Fraser Shipyards, Inc.

Partial Closure Documentation AOC #5 and Additional Investigation Report MW-5

Superior, Wisconsin

SEH No. FRASE9401.00

February 1999

SHORT ELLIOTT HENDRICKSON INC.



Partial Closure Documentation AOC #5 and Additional Investigation Report MW-5

Fraser Shipyards, Inc. Superior, Wisconsin

Prepared for: Fraser Shipyards, Inc. Superior, Wisconsin

Prepared by: Short Elliott Hendrickson Inc. 421 Frenette Drive Chippewa Falls, WI 54729 (715) 720-6200 I, Gloria Chojnacki, hereby certify that I am a scientist as that term is defined in s. NR 712.03(3), Wis. Adm. Code, and that, to the best of my knowledge, all of the information contained in this document is correct and the document was prepared in compliance with all applicable requirements in chs. NR 700 to 726, Wis. Adm. Code.

Gloria Chojnacki, CHMM
Environmental Scientist

Z-25-99

Date

I, John E. Guhl, hereby certify that I am a Hydrogeologist as that term is defined in s. NR 712.03(1) Wis. Adm. Code, and that, to the best of my knowledge, all of the information contained in this document is correct and the document was prepared in compliance with all applicable requirements in chs. NR 700 to 726, Wis. Adm. Code.

John F. Guhl, P.G.

Hydrogeologist

#120
P.G. Number

Date

I, Cyrus W. Ingraham, hereby certify that I am a registered professional engineer in the State of Wisconsin, registered in accordance with the requirements of ch. A-E 4, Wis. Adm. Code; that this document has been prepared in accordance with the Rules of Professional Conduct in ch. A-E 8, Wis. Adm. Code; and that, to the best of my knowledge, all information contained in this document is correct and the document was prepared in compliance with all applicable requirements in chs. NR 700 to 726, Wis. Adm. Code.

Cyrus W. Ingraham, P.E.

E-24690
P.E. Number

Date

Sr. Project Manager

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Partial Closure Documentation AOC #5 and Additional Investigation Report MW-5

Fraser Shipyards, Inc.

Prepared for Fraser Shipyards, Inc.

1.0 Introduction

On behalf of Fraser Shipyards Inc. (Fraser), Short Elliott Hendrickson. Inc. (SEH) has completed a site investigation to address polynuclear aromatic hydrocarbon (PAH) contamination identified in groundwater monitoring well MW-5. In addition, groundwater sampling was conducted at area of concern (AOC) #5 where past dissolved lead was identified in groundwater samples.

This report was developed to meet the requirements for site investigation reporting in general accordance with ch. NR 716 Wisconsin Administrative Code. The required site investigation activities for defining degree and extent of contamination in monitoring well MW-5 and to provide additional lead analytical data from AOC #5 have been performed in accordance with the Wisconsin Department of Natural Resource's (WDNRs) approved "Additional Investigation Work Plan - Monitoring Well MW-5 and AOC #5" (March 1998).

A Site Investigation Work Plan (November 1993) which contained general and specific site information regarding history, waste materials, handling procedures, SEH standard operating protocols (SOPs), and other pertinent project information was submitted by Fraser to the WDNR.

1.1 Scope of Work

SEH performed the following activities in order to assess groundwater contaminants identified at the Fraser facility:

- Groundwater sampling and analysis of monitoring well, MW-5, and three hydraulic probe borings placed in the immediate area surrounding MW-5.
- Laboratory analysis of groundwater collected from the monitoring well located at AOC #5.
- Report preparation.

1.2 Project Contacts

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2.0 Background Information

The Fraser facility is located at Third Street and Clough Avenue in Superior, Wisconsin as depicted on Figure 1, "Site Location." The site is located on Howard's Bay in Section 11, T49N, R14W, Douglas County, Wisconsin.

Monitoring well, MW-5, was installed at Fraser on August 16, 1996 to provide up gradient data for several AOCs at the facility. PAHs were identified in groundwater samples collected from monitoring well MW-5, including concentrations of benzo(a)pyrene and benzo(b)fluoranthene exceeding the ch. NR 140 groundwater quality Enforcement Standards (ES). Consequently, the WDNR required additional investigation of the area around MW-5 to define the degree and extent of PAH contamination. The location of monitoring well MW-5 is depicted on Figure 2, "Site Plan."

AOC #5 is one of 14 AOCs identified at the Fraser facility by WDNR in 1993. The AOC #5 area was historically used to temporarily stage waste materials from Fraser's painting operations prior to disposal. The wastes were staged in two portable aboveground containers. The wastes included paint wastes potentially mixed with dirty solvents. The two storage containers have been cleaned, cut up, and recycled. Paint waste materials are no longer staged in AOC #5. The location of AOC #5 is depicted on Figure 2.

Six soil samples were collected from AOC #5 in January 1994 and were analyzed for volatile organic compounds (VOCs), and total lead, cadmium, chromium, and mercury. No VOCs were detected in the soil samples; however, elevated concentrations of total lead and total chromium were detected. Toxicity characteristic leaching procedure (TCLP) analysis of the most elevated concentration of total lead and total chromium yielded no detectable concentrations of these two parameters. This indicates the lead and chromium detected in the soil sample is not significantly leachable.

One groundwater monitoring well (MW-2) was installed on the down gradient side of AOC #5 on August 16, 1996. Two rounds of groundwater samples have been collected and analyzed for concentrations of total dissolved lead and total dissolved chromium. Initial groundwater analytical results indicated concentrations of dissolved lead which exceeded the ES for lead (15 μ g/l). Dissolved lead concentrations of 48.8 μ g/l to 34.2 μ g/l were present in samples collected from well MW-2 in 1996. Chromium was not detected in the groundwater samples collected from well MW-2.

A total of six hydraulic probe borings were used to collect additional groundwater data in the vicinity of AOC #5 in September 1997. Groundwater samples collected from the six hydraulic probe borings as well as from existing monitoring well MW-2 were analyzed for concentrations of total dissolved lead. Lead was not detected in concentrations exceeding ch. NR 140, Preventative Action Limits during this round of sampling. Based on the review of the groundwater data for AOC #5, additional rounds of groundwater monitoring including both dissolved and total lead groundwater analysis at this location was required by WDNR.

3.0 Geology, Hydrogeology, and Topography

3.1 Geology

Preliminary soil survey information was provided by the USDA Soil Conservation Survey located in Ashland, Wisconsin. Soils on the Fraser Shipyard property are classified as Udorthents which form 1 to 6 percent slopes. Udorthents occur in areas where the original soil profile has been altered by the addition or removal of more than about a foot of soil materials.

Soils adjacent to the south side of the property area classified within the Ontonagon-Rudyard complex. This soil type occurs as an intermix of moderately well drained Ontonagon soil and somewhat poorly drained Rudyard soil. Rudyard soils form in clayey lacustrine deposits.

Ontonagon silty clay loams occur adjacent to the southeast corner of the property. These are well drained, highly erodible soils which occur on 6 to 12 percent slopes and form in clayey lacustrine deposits.

Groundwater in the Ontonagon-Rudyard soil series is generally found at depths less than six feet from the surface and can be perched. Depth to groundwater in the Ontonagon silty clay loams is typically greater than six feet from surface.

Underlying the surface soils in the vicinity of the site are glacial till deposits belonging to the Douglas Creek Member of the Miller Creek Formation. The Douglas Creek till is comprised of fine textured glacial till averaging 10 percent sand, 26 percent silt and 64 percent clay in the less-than-2 mm fraction. It is typically reddish-brown in color and averages 54 percent illite in the less-than-2 mm fraction. The Douglas Member is generally the surface unit throughout most of the Lake Superior bluffs, but in a few places is overlain by fluvial or lacustrine sand and gravel deposits or offshore silt and clay deposits of the Miller Creek Formation or younger fluvial, lacustrine, and organic deposits. Most of the Douglas Member is till deposited by ice of the Superior Lobe.

The Miller Creek Formation soils are generally underlain by sand and gravel soils of the Copper Falls Formation in the vicinity of Superior. The Copper Falls Formation consists of glacial sand and gravel tills and fluvial deposits.

Subsurface investigation of MW-5 indicates the presence of approximately five feet of earthen fill materials underlain by a three foot thick layer of silty sand at MW-5. A black peat-like material was also observed in the three hydraulic probe boring locations performed around MW-5. Lean clay soils of the Miller Creek Formation are present beneath the silty sand layer and black peat-like material.

Subsurface investigation of AOC #5 indicated the presence of 8.5 feet of fill materials, consisting of layers of sand and clay. A thin layer of organic clay separates the fill materials from the underlying clay soils of the Miller Creek Formation. The underlying Copper Falls Formation, and subsequent bedrock units were not encountered during site investigation at MW-5 and AOC #5.

3.2 Hydrogeology

Two major aquifers are present in the vicinity of Superior; the sand and gravel aquifer and the sandstone aquifer. The sand and gravel aquifer either occurs in recent surficial deposits (e.g., sand deposits on Wisconsin Point), or in buried Pleistocene sand and gravel deposits (e.g., the Copper Falls Formation). The sandstone aquifer is comprised of the Cambrian to Precambrian sandstone and shale deposits of the Bayfield and Oronto groups. Regional direction of groundwater flow in the Superior area is generally to the north (toward Lake Superior).

The shallow groundwater surface occurs at approximately 3.5 feet to 4.5 feet below ground surface (bgs) in the vicinity of MW-5 and AOC #5. Direction of shallow groundwater flow is generally to the north, with a horizontal hydraulic gradient of approximately 0.006 ft/ft in these areas based on site monitoring well observations.

3.3 Topography

The site vicinity lies in the Lake Superior lowland physiographic province, which consists of a glacial lake plain sloping gently to the north. Elevation of the property ranges from approximately 601 to 610 feet mean sea level (MSL). Surface water from the site drains overland to Lake Superior.

4.0 Additional Investigation

Additional investigation was performed at the facility by SEH on August 25, 1998. Two additional rounds of groundwater were collected at quarterly intervals on October 2, 1998 and January 19, 1999. The investigation was performed in accordance with SEHs March 1998 Additional Investigation Workplan - Monitoring well MW-5 and AOC #5.

4.1 Groundwater Sampling

Three hydraulic probe borings were performed on August 25, 1998 at the facility by Matrix Technologies Corp. (subcontractor to SEH) to define the degree and extent of groundwater contamination in the immediate vicinity of existing well, MW-5. A truck-mounted hydraulic probe sampler was mobilized to the site for the collection of groundwater samples to be used as a screening process for the identification of potential groundwater contamination. The hydraulic probes were placed around MW-5 in the locations depicted on Figure 2.

The probes were advanced to a depth of eight feet bgs where a screened section of the probe was then exposed from the four to eight foot depth interval within saturated fill soils. Soil boring logs were completed for each boring and are presented in Appendix A, "Soil Boring Documentation."

Dedicated disposable polyethylene tubing was inserted into the screened interval of each boring and groundwater was brought to the surface using a peristaltic pump. Existing wells, MW-5 and MW-2 (located at AOC #5), were also sampled during each sampling event using disposable polyethylene tubing and a peristaltic pump after four times the volume of water standing in the well casings were removed.

Groundwater samples collected from the three hydraulic probe borings and MW-5 were placed in one liter amber bottles and analyzed for PAHs (EPA Method 8310). Filtered and an unfiltered groundwater samples were collected from MW-2 (AOC #5) for lead analyses (EPA Method 7421). Dissolved lead samples were filtered with 0.45 micron filters and unfiltered samples were analyzed for total lead. Samples collected for both lead analyses were placed in polyethylene bottles at the time of collection and preserved with nitric acid to a pH of less than 2.

All water samples were immediately placed on ice for shipment via overnight courier. Samples were delivered to U.S. Filter (formerly Enviroscan Corp.) of Rothschild, Wisconsin (Wisconsin Certification No. 737053130) utilizing standard chain of custody documentation.

Upon completion of sampling activities, the hydraulic probe boreholes were abandoned in accordance with ch. NR 141 Wisconsin Administrative Code guidelines. Borehole abandonment forms are presented in Appendix A.

4.2 Groundwater Analytical Results

4.2.1 MW-5 and Hydraulic Probe Samples

Groundwater samples collected from monitoring well, MW-5 and hydraulic probes, HP-1A, HP-2A, HP-3A were analyzed for PAHs. Groundwater collected from MW-5 appeared clear during each sampling event after well purging and indicated one minor detection of naphthalene (0.193 μ g/l) during the first round of groundwater collection on August 25, 1998. The concentration of naphthalene is well below the ch. NR 140 Preventive Action Limit (PAL) for naphthalene of 8 g/l. Two subsequent rounds of groundwater sampling at MW-5 (October 20, 1998 and January 29, 1999) did not indicate the presence of any PAHs above the detection limit.

Groundwater collected from the three hydraulic probe borings (August 25, 1998) appeared turbid. Numerous detections of PAHs were indicated in all three water samples including exceedance of the ch. NR 140 ES for benzo(a)pyrene, benzo(b)fluoranthene, and chrysene. The Preventive Action Limit (PAL) was exceeded for fluoranthene and pyrene as well. Purging of the hydraulic probe borings was not possible and the groundwater samples contained a

considerable amount of suspended organic solids. The PAHs detected are likely associated with suspended organic solids within the groundwater samples. Comparison of the hydraulic probe sample results to the ch. NR 140 standards is for screening purposes only since purging of the borings could not be performed.

Total PAH concentrations ranged from 30.8 μ g/l at HP-1A to 538 μ g/l at HP-3A. A summary of current and historical analytical results at MW-5 is found on Table 1, "Groundwater Analytical Results." A copy of the laboratory results is located in Appendix B, "Laboratory Results."

4.2.2 MW-2 (AOC #5) Samples

Groundwater samples collected from monitoring well, MW-2, were analyzed for both dissolved lead (filtered samples) and total lead (unfiltered samples). Groundwater samples collected from MW-2 appeared clear after well purging during each sampling event. Samples collected during the current additional investigation were analyzed using EPA Method 7421. Prior analyses of dissolved lead conducted at this AOC were analyzed using EPA Method 239.2. According to the laboratory performing the analysis, the two methods are nearly identical and therefore comparable.

Groundwater results from samples collected during the August 1998 and January 1999 sampling events indicated no detections of dissolved lead. The October 1998 sampling event indicated a total dissolved lead concentration of 3.08 μ g/l, which exceeds the PAL for lead (1.5 μ g/l). No ES exceedances for dissolved lead were identified in MW-2 during the August 1998, October 1998, and January 1999 sampling rounds.

Total lead concentrations were not detected in groundwater samples collected during the August 1998 sampling event. Subsequent quarterly sampling (October 1998 and January 1999) indicated a total lead concentration of 8.38 µg/l and 1.49 µg/l, respectively. A summary of current and historical analytical results at MW-2 is found on Table 1. A copy of the laboratory results is located in Appendix B.

5.0 Conclusions and Recommendations

5.1 MW-5 and Hydraulic Probe Samples

Soil analytical results from the 2.5 foot to 4.5 foot depth interval at MW-5 collected on August 16, 1996 indicate the presence of diesel range organic (DRO) compounds and two volatile organic compounds (VOCs). Soil DRO concentration is 75.4 mg/kg, total xylene concentration is 0.041 mg/kg and the toluene concentration is 0.037 mg/kg indicating compliance with ch. NR 720 generic residual contaminant levels (RCLs) based on protection of groundwater (DRO = 100 mg/kg; total xylenes = 4.1 mg/kg; toluene = 1.5 mg/kg).

Groundwater monitoring events at MW-5 prior to the current additional investigation indicated benzo(a)pyrene benzo(b)fluoranthene concentrations which appear to be in excess of the ch. NR 140 ES. Current investigation of the area surrounding MW-5 to define the degree and extent of PAH contamination indicates no detection of PAHs in MW-5 after purging with a low flow peristaltic pump for the purpose of producing a sediment-free sample. Therefore, the previous PAH concentrations appear to be associated with sampling technique and particulate turbidity. The PAHs are likely bound to the soil particulates and are not impacting the groundwater as demonstrated by this investigation. Three successive quarterly rounds of groundwater have been collected at MW-5 which have demonstrated compliance with the requirements of ch. NR 140.

Groundwater collected from hydraulic probe samples surrounding MW-5 indicates detections of PAH compounds. Total PAH concentrations ranged from 30.8 μ g/l at HP-1A to 538 μ g/l at HP-3A. Collection of a sediment-free hydraulic probe groundwater sample was not possible at this site. Therefore, based on the absence of PAH detections with reduction of turbidity in samples as seen at MW-5 above, it is likely that PAH concentrations in the surrounding hydraulic probe samples are also associated with soil particulates and are not impacting the groundwater. No further investigation appears warranted in the vicinity of MW-5 at this time.

5.2 MW-2 (AOC #5) Samples

Groundwater samples collected from MW-2 (AOC #5 - former Paint Waste Staging Area) indicate no detections above the ch. NR 140 ES for dissolved lead. Four successive quarterly rounds of groundwater have been collected which have demonstrated compliance with the requirements of ch. NR 140 (lead concentrations less than ES of 15 µg/l) and ch. NR 726.05(3). Accordingly, Fraser requests formal closure of AOC #5 with a Deed Restriction to allow soils exceeding the residential RCL for lead based on human health risk from direct contact related to land use to remain in place. WDNR Case Summary, Closeout Forms, and supporting documentation have been prepared and submitted along with this report.

6.0 Standard of Care

The conclusions and recommendations contained in this report were arrived at in accordance with generally accepted professional engineering practice at this time and location. Other than this, no warranty is implied or intended.

GGC/ls/CWI/JEG

Tables

Table 1 – Groundwater Analytical Results

Table 1 **Groundwater Analytical Results**

	NR 140 S	tandards	ndards Well No./Sampling Date																			
Analytical Parameters	ES	PAL			MV	V-2			HP-1	HP-2	HP-3	HP-4	HP-5	HP-6			MW-5			HP-1A	HP-2A	HP-3A
	E9	PAL	8/29/96	11/21/96	10/1/97	8/25/98	10/20/98	1/19/99	10/1/97	10/1/97	10/1/97	10/1/97	10/1/97	10/1/97	8/29/96	11/21/96	8/25/98	10/20/98	1/19/99	8/25/98	8/25/98	8/25/98
Total Dissolved Metals (μg/l)																						-
Chromium	100	10	BDL	BDL				lus:							BDL	BDL						
Cadmium	5	0.5						-2							2.84	BDL						
Lead	15.0	1.5	48.8	34.2	BDL	BDL	3.08	BDL	BDL	1.06	BDL	BDL	BDL	BDL	BDL	BDL						
Total Metals (µg/l)																						
Lead	NSE	NSE				BDL	8.38	1.49														
PAHs ¹ (μg/l)																						
Acenaphthene	NSE	NSE													BDL	BDL	BDL	BDL	BDL	BDL	BDL	9.04
Anthracene	3,000	600													BDL	BDL	BDL	BDL	BDL	0.699	2.77	20.1
Benzo(a)Anthracene	NSE	NSE						1	1						0.97	0.718	BDL	BDL	BDL	2.23	8.06	35.4
Benzo(a)Pyrene	0.2	0.02							1						1.42	0.785	BDL	BDL	BDL	3.27	12.4	27.2
Benzo(b)Fluoranthene	0.2	0.02													0.835	0.684	BDL	BDL	BDL	2.52	8.04	29
Benzo(k)Fluoranthene	NSE	NSE													0.509	0.39	BDL	BDL	BDL	0.972	3.03	11.2
Benzo(ghi)Perylene	NSE	NSE													0.541	0.415	BDL	BDL	BDL	1.78	6.64	14.1
Chrysene	0.2	0.02													BDL	BDL	BDL	BDL	BDL	BDL	BDL	45.5
Dibenzo(a,h)Anthracene	NSE	NSE													BDL	BDL	BDL	BDL	BDL	0.325	1.33	3.26
Fluoranthene	400	80													2.97	BDL	BDL	BDL	BDL	7.69	26.3	142
Fluorene	400	80													BDL	BDL	BDL	BDL	BDL	BDL	BDL	4.21
Indeno(1,2,3-cd)Pyrene	NSE	NSE						1-4		-					0.84	0.565	BDL	BDL	BDL	1.78	6.49	16.2
1-Methyl Naphthalene	NSE	NSE				122									1.01	BDL	BDL	BDL	BDL	0.548	0.226	3.09
2-Methyl Naphthalene	NSE	NSE													BDL	BDL	BDL	BDL	BDL	0.67	0.716	9.06
Naphthalene	40	8.0													0.338	BDL	0.193	BDL	BDL	0.593	BDL	BDL
Phenanthrene	NSE	NSE													1.48	1.03	BDL	BDL	BDL	2.02	7.63	80.8
Pyrene	250	50													4.25	BDL	BDL	BDL	BDL	5.71	21	88.1

NSE = No standard established

BDL = Below laboratory detection limits
--= Not analyzed for

48.8 = Exceeds ch. NR 140 Enforcement Standard (ES)

2.84 = Exceeds ch. NR 140 Preventive Action Limit (PAL)

--- PAH list is not complete; PAHs not listed are BDL

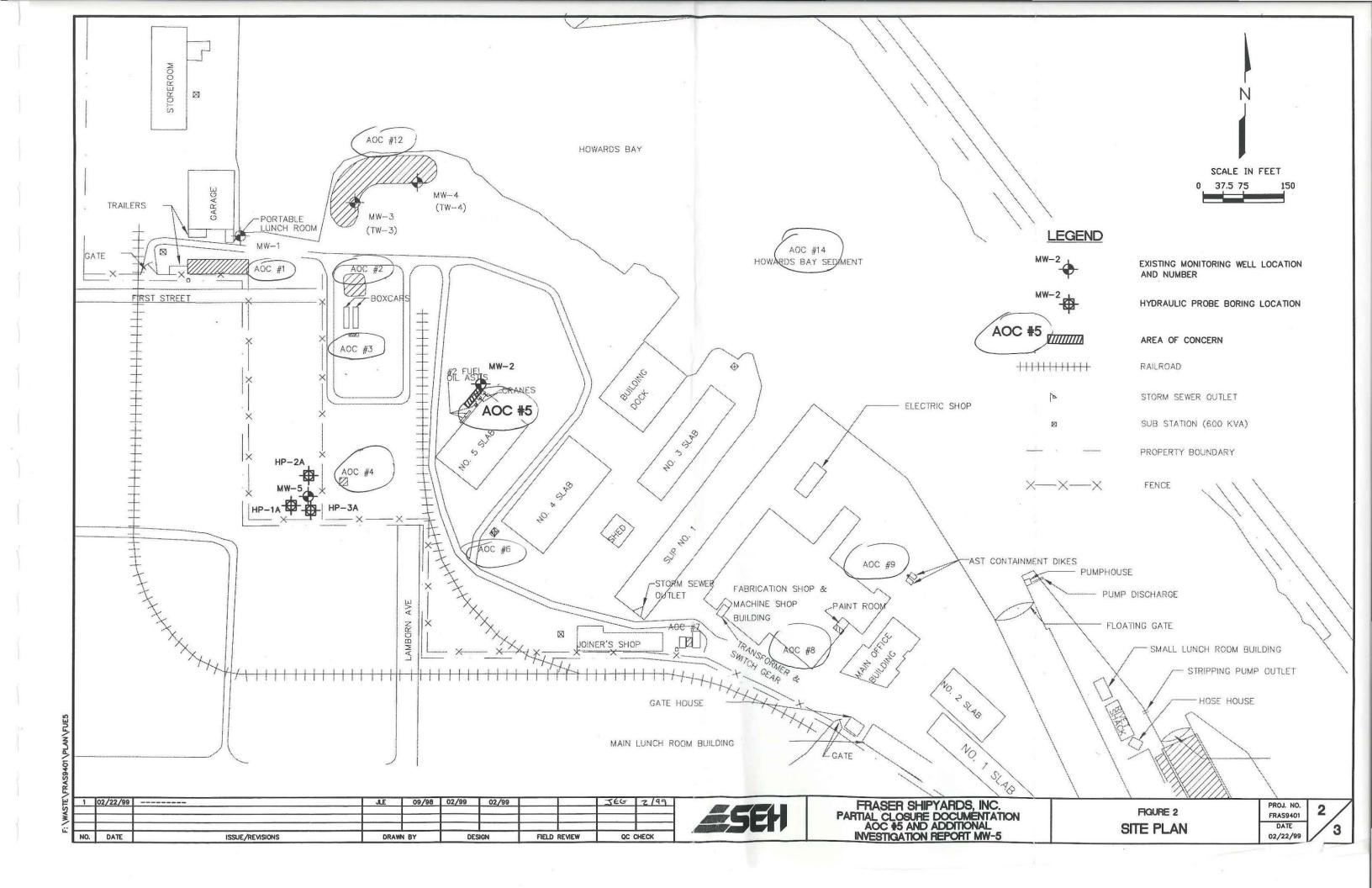
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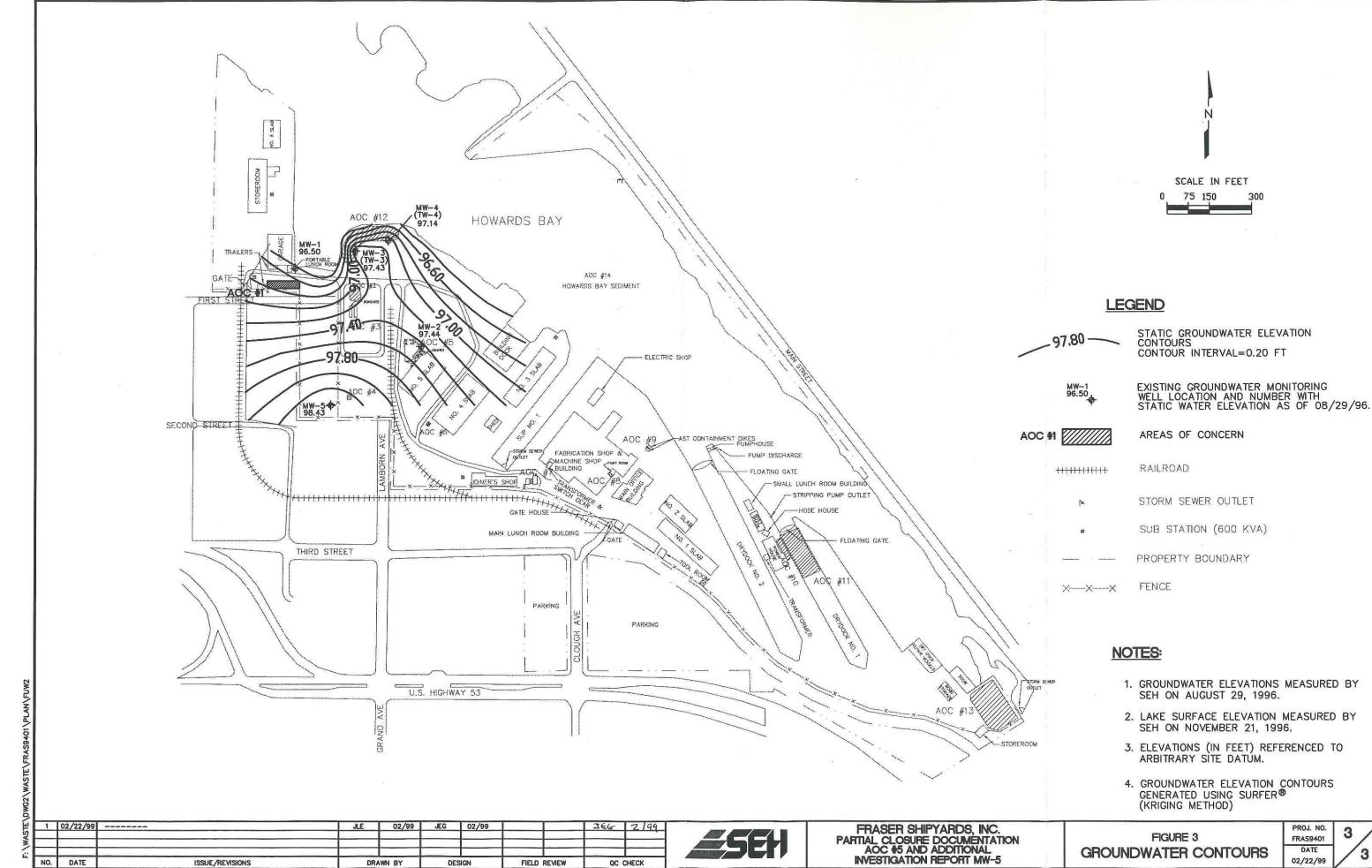
Figures

Figure 1 – Site Location
Figure 2 – Site Plan
Figure 3 – Groundwater Contours

REPRODUCED FROM USGS SUPERIOR QUADRANGLE WISCONSIN - DOUGLAS CO. 7.5 MINUTE SERIES SCALE IN FEET 0 500 1000 2000 West Gat East Gate BAY Basin BasinConnors IANNEL Howard Qil Tanks ВМ Vocational 02/22/99 2/99 03/98 03/98 ISSUE/REVISIONS DATE DESIGN FIELD REVIEW QC CHECK PROJ. NO. FRASER SHIPYARDS, INC. PARTIAL CLOSURE DOCUMENTATION AOC #5 AND ADDITIONAL INVESTIGATION REPORT MW-5 FIGURE 1 FRAS9401 SITE LOCATION DATE 02/22/99

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02/22/99

Appendix A

Soil Boring Documentation

State of Wisconsin Route To: Department of Natural Resources Solid Waste							П	Soil Boring Log Information ☐ Haz. Waste Form 4400-122 7-91								nation 7-91		
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Number	Length (in) Recovered	Blow Counts	Depth In Feet	La	Jii iviaj	or Omi			S	Graphic Log	Well Diagram	PID/FID	Standard Penetration	Moisture Content	Liquid Limit	Plastic Limit	P 200	RQD/ Comments
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Number	Length (in) Recovered	Blow Counts	Depth In Feet	Each	Major U	Jnit		SC	aphi	Log	Well Diagram	PID/FID	Standard Penetration	Moisture Content	Liquid	Plastic Limit	P 200	RQD/ Comments
$-\tilde{z}$	73 %	BI	ă	DI' 1 1 'II 1	0.0.6			D	5	3	N I	PI	Sta	Σő	בב	P I	Ь	20
			E	Blind drilled to 8	s.υ π.		2				• 7							
				Screened interval Black peatlike rescreen End of Hydraulic	esidual o	n bo	ttom of											
I hereb	y certif	y that t	he infor	rmation on this form is	true and o	согте	et to the bes	t of my l	cnowl	edge	e.							
Signatu	ire Z	br	- (. Sulf	7		F	irm	\$ -	(1	Chip	421 F pewa Fa 715-720	alls, W	. 5472		20-630	0

This form is authorized by Chapters 144, 147 and 162, Wis. Stats. Completion of this report is mandatory. Penalties: Forfeit not less than \$10 nor more than \$5,000 for each violation. Fined not less than \$10 or more than \$100 or imprisoned not less than 30 days, or both for each violation. Each day of continued violation is a separate offense, pursuant to ss 144.99 and 162.06, Wis. Stats.

State of Wisconsin Route To: Department of Natural Resources Solid Waste							☐ Haz. Waste Soil Boring Log Information Form 4400-122 7-								nation 7-91	
•				☐ Eme	ergency Respon	nse 🗆 t	Underground Tanks									
		2		☐ Was	tewater		Vater Re	sources					Pa	ge 1	of	1
	ty/Proje						and the same of th	/Permit	/Monito	ing Nu	mber		g Num			
	ASER		An All Transfer office	me and name of crew c	hiaf		Date D	illing S	tomed	Da	te Drilli	HP.	100	Drilli	na Ma	thad
				s / Guy Paquette	illel)		Date D	8/25/		Da		25/98	-			c Prob
DVD	5 111	347 H &	133		la w.i		F: -1 C			- C	rface Ele			Borehole		
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	Locati	on			N E		La	_	11		cal Grid	ATTO SERVICE AND ADDRESS.		pplicabl		
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Count	y		17	4 of Section	1 11,10	DNR Cou		e Civi	l Town/				-		1 001	_ "_
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iber	th (လိ	h In		Major Unit		0	hic	Tam	FID	dard	sture	Pi t	.9 -	0)/ men
Number	Length (in) Recovered	Blow Counts	Depth In Feet				5	Grap	Log Well Diagram	PID/FID	Standard Penetration	Moisture Content	Limit	Plastic Limit	P 200	RQD/ Comments
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I hereb				mation on this form is			- 2	knowle	ige.							
Jigilall	9	olu	~	E. Suly		F	Firm	5	EH	Chip	421 F ppewa F 715-720	alls, W	. 547		0-6300)

This form is authorized by Chapters 144, 147 and 162, Wis. Stats. Completion of this report is mandatory. Penalties: Forfeit not less than \$10 nor more than \$5,000 for each violation. Fined not less than \$10 or more than \$100 or imprisoned not less than 30 days, or both for each violation. Each day of continued violation is a separate offense, pursuant to ss 144.99 and 162.06, Wis. Stats.

All abandonment work shall be performed in accordance with the provisions of Chapters NR 111, NR 112 or 141, Wis. Admin. Code, whichever is applicable. Also, see instructions on back.

	***	1.0.	D . O.			
(1)	GENERAL INFORMATION	(2)		ITY NAME al Well Owner	FRASER SHI	PYARD
	Well/Drillhole/Borehole County		-		150	
9	Location DOUGLAS	_		ser Shipyar	ds	
	∐ E		7.2.3.3.3.3.3.3	t Well Owner		
	1/4 of 1/4 of Sec ; T N; R W			ser Shipyar	ds	
ASTRO-	(If Applicable)		Street	or Route		
	Gov't Lot Grid Number		Thir	rd St and C	lough Ave	
	Grid Location		City, S	state, Zip Code	e	•
	ft. \(\simeg \) N. \(\simeg \) S., \(\left(\simeg \) ft. \(\simeg \) E. \(\simeg \) W.		Sup	erior, Wi 5	4880	
	Civil Town Name		Facility	y Well No. an	d/or Name (If Ap	oplicable) WI Unique Well No.
			HP-	-1A		
-	Street Address of Well			For Abandon	ment	
			Hyd	Iraulic Prob	e Completed	
-	City, Village			f Abandonmer		
	SUPERIOR		8/25			
WE	LL/DRILLHOLE/BOREHOLE INFORMATION	_	0/25	70		
(Lings and		(4)	Denth	to Water (Feet	5 ft.	
(3)		(4)	_	& Piping Rem	,	es 🗆 No 🖾 Not Applicable
	(Date)			Removed?		res \square No \boxtimes Not Applicable
	Marinala Wall	1				es \square No \boxtimes Not Applicable
				Removed?		es No Not Applicable
	The state of the s		Casing	Left in Place?		
	Drillhole		If No,	Explain	Casing Used	
	⊠ Borehole					D Ø
				_	Below Surface?	Yes No
	Construction Type:	1		-	Rise to Surface?	
	Drilled Driven (Sandpoint) Dug				fter 24 Hours?	Yes No
	Other (Specify) Hydraulic Probe		If Yes,	Was Hole Re	topped?	☐ Yes ☐ No
		(5)	Require	ed Method of	Placing Sealing 1	Material
	Formation Type:			nductor Pipe -		Conductor Pipe - Pumped
	☐ Unconsolidated Formation ☐ Bedrock			mp Bailer		Other (Explain)
	Total Well Depth (ft) Casing Diameter (ins.)	(6)		Materials		For monitoring wells and
	(From groundsurface)	(0)		at Cement Gro	unt	monitoring well boreholes only
	,				oncrete) Grout	monitoring went borenoies only
	Casing Depth (Ft.) N/A	1		ncrete	merete) Grout	Bentonite Pellets
			=	y-Sand Slurry		Granular Bentonite
	Was Well Annular Space Grouted?	1		ntonite-Sand S		Bentonite-Cement Grout
	If Yes, To What Depth? N/A Feet			ipped Bentonit		' Bentonne-Cement Grout
(7)		<u> </u>		rpped Belitolin		
(7)	Sealing Material Used	Fro	m (Ft.)	To (Ft.)	No. Yards, Sacks Sealant	Mix Ratio or Mud Weight
		1.0	(1)	10 (11.)	or Volume	With Ratio of Wide Weight
LI.	vdrated Bentonite	C.,	ırface	8.0	5 lbs.	
	An area demonite	Su	Trace	8.0	3 108.	
						,
(8)	Comments					
-	Total State Control of the Control o	_				
(9)	Name of Person or Firm Doing Sealing Work		(10)	FOI	ONR OR COU	NTY USE ONLY
	Short Elliott Hendrickson Inc.		Date	Received/Insp	ected	District/County
2.	Signature of Person Doing Work Date Signed	1				
3	John C. Sull 8-26-98		Revie	wer/Inspector		
,	Street or Route Telephone Number					
	421 Frenette Dr. (715) 720-6200		Folio	w-up Necessar	Y	
10	City, State, Zip Code	1				
	Chinnewa Falls WI 54720		80000000			

All abandonment work shall be performed in accordance with the provisions of Chapters NR 111, NR 112 or 141, Wis. Admin. Code, whichever is applicable. Also, see instructions on back.

WellDrillhole/Borchole County DOUGLAS	(1)	GENERAL INFORMATION		(2)	FACII	ITY NAME	FRASER SHII	PYARD
Location DOUGLAS Fraser Shinyards Fraser Shipyards Fraser Sh	(1)		County	(2)				TARD
Present Well Owner Present Mell Owner Present			The same of the same and the same same same same same same same sam					
Fraser Shipyards Fraser Shipyards Street or Route Fraser Shipyards Street or Route Street Street or Route		Location	DOUGLAS					
Street or Route Grid Location Grid			□ E		Presen	t Well Owner		
Street or Route Grid Location Grid		1/4 of 1/4 of Sec	: T N: R 🗆 W	1	Fra	ser Shipyar	ds	
Gov't Lot Grid Number Grid Location Grid Stand Clough Ave Superior, Wij 54880 Superior, Wij 54880 Superior, Wij 54880 Superior, Wij 54880 Reason For Abandonment Hydratlic Probe Completed Date of Bandonment Hydratlic Probe Completed Date of Abandonment Hydratlic Probe Completed Date of Abandonment Hydratlic Probe Completed Date of Abandonment Hydratlic Probe Completed Date of Bandonment Hydratlic Probe Completed Date of Abandonment Hydratlic Probe Completed Date of Bandonment Hydratlic Probe Completed Date of Bandon		(If Applicable)						
Ciry I Town Name Ciry I Town Name			Cold Nomber	1	Thi	ed St and C	lough Ave	
Superior, Wi 54380 Superior, Wi 54380 Superior, Wi 54380 Superior, Wi 54380 Surface Superior, Wi 54380 Superior, Wi 54380 Surface Superior, Wi 54380	-	Crid Leasting	Grid Number	+-				
Facility Well No. and/or Name (If Applicable) WI Unique Well No. HP-2A								*
HP-2A Reason For Abandonment Hydraulic Probe Completed Date of Abandonment Hydraulic Probe Date Suprised Date of Abandonment Hydraulic Probe Date Suprised D			ft. \sqcup E. \sqcup W.		Sup	erior, Wi 5	4880	
Reason For Abandonment Hydrarulic Probe Completed		Civil Town Name			Facility	Well No. an	d/or Name (If Ap	oplicable) WI Unique Well No
City, Village SUPERIOR Date of Abandomment SY25/98					HP-	2A		
Date of Abandomment SV25/98 WEL/DRILLHOLE/BOREHOLE INFORMATION		Street Address of Well			Reasor	For Abandon	nment	
Date of Abandomment SV25/98 WEL/DRILLHOLE/BOREHOLE INFORMATION					Hyd	raulic Prob	e Completed	
SUPERIOR SUPERIOR WELL/DRILLHOLE/BOREHOLE INFORMATION	-	City Village		+				
WELL/DRILLHOLE/BOREHOLE INFORMATION Gorginal Well/Drillhole/Borehole Construction Completed On (Date) Water Well Construction Report Available? Water Well Yes No Not Applicable Casing Left in Place? Yes No Was Casing Cut Off Below Surface? Yes No Did Sealing Material Rise to Surface? Yes				1				80
Construction Completed On (Date) Construction Report Available? Construction Type: Drillhole Pres			OD MINION	400	8/23	0/98		
Charle Charles Charl	WE	LL/DRILLHOLE/BOREHOLE INFO	ORMATION	1			F.C.	
Construction Report Available? Screen Removed? Yes No Not Applicable Casing Left in Place? Yes No Not Applicable Screen Removed? Yes No Not Applicable Not Not Applicable Not Not Applicable Not Not Applicable Not	(3)	Original Well/Drillhole/Borehole C	Construction Completed On	(4)	Depth	to Water (Fee	t) <u>5 ft.</u>	
Monitoring Well Construction Report Available? Screen Removed? Yes No Not Applicable Casing Left in Place? Yes No Not Casing Left in Place? Yes	8.15	Description of the second of t	•		Pump &	& Piping Rem	oved?	es 🗌 No 🖾 Not Applicat
Monitoring Well Water Well Water Well Water Well Yes No Not Applicable		(2410)						es No Not Applicat
Water Well		Manitoring Well	Construction Penort Available?					
Drillhole Borehole Was Casing Cut Off Below Surface? Yes No Did Sealing Material Rise to Surface? Yes No Did Sealing Material Rise to Surface? Yes No Did Material Settle After 24 Hours? Yes No Did Material Settle After 24 Hours? Yes No Did Material Settle After 24 Hours? Yes No No No No No No No N								
Sorehole Was Casing Cut Off Below Surface? Yes No			Yes 🖾 No		Casing	Left in Place		
Was Casing Cut Off Below Surface? Yes No Did Sealing Material Rise to Surface? Yes No No No No No No No N			*	1	If No,	Explain - 190	Cashig Used	1
Construction Type: Drilled				1				
Drilled Driven (Sandpoint) Dug Other (Specify) Hydraulic Probe Dug Formation Type: Unconsolidated Formation Bedrock Casing Diameter (ins.) Gealing Material Conductor Pipe - Gravity Conductor Pipe - Pumped Dump Bailer Other (Explain) Conductor Pipe - Formation Dump Bailer Dump Baile					Was Ca	asing Cut Off	Below Surface?	☐ Yes ⊠ No
Drilled Driven (Sandpoint) Dug Other (Specify) Hydraulic Probe Dug Formation Type: Unconsolidated Formation Bedrock Casing Diameter (ins.) Gealing Material Conductor Pipe - Gravity Conductor Pipe - Pumped Dump Bailer Other (Explain) Conductor Pipe - Formation Dump Bailer Dump Baile		Construction Type:			Did Sea	aling Material	Rise to Surface?	✓ Yes ✓ No
Some of Person or Firm Doing Sealing Work Signature of Person Doing Work Signature of Person Doing Sealing Work Signature of Person Doing Work Street or Route Str			(Sandpoint) Dug					
Sometiments		M Other (Service) Hydraulic	Probe	1				
Conductor Pipe - Gravity Conductor Pipe - Pumped		Other (Specify) 11 dradie	11000		II res,	was Hole Re	topped?	LI TES LI NO
Conductor Pipe - Gravity Conductor Pipe - Pumped				(5)	Require	ed Method of	Placing Sealing N	Material
Dump Bailer Other (Explain)		Formation Type:		0.5				
Total Well Depth (ft)		□ Unconsolidated Formation	Bedrock	1				
Neat Cement Grout Sand-Cement (Concrete) Grout Granular Bentonite Pellets Granular Space Grouted? Yes No Unknown If Yes, To What Depth? N/A Feet Clay-Sand Slurry Bentonite-Cement Grout Bentonite-Cement Grout Bentonite-Cement Grout Bentonite-Cement Grout Reviewer/Inspector Sand-Cement (Concrete) Granular Bentonite Granular Bentonite Bentonite-Cement Grout Reviewer/Inspector Granular Bentonite Granular Bentonite Surface Sufface Suffac		usa - et suest "telenario - en arterio - e	20 000 Table 1000 No.					
Sand-Cerrent (Concrete) Grout Granular Bentonite Pellets Granular Bentonite Pellets Granular Bentonite Granular Bentonite Bentonite-Cement Grout Granular Bentonite Granular Bentonite Bentonite-Cement Grout Granular Bentonite Bentonite-Cement Grout Granular Bentonite Granular Be			Casing Diameter (ins.)	(6)				
Casing Depth (Ft.) N/A Was Well Annular Space Grouted? Yes No Unknown If Yes, To What Depth? Sealing Material Used Repet Clay-Sand Slurry Bentonite Bentonite Chipped Bentonite Chipped Bentonite Sealing Material Used From (Ft.) To (Ft.) Sacks Sealant or Volume Surface 8.0 5 lbs. 8. Comments Surface Surface (9) Name of Person or Firm Doing Sealing Work Signature of Person Doing Work Signature of Person Doing Work Surface Surface (10) FOR DNR OR COUNTY USE ONLY Date Received/Inspected District/County Reviewer/Inspector Follow-up Necessary Follow-up Necessary		(From groundsurface)			☐ Ne	at Cement Gro	out	monitoring well boreholes or
Was Well Annular Space Grouted?					☐ Sar	d-Cement (Co	oncrete) Grout	
Was Well Annular Space Grouted? Yes No		Casing Depth (Ft.) N/A			Co	ncrete		Bentonite Pellets
Was Well Annular Space Grouted? If Yes, To What Depth? Sealing Material Used From (Ft.) To (Ft.) No. Yards, Sacks Sealant or Volume				ĺ				후 - [1]입도
If Yes, To What Depth? N/A Feet		Was Well Annular Space Grouted?	Ves No I Inknown					
Chipped Bentonite Mix Ratio or Mud Weight or Volume Chipped Bentonite Chipped			NT / A					Bentonite-Cement Grout
Hydrated Bentonite Surface S		ii res, ro what Deptil:	reet		LJ Chi	ipped Bentoni	te	
Hydrated Bentonite Surface Surface 8.0 5 lbs. (8) Comments (9) Name of Person or Firm Doing Sealing Work Signature of Person Doing Work Signature of Person Doing Work Signature of Person Doing Work Surface (10) FOR DNR OR COUNTY USE ONLY Date Received/Inspected District/County Reviewer/Inspector Reviewer/Inspector Follow-up Necessary Follow-up Necessary	(7)			Const	7500 A		No. Yards,	related that the section of the
Hydrated Bentonite Surface 8.0 5 lbs. (8) Comments (9) Name of Person or Firm Doing Sealing Work Signature of Person Doing Work Surface 8.0 5 lbs. (10) FOR DNR OR COUNTY USE ONLY Date Received/inspected District/County Reviewer/Inspector Reviewer/Inspector Follow-up Necessary		Sealing Ma	terial Used	Fro	m (Ft.)	To (Ft.)	Sacks Sealant	Mix Ratio or Mud Weight
(8) Comments (9) Name of Person or Firm Doing Sealing Work Signature of Person Doing Work Signature of Person Doing Work Street or Route 421 Frenette Dr. City, State, Zip Code (10) FOR DNR OR COUNTY USE ONLY Date Received/Inspected District/County Reviewer/Inspector Follow-up Necessary					-		or volume	-
(8) Comments (9) Name of Person or Firm Doing Sealing Work Signature of Person Doing Work Signature of Person Doing Work Street or Route 421 Frenette Dr. City, State, Zip Code (10) FOR DNR OR COUNTY USE ONLY Date Received/Inspected District/County Reviewer/Inspector Follow-up Necessary	H	vdrated Bentonite		Su	rface	8.0	5 lbs	
(9) Name of Person or Firm Doing Sealing Work Signature of Person Doing Work Signature of Person Doing Work Street or Route 421 Frenette Dr. City, State, Zip Code (10) FOR DNR OR COUNTY USE ONLY Date Received/Inspected Reviewer/Inspector Follow-up Necessary						0.0	5 100.	
(9) Name of Person or Firm Doing Sealing Work Signature of Person Doing Work Signature of Person Doing Work Street or Route 421 Frenette Dr. City, State, Zip Code (10) FOR DNR OR COUNTY USE ONLY Date Received/Inspected Reviewer/Inspector Follow-up Necessary								
(9) Name of Person or Firm Doing Sealing Work Signature of Person Doing Work Signature of Person Doing Work Street or Route 421 Frenette Dr. City, State, Zip Code (10) FOR DNR OR COUNTY USE ONLY Date Received/Inspected Reviewer/Inspector Follow-up Necessary								
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(9) Name of Person or Firm Doing Sealing Work Signature of Person Doing Work Signature of Person Doing Work Street or Route 421 Frenette Dr. City, State, Zip Code (10) FOR DNR OR COUNTY USE ONLY Date Received/Inspected Reviewer/Inspector Follow-up Necessary								'
(9) Name of Person or Firm Doing Sealing Work Signature of Person Doing Work Signature of Person Doing Work Street or Route 421 Frenette Dr. City, State, Zip Code (10) FOR DNR OR COUNTY USE ONLY Date Received/Inspected Reviewer/Inspector Follow-up Necessary	_							
(9) Name of Person or Firm Doing Sealing Work Signature of Person Doing Work Signature of Person Doing Work Street or Route 421 Frenette Dr. City, State, Zip Code (10) FOR DNR OR COUNTY USE ONLY Date Received/Inspected Reviewer/Inspector Follow-up Necessary	(8)	Comments						
Signature of Person Doing Work Street or Route 421 Frenette Dr. City, State, Zip Code Date Signed Reviewer/Inspector Date Received/inspected District/County Reviewer/Inspector Follow-up Necessary				_	· Constitution			
Signature of Person Doing Work Street or Route 421 Frenette Dr. City, State, Zip Code Date Signed Reviewer/Inspector Follow-up Necessary Date Received/Inspected District/County Reviewer/Inspector Follow-up Necessary	(9)	Name of Person or Firm Doing Seal	ing Work	1	(10)	FO	R DNR OR COU	NTY USE ONLY
Signature of Person Doing Work Signature of Person Doing Work 8-2(-9) Street or Route Telephone Number 421 Frenette Dr. (715) 720-6200 City, State, Zip Code Reviewer/Inspector Follow-up Necessary		Short Elliott He	endrickson Inc	1	600000000000000000000000000000000000000			
Street or Route 421 Frenette Dr. (715) 720-6200 City, State, Zip Code Reviewer/Inspector Reviewer/Inspector Follow-up Necessary				1			CAACO	District County
Street or Route / Telephone Number 421 Frenette Dr. (715) 720-6200 City, State, Zip Code Follow-up Necessary		70 3 401						
421 Frenette Dr. (715) 720-6200 Follow-up Necessary			0-66-16	1	Kevie	wer/inspector		
City, State, Zip Code		The second secon						
City, State, Zip Code		421 Frenette Dr.	(715) 720-6200		Folio	w-up Necessa	У	
Chippewa Falls, WI 54729		City, State, Zip Code		1				
		Chippewa Falls, WI 54729			***********			

All abandonment work shall be performed in accordance with the provisions of Chapters NR 111, NR 112 or 141, Wis. Admin. Code, whichever is applicable. Also, see instructions on back.

(1) GENERAL INFORMATION	(2) FACILITY NAME FRASER SHIPYARD
Well/Drillhole/Borehole County	Original Well Owner (If Known)
Location DOUGLAS	Fraser Shipyards
E	Present Well Owner
1/4 of 1/4 of Sec ; T N; R \bigsim W	Fraser Shipyards
(If Applicable)	Street or Route
Gov't Lot Grid Number	Third St and Clough Ave
Grid Location	City, State, Zip Code
ft. \(\simeg \) N. \(\simeg \) S., \(\left(\simeg \) ft. \(\simeg \) E. \(\simeg \) W.	Superior, Wi 54880
Civil Town Name	Facility Well No. and/or Name (If Applicable) WI Unique Well No.
	HP-3A
Street Address of Well	Reason For Abandonment
	Hydraulic Probe Completed
City, Village	Date of Abandonment
SUPERIOR	8/25/98
WELL/DRILLHOLE/BOREHOLE INFORMATION	
	(4) Depth to Water (Feet) 5 ft.
	Pump & Piping Removed?
(Date)	Liner(s) Removed?
Monitoring Well Construction Report Available?	Screen Removed? Yes No Not Applicable
☐ Water Well ☐ Yes ☐ No	Casing Left in Place? Yes No
Drillhole	If No, Explain No Casing Used
⊠ Borehole	II 10, Explain
Dotellole	Was Casing Cut Off Below Surface? ☐ Yes ☒ No
Comptension Towns	Did Sealing Material Rise to Surface? Yes No
Construction Type:	Did Sealing Material Rise to Surface? Yes No
☐ Drilled ☐ Driven (Sandpoint) ☐ Dug ☐ Other (Specify) ☐ Hydraulic Probe	Control of the Contro
Other (Specify)	If Yes, Was Hole Retopped?
P	(5) Required Method of Placing Sealing Material
Formation Type:	☐ Conductor Pipe - Gravity ☐ Conductor Pipe - Pumped
Unconsolidated Formation	☐ Dump Bailer ☐ Other (Explain)
Total Well Depth (ft) Casing Diameter (ins.)	(6) Sealing Materials For monitoring wells and
(From groundsurface)	Neat Cement Grout monitoring well boreholes only
	Sand-Cement (Concrete) Grout
Casing Depth (Ft.) N/A	☐ Concrete ☐ Bentonite Pellets
	☐ Clay-Sand Slurry ☐ Granular Bentonite
Was Well Annular Space Grouted? ☐ Yes ☒ No ☐ Unknown	☐ Bentonite-Sand Slurry ☐ Bentonite-Cement Grout
If Yes, To What Depth? N/A Feet	Chipped Bentonite
(7)	
(7) Sealing Material Used	From (Ft.) To (Ft.) Sacks Sealant Mix Ratio or Mud Weight
A CONTRACTOR OF THE CONTRACTOR	or Volume
Hydrated Bentonite	Surface 8.0 5 lbs.
Trydrated Belliointe	Surface 8.0 5 lbs.
(8) Comments	¥
(9) Name of Person or Firm Doing Sealing Work	(10) FOR DNR OR COUNTY USE ONLY
Short Elliott Hendrickson Inc.	Date Received/Inspected District/County
Signature of Person Doing Work Date Signed	
John C. Sull 8-76-98	Reviewer/Inspector
Street or Route Telephone Number	
421 Frenette Dr. (715) 720-6200	Follow-up: Necessary
City, State, Zip Code	
Chippewa Falls, WI 54729	

Appendix B

Laboratory Results

U.S. FILTER/ENVIROSCAN 301 WEST MILITARY ROAD ROTHSCHILD, WI 54474

TELEPHONE 715-359-7226 FACSIMILE 715-355-3221

September 4, 1998

Short Elliott Henderickson 421 Frenette Drive Chippewa Falls , WI 54729

SEP 8 1000

Attn: John Guhl

Please find enclosed the analytical results for the samples received August 27, 1998.

The chain of custody document is enclosed.

If you have any questions about the results, please call. Thank you for using US Filter/Enviroscan for your analytical needs.

Sincerely,

US Filter/Enviroscan

Cindy K. Varga

Senior Analytical Chemist

U.S.FILT

Short Elliott Henderickson 421 Frenette Drive Chippewa Falls , WI 54729

CUST NUMBER:

SAMPLED BY: Client DATE REC'D: 08/27/98 REPORT DATE: 09/04/98

PREPARED BY: CKV REVIEWED BY:

Attn: John Guhl

					,	
		Reporting	MW-5		Date	
	Units	Limit	08/25/98	<u>Qualifier</u> s	Analyzed	By
EPA 8310						
Acenaphthene	$\mu g/1$	0.11	X		09/02/98	GLS
Acenaphthylene	$\mu g/1$	0.08	X		09/02/98	GLS
Anthracene	$\mu g/1$	0.03	X X X		09/02/98	GLS
Benzo (a) Anthracene	$\mu g/1$	0.06	x		09/02/98	GLS
Benzo(a) Pyrene	$\mu g/1$	0.06	X		09/02/98	GLS
Benzo(b) Fluoranthene	$\mu g/1$	0.03	X		09/02/98	GLS
Benzo(k) Fluoranthene	$\mu g/1$	0.03	X		09/02/98	GLS
Benzo (ghi) Perylene	$\mu g/1$	0.05	X		09/02/98	GLS
Chrysene	$\mu g/1$	0.04	X		09/02/98	GLS
Dibenzo (a, h) Anthracene	$\mu g/1$	0.06	X		09/02/98	GLS
Fluoranthene	$\mu g/1$	0.04	Х .		09/02/98	GLS
Fluorene	$\mu g/1$	0.04	X X		09/02/98	GLS
Indeno(1,2,3-cd)Pyrene	$\mu g/1$	0.04	X		09/02/98	GLS
1-Methyl Naphthalene	$\mu g/1$	0.06	X X		09/02/98	GLS
2-Methyl Naphthalene	$\mu g/1$	0.07	X		09/02/98	GLS
Naphthalene	$\mu g/1$	0.05	0.193		09/02/98	GLS
Phenanthrene	$\mu g/1$	0.08	X		09/02/98	GLS
Pyrene	$\mu g/1$	0.17	X		09/02/98	GLS
Liquid Organic Extraction		-	COMP		08/28/98	CKV
Analytical No.:			47569			



Short Elliott Henderickson 421 Frenette Drive Chippewa Falls , WI 54729 CUST NUMBER:

SAMPLED BY: Client DATE REC'D: 08/27/98 REPORT DATE: 09/04/98

PREPARED BY: CKV

REVIEWED BY:

Attn: John Guhl

			Reporting	HP-1A		Date	
		Units	Limit	08/25/98	<u>Oualifiers</u>	Analyzed	By
	EPA 8310						
	Acenaphthene	$\mu g/1$	0.11	X		09/02/98	GLS
	Acenaphthylene	$\mu g/1$	0.08	X X		09/02/98	GLS
	Anthracene	$\mu g/1$	0.03	0.699		09/02/98	GLS
	Benzo (a) Anthracene	$\mu g/1$	0.06	2.23		09/02/98	GLS
	Benzo (a) Pyrene	$\mu g/1$	0.06	3.27		09/02/98	GLS
	Benzo(b) Fluoranthene	$\mu g/1$	0.03	2.52		09/02/98	GLS
	Benzo(k) Fluoranthene	$\mu g/1$	0.03	0.972		09/02/98	GLS
	Benzo (ghi) Perylene	$\mu g/1$	0.05	1.78		09/02/98	GLS
	Chrysene	$\mu g/1$	0.04	X		09/02/98	GLS
	Dibenzo (a, h) Anthracene	$\mu g/1$	0.06	0.325		09/02/98	GLS
	Fluoranthene	$\mu g/1$	0.04	7.69		09/02/98	GLS
	Fluorene	$\mu g/1$	0.04	X		09/02/98	GLS
	Indeno(1,2,3-cd)Pyrene	$\mu g/1$	0.04	1.78		09/02/98	GLS
	1-Methyl Naphthalene	$\mu g/1$	0.06	0.548		09/02/98	GLS
	2-Methyl Naphthalene	$\mu g/1$	0.07	0.670		09/02/98	GLS
	Naphthalene	$\mu g/1$	0.05	0.593		09/02/98	GLS
	Phenanthrene	$\mu g/1$	0.08	2.02		09/02/98	GLS
Y	Pyrene	$\mu g/1$	0.17	5.71		09/02/98	GLS
	Liquid Organic Extraction		-	COMP		08/28/98	CKV
i	Application No.			47570			
ľ.	Analytical No.:			47570			

I.S.FILT

Short Elliott Henderickson 421 Frenette Drive Chippewa Falls , WI 54729

Attn: John Guhl

CUST NUMBER:

SAMPLED BY: Client DATE REC'D: 08/27/98 REPORT DATE: 09/04/98

PREPARED BY: CKV

REVIEWED BY:

		Reporting	HP-2A		Date	
	Units	Limit	08/25/98	<u>Qualifiers</u>	Analyzed	By
EPA 8310						
Acenaphthene	$\mu g/1$	0.11	X		09/02/98	GLS
Acenaphthylene	$\mu g/1$	0.08	X		09/02/98	GLS
Anthracene	$\mu g/1$	0.03	2.77		09/02/98	GLS
Benzo (a) Anthracene	$\mu g/1$	0.06	8.06		09/02/98	GLS
Benzo(a) Pyrene	$\mu g/1$	0.06	12.4		09/02/98	GLS
Benzo(b) Fluoranthene	$\mu g/1$	0.03	8.04		09/02/98	GLS
Benzo(k) Fluoranthene	$\mu g/1$	0.03	3.03		09/02/98	GLS
Benzo (ghi) Perylene	$\mu g/1$	0.05	6.64		09/02/98	GLS
Chrysene	$\mu g/1$	0.04	X		09/02/98	GLS
Dibenzo (a, h) Anthracene	$\mu g/1$	0.06	1.33.		09/02/98	GLS
Fluoranthene	$\mu g/1$	0.40	26.3		09/03/98	GLS
Fluorene	$\mu g/1$	0.04	X		09/02/98	GLS
Indeno(1,2,3-cd)Pyrene	$\mu g/1$	0.04	6.49		09/02/98	GLS
1-Methyl Naphthalene	$\mu g/1$	0.06	0.226		09/02/98	GLS
2-Methyl Naphthalene	$\mu g/1$	0.07	0.716		09/02/98	GLS
Naphthalene	$\mu g/1$	0.05	X		09/02/98	GLS
Phenanthrene	μ g/l	0.08	7.63		09/02/98	GLS
Pyrene	$\mu g/1$	1.7	21.0		09/03/98	GLS
Liquid Organic Extraction		-	COMP		08/28/98	CKV
Analytical No.:			47571			



Short Elliott Henderickson 421 Frenette Drive Chippewa Falls , WI 54729

Attn: John Guhl

CUST NUMBER:

SAMPLED BY: Client DATE REC'D: 08/27/98 REPORT DATE: 09/04/98

PREPARED BY: CKV

REVIEWED BY:

	** **	Reporting	HP-3A	0 1 1 5 1	Date	
	Units	Limit	08/25/98	<u>Qualifier</u> s	Analyzed	By
EPA 8310						
Acenaphthene	$\mu g/1$	0.11	9.04		09/02/98	GLS
Acenaphthylene	$\mu g/1$	0.08	X		09/02/98	GLS
Anthracene	$\mu g/1$	0.6	20.1		09/03/98	GLS
Benzo (a) Anthracene	$\mu g/1$	1.2	35.4		09/03/98	GLS
Benzo(a) Pyrene	$\mu g/1$	1.2	27.2	CSL	09/03/98	GLS
Benzo(b) Fluoranthene	$\mu g/1$	0.6	29.0		09/03/98	GLS
Benzo(k) Fluoranthene	$\mu g/1$	0.03	11.2		09/02/98	GLS
Benzo (ghi) Perylene	$\mu g/1$	0.05	14.1		09/02/98	GLS
Chrysene	$\mu g/1$	0.8	45.5		09/03/98	GLS
Dibenzo (a, h) Anthracene	$\mu g/1$	0.06	3.26		09/02/98	GLS
Fluoranthene	$\mu g/1$	0.8	142.		09/03/98	GLS
Fluorene	$\mu g/1$	0.04	4.21		09/02/98	GLS
Indeno(1,2,3-cd)Pyrene	$\mu g/1$	0.04	16.2		09/02/98	GLS
1-Methyl Naphthalene	$\mu g/1$	0.06	3.09		09/02/98	GLS
2-Methyl Naphthalene	$\mu g/1$	0.07	9.06		09/02/98	GLS
Naphthalene	$\mu g/1$	0.05	X		09/02/98	GLS
Phenanthrene	$\mu g/1$	1.6	80.8		09/03/98	GLS
Pyrene	$\mu g/1$	3.4	88.1		09/03/98	GLS
Liquid Organic Extraction		100	COMP		08/28/98	CKV
Analytical No.:			47572			

UN/10/00 THE 10.02 FAA 110 000 0221

UNITED STATES FILTER CORPORATION

Short Elliott Henderickson 421 Frenette Drive Chippewa Falls , WI 54729

CUST NUMBER:

SAMPLED BY: Client DATE REC'D: 08/27/98 REPORT DATE: 09/04/98

PREPARED BY: CKV

REVIEWED BY:

Attn: John Guhl

Analytical No.:

	Units	Reporting Limit	MW-2 UNFILTERED 08/25/98	<u>Oualifiers</u>	Date Analyzed	Ву
EPA 7421 Lead (GFAAS)	μg/l	1.0	×		08/28/98	JCH
Analytical No.:			47573			
	Units	Reporting Limit	MW-2 FILTERED 08/25/98	<u>Qualifier</u> s	Date Analyzed	Ву
EPA 7421 Sol. Lead (GFAAS)	μg/l	1.0	x		08/28/98	JCH

47574

U.S. FILLER



Short Elliott Henderickson 421 Frenette Drive Chippewa Falls , WI 54729

Attn: John Guhl

Qualifier Descriptions

CUST NUMBER:

SAMPLED BY: Client DATE REC'D: 08/27/98 REPORT DATE: 09/04/98

PREPARED BY: CKV REVIEWED BY: \r.

KH

CSL

Check standard for this analyte exhibited a low bias. Sample results may also be biased low. Non-detects verified with a low standard comparison.

REQUEST FOR SERVICES

U.S. FILTER/ENVIR	OSCAN	301	W. MIL	ITARY RE	D. ROTH	ISCH	IILD,	WI.	5447	4	1-800-	338-SCAN
REPORT TO:		. 1			BILL TO: (if diffe	erent	from	Repo	ort To	info):	
Name:	. <u> </u>	N			Name:							
Company: SEH Address: 121 (7.										
Address: 121 fr	ENELL	-176	11 5	4776	Address:					-		
Phone: (715)	770-1	07 25	<u>~</u>	110	Phone: ()					
PO #					T HOHE.					A. F	250115	TOTO
Project #	Quo	ote #					Α				REQUE	
Location								(use s	eparate	sneet	if neces	sary)
Sample Type		I	urnaround 1	<u>lime</u>		Í			/	/	/ /	
(Check all that app	ely)	Norm	al				/	/ /	100	-	/ /	/
□ Groundwater		Rush	(Pre-approv	ed by Lab)			/	/	/	3	/	
Wastewater			1	7	210412		/		/ .	<u>-</u> /	/	
☐ Soil/Solid		Date Nee	eded _14	2	121041			\mathcal{N}	/_	3	/ /	/
☐ Drinking Water		Approved	d By				3.5	Lead	7 3	7	/ /	
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☐ Vapor ☐ Other						/:		4	/	/	/	
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LAB USE ONLY	DATE	IIIVIE	COMP GRAB	SAIVI	PLE ID	1	F F	7 1	Ŧ	/	/	REMARKS
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ENVIROSCAN SERVICES 301 WEST MILITARY ROAD ROTHSCHILD, WI 54474 TELEPHONE 715-359-7226 FACSIMILE 715-355-3221

1. 1 . 3

November 3, 1998

Short Elliott Henderickson 421 Frenette Drive Chippewa Falls , WI 54729

Attn: Trevor Bauer/ Cy Ingraham

Re: FRASE9401.00

Please find enclosed the analytical results for the samples received October 22, 1998.

All analyses were completed in accordance with appropriate EPA methodologies. Methods and dates of analysis are included in the report tables.

The chain of custody document is also enclosed.

If you have any questions about the results, please call. Thank you for using US Filter/Enviroscan for your analytical needs.

Sincerely,

US Filter/Enviroscan

Gary L. Scharrer

Organic Laboratory Supervisor



Short Elliott Henderickson 421 Frenette Drive Chippewa Falls , WI 54729 CUST NUMBER: FRASE9401.0

SAMPLED BY: Client DATE REC'D: 10/22/98 REPORT DATE: 11/03/98

PREPARED BY: GLS
REVIEWED BY:

Attn: Trevor Bauer/ Cy Ingraham

	Units	Reporting Limit	MW-2 10/20/98	<u>Qualifier</u> s	Date Analyzed	Ву
EPA 7421 Lead (GFAAS) Sol. Lead (GFAAS)	μg/l μg/l	1.0	8.38 3.08		10/30/98 10/30/98	JCH JCH
Analytical No.:			52826			



Short Elliott Henderickson 421 Frenette Drive

Chippewa Falls , WI 54729

CUST NUMBER: FRASE9401.0

SAMPLED BY: Client DATE REC'D: 10/22/98 REPORT DATE: 11/03/98

PREPARED BY: GLS
REVIEWED BY:

Attn: Trevor Bauer/ Cy Ingraham

		Reporting	MW-5		Date	
	Units	Limit	10/20/98	<u>Qualifiers</u>	Analyzed	Ву
EPA 8310						
Acenaphthene	$\mu g/1$	0.11	X		10/27/98	GLS
Acenaphthylene	$\mu g/1$	0.08	x x		10/27/98	GLS
Anthracene	$\mu g/1$	0.03	X X		10/27/98	GLS
Benzo (a) Anthracene	$\mu g/1$	0.06	X		10/27/98	GLS
Benzo(a) Pyrene	$\mu g/1$	0.06	X		10/27/98	GLS
Benzo(b) Fluoranthene	$\mu g/1$	0.03	X		10/27/98	GLS
Benzo(k) Fluoranthene	$\mu g/1$	0.03	X		10/27/98	GLS
Benzo (ghi) Perylene	$\mu g/1$	0.05	X		10/27/98	GLS
Chrysene	$\mu g/1$	0.04	X		10/27/98	GLS
Dibenzo (a, h) Anthracene	$\mu g/1$	0.06	Х .		10/27/98	GLS
Fluoranthene	$\mu g/1$	0.04	X		10/27/98	GLS
Fluorene	$\mu g/1$	0.04	X		10/27/98	GLS
Indeno (1, 2, 3-cd) Pyrene	$\mu g/1$	0.04	X		10/27/98	GLS
1-Methyl Naphthalene	$\mu g/1$	0.06	X		10/27/98	GLS
2-Methyl Naphthalene	$\mu g/1$	0.07	X		10/27/98	GLS
Naphthalene	$\mu g/1$	0.05	X		10/27/98	GLS
Phenanthrene	$\mu g/1$	0.08	X		10/27/98	GLS
Pyrene	$\mu g/1$	0.17	X		10/27/98	GLS
Liquid Organic Extraction		=	COMP		10/26/98	CKV
Analytical No.:			52827			

REQUEST FOR SERVICES

ENVIROSCAN SERVICES	30) I VV. MILI	IARY RD.	HOIF	190HIL	D, WI	044/4	•	1-800-33	8-5CAN
REPORT TO:				BILL TO	: (if diff	ferent fr	om R	epor	t To info)	
Name: Trevor Bay	ur			Name:	<u>C</u> .	y In	grah	am		
Company: SEH, Inc. Address: 421 French				Compa	ıny:^	SEA	リエ	nç.		
Address: 421 Frenet	te Dr	ive		Addres	s:4	AL F	rene	the	Drive	
Chippewa	Falls	WI S	34729		_Cl	ripper	Na	Fal	ls WI	54729
Chippena Phone: (715) 720-	6237			Phone:	(715) - 73	10 -	62	3 <i>[</i>	
P O #										
Project # FRASE9401.00	Quote	# _ 590	19-7							
Locatioon						ANA	IY	ICA	L REQU	FSTS
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Sample Type	Turnarou	und Time				7	COOPE	V	/ /	-/
(Check all that apply)	Norr					/_	/ 1	K/\	/ /	/
Groundwater Wastewaater		h (Pre-appro		n		Sicologa A	17	/_ ,	/ / /	/
Soil/Solid	Date Nee	eded 11-5	2104	,		/ 3/	4	S	3//	
Drinking Water	Approve	d By			00	1.3	N.		Z / /	
☐ Oil ☐ Vapor			*		()	011	the state of	S C	`/ /	
Other					4	17 1	γ	1 ×,	/ /	
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LAB USE ONLY DATE	TIME	Containers	SAMP	LE ID	/ 6	4 3 .	44	/	/ RE	MARKS
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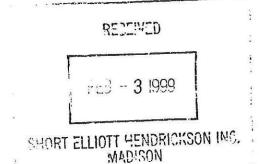
ENVIROSCAN SERVICES 301 WEST MILITARY ROAD ROTHSCHILD, WI 54474 TELEPHONE 715-359-7226 FACSIMILE 715-355-3221

February 2, 1999

SEH 6418 Normandy Lane Suite 100 Madison, WI 53719

Attn: Gloria Chojnacki

Re: FRASE9401.00



Please find enclosed the analytical results for the samples received January 26, 1999.

All analyses were completed in accordance with appropriate EPA methodologies. Methods and dates of analysis are included in the report tables.

The chain of custody document is also enclosed.

If you have any questions about the results, please call. Thank you for using US Filter/Enviroscan for your analytical needs.

Sincerely,

US Filter/Enviroscan

Gary L. Scharrer

Organic Laboratory Supervisor



SEH

6418 Normandy Lane

Suite 100

Madison, WI 53719

CUST NUMBER: FRASE9401.0

SAMPLED BY: Client

DATE REC'D: 01/26/99 REPORT DATE: 02/02/99

PREPARED BY: GLS

REVIEWED BY:

Attn: Gloria Chojnacki

a "	Units	Reporting M Limit	W-2 UNFILTERED 01/19/99	Oualifiers	Date Analyzed	Ву
EPA 7421 Lead (GFAAS)	μg/l	1.0	1.49		02/02/99	JCH
Analytical No.:			61530			

	Units	Reporting Limit	MW-2 FILTERED 01/19/99	<u>Qualifier</u> s	Date Analyzed	Ву
EPA 7421 Sol. Lead (GFAAS)	μg/l	1.0	ND		02/02/99	JCH
Analytical No.:			61531			



SEH 6418 Normandy Lane Suite 100 Madison, WI 53719 CUST NUMBER: FRASE9401.0 SAMPLED BY: Client DATE REC'D: 01/26/99 REPORT DATE: 02/02/99

PREPARED BY: GLS
REVIEWED BY:

Attn: Gloria Chojnacki

	Units	Reporting Limit	MW-5 01/19/99	<u>Qualifier</u> s	Date Analyzed	<u>B</u> y
EPA 8310						
Acenaphthene	$\mu g/1$	0.1	ND		01/29/99	GLS
Acenaphthylene	$\mu g/1$	0.1	ND		01/29/99	GLS
Anthracene	$\mu g/1$	0.09	ND		01/29/99	GLS
Benzo (a) Anthracene	$\mu g/1$	0.05	ND		01/29/99	GLS
Benzo(a) Pyrene	$\mu g/1$	0.04	ND		01/29/99	GLS
Benzo (b) Fluoranthene	$\mu g/1$	0.04	ND		01/29/99	GLS
Benzo(k) Fluoranthene	$\mu g/1$	0.06	ND		01/29/99	GLS
Benzo (ghi) Perylene	$\mu g/1$	0.06	ND		01/29/99	GLS
Chrysene	$\mu g/1$	0.05	ND .		01/29/99	GLS
Dibenzo (a, h) Anthracene	$\mu g/1$	0.1	ND		01/29/99	GLS
Fluoranthene	μg/l	0.06	ND		01/29/99	GLS
Fluorene	$\mu g/1$	0.07	ND		01/29/99	GLS
Indeno(1,2,3-cd)Pyrene	μg/l	0.07	ND		01/29/99	GLS
1-Methyl Naphthalene	$\mu g/1$	0.09	ND		01/29/99	GLS
2-Methyl Naphthalene	$\mu g/1$	0.08	ND		01/29/99	GLS
Naphthalene	$\mu g/1$	0.08	ND		01/29/99	GLS
Phenanthrene	μg/l	0.08	ND		01/29/99	GLS
Pyrene	$\mu g/1$	0.11	ND		01/29/99	GLS
Liquid Organic Extraction		2.5	COMP		01/27/99	CKV
Analytical No.:			61532			(94)

REQUEST FOR SERVICES

REPORT TO: Name: Company: SEH Address: 6418 Madis Phone: (608) 275 P. O. # Project # FRASE946 Location Supervior	Gloria Normai on Will-Zoza	Chojn		and the same	SCHILD (if differ y: :)	ent fro	om R	epor	1-800-338-SC t To info)	
Sample Type (Check all that apply, Groundwater Wastewater Soil/Solid Drinking Water Oil Vapor Other	Turn	Needed 2- oved By	proved by Lab) 1-4기 고급기	c	SAD	(use			heet if necessary)	
LAB USE ONLY DA	TIM	No. of	ers SAMP	LEID	1/2/	#/	/ ,	/ ,	REMARK	(S
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