HEARTLAND
Environmental Services, Inc.

CON 12-15
Doc #17582

LIMITED PHASE II ENVIRONMENTAL SITE ASSESSMENT

KNAPPER PROPERTY
FOREST CITY, IOWA

Prepared for:

WALDORF COLLEGE
106 SOUTH 6TH STREET
FOREST CITY, IOWA 50436

Prepared by:

HEARTLAND ENVIRONMENTAL SERVICES, INC.
10050 NW LAKE DRIVE
POLK CITY, IOWA 50226
(515) 984-9166

JULY 2002

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1.0 INTRODUCTION

Heartland Environmental Services, Inc. (Heartland) was retained by Waldorf College, Forest City, Iowa to perform a Limited Phase II Environmental Site Assessment (ESA) for the Knapper Property located at the northwest corner of South 11th Street and West I Street in Forest City, Iowa. The purpose of this study was to determine if historic petroleum related operations on the property have impacted soil and groundwater at the site. The property was formerly used as a petroleum bulk plant facility. Aboveground petroleum storage tanks and associated piping and fueling areas existed on the property. The scope of work included collecting subsurface soil and groundwater samples from areas where former fuel storage and dispensing operations occurred.

2.0 SCOPE OF FIELD INVESTIGATION

The site investigation was completed on July 1, 2002 and included a review of aerial photographs and the completion of four exploratory soil borings (BH1 - BH4) at locations suspected to be near historic petroleum related operations. Prior to completing the soil borings, an aerial photograph was obtained from the Winnebago County Assessor's office. The 1988 aerial photograph depicted the subject property and location of the historic aboveground storage tanks. These tanks no longer exist on the property. The aerial photograph was used to provide a rationale for the placement of soil borings. The locations of soil borings with respect to the property are shown on the Site Plan Map (Figure 1) included with this report. In addition, a Site Vicinity Map (Figure 2) and Aerial Photograph (Figure 3) are included to further document the study. Boring locations were chosen using the following rationale:

- Boring BH1 was placed in a topographic low area in the former aboveground storage tank area;
- Boring BH2 was placed near the former railroad car fueling island;
- Boring BH3 was placed at the former AST fueling area near the eastern property boundary; and

- Boring BH4 was placed on the southeast portion of the property where a depression in the ground appeared suspect (i.e., The area may have contained an underground tank or other structure.).

Soil borings were completed using a truck-mounted drilling rig. Soil samples were collected at 1-ft intervals for visual observation and field screened using an organic vapor analyzer equipped with a photoionization detector. The sample interval exhibiting the highest screening value was set aside for possible laboratory analyses. The screening results indicated the presence of petroleum impacts in three of the four soil borings (BH1, BH3, and BH4). Soil boring BH1 exhibited significantly higher screening levels and visual evidence of petroleum impacts in comparison to the remaining borings which indicated either no evidence or very slight evidence of petroleum impacts. A description of soils encountered and results of vapor field screening are shown on the Soil Boring Logs (Appendix A) included with this report.

A soil and groundwater sample was collected from boring BH1 for submittal to a certified laboratory for analyses of petroleum compounds. The soil sample was collected from the interval with the highest vapor screening value (6 ft depth). A groundwater sample was collected at boring BH1 from a temporary monitoring well constructed of a 2-inch diameter PVC well screen (0.010-inch slotted). The sample was retrieved with a dedicated polyethylene bailer and placed into laboratory-supplied containers. After collecting the groundwater sample, the well was removed, and the borehole was backfilled in accordance with Iowa Department of Natural Resources (IDNR) requirements. The remaining borings were similarly filled upon completion.

Soil and groundwater samples were submitted to TestAmerica Laboratories of Cedar Falls, Iowa. Samples were analyzed using Iowa Method OA1 and OA2. These are the methods required for petroleum related spills. Samples were analyzed for the compounds; benzene, toluene, ethylbenzene, xylenes, and for total extractable hydrocarbons as diesel fuel and waste oil.

3.0 RESULTS

The results of the field investigation indicate soil types consisting of black to dark brown organic silt in the upper portion and gray to dark gray silty clay to the total boring depth of 20-feet. The laboratory results indicate levels of soil and groundwater contamination exceeding the IDNR action standards. Groundwater contamination levels exceed the IDNR action standards for benzene and Total Extractable Hydrocarbons (as Diesel and Waste Oil). Soil contamination levels exceed the IDNR action standards for benzene. A summary of the soil and groundwater sample results and a listing of the IDNR action levels for petroleum compounds are shown below (Table 1). Note that the underlined values exceed the corresponding IDNR action levels. Laboratory analytical reports are also included with this report (Appendix B).

TABLE 1
LABORATORY ANALYTICAL RESULTS

Sample ID	Concentration[1]					
	Benzene	Toluene	Ethyl-benzene	Xylenes	TEH-D[2]	TEH-WO[3]
IDNR ACTION LEVEL (SOIL)	0.54	42	15	NA	3,800	NA
SOIL SAMPLE (BH1-6)	1.73	1.18	1.44	3.05	537	21.3
IDNR ACTION LEVEL (GROUNDWATER)	5	1,000	700	10,000	1,200	400
GROUNDWATER SAMPLE (TW-1)	49.3	14.0	46.5	107	2,970	513

5 120 1200 400

Notes:

(1) milligrams per kilogram (mg/kg) and micrograms per gram (ug/g) for soil; micrograms per liter (ug/L) for groundwater.

(2) Total Extractable Hydrocarbons (Diesel)

(3) Total Extractable Hydrocarbons (Waste Oil)

4.0 SIGNATURE AND QUALIFICATIONS

This Phase II Environmental Site Assessment Report for the Knapper Property, Forest City, Iowa has been prepared and reviewed by environmental professionals knowledgeable of principles related to standard environmental site assessments. This report was prepared by Mr. Steven M. Kobberdahl. Mr. Kobberdahl is the Principle Geologist and President of Heartland Environmental Services, Inc. and a Certified Groundwater Professional in the State of Iowa. He has fifteen years of experience in the environmental field and is responsible for completion of environmental assessments, compliance audits, contamination assessments, and contamination remediation.

Steve Kobberdahl

Steven M. Kobberdahl
Certified Groundwater Professional

7-30-02

Date

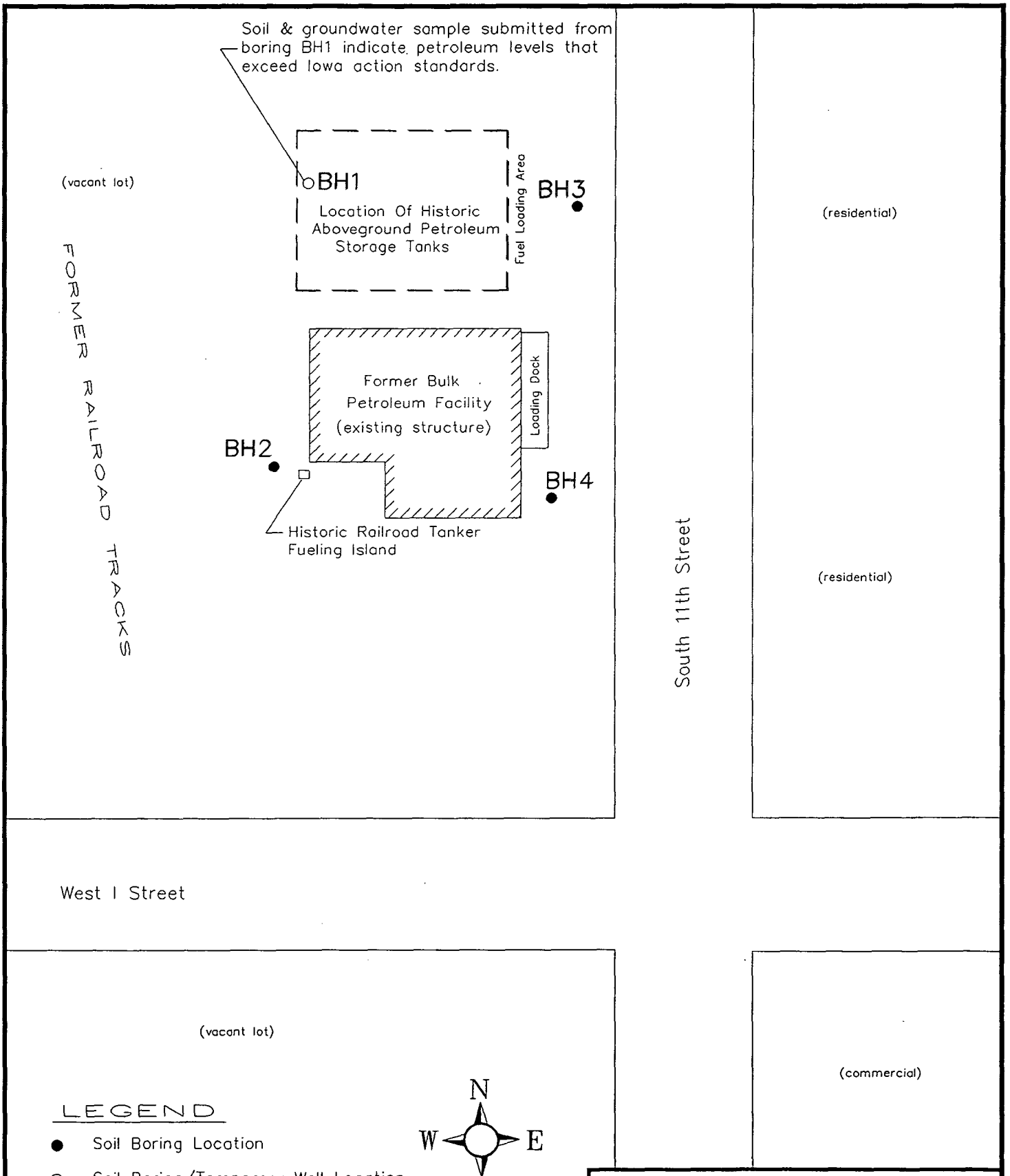
FIGURES

1 SITE PLAN MAP

2 SITE VICINITY MAP

3 AERIAL PHOTOGRAPH (1988)

10050 NW Lake Drive • Polk City, IA • 50226-2107
515/984-9166 • Fax: 515/984-7737

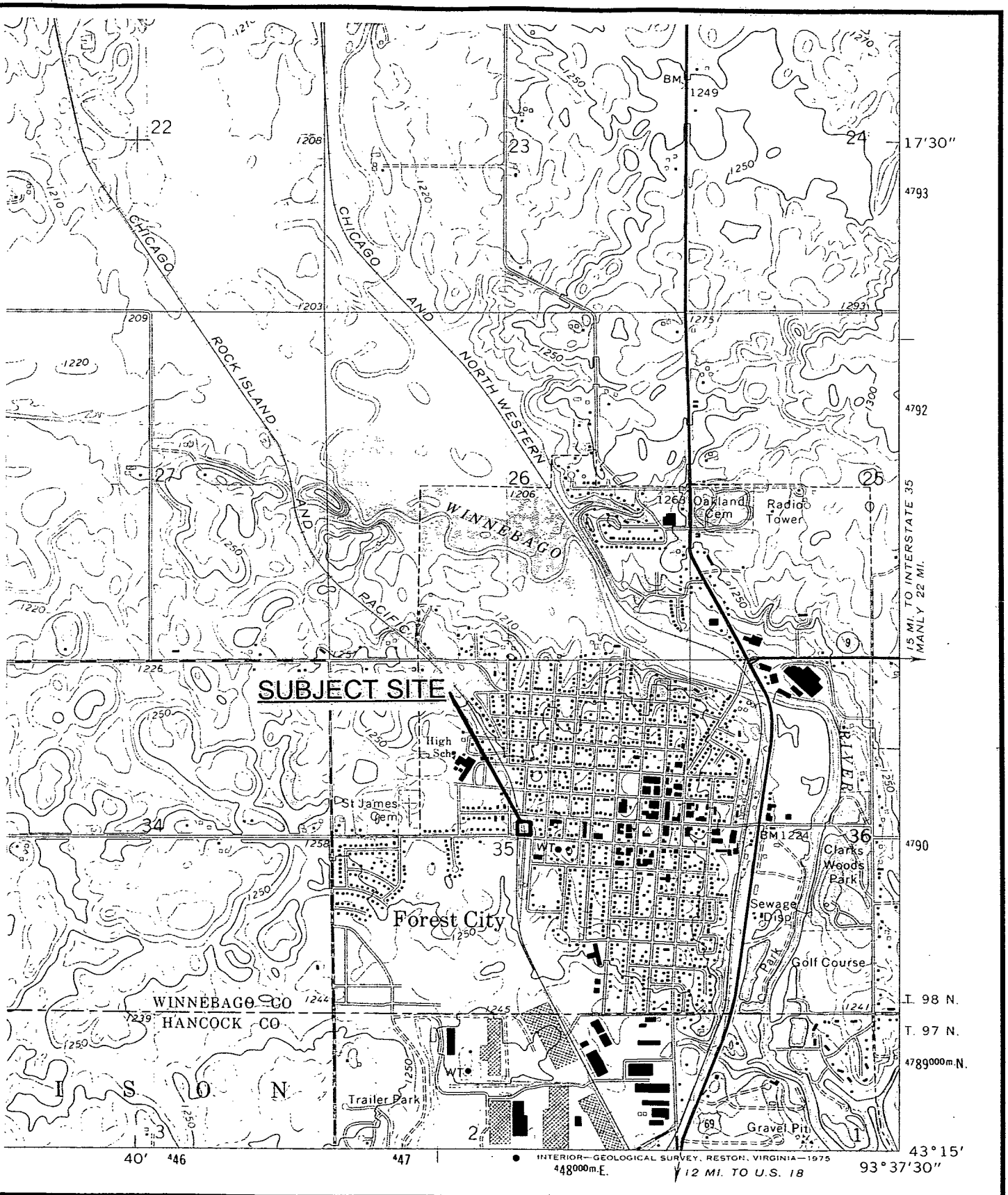


SITE PLAN MAP

Knapper Property
Forest City, Iowa

Project No	Drawing No	Revised
WAL-01	WAL-01	7/25/02

HEARTLAND
Environmental Services, Inc.



Forest City Iowa Quad – 7.5 Minute Series
Map Source: USGS – Map Scale: 1" = 2000'

N
W E
S

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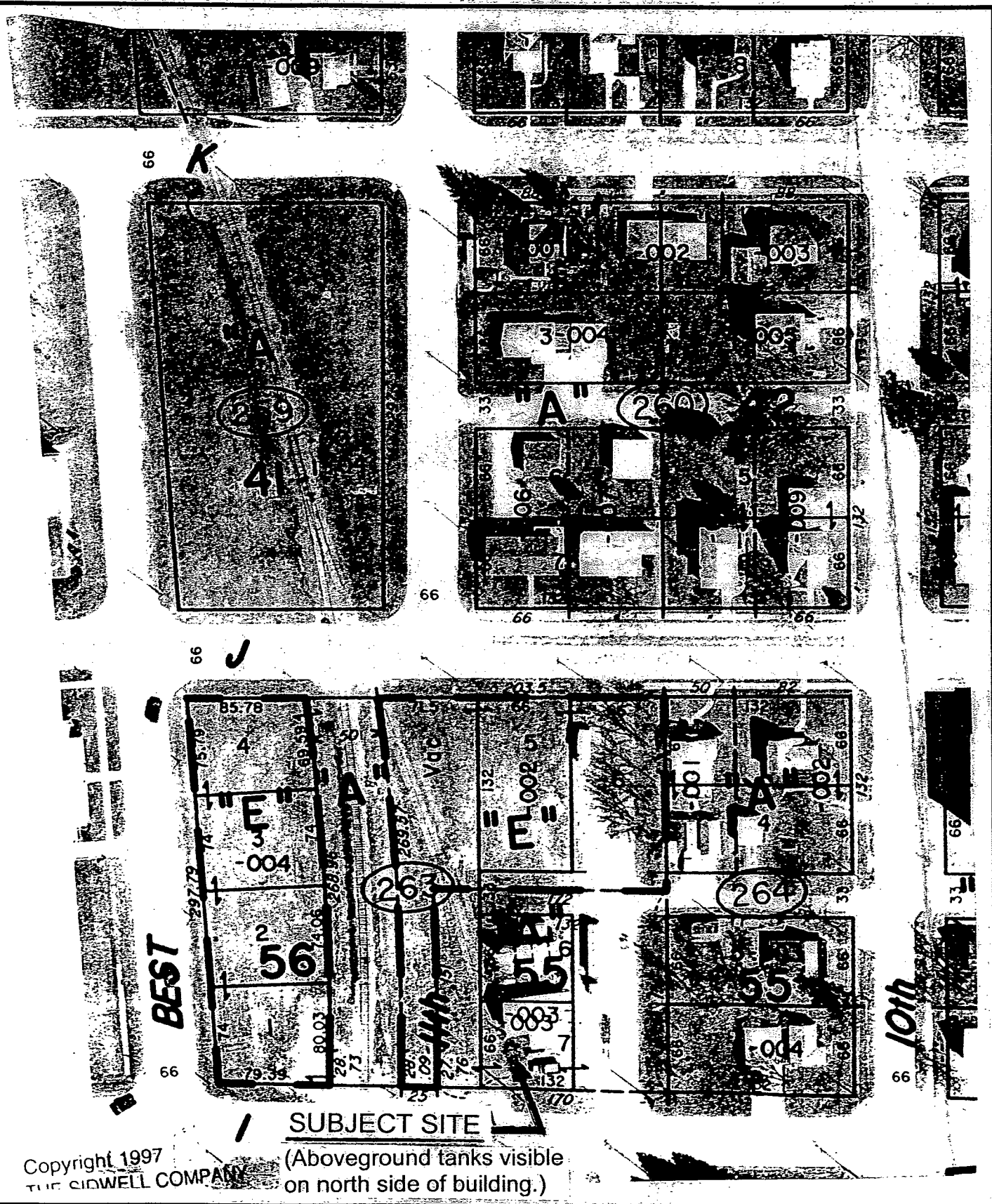
SITE VICINITY MAP

Knapper Property
Forest City, Iowa

Project No	Drawing No	Revised
WAL–01	WAL–02	7/25/02



Aerial Photograph Source: Winnebago County Assessor
Photograph Date: 1988 – Scale: 1" = 100'

N
W E
S

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AERIAL PHOTOGRAPH

Knapper Property
Forest City, Iowa

Project No	Drawing No	Revised
WAL-01	WAL-02	7/25/02

APPENDIX A

SOIL BORING LOGS

10050 NW Lake Drive • Polk City, IA • 50226-2107
515/984-9166 • Fax: 515/984-7737

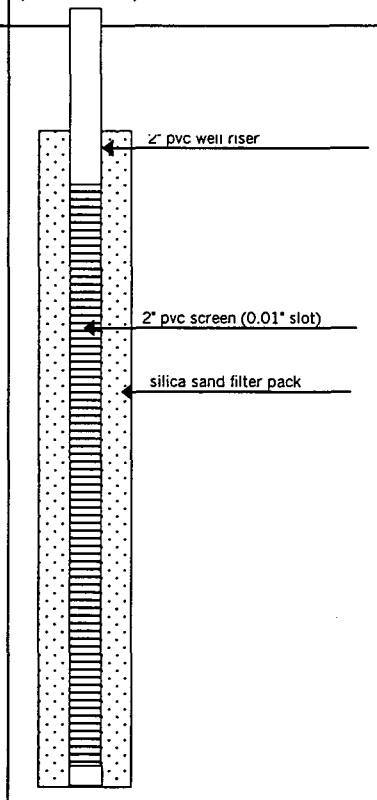
SOIL BORING LOG AND MONITORING WELL CONSTRUCTION DIAGRAM

Boring/Well Number:	Facility Name	Facility Street Address
BH1/TW-1	**Knapper Property**	**Forest City, Iowa**

Boring Depth (ft) X Diameter (in):	**20' x 4"**	Drilling Method:	**sfa**
Certified Well Contractor Name:	**S. Kobberdahl**	Logged by:	
Certification Number:	**#40446**		**SMK**

Ground Surface Elevation (ASL): **NA**	Top of Casing Elevation (ASL): **NA**

Date: **7/1/02**	Date: **7/1/02**	UST Number **NA**		LUST Number **NA**	
Time Start: **1300**	End Time: **1400**				

Depth (FT)	Well Construction Details	Blow Count If Applicable	lab Sample No.	lab Sample Type*	Field Screening Results (PID/FID)	Rock Formations, Soil, Color and Classifications, Observations (moisture, odor, etc.) First column for USCS
0--						Grass
-					0	OL- Organic Silt, black to dark brown, firm
-					10	moist, with fine- to medium-grained sand
-					70	and fine-grained gravel
-					50	petroleum odor
5--					50	
-			6'	sfa	100(*)	CL-Silty Clay, dark gray to gray, firm to
-					30	hard, moist, strong petroleum odor and
-					60	soil discoloration evident
-					5	
10--					12	
-					5	wet, decreasing evidence of petroleum
-					2	impacts with depth
-					1	
-					0	
15--					0	
-					0	
-					0	
-					0	
-					0	
20--					0	
-						
-						
-						
-						
25--						
-						

* SS (split spoon) HS (hollow stem auger) (*) soil sample submitted for lab analyses

Observations	Date:					
Water Levels (ASL)	Level:	NA				
Static Water Level Symbol (v)	Time:					

DNR FORM 542-1392

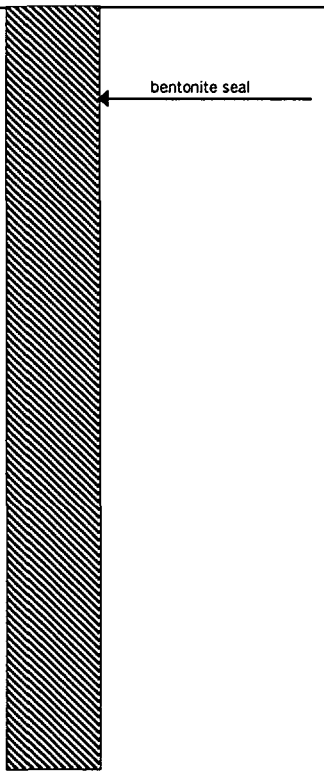
Revised June 1998

SOIL BORING LOG AND MONITORING WELL CONSTRUCTION DIAGRAM

Boring/Well Number:	Facility Name	Facility Street Address
BH2	**Knapper Property**	**Forest City, Iowa**

Boring Depth (ft) X Diameter (in):	**20' x 4"**	Drilling Method:	**sfa**
Certified Well Contractor Name:	**S. Kobberdahl**	Logged by:	
Certification Number:	**#40446**		**SMK**

Ground Surface Elevation (ASL):	**NA**	Top of Casing Elevation (ASL):	**NA**
Date: **7/1/02**	Date: **7/1/02**	UST	LUST
Time Start: **1400**	End Time: **1445**	Number **NA**	Number **NA**

Depth (FT)	Well Construction Details	Blow Count If Applicable	lab Sample No.	lab Sample Type*	Field Screening Results (PID/FID)	Rock Formations, Soil, Color and Classifications, Observations (moisture, odor, etc.) First column for USCS
0--					0	Grass
-					0	OL- Organic Silt, black to dark brown, firm
-					0	moist, with fine- to medium-grained sand
-					0	
-					0	no petroleum odor
5--					0	CL-Silty Clay, dark gray to gray, firm to hard,
-					0	moist
-					0	
-					0	
-					0	no petroleum odor
10--					0	
-					0	
-					0	
-					0	
-					0	
15--					0	
-					0	
-					0	
-					0	
-					0	
20--					0	
-						
-						
-						
-						
25--						
-						

* SS (split spoon) HS (hollow stem auger) (*) soil sample submitted for lab analyses

Observations	Date:					
Water Levels (ASL)	Level:	NA				
Static Water Level Symbol (v)	Time:					

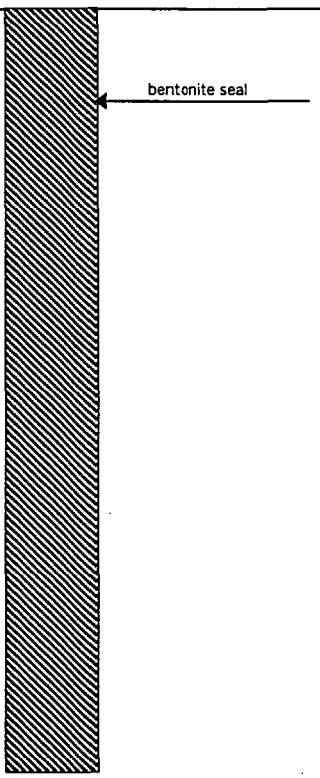
DNR FORM 542-1392

Revised June 1998

SOIL BORING LOG AND MONITORING WELL CONSTRUCTION DIAGRAM

Boring/Well Number:	Facility Name	Facility Street Address
BH3	**Knapper Property**	**Forest City, Iowa**
Boring Depth (ft) X Diameter (in):	**20' x 4"**	Drilling Method: **sfa**
Certified Well Contractor Name:	**S. Kobberdahl**	Logged by:
Certification Number:	**#40446**	**SMK**

Ground Surface Elevation (ASL):	**NA**	Top of Casing Elevation (ASL):	**NA**
Date: **7/1/02**	Date: **7/1/02**	UST	LUST
Time Start: **1445**	End Time: **1530**	Number **NA**	Number **NA**

Depth (FT)	Well Construction Details	Blow Count If Applicable	lab Sample No.	lab Sample Type*	Field Screening Results (PID/FID)	Rock Formations, Soil, Color and Classifications, Observations (moisture, odor, etc.) First column for USCS
0--						Grass
-					0	OL- Organic Silt, black to dark brown, firm
-					1	moist, with fine- to medium-grained sand
-					2	
-					4	slight petroleum odor
5--					2	CL-Silty Clay, dark gray to gray, firm to hard,
-					8	moist
-					2	
-					1	
-					0	no petroleum odor
10--					0	
-					0	
-					0	
-					0	
-					0	
15--					0	
-					0	
-					0	
-					0	
-					0	
20--					0	
-						
-						
-						
-						
25--						
-						

* SS (split spoon) HS (hollow stem auger) (*) soil sample submitted for lab analyses

Observations	Date:					
Water Levels (ASL)	Level:	NA				
Static Water Level Symbol (v)	Time:					

DNR FORM 542-1392

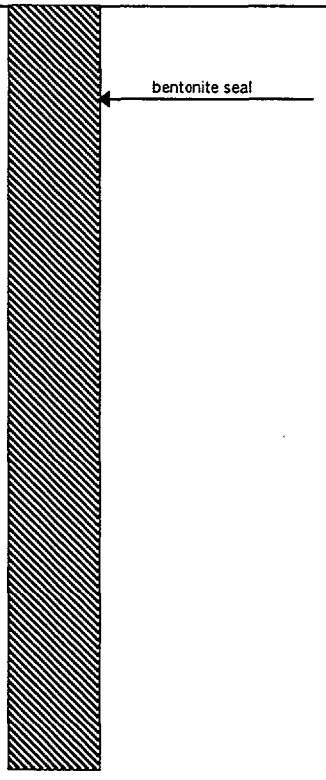
Revised June 1998

SOIL BORING LOG AND MONITORING WELL CONSTRUCTION DIAGRAM

Boring/Well Number:	Facility Name	Facility Street Address
BH4	**Knapper Property**	**Forest City, Iowa**

Boring Depth (ft) X Diameter (in):	**20' x 4"**	Drilling Method:	**sfa**
Certified Well Contractor Name:	**S. Kobberdahl**	Logged by:	
Certification Number:	**#40446**		**SMK**

Ground Surface Elevation (ASL):	**NA**	Top of Casing Elevation (ASL):	**NA**
Date: **7/1/02**	Date: **7/1/02**	UST Number **NA**	LUST Number **NA**
Time Start: **1530**	End Time: **1600**		

Depth (FT)	Well Construction Details	Blow Count If Applicable	lab Sample No.	lab Sample Type*	Field Screening Results (PID/FID)	Rock Formations, Soil, Color and Classifications, Observations (moisture, odor, etc.) First column for USCS
0--						Grass
-					5	OL- Organic Silt, black to dark brown, firm
-	bentonite seal				2	moist, with fine- to medium-grained sand
-					5	
-					4	slight petroleum odor
5--					2	
-					5	CL-Silty Clay, dark gray to gray, firm to hard,
-					2	moist
-					1	
-					0	no petroleum odor
10--					0	
-					0	
-					0	
-					0	
-					0	
15--					0	
-					0	
-					0	
-					0	
-					0	
20--					0	
-						
-						
-						
-						
25--						
-						

* SS (split spoon) HS (hollow stem auger) (*) soil sample submitted for lab analyses

Observations	Date:					
Water Levels (ASL)	Level:	NA				
Static Water Level Symbol (v)	Time:					

DNR FORM 542-1392

Revised June 1998

APPENDIX B

LABORATORY ANALYTICAL REPORTS

10050 NW Lake Drive • Polk City, IA • 50226-2107
515/984-9166 • Fax: 515/984-7737

ANALYTICAL REPORT

Steve Kobberdahl
HEARTLAND ENVIRONMENTAL
SERVICES, INC.
10050 NW Lake Drive
Polk City, IA 50226
515-984-9166

07/16/2002

Job Number: 02.08070

Sample Number: 684096

Collected by: SMK

Collectors Phone No.: 515-984-9166

Job Description: WALDORF COLLEGE PROJECT TYPE: LIMITED PHASE II
FOREST CITY, IOWA

Date Taken: 07/01/2002

Sample ID: BH1-6 Project # WALDORF

Date Received: 07/03/2002

Analyte	Result	Units	Result Flag	Analyst	Date Analyzed	Method	Quantitation Limit	Matrix
Extraction Prep, soil	COMPLETE			amn	07/05/2002	IOWA-0A2		SOIL
EXTRACTABLE HYDROCARBONS-SOIL								
Total Extractable Hydrocarbons	794	mg/kg		jaa	07/13/2002	IA-OA2/S-8015	10	SOIL
Diesel	537	mg/kg		jaa	07/13/2002	IA-OA2/S-8015	10	SOIL
Gasoline	236	mg/kg		jaa	07/13/2002	IA-OA2/S-8015	10	SOIL
Motor Oil	21.3	mg/kg		jaa	07/13/2002	IA-OA2/S-8015	10	SOIL
VOLATILES - BTEX (NONAQUEOUS)								
Benzene	1.73	ug/g		sjg	07/09/2002	IA-OA1	0.25	SOIL
Toluene	1.18	ug/g		sjg	07/09/2002	IA-OA1	0.5	SOIL
Ethylbenzene	1.44	ug/g		sjg	07/09/2002	IA-OA1	0.5	SOIL
Xylenes, Total	3.05	ug/g		sjg	07/09/2002	IA-OA1	0.5	SOIL

All results are calculated on a wet weight basis.

R. L. Bindert
Operations Manager
IA UST LAB CERTIFICATION NO. 0007

ANALYTICAL REPORT

Steve Kobberdahl
HEARTLAND ENVIRONMENTAL
SERVICES, INC.
10050 NW Lake Drive
Polk City, IA 50226
515-984-9166

07/16/2002

Job Number: 02.08070

Sample Number: 684097

Collected by: SMK

Collectors Phone No.: 515-984-9166

Job Description: WALDORF COLLEGE PROJECT TYPE: LIMITED PHASE II

FOREST CITY, IOWA

Date Taken: 07/01/2002

Sample ID: TW-1 Project # WALDORF

Date Received: 07/03/2002

Analyte	Result	Units	Result Flag	Analyst	Date Analyzed	Method	Quantitation Limit	Matrix
Extraction Prep	COMPLETE			amn	07/03/2002	IOWA-OA2		WATER
EXTRACTABLE HYDROCARBONS-WATER								
Total Extractable Hydrocarbons	5,760	ug/L		jaa	07/16/2002	IA-OA2/S-8015	380	WATER
Diesel	2,970	ug/L		jaa	07/16/2002	IA-OA2/S-8015	380	WATER
Gasoline	2,280	ug/L		jaa	07/16/2002	IA-OA2/S-8015	380	WATER
Motor Oil	513	ug/L		jaa	07/16/2002	IA-OA2/S-8015	380	WATER
VOLATILES - BTEX (WATER)								
Benzene	49.3	ug/L		sjg	07/08/2002	IA-OA1	2.0	WATER
Toluene	14.0	ug/L		sjg	07/08/2002	IA-OA1	2.0	WATER
Ethylbenzene	46.5	ug/L		sjg	07/08/2002	IA-OA1	2.0	WATER
Xylenes, Total	107	ug/L		sjg	07/08/2002	IA-OA1	3.0	WATER
VOA Preservation pH	<2	units		djl	07/08/2002	SW 9041A		WATER

All results are calculated on a wet weight basis.

R. L. Bindert
Operations Manager
IA UST LAB CERTIFICATION NO. 0007

HEARTLAND
Environmental Services, Inc.

10050 NW Lake Drive
Polk City, Iowa 50226
(515) 984-9166 FAX/984-7737

CHAIN OF CUSTODY RECORD - LAB ANALYSES REQUEST FORM

PROJECT INFORMATION:		LABORATORY INFORMATION:		REPORTING INFORMATION:	
Project Name	Waldorf College	Laboratory	TestAmerica	Report To	Heartland Environmental
Project Number	WALDORF	Address	704 Enterprise Drive	Address	10050 NW Lake Drive
Project Address	11th and I St.	City/State/Zip	Cedar Falls, Iowa 50613	City/State/Zip	Polk City, Iowa 50226
City/State/Zip	Forest City, IA	Lab Contact	R. Bindert	Telephone	515-984-9166
Sampled By	SMK	Project Type	limited phase II	UST Content	NA - AST's only

SAMPLE IDENTIFICATION:						ANALYSES REQUESTED:			
ID Number	Date	Time	Matrix	Description	Containers	Compounds	Method	Preservation	Other
BH1-6	7-1-02	1330	SOIL	Silty Cl.	(1) 4oz	BTEX/TEH	OA1/OA2	chilled	OA1/GC meth ⊗
TW-1	7-1-02	1600	Water	Sl. Turbid	(2) 40ml (1) 8	BTEX/TEH	OA1/OA2	HCL/chilled	OA1/GC meth ⊗
Special Instructions or Information				⊗ MTBE Not Needed		Include chromatograms ALL Samples			

Relinquished By: Steve Kobberdahl	Date: 7-2-02 Time: 1300	Received By: Edna Muehling	Date: 7-3-02 Time: 8:00
Relinquished By:	Date: Time:	Received By:	Date: Time:

Sample Receipt and Temperature Log Form

Client: HeartLand Environ. Project: Waldorf College

City: _____

Date: 7-3-02 Receiver's Initials CH Time (if Applicable): _____

Temperature Record

Cooler #1: 2° ° C (On Ice) ☒ Temp. Blank

Cooler #2: _____ ° C / On Ice ☐ Temp. Blank

Cooler #3: _____ ° C / On Ice ☐ Temp. Blank

Cooler #4: _____ ° C / On Ice ☐ Temp. Blank

Thermometer:

- ☐ IR-905085
- ☒ IR-809065
- ☐ CF07-03-T1
- ☐ CF07-03-T2

Couriers

- ☐ Airborne
- ☐ Speedy
- ☐ UPS
- ☐ TA Courier
- ☒ Velocity
- ☐ TA Field Svs
- ☐ FedEx
- ☐ Client
- ☐ DHL
- ☐ US Postal
- ☐ Other

- ☐ Samples Not Received in a Cooler
- ☐ Temperature Not Taken
- ☐ Samples Received Within 6 hrs of sampling

COC Completed Correctly? ☐ Yes ☐ No
(Cite inconsistencies below)

Custody Seals Intact? ☐ Yes ☐ No
(If Applicable)

Cooler Checklist (Check indicates conformance failure)

	Received Broken		Improper Container		Temperature*
	Improperly Preserved		Missing Sample		Extra Sample
	Missing Label		Sample Past Hold Date		Improper Label
	Insufficient Sample Volume		Other:		

Client Sample IDs:
Initial/Date:

Remarks/Action Taken:

Log-In By:
NF MF (EM)
OT _____

*Refer to SOP CF01-01 for Temperature Criteria