

June 27, 2012

Mr. David Moore
Minnesota Pollution Control Agency
520 Lafayette Road North
Saint Paul, MN 55155-4194

RE: **Residential Water/GAC System Sampling and Site Data Review**
Bulinski Point
Ely, Minnesota
MPCA ID: SA#4493
BW J110583

Dear Mr. Moore:

The purpose of this letter is to present the results of the recent residential water/granular activated carbon (GAC) system sampling and historic data review performed at the above referenced site (the site). A site location map is included as **Figure 1** and a site map with historic investigation data is included as **Figure 2**. Bay West, Inc. (Bay West) completed this work based on the work plan and cost proposal dated February 15, 2012, as approved by the Minnesota Pollution Control Agency (MPCA). The historic data review is provided in **Section 1.0**, the potable well and GAC system sampling results are discussed in **Section 2.0**, the potential receptor survey is discussed in **Section 3.0**, and conclusions and recommendations are provided in **Section 4.0**.

1.0 Historic Investigation Data Review

1.1 Site Background Information

In May 2002, tetrachloroethene (PCE) was detected in groundwater samples collected from potable wells located at 1933 West Shagawa Road (Leustek residence) and 1925 West Shagawa Road (Berglund residence), located on Bulinski Point in Ely, Minnesota (**Figure 1**). The samples were collected as part of a leaking underground storage tank (LUST) investigation for a petroleum release identified at the Leustek property (Leak# 14216). The analysis indicated that the two potable wells contained PCE concentrations of 17 micrograms per liter (µg/L) and 42 µg/L, respectively. The PCE concentrations detected in these wells exceeded the Minnesota Department of Health (MDH) Health Risk Limit (HRL) of 5 µg/L for drinking water. The existing wells located on Bulinski Point were tested for volatile organic compounds (VOCs) at that time and three residential wells (Feela well - 1936 Shagawa Road, Leustek well, and Berglund well) tested positive for PCE and were subsequently connected to GAC water filtration systems installed by Bay West. (Terracon, 2005)

MPCA staff visited Bulinski Point to obtain information regarding dumping activities in the area, and reviewed groundwater quality and well construction data for potable wells in the area. Historical information obtained by the MPCA from Ray and Laurie Feela indicated that they had found a dump area containing plastic barrels labeled "perchloroethylene" after they had purchased the property at 1936 Shagawa Road from Ken and Carolyn Wittrup. Based on the information available, this dump area was assumed to be located to the south of the Feela House. Some of the barrels reportedly contained a dark tarry residue and had a strong odor. The barrels and other debris were removed for disposal and the area was filled. The Wittrups

reportedly owned and operated a dry cleaning facility in Ely. The MPCA used the available information to select Investigation Areas A, B, and C which were either known dumping areas (Area A) or may have been used for dumping (Areas B and C). (Terracon, 2003)

Historic figures and tables from the previous investigation reports have also been included with this letter report to better illustrate the past investigation results. Investigation Areas A, B, and C are indicated on **Historic Figure 1**.

1.2 Regional Geology and Hydrogeology

The surface elevation across the site varies from a lake surface elevation of approximately 1,327 feet above mean sea level (amsl) to 1,370 feet amsl. Bedrock outcrops at the site along a southwest to northeast trending ridge between the Feela Property (Investigation Areas A and B) and the Bulinski Property (Investigation Area C) and along the lakeshore. Precambrian age graywackes and slates of the Knife Lake Group are overlain by up to 50 feet of Quaternary age sand and gravel deposits. The sand and gravel sediments are ice contact deposits formed as part of the Rainy-Superior lobe of the Late Wisconsinan glaciation. The local horizontal groundwater flow direction is anticipated to vary from east to west across the site, but likely discharges to Shagawa Lake. During Terracon Inc.'s (Terracon) investigation activities, groundwater was encountered at depths ranging from six to nine feet below ground surface (bgs). (Terracon, 2005)

1.3 Initial Subsurface Investigation - 2002

In December 2002, as directed by the MPCA, Terracon performed a Limited Phase II subsurface investigation at Investigation Area A – located just east of the originally identified dump area, Investigation Area B – former greenhouse area, and Investigation Area C – former construction company. The investigation consisted of advancing 14 soil probes to refusal at depths ranging from four to 37 feet bgs and collecting soil and groundwater samples for laboratory analysis of VOCs. The goal of the investigation activities was to assess the known and potential areas where dry cleaning solvents and/or associated wastes dumping occurred and to assess potential pathways for contaminant migration to the Berglund and Leustek potable wells that had documented PCE impacts.

Soil and groundwater samples collected from soil probes advanced in Investigation Area A did not detect PCE or its daughter products. Soil samples collected from soil probes advanced in Investigation Area B did not detect PCE or its daughter products. Groundwater was not encountered in the Investigation Area B soil probes, as bedrock refusal was encountered between four and six feet bgs.

PCE was detected in groundwater samples collected from Investigation Area C at concentrations of 15 µg/L and 1.1 µg/L in probes PC-3 (11-15 feet) and PC-6 (38-42 feet), respectively. The soil probe locations are indicated on **Figure 2** and **Historic Figure 1**. The soil and groundwater results are summarized on **Historic Tables 1 and 2**.

1.4 Gore-Sorber Screening Surveys - 2003

In April 2003, a Gore-Sorber Screening Survey was completed at Investigation Area C and along West Shagawa Road in an attempt to identify the PCE source area(s) and to assess potential contaminant migration pathways. The survey consisted of 25 survey modules that were installed approximately 50 feet apart from each other (**Historic Figure 1**); the modules were submitted for analysis of the Gore Chlorinated VOC Target Compound List.

PCE vapors were detected at concentrations ranging from 0.01 to 1.89 micrograms (µg) in samples collected from the northwest and southwest quadrants of Investigation Area C and

along West Shagawa Road between the driveway to the Feela (former Wittrup) residence and entrance to the Bulinski property (**Figure 2** and **Historic Figure 1**). The Gore-Sorber data suggested that the source area may be located between the bedrock ridge and the Feela driveway; however, a definitive PCE source area was not identified. Terracon indicated that the lower PCE concentrations detected in screening survey modules along West Shagawa Road were likely indicative of the PCE plume migrating towards the Berglund and Leustek potable wells.

In October 2003, Terracon performed a second Gore-Sorber Screening Survey at the site to identify the source(s) of the PCE contamination. The investigation consisted of 39 survey modules located at approximate distances apart ranging from 20 to 50 feet (**Historic Figure 1**). The survey modules were submitted for analysis of the Gore Chlorinated VOC Target Compound List.

PCE vapors were detected at concentrations ranging from 0.03 to 2.07 μg in the area adjacent to the Feela (former Wittrup) driveway (**Figure 2** and **Historic Figure 1**), as identified in the April 2003 survey. The survey results identified a potential source of PCE contamination on the former Wittrup property, located adjacent to the south of the driveway entrance to the former Wittrup property from West Shagawa Road. The Gore-Sorber sampling results are summarized on **Historic Table 3**.

1.5 Source Area Investigation - 2005

In May 2005, Terracon performed a Source Area Investigation to assess the shallow soils located in the suspected source area identified during the October 2003 Gore-Sorber Screening Survey, as directed by the MPCA. The investigation consisted of advancing 33 hand auger borings to depths ranging from 0.5 to 3 feet bgs, which coincided with refusal on bedrock obstructions in each boring (**Historic Figure 2**). Twelve soil samples were submitted to a laboratory for analysis of VOCs.

PCE was detected in soil samples HA-11 (1 foot) and HA-20 (0.5 feet) at concentrations of 0.083 milligrams per kilogram (mg/kg) and 2.2 mg/kg, respectively (**Figure 2** and **Historic Figure 2**). These PCE concentrations are below the MPCA established Tier 1 Soil Reference Value (SRV) of 72 mg/kg; however, they are above the MPCA Tier 1 Soil Leaching Value (SLV) of 0.068 mg/kg. PCE was not detected in the 10 other hand auger soil samples.

Based on the analytical results, the additional investigation work confirmed the presence of PCE in the shallow soils where the previous Gore-Sorber Screening Survey data indicated that PCE vapors were present. The PCE soil impacts appeared to be concentrated along the south side of the Feela driveway where it meets West Shagawa Road, which may be the source area associated with the PCE groundwater impacts to residential wells located to the east-northeast. The investigation results also confirmed the absence of detectable PCE at various locations throughout the site. The PCE impacts detected in the shallow soil samples are low level and are not likely to be significantly contributing PCE to groundwater at the site. Based on the depth of the soil samples, the soil was likely impacted from a surface release (i.e., spill or dumping). Furthermore, based on the results and distribution of the soil sampling, the lateral extent of the source area may be limited, or was previously removed, such as by excavating impacted soil/gravel (i.e., mining activities) which was historically conducted on the property adjacent to the south. (Terracon, 2005)

Terracon recommended excavating and transporting the impacted soil having PCE concentrations exceeding the MPCA established SLVs off-site to an appropriate disposal facility. The estimated volume of soil removed is between 200 and 300 cubic yards. The

excavation work would also provide a more comprehensive view of the suspected source area. (Terracon, 2005)

2.0 Potable Well and GAC System Sampling – 2003 through 2012

Following the discovery of PCE in water samples collected from the Berglund, Leustek, and Feela potable wells in May 2002, GAC water filtration systems were installed on each of these wells. Each GAC treatment system consists of two vessels (GAC1 and GAC2) that are designed to remove PCE and other VOCs from the water before it is supplied for residential use. Since January 2003, water samples have been collected on varying time intervals (quarterly, semi-annual, and annual) from the Berglund, Feela, and Leustek potable wells and submitted to a laboratory for analysis of VOCs. Water samples were collected from sample ports located before the GAC system (raw, untreated water), between the two GAC system vessels, and after the GAC system (fully treated water). The water sampling results are summarized on **Table 1**.

2.1 Berglund Well - 1925 West Shagawa Road

Since January 2003, PCE has been detected at concentrations exceeding the MDH HRL of 5 µg/L in raw (untreated by GAC system) water samples collected from the Berglund well. However, no VOCs [except for low levels of acetone, methyl ethyl ketone (MEK), methyl isobutyl ketone (MIBK), and toluene in samples collected May 2011] have been detected in water samples collected after the first and second GAC vessels in the Berglund well, indicating that the GAC system is effectively removing PCE from the well water.

PCE concentrations in raw water samples collected from the Berglund well have ranged from 15 to 125 µg/L, with a concentration of 66 µg/L during the most recent sampling event on May 10, 2012. The PCE concentrations appear to be decreasing over time; however, the most recent PCE concentration of 66 µg/L is elevated compared to PCE concentrations since November 2008. A graph depicting PCE concentrations over time in the Berglund well is included as **Figure 3**.

2.2 Leustek Well - 1933 West Shagawa Road

Since January 2003, PCE has been detected at concentrations exceeding the MDH HRL of 5 µg/L in raw (untreated by GAC system) water samples collected from the Leustek well. However, no VOCs (except for a low level of acetone in a sample collected May 2007) have been detected in water samples collected after the first and second GAC vessels in the Leustek well, indicating that the GAC system is effectively removing PCE from the well water.

PCE concentrations in raw water samples collected from the Leustek well have ranged from non-detect to 19 µg/L, with a concentration of 5.3 µg/L during the most recent sampling event on May 10, 2012. The PCE concentrations appear to be decreasing over time. A graph depicting PCE concentrations over time in the Leustek well is included as **Figure 4**.

2.3 Feela Well - 1936 West Shagawa Road

In 2003, 2004, and 2006, PCE was detected at concentrations ranging from 1.2 to 2.0 µg/L in raw water samples collected from the Feela well; however, PCE has not been detected at concentrations exceeding the MDH HRL and no PCE has been detected in the well since May 2007. No VOCs have been detected in water samples collected after the first and second GAC vessels in the Feela well. The Feela well does not appear to be impacted by PCE at concentrations that pose a risk to human health.

2.4 Cotter Well - 1932 West Shagawa Road

On May 10, 2012, a water sample was collected from the potable well and submitted for laboratory analysis of VOCs. A GAC system is not present on the Cotter well. No VOCs were detected in the Cotter well water sample; this well is not impacted by PCE.

3.0 Potential Receptor Survey

On May 10, 2012, Bay West performed a receptor survey of properties within 500 feet of the suspected source area to identify potential ingestion, inhalation, and dermal contact exposure pathways associated with the PCE contamination. The potential receptor map is included as **Figure 5**. All properties located on Bulinski Point and within 500 feet of the suspected source area are included on **Table 2**. The water supply wells located within 500 feet and the municipal and industrial wells located within a half mile of the suspected source area are included on **Table 3**. Surface waters located in the vicinity of the suspected source area are included on **Table 4**.

3.1 Groundwater Pathway

In addition to the Berglund, Cotter, Feela, and Leustek residences, two other properties, located at 1950 and 1951 West Shagawa Road, were identified within 500 feet of the suspected source area. No one was home at the 1950 and 1951 West Shagawa Road properties at the time of the receptor survey; and no postcards were returned from these properties with the requested receptor survey information. However, it is assumed that these properties utilize private wells for their potable water supply. The 1950 and 1951 West Shagawa Road properties are located approximately 400 and 470 feet from the suspected source area, respectively, at inferred cross-gradient positions with respect to groundwater flow. Based on this information, there appears to be a potential risk of PCE impacts to potable wells located at 1950 and 1951 West Shagawa Road.

Nine other properties located beyond 500 feet to the north of the suspected source area were identified on Bulinski Point. These properties are located approximately 675 to 1,500 feet cross-to up-gradient of the suspected source area. Four domestic wells associated with these properties were identified on the MDH County Well Index (CWI) and it is assumed that the remaining properties also utilize private wells. However, based on the distance and direction from the suspected source area, the PCE groundwater contamination does not appear to pose a risk to these potable wells.

Additionally, Bay West contacted the City of Ely for information regarding the water supply in the vicinity of the source area. Harold Langowski, Operations Director for the City of Ely, indicated that municipal water is not provided to Bulinski Point and all potable water is supplied to properties on Bulinski Point by private wells. Mr. Langowski also indicated that the City of Ely municipal water supply is sourced from Burntside Lake, located approximately 2.5 miles northwest of Bulinski Point.

3.2 Soil Gas Pathway

During the Gore Sorber Survey conducted at the site in 2003, PCE impacts were identified in the area adjacent to the south of the Feela driveway and west of West Shagawa Road; this location is considered a suspected source of the PCE contamination. Basements were identified at the Berglund, Leustek, and Feela residences, located between 150 and 200 feet from the suspected source area. The 2003 Gore-Sorber Survey identified relatively few clean sample locations between the suspected source area and the Berglund, Leustek, and Feela residences. Additionally, relatively few clean Gore-Sorber samples are located between the suspected source area and the 1950 and 1951 West Shagawa Road residences to the north.

Based on this information, the vapor intrusion pathways to residences surrounding the suspected PCE source area have not been adequately investigated.

3.3 Soil Pathway

During the 2005 Source Area Investigation, PCE was detected in soil samples HA-11 (1 foot) and HA-20 (0.5 foot) at concentrations of 0.083 milligrams per kilogram (mg/kg) and 2.2 mg/kg, respectively. These results indicate that the surface soil is impacted by PCE in the suspected source area (**Figure 2**).

3.4 Surface Water Pathway

Shagawa Lake is located approximately 350 feet east and 390 feet west-northwest of the suspected source area. However, the PCE concentrations of 66 and 5.3 µg/L detected in the well water samples during the recent sampling event in May 2012 indicate that the risk of significant contamination to Shagawa Lake is low.

4.0 Conclusions and Recommendations

The previous investigation activities at the site have identified a potential PCE source area at 1936 West Shagawa Road (Feela), located adjacent to the south of the Feela driveway and west of West Shagawa Road (**Figure 2**). The discovery of abandoned PCE-labeled drums, historic occupancy of the property by the Wittrups (dry cleaning operators), and identified surface soil impacts indicate that the PCE release was likely caused by dumping and/or spilling dry cleaning solvents and/or associated wastes at 1936 West Shagawa Road (Feela).

Based on the results of the current assessment activities and review of the historic investigation data, Bay West makes the following recommendations for the site:

- Continue to collect water samples for laboratory analysis of VOCs from the potable wells/GAC systems located at 1925 (Berglund), 1933 (Leustek), and 1936 West Shagawa Road (Feela). The Berglund and Leustek wells should be sampled on a semi-annual basis and the Feela well should be sampled on an annual basis.
- Collect one more water sample for laboratory analysis of VOCs from the potable well at 1932 West Shagawa Road (Cotter) to verify that PCE impacts are not present.
- Collect water samples for laboratory analysis of VOCs from the potable wells located at 1950 and 1951 West Shagawa Road to identify if these wells are impacted by PCE.
- Perform a vapor intrusion assessment by collecting a soil gas sample in the suspected source area and at locations between the suspected source area and the five residences immediately surrounding the source area, including: 1925 (Berglund), 1932 (Cotter), 1933 (Leustek), 1936 (Feela), and 1950 West Shagawa Road. The proposed soil gas sampling locations are indicated on **Figure 5**.

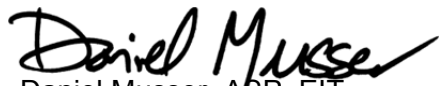
Based on the results of the proposed vapor intrusion assessment and additional potable well sampling activities, an additional subsurface investigation, involving roto-sonic drilling into bedrock, may be warranted in the location of the suspected source area. The goals of the roto-sonic investigation would be to verify the PCE source area, identify the magnitude of the PCE groundwater impacts, and gain more information about the hydrogeologic conditions at the site to evaluate potential remediation alternatives. Additionally, a cost and feasibility evaluation of installing deeper, replacement potable wells on the properties with current PCE-impacted wells

may be warranted, as this alternative may be more cost effective and practicable due to the site conditions.

In addition, the PCE-impacted surface soil located in the suspected source area will likely need to be removed to eliminate the dermal contact and soil leaching exposure pathways. However, Bay West recommends conducting the proposed vapor intrusion assessment and additional potable well sampling to evaluate all potential exposure pathways prior to planning the soil removal activities at the site.

Please contact me at 651-291-3457 if you have any questions regarding the work performed.

Sincerely,



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danielm@baywest.com



William Miley
Geologist
(651) 291-3489
wmiley@baywest.com

BWJ110583 / DMS1540870

References

Limited Phase II Investigation, Bulinski Point – Wittrup Property - MPCA/SF, 1936 West Shagawa Road, Ely, Minnesota, prepared by Terracon Inc., dated June 17, 2003.

Gore-Sorber Screening Survey, Bulinski Point – Wittrup Property - MPCA/SF, 1936 West Shagawa Road, Ely, Minnesota, prepared by Terracon Inc., dated February 5, 2004.

Source Area Investigation, Bulinski Point – Wittrup Property - MPCA/SF, 1936 West Shagawa Road, Ely, Minnesota, prepared by Terracon Inc., dated June 17, 2005.

Figures

Y:\Clients\MPCASA_4493_Bulinski_Point\110583\MapDocs\Figure 1 - Site Location Map Topo.mxd

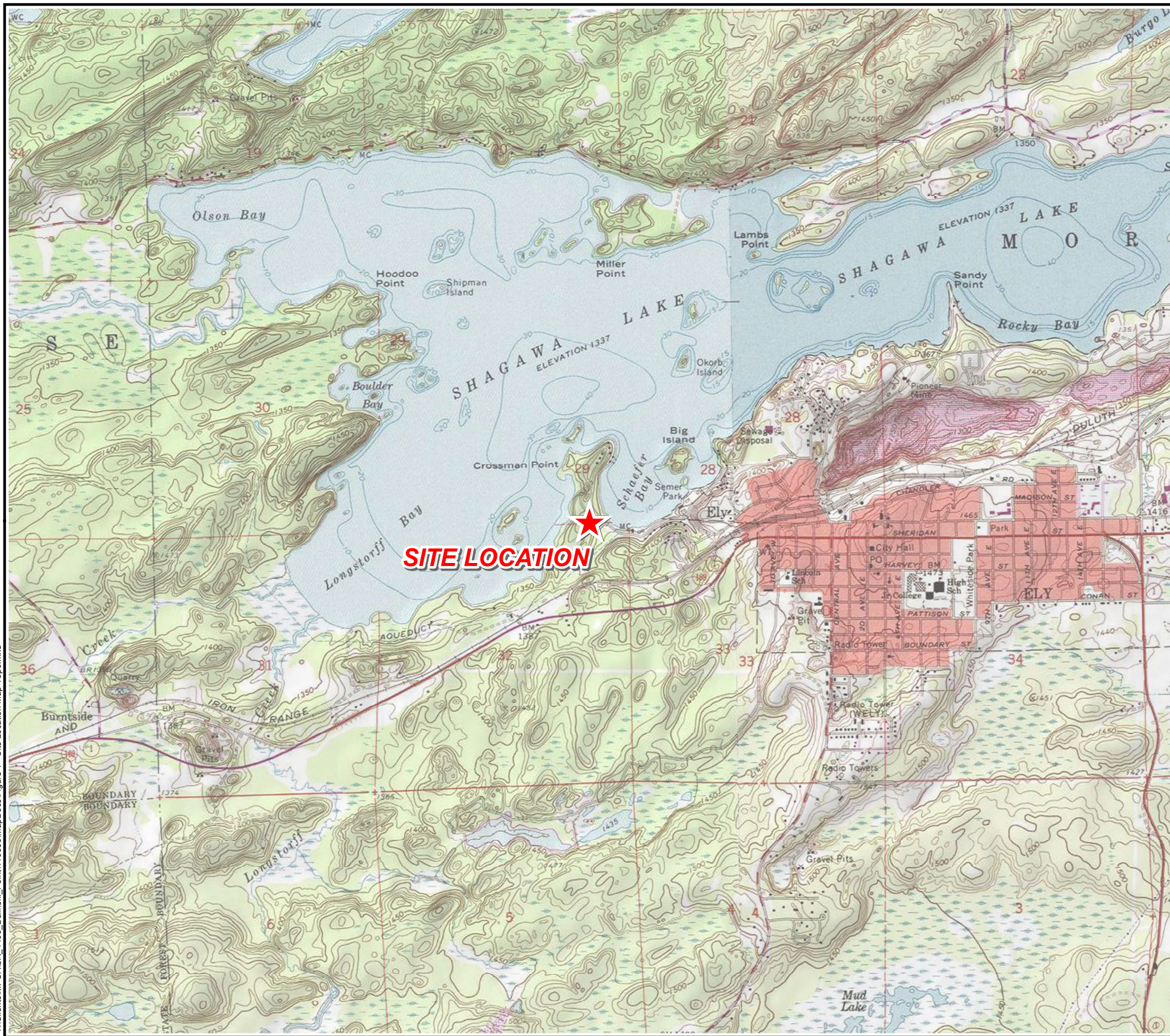
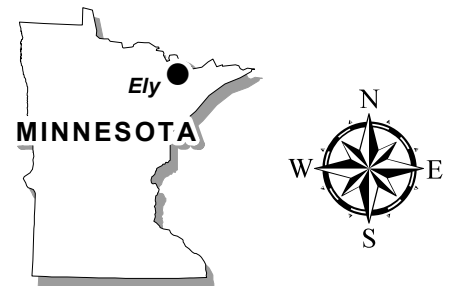


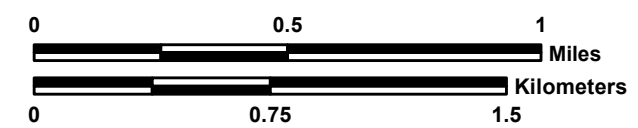
Figure 1
Site Location Map

MPCA ID: SA#4493
Bulinski Point
Ely, Minnesota



Map Units: Meters
Coordinate System: UTM 15N NAD 1983 Meters

Map Source:
Bing Aerial Map Service



1:24,000



Y:\Clients\MPCA\SA_4493_Bulinski_Point\110583MapDocs\Figure 2 - Site Location Map with Historic Investigation Results.mxd



Figure 2 Site Map with Historic Investigation Results

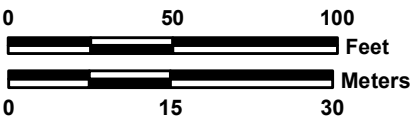
MPCA ID: SA#4493

Bulinski Point
Ely, Minnesota



Map Units: Meters
Coordinate System: UTM 15N NAD 1983 Meters

Map Source:
Bing Aerial Map Service



1:700

- Approximate Parcel Boundaries (St. Louis County GIS)
- ⊕ Potable Well Location (Field Verified) with Owner and MDH Unique Well# (If available)
- ⊙ Gore-Sorber Module (2003) with PCE Concentration
- Soil Probe (Dec. 2002) with PCE Concentration
- ▲ Hand Auger Sample (May 2005) with PCE Concentration
- ⬭ Area of Surface Soil Contamination and Potential PCE Source Area

Notes:

- If no PCE result is indicated for a soil probe, then PCE was not detected in soil and/or groundwater samples collected from the probe.
- Only Gore-Sorber modules where PCE was detected are indicated on this map. See the original screening survey map (Historic Figure 1) for all sample locations.



Figure 3
PCE Concentrations in Well Water
Berglund Residence
1925 West Shagawa Road

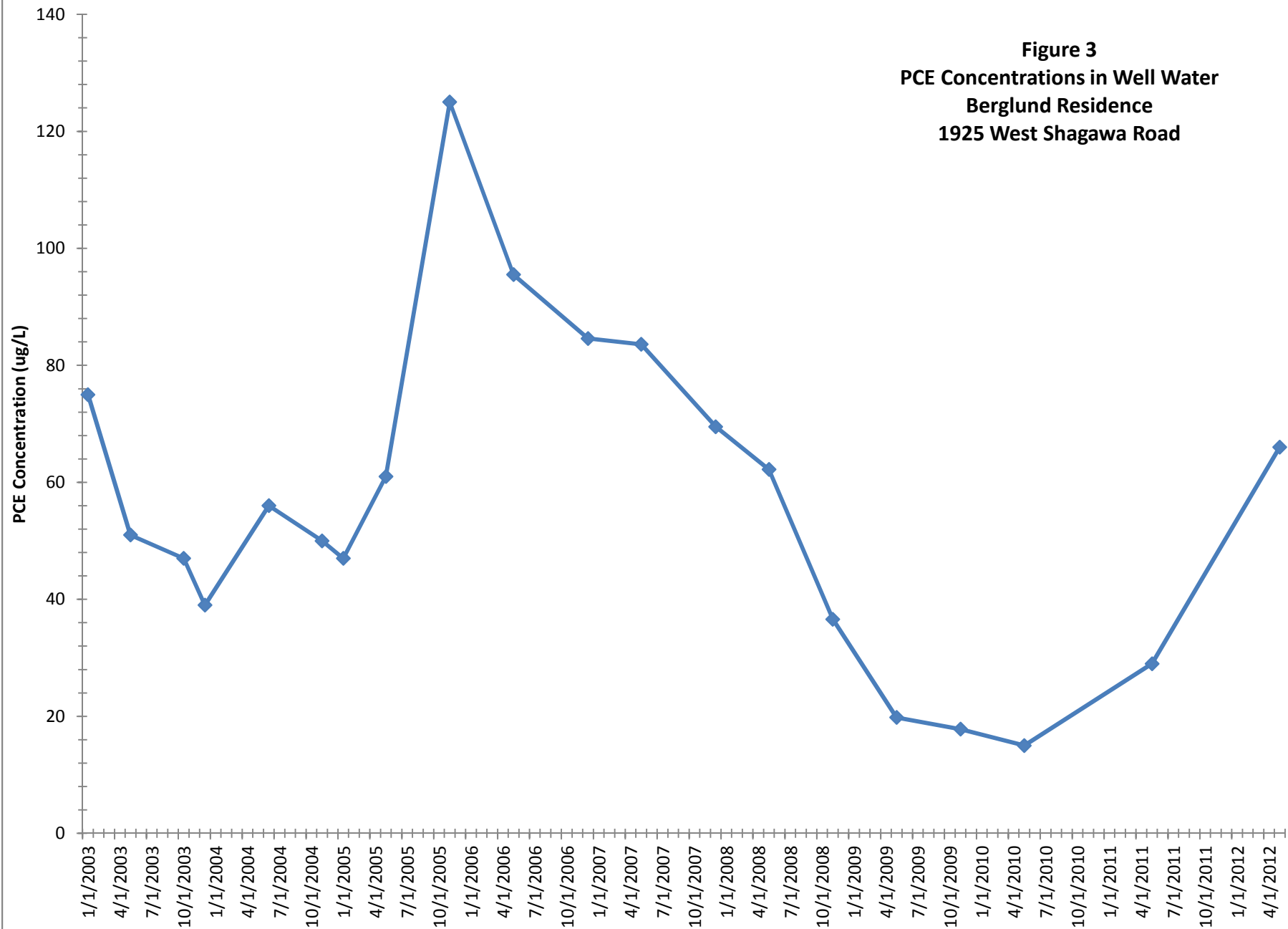
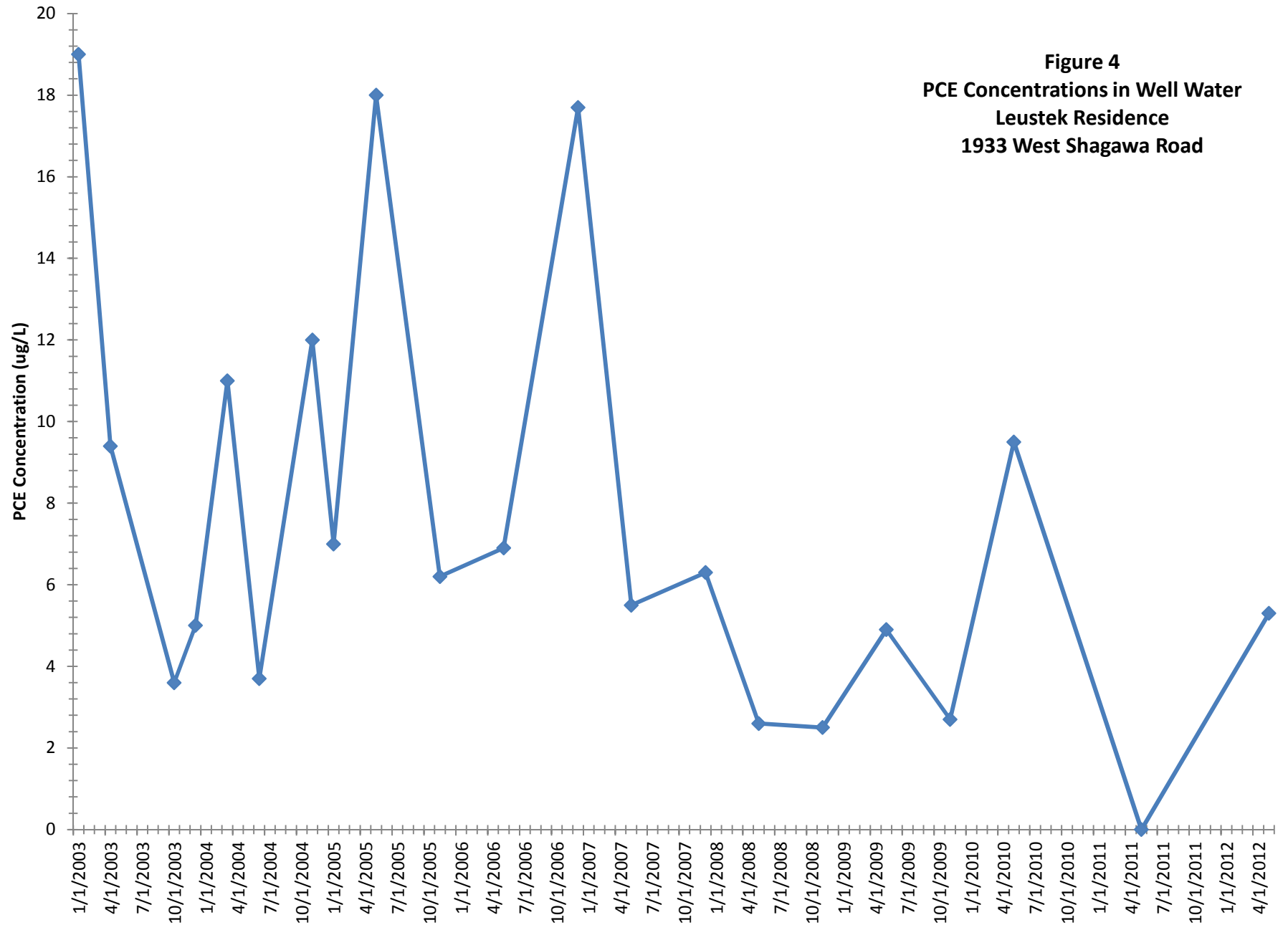


Figure 4
PCE Concentrations in Well Water
Leustek Residence
1933 West Shagawa Road

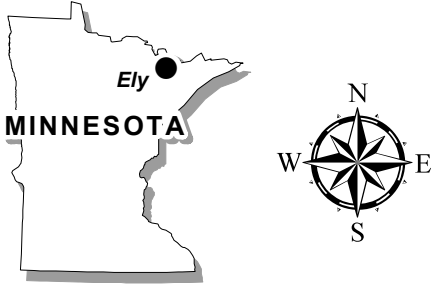


Y:\Clients\MPCA\SA_4493_Bulinski_Point\110583\MapDocs\Figure 5 - Potential Well Receptor Survey.mxd



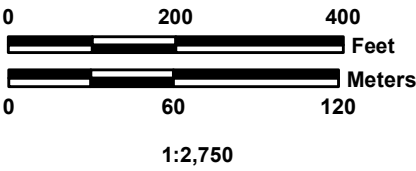
Figure 5
Potential Receptor Survey Map

MPCA ID: SA#4493
Bulinski Point
Ely, Minnesota



Map Units: Meters
Coordinate System: UTM 15N NAD 1983 Meters

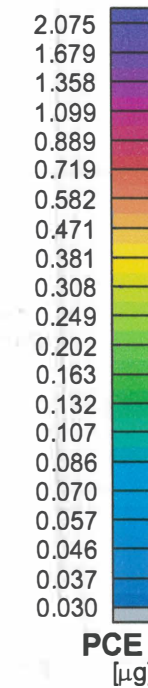
Map Source:
Bing Aerial Map Service



- Approximate Parcel Boundaries (St. Louis County GIS)
- ⊙ Potable Well Location (Field Verified)
- ⊙ Inferred Potable Well Location (Approximate Location/ Not Field Verified)
- ★ Potential PCE Source Area
- 500 foot Receptor Survey Area
- 2 Building ID# (Corresponds to Table 2)
- Proposed Soil Gas Probe



Historic Figures



Historic Figure 1

GORE-SORBER® Screening Survey



W.L. GORE & ASSOCIATES, INC.

**100 CHESAPEAKE BOULEVARD
ELKTON, MD, USA 21921
USA
(410) 392-7600**

Terracon Environmental, Inc., White Bear Lake, MN
Bulinski Point, Ely, MN
Tetrachloroethene

DATE DRAWN: 07 NOV 2003

DRAWN BY: JW

ORIG. CAD: 41027048sm.dwg

SITE CODE: CNE

REV. DATE:

REV. #:

PROJECT NUMBER: 11583052

GORE-SORBER IS REG. PAT. & T.M. OFF.
 GORE-SORBER Screening Survey IS A REGISTERED SERVICE MARK OF W.L. GORE & ASSOCIATES
 GORE-SORBER Module IS A REGISTERED TRADEMARK OF W.L. GORE & ASSOCIATES

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Scale 1:1800



FEELA RESIDENCE

SHAGAWA ROAD

FEELA DRIVEWAY

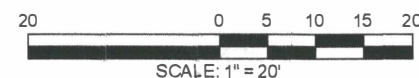
FORMER GRAVEL PIT

LEGEND

- ▲ HA-1
(0.1) HAND AUGER LOCATION
PID READING IN PPM
- 419653
MAY 2003 GORE-SORBER
LOCATIONS
- ③ OCTOBER 2003 GORE-SORBER
LOCATIONS
- [2.2 mg/kg] GORE-SORBER PCE LABORATORY
ANALYTICAL RESULTS
- {0.08 µg} SOIL SAMPLE PCE LABORATORY
ANALYTICAL RESULTS

● ⑨
{0.08 µg}

NOTE: RED INDICATES PID READING
GREATER THAN 1 ppm AND/OR
LABORATORY ANALYTICAL RESULTS
WITH DETECTABLE PCE.



Historic Figure 2

HAND AUGER LOCATION MAP
BULINSKI POINT / FEELA PROPERTY
BULINSKI POINT
ELY, MN
MPCA

Project Mgr:	PJW	Project No.	41027048
Designed By:	BJS	Scale:	AS SHOWN
Checked By:	BJS	Date:	6/16/05
Approved By:	PJW	Drawn By:	CDR (41)
File Name:	41027048smha.dwg	Layout:	2
		Figure No.	3

Tables

<div>Table 1</div> <div>Groundwater Analytical Results - Residential Well Samples</div> <div>Bulinski Point (Wittrup Property) - MPCA</div> <div>Ely, Minnesota</div>															
Location	Field ID	Data Qualifier	Collected Date	PCE	TCE	Acetone	Benzene	MEK	Chloro-methane	Ethyl-Benzene	Methylene Chloride	MIBK	Toluene	1,2,4-TMB	Xylenes
Potable Wells															
1925 W Shagawa Road	Before GAC		1/22/2003	75	<0.50	<5.0	<0.30	-	-	<0.60	-	-	<0.75	<0.45	<1.8
1925 W Shagawa Road	Before GAC	4	5/1/2003	51	<1.0	<5.0	<1.0	-	-	<1.0	-	-	<1.0	<1.0	<3.0
1925 W Shagawa Road	Before GAC	5	10/7/2003	47	1.2	<5.0	<1.0	-	-	<1.0	-	-	<1.0	<1.0	<3.0
1925 W Shagawa Road	Before GAC	6	12/2/2003	39	<1.0	<5.0	<1.0	-	-	<1.0	-	-	<1.0	<1.0	<3.0
1925 W Shagawa Road	Before GAC	4	6/28/2004	56	1.4	<5.0	<1.0	-	-	<1.0	-	-	<1.0	<1.0	<3.0
1925 W Shagawa Road	Before GAC	7,8	11/29/2004	50	1.2	<5.0	<1.0	-	-	<1.0	-	-	<1.0	<1.0	<3.0
1925 W Shagawa Road	Before GAC		1/27/2005	47	1.1	<5.0	<1.0	-	-	<1.0	-	-	<1.0	<1.0	<3.0
1925 W Shagawa Road	Before GAC	9	5/5/2005	61	1.2	<5.0	<1.0	-	-	<1.0	-	-	<1.0	<1.0	<3.0
1925 W Shagawa Road	Before GAC		11/22/2005	125	1.7	<5.0	<1.0	-	-	<1.0	-	-	<1.0	<1.0	<3.0
1925 W Shagawa Road	Before GAC		5/26/2006	95.5	1.4	<5.0	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<3.0
1925 W Shagawa Road	Before GAC		12/22/2006	84.6	1.6	<5.0	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<3.0
1925 W Shagawa Road	Before GAC		5/10/2007	83.6	1.7	<5.0	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<3.0
1925 W Shagawa Road	Before GAC		12/6/2007	69.5	1.5	<5.0	<1.0	<5.0	<1.0	<1.0	<4.0	<5.0	<1.0	<1.0	<3.0
1925 W Shagawa Road	Before GAC		5/29/2008	62.2	1.6	<10.0	<1.0	<4.0	<1.0	<1.0	<4.0	<4.0	<1.0	<1.0	<3.0
1925 W Shagawa Road	Before GAC		11/10/2008	36.6	1.2	<10.0	<1.0	<4.0	<1.0	<1.0	<4.0	<4.0	<1.0	<1.0	<3.0
1925 W Shagawa Road	Before GAC		5/22/2009	19.8	1	<10.0	<1.0	<4.0	<1.0	<1.0	<4.0	<4.0	<1.0	<1.0	<3.0
1925 W Shagawa Road	Before GAC		11/16/2009	17.8	<1.0	<10.0	<1.0	<4.0	<4.0	<1.0	<4.0	<4.0	<1.0	<1.0	<3.0
1925 W Shagawa Road	Before GAC		5/12/2010	15	1.2	<20	<1.0	<10	<1.0	<1.0	<2.0	<5.0	<1.0	<1.0	<2.0
1925 W Shagawa Road	Before GAC		5/23/2011	29	1.4	77	<1.0	15	<1.0	<1.0	<2.0	<5.0	9.2	<1.0	<2.0
1925 W Shagawa Road	Before GAC		5/10/2012	66	2.8	<20	<1.0	<10	<1.0	<1.0	<2.0	<5.0	<1.0	<1.0	<2.0
1925 W Shagawa Road	Between GAC 1&2		1/22/2003	<0.75	<0.50	<5.0	<0.30	-	-	<0.60	-	-	<0.75	<0.45	<1.8
1925 W Shagawa Road	Between GAC 1&2	4	5/1/2003	<1.0	<1.0	<5.0	<1.0	-	-	<1.0	-	-	<1.0	<1.0	<3.0
1925 W Shagawa Road	Between GAC 1&2	5	10/7/2003	<1.0	<1.0	<5.0	<1.0	-	-	<1.0	-	-	<1.0	<1.0	<3.0
1925 W Shagawa Road	Between GAC 1&2	6	12/2/2003	<1.0	<1.0	<5.0	<1.0	-	-	<1.0	-	-	<1.0	<1.0	<3.0
1925 W Shagawa Road	Between GAC 1&2	4	6/28/2004	<1.0	<1.0	<5.0	<1.0	-	-	<1.0	-	-	<1.0	<1.0	<3.0
1925 W Shagawa Road	Between GAC 1&2	7,8	11/29/2004	<1.0	<1.0	<5.0	<1.0	-	-	<1.0	-	-	<1.0	<1.0	<3.0
1925 W Shagawa Road	Between GAC 1&2		1/27/2005	<1.0	<1.0	<5.0	<1.0	-	-	<1.0	-	-	<1.0	<1.0	<3.0
1925 W Shagawa Road	Between GAC 1&2	9	5/5/2005	<1.0	<1.0	<5.0	<1.0	-	-	<1.0	-	-	<1.0	<1.0	<3.0
1925 W Shagawa Road	Between GAC 1&2		11/22/2005	<1.0	<1.0	<5.0	<1.0	-	-	<1.0	-	-	<1.0	<1.0	<3.0
1925 W Shagawa Road	Between GAC 1&2		5/26/2006	<1.0	<1.0	<5.0	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<3.0
1925 W Shagawa Road	Between GAC 1&2		12/22/2006	<1.0	<1.0	<5.0	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<3.0
1925 W Shagawa Road	Between GAC 1&2		5/10/2007	<1.0	<1.0	<5.0	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<3.0
1925 W Shagawa Road	Between GAC 1&2		12/6/2007	<1.0	<1.0	<5.0	<1.0	<5.0	<1.0	<1.0	<4.0	<5.0	<1.0	<1.0	<3.0
1925 W Shagawa Road	Between GAC 1&2		5/29/2008	<1.0	<1.0	<10.0	<1.0	<4.0	<1.0	<1.0	<4.0	<4.0	<1.0	<1.0	<3.0
1925 W Shagawa Road	Between GAC 1&2		11/10/2008	<1.0	<1.0	<10.0	<1.0	<4.0	<1.0	<1.0	<4.0	<4.0	<1.0	<1.0	<3.0
1925 W Shagawa Road	Between GAC 1&2		5/22/2009	<1.0	<1.0	<10.0	<1.0	<4.0	<4.0	<1.0	<4.0	<4.0	<1.0	<1.0	<3.0
1925 W Shagawa Road	Between GAC 1&2		11/16/2009	<1.0	<1.0	<10.0	<1.0	<4.0	<4.0	<1.0	<4.0	<4.0	<1.0	<1.0	<3.0
1925 W Shagawa Road	Between GAC 1&2		5/12/2010	<1.0	<1.0	<20	<1.0	<10	<1.0	<1.0	<2.0	<5.0	<1.0	<1.0	<2.0
1925 W Shagawa Road	Between GAC 1&2		5/23/2011	<1.0	<1.0	140	<1.0	27	<1.0	<1.0	<2.0	3.0	12	<1.0	<2.0
1925 W Shagawa Road	Between GAC 1&2		5/10/2012	<1.0	<1.0	<20	<1.0	<10	<1.0	<1.0	<2.0	<5.0	<1.0	<1.0	<2.0
1925 W Shagawa Road	After GAC2		1/22/2003	<0.75	<0.50	<5.0	<0.30	-	-	<0.60	-	-	<0.75	<0.45	<1.8
1925 W Shagawa Road	After GAC2	4	5/1/2003	<1.0	<1.0	<5.0	<1.0	-	-	<1.0	-	-	<1.0	<1.0	<3.0
1925 W Shagawa Road	After GAC2		11/22/2005	<1.0	<1.0	<5.0	<1.0	-	-	<1.0	-	-	<1.0	<1.0	<3.0
1925 W Shagawa Road	After GAC2		5/26/2006	<1.0	<1.0	<5.0	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<3.0
1925 W Shagawa Road	After GAC2		12/22/2006	<1.0	<1.0	<5.0	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<3.0
1925 W Shagawa Road	After GAC2		5/10/2007	<1.0	<1.0	<5.0	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<3.0
1925 W Shagawa Road	After GAC2		12/6/2007	<1.0	<1.0	<5.0	<1.0	<5.0	<1.0	<1.0	<4.0	<5.0	<1.0	<1.0	<3.0
1925 W Shagawa Road	After GAC2		5/29/2008	<1.0	<1.0	<10.0	<1.0	<4.0	<1.0	<1.0	<4.0	<4.0	<1.0	<1.0	<3.0
1925 W Shagawa Road	After GAC2		11/10/2008	<1.0	<1.0	<10.0	<1.0	<4.0	<1.0	<1.0	<4.0	<4.0	<1.0	<1.0	<3.0
1925 W Shagawa Road	After GAC2		5/22/2009	<1.0	<1.0	<10.0	<1.0	<4.0	<4.0	<1.0	<4.0	<4.0	<1.0	<1.0	<3.0
1925 W Shagawa Road	After GAC2		11/16/2009	<1.0	<1.0	<10.0	<1.0	<4.0	<4.0	<1.0	<4.0	<4.0	<1.0	<1.0	<3.0
1925 W Shagawa Road	After GAC2		5/12/2010	<1.0	<1.0	<20	<1.0	<10	<1.0	<1.0	<2.0	<5.0	<1.0	<1.0	<2.0
1925 W Shagawa Road	After GAC2		5/23/2011	<1.0	<1.0	44	<1.0	8.3	<1.0	<1.0	<2.0	<5.0	6.6	<1.0	<2.0
1925 W Shagawa Road	After GAC2		5/10/2012	<1.0	<1.0	<20	<1.0	<10	<1.0	<1.0	<2.0	<5.0	<1.0	<1.0	<2.0
1932 W Shagawa Road	-		5/10/2012	<1.0	<1.0	<20	<1.0	<10	<1.0	<1.0	<2.0	<5.0	<1.0	<1.0	<2.0
1933 W Shagawa Road	Before GAC		1/22/2003	19	<0.75	<5.0	<0.30	-	-	<0.60	-	-	<0.75	<0.45	<1.8
1933 W Shagawa Road	Before GAC	4	4/30/2003	9.4	<1.0	<5.0	<1.0	-	-	<1.0	-	-	<1.0	<1.0	<3.0
1933 W Shagawa Road	Before GAC	5	10/8/2003	3.6	<1.0	<5.0	<1.0	-	-	<1.0	-	-	<1.0	<1.0	<3.0
1933 W Shagawa Road	Before GAC	6	12/2/2003	5.0	<1.0	<5.0	<1.0	-	-	<1.0	-	-	<1.0	<1.0	<3.0
1933 W Shagawa Road	Before GAC	2	3/24/2004	11	<1.0	<5.0	<1.0	-	-	<1.0	-	-	<1.0	<1.0	<3.0
1933 W Shagawa Road	Before GAC	4	6/29/2004	3.7	<1.0	<5.0	<1.0	-	-	<1.0	-	-	<1.0	<1.0	<3.0
1933 W Shagawa Road	Before GAC	7,8	11/29/2004	12	<1.0	<5.0	<1.0	-	-	<1.0	-	-	<1.0	<1.0	<3.0
1933 W Shagawa Road	Before GAC		1/27/2005	7	<1.0	<5.0	<1.0	-	-	<1.0	-	-	<1.0	<1.0	<3.0
1933 W Shagawa Road	Before GAC	9	5/5/2005	18	<1.0	<5.0	<1.0	-	-	<1.0	-	-	<1.0	<1.0	<3.0
1933 W Shagawa Road	Before GAC		11/22/2005	6.2	<1.0	<5.0	<1.0	-	-	<1.0	-	-	<1.0	<1.0	<3.0
1933 W Shagawa Road	Before GAC		5/26/2006	6.9	<1.0	<5.0	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<3.0
1933 W Shagawa Road	Before GAC		12/22/2006	17.7	<1.0	<5.0	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<3.0
1933 W Shagawa Road	Before GAC		5/10/2007	5.5	<1.0	<5.0	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<3.0
1933 W Shagawa Road	Before GAC		12/6/2007	6.3	<1.0	<5.0	<1.0	<5.0	<1.0	<1.0	<4.0	<5.0	<1.0	<1.0	<3.0
1933 W Shagawa Road	Before GAC		5/29/2008	2.6	<1.0	<10.0	<1.0	<4.0	<1.0	<1.0	<4.0	<4.0	<1.0	<1.0	<3.0
1933 W Shagawa Road	Before GAC		11/10/2008	2.5	<1.0	<10.0	<1.0	<4.0	<1.0	<1.0	<4.0	<4.0	<1.0	<1.0	<3.0
1933 W Shagawa Road	Before GAC		5/21/2009	4.9	<1.0	<10.0	<1.0	<4.0	<4.0	<1.0	<4.0	<4.0	<1.0	<1.0	<3.0
1933 W Shagawa Road	Before GAC		11/16/2009	2.7	<1.0	<10.0	<1.0	<4.0	<4.0	<1.0	<4.0	<4.0	<1.0	<1.0	<3.0
1933 W Shagawa Road	Before GAC		5/12/2010	9.5	0.74	<20	<1.0	<10	<1.0	<1.0	<2.0	<5.0	<1.0	<1.0	<2.0
1933 W Shagawa Road	Before GAC		5/23/2011	<1.0	<1.0	<20	<1.0	<10	<1.0	<1.0	<2.0	<5.0	7.1	<1.0	<2.0
1933 W Shagawa Road	Before GAC		5/10/2012	5.3	<1.0	<20	<1.0	<10</							

Table 1 Groundwater Analytical Results - Residential Well Samples Bulinski Point (Wittrup Property) - MPCA Ely, Minnesota															
Location	Field ID	Data Qualifier	Collected Date	PCE	TCE	Acetone	Benzene	MEK	Chloro- methane	Ethyl- Benzene	Methylene Chloride	MIBK	Toluene	1,2,4- TMB	Xylenes
1936 W Shagawa Road	Between GAC 1&2		5/29/2008	<1.0	<1.0	<10.0	<1.0	<4.0	<1.0	<1.0	<4.0	<4.0	<1.0	<1.0	<3.0
1936 W Shagawa Road	Between GAC 1&2		5/22/2009	<1.0	<1.0	<10.0	<1.0	<4.0	<4.0	<1.0	<4.0	<4.0	<1.0	<1.0	<3.0
1936 W Shagawa Road	Between GAC 1&2		5/23/2011	<1.0	<1.0	<20	<1.0	<10	<1.0	<1.0	<2.0	<5.0	<1.0	<1.0	<2.0
1936 W Shagawa Road	Between GAC 1&2		5/10/2012	<1.0	<1.0	<20	<1.0	<10	<1.0	<1.0	<2.0	<5.0	<1.0	<1.0	<2.0
1936 W Shagawa Road	After GAC2		1/22/2003	<0.75	<0.50	<5.0	<0.30	-	-	<0.60	-	-	<0.75	<0.45	<1.8
1936 W Shagawa Road	After GAC2	4	4/30/2003	<1.0	<1.0	<5.0	<1.0	-	-	<1.0	-	-	<1.0	<1.0	<3.0
Soil Probes															
PA-2	7-12 ft	3	12/4/2002	<1.0	<1.0	<5.0	<1.0	-	-	<1.0	-	-	<1.0	<1.0	<3.0
PA-3	9.5-14 ft	1,3	12/4/2002	<1.0	<1.0	<5.0	4.9	-	-	1.4	-	-	20	1.7	7.0
PA-4	10.5-15.5 ft	3	12/4/2002	<1.0	<1.0	<5.0	<1.0	-	-	<1.0	-	-	<1.0	<1.0	<3.0
PC-1-Shallow	7-11 ft	3	12/6/2002	<1.0	<1.0	<5.0	<1.0	-	-	<1.0	-	-	<1.0	<1.0	<3.0
PC-1-Deep	26-30 ft	3	12/6/2002	<1.0	<1.0	<5.0	<1.0	-	-	<1.0	-	-	<1.0	<1.0	<3.0
PC-2-Shallow	8-12 ft	3	12/6/2002	<1.0	<1.0	<5.0	<1.0	-	-	<1.0	-	-	<1.0	<1.0	<3.0
PC-2-Deep	25-29 ft	3	12/6/2002	<1.0	<1.0	<5.0	<1.0	-	-	<1.0	-	-	<1.0	<1.0	<3.0
PC-3-Shallow	8 - 11 ft	3	12/6/2002	15	<1.0	<5.0	<1.0	-	-	<1.0	-	-	<1.0	<1.0	<3.0
PC-3-Deep	11-15 ft	3	12/6/2002	<1.0	<1.0	<5.0	<1.0	-	-	<1.0	-	-	<1.0	<1.0	<3.0
PC-5-Shallow	20-24 ft	3	12/6/2002	<1.0	<1.0	<5.0	<1.0	-	-	<1.0	-	-	<1.0	<1.0	<3.0
PC-5-Deep	33-37 ft	3	12/6/2002	<1.0	<1.0	<5.0	<1.0	-	-	<1.0	-	-	<1.0	<1.0	<3.0
PC-6	38-42 ft	3	12/6/2002	1.1	<1.0	<5.0	<1.0	-	-	<1.0	-	-	6.4	<1.0	<3.0
QA/QC Samples															
PA-3	9.5-14.5 ft	D,1,3	12/4/2002	<1.0	<1.0	<5.0	3.4	-	-	<1.0	-	-	13	1.6	3.9
1936 W Shagawa Road	Before GAC	D,4	4/30/2003	<1.0	<1.0	<5.0	<1.0	-	-	<1.0	-	-	<1.0	<1.0	<3.0
1933 W Shagawa Road	Before GAC	D,6	12/2/2003	5.4	<1.0	<5.0	<1.0	-	-	<1.0	-	-	<1.0	<1.0	<3.0
1933 W Shagawa Road	Before GAC	D,6	3/24/2004	13	<1.0	<5.0	<1.0	-	-	<1.0	-	-	<1.0	<1.0	<3.0
1925 W Shagawa Road	Before GAC	D,4	6/28/2004	56	1.2	<5.0	<1.0	-	-	<1.0	-	-	<1.0	<1.0	<3.0
1933 W Shagawa Road	Before GAC	D,7,8	11/29/2004	12	<1.0	<5.0	<1.0	-	-	<1.0	-	-	<1.0	<1.0	<3.0
1933 W Shagawa Road	Before GAC	D,7,8	1/27/2005	6.5	<1.0	<5.0	<1.0	-	-	<1.0	-	-	<1.0	<1.0	<3.0
1925 W Shagawa Road	Before GAC	D,9	5/5/2005	57	1.2	<5.0	<1.0	-	-	<1.0	-	-	<1.0	<1.0	<3.0
1925 W Shagawa Road	Before GAC	D,9	11/22/2005	127	1.5	<5.0	<1.0	-	-	<1.0	-	-	<1.0	<1.0	<3.0
1925 W Shagawa Road	Before GAC	D	5/26/2006	98	1.5	<5.0	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<3.0
1925 W Shagawa Road	Before GAC	D	12/22/2006	77	1.4	<5.0	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<3.0
1925 W Shagawa Road	Before GAC	D	5/10/2007	87.6	1.7	<5.0	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<3.0
1933 W Shagawa Road	Before GAC	D	12/6/2007	5.9	<1.0	<5.0	<1.0	<5.0	<1.0	<1.0	<4.0	<5.0	<1.0	<1.0	<3.0
1936 W Shagawa Road	Before GAC	D	5/29/2008	<1.0	<1.0	<10.0	<1.0	<4.0	<1.0	<1.0	<4.0	<4.0	<1.0	<1.0	<3.0
1925 W Shagawa Road	Before GAC	D	11/10/2008	35.5	1.2	<10.0	<1.0	<4.0	<1.0	<1.0	<4.0	<4.0	<1.0	<1.0	<3.0
1925 W Shagawa Road	Before GAC	D	5/22/2009	21	<1.0	<10.0	<1.0	<4.0	<4.0	<1.0	<4.0	<4.0	<1.0	<1.0	<3.0
1925 W Shagawa Road	Before GAC	D	11/16/2009	17.1	<1.0	<10.0	<1.0	<4.0	<4.0	<1.0	<4.0	<4.0	<1.0	<1.0	<3.0
1925 W Shagawa Road	Before GAC	D	5/12/2010	16	1.2	<20	<1.0	<10	<1.0	<1.0	<2.0	<5.0	<1.0	<1.0	<2.0
1925 W Shagawa Road	Before GAC	D	5/23/2011	30	1.4	92	<1.0	17	<1.0	<1.0	<2.0	<5.0	9.0	<1.0	<2.0
1925 W Shagawa Road	Before GAC	D	5/10/2012	66	2.8	<20	<1.0	<10	<1.0	<1.0	<2.0	<5.0	<1.0	<1.0	<2.0
Equipment Blank			12/6/2002	<1.0	<1.0	<5.0	<1.0	-	-	<1.0	-	-	<1.0	<1.0	<3.0
Trip Blank			12/6/2002	<1.0	<1.0	<5.0	<1.0	-	-	<1.0	-	-	<1.0	<1.0	<3.0
Trip Blank			1/22/2003	<0.75	<0.50	<5.0	<0.30	-	-	<0.60	-	-	<0.75	<0.45	<1.8
Trip Blank		4	4/30/2003	<1.0	<1.0	<5.0	<1.0	-	-	<1.0	-	-	<1.0	<1.0	<3.0
Trip Blank		5	10/8/2003	<1.0	<1.0	<5.0	<1.0	-	-	<1.0	-	-	<1.0	<1.0	<3.0
Trip Blank			12/2/2003	<1.0	<1.0	<5.0	<1.0	-	-	<1.0	-	-	<1.0	<1.0	<3.0
Trip Blank			3/24/2004	<1.0	<1.0	<5.0	<1.0	-	-	<1.0	-	-	<1.0	<1.0	<3.0
Trip Blank		4	6/29/2004	<1.0	<1.0	<5.0	<1.0	-	-	<1.0	-	-	<1.0	<1.0	<3.0
Trip Blank		7,8	11/29/2004	<1.0	<1.0	<5.0	<1.0	-	-	<1.0	-	-	<1.0	<1.0	<3.0
Trip Blank			1/27/2005	<1.0	<1.0	<5.0	<1.0	-	-	<1.0	-	-	<1.0	<1.0	<3.0
Trip Blank		9	5/5/2005	<1.0	<1.0	<5.0	<1.0	-	-	<1.0	-	-	<1.0	<1.0	<3.0
Trip Blank			11/22/2005	<1.0	<1.0	<5.0	<1.0	-	-	<1.0	-	-	<1.0	<1.0	<3.0
Trip Blank			5/26/2006	<1.0	<1.0	<5.0	<1.0	<5.0	<1.0	<1.0	5.7	<5.0	<1.0	<1.0	<3.0
Trip Blank			6/20/2006	<1.0	<1.0	<5.0	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<3.0
Trip Blank			12/22/2006	<1.0	<1.0	<5.0	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<3.0
Trip Blank			5/10/2007	<1.0	<1.0	<5.0	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<3.0
Trip Blank			12/6/2007	<1.0	<1.0	<5.0	<1.0	<5.0	<1.0	<1.0	<4.0	<5.0	<1.0	<1.0	<3.0
Trip Blank			5/29/2008	<1.0	<1.0	<10.0	<1.0	<4.0	<1.0	<1.0	<4.0	<4.0	<1.0	<1.0	<3.0
Trip Blank			11/10/2008	<1.0	<1.0	<10.0	<1.0	<4.0	<1.0	<1.0	<4.0	<4.0	<1.0	<1.0	<3.0
Trip Blank			5/21/2009	<1.0	<1.0	<10.0	<1.0	<4.0	<4.0	<1.0	<4.0	<4.0	<1.0	<1.0	<3.0
Trip Blank			11/16/2009	<1.0	<1.0	<10.0	<1.0	<4.0							

Table 2
Bulinski Point - Ely, Minnesota
Properties Located within 500 feet of the Release Source

Prop ID ¹	Property Address	Distance From Site (ft)	Water Supply Well			Public Water Supply		Base-ment (Y/N)	Sump (Y/N)	Possible PCE Sources (Y/N)	Comments/Property Use [GPS Coordinates]
			Well Present (Y/N)	How Determined ²	Well Use ³	Utilized (Y/N)	Confirmed by City (Y/N)				
1	1936 W Shagawa Rd	On-site	Y	PC	Domestic	N	Y	Y	N	Y	Feela Residence [UTM 15 T 0583059 5306271]
2	1925 W Shagawa Rd	150 ft ENE	Y	PC	Domestic	N	Y	Y	N	N	Berglund Residence [UTM 15 T 0583206 5306302]
3	1933 W Shagawa Rd	200 ft NE	Y	PC	Domestic	N	Y	Y	N	N	Leustek Residence [UTM 15 T 0583213 5306319]
4	1932 W Shagawa Rd	325 ft WSW	Y	PC	Domestic	N	Y	N	N	N	Cotter Residence [UTM 15 T 0583076 5306250]
5	1950 W Shagawa Rd	400 ft NW	Y	Assumed	Domestic	N	Y	Unk	Unk	Unk	Bulinski* Residence
6	1951 W Shagawa Rd	470 ft N	Y	Assumed	Domestic	N	Y	Unk	Unk	Unk	Hane* Residence
7	1963 W Shagawa Rd	675 ft N	Y	Assumed	Domestic	N	Y	Unk	Unk	Unk	Olson* Residence
8	Unk; Potentially 1960 W Shagawa Rd	700 ft NNW	Y	Assumed	Domestic	N	Y	Unk	Unk	Unk	Holmgren* Residence
9	1970 W Shagawa Rd	900 ft NNW	Y	Assumed	Domestic	N	Y	Unk	Unk	Unk	Planton* Residence
10	1971 W Shagawa Rd	900 ft N	Y	Assumed	Domestic	N	Y	Unk	Unk	Unk	Rauch* Residence
11	1975 W Shagawa Rd	1,200 ft N	Y	Assumed	Domestic	N	Y	Unk	Unk	Unk	Bowell* Residence
12	1987 W Shagawa Rd	1,300 ft NNW	Y	Assumed	Domestic	N	Y	Unk	Unk	Unk	Mathews* Residence
13	1988 W Shagawa Rd	1,050 ft NNW	Y	Assumed	Domestic	N	Y	Unk	Unk	Unk	Plath* Residence
14	1990 W Shagawa Rd	1,150 ft NNW	Y	Assumed	Domestic	N	Y	Unk	Unk	Unk	Lassila* Residence
15	1200 W Shagawa Rd	1,500 ft NNE	Y	Assumed	Domestic	N	Y	Unk	Unk	Unk	Bettcher* Residence
16	1928 W Shagawa Rd	150 ft S	N	Assumed	NA	N	Y	N	N	N	Storage Garage

¹ Property IDs correspond to labeled properties on Figure 5, Potential Receptor Map.

² For example, visual observation, personal contact, telephone, returned postcard, assumed (i.e., no postcard returned).

³ For example, domestic, industrial, municipal, livestock, lawn/gardening, irrigation.

Notes:
Unk = Unknown
* = Property owner as indicated in St. Louis County property data; however, ownership was not verified by Bay West.

Table 3
Bulinski Point - Ely, Minnesota
Water Supply Wells Located within 500 feet of the
Release Source and Municipal or Industrial Wells within ½ mile

Property ID ¹	MDH Unique Well Number	Ground Elevation	Total Depth (ft)	Base of Casing (ft)	Static Elevation	Aquifer	Use	Address	Well Name/Owner	Distance and Direction from Source (ft)
1	NA	NA	NA	NA	NA	NA	Domestic	1936 W Shagawa Rd	Feela, Laurie	~350 ft west
2	519667	NA	170	51	NA	NA	Domestic	1925 W Shagawa Rd	Berglund, Charles & Bonnie	~150 ft ENE
3	NA	NA	165	NA	NA	NA	Domestic	1933 W Shagawa Rd	Leustek, Albert	~200 ft NE
4	771078	NA	325	NA	NA	NA	Domestic	1932 W Shagawa Rd	Cotter, Shawn	~310 ft WSW
5	172366	NA	66	21	NA	NA	Domestic	1950 W Shagawa Rd^	Bulinski, Emery	~400 ft NW
NA	109548	NA	84	25	20	NA	Domestic	NA	Bulinski, Emery	Unknown; potentially located on Property ID# 5
6	139927	NA	130	25	NA	NA	Domestic	1951 W Shagawa Rd^	Hanes, William Jr.	~470 ft north
8	729066	NA	325	20	15	NA	Domestic	1960 W Shagawa Rd	Holmgren, Steven & Sandra	~700 ft NNW
10	626677	NA	145	51	21	NA	Domestic	1971 W Shagawa Rd	Rauch, William	~900 ft north
13	596854	NA	225	21	7	NA	Domestic	1988 W Shagawa Rd	Plath, Wesley	~1,000 ft NNW
14	139928	NA	228	25	NA	NA	Domestic	1990 W Shagawa Rd^	East-West Reality In; Lassila, Paul	~1,150 ft NNW

Notes:

No municipal or industrial wells were identified within ½ mile of the site.

^ = The well address was determined based on parcel lot information included on the well log cross-checked with information available on the St. Louis County Property Tax Lookup database.

Table 4
Bulinski Point - Ely, Minnesota
Surface Water Receptor Information

Map ID¹	Name and Type²	Distance and Direction from Plume Edge (ft)	Clean Boring/Well Between?³ (Y or N)
Shagawa Lake	Shagawa Lake	150 ft ENE; 500 ft WNW	To ENE: No; To WNW: Yes

¹ Map ID should correspond to a surface water feature ID on the Potential Receptor Map.

² Type includes, but is not limited to, lake, retention pond, infiltration pond, ditch, intermittent stream, river, creek, rain garden, etc.

³ If the surface water feature is upgradient or cross-gradient from the site, indicate so with "NA" for not applicable.

Add additional rows as needed.

Notes:

Historic Tables

Historic Table 1

Terracon

SOIL ANALYTICAL RESULTS (VOCs)
BULINSKI POINT - WITTRUP PROPERTY - MPCA / SF
ELY, MINNESOTA
TERRACON PROJECT NO. 41027048

Sample Location	Sample Depth	Sample Date	PCE mg/kg	Trichloroethene mg/kg	cis-1,2-DCE mg/kg	trans-1,2-DCE mg/kg	Vinyl Chloride mg/kg	Acetone mg/kg	Benzene mg/kg	E-Benzene mg/kg	Toluene mg/kg	Xylenes mg/kg	1,2,4-TMB mg/kg	1,3,5-TMB mg/kg
Soil Probes														
PA-2	6-8 ft	12/4/2002	<0.031	<0.031	<0.031	<0.031	<0.031	0.38	<0.031	<0.031	<0.031	<0.062	<0.031	<0.031
PA-3	2-4 ft	12/4/2002	<0.053	<0.053	<0.053	<0.053	<0.053	<0.53	<0.053	0.089	0.47	0.56	0.21	0.078
PA-4	2-4 ft	12/4/2002	<0.031	<0.031	<0.031	<0.031	<0.031	0.43	<0.031	<0.031	<0.031	<0.062	<0.031	<0.031
PB-1	0-2 ft	12/4/2002	<0.029	<0.029	<0.029	<0.029	<0.029	0.32	<0.029	<0.029	<0.029	<0.058	<0.029	<0.029
PB-3	2-4 ft	12/4/2002	<0.028	<0.028	<0.028	<0.028	<0.028	0.31	<0.028	<0.028	<0.028	<0.056	<0.028	<0.028
PB-4	2-4 ft	12/4/2002	<0.029	<0.029	<0.029	<0.029	<0.029	0.47	<0.029	<0.029	<0.029	<0.058	<0.029	<0.029
PC-1	4-6 ft	12/5/2002	<0.026	<0.026	<0.026	<0.026	<0.026	0.28	<0.026	<0.026	<0.026	<0.052	<0.026	<0.026
PC-2	6-8 ft	12/6/2002	<0.027	<0.027	<0.027	<0.027	<0.027	<0.27	<0.027	<0.027	<0.027	<0.054	<0.027	<0.027
PC-4	0-2 ft	12/6/2002	<0.030	<0.030	<0.030	<0.030	<0.030	0.39	<0.030	<0.030	<0.030	<0.060	<0.030	<0.030
PC-5	2-4 ft	12/6/2002	<0.027	<0.027	<0.027	<0.027	<0.027	0.38	<0.027	<0.027	<0.027	<0.054	<0.027	<0.027
PC-6	8-10 ft	12/6/2002	<0.032	<0.032	<0.032	<0.032	<0.032	0.5	<0.032	<0.032	<0.032	<0.064	<0.032	<0.032
Hand Augers														
HA 3	2 ft	5/4/2005	<0.019	<0.023	<0.023	<0.016	<0.016	<0.065	<0.016	<0.017	0.011 J	<0.041	<0.012	<0.014
HA 4	2 ft	5/4/2005	<0.018	<0.022	<0.022	<0.016	<0.016	<0.062	<0.016	<0.016	<0.0092	<0.039	<0.012	<0.013
HA 5	1 ft	5/4/2005	<0.020	<0.024	<0.024	<0.018	<0.018	<0.070	<0.018	<0.018	<0.010	<0.044	<0.013	<0.015
HA 6	1 ft	5/4/2005	<0.019	<0.023	<0.023	<0.017	<0.017	<0.066	<0.017	<0.017	0.023 J	0.035 J	0.047 J	0.015 J
HA 10	0.5 ft	5/4/2005	<0.020	<0.024	<0.024	<0.018	<0.018	0.19 J	<0.018	<0.018	<0.010	<0.044	<0.013	<0.015
HA 11	1 ft	5/4/2005	0.083	<0.023	<0.023	<0.017	<0.017	<0.066	<0.017	<0.017	<0.0097	<0.042	<0.013	<0.014
HA 13	2 ft	5/4/2005	<0.019	<0.023	<0.023	<0.017	<0.017	<0.066	<0.017	<0.017	<0.0097	<0.042	<0.013	<0.014
HA 14	0.5 ft	5/4/2005	<0.019	<0.023	<0.023	<0.017	<0.017	<0.067	<0.017	<0.018	<0.010	<0.043	<0.013	<0.014
HA 16	1 ft	5/4/2005	<0.019	<0.024	<0.024	<0.017	<0.017	<0.068	<0.017	<0.018	<0.010	<0.043	<0.013	<0.014
HA 20	0.5 ft	5/4/2005	2.2	<0.035	<0.035	<0.026	<0.026	<0.10	<0.026	<0.026	<0.015	<0.064	<0.019	0.030 J
HA 21	1 ft	5/4/2005	<0.018	<0.022	<0.022	<0.016	<0.016	<0.062	<0.016	<0.016	<0.0092	<0.039	<0.012	<0.013
HA 25	2 ft	5/5/2005	<0.020	<0.025	<0.025	<0.018	<0.018	<0.071	<0.018	<0.018	<0.010	<0.044	<0.014	<0.015
QA/QC Samples														
PA-3	-	12/4/2002	<0.026	<0.026	<0.026	<0.026	<0.026	0.32	<0.026	0.037	0.17	0.226	0.099	0.039
Equipment Blank	-	12/6/2002	<0.025	<0.025	<0.025	<0.025	<0.025	<0.25	<0.025	<0.025	<0.025	<0.050	<0.025	<0.025
Trip Blank	-	12/6/2002	<0.025	<0.025	<0.025	<0.025	<0.025	0.32	<0.025	<0.025	<0.025	<0.050	<0.025	<0.025
Trip Blank	-	5/4/2005	<0.016	<0.20	<0.020	<0.014	<0.014	<0.057	<0.014	<0.015	<0.0085	<0.037	<0.011	<0.012
Method Blank	-	12/6/2002	<0.025	<0.025	<0.025	<0.025	<0.025	0.301	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025
SRVs (Tier I)	-	-	72	29	8	11	0.25	320	1.5	200	107	110	5	4
SRVs (Tier II)	-	-	131	46	22	33	0.4	1000	4.0	305	200	248	5	10
SLVs (Tier I)	-	-	0.068	0.14	0.14	0.27	0.001	0.7	0.034	6.4	4.7	45	NE	NE

Soil volatile organic compound (VOCs) concentrations are in milligrams per kilogram (mg/kg) which is equal to parts per million

Notes:

< = not detected above laboratory reporting limits

- = Not Analyzed

J = Analyte positively identified, but value is an approximate concentration

SRVs (Tier I) - MPCA Soil Reference Values same as Tier II Residential Based (11/99)

¹ = Other petroleum related VOCs detected

² = Other non-petroleum related VOCs detected

³ = MS and MSD Samples for P-A-2-6-8' indicated that VOCs results met lab requirements for accuracy and precision.

⁴ = MeOH Trip and Equipment Blank concentrations in mg/L.

⁵ = PA-3 @ 2-4' contained an unknown volume of MeOH

MS = Matrix Spike

MSD = Matrix Spike Duplicate

PCE = Tetrachloroethene

DCE = Dichloroethene

SRVs (Tier II) - MPCA Soil Reference Values - Industrial Based (11/99)

SLVs (Tier I) - MPCA Tier I Soil Leaching Values (11/99)

⁶ = Laboratory Control Spike recovery and Duplicate analyses not within control limits for styrene and trans-1,2-dichloropropene.

TMB = Trimethylbenzene

⁰ = Duplicate

NE = Not Established

Historic Table 2

Terracon

GROUNDWATER ANALYTICAL RESULTS (VOCs)
BULINSKI POINT - WITTRUP PROPERTY - MPCA / SF
ELY, MINNESOTA
TERRACON PROJECT NO. 41027048

Sample Location (screen interval)	Depth to Water (ft)	Sample Date	PCE (µg/L)	Trichloroethene (µg/L)	cis-1,2-DCE (µg/L)	trans-1,2-DCE (µg/L)	Vinyl Chloride (µg/L)	Acetone (µg/L)	Benzene (µg/L)	E-Benzene (µg/L)	Toluene (µg/L)	Xylenes (µg/L)	1,2,4-TMB (µg/L)	1,3,5-TMB (µg/L)
Potable Wells														
Feela Pre-Treatment	-	01/22/03	<0.75	<0.50	<0.21	<0.10	<0.20	<5.0	<0.30	<0.60	<0.75	<1.8	<0.45	<0.35
Feela Pre-Treatment 4	-	04/30/03	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0
Feela Pre-Treatment 5	-	10/07/03	1.2	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0
Feela Pre-Treatment 7.3	-	11/29/04	1.2	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0
Feela Mid-Treatment	-	01/22/03	<0.75	<0.50	<0.21	<0.10	<0.20	<5.0	<0.30	<0.60	<0.75	<1.8	<0.45	<0.35
Feela Mid-Treatment 4	-	04/30/03	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0
Feela Mid-Treatment	-	03/24/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0
Feela Mid-Treatment 7.3	-	11/29/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0
Feela Post-Treatment	-	01/22/03	<0.75	<0.50	<0.21	<0.10	<0.20	<5.0	<0.30	<0.60	<0.75	<1.8	<0.45	<0.35
Feela Post-Treatment 4	-	04/30/03	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0
Berglund Pre-Treatment	-	01/22/03	75	<0.50	<0.21	<0.10	<0.20	<5.0	<0.30	<0.60	<0.75	<1.8	<0.45	<0.35
Berglund Pre-Treatment 4	-	05/01/03	51	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0
Berglund Pre-Treatment 5	-	10/07/03	47	1.2	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0
Berglund Pre-Treatment 6	-	12/02/03	39	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0
Berglund Pre-Treatment 4	-	06/28/04	56	1.4	<1.0	<1.0	<0.18	<5.0	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0
Berglund Pre-Treatment 7.3	-	11/29/04	50	1.2	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0
Berglund Pre-Treatment	-	01/27/05	47	1.1	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0
Berglund Pre-Treatment 9	-	05/05/05	61	1.2	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0
Berglund Mid-Treatment	-	01/22/03	<0.75	<0.50	<0.21	<0.10	<0.20	<5.0	<0.30	<0.60	<0.75	<1.8	<0.45	<0.35
Berglund Mid-Treatment 4	-	05/01/03	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0
Berglund Mid-Treatment 5	-	10/07/03	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0
Berglund Mid-Treatment 6	-	12/02/03	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0
Berglund Mid-Treatment 4	-	06/28/04	<1.0	<1.0	<1.0	<1.0	<0.18	<5.0	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0
Berglund Mid-Treatment 7.3	-	11/29/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0
Berglund Mid-Treatment	-	01/27/05	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0
Berglund Mid-Treatment 9	-	05/05/05	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0
Berglund Post-Treatment	-	01/22/03	<0.75	<0.50	<0.21	<0.10	<0.20	<5.0	<0.30	<0.60	<0.75	<1.8	<0.45	<0.35
Berglund Post-Treatment 4	-	05/01/03	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0
Leustek Pre-Treatment	-	01/22/03	19	<0.75	<0.21	<0.10	<0.20	<5.0	<0.30	<0.60	<0.75	<1.8	<0.45	<0.35
Leustek Pre-Treatment 4	-	04/30/03	9.4	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0
Leustek Pre-Treatment 5	-	10/08/03	3.6	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0
Leustek Pre-Treatment 6	-	12/02/03	5.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0
Leustek Pre-Treatment 2	-	03/24/04	11	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0
Leustek Pre-Treatment 4	-	06/29/04	3.7	<1.0	<1.0	<1.0	<0.18	<5.0	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0
Leustek Pre-Treatment 7.3	-	11/29/04	12	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0
Leustek Pre-Treatment	-	01/27/05	7.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0
Leustek Pre-Treatment 9	-	05/05/05	18.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0

Historic Table 2

Terracon

GROUNDWATER ANALYTICAL RESULTS (VOCs)
BULINSKI POINT - WITTRUP PROPERTY - MPCA / SF
ELY, MINNESOTA
TERRACON PROJECT NO. 41027048

Sample Location (screen interval)	Depth to Water (ft)	Sample Date	PCE (µg/L)	Trichloroethene (µg/L)	cis-1,2-DCE (µg/L)	trans-1,2-DCE (µg/L)	Vinyl Chloride (µg/L)	Acetone (µg/L)	Benzene (µg/L)	E-Benzene (µg/L)	Toluene (µg/L)	Xylenes (µg/L)	1,2,4-TMB (µg/L)	1,3,5-TMB (µg/L)
Leustek Mid-Treatment	-	01/22/03	<0.75	<0.50	<0.21	<0.10	<0.20	<5.0	<0.30	<0.60	<0.75	<1.8	<0.45	<0.35
Leustek Mid-Treatment ⁴	-	04/30/03	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0
Leustek Mid-Treatment ⁵	-	10/08/03	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0
Leustek Mid-Treatment ⁶	-	12/02/03	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0
Leustek Mid-Treatment ²	-	03/24/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0
Leustek Mid-Treatment ⁴	-	06/29/04	<1.0	<1.0	<1.0	<1.0	<0.18	<5.0	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0
Leustek Mid-Treatment ^{7,8}	-	11/29/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0
Leustek Mid-Treatment	-	01/27/05	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0
Leustek Mid-Treatment ⁹	-	05/05/05	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0
Leustek Post-Treatment	-	01/22/03	<0.75	<0.50	<0.21	<0.10	<0.20	<5.0	<0.30	<0.60	<0.75	<1.8	<0.45	<0.35
Leustek Post-Treatment ⁴	-	04/30/03	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0
Soil Probes														
PA-2 (7-12 ft) ³	8.9	12/04/02	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0
PA-3 (9.5-14.5 ft) ^{1,3}	8.9	12/04/02	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	4.9	1.4	20	7.0	1.7	<1.0
PA-4 (10.5-15.5 ft) ³	9.1	12/04/02	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0
PC-1-Shallow (7-11ft) ³	7.0	12/06/02	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0
PC-1-Deep (26-30 ft) ³	7.0	12/06/02	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0
PC-2-Shallow (8-12 ft) ³	8.0	12/06/02	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0
PC-2-Deep (25-29 ft) ³	8.0	12/06/02	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0
PC-3-Shallow (8-11ft) ³	8.0	12/06/02	15	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0
PC-3-Deep (11-15 ft) ³	8.0	12/06/02	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0
PC-5-Shallow (20-24 ft) ³	6.5	12/06/02	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0
PC-5-Deep (33-37 ft) ³	6.5	12/06/02	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0
PC-6 (38-42 ft) ³	7.0	12/06/02	1.1	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	6.4	<3.0	<1.0	<1.0
QA/QC Samples														
PA-3 (9.5-14.5 ft) ^{D,1,3}	-	12/04/02	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	3.4	<1.0	13	3.9	1.6	<1.0
Feela Pre-Treatment ^{D,4}	-	04/30/03	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0
Leustek Pre-Treatment ^{D,6}	-	12/02/03	5.4	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0
Leustek Pre-Treatment ^D	-	03/24/04	13	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0
Berglund Pre-Treatment ^{D,4}	-	06/28/04	56	1.2	<1.0	<1.0	<0.18	<5.0	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0
Leustek Pre-Treatment ^{D,7,8}	-	11/29/04	12	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0
Leustek Pre-Treatment ^{D,7,8}	-	01/27/05	6.5	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0
Berglund Pre-Treatment ^{D,9}	-	05/05/05	57	1.2	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0
Equipment Blank	-	12/06/02	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0
Trip Blank	-	12/06/02	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0
Trip Blank	-	01/22/03	<0.75	<0.50	<0.21	<0.10	<0.20	<5.0	<0.30	<0.60	<0.75	<1.8	<0.45	<0.35
Trip Blank ⁴	-	04/30/03	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0
Trip Blank ⁵	-	10/08/03	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0

Historic Table 2

Terracon

GROUNDWATER ANALYTICAL RESULTS (VOCs)
BULINSKI POINT - WITTRUP PROPERTY - MPCA / SF
ELY, MINNESOTA
TERRACON PROJECT NO. 41027048

Sample Location (screen interval)	Depth to Water (ft)	Sample Date	PCE (µg/L)	Trichloroethene (µg/L)	cis-1,2-DCE (µg/L)	trans-1,2-DCE (µg/L)	Vinyl Chloride (µg/L)	Acetone (µg/L)	Benzene (µg/L)	E-Benzene (µg/L)	Toluene (µg/L)	Xylenes (µg/L)	1,2,4-TMB (µg/L)	1,3,5-TMB (µg/L)
Trip Blank	-	12/02/03	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0
Trip Blank	-	03/24/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0
Trip Blank	4	06/29/04	<1.0	<1.0	<1.0	<1.0	<0.18	<5.0	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0
Trip Blank	7,8	11/29/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0
Trip Blank	-	01/27/05	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0
Trip Blank	9	05/05/05	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0
Method Blank	-	12/06/02	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0
Method Blank	4	04/30/03	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0
Method Blank	-	10/08/03	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0
Method Blank	-	12/02/03	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0
Method Blank	-	03/24/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0
Method Blank	-	06/29/04	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0
Method Blank	-	11/29/04	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0
Method Blank	-	01/27/05	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0
HRLs / HBVs			7	30	100	70	0.2	700	10	700	1,000	10,000	NE	NE
MCLs			5	5	100	70	2	NE	5	700	1,000	10,000	NE	NE

Ground water volatile organic compound (VOCs) concentrations are in micrograms per liter (µg/L) which is equivalent to parts per billion

Notes:

< = not detected above laboratory reporting limits

"-" = Not Analyzed

HRLs/HBV = MDH Health Risk Limits / Health Based Values

J = Analyte positively identified, but value is an approximate concentration

¹ = Other petroleum related VOCs detected

² = Other non-petroleum related VOCs detected

³ = MS and MSD Samples for P-A-2 indicated vinyl chloride, 1,1-DCE, carbon disulfide, 1,1,1-trichloroethane (MSD only), carbon tetrachloride and styrene values were less than QC limits

⁴ = Laboratory Control Spike recovery and Duplicate analyses not within control limits for 2-Butone (MEK) and Acetone.

⁵ = Laboratory Control Spike recovery and Duplicate analyses not within control limits for 2-Butone (MEK), Acetone and 1, 1, 1-trichloroethane.

⁶ = Laboratory Control Spike recovery and Duplicate analyses not within control limits for 4-Methyl-2-pentanone.

⁷ = Laboratory Control Spike recovery and Duplicate analyses not within control limits for Acetone and 1, 1-Dichloroethane.

⁸ = Precision not within control limits.

⁹ = Laboratory Control Spike recovery and Duplicate analyses not within control limits for Acetone

MS = Matrix Spike

MSD = Matrix Spike Duplicate

MCL = EPA Maximum Contaminant Levels

PCE = Tetrachloroethene

DCE = Dichloroethene

TMB = Trimethylbenzene

NE = Not Established

^D = Duplicate

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Historic Table 3

**HAND AUGER INVESTIGATION DATA
BULINSKI POINT - WITTRUP PROPERTY - MPCA/SF
ELY, MINNESOTA
TERRACON PROJECT NO. 41027048**

Hand Auger ID	Date	Sample Name	Sample Depth In Feet Below Ground Surface	Lithology	PID (ppm)	Laboratory Analysis	PCE (mg/kg)
HA-1	5/4/2005	HA-1-1	1	dark brown, fine to coarse grained, silty sand with weathered bedrock fragments	0.1	-	-
HA-2	5/4/2005	HA-2-1	1	dark brown, fine to coarse grained, silty sand with weathered bedrock fragments	0.5	-	-
HA-3	5/4/2005	HA-3-1	1	dark brown, fine to coarse grained, silty sand with weathered bedrock fragments	0.5	-	-
		HA-3-2	2	dark brown, fine to coarse grained, silty sand with weathered bedrock fragments	0.9	X	<0.019
HA-4	5/4/2005	HA-4-1	1	dark brown, fine to coarse grained, silty sand with weathered bedrock fragments	0.7	-	-
		HA-4-2	2	dark brown, fine to coarse grained, silty sand with weathered bedrock fragments	0.9	X	<0.018
HA-5	5/4/2005	HA-5-1	1	dark brown, fine to coarse grained, silty sand with weathered bedrock fragments	0.7	X	<0.020
		HA-5-2	2	dark brown, fine to coarse grained, silty sand with weathered bedrock fragments	0.5	-	-
HA-6	5/4/2005	HA-6-1	1	dark brown, fine to coarse grained, silty sand with weathered bedrock fragments	1.1	X	<0.019
HA-7	5/4/2005	HA-7-1	1	dark brown, fine to coarse grained, silty sand with weathered bedrock fragments	0.7	-	-
		HA-7-2	2	dark brown, fine to coarse grained, silty sand with weathered bedrock fragments	0.5	-	-
HA-8	5/4/2005	HA-8-1	1	dark brown, fine to coarse grained, silty sand with weathered bedrock fragments	0.1	-	-
		HA-8-2	2	dark brown, fine to coarse grained, silty sand with weathered bedrock fragments	0.3	-	-
HA-9	5/4/2005	HA-9-1	1	dark brown, fine to coarse grained, silty sand with weathered bedrock fragments	0.7	-	-
HA-10	5/4/2005	HA-10-0.5	0.5	dark brown, fine to coarse grained, silty sand with weathered bedrock fragments	2.2	X	<0.020
HA-11	5/4/2005	HA-11-1	1	dark brown, fine to coarse grained, silty sand with weathered bedrock fragments	1.3	X	0.083
HA-12	5/4/2005	HA-12-1.5	1.5	dark brown, fine to coarse grained, silty sand with weathered bedrock fragments	0.3	-	-
HA-13	5/4/2005	HA-13-1	1	dark brown, fine to coarse grained, silty sand with weathered bedrock fragments	0.5	-	-
		HA-13-2	2	dark brown, fine to coarse grained, silty sand with weathered bedrock fragments	1.1	X	<0.019
HA-14	5/4/2005	HA-14-0.5	0.5	dark brown, fine to coarse grained, silty sand with weathered bedrock fragments	3.3	X	<0.019
HA-15	5/4/2005	HA-15-1	1	dark brown, fine to coarse grained, silty sand with weathered bedrock fragments	0.0	-	-
HA-16	5/4/2005	HA-16-1	1	dark brown, fine to coarse grained, silty sand with weathered bedrock fragments	1.3	X	<0.019
HA-17	5/4/2005	HA-17-1	1	dark brown, fine to coarse grained, silty sand with weathered bedrock fragments	0.1	-	-
HA-18	5/4/2005	HA-18-1	1	brown, fine grained, sandy clay	0.0	-	-
		HA-18-2	2	brown, fine grained, sandy clay	0.0	-	-
		HA-18-3	3	brown, fine grained, sandy clay	0.0	-	-
HA-19	5/4/2005	HA-19-1	1	brown, fine grained, sandy clay	0.0	-	-
HA-20	5/4/2005	HA-20-0.5	0.5	dark brown, fine to coarse grained, silty sand with weathered bedrock fragments	1.1	X	2.2
		HA-21-1	1	dark brown, fine to coarse grained, silty sand with weathered bedrock fragments	1.1	X	<0.018
HA-22	5/4/2005	HA-22-1	1	dark brown, fine to coarse grained, silty sand with weathered bedrock fragments	0.5	-	-
HA-23	5/5/2005	HA-23-1	1	dark brown, fine to coarse grained, silty sand with weathered bedrock fragments	0.0	-	-
		HA-23-2	2	dark brown, fine to coarse grained, silty sand with weathered bedrock fragments	0.5	-	-

Historic Table 3

**HAND AUGER INVESTIGATION DATA
BULINSKI POINT - WITTRUP PROPERTY - MPCA/SF
ELY, MINNESOTA
TERRACON PROJECT NO. 41027048**

Hand Auger ID	Date	Sample Name	Sample Depth in Feet Below Ground Surface	Lithology	PID (ppm)	Laboratory Analysis	PCE (mg/kg)
HA-24	5/5/2005	HA-24-1	1	dark brown, fine to coarse grained, silty sand with weathered bedrock fragments	0.0	-	-
		HA-24-2	2	dark brown, fine to coarse grained, silty sand with weathered bedrock fragments	0.0	-	-
HA-25	5/5/2005	HA-25-1	1	brown, fine grained, sandy clay	0.0	-	-
		HA-25-2	2	brown, fine grained, sandy clay	0.0	X	<0.020
HA-26	5/5/2005	HA-26-1	1	dark brown, fine to coarse grained, silty sand with weathered bedrock fragments	0.0	-	-
HA-27	5/5/2005	HA-27-1	1	dark brown, fine to coarse grained, silty sand with weathered bedrock fragments	0.0	-	-
HA-28	5/5/2005	HA-28-1	1	dark brown, fine to coarse grained, silty sand with weathered bedrock fragments	0.0	-	-
HA-29	5/5/2005	HA-29-1	1	dark brown, fine to coarse grained, silty sand with weathered bedrock fragments	0.0	-	-
HA-30	5/5/2005	HA-30-1	1	dark brown, fine to coarse grained, silty sand with weathered bedrock fragments	0.0	-	-
HA-31	5/5/2005	HA-31-1	1	dark brown, fine to coarse grained, silty sand with weathered bedrock fragments	0.0	-	-
HA-32	5/5/2005	HA-32-1	1	dark brown, fine to coarse grained, silty sand with weathered bedrock fragments	0.0	-	-
HA-33	5/5/2005	HA-33-1	1	brown, fine grained, sandy clay	0.0	-	-
		HA-33-2	2	brown, fine grained, sandy clay	0.0	-	-

Notes:

PID = Photoionization Detector

ppm = part per million

mg/kg = milligrams per kilogram

Soil samples were analyzed for volatile organic compounds using EPA method 8260.