



**FRASER  
SHIPYARDS, INC.**

P. O. BOX 997  
SUPERIOR, WISCONSIN  
54880

DIAL (715) 394-7787  
FAX (715) 394-2807

October 21, 1996

RE: Fraser Shipyards, Inc.  
Partial Closure Documentation Report  
AOCs #8 and #12  
Superior, Wisconsin  
SEH No. FRASE9401.00

Mr. Steven LaValley, Hazardous Waste Specialist  
Wisconsin Department of Natural Resources  
1705 Tower Avenue  
Superior, Wisconsin 54880

Dear Mr. LaValley:

Fraser Shipyards, Inc. (Fraser) is submitting this Partial Closure Documentation Report for areas of concern (AOCs) #8 and #12 at the Fraser facility located in Superior, Wisconsin. This report was prepared on behalf of Fraser by our consultant, Short Elliott Hendrickson, Inc. (SEH). The document describes investigation activities which were performed and provides closure documentation for select AOCs at the Fraser facility.

At this time, Fraser wishes to pursue closure of AOC #8 and AOC #12. Based on the information presented in this report and the documents previously submitted by Fraser to the Wisconsin Department of Natural Resources (WDNR), Fraser has complied with the closure requirements of defining degree and extent of contamination as specified in various WDNR correspondence and discussion.

Fraser respectfully requests the WDNR to review this document and issue a letter of completeness which acknowledges that Fraser has met the conditions for closure and that no further action is required at AOC # 8 and #12. Additional investigation data at the remaining open AOCs has not been completed and will follow at a later date.

If you have any questions regarding the submittal of the Partial Closure Documentation Report, please call me (715) 394-7787 or Cy Ingraham at (715) 720-6231.

Sincerely,  
Fraser Shipyards, Inc.

Ronald Peterson  
Yard Superintendent

GGC/lS/CWI

02-16-120589

Fraser Shipyards, Inc.

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***Partial Closure Documentation Report  
AOCs #8 and #12***

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Superior, Wisconsin

SEH No. FRASE9401.00

October 1996

SHORT ELLIOTT HENDRICKSON INC.



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Cyrus Ingraham, P.E.  
Short Elliott Hendrickson Inc.  
421 Frenette Drive  
Chippewa Falls, WI 54729

**Partial Closure Documentation Report AOCs #8 and #12**

**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**





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# Partial Closure Documentation Report AOCs #8 and #12

**Fraser Shipyards, Inc.**

Prepared for Fraser Shipyards, Inc.

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## 1.0 Introduction

Fraser Shipyards, Inc. (Fraser) is submitting the Partial Closure Documentation Report for AOCs #8 and 12, prepared by Short Elliott Hendrickson Inc. (SEH) to the Department of Natural Resources (WDNR). This report was developed to meet the requirements for case closure as specified in ch. NR 726 Wisconsin Administrative Code. The required site investigation activities for defining degree and extent of contamination have been performed in accordance with the WDNR conditionally approved "Additional Investigation Work Plan" (March 1996) and the amendment to that Work Plan (July 29, 1996). Additional verbal guidance regarding closure activities was provided by the WDNR during a meeting at the Fraser facility on June 7, 1996.

A Site Investigation Work Plan (November 1993) which contained 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. An initial site investigation was conducted at the Fraser facility in January 1994 for the purpose of determining the presence or absence of contamination in specific areas of concern (AOCs) and to determine whether contamination present was comprised of hazardous constituents above regulatory limits. Additional investigation and closure activities were performed during the summer of 1994 and spring and summer of 1995. Closure documentation has been presented to the WDNR in the following reports:



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Site Investigation Report and Closure Plan May 1994

Partial Closure Documentation Report and Addendum April 1995

Closure Documentation Report and Monitoring Plan  
AOCs #1, 3, 5, 7, 9, 11, 12, and 13 November 1995

The purpose of this Partial Closure Documentation Report is to summarize site investigation data gathered from AOC #8 and #12 at the Fraser facility located in Superior, Wisconsin and provide additional information as required by the WDNR to achieve closure of the select AOCs.

Previous WDNR correspondence has indicated the following AOCs are considered "closed" and no further action is necessary at this time:

<b>Closed AOCs</b>	<b>Closure Correspondence</b>
2 - Sandblasting Grit Storage	July 14, 1995
6 - 600 KVA Substation	July 14, 1995
10 - Upper Landing Dry Dock #1	July 14, 1995
13 - Southeast Fill Area	July 14, 1995
3 - Dirty Solvent Staging	January 4, 1996
4 - Bilge Water Staging	January 4, 1996
7 - Transformer Staging	January 4, 1996
9 - Fuel Storage	January 4, 1996

## **1.1 Project Contacts**

1. Ron Peterson, Superintendent  
Fraser Shipyards, Inc.  
Third Street and Clough Avenue  
Superior, WI 54880  
(715) 394-7787
2. Steve LaValley  
Hazardous Waste Specialist  
Wisconsin Department of Natural Resources  
1705 Tower Avenue  
Superior, WI 54880  
(715) 392-7988
3. Cyrus Ingraham, P.E., Project Manager  
Gloria Chojnacki, CHMM, Environmental Scientist  
Short Elliott Hendrickson Inc.  
421 Frenette Drive  
Chippewa Falls, WI 54729  
(715) 720-6231

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## **2.0 Closure Documentation**

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

Laboratory analysis for this project was performed by U.S. Filter (formerly Enviroscan Corp.) according to specified WDNR and EPA methods at the time of sample collection. The address and phone number of U.S. Filter is:

U.S. Filter/Enviroscan  
301 W. Military Road  
Rothschild, WI 54474  
(800) 338-7226  
WI Lab Certification No. 737053130

### **2.1 AOC #8 - Paint Room Storage Pad**

Fraser temporarily stores flammable liquids in a paint room located in the Fabrication Shop. A small storage pad is located south of the paint room where partially used containers of paint and solvent are staged. This storage pad had a crushed stone base, which has subsequently been covered with concrete to facilitate protection of the soils from potential future releases. The concrete pad was constructed in July 1994. The partially used materials associated with this AOC include paint and solvents. Scrap metal and solid wastes (paper, rags, etc.) were also staged in this area. The location of AOC #8 is indicated on Figure 2, "Site Plan."

#### **2.1.1 Sample Collection**

AOC #8 was previously investigated for the presence or absence of contaminated soils associated with potential release from materials staged at the AOC. The investigation consisted of two soil samples (B-20 and B-21) obtained from a shallow test pit from the 0 to 1 foot (B-20) and 2 to 2.5 foot (B-21) depth interval on January 25, 1994. The soil samples were submitted for laboratory analysis of Volatile Organic Compounds (VOCs) and total cadmium, chromium, mercury, and lead. Two soil samples were collected from the shop floor adjacent to the storage pad with a hand auger on August 23, 1995 (HAX-1 and HAX-2) from the 8 to 12 inch depth interval to define the extent of contamination. These samples were submitted for laboratory analysis of VOCs.

Additional soil sampling at AOC #8 was conducted on August 15, 1996 in accordance with discussion which occurred between Fraser, WDNR and SEH. The sampling strategy was agreed upon at a meeting conducted at the Fraser facility on June 7, 1996 as a means of further defining the degree and extent of VOC contamination. Four additional soil samples



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(HAX-3, HAX-4, HAX-5, HAX-6) were obtained with a hand auger. The samples were collected at a depth of approximately 18 inches. Soil samples were immediately placed in an ice filled cooler for laboratory analysis. The samples were submitted under standard chain of custody procedures for laboratory analysis of VOCs and total lead and chromium. The locations and depths of the soil samples are indicated in Figure 3, "AOC #8." Analytical results for select AOCs, including AOC #8 are summarized in Table 1, "Field and Soil Analytical Results."

### **2.1.2 Soil Results**

Initial soil analytical results indicate benzene and toluene concentrations of 0.0058  $\mu\text{g/g}$  and 0.150  $\mu\text{g/g}$ , respectively, were detected closer to the surface (B-20) at AOC #8, while no VOCs above laboratory detection limits were found at the 2 to 2.5 foot depth interval (B-21). Low level concentrations of various hydrocarbon compounds which appear to be petroleum and manufacturing related were detected at the surface of the shop floor in the area adjacent to the AOC. The total VOC concentration at HAX-2 was 24  $\mu\text{g/g}$ .

Initial soil samples were also analyzed for select metals. The total lead concentration at the upper interval (B-20) was 167  $\mu\text{g/g}$  with no lead above the laboratory detection level at the lower depth. The remaining metals (cadmium, chromium, and mercury) at both depth intervals were either not detected or were within the concentration ranges typically found in Wisconsin soils based on an internal WDNR memorandum from Bob Schaefer dated June 20, 1980.

Additional floor samples to further define the extent of contamination indicate very low concentrations of naphthalene (0.033  $\mu\text{g/g}$ ) at HAX-3, chloromethane (0.028  $\mu\text{g/g}$ ) at HAX-4, and o-xylene and styrene (0.035  $\mu\text{g/g}$  to 0.138  $\mu\text{g/g}$ ) at HA-3, HAX-4, HAX-5 and HAX-6. These concentrations are below proposed or final generic soil cleanup levels based on protection of groundwater or human health from direct contact.

Total lead and chromium at the four additional hand auger locations (HAX-3, HAX-4, HAX-5, HAX-6) are either not detectable or below the ch. NR 720 Residual Contaminant Levels (RCLs) Table 1 values for non-industrial sites. Copies of the laboratory results from the August 15, 1996 sampling event are included in Appendix A, "Laboratory Results."

### **2.1.3 Closure Documentation**

As stated in the Closure Documentation Report and Monitoring Plan (November 1995), the Fabrication Shop Building is used for equipment storage as well as fabrication which necessitates the frequent movement of equipment through the sampled area. Previous soil samples identified low level concentrations of VOCs potentially related to work activities.

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However, the WDNR indicated that degree and extent of contamination had not been defined in the area. Therefore, based on discussion with the WDNR, additional samples were collected to define degree and extent of contamination.

Laboratory results of the additional soil samples were consistent with earlier soil sample concentrations. Surficial concentrations of VOCs are potentially related to petroleum products associated with work equipment and appear confined to the dirt area within the building. The surficial VOC contaminants also appear to be unrelated to the original contaminants found within AOC #8. This indicates that the original low level contaminants detected within the AOC were confined to that area.

Significant concentrations of total lead also appears confined to the original AOC. In addition, on February 21, 1995 it was concluded that the ch. NR 720 RCL for lead of 500 mg/kg at an industrial site was an acceptable value for the Fraser property. The total lead concentration of 167  $\mu\text{g/g}$  (mg/kg) does not exceed the RCL and therefore, can justifiably be left in place with adequate protection of the environment and human health.

The Fabrication Shop currently has a partial dirt floor; however, Fraser has plans for constructing a concrete floor in the future. The concrete floor over the AOC and the overhead roof of the shop will prevent downward migration of the surficial contaminants in the building. Fraser requests that AOC #8 be submitted for closure and no further action be required at this time.

## **2.2 AOC #12 - NW Fill Area**

Fill materials were placed along the shoreline at AOC #12 in the late 1980's in the form of a berm five to eight feet high. The fill reportedly consisted primarily of soil, stone, and demolition materials. The berm was capped with onsite soils and seeded to minimize erosion to Howard's Bay. The intended purpose of fill placement was to prevent surface runoff to the Bay. An investigation of AOC #12 was conducted to determine the composition of fill materials in the berm area. The location of AOC #12 is indicated on Figure 2.

### **2.2.1 Sample Collection**

The initial investigation of AOC #12 consisted of the excavation of four test pits (TP-5, TP-6, TP-7, TP-8) with soil sample collection on January 25, 1994 from depths ranging from 2.5 to 6 feet. Soil samples were submitted for laboratory analysis of VOCs from three of the four test pits. Three soil samples (HA-1, HA-2, HA-3) were collected on August 23, 1995 from 12 to 18 inches below the surface to define the extent of



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contamination. These samples were submitted for laboratory analysis of petroleum related VOCs (PVOCs).

Additional investigation of AOC #12 was conducted on August 16, 1996 with the installation of two temporary monitoring wells (TW-3, TW-4). The location of the temporary wells was determined in the field by the WDNR, Fraser and SEH on June 7, 1996. The purpose of these wells was two-fold: first, to determine if groundwater has been impacted by VOCs detected at AOC #12 and second, as a means of further defining the degree and extent of contamination.

#### 2.2.1.1 Soil Samples

Soil samples were collected continuously from the hollow stem auger (HSA) borings using a two foot split spoon sampler. Detailed boring logs are included in Appendix B, "Soil Boring Logs". Undisturbed soil samples for field and laboratory analysis were collected from the temporary well borings according to SEH Standard Operating Procedures (SOPs) submitted in the November 1993 Work Plan. Laboratory samples were collected using brass tubes placed within a split spoon sampler. The brass tubes were capped and immediately placed on ice upon sample collection. Laboratory samples were selected, containerized, preserved as necessary, and returned to the ice filled cooler for transport under standard chain of custody procedures within two hours of sample collection. Soil samples were submitted for laboratory analysis of PVOCs. The locations and depths of the soil samples are indicated in Figure 4, "AOC #12." Soil analytical results for select AOCs, including AOC #12 are summarized in Table 1.

#### 2.2.1.2 Groundwater Samples

Both temporary monitoring wells were constructed using two inch ID Schedule 40 PVC, with a 10 foot slotted screen section. The temporary well construction was performed in accordance with ch. NR 141 with the exception that steel protective casing was not utilized. WDNR Monitoring Well Construction Forms (4400-113A) are included in Appendix C, "Monitoring Well Forms." TW-3 and TW-4 were developed by surging with a block and pumping on August 29, 1996. Sampling followed according to SEH SOPs submitted in the 1996 Additional Investigation Work Plan with immediate placement of samples in an ice filled cooler for transfer to the laboratory. Groundwater samples were submitted for laboratory analysis of PVOCs. WDNR Well Development Forms (4400-113B) are included in Appendix C.

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## **2.2.2 Sample Results**

### **2.2.2.1 Soil Sample Results**

Initial soil analytical results indicated the presence of toluene ranging from 0.356  $\mu\text{g/g}$  (TP-5) to 0.42  $\mu\text{g/g}$  (TP-7) and low concentrations of various petroleum related compounds in surficial samples. Total PVOCs in surficial samples ranged from 0.119  $\mu\text{g/g}$  to 0.39  $\mu\text{g/g}$ . WDNR indicated that Fraser needed to demonstrate that VOCs detected in the soils were not impacting groundwater at the AOC and the degree and extent of contamination needed further delineation.

The additional soil sample collected at TW-3 from the 12.5 to 14.5 depth interval indicates the presence of low concentrations of benzene (0.045  $\mu\text{g/g}$ ), ethylbenzene (0.032  $\mu\text{g/g}$ ), 1,2,4-trimethylbenzene (0.063  $\mu\text{g/g}$ ), total xylenes (0.180) and toluene (0.126  $\mu\text{g/g}$ ). The total PVOC concentration at TW-3 is 0.446  $\mu\text{g/g}$ . The additional soil sample collected at TW-4 from the 7.5 to 9.5 depth interval indicates a toluene concentration of 0.026  $\mu\text{g/g}$  with no other PVOCs above the detection limits.

Field headspace screening conducted at the time of sample collection did not indicate the presence of volatile constituents within the soil pore space of either sample. Field headspace screening was performed using a Foxboro TVA 1000 flame ionization detector (FID)/photoionization detector (PID) according to procedures included in the 1996 Additional Investigation Work Plan. No indications of contamination (e.g. staining, odor) were observed in soil samples collected from either boring. Copies of the laboratory results from the August 16, 1996 sampling event are included in Appendix A.

### **2.2.2.2 Groundwater Sample Results**

Groundwater samples were collected in order to demonstrate that VOCs detected in the fill soils of AOC #12 were not impacting groundwater. Groundwater samples were collected from TW-3 and TW-4 on August 29, 1996 and analyzed for PVOCs. Results did not indicate the presence of PVOCs above detection limits at either location. Copies of the laboratory results can be found in Appendix A.

### **2.2.3 Closure Documentation**

Low level PVOCs have been detected in the fill material at AOC #12. The low level petroleum constituents detected in the fill at AOC #12 do not appear to be associated with a specific release. Historic loading and earthwork activities associated with the transfer of bulk materials (rock, etc.) in the area are most probably the source of the PVOCs. With the exception of the soil sample collected from TW-3, these PVOCs are less than the ch. NR 720 Table 1 generic RCLs which are based on the



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protection of groundwater. The soil sample collected from the 12.5 to 14.5 foot depth interval indicated a benzene concentration of 0.045  $\mu\text{g/g}$  which is greater than the ch. NR 720 RCL for benzene of 0.0055  $\mu\text{g/g}$ . Depth to groundwater is approximately 6.5 feet below the surface, therefore, the soil sample was collected from an area below the soil/groundwater interface.

Groundwater samples were collected to demonstrate that PVOCs in the fill were not impacting the groundwater. Results from the groundwater samples did not indicate any detections of PVOCs, including benzene.

Based on the determination that fill materials at AOC #12 did not need to be removed as stated during a meeting attended by the WDNR, Fraser, and SEH on February 8, 1995 and the fact that groundwater does not appear to be impacted by the low concentration of petroleum constituents in the fill material, Fraser requests that AOC #12 be submitted for closure and no further action be required at this time.

Upon closure of the area by the WDNR, Fraser will properly abandon the temporary wells. The area will be mowed annually to maintain surface soils and prevent erosion.

### **3.0 Standard of Care**

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

GGC/lS/CWI

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## Tables

Table 1 – Field and Soil Analytical Results

Table 1  
FRASER SHIPYARDS, INC.  
FIELD AND SOIL ANALYTICAL RESULTS

AOC #	SAMPLE ID DEPTH	DATE	FIELD SCREEN			VOC (8010/8020 or 8021) ug/g	PVOC (8021a) ug/g	Pb (6010) ug/g	Cd (6010) ug/g	Cr (6010) ug/g	Hg (7471) ug/g
			FID units	DRO* ug/g							
8	PAINT ROOM STORAGE PAD										
	B-20 (0-1')	1-25-94	1	--	0.0058 benzene 0.150 toluene	--	167	0.218	7.53	0.0509	
	B-21 (2-2.5')	1-25-94	1	--	X	--	X	X	4.94	X	
	HAX-1 (8")	8-23-95	--	--	0.104 n-butylbenzene 0.240 naphthalene 0.0665 1,2,4-trimethylbenzene 0.194 m- & p-xylene 0.131 o-xylene & styrene	--	--	--	--	--	
	HAX-2 (1')	8-23-95	--	--	3.24 n-butylbenzene 0.910 sec-butylbenzene 0.557 tert-butylbenzene 1.24 ethylbenzene 0.469 p-isopropyltoluene 5.11 naphthalene 0.658 n-propylbenzene 2.01 1,2,4-trimethylbenzene 0.696 1,3,5-trimethylbenzene 6.45 m- & p-xylene 3.02 o-xylene & styrene	--	--	--	--	--	
	HAX-3 (18")	8-15-96	--	--	0.033 naphthalene 0.046 o-xylene & styrene 0.028 chloromethane 0.035 o-xylene & styrene	--	33.3	--	10.5	--	
	HAX-4 (18")	8-15-96	--	--	0.138 o-xylene & styrene	--	X	--	3.35	--	
	HAX-5 (18")	8-15-96	--	--	0.122 o-xylene & styrene	--	X	--	2.92	--	
	HAX-6 (18")	8-15-96	--	--		--	X	--	2.80	--	
	12	NW FILL AREA									
TP-5 (2.5')		1-25-94	15	--	0.356 toluene	--	--	--	--	--	
TP-6 (5')		1-25-94	13	--	X	--	--	--	--	--	
TP-7 (6')		1-25-94	350	--	0.42 toluene	--	--	--	--	--	
TP-8 (4')		1-25-94	2	--	--	--	--	--	--	--	
HA-1 (1.5')		8-23-95	--	--	0.0491 ethylbenzene 0.0387 1,3,5-trimethylbenzene 0.0313 m- & p-xylene 0.0568 ethylbenzene 0.0560 toluene	--	--	--	--	--	
HA-2 (1.5')		8-23-95	--	--	0.0794 1,2,4-trimethylbenzene 0.0718 1,3,5-trimethylbenzene 0.0685 m- & p-xylene 0.0401 o-xylene & styrene 0.0604 ethylbenzene 0.0777 toluene	--	--	--	--	--	
HA-3 (1')		8-23-95	--	--	0.0802 1,2,4-trimethylbenzene 0.092 m- & p-xylene 0.0793 o-xylene & styrene	--	--	--	--	--	
TW-3 (12.5-14.5')		8-16-96	X	--	--	0.045 benzene 0.032 ethylbenzene 0.063 1,2,4-trimethylbenzene 0.135 m- & p-xylene 0.045 o-xylene & styrene 0.126 toluene 0.026 toluene	--	--	--	--	
TW-4 (7.5-9.5')		8-16-96	X	--	--		--	--	--	--	
Background	MW-5 (2.5-4.5')	8-16-96	--	75.4	--	0.041 m- & p-xylene 0.037 toluene	--	--	--	--	

\* DRO method - Wisconsin modified DRO  
-- indicates parameter not analyzed  
X = analyzed but not detected

SEG 10-21-96

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## **Figures**

**Figure 1 – Site Location Map**

**Figure 2 – Site Plan**

**Figure 3 – AOC #8**

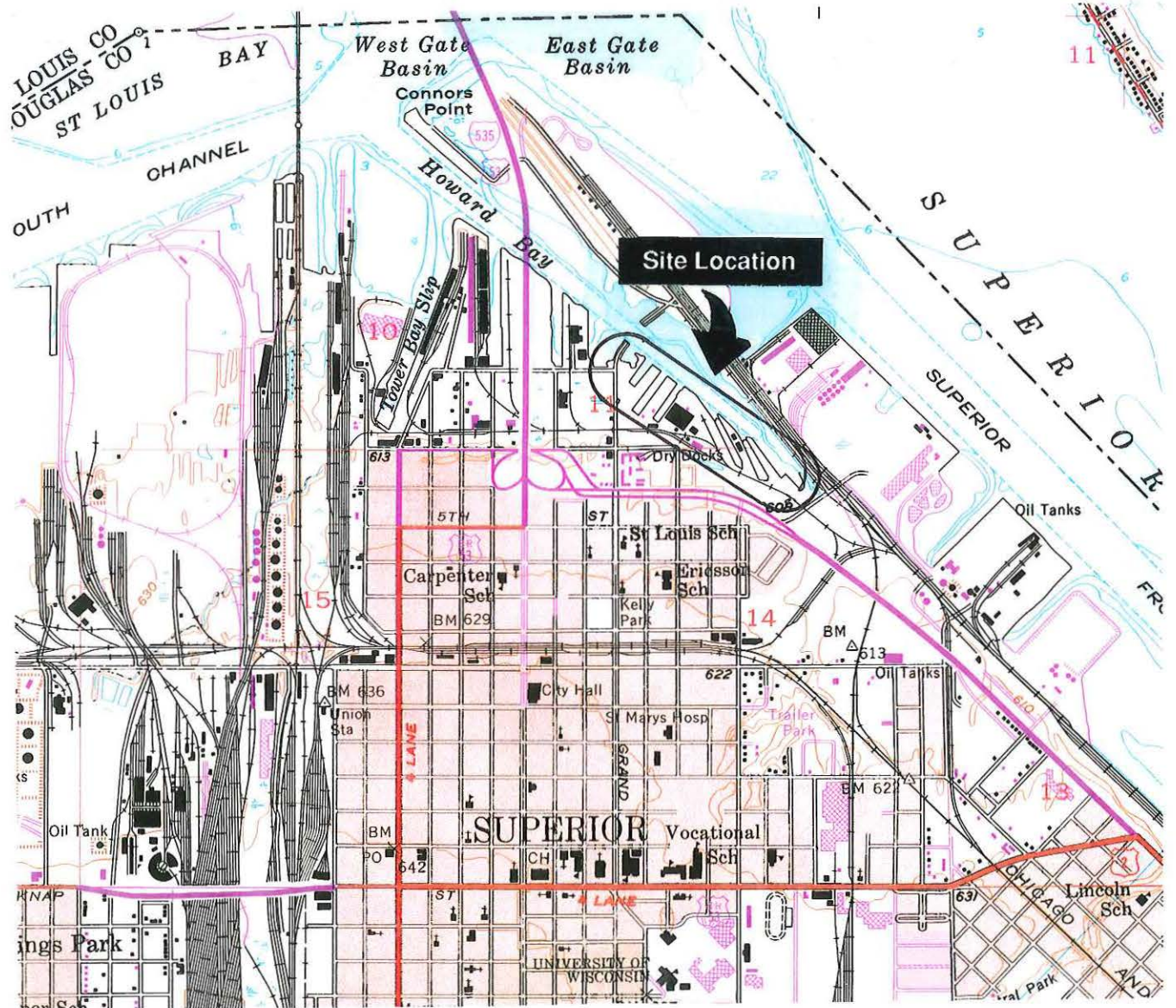
**Figure 4 – AOC #12**



REPRODUCED FROM  
**USGS SUPERIOR QUADRANGLE**  
 WISCONSIN - DOUGLAS CO. 7.5 MINUTE SERIES



SCALE: 1"=2,000'

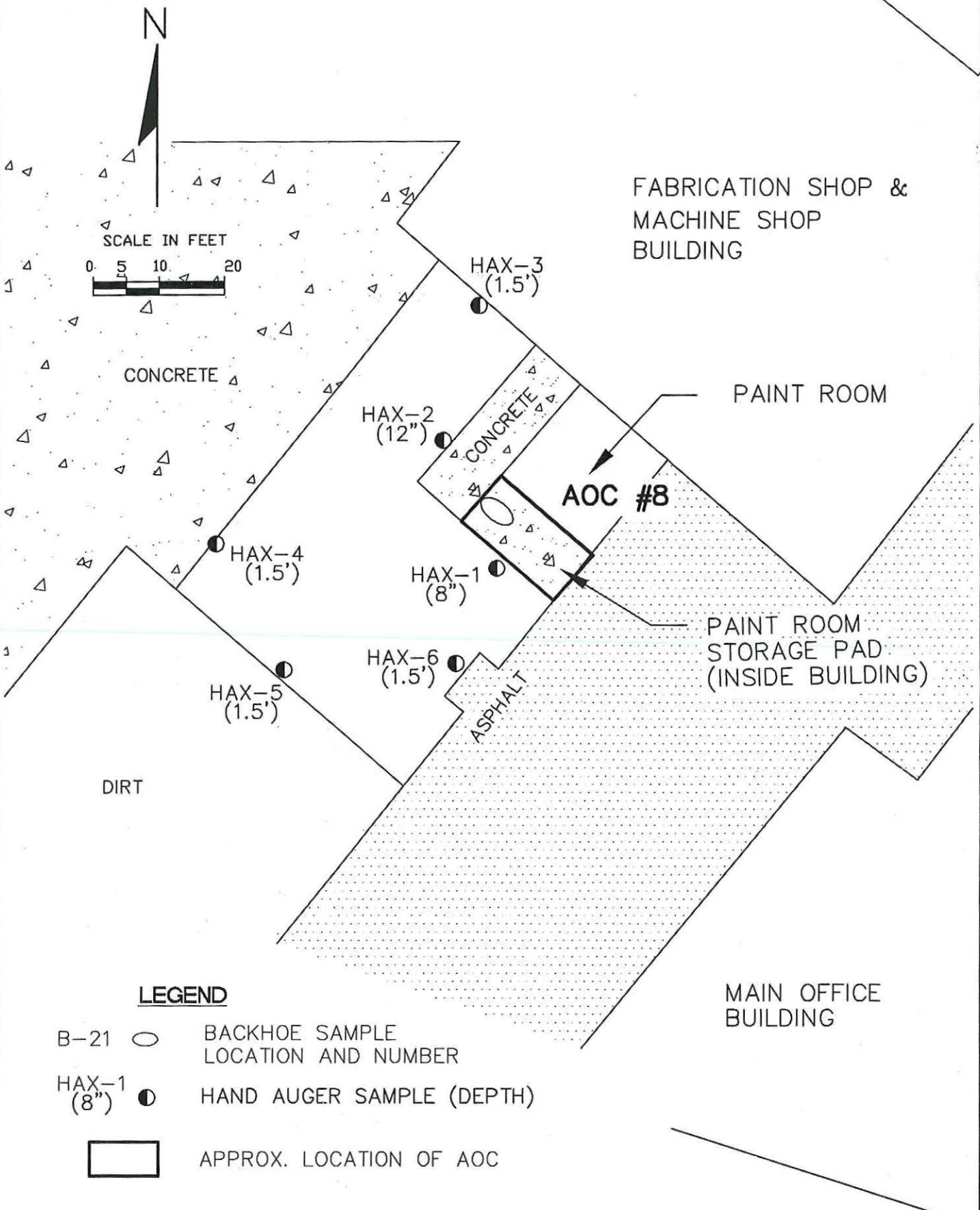


DRAWN BY:  
 KEA 10/18/93  
 CHECKED BY:  
 CWI 11/10/93

FIGURE 1  
**FRASER SHIPYARDS, INC.**  
**SUPERIOR, WISCONSIN**

FILE NO.  
 FRASE9401  
 DRG. NO.  
 9401FZA1





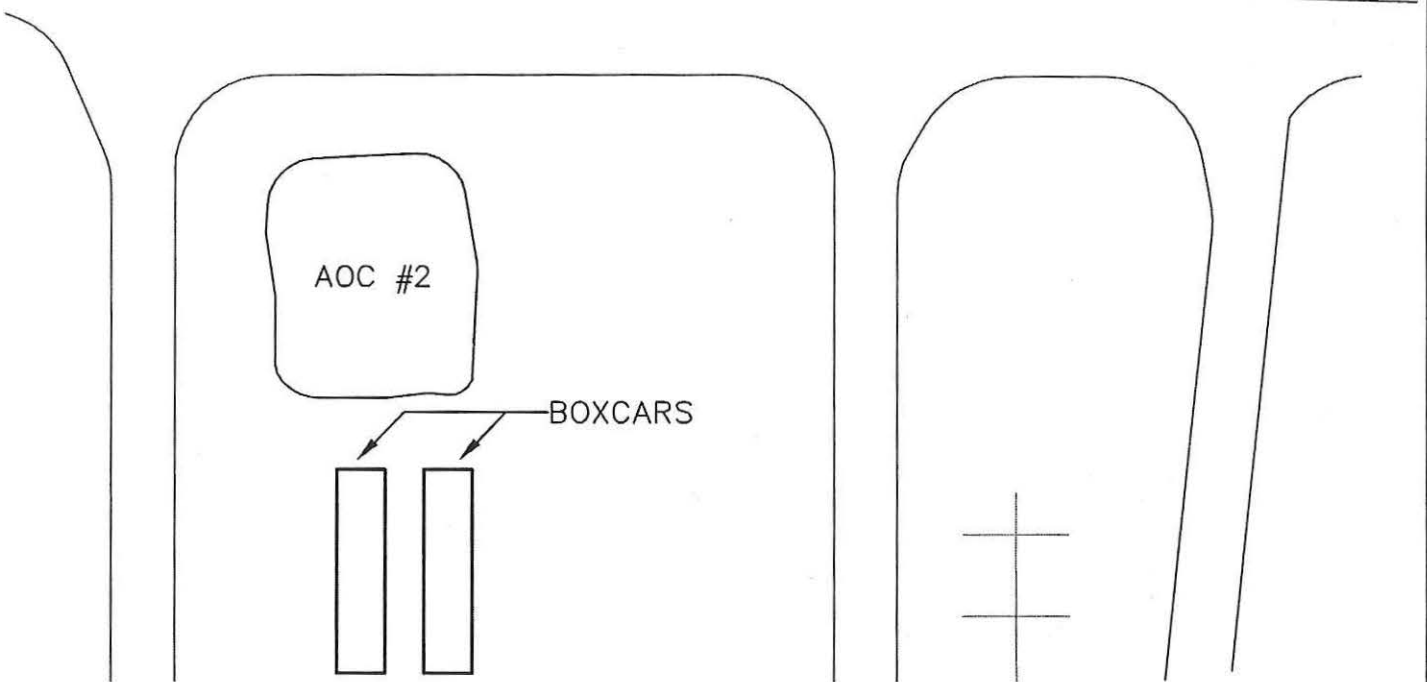
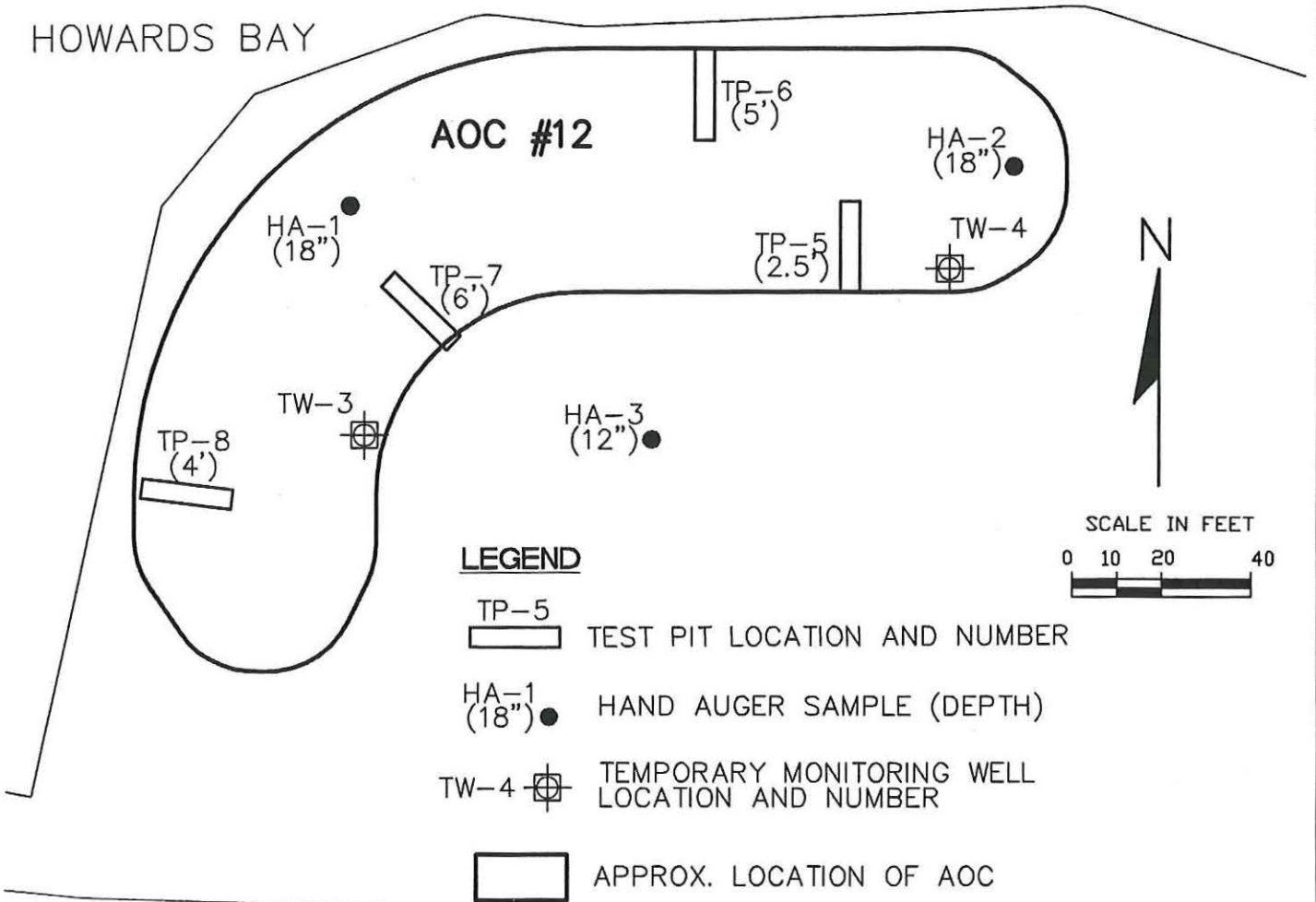
**LEGEND**

- B-21 ○ BACKHOE SAMPLE LOCATION AND NUMBER
- HAX-1 (8") ● HAND AUGER SAMPLE (DEPTH)
- APPROX. LOCATION OF AOC

E:\WASTE\FRAS9401\REPORT\FUD1

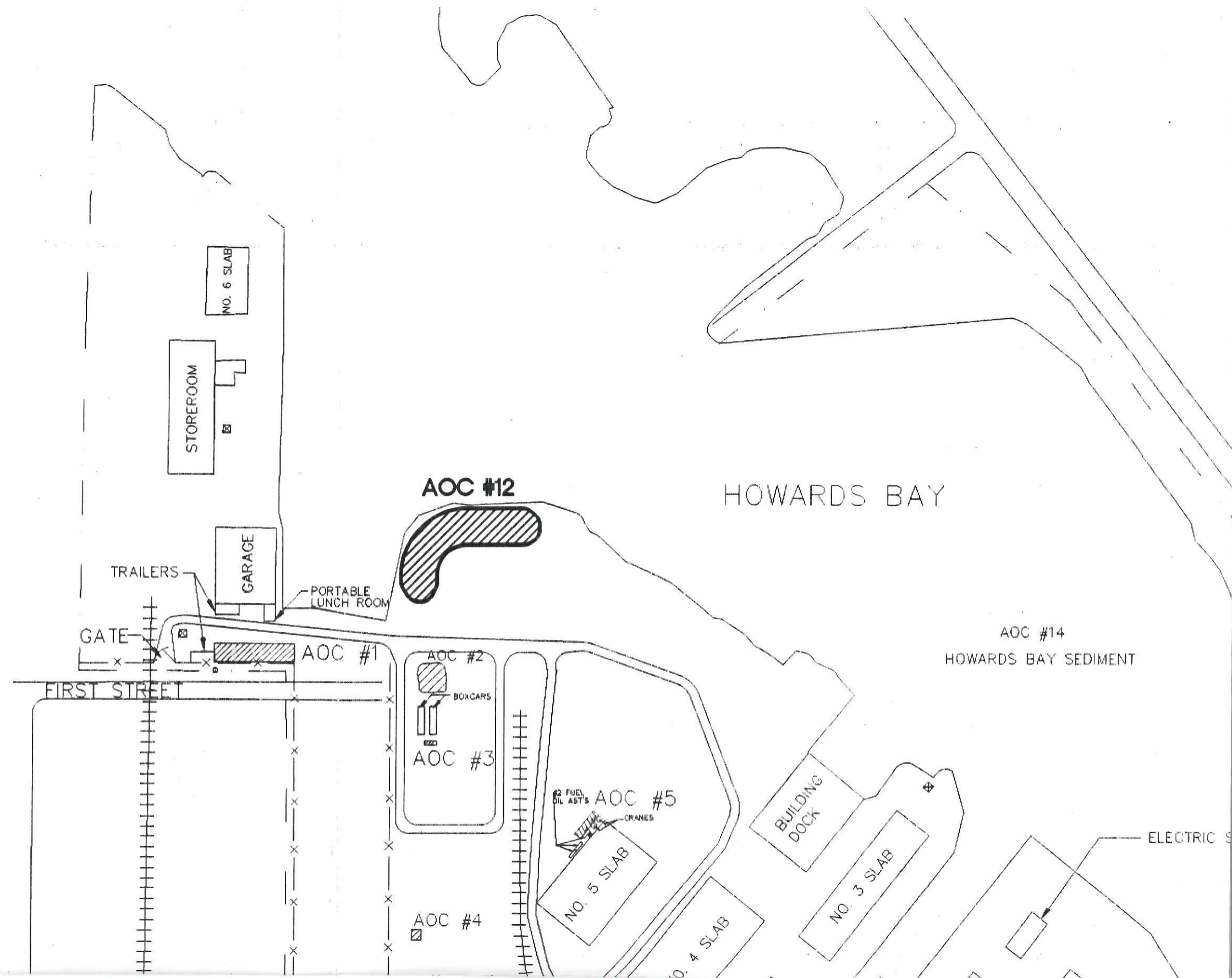
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NO.	DATE	ISSUE/REVISIONS	DRAWN BY	DESIGN	FIELD REVIEW	QC CHECK			
			FRASER SHIPYARDS, INC.		FIGURE 3 AOC #8		PROJ. NO. FRAS9401	3  4	
			DATE 10/03/96						

HOWARDS BAY



E:\WASTE\FRAS9401\REPORT\FUD2

1	10/03/96	JLE	10/96	CW	10/96	GSC	10-21-96
NO.	DATE	ISSUE/REVISIONS	DRAWN BY	DESIGN	FIELD REVIEW	QC CHECK	
		FRASER SHIPYARDS, INC.	FIGURE 4 AOC #12		PROJ. NO. FRAS9401	4	4
					DATE 10/03/96		



NO. 6 SLAB

STOREEROOM

GARAGE

TRAILERS

PORTABLE LUNCH ROOM

AOC #12

HOWARDS BAY

AOC #14  
HOWARDS BAY SEDIMENT

GATE

AOC #1

AOC #2

BOXCARS

AOC #3

FUEL OIL AST'S  
CRANES

NO. 5 SLAB

AOC #4

NO. 4 SLAB

BUILDING DOCK

NO. 3 SLAB

ELECTRIC S

FIRST STREET



N



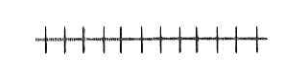
SCALE IN FEET



**LEGEND**



AREAS OF CONCERN



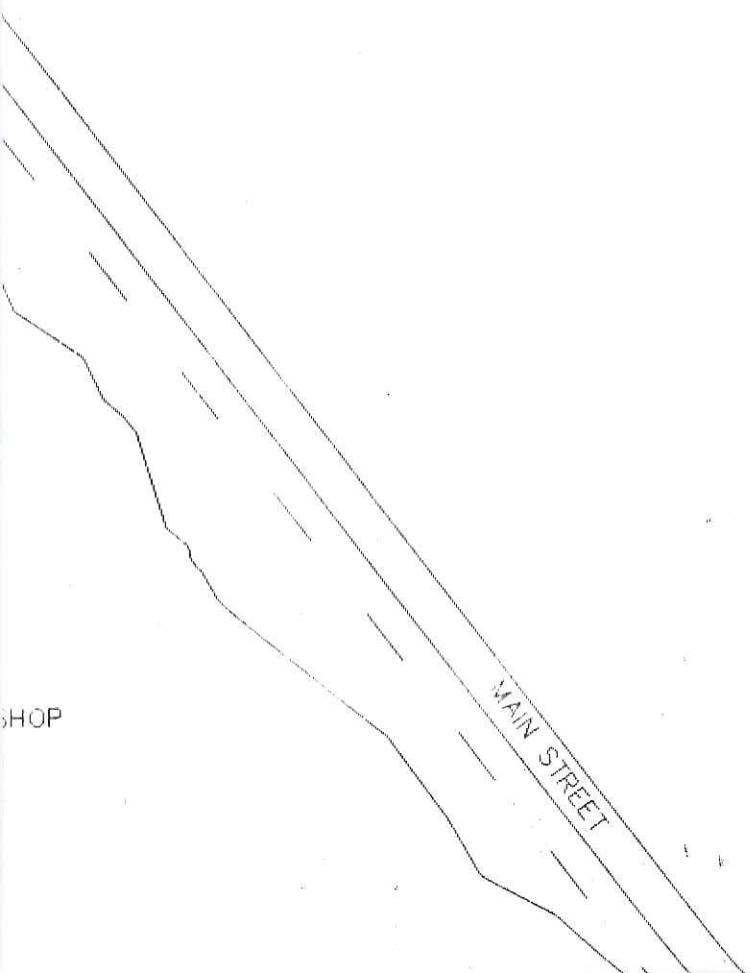
RAILROAD



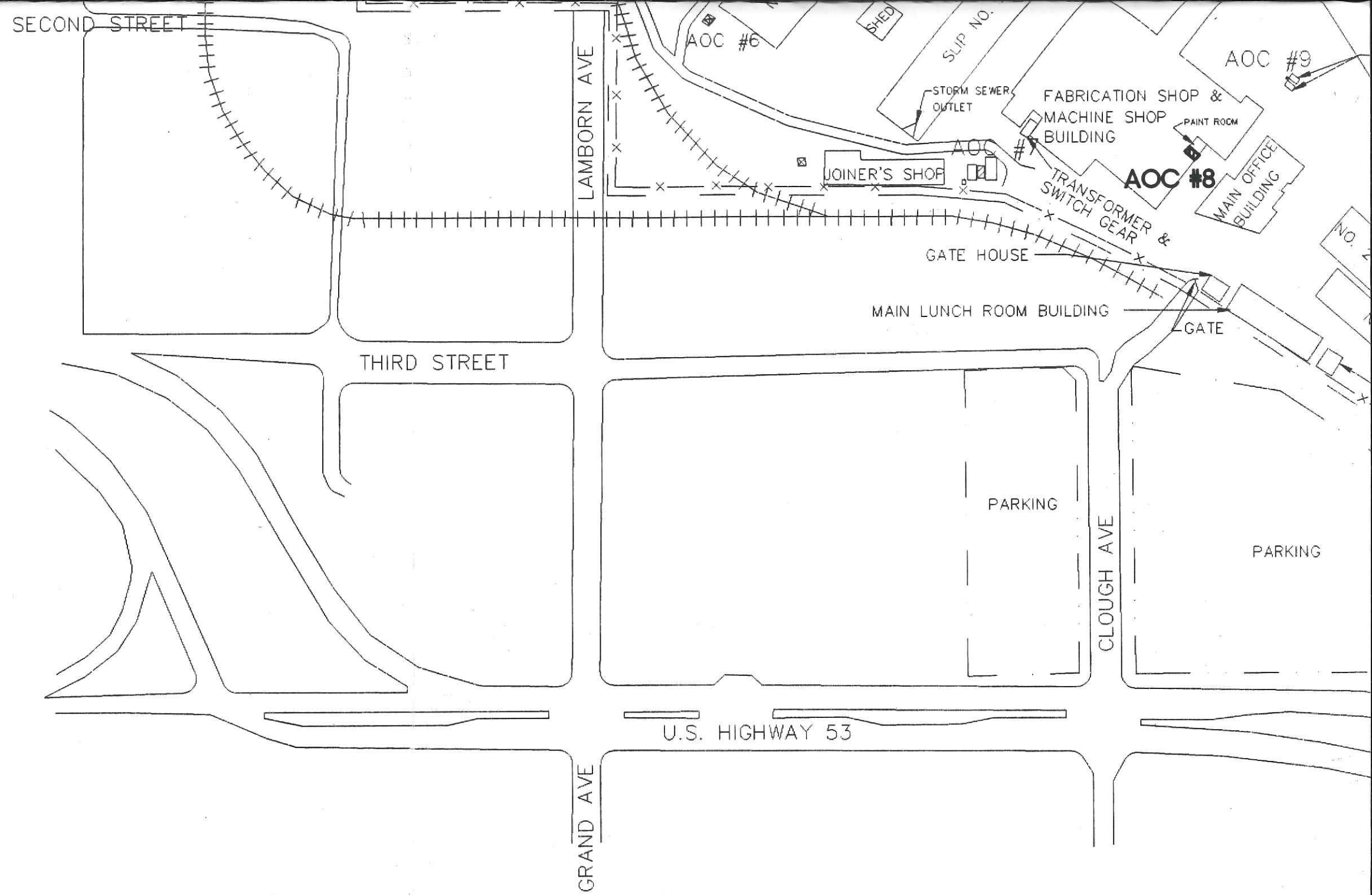
STORM SEWER OUTLET



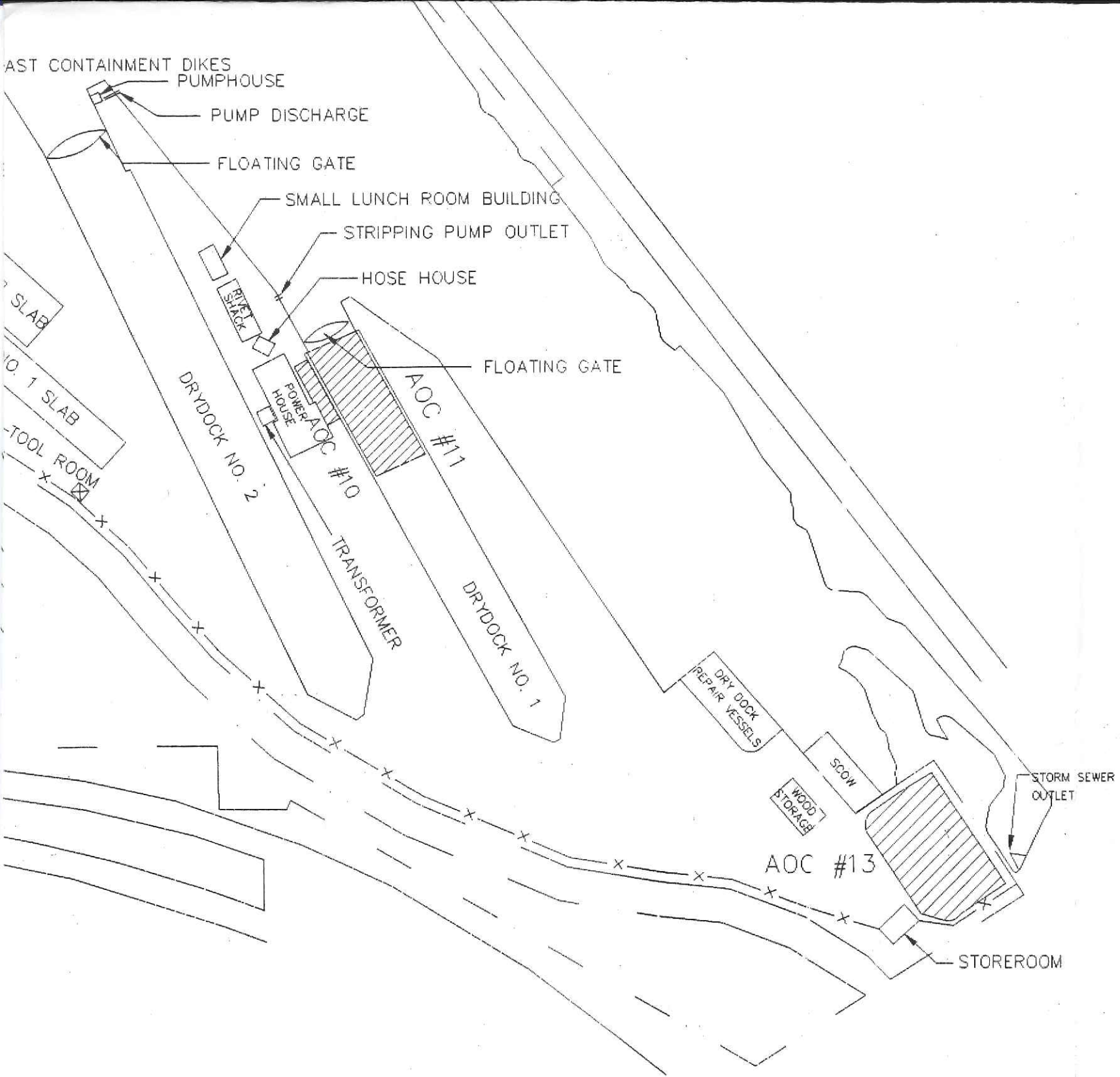
SUB STATION (600 KVA)



F:\WASTE\DWG2\WASTE\FRAS9401\REPORT\FUA1



1	10/03/96	-----	JLE	10/96	CW	10/96		GSC	10-21-96
NO.	DATE	ISSUE/REVISIONS	DRAWN BY	DESIGN	FIELD REVIEW	QC CHECK			



— — — — — PROPERTY BOUNDARY  
 X—X—X—X FENCE



FRASER SHIPYARDS, INC.

FIGURE 2  
 SITE PLAN

PROJ. NO.  
 FRAS9401  
 DATE  
 10/03/96

2  
 4

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**Appendix A**  
Laboratory Results



August 30, 1996

ENVIRONMENTAL AND  
ANALYTICAL SERVICES

Short Elliott Hendrickson, Inc.  
421 Frenette Drive  
Chippewa Falls , WI 54729

SEP 3 1996

Attn: John Guhl

Re: FRASE9401.00

Please find enclosed the analytical results for the samples received August 20, 1996.

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

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

# ANALYTICAL REPORT

Short Elliott Hendrickson, Inc.  
421 Frenette Drive  
Chippewa Falls, WI 54729

Attn: John Guhl

CUST NUMBER: FRASE9401.00  
SAMPLED BY: Client  
DATE REC'D: 08/20/96  
REPORT DATE: 08/30/96  
PREPARED BY: CKVCKU  
REVIEWED BY: SPM

Client Sample HAX-3, Enviroscan Analytical # 74862, Results are in Units of mg/kg

Method EPA 8021	MDL	LUST LOD	LUST LOQ	RESULT		Quality Control Qualifiers	Analysis Date	
				Wet	Dry			
Benzene	0.012	0.025	0.060	<	0.025	<	0.032	08/26/96
Bromobenzene	0.007	0.025	0.060	<	0.025	<	0.032	08/26/96
Bromodichloromethane	0.005	0.025	0.060	<	0.025	<	0.032	08/26/96
n-Butylbenzene	0.007	0.025	0.060	<	0.025	<	0.032	08/26/96
sec-Butylbenzene	0.006	0.025	0.060	<	0.025	<	0.032	08/26/96
tert-Butylbenzene	0.004	0.025	0.060	<	0.025	<	0.032	08/26/96
Carbon Tetrachloride	0.008	0.025	0.060	<	0.025	<	0.032	08/26/96
Chlorobenzene	0.003	0.025	0.060	<	0.025	<	0.032	08/26/96
Chlorodibromomethane	0.005	0.025	0.060	<	0.025	<	0.032	08/26/96
Chloroethane	0.006	0.025	0.060	<	0.025	<	0.032	CSH SPH 08/26/96
Chloroform	0.002	0.025	0.060	<	0.025	<	0.032	08/26/96
Chloromethane	0.012	0.025	0.060	<	0.025	<	0.032	CSH SPL DUP 08/26/96
o-Chlorotoluene	0.003	0.025	0.060	<	0.025	<	0.032	08/26/96
p-Chlorotoluene	0.005	0.025	0.060	<	0.025	<	0.032	SPH 08/26/96
1,2-Dibromo-3-chloropropane	0.018	0.025	0.060	<	0.025	<	0.032	08/26/96
1,2-Dibromoethane	0.002	0.025	0.060	<	0.025	<	0.032	08/26/96
1,2-Dichlorobenzene	0.014	0.025	0.060	<	0.025	<	0.032	08/26/96
1,3-Dichlorobenzene	0.003	0.025	0.060	<	0.025	<	0.032	08/26/96
1,4-Dichlorobenzene	0.002	0.025	0.060	<	0.025	<	0.032	08/26/96
Dichlorodifluoromethane	0.005	0.025	0.060	<	0.025	<	0.032	SPL 08/26/96
1,1-Dichloroethane	0.002	0.025	0.060	<	0.025	<	0.032	08/26/96
1,2-Dichloroethane	0.001	0.025	0.060	<	0.025	<	0.032	08/26/96
1,1-Dichloroethylene	0.006	0.025	0.060	<	0.025	<	0.032	CSH 08/26/96
cis-1,2-Dichloroethylene	0.008	0.025	0.060	<	0.025	<	0.032	CSL SPL 08/26/96
trans-1,2-Dichloroethylene	0.002	0.025	0.060	<	0.025	<	0.032	08/26/96
1,2-Dichloropropane	0.002	0.025	0.060	<	0.025	<	0.032	08/26/96
1,3-Dichloropropane	0.002	0.025	0.060	<	0.025	<	0.032	08/26/96
2,2-Dichloropropane	0.008	0.025	0.060	<	0.025	<	0.032	CSL SPL 08/26/96
Ethylbenzene	0.006	0.025	0.060	<	0.025	<	0.032	08/26/96
Hexachlorobutadiene	0.003	0.025	0.060	<	0.025	<	0.032	SPH 08/26/96
Isopropylbenzene	0.006	0.025	0.060	<	0.025	<	0.032	08/26/96
p-Isopropyltoluene	0.002	0.025	0.060	<	0.025	<	0.032	08/26/96
Methyl tert Butyl Ether	0.017	0.025	0.060	<	0.025	<	0.032	CSL SPL DUP 08/26/96
Methylene Chloride	0.009	0.025	0.060	<	0.025	<	0.032	CSH 08/26/96
Naphthalene	0.017	0.025	0.060		0.026		0.033	SPH 08/26/96
n-Propylbenzene	0.007	0.025	0.060	<	0.025	<	0.032	08/26/96
Tetrachloroethylene	0.002	0.025	0.060	<	0.025	<	0.032	08/26/96
1,1,2,2-Tetrachloroethane	0.002	0.025	0.060	<	0.025	<	0.032	DUP 08/26/96
Toluene	0.004	0.025	0.060	<	0.025	<	0.032	08/26/96
1,2,3-Trichlorobenzene	0.003	0.025	0.060	<	0.025	<	0.032	SPH 08/26/96
1,2,4-Trichlorobenzene	0.002	0.025	0.060	<	0.025	<	0.032	SPH 08/26/96
Trichloroethylene	0.002	0.025	0.060	<	0.025	<	0.032	CSH 08/26/96
Trichlorofluoromethane	0.002	0.025	0.060	<	0.025	<	0.032	CSH 08/26/96
1,2,4-Trimethylbenzene	0.007	0.025	0.060	<	0.025	<	0.032	08/26/96
1,3,5-Trimethylbenzene	0.020	0.025	0.060	<	0.025	<	0.032	08/26/96
Vinyl Chloride	0.002	0.025	0.060	<	0.025	<	0.032	SPL 08/26/96
m- & p-Xylene	0.011	0.025	0.060	<	0.025	<	0.032	08/26/96
o-Xylene & Styrene	0.011	0.025	0.060		0.036		0.046	08/26/96

\* = Regulatory Limit based on total Xylene.

All analyses conducted in accordance with Enviroscan Quality Assurance Program.

Enviroscan Corp., 303 West Military Rd., Rothschild, WI 54474 1/800/338-SCAN Wisconsin Lab Certification No. 737053130



# ANALYTICAL REPORT

Short Elliott Hendrickson, Inc.  
421 Frenette Drive  
Chippewa Falls, WI 54729

Attn: John Guhl

CUST NUMBER: FRASE9401.00  
SAMPLED BY: Client  
DATE REC'D: 08/20/96  
REPORT DATE: 08/30/96  
PREPARED BY: CKV/CJ  
REVIEWED BY: ZM

Client Sample HAX-4, Enviroscan Analytical # 74863, Results are in Units of mg/kg

Method EPA 8021	MDL	LUST		RESULT		Quality Control Qualifiers	Analysis Date	
		LOD	LOQ	Wet	Dry			
Benzene	0.015	0.025	0.060	<	0.025	<	0.027	08/26/96
Bromobenzene	0.009	0.025	0.060	<	0.025	<	0.027	08/26/96
Bromodichloromethane	0.006	0.025	0.060	<	0.025	<	0.027	08/26/96
n-Butylbenzene	0.008	0.025	0.060	<	0.025	<	0.027	08/26/96
sec-Butylbenzene	0.008	0.025	0.060	<	0.025	<	0.027	08/26/96
tert-Butylbenzene	0.005	0.025	0.060	<	0.025	<	0.027	08/26/96
Carbon Tetrachloride	0.010	0.025	0.060	<	0.025	<	0.027	08/26/96
Chlorobenzene	0.004	0.025	0.060	<	0.025	<	0.027	08/26/96
Chlorodibromomethane	0.006	0.025	0.060	<	0.025	<	0.027	08/26/96
Chloroethane	0.007	0.025	0.060	<	0.025	<	0.027	CSH SPH 08/26/96
Chloroform	0.003	0.025	0.060	<	0.025	<	0.027	08/26/96
Chloromethane	0.015	0.025	0.060	<	0.026		0.028	CSH SPL DUP 08/26/96
o-Chlorotoluene	0.003	0.025	0.060	<	0.025	<	0.027	08/26/96
p-Chlorotoluene	0.006	0.025	0.060	<	0.025	<	0.027	SPH 08/26/96
1,2-Dibromo-3-chloropropane	0.021	0.025	0.060	<	0.025	<	0.027	08/26/96
1,2-Dibromoethane	0.003	0.025	0.060	<	0.025	<	0.027	08/26/96
1,2-Dichlorobenzene	0.017	0.025	0.060	<	0.025	<	0.027	08/26/96
1,3-Dichlorobenzene	0.003	0.025	0.060	<	0.025	<	0.027	08/26/96
1,4-Dichlorobenzene	0.003	0.025	0.060	<	0.025	<	0.027	08/26/96
Dichlorodifluoromethane	0.005	0.025	0.060	<	0.025	<	0.027	SPL 08/26/96
1,1-Dichloroethane	0.002	0.025	0.060	<	0.025	<	0.027	08/26/96
1,2-Dichloroethane	0.002	0.025	0.060	<	0.025	<	0.027	08/26/96
1,1-Dichloroethylene	0.008	0.025	0.060	<	0.025	<	0.027	CSH 08/26/96
cis-1,2-Dichloroethylene	0.009	0.025	0.060	<	0.025	<	0.027	CSL SPL 08/26/96
trans-1,2-Dichloroethylene	0.003	0.025	0.060	<	0.025	<	0.027	08/26/96
1,2-Dichloropropane	0.002	0.025	0.060	<	0.025	<	0.027	08/26/96
1,3-Dichloropropane	0.002	0.025	0.060	<	0.025	<	0.027	08/26/96
2,2-Dichloropropane	0.009	0.025	0.060	<	0.025	<	0.027	CSL SPL 08/26/96
Ethylbenzene	0.008	0.025	0.060	<	0.025	<	0.027	08/26/96
Hexachlorobutadiene	0.004	0.025	0.060	<	0.025	<	0.027	SPH 08/26/96
Isopropylbenzene	0.008	0.025	0.060	<	0.025	<	0.027	08/26/96
p-Isopropyltoluene	0.003	0.025	0.060	<	0.025	<	0.027	08/26/96
Methyl tert Butyl Ether	0.020	0.025	0.060	<	0.025	<	0.027	CSL SPL DUP 08/26/96
Methylene Chloride	0.011	0.025	0.060	<	0.025	<	0.027	CSH 08/26/96
Naphthalene	0.020	0.025	0.060	<	0.025	<	0.027	SPH 08/26/96
n-Propylbenzene	0.008	0.025	0.060	<	0.025	<	0.027	08/26/96
Tetrachloroethylene	0.002	0.025	0.060	<	0.025	<	0.027	08/26/96
1,1,2,2-Tetrachloroethane	0.003	0.025	0.060	<	0.025	<	0.027	DUP 08/26/96
Toluene	0.004	0.025	0.060	<	0.025	<	0.027	08/26/96
1,2,3-Trichlorobenzene	0.004	0.025	0.060	<	0.025	<	0.027	SPH 08/26/96
1,2,4-Trichlorobenzene	0.003	0.025	0.060	<	0.025	<	0.027	SPH 08/26/96
Trichloroethylene	0.002	0.025	0.060	<	0.025	<	0.027	CSH 08/26/96
Trichlorofluoromethane	0.002	0.025	0.060	<	0.025	<	0.027	CSH 08/26/96
1,2,4-Trimethylbenzene	0.009	0.025	0.060	<	0.025	<	0.027	08/26/96
1,3,5-Trimethylbenzene	0.024	0.025	0.060	<	0.025	<	0.027	08/26/96
Vinyl Chloride	0.002	0.025	0.060	<	0.025	<	0.027	SPL 08/26/96
m- & p-Xylene	0.014	0.025	0.060	<	0.025	<	0.027	08/26/96
o-Xylene & Styrene	0.013	0.025	0.060		0.032		0.035	08/26/96

\* = Regulatory Limit based on total Xylene.

All analyses conducted in accordance with Enviroscan Quality Assurance Program.

Enviroscan Corp., 303 West Military Rd., Rothschild, WI 54474 1/800/338-SCAN Wisconsin Lab Certification No. 737053130



# ANALYTICAL REPORT

# ENVIROSCAN

Short Elliott Hendrickson, Inc.  
421 Frenette Drive  
Chippewa Falls, WI 54729

CUST NUMBER: FRASE9401.00  
SAMPLED BY: Client  
DATE REC'D: 08/20/96  
REPORT DATE: 08/30/96  
PREPARED BY: CKV/24  
REVIEWED BY: SM

Attn: John Guhl

Client Sample HAX-5, Enviroscan Analytical # 74864, Results are in Units of mg/kg

Method EPA 8021	MDL	LUST		RESULT		Quality Control Qualifiers	Analysis Date	
		LOD	LOQ	Wet	Dry			
Benzene	0.014	0.025	0.060	<	0.025	<	0.031	08/26/96
Bromobenzene	0.008	0.025	0.060	<	0.025	<	0.031	08/26/96
Bromodichloromethane	0.006	0.025	0.060	<	0.025	<	0.031	08/26/96
n-Butylbenzene	0.007	0.025	0.060	<	0.025	<	0.031	08/26/96
sec-Butylbenzene	0.007	0.025	0.060	<	0.025	<	0.031	08/26/96
tert-Butylbenzene	0.004	0.025	0.060	<	0.025	<	0.031	08/26/96
Carbon Tetrachloride	0.009	0.025	0.060	<	0.025	<	0.031	08/26/96
Chlorobenzene	0.003	0.025	0.060	<	0.025	<	0.031	08/26/96
Chlorodibromomethane	0.005	0.025	0.060	<	0.025	<	0.031	08/26/96
Chloroethane	0.006	0.025	0.060	<	0.025	<	0.031	CSH SPH 08/26/96
Chloroform	0.002	0.025	0.060	<	0.025	<	0.031	08/26/96
Chloromethane	0.013	0.025	0.060	<	0.025	<	0.031	CSH SPL DUP 08/26/96
o-Chlorotoluene	0.003	0.025	0.060	<	0.025	<	0.031	08/26/96
p-Chlorotoluene	0.005	0.025	0.060	<	0.025	<	0.031	SPH 08/26/96
1,2-Dibromo-3-chloropropane	0.019	0.025	0.060	<	0.025	<	0.031	08/26/96
1,2-Dibromoethane	0.002	0.025	0.060	<	0.025	<	0.031	08/26/96
1,2-Dichlorobenzene	0.015	0.025	0.060	<	0.025	<	0.031	08/26/96
1,3-Dichlorobenzene	0.003	0.025	0.060	<	0.025	<	0.031	08/26/96
1,4-Dichlorobenzene	0.002	0.025	0.060	<	0.025	<	0.031	08/26/96
Dichlorodifluoromethane	0.005	0.025	0.060	<	0.025	<	0.031	SPL 08/26/96
1,1-Dichloroethane	0.002	0.025	0.060	<	0.025	<	0.031	08/26/96
1,2-Dichloroethane	0.001	0.025	0.060	<	0.025	<	0.031	08/26/96
1,1-Dichloroethylene	0.007	0.025	0.060	<	0.025	<	0.031	CSH 08/26/96
cis-1,2-Dichloroethylene	0.008	0.025	0.060	<	0.025	<	0.031	CSL SPL 08/26/96
trans-1,2-Dichloroethylene	0.003	0.025	0.060	<	0.025	<	0.031	08/26/96
1,2-Dichloropropane	0.002	0.025	0.060	<	0.025	<	0.031	08/26/96
1,3-Dichloropropane	0.002	0.025	0.060	<	0.025	<	0.031	08/26/96
2,2-Dichloropropane	0.008	0.025	0.060	<	0.025	<	0.031	CSL SPL 08/26/96
Ethylbenzene	0.007	0.025	0.060	<	0.025	<	0.031	08/26/96
Hexachlorobutadiene	0.004	0.025	0.060	<	0.025	<	0.031	SPH 08/26/96
Isopropylbenzene	0.007	0.025	0.060	<	0.025	<	0.031	08/26/96
p-Isopropyltoluene	0.002	0.025	0.060	<	0.025	<	0.031	08/26/96
Methyl tert Butyl Ether	0.019	0.025	0.060	<	0.025	<	0.031	CSL SPL DUP 08/26/96
Methylene Chloride	0.010	0.025	0.060	<	0.025	<	0.031	CSH 08/26/96
Naphthalene	0.018	0.025	0.060	<	0.025	<	0.031	SPH 08/26/96
n-Propylbenzene	0.008	0.025	0.060	<	0.025	<	0.031	08/26/96
Tetrachloroethylene	0.002	0.025	0.060	<	0.025	<	0.031	08/26/96
1,1,2,2-Tetrachloroethane	0.003	0.025	0.060	<	0.025	<	0.031	DUP 08/26/96
Toluene	0.004	0.025	0.060	<	0.025	<	0.031	08/26/96
1,2,3-Trichlorobenzene	0.003	0.025	0.060	<	0.025	<	0.031	SPH 08/26/96
1,2,4-Trichlorobenzene	0.002	0.025	0.060	<	0.025	<	0.031	SPH 08/26/96
Trichloroethylene	0.002	0.025	0.060	<	0.025	<	0.031	CSH 08/26/96
Trichlorofluoromethane	0.002	0.025	0.060	<	0.025	<	0.031	CSH 08/26/96
1,2,4-Trimethylbenzene	0.008	0.025	0.060	<	0.025	<	0.031	08/26/96
1,3,5-Trimethylbenzene	0.022	0.025	0.060	<	0.025	<	0.031	08/26/96
Vinyl Chloride	0.002	0.025	0.060	<	0.025	<	0.031	SPL 08/26/96
m- & p-Xylene	0.012	0.025	0.060	<	0.025	<	0.031	08/26/96
o-Xylene & Styrene	0.012	0.025	0.060		0.112		0.138	08/26/96

\* = Regulatory Limit based on total Xylene.

All analyses conducted in accordance with Enviroscan Quality Assurance Program.

Enviroscan Corp., 303 West Military Rd., Rothschild, WI 54474 1/800/338-SCAN Wisconsin Lab Certification No. 737053130



# ANALYTICAL REPORT

Short Elliott Hendrickson, Inc.  
421 Frenette Drive  
Chippewa Falls, WI 54729

Attn: John Guhl

CUST NUMBER: FRASE9401.00  
SAMPLED BY: Client  
DATE REC'D: 08/20/96  
REPORT DATE: 08/30/96  
PREPARED BY: CKV *ckv*  
REVIEWED BY: *SPM*

Client Sample HAX-6, Enviroscan Analytical # 74865, Results are in Units of mg/kg

Method EPA 8021	MDL	LUST		RESULT		Quality Control Qualifiers	Analysis Date	
		LOD	LOQ	Wet	Dry			
Benzene	0.014	0.025	0.060	<	0.025	<	0.031	08/26/96
Bromobenzene	0.008	0.025	0.060	<	0.025	<	0.031	08/26/96
Bromodichloromethane	0.006	0.025	0.060	<	0.025	<	0.031	08/26/96
n-Butylbenzene	0.008	0.025	0.060	<	0.025	<	0.031	08/26/96
sec-Butylbenzene	0.007	0.025	0.060	<	0.025	<	0.031	08/26/96
tert-Butylbenzene	0.005	0.025	0.060	<	0.025	<	0.031	08/26/96
Carbon Tetrachloride	0.010	0.025	0.060	<	0.025	<	0.031	08/26/96
Chlorobenzene	0.003	0.025	0.060	<	0.025	<	0.031	08/26/96
Chlorodibromomethane	0.005	0.025	0.060	<	0.025	<	0.031	08/26/96
Chloroethane	0.007	0.025	0.060	<	0.025	<	0.031	CSH SPH 08/26/96
Chloroform	0.002	0.025	0.060	<	0.025	<	0.031	08/26/96
Chloromethane	0.014	0.025	0.060	<	0.025	<	0.031	CSH SPL DUP 08/26/96
o-Chlorotoluene	0.003	0.025	0.060	<	0.025	<	0.031	08/26/96
p-Chlorotoluene	0.006	0.025	0.060	<	0.025	<	0.031	SPH 08/26/96
1,2-Dibromo-3-chloropropane	0.020	0.025	0.060	<	0.025	<	0.031	08/26/96
1,2-Dibromoethane	0.002	0.025	0.060	<	0.025	<	0.031	08/26/96
1,2-Dichlorobenzene	0.016	0.025	0.060	<	0.025	<	0.031	08/26/96
1,3-Dichlorobenzene	0.003	0.025	0.060	<	0.025	<	0.031	08/26/96
1,4-Dichlorobenzene	0.002	0.025	0.060	<	0.025	<	0.031	08/26/96
Dichlorodifluoromethane	0.005	0.025	0.060	<	0.025	<	0.031	SPL 08/26/96
1,1-Dichloroethane	0.002	0.025	0.060	<	0.025	<	0.031	08/26/96
1,2-Dichloroethane	0.002	0.025	0.060	<	0.025	<	0.031	08/26/96
1,1-Dichloroethylene	0.007	0.025	0.060	<	0.025	<	0.031	CSH 08/26/96
cis-1,2-Dichloroethylene	0.009	0.025	0.060	<	0.025	<	0.031	CSL SPL 08/26/96
trans-1,2-Dichloroethylene	0.003	0.025	0.060	<	0.025	<	0.031	08/26/96
1,2-Dichloropropane	0.002	0.025	0.060	<	0.025	<	0.031	08/26/96
1,3-Dichloropropane	0.002	0.025	0.060	<	0.025	<	0.031	08/26/96
2,2-Dichloropropane	0.009	0.025	0.060	<	0.025	<	0.031	CSL SPL 08/26/96
Ethylbenzene	0.007	0.025	0.060	<	0.025	<	0.031	08/26/96
Hexachlorobutadiene	0.004	0.025	0.060	<	0.025	<	0.031	SPH 08/26/96
Isopropylbenzene	0.007	0.025	0.060	<	0.025	<	0.031	08/26/96
p-Isopropyltoluene	0.003	0.025	0.060	<	0.025	<	0.031	08/26/96
Methyl tert Butyl Ether	0.019	0.025	0.060	<	0.025	<	0.031	CSL SPL DUP 08/26/96
Methylene Chloride	0.011	0.025	0.060	<	0.025	<	0.031	CSH 08/26/96
Naphthalene	0.019	0.025	0.060	<	0.025	<	0.031	SPH 08/26/96
n-Propylbenzene	0.008	0.025	0.060	<	0.025	<	0.031	08/26/96
Tetrachloroethylene	0.002	0.025	0.060	<	0.025	<	0.031	08/26/96
1,1,2,2-Tetrachloroethane	0.003	0.025	0.060	<	0.025	<	0.031	DUP 08/26/96
Toluene	0.004	0.025	0.060	<	0.025	<	0.031	08/26/96
1,2,3-Trichlorobenzene	0.003	0.025	0.060	<	0.025	<	0.031	SPH 08/26/96
1,2,4-Trichlorobenzene	0.002	0.025	0.060	<	0.025	<	0.031	SPH 08/26/96
Trichloroethylene	0.002	0.025	0.060	<	0.025	<	0.031	CSH 08/26/96
Trichlorofluoromethane	0.002	0.025	0.060	<	0.025	<	0.031	CSH 08/26/96
1,2,4-Trimethylbenzene	0.008	0.025	0.060	<	0.025	<	0.031	08/26/96
1,3,5-Trimethylbenzene	0.023	0.025	0.060	<	0.025	<	0.031	08/26/96
Vinyl Chloride	0.002	0.025	0.060	<	0.025	<	0.031	SPL 08/26/96
m- & p-Xylene	0.013	0.025	0.060	<	0.025	<	0.031	08/26/96
o-Xylene & Styrene	0.012	0.025	0.060		0.098		0.122	08/26/96

\* = Regulatory Limit based on total Xylene.

All analyses conducted in accordance with Enviroscan Quality Assurance Program.

Enviroscan Corp., 303 West Military Rd., Rothschild, WI 54474 1/800/338-SCAN Wisconsin Lab Certification No. 737053130



# ANALYTICAL REPORT

# ENVIROSCAN

Short Elliott Hendrickson, Inc.  
421 Frenette Drive  
Chippewa Falls, WI 54729

Attn: John Guhl

CUST NUMBER: FRASE9401.00  
SAMPLED BY: Client  
DATE REC'D: 08/20/96  
REPORT DATE: 08/30/96  
PREPARED BY: CKV *CKV*  
REVIEWED BY: *SPM*

Client Sample MW-1,5-7' , Enviroscan Analytical # 74871, Results are in Units of mg/kg

Method EPA 8021	MDL	LUST LOD	LUST LOQ	RESULT		Quality Control Qualifiers	Analysis Date
				Wet	Dry		
Benzene	0.012	0.025	0.060	< 0.025	< 0.025		08/23/96
Ethylbenzene	0.006	0.025	0.060	< 0.025	< 0.025		08/23/96
Methyl tert Butyl Ether	0.016	0.025	0.060	< 0.025	< 0.025		08/23/96
1,2,4-Trimethylbenzene	0.007	0.025	0.060	< 0.025	< 0.025		08/23/96
1,3,5-Trimethylbenzene	0.019	0.025	0.060	< 0.025	< 0.025		08/23/96
m- & p-Xylene	0.011	0.025	0.060	0.041	0.041		08/23/96
o-Xylene & Styrene	0.010	0.025	0.060	< 0.025	< 0.025		08/23/96
Toluene	0.003	0.025	0.060	0.035	0.035		08/23/96

Client Sample MW-3, 12.5-14.5 , Enviroscan Analytical # 74872, Results are in Units of mg/kg

Method EPA 8021	MDL	LUST LOD	LUST LOQ	RESULT		Quality Control Qualifiers	Analysis Date
				Wet	Dry		
Benzene	0.012	0.025	0.060	0.045	0.045		08/23/96
Ethylbenzene	0.006	0.025	0.060	0.032	0.032		08/23/96
Methyl tert Butyl Ether	0.016	0.025	0.060	< 0.025	< 0.025		08/23/96
1,2,4-Trimethylbenzene	0.007	0.025	0.060	< 0.063	< 0.063		08/23/96
1,3,5-Trimethylbenzene	0.019	0.025	0.060	< 0.025	< 0.025		08/23/96
m- & p-Xylene	0.011	0.025	0.060	0.135	0.135		08/23/96
o-Xylene & Styrene	0.010	0.025	0.060	0.045	0.045		08/23/96
Toluene	0.003	0.025	0.060	0.126	0.126		08/23/96

Client Sample MW-4, 7.5-9.5' , Enviroscan Analytical # 74873, Results are in Units of mg/kg

Method EPA 8021	MDL	LUST LOD	LUST LOQ	RESULT		Quality Control Qualifiers	Analysis Date
				Wet	Dry		
Benzene	0.012	0.025	0.060	< 0.025	< 0.025		08/28/96
Ethylbenzene	0.006	0.025	0.060	< 0.025	< 0.025		08/28/96
Methyl tert Butyl Ether	0.016	0.025	0.060	< 0.025	< 0.025		08/28/96
1,2,4-Trimethylbenzene	0.007	0.025	0.060	< 0.025	< 0.025		08/28/96
1,3,5-Trimethylbenzene	0.019	0.025	0.060	< 0.025	< 0.025		08/28/96
m- & p-Xylene	0.011	0.025	0.060	< 0.025	< 0.025		08/28/96
o-Xylene & Styrene	0.010	0.025	0.060	< 0.025	< 0.025		08/28/96
Toluene	0.003	0.025	0.060	0.026	0.026		08/28/96

Client Sample MW-5, 2.5-4.5' , Enviroscan Analytical # 74874, Results are in Units of mg/kg

Method EPA 8021	MDL	LUST LOD	LUST LOQ	RESULT		Quality Control Qualifiers	Analysis Date
				Wet	Dry		
Benzene	0.012	0.025	0.060	< 0.025	< 0.025		08/23/96
Ethylbenzene	0.006	0.025	0.060	< 0.025	< 0.025		08/23/96
Methyl tert Butyl Ether	0.016	0.025	0.060	< 0.025	< 0.025		08/23/96
1,2,4-Trimethylbenzene	0.007	0.025	0.060	< 0.025	< 0.025		08/23/96
1,3,5-Trimethylbenzene	0.019	0.025	0.060	< 0.025	< 0.025		08/23/96
m- & p-Xylene	0.011	0.025	0.060	0.041	0.041		08/23/96
o-Xylene & Styrene	0.010	0.025	0.060	< 0.025	< 0.025		08/23/96
Toluene	0.003	0.025	0.060	0.037	0.037		08/23/96

\* = Regulatory Limit based on total Xylene.

All analyses conducted in accordance with Enviroscan Quality Assurance Program.

Enviroscan Corp., 303 West Military Rd., Rothschild, WI 54474 1/800/338-SCAN Wisconsin Lab Certification No. 737053130

# ANALYTICAL REPORT **ENVIROSCAN**

Short Elliott Hendrickson, Inc.  
 421 Frenette Drive  
 Chippewa Falls, WI 54729

CUST NUMBER: FRASE9401.0  
 SAMPLED BY: Client  
 DATE REC'D: 08/20/96  
 REPORT DATE: 08/30/96  
 PREPARED BY: CKV *ckv*  
 REVIEWED BY: *SM*

Attn: John Guhl

	<u>Units</u>	<u>Reporting Limit</u>	<u>HAX-3 08/15/96</u>	<u>Qualifiers</u>	<u>Date Analyzed</u>
<u>EPA 160.3</u>					
Total Solids	%	-	78.6		08/20/96
<u>EPA 6010</u>					
Chromium	mg/kg	1.1	10.5		08/27/96
Lead	mg/kg	5.1	33.3		08/27/96

Analytical No.: 74862

	<u>Units</u>	<u>Reporting Limit</u>	<u>HAX-4 08/15/96</u>	<u>Qualifiers</u>	<u>Date Analyzed</u>
<u>EPA 160.3</u>					
Total Solids	%	-	92.4		08/20/96
<u>EPA 6010</u>					
Chromium	mg/kg	0.9	3.35		08/27/96
Lead	mg/kg	4.3	X		08/27/96

Analytical No.: 74863

	<u>Units</u>	<u>Reporting Limit</u>	<u>HAX-5 08/15/96</u>	<u>Qualifiers</u>	<u>Date Analyzed</u>
<u>EPA 160.3</u>					
Total Solids	%	-	81.2		08/20/96
<u>EPA 6010</u>					
Chromium	mg/kg	1.0	2.92		08/27/96
Lead	mg/kg	4.9	X		08/27/96

Analytical No.: 74864

	<u>Units</u>	<u>Reporting Limit</u>	<u>HAX-6 08/15/96</u>	<u>Qualifiers</u>	<u>Date Analyzed</u>
<u>EPA 160.3</u>					
Total Solids	%	-	80.1		08/20/96
<u>EPA 6010</u>					
Chromium	mg/kg	1.0	2.80		08/27/96
Lead	mg/kg	5.0	X		08/27/96

Analytical No.: 74865

X = Analyzed but not detected.  
 Results calculated on a dry weight basis.

All analyses conducted in accordance with Enviroscan Quality Assurance Program.



# ANALYTICAL REPORT

# ENVIROSCAN

Short Elliott Hendrickson, Inc.  
421 Frenette Drive  
Chippewa Falls , WI 54729

CUST NUMBER: FRASE9401.0  
SAMPLED BY: Client  
DATE REC'D: 08/20/96  
REPORT DATE: 08/30/96  
PREPARED BY: CKV *ud*  
REVIEWED BY: *ams*

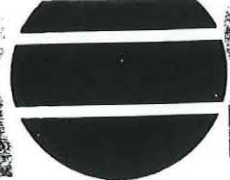
Attn: John Guhl

## Qualifier Descriptions

CSH	Check standard for this analyte exhibited a high bias. Sample results may also be biased high. Non-detects were verified by comparison with a low standard.
SPH	The matrix spike included with this analytical batch had a high recovery. Since that sample matrix appears similar to your sample, your result may also be high.
SPL	The matrix spike included with this analytical batch had a low recovery. Since that sample matrix appears similar to your sample, your result may also be low.
DUP	Result of duplicate analysis in this quality assurance batch exceeds the limits for precision. Sample results may also show a degree of variability.
CSL	Check standard for this analyte exhibited a low bias. Sample results may also be biased low. Non-detects were verified by comparison with a low standard.

All analyses conducted in accordance with Enviroscan Quality Assurance Program.

Enviroscan Corp., 303 West Military Rd., Rothschild, WI 54474 1/800/338-SCAN Wisconsin Lab Certification No. 737053130



Sample Receipt Report

Client: Short

Date Received: 8/20/96

Analytical No.: 74862 Through 74878

Check all deviations from EPA or WDNR sample protocol.

- Sample(s) received at \_\_\_\_ °C which is above the EPA and WDNR limit of 4°C.
- VOC vial(s) received with headspace. Explain: \_\_\_\_\_
- Sample(s) received in bottles not furnished by Enviroscan. Preservation method, if used, is unknown.
- Sample(s) not properly preserved per EPA/WDNR protocol for the following: \_\_\_\_\_
- Sample(s) received beyond EPA holding time for: \_\_\_\_\_
- Sample date/time not supplied by client. Actual holding time unknown.
- GRO/PVOC/VOC/DRO (circle appropriate) sample(s) are < 19.5 gms and this report is the flag for that information. Sample(s) under-weight: \_\_\_\_\_
- GRO/PVOC/VOC (circle appropriate) sample(s) were between 26.4-35.4 gms so methanol was added in a 1:1 ratio. Sample(s) included: 74871 → 3ml, 74873 → 3ml, 74874 → 4ml, 74877 → 0.5ml
- GRO/PVOC/VOC/DRO (circle appropriate) sample(s) were > 35.4 gms and are required to be rejected. Sample(s) included: \_\_\_\_\_
- Other: report on wet weight no total solid for samples 74871 → 74878

Client contact concerning the above deviations:

Client John Gphl (contact name) notified of the above deviation(s) on 8/22/96 at 9:00 am/pm by Channon K. Mathey and the client ordered: (signature)

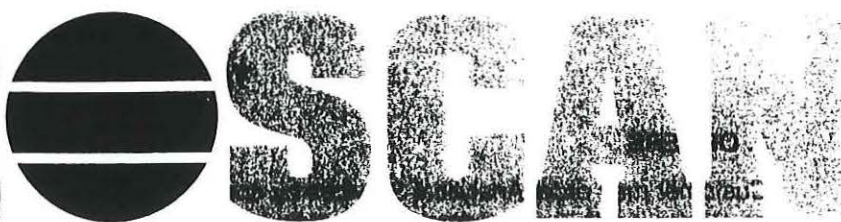
- Proceed with analyses as ordered.
- Proceed with analyses after taking the following corrective action: \_\_\_\_\_
- Do NOT proceed with analyses.







# REQUEST FOR SERVICES



303 W. MILITARY RD. ROTHSCHILD, WI 54474 1-800-338-SCAN

**REPORT TO:**

Name: JOHN GUHL  
 Company: SHORT ELLIOTT HENDRICKSON INC.  
 Address: 421 FRENETTE DRIVE  
C.F., WI 54729  
 Phone: ( 715 ) 720-6200  
 P.O. # FRASER  
 Project # FRASE9401.00 Quote # \_\_\_\_\_

**BILL TO: (if different from Report To info):**

Name: \_\_\_\_\_  
 Company: \_\_\_\_\_  
 Address: \_\_\_\_\_  
 Phone: ( \_\_\_\_\_ ) \_\_\_\_\_

**ANALYTICAL REQUESTS**

(use separate sheet if necessary)

- Sample Type**  
 (Check all that apply)
- Groundwater
  - Wastewater
  - Soil/Solid
  - Drinking Water
  - Oil
  - Vapor
  - Other
- Turnaround Time**
- Normal
  - Rush (Pre-approved by Lab)
- Date Needed \_\_\_\_\_  
 Approved By \_\_\_\_\_

DATE	TIME	No. of Containers		SAMPLE ID	Pvocs	DRO	REMARKS
		COMP	GRAB				
8-16-96				MW-3, 12.5'-14.5'			pvoc = 26.9
8-16-96				MW-4, 7.5'-9.5'			pvoc = 28.0
8-16-96				MW-5, 2.5'-4.5'			pvoc = 28.7 DRO = 27.6
8-16-96				B-1, 2.5'-4.5'			pvoc = 26.0 DRO = 25.3
8-16-96				B-1, 7.5'-9.5'			pvoc = 25.5 DRO = 26.0
8-16-96				B-2, 2.5'-4.5'			pvoc = 27.5 DRO = 26.3
8-16-96				B-2, 5'-7'			pvoc = 26.4 DRO = 28.6

**CHAIN OF CUSTODY RECORD**

SAMPLERS: (Signature) \_\_\_\_\_

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)

Comments: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

RECEIVED FOR LABORATORY BY (Signature) \_\_\_\_\_ DATE/TIME \_\_\_\_\_  
 \_\_\_\_\_ 8-20-96 10



September 16, 1996

ENVIRONMENTAL AND  
ANALYTICAL SERVICES

Short Elliott Hendrickson, Inc.  
421 Frenette Drive  
Chippewa Falls , WI 54729

SEP 18 1996

Attn: John Guhl

Re: FRASE9401.00

Please find enclosed the analytical results for the samples received August 31, 1996.

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

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.

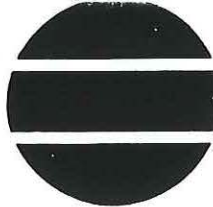
Sincerely,

US Filter/Enviroscan

Jay C. Hunger  
Analytical Chemist



# ANALYTICAL REPORT



Short Elliott Hendrickson, Inc.  
421 Frenette Drive  
Chippewa Falls, WI 54729

CUST NUMBER: FRASE9401.0  
SAMPLED BY: Client  
DATE REC'D: 08/31/96  
REPORT DATE: 09/16/96  
PREPARED BY: JCH  
REVIEWED BY: *[Signature]*

Attn: John Guhl

	<u>Units</u>	<u>Reporting Limit</u>	<u>MW-3</u> <u>08/29/96</u>	<u>Qualifiers</u>	<u>Date Analyzed</u>
<u>EPA 8021</u>					
Benzene	µg/l	0.5	X		09/04/96
Ethylbenzene	µg/l	1.0	X		09/04/96
Methyl tert Butyl Ether	µg/l	1.0	X		09/04/96
Toluene	µg/l	1.0	X		09/04/96
1,2,4-Trimethylbenzene	µg/l	1.0	X		09/04/96
1,3,5-Trimethylbenzene	µg/l	1.0	X		09/04/96
m- & p-Xylene	µg/l	1.0	X		09/04/96
o-Xylene	µg/l	1.0	X		09/04/96

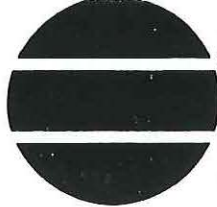
Analytical No.:

75798

X = Analyzed but not detected.



# ANALYTICAL REPORT



Short Elliott Hendrickson, Inc.  
421 Frenette Drive  
Chippewa Falls, WI 54729

CUST NUMBER: FRASE9401.0  
SAMPLED BY: Client  
DATE REC'D: 08/31/96  
REPORT DATE: 09/16/96  
PREPARED BY: JCH  
REVIEWED BY: *[Signature]*

Attn: John Guhl

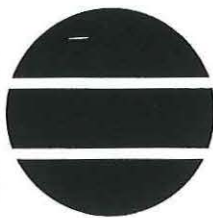
	<u>Units</u>	<u>Reporting Limit</u>	<u>MW-4 08/29/96</u>	<u>Qualifiers</u>	<u>Date Analyzed</u>
<b><u>EPA 8021</u></b>					
Benzene	µg/l	0.5	X		09/04/96
Ethylbenzene	µg/l	1.0	X		09/04/96
Methyl tert Butyl Ether	µg/l	1.0	X		09/04/96
Toluene	µg/l	1.0	X		09/04/96
1,2,4-Trimethylbenzene	µg/l	1.0	X		09/04/96
1,3,5-Trimethylbenzene	µg/l	1.0	X		09/04/96
m- & p-Xylene	µg/l	1.0	X		09/04/96
o-Xylene	µg/l	1.0	X		09/04/96

Analytical No.:

75799

X = Analyzed but not detected.

# REQUEST FOR SERVICES



# SCAN

303 W. MILITARY RD. ROTHSCHILD, WI 54474 1-800-338-SCAN

**REPORT TO:**

Name: John Guhl  
 Company: SEIT Inc.  
 Address: 421 Frenette Dr.  
Chippewa Falls, WI 54729  
 Phone: ( 715 ) 720-6200  
 P.O. # \_\_\_\_\_  
 Project # FRASE 9401.00 Quote # 3741-5

**BILL TO: (if different from Report To info):**

Name: \_\_\_\_\_  
 Company: \_\_\_\_\_  
 Address: \_\_\_\_\_  
 Phone: ( \_\_\_\_\_ ) \_\_\_\_\_

**ANALYTICAL REQUESTS**

(use separate sheet if necessary)

**Sample Type**

(Check all that apply)

- Groundwater
- Wastewater
- Soil/Solid
- Drinking Water
- Oil
- Vapor
- Other

**Turnaround Time**

- Normal
- Rush (Pre-approved by Lab)

Date Needed \_\_\_\_\_

Approved By \_\_\_\_\_

LAB USE ONLY	DATE	TIME	No. of Containers		SAMPLE ID	ANALYTICAL REQUESTS							REMARKS	
			COMP	GRAB		PAHS	LNNA A	VOCs	PVOCs	F-Pb	F-Cd	Lead, Cadmium		F-Cr
10075796	8/29/96	9:40 AM		4	MW-1	X	X		X					Page 1 of 2
10075797	↓	12:45		1	MW-2								X	
10075798		11:30		2	MW-3			X						
10075799		11:35		2	MW-4			X						
10075800		1:00		2	Dup-1		X							
10075801				2	Trip Blank		X							
				1	Temp Blank									

Short

Fraserish

## CHAIN OF CUSTODY RECORD

SAMPLERS: (Signature)

John Guhl

Del'v: Hand Comm.   
 Ship. Cont. OK?  N N/A  
 Samples leaking?  Y  N/A  
 Seals OK?  Y N N/A  
 Rec'd on ice?  Y N N/A °C

Comments: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
<u>John Guhl</u>	8/30/96 9:30 AM	
RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED FOR LABORATORY BY: (Signature)
		<u>Missikaonke</u>

DATE/TIME  
 8/31/96 9:15am



---

## **Appendix B**

### Soil Boring Logs

Facility/Project Name <b>FRASER SHIPYARD</b>		License/Permit/Monitoring Number	Boring Number <b>MW-3 (TW-3)</b>	
Boring Drilled By (Firm name and name of crew chief) <b>MES - Erik Schoenberg</b>		Date Drilling Started <b>8/16/96</b>	Date Drilling Completed <b>8/16/96</b>	Drilling Method <b>4 1/4" ID HSA</b>
DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level Feet MSL	Surface Elevation Feet MSL
Boring Location State Plane		Lat    0' "		Local Grid Location (If applicable)
1/4 of	1/4 of Section	T    N,R		Feet <input type="checkbox"/> N <input type="checkbox"/> E <input type="checkbox"/> S <input type="checkbox"/> W
County <b>DOUGLAS</b>		DNR County Code	Civil Town/City/ or Village <b>SUPERIOR</b>	

Sample Number	Length (in) Recovered	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments	
									Standard Penetration	Moisture Content	Liquid Limit	Plastic Limit	P 200		
1	18	5+4-3	2	FILL: Brown Lean Clay, Little Sand and Gravel, Occasional Concrete, Brick and Wood Pieces				ND	8						
2	19	5-3-4-4	4						ND	7					
3	7	4-3-2-4	6						ND	5					
4	16	7-17-20-15	8						ND	37					
5	12	2-2-4-5	10						ND	6					
6	18	5-3-4-3	12						ND	7					
7	20	4-3-3-3	16	Brown Fibrous PEAT	PT			ND	6						
8	17	4-5-5-6	18	Reddish-Brown Lean CLAY, Little Sand and Gravel	CL			ND	10						
				End of Boring at 19.5 feet											

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature 	Firm SEH 421 Frenette Drive Chippewa Falls, WI. 54729 Tel: 715-720-6200, Fax: 715-720-6300
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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.

Facility/Project Name <b>FRASER SHIPYARD</b>			License/Permit/Monitoring Number		Boring Number <b>MW-4 (TW-4)</b>	
Boring Drilled By (Firm name and name of crew chief) <b>MES - Erik Schoenberg</b>			Date Drilling Started <b>8/16/96</b>		Date Drilling Completed <b>8/16/96</b>	
DNR Facility Well No.			WI Unique Well No.		Common Well Name	
Final Static Water Level Feet MSL			Surface Elevation Feet MSL		Borehole Diameter <b>8.2 Inches</b>	
Boring Location State Plane 1/4 of      1/4 of Section			N, E T      N,R		Local Grid Location (If applicable) <input type="checkbox"/> N <input type="checkbox"/> E <input type="checkbox"/> S <input type="checkbox"/> W	
County <b>DOUGLAS</b>			DNR County Code		Civil Town/City/ or Village <b>SUPERIOR</b>	

Sample Number	Length (in) Recovered	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments
									Standard Penetration	Moisture Content	Liquid Limit	Plastic Limit	P 200	
1	12	2-3-3-6	0-2	FILL: Mixture of Brown Lean Clay and Brown Silty Sand, Some Gravel, Occasional Concrete, Brick and Wood Pieces				ND	6					
2	14	6-9-9-7	2-4					ND	18					
3	17	10-7-10-7	4-6					ND	17					
4	17	9-4-16-12	6-8					ND	20					
5	22	2-1-1-3	8-10					ND	2					
6	18	6-2-2-2	10-14					ND	4					
7	1	4-2-2-3	14-16	Brown Fibrous PEAT	PT			ND	4					
				End of Boring at 17.0 feet										

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature

*John E. Gull*

Firm



SEH 421 Frenette Drive  
Chippewa Falls, WI. 54729  
Tel: 715-720-6200, Fax: 715-720-6300

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**Appendix C**  
Monitoring Well Forms

Facility/Project Name <b>FRASER SHIPYARD</b>	Local Grid Location of Well _____ ft. <input type="checkbox"/> N. _____ ft. <input type="checkbox"/> E. _____ ft. <input type="checkbox"/> S. _____ ft. <input type="checkbox"/> W.	Well Name <b>MW-3 (TW-3)</b>
Facility License, Permit or Monitoring Number	Grid Origin Location Lat. _____ " Long. _____ " or St. Plane _____ ft. N. _____ ft. E.	Wis. Unique Well Number _____ DNR Well Number _____
Type of Well Water Table Observation Well <input checked="" type="checkbox"/> 11 Piezometer <input type="checkbox"/> 12	Section Location of Waste/Source _____ 1/4 of _____ 1/4 of Sec. _____ T. _____ N. R. _____ <input type="checkbox"/> E. <input type="checkbox"/> W.	Date Well Installed <b>8/16/96</b>
Distance Well Is From Waste/Source Boundary _____ ft.	Location of Well Relative to Waste/Source u <input type="checkbox"/> Upgradient s <input type="checkbox"/> Sidegradient d <input type="checkbox"/> Downgradient n <input checked="" type="checkbox"/> Not Known	Well Installed By: (Person's Name and Firm) <b>Erik Schoenberg</b>
Is Well A Point of Enforcement Std. Application? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		<b>MES</b>

- A. Protective pipe, top elevation \_\_\_\_\_ ft. MSL
- B. Well casing, top elevation \_\_\_\_\_ ft. MSL
- C. Land surface elevation \_\_\_\_\_ ft. MSL
- D. Surface seal, bottom \_\_\_\_\_ ft. MSL or 2.2 ft.

12. USC classification of soil near screen:  
 GP  GM  GC  GW  SW  SP   
 SM  SC  ML  MH  CL  CH   
 Bedrock

13. Sieve analysis attached?  Yes  No

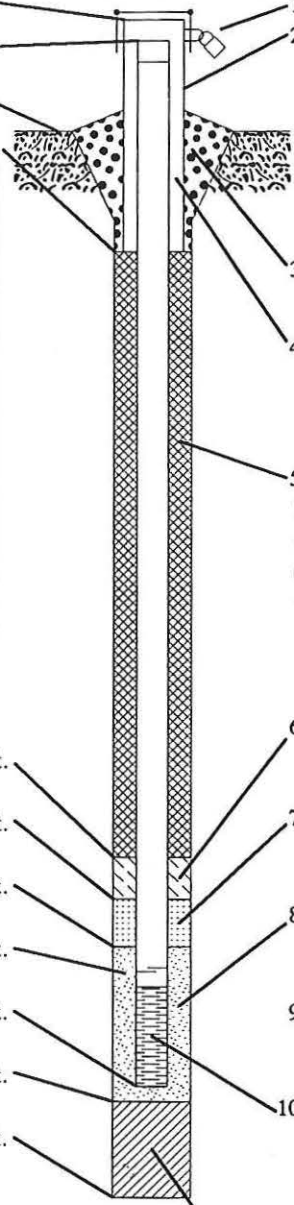
14. Drilling method used: Rotary  5 0  
 Hollow Stem Auger  4 1  
 \_\_\_\_\_ Other

15. Drilling fluid used: Water  0 2 Air  0 1  
 Drilling Mud  0 3 None  9 9

16. Drilling additives used?  Yes  No  
 Describe NA

17. Source of water (attach analysis):  
NA

- E. Bentonite seal, top \_\_\_\_\_ ft. MSL or 2.2 ft.
- F. Fine sand, top \_\_\_\_\_ ft. MSL or 6.2 ft.
- G. Filter pack, top \_\_\_\_\_ ft. MSL or 7.2 ft.
- H. Screen joint, top \_\_\_\_\_ ft. MSL or 9.5 ft.
- I. Well bottom \_\_\_\_\_ ft. MSL or 19.5 ft.
- J. Filter pack, bottom \_\_\_\_\_ ft. MSL or 19.5 ft.
- K. Borehole, bottom \_\_\_\_\_ ft. MSL or 20.0 ft.
- L. Borehole, diameter 8.2 in.
- M. O.D. well casing 2.40 in.
- N. I.D. well casing 2.00 in.



- 1. Cap and lock?  Yes  No
- 2. Protective cover pipe: **NONE, TEMPORARY WELL**  
 a. Inside diameter: \_\_\_\_\_ in.  
 b. Length: \_\_\_\_\_ ft.  
 c. Material: Steel  0 4  
 Other
- d. Additional protection?  Yes  No  
 If yes, describe: \_\_\_\_\_
- 3. Surface seal:  
 Bentonite  3 0  
 Concrete  0 1  
 Other
- 4. Material between well casing and protective pipe:  
 Bentonite  3 0  
 Annular space seal   
 Other
- 5. Annular space seal:  
 a. **Chipped Granular** Bentonite  3 3  
 b. \_\_\_\_\_ Lbs/gal mud weight . . . Bentonite-sand slurry  3 5  
 c. \_\_\_\_\_ Lbs/gal mud weight . . . Bentonite slurry  3 1  
 d. \_\_\_\_\_ % Bentonite . . . Bentonite-cement grout  5 0  
 e. \_\_\_\_\_ Ft<sup>3</sup> volume added for any of the above  
 f. How installed: Tremie  0 1  
 Tremie pumped  0 2  
 Gravity  0 8  
**chips**
- 6. Bentonite seal:  
 a. Bentonite  3 3  
 b.  1/4 in.  3/8 in.  1/2 in. Bentonite pellets  3 2  
 c. \_\_\_\_\_ Other
- 7. Fine sand material: Manufacturer, product name and mesh size  
 a. **Red Flint Filter Sand #45 -#55 Mesh**  
 b. Volume added 1 bag ft<sup>3</sup>
- 8. Filter pack material: Manufacturer, product name and mesh size  
 a. **Red Flint Filter Sand #30 Mesh**  
 b. Volume added 7 bags ft<sup>3</sup>
- 9. Well casing: Flush threaded PVC schedule 40  2 3  
 Flush threaded PVC schedule 80  2 4  
 Other
- 10. Screen material: **Flush thread. PVC Sch. 40**  
 a. Screen Type: Factory cut  1 1  
 Continuous slot  0 1  
 Other   
 b. Manufacturer **Diedrich**  
 c. Slot size: 0.010 in.  
 d. Slotted length: 10.0 ft.
- 11. Backfill material (below filter pack): None  1 4  
 Other

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature John E. Schell Firm **ESEN** Short Elliott Hendrickson, Inc. Tel: (715) 720-6200  
 421 Frenette Drive, Chippewa Falls, WI 54729 Fax: (715) 720-6300

Please complete both sides of this form and return to the appropriate DNR office listed at the top of this form as required by chs. 144, 147 and 160, Wis. Stats., and ch. NR 141, Wis. Ad. Code. In accordance with ch. 144, Wis. Stats., failure to file this form may result in a forfeiture of not less than \$10, nor more than \$5000 for each day of violation. In accordance with ch. 147, Wis. Stats., failure to file this form may result in a forfeiture of not more than \$10,000 for each day of violation. NOTE: Shaded areas are for DNR use only. See instructions for more information including where the completed form should be sent.



Facility/Project Name <b>FRASER SHIPYARD</b>	Local Grid Location of Well _____ ft. <input type="checkbox"/> N. _____ ft. <input type="checkbox"/> E. _____ ft. <input type="checkbox"/> S. _____ ft. <input type="checkbox"/> W.	Well Name <b>MW-4 (TW-4)</b>
Facility License, Permit or Monitoring Number	Grid Origin Location Lat. _____ Long. _____ or	Wis. Unique Well Number _____ DNR Well Number _____
Type of Well Water Table Observation Well <input checked="" type="checkbox"/> 11 Piezometer <input type="checkbox"/> 12	St. Plane _____ ft. N, _____ ft. E.	Date Well Installed <b>8/16/96</b>
Distance Well Is From Waste/Source Boundary _____ ft.	Section Location of Waste/Source _____ 1/4 of _____ 1/4 of Sec. _____ T. _____ N, R. _____ <input type="checkbox"/> E. _____ <input type="checkbox"/> W.	Well Installed By: (Person's Name and Firm) <b>Erik Shoenberg</b>
Is Well A Point of Enforcement Std. Application? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Location of Well Relative to Waste/Source u <input type="checkbox"/> Upgradient s <input type="checkbox"/> Sidegradient d <input type="checkbox"/> Downgradient n <input checked="" type="checkbox"/> Not Known	<b>MES</b>

A. Protective pipe, top elevation \_\_\_\_\_ ft. MSL  Yes  No

B. Well casing, top elevation \_\_\_\_\_ ft. MSL

C. Land surface elevation \_\_\_\_\_ ft. MSL

D. Surface seal, bottom \_\_\_\_\_ ft. MSL or **2.2** ft.

12. USC classification of soil near screen:  
GP  GM  GC  GW  SW  SP   
SM  SC  ML  MH  CL  CH   
Bedrock

13. Sieve analysis attached?  Yes  No

14. Drilling method used: Rotary  5 0  
Hollow Stem Auger  4 1  
Other

15. Drilling fluid used: Water  0 2 Air  0 1  
Drilling Mud  0 3 None  9 9

16. Drilling additives used?  Yes  No  
Describe NA

17. Source of water (attach analysis):  
NA

E. Bentonite seal, top \_\_\_\_\_ ft. MSL or **2.2** ft.

F. Fine sand, top \_\_\_\_\_ ft. MSL or **4.5** ft.

G. Filter pack, top \_\_\_\_\_ ft. MSL or **5.5** ft.

H. Screen joint, top \_\_\_\_\_ ft. MSL or **7.0** ft.

I. Well bottom \_\_\_\_\_ ft. MSL or **17.0** ft.

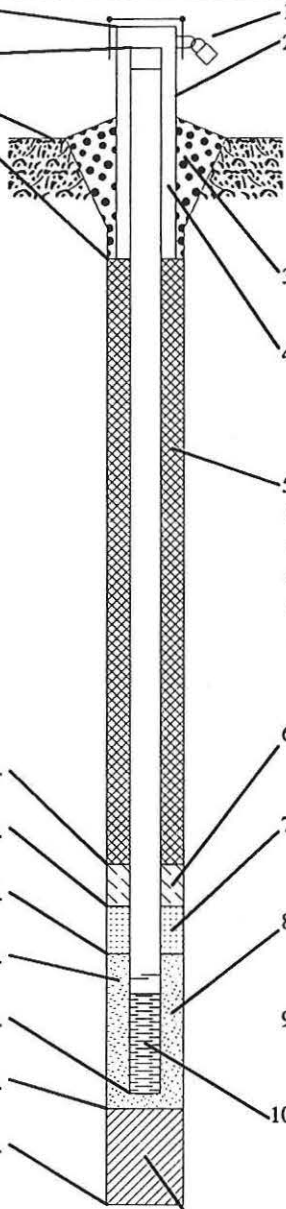
J. Filter pack, bottom \_\_\_\_\_ ft. MSL or **17.0** ft.

K. Borehole, bottom \_\_\_\_\_ ft. MSL or **17.0** ft.

L. Borehole, diameter **8.2** in.

M. O.D. well casing **2.40** in.

N. I.D. well casing **2.00** in.



1. Cap and lock?  Yes  No

2. Protective cover pipe: **NONE, TEMPORARY WELL**

a. Inside diameter: \_\_\_\_\_ in.

b. Length: \_\_\_\_\_ ft.

c. Material: Steel  0 4  
Other

d. Additional protection?  Yes  No  
If yes, describe: \_\_\_\_\_

3. Surface seal: Bentonite  3 0  
Concrete  0 1  
Other

4. Material between well casing and protective pipe: Bentonite  3 0  
Annular space seal   
Other

5. Annular space seal: a. **chipped Granular** Bentonite  3 3  
b. \_\_\_\_\_ Lbs/gal mud weight . . . Bentonite-sand slurry  3 5  
c. \_\_\_\_\_ Lbs/gal mud weight . . . Bentonite slurry  3 1  
d. \_\_\_\_\_ % Bentonite . . . Bentonite-cement grout  5 0  
e. \_\_\_\_\_ Ft<sup>3</sup> volume added for any of the above  
f. How installed: Tremie  0 1  
Tremie pumped  0 2  
Gravity  0 8

6. Bentonite seal: a. Bentonite **chips granules**  3 3  
b.  1/4 in.  3/8 in.  1/2 in. Bentonite pellets  3 2  
c. \_\_\_\_\_ Other

7. Fine sand material: Manufacturer, product name and mesh size  
a. **Red Flint Filter Sand #45 - #55 Mesh**  
b. Volume added **1 bag** ft<sup>3</sup>

8. Filter pack material: Manufacturer, product name and mesh size  
a. **Red Flint Filter Sand #30 Mesh**  
b. Volume added **7 bags** ft<sup>3</sup>

9. Well casing: Flush threaded PVC schedule 40  2 3  
Flush threaded PVC schedule 80  2 4  
Other

10. Screen material: **Flush thread.PVC Sch 40**  
a. Screen Type: Factory cut  1 1  
Continuous slot  0 1  
Other   
b. Manufacturer **Diedrich**  
c. Slot size: **0.010** in.  
d. Slotted length: **10.0** ft.

11. Backfill material (below filter pack): None  1 4  
Other

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature *John P. Hall* Firm **ESEH** Short Elliott Hendrickson, Inc. Tel: (715) 720-6200  
421 Frenette Drive, Chippewa Falls, WI 54729 Fax: (715) 720-6300

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Route to: Solid Waste  Haz. Waste  Wastewater   
Env. Response & Repair  Underground Tanks  Other  \_\_\_\_\_

Facility/Project Name <b>FRASER SHIPYARD</b>	County <b>DOUGLAS</b>	Well Name <b>MW-3</b>
Facility License, Permit or Monitoring Number	County Code	Wis. Unique Well Number
		DNR Well Number

1. Can this well be purged dry?  Yes  No
2. Well development method:
- surged with bailer and bailed  4 1
  - surged with bailer and pumped  6 1
  - surged with block and bailed  4 2
  - surged with block and pumped  6 2
  - surged with block, bailed, and pumped  7 0
  - compressed air  2 0
  - bailed only  1 0
  - pumped only  5 1
  - pumped slowly  5 0
  - other \_\_\_\_\_
3. Time spent developing well **75 min.**
4. Depth of well (from top of well casing) **22.5 ft.**
5. Inside diameter of well **2.07 in.**
6. Volume of water in filter pack and well casing **11.9 gal.**
7. Volume of water removed from well **11.0 gal.**
8. Volume of water added (if any) **0.0 gal.**
9. Source of water added \_\_\_\_\_
10. Analysis performed on water added?  Yes  No  
(If yes, attach results)

	Before Development	After Development
11. Depth to Water (from top of well casing)	a. 9.06 ft.	21.60 ft.
Date	b. 8/29/96	8/29/96
Time	c. 10:15 <input checked="" type="checkbox"/> a.m. <input type="checkbox"/> p.m.	11:55 <input checked="" type="checkbox"/> a.m. <input type="checkbox"/> p.m.
12. Sediment in well bottom	0.0 inches	0.0 inches
13. Water clarity	Clear <input type="checkbox"/> 1 0 Turbid <input checked="" type="checkbox"/> 1 5 (Describe) <u>slightly turbid</u>	Clear <input type="checkbox"/> 2 0 Turbid <input checked="" type="checkbox"/> 2 5 (Describe) <u>Slightly turbid</u>
Fill in if drilling fluids were used and well is at solid waste facility:		
14. Total suspended solids	mg/l	mg/l
15. COD	mg/l	mg/l

16. Additional comments on development:  
**Well purged dry after pumping 9 gallons; very slow to recharge**

Well developed by: Person's Name and Firm

Name: Trevor Bauer

Firm: SEH Inc.

I hereby certify that the above information is true and correct to the best of my knowledge.

Signature:

Print Initials: TJB

Firm:  Short Elliott Hendrickson Inc.

NOTE: Shaded areas are for DNR use only. See instructions for more information including a list of county codes.

Route to: Solid Waste  Haz. Waste  Wastewater   
Env. Response & Repair  Underground Tanks  Other  \_\_\_\_\_

Facility/Project Name <b>FRASER SHIPYARD</b>	County <b>DOUGLAS</b>	Well Name <b>MW-4</b>
Facility License, Permit or Monitoring Number	County Code	Wis. Unique Well Number
		DNR Well Number

1. Can this well be purged dry?  Yes  No

2. Well development method:

- surged with bailer and bailed  4 1
- surged with bailer and pumped  6 1
- surged with block and bailed  4 2
- surged with block and pumped  6 2
- surged with block, bailed, and pumped  7 0
- compressed air  2 0
- bailed only  1 0
- pumped only  5 1
- pumped slowly  5 0
- other \_\_\_\_\_

3. Time spent developing well **60 min.**

4. Depth of well (from top of well casing) **20.3 ft.**

5. Inside diameter of well **2.07 in.**

6. Volume of water in filter pack and well casing **9.7 gal.**

7. Volume of water removed from well **11.0 gal.**

8. Volume of water added (if any) **0.0 gal.**

9. Source of water added \_\_\_\_\_

10. Analysis performed on water added?  Yes  No  
(If yes, attach results)

	Before Development	After Development
11. Depth to Water (from top of well casing)	a. <b>9.36 ft.</b>	<b>18.32 ft.</b>
Date	b. <b>8/29/96</b>	<b>8/29/96</b>
Time	c. <b>10:45</b> <input checked="" type="checkbox"/> a.m. <input type="checkbox"/> p.m.	<b>11:45</b> <input checked="" type="checkbox"/> a.m. <input type="checkbox"/> p.m.
12. Sediment in well bottom	<b>0.0 inches</b>	<b>0.0 inches</b>
13. Water clarity	Clear <input type="checkbox"/> 1 0 Turbid <input checked="" type="checkbox"/> 1 5 (Describe) <u>slightly turbid</u>	Clear <input type="checkbox"/> 2 0 Turbid <input checked="" type="checkbox"/> 2 5 (Describe) <u>Slightly turbid</u>

Fill in if drilling fluids were used and well is at solid waste facility:

14. Total suspended solids	mg/l	mg/l
15. COD	mg/l	mg/l

16. Additional comments on development:  
**Well purged dry after pumping 8 gallons; slow to recharge**

Well developed by: Person's Name and Firm

Name: Trevor Bauer

Firm: SEH Inc.

I hereby certify that the above information is true and correct to the best of my knowledge.

Signature: *Trevor Bauer*

Print Initials: TJB

Firm: **SEH** Short Elliott Hendrickson Inc.

NOTE: Shaded areas are for DNR use only. See instructions for more information including a list of county codes.