fine sands and consist of silty sands and gravel. This layer is considered the upper most aquifer and is present to 70 to 80 feet below ground surface (bgs). The third layer consists of clayey weathered bedrock located approximately 70 to 80 feet bgs which acts as an aquitard restricting the downward flow of groundwater into the bedrock.

Groundwater conditions are characterized by the network of monitoring wells located on-site. Groundwater elevations and data are presented in Table 1. Figures 2 and 3 depict the interpreted flow directions for each sampling event. Further details are discussed in Section 2.2.4.

2.2 GROUNDWATER MONITORING PROGRAM

2.2.1 Sampling and Network Evaluation

The wells that comprise the monitoring network for the Facility are shown on Figures 2 and 3. Samples were obtained from a total of four wells in 2000. Well P-13 is the upgradient well and wells P-5R, P-9R, and P-12R are the downgradient wells. As stated in the 1999 Detection Monitoring Plan revisions, the monitoring wells are sampled once each during sampling events.

Groundwater samples were collected in 2000 by Minnesota Valley Testing Laboratory (MVTL) of New Ulm, Minnesota. MVTL also performed all laboratory analyses on the samples. The spring sampling round was completed on April 24 and 25, 2000 and the fall sampling round was completed on October 23 and 24, 2000.

Prior to sampling, the water level in each well was recorded and the general condition of each well was noted. All of the wells were in good condition during both sampling events in 2000.

2.2.2 Results

Analytical results and field notes for 2000 are presented in Appendix A. Groundwater quality data for the Facility was statistically analyzed and compared to various and state water quality standards. The pertinent standards are described below.

- Maximum Contaminant Level (MCL) – The MCLs are enforceable standards that apply to public water systems, as established in the National Interim Primary Drinking Water Standards for the United States.
- Secondary Maximum Containment Level (SMCL) – The SMCL applies to public water systems. The standards are established primarily for taste, odor, and aesthetic reasons, not due to adverse health affects.
- Health Risk Limits (HRLs) – The HRLs are risk-based levels for constituents in groundwater. The HRLs are determined by the Minnesota Department of Health and are enforceable under Minnesota Rules 4717.7100 to 4717.7800.

Background concentrations for target contaminants (arsenic, barium, cadmium, lead, and selenium) are established at the upgradient well, P-13. The background data during the spring and fall sampling rounds of 2000 remained consistent with past data (Table 2) except for barium. Background concentration results for barium increased over historical levels during the 1998 and 1999 sampling events, and decreased slightly during the 2000 sampling events. The elevated results are higher than concentrations recorded to date but are below the 2,000 µg/L MCL and HRL, and the 375 µg/L IL for barium. No analytes have exceeded an MCL and/or HRL since 1993.

Results from both the spring and fall 2000 sampling events are generally consistent with historical results. Dissolved boron, manganese, nitrate, and total dissolved solids (TDS) levels exceeded federal or state water quality standards in the spring and/or fall in at least one monitoring well, as detailed below.

With MPCA approval, P-5A was removed from the sampling program in 1993 and replaced with well P-5R. P-5A is located sidegradient of the Facility and has had historical boron (dissolved) results ranging from 0.4 to 2.6 mg/L, with a relatively steady downward trend since the December 1990 sampling event. Well P-5R is also located sidegradient of the Facility. Boron was detected in P-5R at 1.18 mg/L and 1.62 mg/L for the spring and fall 2000 sampling events, respectively. The HRL for boron is 0.6 mg/L. RMT suggested in a correspondence dated February 17, 1998 that there may be an upgradient boron source or that naturally occurring variability could affect groundwater quality at the Facility.

Manganese concentrations in well P-5R were 0.092 mg/L in the spring and 0.063 mg/L in the fall. These levels exceed the SMCL of 0.05 mg/L, but are below the HRL of 0.1 mg/L.

Nitrate exceeded the IL of 2.5 mg/L in wells P-5R, P-9R, P-12R, and P-13A during the spring sampling event. The fall samples were not tested for nitrate. Nitrate concentrations during the spring sampling event were 5.57 mg/L at P-5R, 4.59 mg/L at P-9R, 4.72 mg/L at P-12R, and 5.80 mg/L at P-13A.

TDS exceeded the SMCL of 500 mg/L in wells P-5R, P-9R, and P-12R for both the spring and fall sampling events. Well P-5R readings were 717 mg/L in the spring and 852 mg/L in the fall. Well P-9R readings were 508 mg/L in the spring and 625 mg/L in the fall. Well P-12R readings were 582 mg/L in the spring and 585 mg/L in the fall. The TDS level has historically exceeded the SMCL at P-5R but the level has generally been decreasing since October 1990. Well P-13 also has tended to have variable TDS levels (RMT, Inc., 2/17/98).

2.2.3 Statistical Analysis

Statistical analysis was performed on the results of the sampling events to determine if detections in downgradient wells (P-5R, P-9R, P-12R) are above background concentrations in the upgradient well (P-13). The statistical analysis was completed in accordance with the Part B Permit reissued in September 1994. The analysis is performed on dissolved concentrations of arsenic, barium, cadmium, lead and selenium (also given in Table 2).

The tolerance interval was calculated for each analyte based on historical levels in upgradient well P-13. The Poisson Distribution was used to estimate the population mean and variance for arsenic, cadmium, lead and selenium. Since more than two detects occurred for barium, the arithmetic mean and standard deviation were used to calculate the tolerance interval for barium. The decreased background concentrations in 2000 for barium lowered the tolerance interval from 320 µg/L to 220 µg/L. The assumed tolerance factor of 2.523 is based on a confidence factor of 95 percent with a typical set of background data (n=16). The following equation was used to calculate the tolerance:

$$T = U + (k * s)$$

Where:

T = Tolerance interval

U = Population mean

k = Tolerance factor

s = Standard deviation

As stated in the correspondence dated September 29, 1998 from DeZurik to the MPCA, even though laboratory detection limits are lower, tolerance levels continue to be calculated assuming the means are equal to the reporting limits identified in the November 1994 Quality Assurance Project Plan (QAPP), as long as the detects are less than the QAPP reporting limits.

The contaminants of concern were all below background concentrations for the 2000 sampling events. No contaminants of concern have exceeded background concentrations since 1990. Graphs of concentration versus time for barium and cadmium are contained in Appendix B. These parameters are the only contaminants of concern to have exceeded background concentrations in the past.

2.2.4 Groundwater Elevations and Flow

Groundwater elevations were measured at each monitoring well during the spring and fall 2000 sampling events. Wells P-7 and P-5A are used for groundwater elevations only. Water level

data is summarized in Table 1. Groundwater flow is primarily to the southeast, which is consistent with historical results. Water table contour maps are presented as Figures 2 and 3. Appendix C contains historical water level information.

The hydraulic gradient remains consistent for the area. In 1994 for the Part B Permit Application, the average gradient was reported by RMT, Inc. as 0.006 ft/ft. In 1998, the average hydraulic gradient was 0.006 ft/ft. The gradients calculated in 2000 are 0.011 ft/ft and 0.013 ft/ft for spring and fall sampling events, respectively.

The average linear groundwater flow rates can be calculated using the following equation and assumptions:

$$V = K \cdot I / n_e$$

Where:

V = groundwater velocity

K = hydraulic conductivity (assumed 0.39 ft/min)

I = hydraulic gradient (ft/ft)

n_e = effective porosity (assumed 25%)

The calculated linear flow rates based on the above equation and assumptions are 24.26 ft/day for the spring sampling event and 30.10 ft/day for the fall sampling event. Both velocities are significantly higher than previous velocities found at the site. The maximum spring velocity was 17 ft/day (1999), and the maximum fall velocity was 13.5 ft/day (1994).

According to laboratory analysis results and the results of the statistical analysis, concentrations of target contaminants (arsenic, barium, cadmium, lead, and selenium) were below background concentrations at the Dezurik Lagoon No. 3 in 2000. Overall, the monitoring well network is in good condition and correctly placed to monitor potential releases from the Facility.

In at least one well, a MCL, SMCL and/or HRL were exceeded during both the spring and fall sampling events. The SMCL for TDS was exceeded in P-5R, P-9R and P-12R. The HRL for boron was exceeded in P-5R. Samples from P-5R exceeded the SMCL for manganese, but did not exceed the HRL. The IL for nitrate was exceeded in P-5R, P-9R, P-12R, and P-13A during the spring sampling event.

The calculated groundwater flow velocities for the spring and fall 2000 sampling events are 24.26 ft/day and 30.10 ft/day, respectively. These velocities are both new maximums for the spring and fall events.

- “Annual Groundwater Monitoring Report – Dezurik Lagoon No. 3,” RMT, Inc., December 1997.
- “Part B Permit Application for the Dezurik Lagoon No. 3,” RMT Inc., August 1994.
- “Spring 1998 Groundwater Monitoring Results for the Dezurik Closed Hazardous Waste Landfill Lagoon No. 3,” URS Greiner Woodward Clyde, July 1998.

TABLE 1
2000 Groundwater Elevation Data
DeZurik Hazardous Waste Lagoon #3

Well I.D.	Top of Casing Elevation (feet above MSL)	April 25, 2000		October 23, 2000	
		Depth to Groundwater (feet)	Groundwater Elevation (feet above MSL)	Depth to Groundwater (feet)	Groundwater Elevation (feet above MSL)
P-5R	1099.04	76.04	1023.00	76.87	1022.17
P-9R	1102.09	79.13	1022.96	80.08	1022.01
P-12R	1101.33	78.33	1023.00	79.15	1022.18
P-13*	1105.12	78.90	1026.22	79.04	1026.08

Note: MSL, mean sea level, used as a vertical datum.

*P-13A was used for this elevation

Table 2
Summary of Analytical and Statistical Analysis Results
DeZurik Hazardous Waste Lagoon No. 3
(units = µg/L, dissolved)

WELL NUMBER	DATE	ARSENIC	BARIUM	CADMIUM	LEAD	SELENIUM
P-5A	12/27/89	ND	50	ND	ND	ND
P-5A	6/28/90	ND	ND	0.5	5	ND
P-5A	10/4/90	ND	110	ND	ND	ND
P-5A	12/18/90	ND	80	ND	ND	ND
P-5A	4/4/91	ND	60	0.4	ND	ND
P-5A	8/1/91	ND	67	ND	ND	ND
P-5A-1	10/31/91	ND	63	0.32	ND	ND
P-5A-2	10/31/91	ND	60	0.43	ND	ND
P-5A-3	10/31/91	ND	62	0.38	ND	ND
P-5A-4	10/31/91	ND	62	0.55	ND	ND
P-5A	4/23/92	ND	56	ND	ND	ND
P-5A	9/30/92	ND	ND	ND	ND	ND
P-5A	4/20/93	ND	ND	ND	ND	ND
P-5R	10/27/93	ND	78	1.4	ND	ND
P-5R	1/10/94	--	ND	--	--	--
P-5R	4/20/94	ND	ND	ND	ND	<6.02
P-5R	10/17/94	ND	ND	ND	ND	ND
P-5R	4/11/95	ND	ND	ND	ND	ND
P-5R	10/11/95	ND	52	ND	ND	ND
P-5R	4/17/96	ND	ND	ND	ND	ND
P-5R	10/16/96	< 3.0	ND	0.36	< 3.0	< 3.0
P-5R	4/17/97	< 3.0	50	< 0.30	< 3.0	< 3.0
P-5R	10/16/97	<3.0	ND	<0.30	<3.0	<3.0
P-5R	4/13/98	<2	16	<0.2	<1	<3
P-5R	10/6/98	<2	33	<0.2	<1	<3
P-5R	4/27/99	<2	131	<0.2	<1	<1
P-5R	10/27/99	<2	210*	<0.2	<1	<1
P-5R	4/24/00	<2	204	<0.2	<1	<1
P-5R	10/23/00	<2	183	<0.2	<1	<1
P-9R	4/4/91	ND	ND	ND	ND	ND
P-9R	8/1/91	ND	ND	ND	ND	ND
P-9R-1	10/31/91	ND	ND	ND	ND	ND
P-9R-2	10/31/91	ND	ND	ND	ND	ND
P-9R-3	10/31/91	ND	ND	0.3	ND	ND
P-9R-4	10/31/91	ND	ND	ND	ND	ND
P-9R	4/23/92	ND	ND	0.19	ND	ND
P-9R	9/30/92	ND	ND	ND	ND	ND
P-9R	4/20/93	ND	ND	ND	ND	ND
P-9R	10/27/93	ND	ND	0.7	ND	ND
P-9R	4/20/94	ND	ND	ND	ND	<6.02
P-9R	10/17/94	ND	ND	ND	ND	ND
P-9R	4/11/95	ND	ND	ND	ND	ND
P-9R	10/10/95	ND	ND	ND	ND	ND
P-9R	4/17/96	ND	ND	ND	ND	ND
P-9R	10/16/96	< 3.0	ND	< 0.30	< 3.0	< 3.0
P-9R	4/16/97	< 3.0	53	< 0.30	< 3.0	< 3.0
P-9R	10/15/97	<3.0	61	1.4	<3.0	<3.0
P-9R	4/10/98	<2	17	0.7	2	<3

Table 2
Summary of Analytical and Statistical Analysis Results
DeZurik Hazardous Waste Lagoon No. 3
(units = µg/L, dissolved)

WELL NUMBER	DATE	ARSENIC	BARIUM	CADMIUM	LEAD	SELENIUM
P-9R	10/6/98	<2	46	<0.2	<1	<3
P-9R	4/27/99	<2	191	<0.2	1.4	<1
P-9R	10/27/99	<2	126*	0.35	<1	<1
P-9R	4/25/00	<2	99	0.26	<1	<1
P-9R	10/23/00	<2	115	<0.2	<1	<1
P-12	4/4/91	ND	ND	ND	ND	ND
P-12	8/1/91	ND	ND	0.32	ND	ND
P-12-1	10/31/91	ND	ND	0.31	ND	ND
P-12-2	10/31/91	ND	ND	0.33	ND	ND
P-12-3	10/31/91	ND	ND	ND	ND	ND
P-12-4	10/31/91	ND	ND	ND	ND	ND
P-12	4/23/92	ND	ND	ND	ND	ND
P-12	9/30/92	ND	ND	ND	ND	ND
P-12	4/20/93	ND	ND	ND	ND	ND
P-12R	10/27/93	ND	ND	13	ND	ND
P-12R	1/10/94	--	--	ND	--	--
P-12R	4/20/94	ND	ND	ND	ND	<6.02
P-12R	10/17/94	ND	ND	ND	ND	ND
P-12R	4/11/95	ND	ND	ND	ND	ND
P-12R	10/10/95	ND	ND	ND	5.2	ND
P-12R	4/17/96	ND	ND	ND	ND	ND
P-12R	10/16/96	< 3.0	ND	0.63	< 3.0	< 3.0
P-12R	4/17/97	< 3.0	ND	< 0.30	< 3.0	< 3.0
P-12R	10/16/97	<3.0	ND	<0.30	<3.0	<3.0
P-12R	4/13/98	<2	9	<0.2	<1	<3
P-12R	10/6/98	<2	30	<0.2	<1	<3
P-12R	4/27/99	<2	54	<0.2	<1	<1
P-12R	10/27/99	<2	159*	<0.2	<1	<1
P-12R	4/25/00	<2	135	<0.2	1.1	<1
P-12R	10/24/00	<2	185	<0.2	<1	<1
P-13	6/28/90	< 3.0	< 50	< 0.3	< 3.0	< 3.0
P-13A	6/28/90	< 3.0	< 50	< 0.3	< 3.0	< 3.0
P-13B	6/28/90	< 3.0	< 50	< 0.3	< 3.0	< 3.0
P-13C	6/28/90	< 3.0	< 50	< 0.3	< 3.0	< 3.0
P-13	10/4/90	< 3.0	< 50	< 0.3	< 3.0	< 3.0
P-13A	10/4/90	< 3.0	60	< 0.3	< 3.0	< 3.0
P-13B	10/4/90	< 3.0	< 50	< 0.3	< 3.0	< 3.0
P-13C	10/4/90	< 3.0	< 50	< 0.3	< 3.0	< 3.0
P-13A	12/18/90	< 3.0	< 50	< 0.3	< 3.0	< 3.0
P-13B	12/18/90	< 3.0	< 50	< 0.3	< 3.0	< 3.0
P-13C	12/18/90	< 3.0	< 50	< 0.3	< 3.0	< 3.0
P-13D	12/18/90	< 3.0	< 50	< 0.3	< 3.0	< 3.0
P-13	4/4/91	< 3.0	< 50	< 0.3	< 3.0	< 3.0
P-13	8/1/91	< 3.0	< 50	< 0.3	< 3.0	< 3.0
P-13-1	10/31/91	< 3.0	< 50	< 0.3	< 3.0	< 3.0
P-13-2	10/31/91	< 3.0	< 50	0.88	< 3.0	< 3.0
P-13-3	10/31/91	< 3.0	< 50	< 0.3	< 3.0	< 3.0
P-13-4	10/31/91	< 3.0	< 50	< 0.3	< 3.0	< 3.0

Table 2
Summary of Analytical and Statistical Analysis Results
DeZurik Hazardous Waste Lagoon No. 3
(units = µg/L, dissolved)

WELL NUMBER	DATE	ARSENIC	BARIUM	CADMIUM	LEAD	SELENIUM
P-13-1	4/23/92	< 3.0	< 50	< 0.3	< 3.0	< 3.0
P-13-2	4/23/92	< 3.0	< 50	< 0.3	< 3.0	< 3.0
P-13-3	4/23/92	< 3.0	< 50	< 0.3	< 3.0	< 3.0
P-13-4	4/23/92	< 3.0	< 50	< 0.3	< 3.0	< 3.0
P-13	9/30/92	< 3.0	< 50	< 0.3	< 3.0	< 3.0
P-13-1	10/8-9/92	< 3.0	< 50	< 0.3	< 3.0	< 3.0
P-13-2	10/8-9/92	< 3.0	< 50	< 0.3	< 3.0	< 3.0
P-13-3	10/8-9/92	< 3.0	< 50	< 0.3	< 3.0	< 3.0
P-13A	4/20/93	< 3.0	< 50	< 0.3	< 3.0	< 3.0
P-13B	4/20/93	< 3.0	< 50	< 0.3	< 3.0	< 3.0
P-13C	4/20/93	< 3.0	< 50	< 0.3	< 3.0	< 3.0
P-13D	4/20/93	< 3.0	< 50	< 0.3	< 3.0	< 3.0
P-13A	10/29/93	< 3.0	< 50	3.3*	< 3.0	< 3.0
P-13B	10/29/93	< 3.0	< 50	5.5*	< 3.0	< 3.0
P-13C	10/29/93	< 3.0	< 50	3.9*	< 3.0	< 3.0
P-13D	10/29/93	< 3.0	< 50	17*	< 3.0	< 3.0
P-13	4/20/94	< 3.0	< 50	< 0.3	< 3.0	< 6.02
P-13A	4/20/94	< 3.0	< 50	< 0.3	< 3.0	< 6.02
P-13B	4/20/94	< 3.0	< 50	0.31	< 3.0	< 6.02
P-13C	4/20/94	< 3.0	< 50	< 0.3	< 3.0	< 6.02
P-13	10/17/94	< 3.0	54	< 0.3	< 3.0	< 3.0
P-13A	10/18/94	< 3.0	< 50	< 0.3	< 3.0	< 3.0
P-13B	10/18/94	< 3.0	< 50	< 0.3	< 3.0	< 3.0
P-13C	10/18/94	< 3.0	< 50	< 0.3	< 3.0	< 3.0
P-13	4/11/95	< 3.0	< 50	< 0.3	< 3.0	< 3.0
P-13A	4/11/95	< 3.0	< 50	< 0.3	< 3.0	< 3.0
P-13B	4/11/95	< 3.0	< 50	< 0.3	< 3.0	< 3.0
P-13C	4/12/95	< 3.0	< 50	< 0.3	< 3.0	< 3.0
P-13	10/11/95	< 3.0	< 50	< 0.3	< 3.0	< 3.0
P-13A	10/11/95	< 3.0	< 50	< 0.3	< 3.0	< 3.0
P-13B	10/11/95	< 3.0	< 50	< 0.3	< 3.0	< 3.0
P-13C	10/11/95	< 3.0	< 50	< 0.3	< 3.0	< 3.0
P-13	4/17/96	< 3.0	< 50	< 0.3	< 3.0	< 3.0
P-13A	4/17/96	< 3.0	< 50	< 0.3	< 3.0	< 3.0
P-13B	4/17/96	< 3.0	< 50	< 0.3	< 3.0	< 3.0
P-13C	4/17/96	< 3.0	< 50	< 0.3	< 3.0	< 3.0
P-13	10/16/96	< 3.0	< 50	< 0.30	< 3.0	< 3.0
P-13A	10/16/96	< 3.0	< 50	< 0.30	< 3.0	< 3.0
P-13B	10/17/96	< 3.0	< 50	< 0.30	< 3.0	< 3.0
P-13C	10/17/96	< 3.0	< 50	< 0.30	< 3.0	< 3.0
P-13	4/16/97	< 3.0	< 50	< 0.30	< 3.0	< 3.0
P-13A	4/17/97	< 3.0	< 50	< 0.30	< 3.0	< 3.0
P-13B	4/17/97	< 3.0	< 50	< 0.30	< 3.0	< 3.0
P-13C	4/17/97	< 3.0	< 50	< 0.30	< 3.0	< 3.0
P-13	10/15/97	< 3.0	< 50	< 0.30	< 3.0	< 3.0
P-13A	10/16/97	< 3.0	< 50	< 0.30	< 3.0	< 3.0
P-13B	10/16/97	< 3.0	< 50	< 0.30	< 3.0	< 3.0
P-13C	10/16/97	< 3.0	< 50	< 0.30	< 3.0	< 3.0

Table 2
Summary of Analytical and Statistical Analysis Results
DeZurik Hazardous Waste Lagoon No. 3
(units = µg/L, dissolved)

WELL NUMBER	DATE	ARSENIC	BARIUM	CADMIUM	LEAD	SELENIUM
P-13A	4/9/98	<2	<6	<0.2	<1	<3
P-13B	4/10/98	<2	<6	<0.2	<1	<3
P-13C	4/10/98	2.2	<6	<0.2	<1	<3
P-13D	4/13/98	<2	<6	<0.2	<1	<3
P-13A	10/5/98	<2	27	<0.2	<1	<3
P-13B	10/5/98	<2	101	<0.2	<1	<3
P-13C	10/6/98	<2	180	<0.2	<1	<3
P-13D	10/6/98	<2	135	<0.2	<1	<3
P-13A	4/26/99	<2	66	<0.2	<1	<1
P-13B	4/26/99	<2	178	<0.2	<1	<1
P-13C	4/27/99	<2	114	<0.2	<1	<1
P-13D	4/27/99	<2	151	<0.2	<1	<1
P-13A	10/26/99	<2	95*	<0.2	<1	<1
P-13B	10/27/99	<2	300*	<0.2	<1	<1
P-13C	10/27/99	<2	196*	<0.2	<1	<1
P-13D	10/27/99	<2	229*	<0.2	<1	<1
P-13A	4/24/00	<2	156	<0.2	<1	<1
P-13A	10/23/00	<2	115	<0.2	<1	<1
Background Detection limit**		3	50	0.3	3	3
Background Mean#		3	93	0.3	3	3
Background Standard deviation#		1.732	51.6	0.548	1.732	1.732
K _{0.95}		2.532	2.532	2.532	2.532	2.532
Tolerance level###**		7.4	220	1.7	7.4	7.4

ND Not detected.

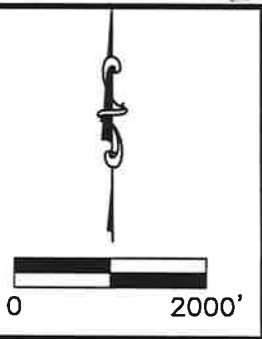
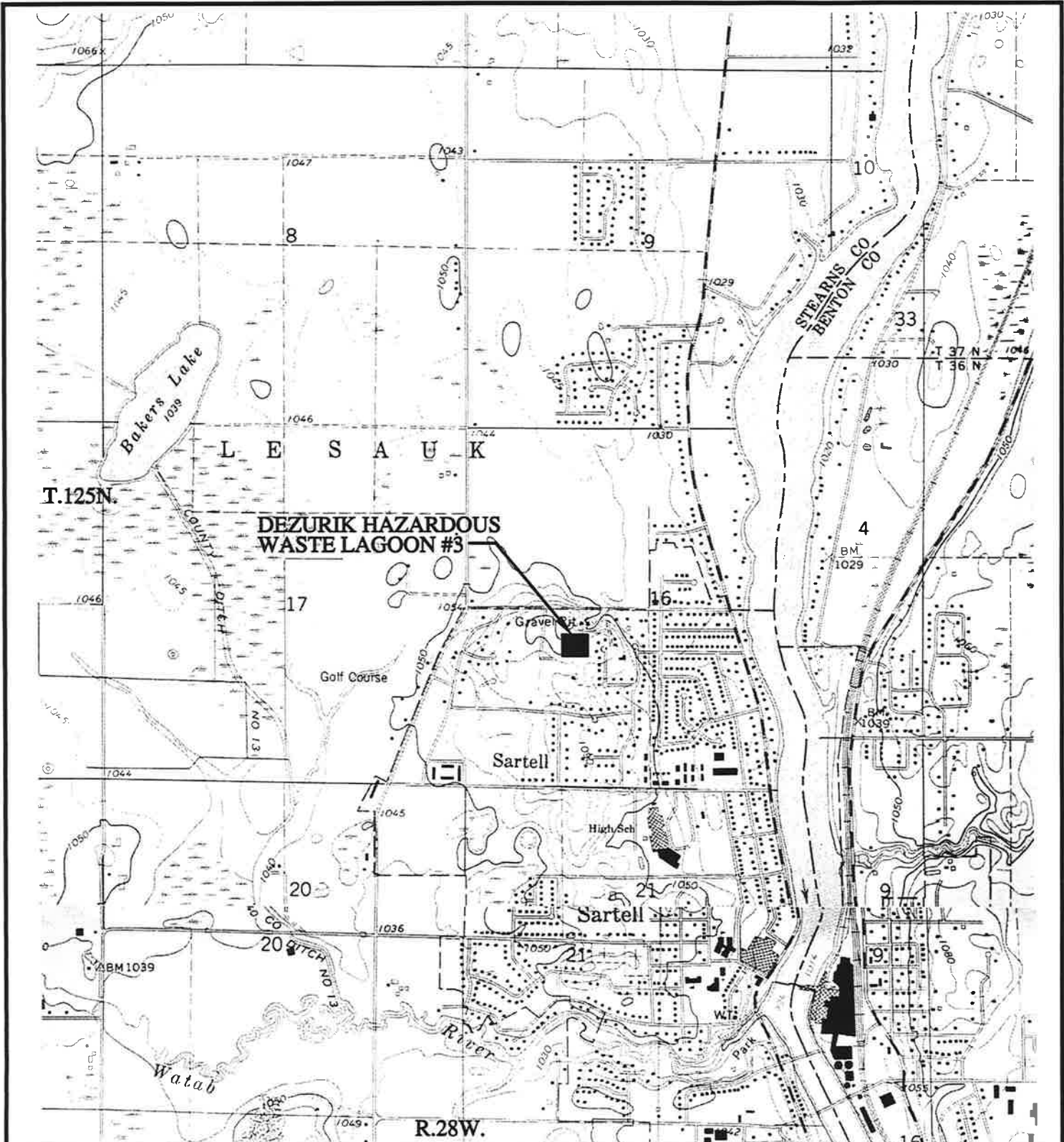
-- Not measured.

The Poisson Distribution method was used for calculating the mean and standard deviation for background constituents with two or less reported results above the detection limit. For background constituents with three or more results above the detection limit, the arithmetic mean and standard deviation is calculated.

* Data collected are considered suspect and are excluded from the tolerance limit calculation. As required in the August 1994 Part B Permit Application, the most recent and valid 16 samples were included in the tolerance limit calculation.

** In 1998, new analytical equipment allowed the laboratory to obtain lower detection limits than that obtained in previous sampling years. These detection limits are lower than those required in the August 1994 Part B Permit Application for evaluating compliance of wells. Where the reported detection limit is lower than the required detection limit, the required detection limit is used for calculating the tolerance level to maintain continuity in evaluating compliance.

Note: Sample results in bold type exceed MCL and/or HRL



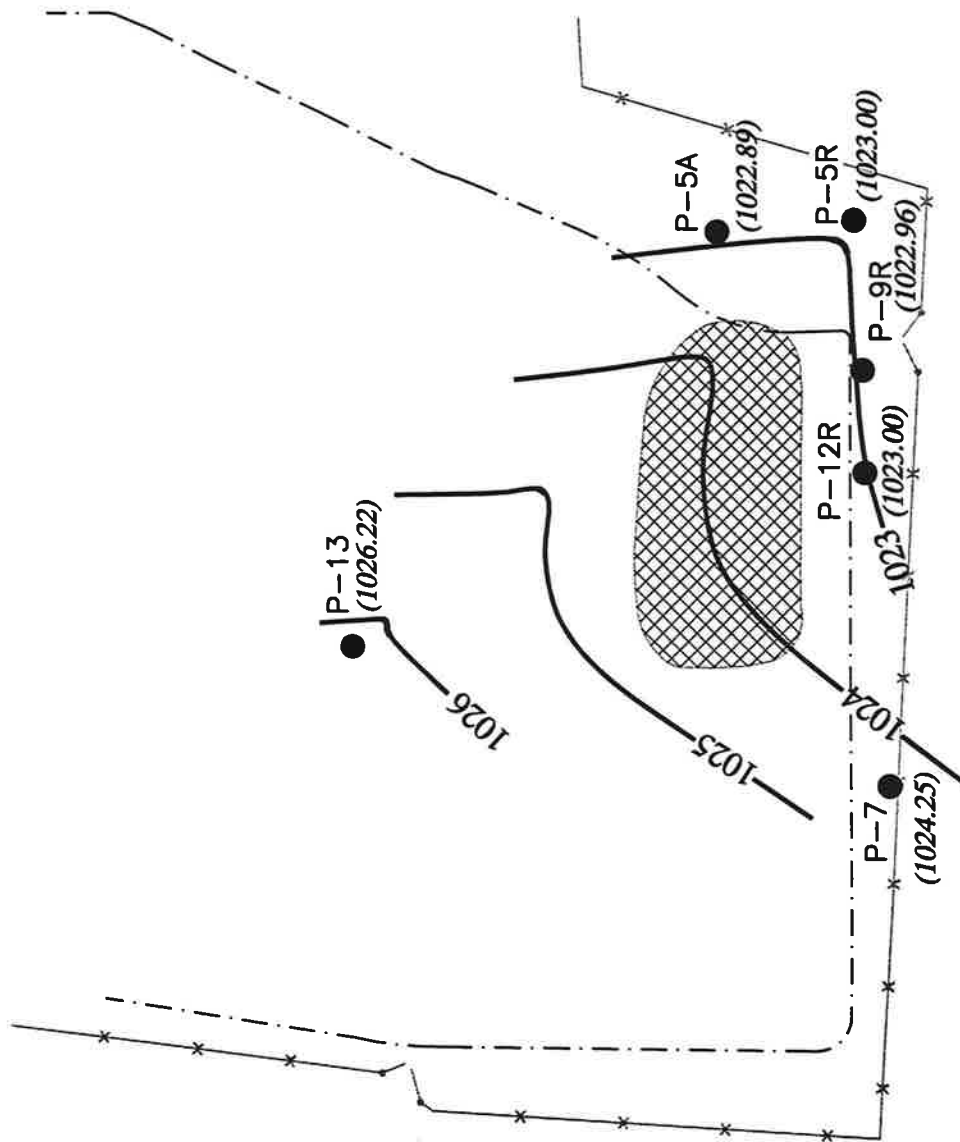
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**SITE LOCATION MAP
DEZURIK HAZARDOUS WASTE LAGOON #3
SARTELL, MINNESOTA**

DRN BY: KAH	DATE: 01/01	PROJECT NO.	FIG. NO.
CHK'D BY: TEZ	DATE: 01/01	46567-002-0201	1

LEGEND

- P-13
(1026.10)
- x — FENCE
- - - APPROXIMATE LIMIT OF LANDFILL WASTE
- ▨ APPROXIMATE LIMIT OF LAGOON
- 1025 WATER TABLE CONTOUR (DASHED WHERE INFERRED)



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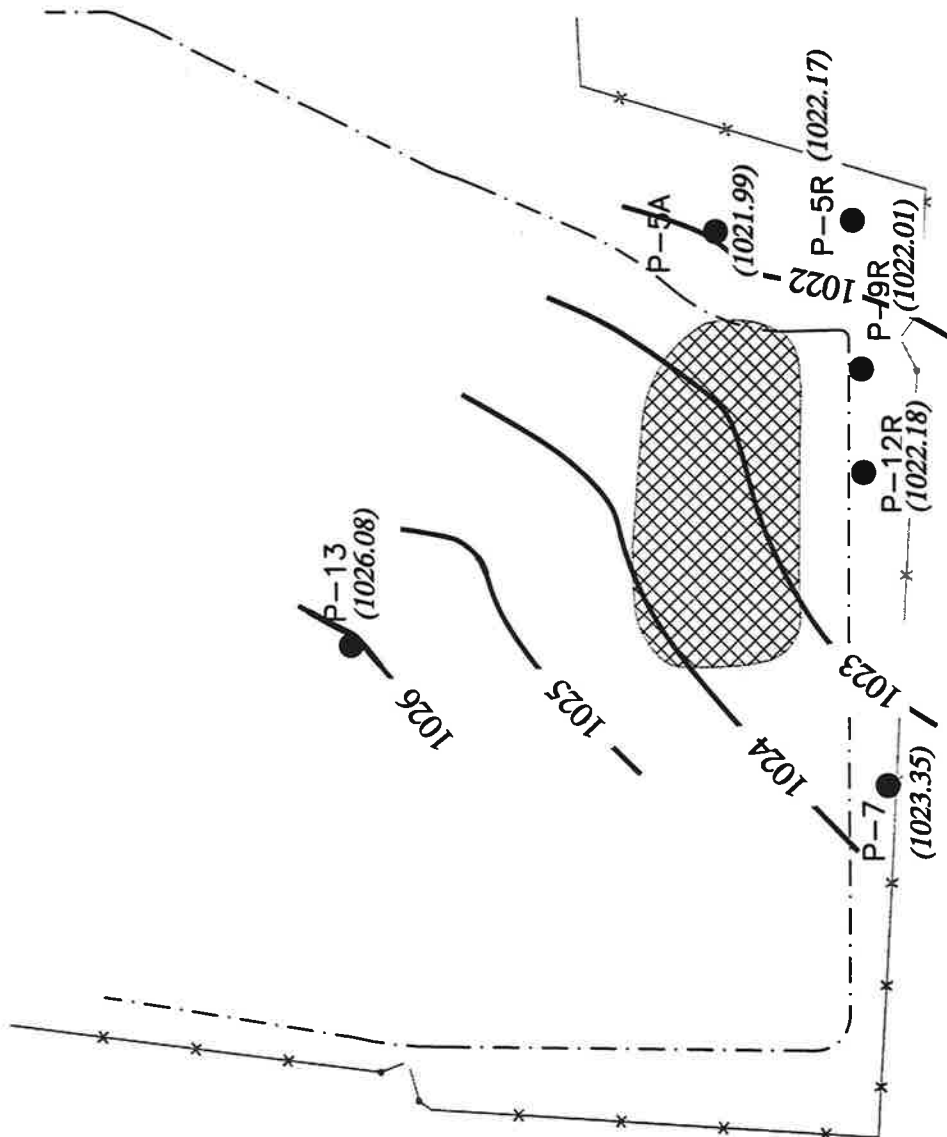
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GROUNDWATER CONTOUR MAP, APRIL 24&25, 2000
 DEZURIK HAZARDOUS WASTE LAGOON NO. 3
 SARTELL, MINNESOTA

DRN BY: KAH	DATE: 01/01	PROJECT NO. 46567-002-0201	FIG. NO. 2
CHK'D BY: TEA	DATE: 01/01		

LEGEND

- P-13
(1026.10)
- x — FENCE
- · - · - APPROXIMATE LIMIT OF LANDFILL WASTE
- ▨ APPROXIMATE LIMIT OF LAGOON
- 1025 — WATER TABLE CONTOUR (DASHED WHERE INFERRED)



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GROUNDWATER CONTOUR MAP, OCT. 23, 2000
 DEZURIK HAZARDOUS WASTE LAGOON NO. 3
 SARTELL, MINNESOTA

DRN BY: KAH	DATE: 01/01	PROJECT NO.	FIG. NO.
CHK'D BY: TEA	DATE: 01/01	46567-002-0101	3

Appendix A
2000 Analytical And Field Results

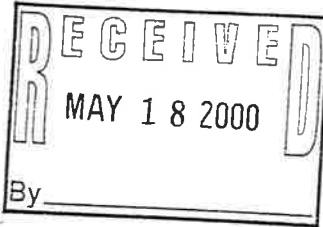


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DEAN STOCKWELL
URS GREINER WOODWARD CLYDE
6465 WAYZATA BLVD STE 660
MINNEAPOLIS MN 55426-1711



Date Reported: 10 May 2000

Work Order #: 31-162

Account Number: 013138

Project Name: DEZURIK


Simpler Signature

RL = Reporting Limits
NQ = Not Present, Qualitative Only
PQ = Present, Qualitative Only
ND = Not Determined

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Report Date: 10 May 2000

Lab Number: 00-L9889
 Work Order #: 31-162
 Account #: 013138

DEAN STOCKWELL
 URS GREINER WOODWARD CLYDE
 6465 WAYZATA BLVD STE 660
 MINNEAPOLIS MN 55426-1711

Date Received: 25 Apr 2000
 Date Sampled: 24 Apr 2000
 Time Sampled: 16:04
 Temperature at Receipt: 1.00

Project Name: DEZURIK

Sample Description: P-5R

Analyte	Result	RI	Method	Date Analyzed	Analyst
Appearance, Field	Slightly cloudy	NA	2110		MS
Water Elevation	76.04	NA	NA		MS
Temperature - Field	13.9 deg. C	NA	170.1		MS
Specific Conductance, fld	1046 umhos/cm	1.	120.1		MS
Specific Conductance	1109 umhos/cm	0.1	120.1	5/ 1/00 3:00	SDH
pH, Field	7.15 units	1.00	150.1		MS
pH (Laboratory)	7.3 units	1.0	150.1	5/ 3/00 8:33	SDH
Fluoride	< 0.1 mg/L	0.10	340.2	4/28/00	JD
Sulfate	157 mg/L	4	375.4	5/ 2/00 10:24	THK
Chloride	23.0 mg/L	3.0	325.2	5/ 2/00 15:46	THK
Nitrate+Nitrite	5.57 mg/L as N	0.20	353.2	4/28/00 8:40	THK
Nitrite	< 0.01 mg/L as N	0.010	EPA 353.2	4/27/00 11:30	THK
Phenolics, Total	< 5 ug/L	5	420.1	5/ 3/00 9:19	JD
Cyanide, Total	< 0.02 mg/L	0.02	335.2	4/28/00	JD
Chemical Oxygen Demand	41 mg/L	5	410.4	4/28/00 6:00	JD

MINNESOTA LAB # 027-015-125
 WISCONSIN LAB ID # 999447680

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Report Date: 10 May 2000

Lab Number: 00-L9889
 Work Order #: 31-162
 Account #: 013138

DEAN STOCKWELL
 URS GREINER WOODWARD CLYDE
 6465 WAYZATA BLVD STE 660
 MINNEAPOLIS MN 55426-1711

Date Received: 25 Apr 2000
 Date Sampled: 24 Apr 2000
 Time Sampled: 16:04
 Temperature at Receipt: 1.00

Project Name: DEZURIK

Sample Description: P-5R

Analyte	Result	RL	Method	Date Analyzed	Analyst
Solids, Total Dissolved	717 mg/L	1	160.1	4/27/00 14:59	AKF
Barium, Dissolved	0.204 mg/L	0.001	6010	5/ 2/00 10:30	TB
Chromium, Dissolved	< 0.002 mg/L	0.002	6010	5/ 2/00 10:30	TB
Iron, Dissolved	< 0.002 mg/L	0.008	6010	5/ 2/00 10:30	TB
Manganese, Dissolved	0.092 mg/L	0.003	6010	5/ 2/00 10:30	TB
Zinc, Dissolved	0.065 mg/L	0.007	6010	5/ 2/00 10:30	TB
Boron, Dissolved	1.18 mg/L	0.10	6010	5/ 4/00 9:15	TB
Arsenic, Dissolved	< 2 ug/L	2.0	206.2	5/ 1/00 6:20	JGS
Cadmium, Dissolved	< 0.2 ug/L	0.20	213.2	5/ 2/00 8:07	JGS
Lead, Dissolved	< 1 ug/L	1.0	239.2	5/ 1/00 9:14	JGS
Selenium, Dissolved	< 1 ug/L	1.0	270.2	5/ 8/00 11:03	JGS
Calcium, Dissolved	153 mg/L	0.20	215.1	4/26/00 13:45	JGS
Magnesium, Dissolved	47.0 mg/L	0.03	242.1	4/26/00 14:01	JGS
Sodium, Dissolved	26.0 mg/L	0.05	273.1	4/27/00 9:47	JGS
Nitrate	5.57 mg/L as N	NA	353.2	4/28/00 8:40	Calculated

OL = Analysis Performed by an Outside Laboratory

MINNESOTA LAB # 027-015-125
 WISCONSIN LAB ID # 999447680

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Report Date: 10 May 2000

Lab Number: 00-L9889

Work Order #: 31-162

Account #: 013138

DEAN STOCKWELL
URS GREINER WOODWARD CLYDE
6465 WAYZATA BLVD STE 660
MINNEAPOLIS MN 55426-1711

Date Received: 25 Apr 2000

Date Sampled: 24 Apr 2000

Time Sampled: 16:04

Temperature at Receipt: 1.00

Project Name: DEZURIK

Sample Description: P-5R

Analyte	Result	RI	Method	Date Analyzed	Analyst
Carbon, Total Organic	1.3 mg/l	1.0	415.1	4/28/00	01

01 = Analysis Performed by an Outside Laboratory

MINNESOTA LAB # 027-015-125
WISCONSIN LAB ID # 999447680

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Report Date: 10 May 2000

Lab Number: 00-L9890

Work Order #: 31-162

Account #: 013138

DEAN STOCKWELL
 URS GREINER WOODWARD CLYDE
 6465 WAYZATA BLVD STE 660
 MINNEAPOLIS MN 55426-1711

Date Received: 25 Apr 2000
 Date Sampled: 25 Apr 2000
 Time Sampled: 9:33
 Temperature at Receipt: 1.0C

Project Name: DEZURIK

Sample Description: P-12R

Analyte	Result	RL	Method	Date Analyzed	Analyst
Appearance, Field	Slightly cloudy	NA	2110		MS
Water Elevation	78.33	NA	NA		MS
Temperature - Field	11.4 deg. C	NA	170.1		MS
Specific Conductance, fld	879 umhos/cm	1.	120.1		MS
Specific Conductance	958.0 umhos/cm	0.1	120.1	5/ 1/00 3:00	SDH
pH, Field	7.31 units	1.00	150.1		MS
pH (Laboratory)	7.4 units	1.0	150.1	5/ 3/00 8:33	SDH
Fluoride	< 0.1 mg/L	0.10	340.2	4/28/00	JD
Sulfate	96 mg/L	4	375.4	5/ 2/00 10:24	TKK
Chloride	31.5 mg/L	3.0	325.2	5/ 2/00 15:46	TKK
Nitrate+Nitrite	4.72 mg/L as N	0.20	353.2	4/28/00 8:40	TKK
Nitrite	< 0.01 mg/L as N	0.010	EPA 353.2	4/27/00 11:30	TKK
Phenolics, Total	< 5 ug/L	5	420.1	5/ 3/00 9:19	JD
Cyanide, Total	< 0.02 mg/L	0.02	335.2	4/28/00	JD
Chemical Oxygen Demand	15 mg/L	5	410.4	4/28/00 6:00	JD

OL = Analysis Performed by an Outside Laboratory

MINNESOTA LAB # 027-015-125
 WISCONSIN LAB ID # 999447680

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Report Date: 10 May 2000

Lab Number: 00-L9890

Work Order #: 31-162

Account #: 013138

DEAN STOCKWELL
 URS GREINER WOODWARD CLYDE
 6465 WAYZATA BLVD STE 660
 MINNEAPOLIS MN 55426-1711

Date Received: 25 Apr 2000

Date Sampled: 25 Apr 2000

Time Sampled: 9:33

Temperature at Receipt: 1.0C

Project Name: DEZURIK

Sample Description: P-12R

Analyte	Result	RL	Method	Date Analyzed	Analyst
Solids, Total Dissolved	582 mg/L	1	160.1	5/ 1/00 13:58	AKF
Barium, Dissolved	0.135 mg/L	0.001	6010	5/ 8/00 14:00	TB
Chromium, Dissolved	< 0.002 mg/L	0.002	6010	5/ 8/00 14:00	TB
Iron, Dissolved	0.028 mg/L	0.000	6010	5/ 8/00 14:00	TB
Manganese, Dissolved	0.022 mg/L	0.003	6010	5/ 8/00 14:00	TB
Zinc, Dissolved	0.042 mg/L	0.007	6010	5/ 8/00 14:00	TB
Boron, Dissolved	< 0.1 mg/L	0.10	6010	5/ 4/00 9:15	TB
Arsenic, Dissolved	< 2 ug/L	2.0	206.2	5/ 1/00 6:20	JGS
Cadmium, Dissolved	< 0.2 ug/L	0.20	213.2	5/ 2/00 8:07	JGS
Lead, Dissolved	1.1 ug/L	1.0	239.2	5/ 1/00 9:14	JGS
Selenium, Dissolved	< 1 ug/L	1.0	270.2	5/ 8/00 11:03	JGS
Calcium, Dissolved	136 mg/L	0.20	215.1	5/ 5/00 12:40	JGS
Magnesium, Dissolved	37.0 mg/L	0.03	242.1	5/ 5/00 12:47	JGS
Sodium, Dissolved	9.70 mg/L	0.05	273.1	5/ 5/00 12:26	JGS
Nitrate	4.72 mg/L as N	NA	353.2	4/28/00 8:40	Calculated

01 = Analysis Performed by an Outside Laboratory

MINNESOTA LAB # 027-015-125

WISCONSIN LAB ID # 999447680

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Report Date: 10 May 2000

Lab Number: 00-L9890
Work Order #: 31-162
Account #: 013138

DEAN STOCKWELL
URS GREINER WOODWARD CLYDE
6465 WAYZATA BLVD STE 660
MINNEAPOLIS MN 55426-1711

Date Received: 25 Apr 2000
Date Sampled: 25 Apr 2000
Time Sampled: 9:33
Temperature at Receipt: 1.0C

Project Name: DEZURIK

Sample Description: P-12R

Table with 7 columns: Analyte, Result, RL, Method, Date Analyzed, Analyst. Row 1: Carbon, Total Organic, 1.9 mg/L, 1.0, 415.1, 4/28/00, 0L

0L = Analysis Performed by an Outside Laboratory

MINNESOTA LAB # 027-015-125
WISCONSIN LAB ID # 999447680

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Report Date: 10 May 2000

Lab Number: 00-L9891
 Work Order #: 31-162
 Account #: 013138

DEAN STOCKWELL
 URS GREINER WOODWARD CLYDE
 6465 WAYZATA BLVD STE 660
 MINNEAPOLIS MN 55426-1711

Date Received: 25 Apr 2000
 Date Sampled: 25 Apr 2000
 Time Sampled: 9:55
 Temperature at Receipt: 1.0C

Project Name: DEZURIK

Sample Description: P-9R

Analyte	Result	RL	Method	Date Analyzed	Analyst
Appearance, Field	Clear	NA	2110		MS
Water Elevation	79.13	NA	NA		MS
Temperature - Field	12.5 deg. C	NA	170.1		MS
Specific Conductance, fld	773 umhos/cm	1.	120.1		MS
Specific Conductance	864.0 umhos/cm	0.1	120.1	5/ 1/00 3:00	SDH
pH, Field	7.48 units	1.00	150.1		MS
pH (Laboratory)	7.5 units	1.0	150.1	5/ 3/00 8:33	SDH
Fluoride	< 0.1 mg/L	0.10	340.2	4/28/00	JD
Sulfate	67 mg/L	4	375.4	5/ 2/00 10:24	THK
Chloride	21.4 mg/L	3.0	325.2	5/ 2/00 15:46	THK
Nitrate+Nitrite	4.60 mg/L as N	0.20	353.2	4/28/00 8:40	THK
Nitrite	0.010 mg/L as N	0.010	EPA 353.2	4/27/00 11:30	THK
Phenolics, Total	< 5 ug/L	5	420.1	5/ 3/00 9:19	JD
Cyanide, Total	< 0.02 mg/L	0.02	335.2	5/ 5/00	JD
Chemical Oxygen Demand	9 mg/L	5	410.4	4/28/00 6:00	JD

OL = Analysis Performed by an Outside Laboratory

MINNESOTA LAB # 027-015-125
 WISCONSIN LAB ID # 999447680

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Report Date: 10 May 2000

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Account #: 013138

DEAN STOCKWELL
 URS GREINER WOODWARD CLYDE
 6465 WAYZATA BLVD STE 660
 MINNEAPOLIS MN 55426-1711

Date Received: 25 Apr 2000

Date Sampled: 25 Apr 2000

Time Sampled: 9:55

Temperature at Receipt: 1.00

Project Name: DEZURIK

Sample Description: P-9R

Analyte	Result	RL	Method	Date Analyzed	Analyst
Solids, Total Dissolved	508 mg/L	1	160.1	5/ 1/00 13:58	AKF
Barium, Dissolved	0.099 mg/L	0.001	6010	5/ 2/00 10:30	TB
Chromium, Dissolved	< 0.002 mg/L	0.002	6010	5/ 2/00 10:30	TB
Iron, Dissolved	< 0.008 mg/L	0.008	6010	5/ 2/00 10:30	TB
Manganese, Dissolved	0.024 mg/L	0.003	6010	5/ 2/00 10:30	TB
Zinc, Dissolved	0.020 mg/L	0.007	6010	5/ 2/00 10:30	TB
Boron, Dissolved	< 0.1 mg/L	0.10	6010	5/ 4/00 9:15	TB
Arsenic, Dissolved	< 2 ug/L	2.0	206.2	5/ 1/00 6:20	JGS
Cadmium, Dissolved	0.26 ug/L	0.20	213.2	5/ 2/00 8:07	JGS
Lead, Dissolved	< 1 ug/L	1.0	239.2	5/ 1/00 9:14	JGS
Selenium, Dissolved	< 1 ug/L	1.0	270.2	5/ 8/00 11:03	JGS
Calcium, Dissolved	118 mg/L	0.20	215.1	4/26/00 13:45	JGS
Magnesium, Dissolved	37.0 mg/L	0.03	242.1	4/26/00 14:01	JGS
Sodium, Dissolved	8.40 mg/L	0.05	273.1	4/27/00 9:47	JGS
Nitrate	4.59 mg/L as N	NA	353.2	4/28/00 8:40	Calculated

OL = Analysis Performed by an Outside Laboratory

MINNESOTA LAB # 027-015-125
 WISCONSIN LAB ID # 999447680

All data for this report has been approved by MVTL Laboratory Management.



MINNESOTA VALLEY TESTING LABORATORIES, INC.

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710 S. 14th St. - Grand Forks, ND 58201 - 800-272-7645 - Fax 701-772-0028
35 W. Lincoln Way - Nevada, IA 50201 - 800-362-0855 - Fax 515-382-3885



Report Date: 10 May 2000

Lab Number: 00-L9891

Work Order #: 31-162

Account #: 013138

DEAN STOCKWELL
URS GREINER WOODWARD CLYDE
6465 WAYZATA BLVD STE 660
MINNEAPOLIS MN 55426-1711

Date Received: 25 Apr 2000

Date Sampled: 25 Apr 2000

Time Sampled: 9:55

Temperature at Receipt: 1.0C

Project Name: DEZURIK

Sample Description: P-9R

Analyte	Result	RL	Method	Date Analyzed	Analyst
Carbon, Total Organic	1.3 mg/L	1.0	415.1	4/28/00	OL

OL = Analysis Performed by an Outside Laboratory

MINNESOTA LAB # 027-015-125
WISCONSIN LAB ID # 999447680

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Report Date: 10 May 2000

Lab Number: 00-L9892

Work Order #: 31-162

Account #: 013138

DEAN STOCKWELL
 URS GREINER WOODWARD CLYDE
 6465 WAYZATA BLVD STE 660
 MINNEAPOLIS MN 55426-1711

Date Received: 25 Apr 2000

Date Sampled: 24 Apr 2000

Time Sampled: 12:53

Temperature at Receipt: 1.0C

Project Name: DEZURIK

Sample Description: P-13A

Analyte	Result	RL	Method	Date Analyzed	Analyst
Appearance, Field	Clear	NA	2110		MS
Water Elevation	78.90	NA	NA		MS
Temperature - Field	13.0 deg. C	NA	170.1		MS
Specific Conductance, Fld	661 umhos/cm	1.	120.1		MS
Specific Conductance	720.0 umhos/cm	0.1	120.1	5/ 1/00 3:00	SDH
pH, Field	7.46 units	1.00	150.1		MS
pH (Laboratory)	7.7 units	1.0	150.1	5/ 3/00 8:33	SDH
Fluoride	< 0.1 mg/L	0.10	340.2	4/28/00	JD
Sulfate	26 mg/L	4	375.4	5/ 2/00 10:24	TMK
Chloride	16.8 mg/L	3.0	325.2	5/ 2/00 15:46	TMK
Nitrate+Nitrite	5.81 mg/L as N	0.20	353.2	4/28/00 8:40	TMK
Nitrite	0.010 mg/L as N	0.010	EPA 353.2	4/27/00 11:30	TMK
Phenolics, Total	< 5 ug/L	5	420.1	5/ 3/00 9:19	JD
Cyanide, Total	< 0.02 mg/L	0.02	335.2	5/ 5/00	JD
Chemical Oxygen Demand	9 mg/L	5	410.4	4/28/00 6:00	JD

OL = Analysis Performed by an Outside Laboratory

MINNESOTA LAB # 027-015-125
 WISCONSIN LAB ID # 999447680

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Report Date: 10 May 2000

Lab Number: 00-L9892

Work Order #: 31-162

Account #: 013138

DEAN STOCKWELL
 URS GREINER WOODWARD CLYDE
 6465 WAYZATA BLVD STE 660
 MINNEAPOLIS MN 55426-1711

Date Received: 25 Apr 2000

Date Sampled: 24 Apr 2000

Time Sampled: 12:53

Temperature at Receipt: 1.00C

Project Name: DEZURIK

Sample Description: P-13A

Analyte	Result	RL	Method	Date Analyzed	Analyst
Solids, Total Dissolved	413 mg/L	1	160.1	4/27/00 14:59	AKF
Barium, Dissolved	0.156 mg/L	0.001	6010	5/ 2/00 10:30	TB
Chromium, Dissolved	< 0.002 mg/L	0.002	6010	5/ 2/00 10:30	TB
Iron, Dissolved	< 0.008 mg/L	0.008	6010	5/ 2/00 10:30	TB
Manganese, Dissolved	0.013 mg/L	0.003	6010	5/ 2/00 10:30	TB
Zinc, Dissolved	0.045 mg/L	0.007	6010	5/ 2/00 10:30	TB
Boron, Dissolved	< 0.1 mg/L	0.10	6010	5/ 4/00 9:15	TB
Arsenic, Dissolved	< 2 ug/L	2.0	206.2	5/ 1/00 6:20	JGS
Cadmium, Dissolved	< 0.2 ug/L	0.20	213.2	5/ 2/00 8:07	JGS
Lead, Dissolved	< 1 ug/L	1.0	239.2	5/ 1/00 9:14	JGS
Selenium, Dissolved	< 1 ug/L	1.0	270.2	5/ 8/00 11:03	JGS
Calcium, Dissolved	102 mg/L	0.20	215.1	4/26/00 13:45	JGS
Magnesium, Dissolved	27.0 mg/L	0.03	242.1	4/26/00 14:01	JGS
Sodium, Dissolved	4.40 mg/L	0.05	273.1	4/27/00 9:47	JGS
Nitrate	5.80 mg/L as N	NA	353.2	4/28/00 8:40	Calculated

0L = Analysis Performed by an Outside Laboratory

MINNESOTA LAB # 027-015-125
 WISCONSIN LAB ID # 999447680

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Report Date: 10 May 2000

Lab Number: 00-L9892

Work Order #: 31-162

Account #: 013138

DEAN STOCKWELL
URS GREINER WOODWARD CLYDE
6465 WAYZATA BLVD STE 660
MINNEAPOLIS MN 55426-1711

Date Received: 25 Apr 2000
Date Sampled: 24 Apr 2000
Time Sampled: 12:53
Temperature at Receipt: 1.00

Project Name: DEZURIK

Sample Description: P-13A

Analyte	Result	RL	Method	Date Analyzed	Analyst
Carbon, Total Organic	< 1 mg/L	1.0	415.1	4/28/00	OL

OL = Analysis Performed by an Outside Laboratory

MINNESOTA LAB # 027-015-125
WISCONSIN LAB ID # 999447680

All data for this report has been approved by MVT L Laboratory Management.

MVT L guarantees the accuracy of the analysis done on the sample submitted for testing. It is not possible for MVT L to guarantee that a test result obtained on a particular sample will be the same on any other sample unless all conditions affecting the sample are the same, including sampling by MVT L. As a mutual protection to clients, the public and ourselves, all reports are submitted as the confidential property of clients, and authorization for publication of statements, conclusions or extracts from or regarding our reports is reserved pending our written approval.

Field Service
CHAIN OF CUSTODY RECORD

Project Name: <i>De Zwik</i>		Name of Samplers: <i>T. J. Newkirk, Mike Scherb</i>	
Report To: <i>DEAN STOCKWELL</i> Address: <i>JRS GREINER</i> <i>6465 WAYZATA BLVD SUITE 660</i> <i>MINNEAPOLIS, MN 55462</i>		Carbon Copy 1:	Carbon Copy 2:
Phone: <i>(612) 593-5688</i> Fax: <i>(612) 593-0094</i>		Work Order Number: <i>31-162 L9889-92</i>	

"HOT"	Sample ID	Date	Time	Sample Type	Sample Location	Analysis
	<i>P-5R</i>	<i>4-24-00</i>	<i>4:05pm</i>	<i>Groundwater</i>		<i>See</i>
	<i>P-12R</i>	<i>4-24-00</i>	<i>9:34am</i>	↓		<i>Attached</i>
	<i>P-9R</i>	<i>4-25-00</i>	<i>9:50am</i>			<i>list</i>
	<i>P-13A</i>	<i>4-24-00</i>	<i>12:54pm</i>			

"HOT" Sample is ≥ 100 ug/L Volatile Organic Chemicals (VOC's)
 Comments:

Samples Relinquished by: <i>Mike Scherb</i>	Date/Time: <i>4/25/00 1:00</i> Temp:	Received By: <i>Alice Lueders</i>	Date/Time: <i>4/25/00 16:00</i> Temp:
Samples Relinquished by:	Date/Time: Temp:	Received By:	Date/Time: Temp:
Means of Delivery: <i>Samplers</i> MVTL Courier Other: _____		Seals Intact? Yes No <i>NA</i>	

MINNESOTA VALLEY TESTING LABORATORIES, INC.

New Ulm, MN 56073 (507) 354-8517

Groundwater Assessment

Sampling Personnel:

T.J. NEWKIRK
MIKE SCHUBER

Site: Dezurik

Solid Waste Permit #: —

Date: 24 APR 08

Well Number: P-5R

WELL INFORMATION

Well Depth: 81.26
Constructed Depth: —
Casing Diameter: 4"
Well Volume: 3.4 Gallons
Water Depth Before: 76.04

Screen Interval: —
Well Casing Elev: —
Static Elevation: —
Previous Static: —
Water Depth After: 76.04

WELL CONDITION

Well Locked?: Yes / No
Well Labelled?: Yes / No
Casing Straight?: Yes / No

Protective Posts?: Yes / No
State ID Tag?: Yes / No
Grout Seal Intact?: Yes / No

SAMPLING INFORMATION

Sampling Method: Bladder / Bailor / Grundfos / Whale / Bore / Other:
Dedicated Equipment: Yes / No
Weather Conditions: Sunny, ESE Wind 5-10 mph, 73°
Well Purged Dry?: Yes / No
Time Purged Dry: —
Amount of Water Removed: 15 Gallons
Duplicate Sample?: Yes / No ID: —

Pumping Rate: 1.25 GPM.
Time Pumping Began: 3:52
Time of Sampling: 4:05
Sample Appearance: Slightly Cloudy
Sample ER/ORP: —

Time	pH	Specific Cond.	Temp (Deg. Cel)	C.D. (mg/L)	Turbidity (NTU)	Water Removed (Gallons)
3:55	7.27	1048	14.63	N/A	N/A	3.75
3:58	7.23	1047	13.74			7.50
4:01	7.17	1046	13.81			11.25
4:04	7.15	1046	13.88			15.00
4:07						18.75

Comments:

Exceptions to Protocol:

MINNESOTA VALLEY TESTING LABORATORIES, INC.

New Ulm, MN 56073 (507) 354-8517

Groundwater Assessment

Sampling Personnel:

T.J. NEWKIRK
MIKE SCHOES

Site: Dezunik

Solid Waste Permit #: —

Date: 25 APR 00

Well Number: P-12R

WELL INFORMATION

Well Depth: 86.77

Constructed Depth:

Casing Diameter: 4"

Well Volume: 5.5 Gallons

Water Depth Before: 78.33

Screen Interval: NA

Well Casing Elev:

Static Elevation:

Previous Static:

Water Depth After: 78.34

WELL CONDITION

Well Locked?: Yes / No

Well Labelled?: Yes / No

Casing Straight?: Yes / No

Protective Posts?: Yes / No

State ID Tag?: Yes / No

Grout Seal Intact?: Yes / No

SAMPLING INFORMATION

Sampling Method: Bladder / Bailor / Ground / Whale / Grab / Other

Dedicated Equipment: Yes / No

Pumping Rate: 2 GPM

Weather Conditions: SUNNY, WINDS LIGHT & VARIABLE, 56°

Well Purged Dry?: Yes / No

Time Pumping Began: 9:24

Time Purged Dry:

Time of Sampling: 9:34

Amount of Water Removed: 24 Gallons

Sample Appearance: Slightly Cloudy

Duplicate Sample?: Yes / No ID: —

Sample EH/ORP: —

Time	pH	Specific Cond.	Temp (Deg. Cel)	D.O. (mg/L)	Turbidity (NTU)	Water Removed (Gallons)
9:24	7.23	885	11.07	NA	NA	6
9:27	7.34	885	11.21			12
9:30	7.34	881	11.34			18
9:33	7.31	879	11.43			24
9:34						30

Comments:

Exceptions to Protocol:

MINNESOTA VALLEY TESTING LABORATORIES, INC.

New Ulm, MN 56073 (507) 354-8517

Groundwater Assessment

Sampling Personnel:

Mike Schaub

Site: Sandell / Dezun 2

Solid Waste Permit #: -

Date: 7-25-00

Well Number: P-9R

WELL INFORMATION

Well Depth: 86.09

Screen Interval: NA

Constructed Depth: _____

Well Casing Elev: _____

Casing Diameter: 4"

Static Elevation: _____

Well Volume: 1.1 Gallons

Previous Static: _____

Water Depth Before: 79.13

Water Depth After: 79.81

WELL CONDITION

Well Locked?: Yes / No

Protective Posts?: Yes / No

Well Labelled?: Yes / No

State ID Tag?: Yes / No

Casing Straight?: Yes / No

Grout Seal Intact?: Yes / No

SAMPLING INFORMATION

Sampling Method: Bladder / Bailer / Grundfos / Whale / Grab / Other: _____

Dedicated Equipment: Yes / No Pumping Rate: 1 GPM.

Weather Conditions: Sunny Skiff Wind S @ 10 mph

Well Purged Dry?: Yes / No Time Pumping Began: 9:49³⁹

Time Purged Dry: _____ Time of Sampling: 9:56

Amount of Water Removed: 6 Gallons Sample Appearance: Clear

Duplicate Sample?: Yes / No ID: _____ Sample EH/ORP: -22.5

Time	pH	Specific Cond.	Temp (Deg. Cel)	D.O. (mg/L)	Turbidity (NTU)	Water Removed (Gallons)
9:51	7.58	762	12.66	NA	NA	2
9:53	7.52	769	12.54			4
9:55	7.48	773	12.53			6
9:59						8
9:59						10

Comments:

Exceptions to Protocol:

MINNESOTA VALLEY TESTING LABORATORIES, INC.

New Ulm, MN 56073 (507) 354-8517

Groundwater Assessment

Sampling Personnel:

Mike Schuch
T. J. Wawruch

Site: SARTELL DeZurik

Solid Waste Permit #: NY

Date: 4-24-00

Well Number: P-13A

WELL INFORMATION

Well Depth: 86.75

Constructed Depth: _____

Casing Diameter: 4"

Well Volume: 5.1 Gallons

Water Depth Before: 78.90

Screen Interval: NA

Well Casing Elev: 1105.12

Static Elevation: 1026.22

Previous Static: NA

Water Depth After: 78.97

WELL CONDITION

Well Locked?: Yes / No

Well Labelled?: Yes / No

Casing Straight?: Yes / No

Protective Posts?: Yes / No

State ID Tag?: Yes / No

Grout Seal Intact?: Yes / No *Grout*

SAMPLING INFORMATION

Sampling Method: Bladder / Bailer / Grundfos / Whale / Seab / Other

Dedicated Equipment: Yes / No Pumping Rate: 2.0 GPM

Weather Conditions: Sunny, 63°F, ESE @ 5-15 mph

Well Purged Dry?: Yes / No Time Pumping Began: 12:38⁵⁷

Time Purged Dry: _____ Time of Sampling: 12:54

Amount of Water Removed: 30 Gallons Sample Appearance: Clear

Duplicate Sample?: Yes / No ID: _____ Sample EH/ORP: _____

Time	pH	Specific Cond.	Temp (Deg. Cel)	D.O. (mg/L)	Turbidity (NTU)	Water Removed (Gallons)
12:41	7.62	592	14.89	NA	NA	6
12:44	7.53	590	14.30	↓	↓	12
12:47	7.48	629	13.58	↓	↓	18
12:50	7.46	651	13.25	↓	↓	24
12:53	7.44	664	13.01	↓	↓	30

Comments:

Exceptions to Protocol:

**LABORATORIES, Inc.**

P.O. BOX 249, 1126 N. FRONT STREET
NEW ULM, MN 56073-0249
PHONE (507) 354-8517 WATS (800) 782-3557 FAX (507) 359-2890



WE ARE AN EQUAL OPPORTUNITY EMPLOYER

January 25, 2000

Dean Stockwell
URS Dames & Moore
6465 Wayzata Blvd
Suite 660
Minneapolis, MN 55426

Dear Mr. Stockwell:

I am writing in response to your request for clarification on analytical results for the DeZurik site. Specifically, you inquired about the total and dissolved data for Barium, based on the fact that some dissolved results are higher than the total.

Routine review of the analytical data by MVTL revealed higher dissolved results compared to the total results on some of the monitoring wells. Samples were re-analyzed to double-check the original results. The re-checks confirmed the Barium data was higher on some dissolved samples than the total. This data indicates that field contamination may have occurred during this sampling event. The field filtering apparatus may have contained carry-over Barium. Sample bottle contamination is another possibility. Bottle contamination is less likely due to the fact that MVTL uses new bottles for each sample.

Corrective action will be taken during the next sampling event. Our technicians will collect a field blank from the filtering apparatus prior to sampling. The field blank will be analyzed with the monitoring well samples to check for contamination.

I apologize for any inconvenience this may have caused. If you have any questions or need further clarification, please contact us in New Ulm. Our toll free number is 800-782-3557. You can reach me direct at 507-233-7130.

Sincerely,

Michael K. Grob



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Date Reported: 16 Nov 2000

DEAN STOCKWELL
URS GREINER WOODWARD CLYDE
6465 WAYZATA BLVD STE 660
MINNEAPOLIS MN 55426-1711

Work Order #: 31-471
Account Number: 013138

Project Name: DEZURIK

Sampler Signature

RL = Reporting Limits
NQ = Not Present, Qualitative Only
PQ = Present, Qualitative Only
ND = Not Determined

All data for this report has been approved by MVTL Laboratory Management.



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Report Date: 16 Nov 2000

Lab Number: 00-L28800
Work Order #: 31-471
Account #: 013138

DEAN STOCKWELL
URS GREINER WOODWARD CLYDE
6465 WAYZATA BLVD STE 660
MINNEAPOLIS MN 55426-1711

Date Received: 25 Oct 2000
Date Sampled: 23 Oct 2000
Time Sampled: 15:40
Temperature at Receipt: 0.5C

Project Name: DEZURIK

Sample Description: P-5R

Table with 6 columns: Analyte, Result, RL, Method, Date Analyzed, Analyst. Rows include Appearance, Field; Water Elevation; Temperature - Field; Specific Conductance, Fld; Specific Conductance; pH, Field; pH (Laboratory); Fluoride; Sulfate; Chloride; Nitrate+Nitrite; Phenolics, Total; Cyanide, Total; Chemical Oxygen Demand; Solids, Total Dissolved.

MINNESOTA LAB # 027-015-125
WISCONSIN LAB ID # 999447680

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Report Date: 16 Nov 2000

Lab Number: 00-L28800
Work Order #: 31-471
Account #: 013138

DEAN STOCKWELL
URS GREINER WOODWARD CLYDE
6465 WAYZATA BLVD STE 660
MINNEAPOLIS MN 55426-1711

Date Received: 25 Oct 2000
Date Sampled: 23 Oct 2000
Time Sampled: 15:40
Temperature at Receipt: 0.5C

Project Name: DEZURIK

Sample Description: P-5R

Table with 6 columns: Analyte, Result, RL, Method, Date Analyzed, Analyst. Rows include Calcium, Magnesium, Sodium, Barium, Chromium, Iron, Manganese, Zinc, Boron, Arsenic, Cadmium, Lead, Selenium, and Carbon, Total Organic.

OL = Analysis Performed by an Outside Laboratory

MINNESOTA LAB # 027-015-125
WISCONSIN LAB ID # 999447680

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Report Date: 16 Nov 2000

Lab Number: 00-L28801
 Work Order #: 31-471
 Account #: 013138

DEAN STOCKWELL
 URS GREINER WOODWARD CLYDE
 6465 WAYZATA BLVD STE 660
 MINNEAPOLIS MN 55426-1711

Date Received: 25 Oct 2000
 Date Sampled: 24 Oct 2000
 Time Sampled: 8:20
 Temperature at Receipt: 0.5C

Project Name: DEZURIK

Sample Description: P-12R

Analyte	Result	RL	Method	Date Analyzed	Analyst
Appearance, Field	Slightly cloudy	NA	2110		TJN
Water Elevation	1022.18	NA	NA		TJN
Temperature - Field	11.1 deg. C	NA	170.1		TJN
Specific Conductance, Fld	876 umhos/cm	1.	120.1		TJN
Specific Conductance	856.0 umhos/cm	0.1	120.1	10/31/00 9:00	BLS
pH, Field	6.74 units	1.00	150.1		TJN
pH (Laboratory)	7.6 units	1.0	150.1	10/26/00 9:00	BLS
Fluoride	< 0.1 mg/L	0.10	340.2	10/27/00 14:29	JD
Sulfate	78 mg/L	4	375.4	10/27/00 7:50	TMK
Chloride	29.7 mg/L	3.0	325.2	10/30/00 10:59	TMK
Nitrate+Nitrite	5.31 mg/L as N	0.20	353.2	10/26/00 10:38	TKK
Phenolics, Total	< 5 ug/L	5	420.1	10/30/00 5:30	JD
Cyanide, Total	< 0.02 mg/L	0.02	335.2	10/31/00	JD
Chemical Oxygen Demand	19 mg/L	5	410.4	10/26/00 6:09	JD
Solids, Total Dissolved	585 mg/L	1	160.1	10/31/00 12:40	AKF

OL = Analysis Performed by an Outside Laboratory

MINNESOTA LAB # 027-015-125
 WISCONSIN LAB ID # 999447680

All data for this report has been approved by MVTL Laboratory Management.



MINNESOTA VALLEY TESTING LABORATORIES, INC.

1126 N. Front St. - New Ulm, MN 56073 - 800-782-3557 - Fax 507-359-2890
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 710 S. 14th St. - Grand Forks, ND 58201 - 800-272-7645 - Fax 701-772-0028
 35 W. Lincoln Way - Nevada, IA 50201 - 800-362-0855 - Fax 515-382-3885



Report Date: 16 Nov 2000

Lab Number: 00-L28801
 Work Order #: 31-471
 Account #: 013138

DEAN STOCKWELL
 URS GREINER WOODWARD CLYDE
 6465 WAYZATA BLVD STE 660
 MINNEAPOLIS MN 55426-1711

Date Received: 25 Oct 2000
 Date Sampled: 24 Oct 2000
 Time Sampled: 8:20
 Temperature at Receipt: 0.5C

Project Name: DEZURIK

Sample Description: P-12R

Analyte	Result	RL	Method	Date Analyzed	Analyst
Calcium, Dissolved	121.0 mg/L	0.018	6010	11/ 3/00 12:37	TB
Magnesium, Dissolved	31.60 mg/L	0.036	6010	11/ 3/00 12:37	TB
Sodium, Dissolved	9.690 mg/L	0.096	6010	11/ 3/00 12:37	TB
Barium, Dissolved	0.185 mg/L	0.001	6010	11/ 9/00 19:06	TB
Chromium, Dissolved	< 0.002 mg/L	0.002	6010	11/14/00 10:40	TB
Iron, Dissolved	< 0.008 mg/L	0.008	6010	11/ 9/00 19:06	TB
Manganese, Dissolved	0.006 mg/L	0.003	6010	11/ 9/00 19:06	TB
Zinc, Dissolved	0.045 mg/L	0.007	6010	11/ 9/00 19:06	TB
Boron, Dissolved	< 0.1 mg/L	0.10	6010	11/ 9/00 19:06	TB
Arsenic, Dissolved	< 2 ug/L	2.0	206.2	11/ 8/00 16:00	TB
Cadmium, Dissolved	< 0.2 ug/L	0.20	213.2	11/13/00 10:30	TB
Lead, Dissolved	< 1 ug/L	1.0	239.2	11/13/00 16:00	TB
Selenium, Dissolved	< 1 ug/L	1.0	270.2	11/ 1/00 18:00	TB
Carbon, Total Organic	1.1 mg/L	1.0	415.1	11/ 3/00 10:00	OL

OL = Analysis Performed by an Outside Laboratory

MINNESOTA LAB # 027-015-125
 WISCONSIN LAB ID # 999447680

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Report Date: 16 Nov 2000

Lab Number: 00-L28802

Work Order #: 31-471

Account #: 013138

DEAN STOCKWELL
 URS GREINER WOODWARD CLYDE
 6465 WAYZATA BLVD STE 660
 MINNEAPOLIS MN 55426-1711

Date Received: 25 Oct 2000

Date Sampled: 23 Oct 2000

Time Sampled: 16:07

Temperature at Receipt: 0.5C

Project Name: DEZURIK

Sample Description: P-9R

Analyte	Result	RL	Method	Date Analyzed	Analyst
Appearance, Field	Clear	NA	2110		TJN
Water Elevation	1022.01	NA	NA		TJN
Temperature - Field	11.7 deg. C	NA	170.1		TJN
Specific Conductance, Fld	932 umhos/cm	1.	120.1		TJN
Specific Conductance	971.0 umhos/cm	0.1	120.1	10/31/00 9:00	BLS
pH, Field	6.91 units	1.00	150.1		TJN
pH (Laboratory)	7.4 units	1.0	150.1	10/26/00 9:00	BLS
Fluoride	< 0.1 mg/L	0.10	340.2	10/27/00 14:29	JD
Sulfate	99 mg/L	4	375.4	10/27/00 7:58	TMK
Chloride	26.4 mg/L	3.0	325.2	10/30/00 10:59	TMK
Nitrate+Nitrite	4.87 mg/L as N	0.20	353.2	10/26/00 10:38	TMK
Phenolics, Total	< 5 ug/L	5	420.1	10/30/00 5:30	JD
Cyanide, Total	< 0.02 mg/L	0.02	335.2	10/31/00	JD
Chemical Oxygen Demand	< 5 mg/L	5	410.4	10/26/00 6:09	JD
Solids, Total Dissolved	625 mg/L	1	160.1	10/31/00 12:40	AKF

OL = Analysis Performed by an Outside Laboratory

MINNESOTA LAB # 027-015-125
 WISCONSIN LAB ID # 999447680

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Report Date: 16 Nov 2000

Lab Number: 00-L28802
Work Order #: 31-471
Account #: 013138

DEAN STOCKWELL
URS GREINER WOODWARD CLYDE
6465 WAYZATA BLVD STE 660
MINNEAPOLIS MN 55426-1711

Date Received: 25 Oct 2000
Date Sampled: 23 Oct 2000
Time Sampled: 16:07
Temperature at Receipt: 0.5C

Project Name: DEZURIK

Sample Description: P-9R

Analyte	Result	RL	Method	Date Analyzed	Analyst
Calcium, Dissolved	139.0 mg/L	0.018	6010	11/ 3/00 12:37	TB
Magnesium, Dissolved	39.50 mg/L	0.036	6010	11/ 3/00 12:37	TB
Sodium, Dissolved	8.280 mg/L	0.096	6010	11/ 3/00 12:37	TB
Barium, Dissolved	0.115 mg/L	0.001	6010	11/ 9/00 19:06	TB
Chromium, Dissolved	< 0.002 mg/L	0.002	6010	11/14/00 10:40	TB
Iron, Dissolved	< 0.008 mg/L	0.008	6010	11/ 9/00 19:06	TB
Manganese, Dissolved	0.036 mg/L	0.003	6010	11/ 9/00 19:06	TB
Zinc, Dissolved	0.026 mg/L	0.007	6010	11/ 9/00 19:06	TB
Boron, Dissolved	< 0.1 mg/L	0.10	6010	11/ 9/00 19:06	TB
Arsenic, Dissolved	< 2 ug/L	2.0	206.2	11/ 8/00 16:00	TB
Cadmium, Dissolved	< 0.2 ug/L	0.20	213.2	11/13/00 10:30	TB
Lead, Dissolved	< 1 ug/L	1.0	239.2	11/13/00 16:00	TB
Selenium, Dissolved	< 1 ug/L	1.0	270.2	11/ 1/00 18:00	TB
Carbon, Total Organic	< 1 mg/L	1.0	415.1	11/ 3/00 10:00	OL

OL = Analysis Performed by an Outside Laboratory

MINNESOTA LAB # 027-015-125
WISCONSIN LAB ID # 999447680

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Report Date: 16 Nov 2000

Lab Number: 00-L28803
Work Order #: 31-471
Account #: 013138

DEAN STOCKWELL
URS GREINER WOODWARD CLYDE
6465 WAYZATA BLVD STE 660
MINNEAPOLIS MN 55426-1711

Date Received: 25 Oct 2000
Date Sampled: 23 Oct 2000
Time Sampled: 13:32
Temperature at Receipt: 0.5C

Project Name: DEZURIK

Sample Description: P-13A

Table with 6 columns: Analyte, Result, RL, Method, Date Analyzed, Analyst. Rows include Appearance, Field; Water Elevation; Temperature - Field; Specific Conductance, Fld; Specific Conductance; pH, Field; pH (Laboratory); Fluoride; Sulfate; Chloride; Nitrate+Nitrite; Phenolics, Total; Cyanide, Total; Chemical Oxygen Demand; Solids, Total Dissolved.

01 = Analysis Performed by an Outside Laboratory

MINNESOTA LAB # 027-015-125
WISCONSIN LAB ID # 999447680

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Report Date: 16 Nov 2000

Lab Number: 00-L28803
Work Order #: 31-471
Account #: 013138

DEAN STOCKWELL
URS GREINER WOODWARD CLYDE
6465 WAYZATA BLVD STE 660
MINNEAPOLIS MN 55426-1711

Date Received: 25 Oct 2000
Date Sampled: 23 Oct 2000
Time Sampled: 13:32
Temperature at Receipt: 0.5C

Project Name: DEZURIK

Sample Description: P-13A

Table with 6 columns: Analyte, Result, RL, Method, Date Analyzed, Analyst. Rows include Calcium, Magnesium, Sodium, Barium, Chromium, Iron, Manganese, Zinc, Boron, Arsenic, Cadmium, Lead, Selenium, and Carbon, Total Organic.

OL = Analysis Performed by an Outside Laboratory

MINNESOTA LAB # 027-015-125
WISCONSIN LAB ID # 999447680

All data for this report has been approved by MVT L Laboratory Management.

MVT L guarantees the accuracy of the analysis done on the sample submitted for testing. It is not possible for MVT L to guarantee that a test result obtained on a particular sample will be the same on any other sample unless all conditions affecting the sample are the same, including sampling by MVT L. As a mutual protection to clients, the public and ourselves, all reports are submitted as the confidential property of clients, and authorization for publication of statements, conclusions or extracts from or regarding our reports is reserved pending our written approval.



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Report Date: 30 Nov 2000

Lab Number: 00-L28804

Work Order #: 31-471

Account #: 013138

DEAN STOCKWELL
 URS GREINER WOODWARD CLYDE
 6465 WAYZATA BLVD STE 660
 MINNEAPOLIS MN 55426-1711

Date Received: 25 Oct 2000
 Date Sampled: 23 Oct 2000
 Time Sampled: 11:10
 Temperature at Receipt: 0.5C

Project Name: DEZURIK

Sample Description: FIELD BLANK

Analyte	Result	RL	Method	Date Analyzed	Analyst
Specific Conductance	3.0 umhos/cm	0.1	120.1	10/31/00 9:00	BLS
pH (Laboratory)	5.2 units	1.0	150.1	10/26/00 9:00	BLS
Fluoride	< 0.1 mg/L	0.10	340.2	10/27/00 14:29	JD
Sulfate	< 4 mg/L	4	375.4	10/27/00 7:58	TMK
Chloride	< 3 mg/L	3.0	325.2	10/30/00 10:59	TMK
Nitrate+Nitrite	< 0.2 mg/L as N	0.20	353.2	10/26/00 10:38	TMK
Phenolics, Total	< 5 ug/L	5	420.1	10/30/00 5:30	JD
Cyanide, Total	< 0.02 mg/L	0.02	335.2	10/31/00	JD
Chemical Oxygen Demand	< 5 mg/L	5	410.4	10/27/00 6:25	JD
Solids, Total Dissolved	10 mg/L	1	160.1	11/21/00 12:40	AKF
Sodium, Dissolved	1.540 mg/L	0.096	6010	11/ 3/00 12:37	TB
Barium, Dissolved	0.033 mg/L	0.001	6010	11/ 9/00 19:06	TB
Chromium, Dissolved	< 0.002 mg/L	0.002	6010	11/14/00 10:40	TB
Iron, Dissolved	< 0.008 mg/L	0.008	6010	11/ 9/00 19:06	TB
Manganese, Dissolved	< 0.003 mg/L	0.003	6010	11/ 9/00 19:06	TB

MINNESOTA LAB # 027-015-125
 WISCONSIN LAB ID # 999447680

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Report Date: 30 Nov 2000

Lab Number: 00-L28804
 Work Order #: 31-471
 Account #: 013138

DEAN STOCKWELL
 URS GREINER WOODWARD CLYDE
 6465 WAYZATA BLVD STE 660
 MINNEAPOLIS MN 55426-1711

Date Received: 25 Oct 2000
 Date Sampled: 23 Oct 2000
 Time Sampled: 11:10
 Temperature at Receipt: 0.5C

Project Name: DEZURIK

Sample Description: FIELD BLANK

Analyte	Result	RL	Method	Date Analyzed	Analyst
Zinc, Dissolved	< 0.007 mg/L	0.007	6010	11/ 9/00 19:06	TB
Boron, Dissolved	< 0.1 mg/L	0.10	6010	11/ 9/00 19:06	TB
Arsenic, Dissolved	< 2 ug/L	2.0	206.2	11/ 8/00 16:30	TB
Cadmium, Dissolved	< 0.2 ug/L	0.20	213.2	11/13/00 12:00	TB
Lead, Dissolved	< 1 ug/L	1.0	239.2	11/13/00 17:00	TB
Selenium, Dissolved	< 1 ug/L	1.0	270.2	11/ 1/00 18:00	TB
Calcium, Dissolved	< 0.2 mg/L	0.20	215.1	11/13/00 9:11	TB
Magnesium, Dissolved	< 0.03 mg/L	0.03	242.1	11/13/00 9:07	TB
Carbon, Total Organic	< 1 mg/L	1.0	415.1	11/ 3/00 10:00	OL

OL = Analysis Performed by an Outside Laboratory

MINNESOTA LAB # 027-015-125
 WISCONSIN LAB ID # 999447680

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MINNESOTA VALLEY TESTING LABORATORIES, INC.

New Ulm, MN 56073 (507) 354-8517

Field Service

CHAIN OF CUSTODY RECORD

Project Name: DeZurik		Name of Samplers: <i>Jim Goebel T.L. Newkirk</i>	
Report To: Dean Stockwell Address: URS-Greiner, Woodward, Clyde 6465 Wayzata Blvd Suite 60 Minneapolis, MN 55462		Carbon Copy 1:	Carbon Copy 2:
Phone: 651-296-7742 Fax: 651-296-9707		Work Order Number: <i>31-471 L25800-04</i>	

"HOT"	Sample ID	Date	Time	Sample Type	Sample Location	Analysis
	P-5R	<i>23 Oct</i>	<i>3:41</i>	GROUNDWATER	NA	
	P-12R	<i>24 Oct</i>	<i>8:21^{am}</i>	GROUNDWATER	NA	
	P-9R	<i>23 Oct</i>	<i>4:08</i>	GROUNDWATER	NA	SEE
	P-13A	<i>23 Oct</i>	<i>1:33</i>	GROUNDWATER	NA	ATTACHED
						SHEETS
						FOR
						ALL
						SAMPLES

"HOT" Sample is ≥ 100 ug/L Volatile Organic Chemicals (VOC's)

Comments:

Samples Relinquished by: <i>T. J. Newkirk</i>	Date/Time: <i>24 Oct 00 4:00pm</i> Temp: <i>0.5</i>	Received By: <i>Alice Lueder</i>	Date/Time: <i>10/25/00 6:00</i> Temp:
Samples Relinquished by:	Date/Time:	Received By:	Date/Time:
	Temp:		Temp:

Means of Delivery: Samplers MVTL Courier Other: _____	Seals Intact? Yes No NA
--	----------------------------

MINNESOTA VALLEY TESTING LABORATORIES, INC.

New Ulm, MN 56073 (507) 354-8517

Groundwater Assessment

Site: DeZurik

Sampling Personnel:

T.S. Newkirk

Solid Waste Permit #: _____

Date: 230600

Well Number: P-5R

WELL INFORMATION

Well Depth: 81.15

Screen Interval: _____

Constructed Depth: 81.08

Well Casing Elev: 1099.04

Casing Diameter: 4"

Static Elevation: 1022.17

Well Volume: 2.8 Gallons

Previous Static: NA

Water Depth Before: 76.87

Water Depth After: 76.93

WELL CONDITION

Well Locked?: Yes / No

Protective Posts?: Yes / No

Well Labelled?: Yes / No

State ID Tag?: Yes / No

Casing Straight?: Yes / No

Grout Seal Intact?: Yes / No

SAMPLING INFORMATION

Sampling Method: Bladder / Bailer / Grundfos / Whale / Grab / Other:

Dedicated Equipment: Yes / No

Pumping Rate: 1-5 GPM.

Weather Conditions: Cloudy, Winds Light + Variable, 65°

Well Purged Dry?: Yes / No

Time Pumping Began: 3:32

Time Purged Dry: _____

Time of Sampling: 3:41

Amount of Water Removed: 12.0 Gallons

Sample Appearance: Slightly Cloudy

Duplicate Sample?: Yes / No ID: _____

Sample EH/ORP: _____

Time	pH	Specific Cond.	Temp (Deg. Cel)	D.O. (mg/L)	Turbidity (NTU)	Water Removed (Gallons)
3:34	6.84	⁹⁰⁵ 1174	13.2	NA	NA	3
3:36	6.77	⁹⁰⁰ 1168	12.8			6
3:38	6.70	⁹⁰⁰ 1182	12.6			9
3:40	6.68	⁹⁰⁰ 1182	12.5			12

Comments:

Exceptions to Protocol:

WELAND BISMARCK
3438 BISMARCK
bth 581121

MINNESOTA VALLEY TESTING LABORATORIES, INC.

New Ulm, MN 56073 (507) 354-8517

Groundwater Assessment

Site: DeZurik

Sampling Personnel:

Solid Waste Permit #: _____

Jim GOEBEL
T.J. NEWKIRK

Date: 24 Oct 00

Well Number: P-12R

WELL INFORMATION

Well Depth: 86.55

Screen Interval: NA

Constructed Depth: —

Well Casing Elev: 1101.33

Casing Diameter: 4"

Static Elevation: 1022.18

Well Volume: 4.8 Gallons

Previous Static: NA

Water Depth Before: 79.15

Water Depth After: 79.20

WELL CONDITION

Well Locked?: Yes / No

Protective Posts?: Yes / No

Well Labelled?: Yes / No

State ID Tag?: Yes / No

Casing Straight?: Yes / No

Grout Seal Intact?: Yes / No

SAMPLING INFORMATION

Sampling Method: Bladder / Bailer / Grundfos / Whale / Grab / Other: _____

Dedicated Equipment: Yes / No

Pumping Rate: 2.5 GPM.

Weather Conditions: Fog 58°

Well Purged Dry?: Yes / No

Time Pumping Began: 8:10am

Time Purged Dry: —

Time of Sampling: 8:21

Amount of Water Removed: 25 Gallons

Sample Appearance: Slightly Cloudy

Duplicate Sample?: Yes / No ID: —

Sample EH/ORP: —

Time	pH	Specific Cond.	Temp (Deg. Cel)	D.O. (mg/L)	Turbidity (NTU)	Water Removed (Gallons)
8:12	6.04	869	10.67	NA	NA	5
8:14	6.36	870	10.85	↓	↓	10
8:16	6.50	871	10.95	↓	↓	15
8:18	6.65	874	11.06	↓	↓	20
8:20	6.74	876	11.11	↓	↓	25

Comments:

Exceptions to Protocol:

MINNESOTA VALLEY TESTING LABORATORIES, INC.

New Ulm, MN 56073 (507) 354-8517

Groundwater Assessment

Sampling Personnel:

T.J. NEWKIRK

Site: Sartell and DeZurik

Solid Waste Permit #: _____

Date: 23 OCT 00

Well Number: P-9R

WELL INFORMATION

Well Depth: 86.04

Screen Interval: _____

Constructed Depth: _____

Well Casing Elev: 1102.09

Casing Diameter: 4"

Static Elevation: 1022.01

Well Volume: 3-9 Gallons

Previous Static: NA

Water Depth Before: 80.08

Water Depth After: 80.11

WELL CONDITION

Well Locked?: Yes / No

Protective Posts?: Yes / No

Well Labelled?: Yes / No

State ID Tag?: Yes / No

Casing Straight?: Yes / No

Grout Seal Intact?: Yes / No

SAMPLING INFORMATION

Sampling Method: Bladder / Bailer / Grundfos / Whale / Grab / Other:

Dedicated Equipment: Yes / No

Pumping Rate: 2.0 GPM.

Weather Conditions: CLOUDY, LIGHT + VARIABLE WINDS, 62°

Well Purged Dry?: Yes / No

Time Pumping Began: 3:59

Time Purged Dry: _____

Time of Sampling: 4:08

Amount of Water Removed: 16.0 Gallons

Sample Appearance: CLEAR

Duplicate Sample?: Yes / No ID: _____

Sample EH/ORP: -9.3

Time	pH	Specific Cond.	Temp (Deg. Cel)	D.O. (mg/L)	Turbidity (NTU)	Water Removed (Gallons)
4:01	7.07	937	12.06	NA	NA	4
4:03	7.02	933	11.96	↓	↓	8
4:05	6.96	932	11.76	↓	↓	12
4:07	6.91	932	11.71	↓	↓	16
				↓	↓	

Comments: THIS WELL IS SHARED. PLEASE PHOTO COPY THIS SHEET AND ADD TO REPORT.

Exceptions to Protocol:

MINNESOTA VALLEY TESTING LABORATORIES, INC.

New Ulm, MN 56073 (507) 354-8517

Groundwater Assessment

Site: DeZurik

Sampling Personnel:

T.J. NEWLARK

Solid Waste Permit #: _____

Date: 230900

Well Number: P-13A

WELL INFORMATION

Well Depth: 86.62

Screen Interval: _____

Constructed Depth: _____

Well Casing Elev: 1105.12

Casing Diameter: 4"

Static Elevation: 1026.08

Well Volume: 5.0 Gallons

Previous Static: 1026.22

Water Depth Before: 79.04

Water Depth After: 80.01

WELL CONDITION

Well Locked?: Yes / No

Protective Posts?: Yes / No

Well Labelled?: Yes / No

State ID Tag?: Yes / No

Casing Straight?: Yes / No

Grout Seal Intact?: Yes / No

SAMPLING INFORMATION

Sampling Method: Bladder / Bailer / Grundfos / Whale / Grab / Other: _____

Dedicated Equipment: Yes / No

Pumping Rate: 2-0 GPM.

Weather Conditions: Cloudy, W Wind 5mph, 62°

Well Purged Dry?: Yes / No

Time Pumping Began: 1:17

Time Purged Dry: —

Time of Sampling: 1:33

Amount of Water Removed: 24.0 Gallons

Sample Appearance: Clear

Duplicate Sample?: Yes / No ID: —

Sample EH/ORP: —

Time	pH	Specific Cond.	Temp (Deg. Cel)	D.O. (mg/L)	Turbidity (NTU)	Water Removed (Gallons)
1:20	6.15	⁴²⁰ 538	13.5	NA	NA	6
1:23	6.54	⁴⁴⁰ 635	12.9			12
1:26	6.72	⁵¹⁰ 670	12.4			18
1:29	6.86	⁵¹⁰ 678	12.2			21
1:32	6.92	⁵¹⁰ 678	12.2			24

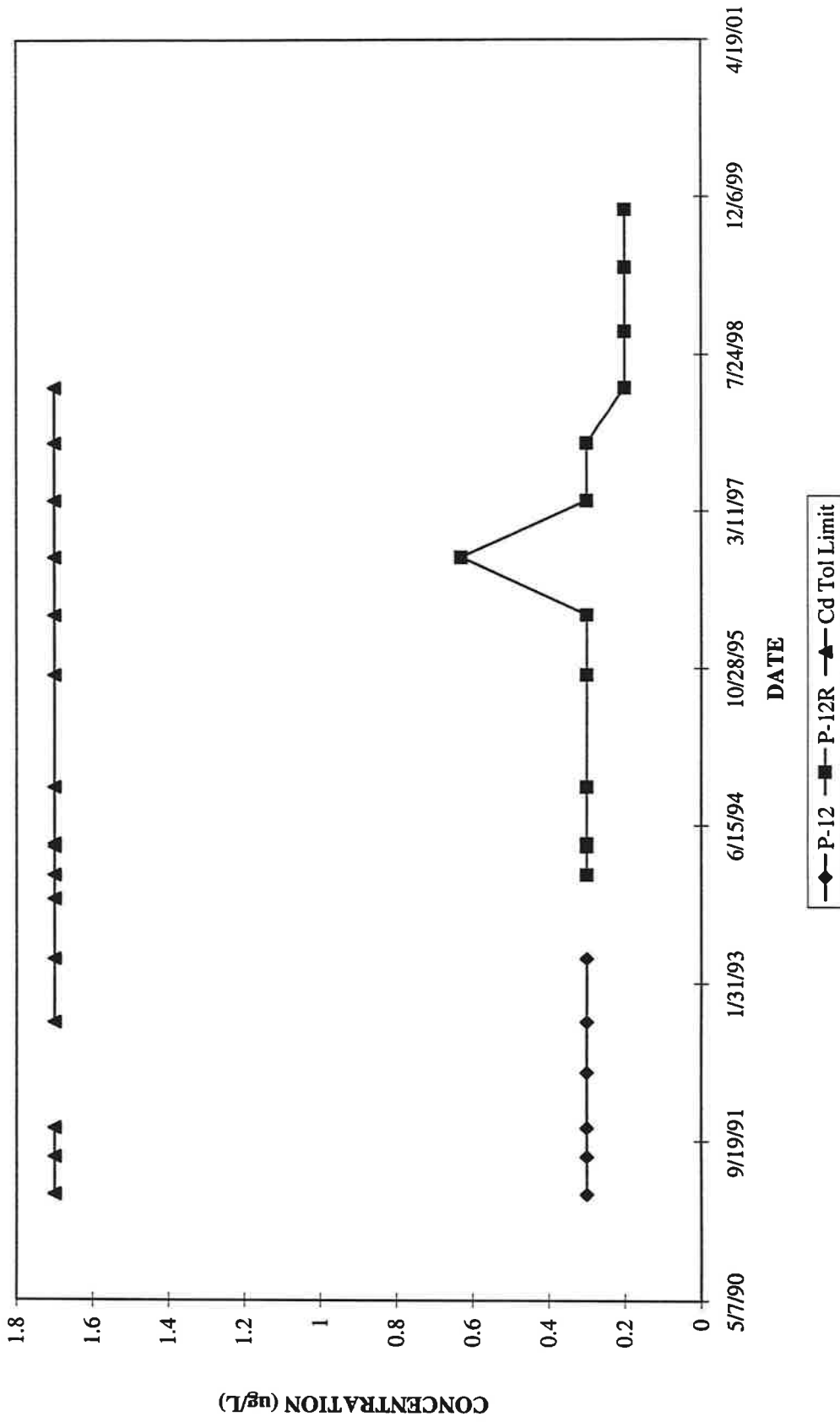
Comments:

Exceptions to Protocol:

Appendix B
Historical Groundwater Analytical Results Graphs

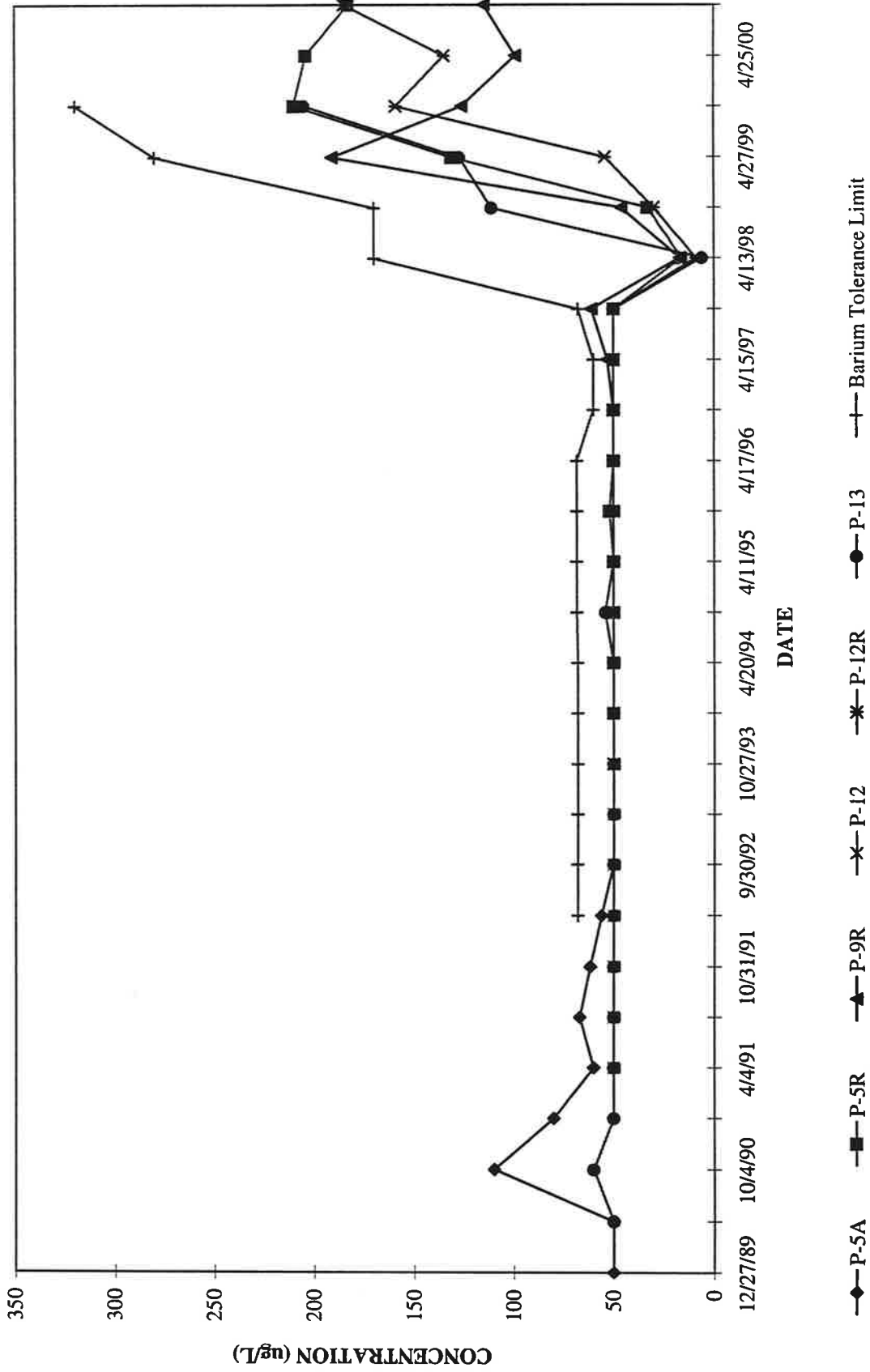
DEZURIK GROUNDWATER HISTORICAL ANALYTICAL RESULTS

Dissolved Cadmium



DEZURIK GROUNDWATER HISTORICAL ANALYTICAL RESULTS

Dissolved Barium



Appendix C
Historical Groundwater Elevation Information

HISTORICAL GROUNDWATER DATA
DeZurik Hazardous Waste Lagoon #3

DATE	P-5A	P-5R	P-9R	P-12	P-12R	P-13
4/4/90	1020.83					
6/26/90	1021.79		1020.74	1021.81		1025.77
10/2/90	1023.15		1023.05	1023.31		1026.18
12/18/90	1023.13		1023.25	1023.41		1026.23
4/4/91	1022.69		1022.79	1022.95		1026.14
7/31/91	1024.29		1024.43	1024.5		1026.45
10/31/91	1025.11		1024.97	1025.07		1026.48
4/23/92	1024.22		1024.36	1024.34		1026.46
10/21/92	1024.25		1024.28			
4/20/93	1023.05		1022.94	1023.11		1026
10/27/93	1025.29	1026.14	1025.2		1025.37	1026.98
4/20/94	1024.56	1024.73	1024.56		1024.75	1026.59
7/11/94			1025.52			
10/17/94	1025.38	1025.47	1025.34		1025.44	1027.04
4/11/95	1024.50	1024.79	1025.01		1024.80	1026.75
10/9/95	1025.39	1025.63	1025.52		1025.53	1026.98
4/17/96	1024.70	1024.94	1024.83		1024.97	1026.59
10/15/96	1024.26	1024.4	1024.25		1024.37	1026.47
4/15/97	1024.11	1024.35	1024.22		1024.23	1026.45
10/14/97	1025.8	1026.04	1025.81		1025.91	1027.27
4/13/98	1024.67	1024.84	1024.69		1024.84	1026.44
10/6/98	1024.48	1024.62	1024.47		1024.63	1026.37
4/27/99		1023.63	1023.48		1023.64	1026.1
10/27/99		1023.93	1023.81		1023.93	1026.24
4/25/00		1023	1022.96		1023	1026.22
10/23/00		1022.17	1022.01		1022.18	1026.08

blank = not sampled

DeZurik Groundwater Elevation Data

