The following site is being submitted for inclusion into the GIS registry:

This is a:	New Submittal
BRRTS ID (no dashes):	**0259000493**
Comm # (no dashes):	54166999950
County:	Shawano
Region:	Commerce
Site name:	Schroeder Oil & Excavating Bulk Plant
Street Address:	517 E 5th St
City:	Shawano
Closure Date	2000-07-25
Closure Conditions:	met
Offsite contamination?	No
Right-of-way contamination?	No
Contaminated media:	Groundwater

GPS Coordinates (meters in the **WTM91** projection)

Easting (X):	630585
Northing (Y):	479854
Submitted by:	Cheryl Nelson

Checklist

- ☒ Final Closure Letter
- ☒ Copy of recorded deed Instrument for any property with GW >NR140 ES
- ☒ General Location Map
- ☒ Detailed Location Map showing property boundaries, buildings, etc for properties with GW >NR140 ES
- ☐ Latest Map(s) showing extent or outline of current GW plume
- ☒ GW flow direction
- ☒ MW(s) and/or potable wells
- ☒ Latest Table of GW results

ENVIRONMENTAL & REGULATORY SERVICES
2129 Jackson Street
Oshkosh, Wisconsin 54901
(920) 424-0025
TDD #: (608) 264-8777
www.commerce.state.wi.us

Wisconsin
Department of Commerce

Tommy G. Thompson, Governor
Brenda J. Blanchard, Secretary

May 22, 2000

July 25, 2000

See text box on page 2 for updated status based on receipt of requested information.

Mr. John Hanlon
Schroeder Oil Co.
PO Box 340
Tigerton, WI 54486

Subject: **Conditional Case Closure** – Schroeder Oil Former Bulk Facility
N. Hamlin Street, Shawano
COMMERCE #54166-9999-50 DNR #02-59-000493

Dear Mr. Hanlon:

The above referenced site was reviewed for closure by Wisconsin Department of Commerce PECFA Site Review staff in response to the closure request prepared by your consultant, Delta Environmental. The Wisconsin Department of Natural Resources (WDNR) transferred this site to the Wisconsin Department of Commerce on January 14, 2000 for regulatory oversight. It is understood that there is a small amount of residual soil and groundwater contamination remaining on site following the successful operation of the remediation system. Using the standards established in NR 700, and the risk criteria of Comm 46, the Department has determined that this site does not pose a significant threat to the environment and human health and no further investigation or remedial action is necessary.

The following items are necessary to satisfy the conditions of closure:

1. A notification must be placed on the property deed addressing residual soil and groundwater impacts. Enclosed is an example of a "Notice of Contamination to Property" for your use. If you wish to modify the language, submit a copy to this office for approval prior to filing. For case closure we will need a copy of the deed notification that contains the County Register of Deeds' recording information.
2. All well abandonment forms.

IMPORTANT: Before this case can be officially listed as "closed" on the Wisconsin Department of Commerce/Natural Resources computer database, you or your consultant must submit the requested information.

If, in the future, site conditions indicate that any contamination that remains poses a threat, the need for further remediation would be determined and required if necessary. If subsequent information indicates a need to reopen this case, any original claim under the PECFA fund would also reopen and you may apply for assistance to the extent of remaining eligibility.

It is important to realize that if the land use conditions change in the future and the contaminated soil is disturbed, appropriate measures must be implemented to assure any residual contamination is managed following all applicable State of Wisconsin regulations and standards.

Conditional Case Closure
Schroeder Oil Company Former Bulk Facility 54166-9999-90
N. Hamlin Street, Shawano

If you have any questions, feel free to contact me at (920)424-0025.

Sincerely,

Thomas Verstegen
Hydrogeologist
Department of Commerce

cc: PECFA File – pf\pecfa\541\54166\999950\close well.doc
Mr. Jonathon Zimdars – Delta Environmental

Case Closure

After review of the requested information submitted on July 25, 2000 , the Department concludes that no further action is required at the above referenced site and it is listed as closed on the Department of Commerce computer tracking system.

Thomas Verstegen *July 25, 2000*
Hydrogeologist

54166-9999-50

LD-2

534250

VOL 946 PAGE 411

REGISTERS OFFICE
SHAWANO COUNTY, WI SS
Received for Record this 19th
day of July A.D. 2000 at 2:45
o'clock P M. AND Recorded in Vol. 946
of Records Pages 411-412
Mawa Beyslin Register
REGISTERS OFFICE

Document Number

NOTICE OF CONTAMINATION TO PROPERTY

Legal Description of the Property: In re:

(as it appears on the most recent deed)

That part of lot 4 in Block 7 of Shanahan's Addition to the Village, now City of Shawano, Wisconsin, lying North of the Spur Track of the Wisconsin nd Northern Railroad Company.

Recording Area

Name and Return Address #12 pd 2:45pm

Schroeder Oil Inc
Ralph Schroeder President
P.O. Box 340, Tigerton,
Wisconsin 54486

RECEIVED
JUL 25 2000
ERS DIVISION

Parcel Identification Number (PIN)

STATE OF WISCONSIN)
) ss
COUNTY OF)

Section 1. Ralph Schroeder is the owner of the above-described property.

Section 2. One or more petroleum discharges have occurred at this property. Benzene and MtBE contaminated groundwater above NR 140 enforcement standards and soils above NR 720 residual contaminant levels of the Wisconsin Administrative Code exist(s) on this property.

Section 3. The owner hereby declares that all of the property described above is held and shall be held, conveyed or encumbered, leased, rented, used, occupied and improved subject to the following limitations and/or restrictions:

Anyone who proposes to construct or reconstruct a well on this property is required to contact the Department of Natural Resources' Bureau of Drinking Water and Groundwater, or its successor agency, to determine what specific prohibitions or requirements are applicable, prior to constructing or reconstructing a well on this property. No well may be constructed or reconstructed on this property unless applicable requirements are met.

Also,

Residual petroleum contaminated soil remains on this site. Natural attenuation will continue to reduce contaminant levels. If contaminated soil is excavated in the future, it may be considered a solid waste and will need to be disposed in accordance with all applicable laws.

Any person who is or becomes owner of the property described above may request that the Wisconsin Department of Commerce, or its successor, issue a determination that the restrictions set forth in this covenant are no longer required. That property owner shall provide any and all necessary information to the Department in order for the Department to be able to make a determination. Upon receipt of such a request, the Department shall determine whether or not the restrictions contained herein can be extinguished. Conditions under which a restriction may be extinguished will be

VOL 946 PAGE 412

determined in accordance with the site specific standards, rules and laws for this property. If the Department determines that the restrictions can be extinguished, an affidavit, with a copy of the Department's written determination, may be recorded to give notice that this restriction, or portions of this restriction are no longer binding. Any restriction placed upon this property shall not be extinguished without the Department's written determination.

IN WITNESS WHEREOF, the owner of the property has executed this document, this 19 day of July, 2000.

[When appropriate use the following clause]:

By signing this document, [he/~~she~~] acknowledges that [he/~~she~~] is duly authorized to sign this document on behalf of Ralph Schroeder.

Signature: Ralph Schroeder

Printed Name: Ralph Schroeder

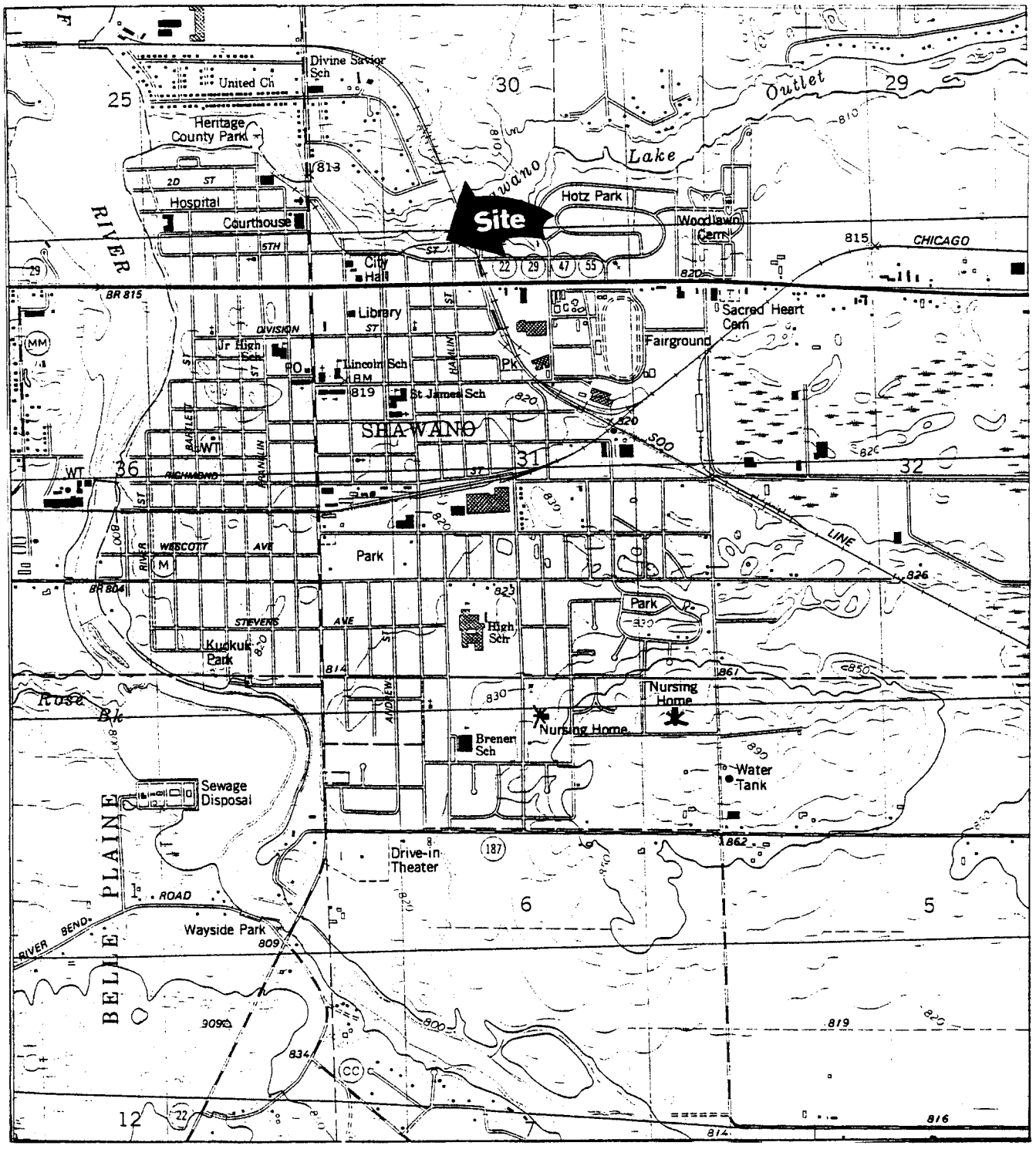
Title: President, Owner

Subscribed and sworn to before me
this 19 day of July, 2000

Michael L Reinert

Notary Public, State of Wisconsin
My commission 9-28-2003

This document was drafted by the Wisconsin Department of Commerce.



North

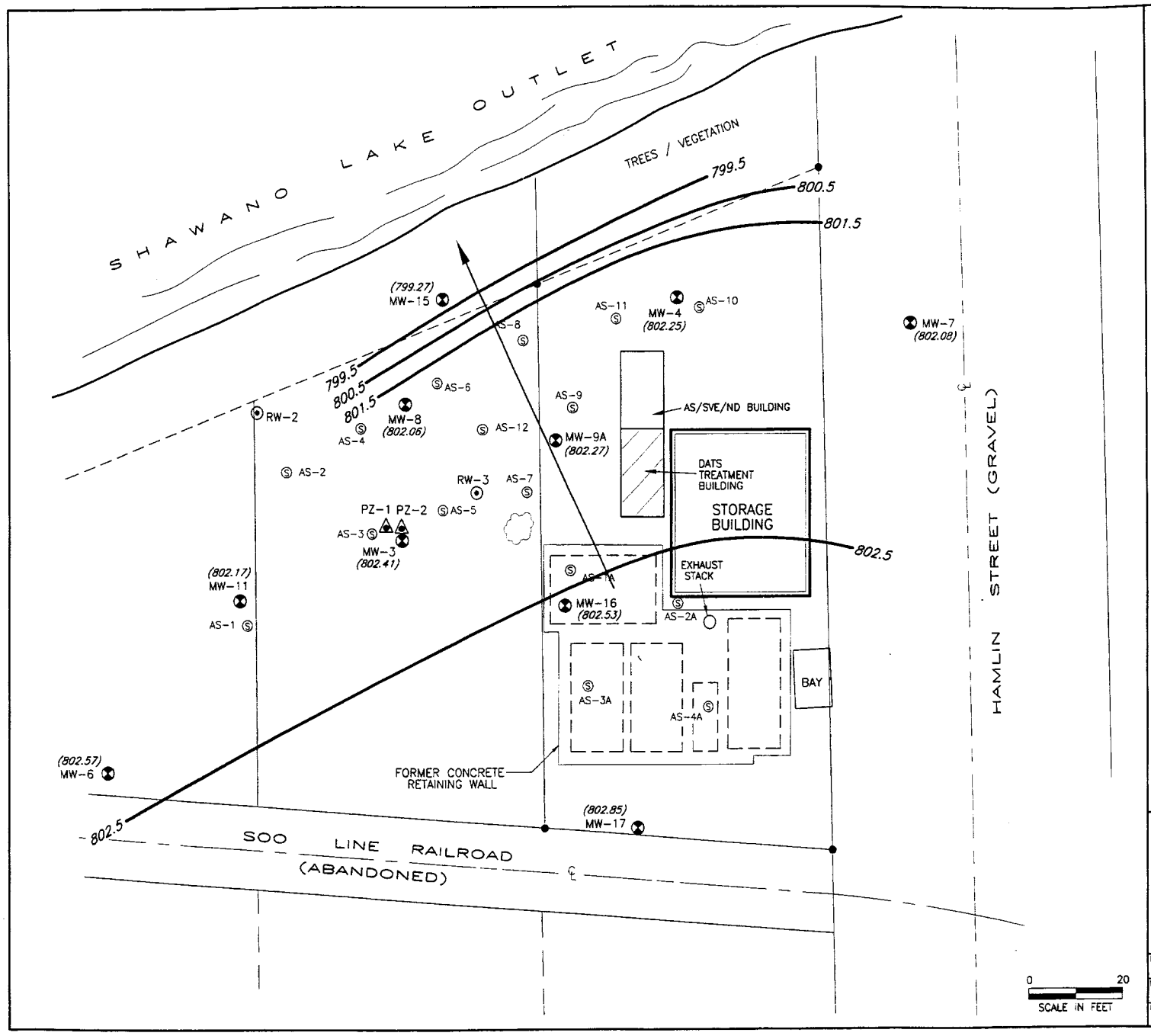
0 2000

SCALE IN FEET

FIGURE 1
SITE LOCATION MAP
FORMER AST TERMINAL
SCHROEDER OIL FORMER BULK PLANT
SHAWANO, WISCONSIN

PROJECT NO.	PREPARED BY
1092-500	SR
DATE	REVIEWED BY
11/11/99	

Delta Environmental Consultants, Inc.



NORTH

LEGEND

- PROPERTY CORNER DETERMINED BY LAND SURVEY
- MONITORING WELL
- AIR SPARGE POINTS
- RECOVERY WELL
- PIEZOMETER
- ABOVE GRADE HORIZONTAL STORAGE TANKS (REMOVED)
- (802.08) GROUND WATER ELEVATION (IN FEET)
- 801.5 GROUND WATER CONTOUR LINE CONTOUR INTERVAL = 1.0 FEET
- INFERRED GROUND WATER FLOW DIRECTION

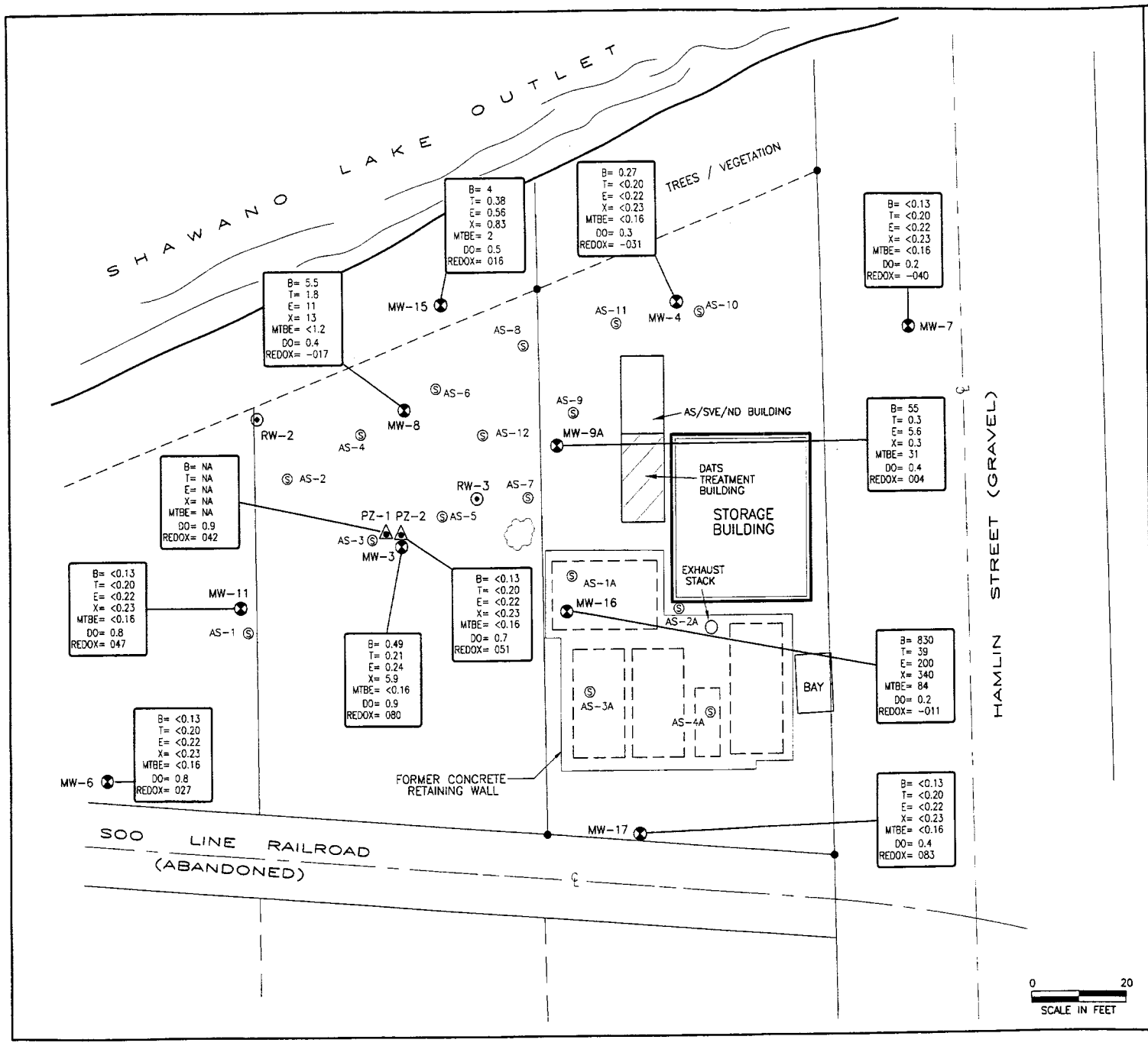
FIGURE 3

GROUND WATER ELEVATION CONTOUR MAP
JULY 27, 1999

FORMER AST TERMINAL
SCHROEDER OIL FORMER BULK PLANT
SHAWANO, WISCONSIN

PROJECT NO.: 1092-500	DRAWN BY: DD
PREPARED BY: SR	DATE: 11/11/99
FILE NAME: 92500SM	

Delta Environmental Consultants Inc.



LEGEND

- PROPERTY CORNER DETERMINED BY LAND SURVEY
- MONITORING WELL
- AIR SPARGE POINTS
- RECOVERY WELL
- PIEZOMETER
- ABOVE GRADE HORIZONTAL STORAGE TANKS (REMOVED)

B= BENZENE (µg/L)
T= TOLUENE (µg/L)
E= ETHYLBENZENE (µg/L)
X= XYLENES (µg/L)
MTBE= METHYL TERTIARY BUTYL ETHER (µg/L)
DO= DISSOLVED OXYGEN (ppm)
REDOX= REDUCTION-OXIDATION POTENTIAL (mV)

NA = NOT ANALYZED
(µg/L) MICROGRAMS PER LITER
(ppm) PARTS PER MILLION
(mV) MILLI-VOLTS

FIGURE 5

GROUND WATER CHEMICAL CONCENTRATION MAP – JULY 27, 1999

FORMER AST TERMINAL
SCHROEDER OIL FORMER BULK PLANT
SHAWANO, WISCONSIN

PROJECT NO.: 1092-500	DRAWN BY: DD
PREPARED BY: SR	DATE: 11/11/99
FILE NAME: 92500SM	

Delta Environmental Consultants Inc.

Table 1
Groundwater Chemistry and In-Field Biodegradation Summary
Schroeder Oil Former Bulk Terminal
Shawano, Wisconsin
Delta Project No. 1092-500

MW-3

	Volatile Organic Compounds								In-field Biodegradation Measurements						
Parameter / Date Sampled	Benzene µg/L	Toluene µg/L	Ethyl-benzene µg/L	Total Xylenes µg/L	Total TMB	MTBE µg/L	GRO µg/L	Naph-thalene µg/L	DO ppm	REDOX mV	Temp °C	Conductivity µmhos/cm	pH	Total Iron (Fe^{3+}) ppm	Soluble Iron (Fe^{2+}) ppm
NR 140 ES	***5***	***343***	***700***	***620***	***480***	***60***		***40***							
04/10/87	***43000***	***54000***	***5400***	***24000***	NA	NA	210000	NA	---	---	---	---	---	---	---
01/27/88	***26000***	***50000***	***7000***	***24000***	NA	NA	120000	NA	---	---	---	---	---	---	---
01/11/89	***7200***	***58000***	***4300***	***39000***	NA	NA	510000	NA	---	---	---	---	---	---	---
07/27/90	***7900***	***27000***	***2100***	***18000***	NA	NA	200000	NA	---	---	---	---	---	---	---
10/18/90	***10000***	***32000***	***2700***	***20000***	NA	NA	250000	NA	---	---	---	---	---	---	---
02/26/91	***5600***	***16000***	***780***	***18000***	NA	NA	270000	NA	---	---	---	---	---	---	---
05/30/91	***4900***	***3400***	***2200***	***28000***	NA	NA	145000	NA	---	---	---	---	---	---	---
08/28/91	***1800***	***11000***	***1400***	***16000***	***5400***	***1800***	78000	NA	---	---	---	---	---	---	---
11/26/91	***1800***	***13000***	***800***	***11000***	***8600***	***450***	140000	NA	---	---	---	---	---	---	---
02/21/92	***480***	***7800***	360	***9800***	***4900***	***110***	52000	NA	---	---	---	---	---	---	---
05/21/92	***200***	***7100***	440	***8900***	***4000***	***200***	41000	NA	---	---	---	---	---	---	---
08/26/92	***830***	***5400***	370	***7300***	***2630***	***360***	25000	NA	---	---	---	---	---	---	---
11/17/92	***200***	***1600***	200	***2900***	***900***	***200***	9400	NA	---	---	---	---	---	---	---
02/16/93	***500***	***2100***	***950***	***9900***	***5300***	***500***	39000	NA	---	---	---	---	---	---	---
05/18/93	***36***	***380***	290	***3200***	***1800***	40	9300	NA	---	---	---	---	---	---	---
08/17/93	***20***	140	390	***4100***	***2020***	20	12000	NA	---	---	---	---	---	---	---
12/13/93	***5***	5	5	260	114	11	760	NA	4.0		10.0	700	7.90	0.8	0.3
02/10/94	NS	NS	NS	NS	NS	NS	NS	NS	NM	NM	NM	NM	NM	NM	NM
05/18/94	<1	<1	<1	3	1.5	5.8	50	NA	5.0	---	10.0	300	7.00	0.8	0.1
08/16/94	<1	<1	<1	3	<1.0	1.9	50	NA	2.0	---	18.0	500	7.60	0.4	0.1
11/07/94	<1	<1	<1	24	59	3.6	590	22	6.0	---	14.0	500	7.70	>10	5.0
02/07/95	<1	<1	<1	4.2	49.3	<1	250	2.6	5.0	---	4.0	400	7.60	3.0	1.0
05/10/95	<1	<1	<1	3	180	<1	550	5.6	8.0	---	10.0	400	7.80	>10	>10
09/07/95	<0.5	<1	<1	<3	<2.0	<1	<50	<1	8.0	---	22.0	400	7.90	10.0	6.0
11/15/95	<0.5	<1	<1	<3	1.4	<1	<50	NA	3.0	---	8.0	500	7.90	7.0	0.4
02/14/96	<0.5	<1	<1	<3	2.4	<1	<50	NA	4.0	---	9.0	300	6.90	3.0	0.6
05/21/96	<0.5	<1	<1	<3	<1.0	<1	<50	NA	6.0	146	14.0	100	7.50	10.0	1.0
08/13/96	<1	<1	<1	<3	<1.0	1.1	<50	NA	7.2	231	18.0	100	7.80	10.0	4.0
11/12/96	<0.5	<1	<1	3.4	4.7	<1	55	NA	3.2	130	9.0	1100	7.70	2.0	0.3
02/26/97	<0.13	<0.2	<0.22	0.65	<0.29	1	<50	NA	1.9	061	8.0	700	7.30	7.0	0.3
05/07/97	0.4	0.34	<0.22	1.5	0.5	1.3	<50	NA	4.4	090	12.0	300	7.20	3.0	0.8
08/27/97	0.21	<0.20	<0.22	2.1	1.51	<0.16	71	NA	1.8	030	17.0	200	7.00	3.0	0.2
01/07/98	NA	NA	NA	NA	NA	NA	NA	NA	0.3	025	NM	NM	NM	NM	NM
04/14/98	<0.13	<0.20	<0.22	0.28	0.29	<0.68	<50	NA	9.2	199	11.0	<100	7.90	7.0	0.4
07/21/98	<0.13	<0.20	<0.22	1.9	2.13	<0.16	<50	NA	8.2	152	18.0	100	7.90	0.8	0.2
10/07/98	<0.13	0.32	<0.22	8.8	20.9	<0.16	670	NA	2.7	104	15.0	200	7.90	4.0	0.3
01/19/99	<0.13	<0.20	<0.22	0.27	0.56	<0.16	<50	NA	1.5	108	NM	NM	NM	NM	NM
04/06/99	<0.13	<0.20	<0.22	<0.23	<0.29	<0.16	<50	NA	0.9	060	NM	NM	NM	NM	NM
07/27/99	0.49	0.21	0.24	5.9	1.28	<0.16	84	NA	0.9	080	NM	NM	NM	NM	NM
03/20/00	<0.13	<0.20	<0.22	0.35	0.39	<0.16	NA	NA	5.3	199	NM	NM	NM	NM	NM

Table I
Groundwater Chemistry and In-Field Biodegradation Summary
Schroeder Oil Former Bulk Terminal
Shawano, Wisconsin
Delta Project No. 1092-500

MW-4

	Volatile Organic Compounds								In-field Biodegradation Measurements						
Parameter / Date Sampled	Benzene µg/L	Toluene µg/L	Ethyl-benzene µg/L	Total Xylenes µg/L	Total TMB µg/L	MTBE µg/L	GRO µg/L	Naph-thalene µg/L	DO ppm	REDOX mV	Temp °C	Conductivity µmhos/cm	pH	Total Iron (Fe^{3+}) ppm	Soluble Iron (Fe^{3+}) ppm
NR 140 ES	***5***	***343***	***700***	***620***	***480***	***60***		***40***							
01/27/88	***17000***	***26000***	***3300***	***14000***	NA	NA	86000	NA	---	---	---	---	---	---	---
07/14/88	***8400***	***15000***	***3600***	***5900***	NA	NA	100000	NA	---	---	---	---	---	---	---
10/07/88	***6500***	***16000***	***920***	***8600***	NA	NA	130000	NA	---	---	---	---	---	---	---
01/11/89	***10000***	***23000***	***940***	***9500***	NA	NA	230000	NA	---	---	---	---	---	---	---
04/20/89	***18000***	***20000***	***2000***	***12000***	NA	NA	170000	NA	---	---	---	---	---	---	---
07/10/89	***20000***	***40000***	***3000***	***17000***	NA	NA	290000	NA	---	---	---	---	---	---	---
10/19/89	***17000***	***39000***	***3800***	***26000***	NA	NA	260000	NA	---	---	---	---	---	---	---
02/26/91	***6000***	***14000***	620	***7800***	NA	NA	280000	NA	---	---	---	---	---	---	---
08/28/91	***5000***	***13000***	***1100***	***6400***	***1660***	***1300***	71000	NA	---	---	---	---	---	---	---
11/26/91	***4000***	***14000***	***1800***	***11000***	***4400***	***400***	100000	NA	---	---	---	---	---	---	---
02/21/92	***6800***	***16000***	***6700***	***20000***	***17900***	***2600***	170000	NA	---	---	---	---	---	---	---
05/21/92	***2600***	***10000***	***1100***	***8000***	***2360***	***200***	72000	NA	---	---	---	---	---	---	---
08/26/92	***3000***	***12000***	***1200***	***7000***	***1910***	***100***	33000	NA	---	---	---	---	---	---	---
11/17/92	***5000***	***20000***	***5000***	***20000***	***14400***	***5000***	100000	NA	---	---	---	---	---	---	---
02/16/93	***2400***	***12000***	***1600***	***9000***	***2610***	***140***	52000	NA	---	---	---	---	---	---	---
05/18/93	***1800***	***9400***	***1500***	***8200***	***2630***	***250***	29000	NA	---	---	---	---	---	---	---
08/17/93	***3400***	***26000***	***12000***	***62000***	***119000***	***4000***	2400000	NA	---	---	---	---	---	---	---
12/13/93	1.3	4.6	1	36	41	4.6	440	NA	5.0	---	8.0	1000	7.90	0.8	0.4
02/10/94	<1	3.5	1	41	23.2	3.6	180	NA	5.0	---	4.0	300	8.20	2.0	1.0
05/18/94	***620***	***3000***	***1300***	***9700***	***2300***	20	21000	NA	4.0	---	10.0	400	7.60	7.0	1.0
08/17/94	***6.7***	12	2	46	11.6	<1	110	NA	5.0	---	18.0	300	7.80	>10	>10
11/09/94	<1	<1	<1	3	<1.0	<1	50	NA	8.0	---	16.0	400	7.90	>10	>10
02/08/95	<1	<1	<1	3	<1.0	<1	50	NA	6.0	---	5.0	300	7.80	1.0	0.4
05/10/95	<1	<1	<1	3	<1.0	<1	50	NA	8.0	---	11.0	300	7.90	>10	0.1
09/07/95	<1	<1	<1	3	<2.0	<1	<50	NA	8.0	---	22.0	400	7.80	0.8	0.2
11/15/95	2.2	<1	<1	<3	<1.0	<1	<50	NA	4.0	---	9.0	500	7.80	2.0	0.6
02/14/96	<1	<1	<1	<3	<1.0	<1	<50	NA	4.0	---	8.0	300	7.00	4.0	0.6
05/21/96	<0.50	<1	<1	<3	<1.0	<50	<1	NA	5.0	061	13.0	200	7.90	3.0	1.0
08/13/96	5.3	<1	<1	<3	3.5	<1	63	NA	2.1	035	18.0	200	7.30	2.0	1.0
11/12/96	<0.5	<1	<1	<3	<1.0	<1	<50	NA	4.2	011	8.0	300	7.30	0.3	0.1
02/26/97	1.3	<0.2	<0.22	0.63	1.5	<0.16	<50	NA	2.9	035	9.0	300	7.40	8.0	0.8
05/07/97	0.44	0.7	<0.22	<0.23	<0.29	2.9	<50	NA	2.4	-014	11.0	100	7.00	10.0	0.8
08/27/97	0.96	<0.20	<0.22	<0.23	<0.29	<0.16	<50	NA	2.8	030	17.0	200	7.00	1.0	0.3
01/07/98	0.17	<0.20	<0.22	<0.23	<0.29	<0.16	<50	NA	1.6	-001	9.0	100	7.70	3.0	0.2
04/14/98	***15***	0.35	5.7	0.87	0.65	<5.10	140	NA	5.2	141	12.0	200	7.90	10.0	2.0
07/21/98	<0.13	<0.20	<0.22	<0.23	<0.29	<0.16	<50	NA	7.1	158	17.0	100	7.70	5.0	0.6
10/07/98	0.3	<0.20	<0.22	<0.23	<0.29	<0.16	<50	NA	2.3	033	14.0	100	7.50	10	0.6
01/19/99	NA	NA	NA	NA	NA	NA	NA	NA	0.8	039	NM	NM	NM	NM	NM
04/06/99	NA	NA	NA	NA	NA	NA	NA	NA	0.6	012	NM	NM	NM	NM	NM
07/27/99	0.27	<0.20	<0.22	<0.23	<0.29	<0.16	<50	NA	0.3	-031	NM	NM	NM	NM	NM

Table 1
Groundwater Chemistry and In-Field Biodegradation Summary
Schroeder Oil Former Bulk Terminal
Shawano, Wisconsin
Delta Project No. 1092-500

MW-6

	Volatile Organic Compounds								In-field Biodegradation Measurements						
Parameter / Date Sampled	Benzene µg/L	Toluene µg/L	Ethyl-benzene µg/L	Total Xylenes µg/L	Total TMB µg/L	MTBE µg/L	GRO µg/L	Naph-thalene µg/L	DO ppm	REDOX mV	Temp °C	Conductivity µmhos/cm	pH	Total Iron (Fe^{3+}) ppm	Soluble Iron (Fe^{3+}) ppm
NR 140 ES	*5*	*343*	*700*	*620*	*480*	*60*		*40*							
05/01/87	<1	<1	<1	<1	NA	NA	<1	NA	---	---	---	---	---	---	---
01/27/88	<1	<1	<1	<1	NA	NA	<1	NA	---	---	---	---	---	---	---
04/28/88	<1	<1	<1	<1	NA	NA	<10	NA	---	---	---	---	---	---	---
07/14/88	<1	<1	<1	<1	NA	NA	<10	NA	---	---	---	---	---	---	---
10/07/88	<1	<1	<1	<1	NA	NA	<10	NA	---	---	---	---	---	---	---
01/11/89	<1	<1	<1	<1	NA	NA	<10	NA	---	---	---	---	---	---	---
04/20/89	<1	<1	<1	<1	NA	NA	<10	NA	---	---	---	---	---	---	---
10/19/89	<1	<1	<1	<3	NA	NA	<10	NA	---	---	---	---	---	---	---
04/25/90	<1	<1	<1	<3	NA	NA	<10	NA	---	---	---	---	---	---	---
02/26/91	<1	<1	<1	<1	NA	NA	<5	NA	---	---	---	---	---	---	---
08/26/92	<1	<1	<1	<1	<1.0	<1	<50	NA	---	---	---	---	---	---	---
08/17/93	<1	<1	<1	<3	<1.0	<1	<50	NA	---	---	---	---	---	---	---
12/13/93	<1	<1	<1	<3	<1.0	<1	<50	NA	---	---	---	---	---	---	---
02/10/94	NA	NA	NA	NA	NA	NA	NA	NA	3.0	---	8.0	500	7.90	3.0	0.3
05/16/94	NA	NA	NA	NA	NA	NA	NA	NA	3.0	---	4.0	400	7.80	0.8	0.2
08/17/94	<1	<1	<1	<3	<1.0	<1	<50	NA	5.0	---	10.0	200	7.50	0.3	0.1
11/09/94	NA	NA	NA	NA	NA	NA	NA	NA	3.0	---	14.0	400	7.80	1.0	0.4
02/09/95	NA	NA	NA	NA	NA	NA	NA	NA	3.0	---	13.0	400	7.80	2.0	0.4
05/10/95	NA	NA	NA	NA	NA	NA	NA	NA	4.0	---	4.0	500	7.90	1.0	0.4
09/07/95	NA	NA	NA	NA	NA	NA	NA	NA	4.0	---	10.0	600	7.90	1.0	0.1
11/15/95	<0.5	<1	<1	<3	<1.0	<1	<50	NA	4.0	---	17.0	500	7.90	5.0	0.2
02/14/96	<0.5	<1	<1	<3	<1.0	<1	<50	NA	3.0	---	6.0	800	7.90	1.0	0.4
05/21/96	NA	NA	NA	NA	NA	NA	NA	NA	3.0	---	8.0	300	6.70	1.0	0.2
08/13/96	NA	NA	NA	NA	NA	NA	NA	NA	NM	NM	NM	NM	NM	NM	NM
11/12/96	NA	NA	NA	NA	NA	NA	NA	NA	4.7	222	NM	NM	NM	NM	NM
02/26/97	<0.13	<0.2	<0.22	<0.23	<0.29	<0.16	<50	NA	4.7	051	NM	NM	NM	NM	NM
05/07/97	NA	NA	NA	NA	NA	NA	NA	NA	3.1	064	10.0	300	7.70	1.0	0.2
08/27/97	<0.13	<0.20	<0.22	<0.23	<0.29	<0.16	<50	NA	1.7	037	NA	NA	NA	NA	NA
01/07/98	NA	NA	NA	NA	NA	NA	NA	NA	2.6	055	16.0	200	7.70	2.0	0.1
04/14/98	NA	NA	NA	NA	NA	NA	NA	NA	1.3	016	NM	NM	NM	NM	NM
07/21/98	<0.13	<0.20	<0.22	<0.23	<0.29	<2.1	<50	NA	3.8	172	NM	NM	NM	NM	NM
10/07/98	NA	NA	NA	NA	NA	NA	NA	NA	6.4	172	17.0	100	7.80	0.8	0.2
01/19/99	NA	NA	NA	NA	NA	NA	NA	NA	1.2	042	NM	NM	NM	NM	NM
04/06/99	NA	NA	NA	NA	NA	NA	NA	NA	1.1	049	NM	NM	NM	NM	NM
07/27/99	<0.13	<0.20	<0.22	<0.23	<0.29	<0.16	<50	NA	0.9	035	NM	NM	NM	NM	NM
									0.8	027	NM	NM	NM	NM	NM

Table 1
Groundwater Chemistry and In-Field Biodegradation Summary
Schroeder Oil Former Bulk Terminal
Shawano, Wisconsin
Delta Project No. 1092-500

MW-7	Volatile Organic Compounds								In-field Biodegradation Measurements						
Parameter / Date Sampled	Benzene µg/L	Toluene µg/L	Ethyl-benzene µg/L	Total Xylenes µg/L	Total TMB µg/L	MTBE µg/L	GRO µg/L	Naph-thalene µg/L	DO ppm	REDOX mV	Temp °C	Conductivity µmhos/cm	pH	Total Iron (Fe^{3+}) ppm	Soluble Iron (Fe^{3+}) ppm
NR 140 ES	***5***	***343***	***700***	***620***	***480***	***60***		***40***							
05/01/87	***62***	320	57	230	NA	NA	1200	NA	---	---	---	---	---	---	---
01/27/88	<1	<1	<1	<1	NA	NA	<1	NA	---	---	---	---	---	---	---
04/28/88	<1	<1	<1	<1	NA	NA	<10	NA	---	---	---	---	---	---	---
07/14/88	<1	<1	<1	<1	NA	NA	<10	NA	---	---	---	---	---	---	---
10/07/88	<1	<1	<1	<1	NA	NA	<10	NA	---	---	---	---	---	---	---
01/11/89	<1	<1	<1	<1	NA	NA	<10	NA	---	---	---	---	---	---	---
04/20/89	<1	<1	<1	<1	NA	NA	<10	NA	---	---	---	---	---	---	---
07/10/89	<1	<1	<1	<1	NA	NA	<10	NA	---	---	---	---	---	---	---
10/19/89	<1	<1	<1	<3	NA	NA	<10	NA	---	---	---	---	---	---	---
01/29/90	<1	<1	<1	<3	NA	NA	<10	NA	---	---	---	---	---	---	---
04/25/90	<1	<1	<1	<3	NA	NA	<10	NA	---	---	---	---	---	---	---
02/26/91	<1	<1	<1	<1	NA	NA	<5	NA	---	---	---	---	---	---	---
08/26/92	<1	<1	<1	<1	<1.0	<1	<50	NA	---	---	---	---	---	---	---
08/17/93	<1	<1	<1	<1	<1.0	<1	<50	NA	---	---	---	---	---	---	---
12/13/93	NA	NA	NA	NA	NA	NA	NA	NA	1.0	---	8.0	800	7.80	0.4	0.2
02/10/94	NA	NA	NA	NA	NA	NA	NA	NA	2.0	---	5.0	300	7.70	2.0	0.3
05/16/94	NA	NA	NA	NA	NA	NA	NA	NA	3.0	---	---	---	---	---	---
08/16/94	<1	<1	<1	<3	<1.0	<1	<50	NA	4.0	---	19.0	500	7.30	4.0	2.0
02/09/95	NA	NA	NA	NA	NA	NA	NA	NA	NM	---	NM	NM	NM	NM	NM
05/10/95	NA	NA	NA	NA	NA	NA	NA	NA	NM	---	NM	NM	NM	NM	NM
09/07/95	***370***	4.4	4.7	9.6	8.7	<5	590	NA	4.0	---	19.0	300	7.40	10.0	10.0
11/15/95	***310***	<1	5.5	<3	1.2	<1	470	NA	3.0	---	10.0	500	7.80	5.0	4.0
02/14/96	***48***	<1	<1	<3	<1.0	<1	76	NA	3.0	---	9.0	400	6.90	3.0	0.8
05/21/96	4.2	<1	<1	<3	<1.0	<1	<50	NA	5.0	166	13.0	300	7.30	1.0	0.1
08/13/96	NA	NA	NA	NA	NA	NA	NA	NA	NM	NM	NM	NM	NM	NM	NM
11/12/96	2.5	<1	<1	<3	<1.0	<1	<50	NA	4.5	013	9.0	500	7.20	8.0	7.0
02/26/97	0.27	<0.2	<0.22	<0.23	<0.29	0.36	<50	NA	4.4	018	9.0	300	7.30	5.0	1.0
05/07/97	NA	NA	NA	NA	NA	NA	NA	NA	4.4	067	NM	NM	NM	NM	NM
08/27/97	NA	NA	NA	NA	NA	NA	NA	NA	NM	NM	NM	NM	NM	NM	NM
01/07/98	<0.13	<0.20	<0.22	0.48	<0.29	<0.16	<50	NA	2.1	000	9.0	200	7.50	5.0	0.4
04/14/98	<0.13	<0.20	<0.22	<0.23	<0.29	<0.55	<50	NA	6.2	131	12.0	200	7.80	2.0	0.1
07/21/98	<0.13	<0.20	<0.22	<0.23	<0.29	<0.16	<50	NA	4.9	149	18.0	100	7.90	0.2	0.1
10/07/98	0.18	<0.20	<0.22	<0.23	<0.29	<0.16	<50	NA	1.8	008	15.0	100	7.60	0.6	0.3
01/19/99	NA	NA	NA	NA	NA	NA	NA	NA	0.5	016	NM	NM	NM	NM	NM
04/06/99	NA	NA	NA	NA	NA	NA	NA	NA	0.4	009	NM	NM	NM	NM	NM
07/27/99	<0.13	<0.20	<0.22	<0.23	<0.29	<0.16	<50	NA	0.2	-040	NM	NM	NM	NM	NM

Table 1
Groundwater Chemistry and In-Field Biodegradation Summary
Schroeder Oil Former Bulk Terminal
Shawano, Wisconsin
Delta Project No. 1092-500

MW-8

	Volatile Organic Compounds								In-field Biodegradation Measurements						
Parameter / Date Sampled	Benzene µg/L	Toluene µg/L	Ethyl-benzene µg/L	Total Xylenes µg/L	Total TMB µg/L	MTBE µg/L	GRO µg/L	Naph-thalene µg/L	DO ppm	REDOX mV	Temp °C	Conductivity µmhos/cm	pH	Total Iron (Fe^{3+}) ppm	Soluble Iron (Fe^{3+}) ppm
NR 140 ES	***5***	***343***	***700***	***620***	***480***	***60***		***40***							
07/10/89	***27000***	***55000***	***3800***	***23000***	NA	NA	450000	NA							
01/29/90	***10000***	***33000***	***2600***	***25000***	NA	NA	290000	NA							
04/25/90	***18000***	***49000***	***4200***	***31000***	NA	NA	102200	NA							
07/27/90	***15000***	***33000***	***2300***	***26000***	NA	NA	280000	NA							
10/18/90	***12000***	***23000***	***2000***	***19000***	NA	NA	200000	NA							
02/27/91	***14000***	***32000***	***3300***	***70000***	NA	NA	450000	NA							
08/28/91	***15000***	***29000***	***2300***	***35000***	NA	NA	220000	NA							
11/26/91	***10000***	***20000***	***1300***	***17000***	NA	NA	130000	NA							
02/21/92	***17000***	***34000***	***8500***	***47000***	NA	NA	330000	NA							
05/21/92	***3500***	***10000***	***800***	***14000***	NA	NA	63000	NA							
08/26/92	***9100***	***22000***	***2100***	***20000***	NA	NA	82000	NA							
11/17/92	***7000***	***20000***	***5000***	***49000***	NA	NA	81000	NA							
02/16/93	***2700***	***6300***	490	***7500***	NA	NA	28000	NA							
05/18/93	***2000***	***4800***	370	***6500***	NA	NA	24000	NA							
08/17/93	***3700***	***8200***	560	***9100***	NA	NA	32000	NA							
12/13/93	***50***	220	50	***1500***	NA	NA	8400	NA							
02/10/94	1	8.5	1.7	49	NA	NA	390	NA							
05/18/94	1	6.1	6.1	120	NA	NA	1400	NA							
08/17/94	1	1	1	4.1	NA	NA	170	NA							
11/09/94	1	1	1	3	NA	NA	50	NA							
02/08/95	<1	<1	<1	3	<1.0	<1	50	NA	5.0	---	4.0	500	7.90	4.0	1.0
05/10/95	<1	2.2	3.1	39	56	<1	680	NA	8.0	---	10.0	400	7.70	3.0	1.0
09/07/95	<0.50	<1	<1	<3	5.7	<1	95	NA	6.0	---	21.0	400	7.90	10.0	1.0
11/15/95	0.86	1.5	<1	5.8	4.2	<1	<50	NA	3.0	---	10.0	700	7.80	0.6	0.1
02/14/96	<0.5	<1	<1	<3	<1.0	<1	<50	NA	3.0	---	9.0	500	6.60	1.0	0.1
05/21/96	<0.5	<1	<1	<3	<1.0	<1	<50	NA	6.0	174	13.0	200	7.80	6.0	2.0
08/13/96	***30***	<1	1.9	4.9	5.9	3.8	130	NA	3.9	155	19.0	300	7.20	3.0	2.0
11/12/96	<0.5	<1	<1	<3	<1.0	<1	<50	NA	5.3	126	8.0	600	7.20	0.4	0.2
02/26/97	0.2	<0.2	0.36	0.23	<0.29	4.4	<50	NA	4.8	053	8.0	300	7.00	0.8	0.1
05/07/97	***8***	1.1	<1	12	3.3	<0.16	140	NA	3.5	086	12.0	400	6.90	2.0	0.3
08/27/97	***13***	6.3	8.5	37	42.7	<0.16	460	NA	2.4	-091	18.0	300	7.00	10.0	10.0
01/07/98	<0.13	<0.20	<0.22	3.3	0.29	<0.16	<50	NA	3.5	012	9.0	200	7.80	0.4	0.1
04/14/98	<0.13	<0.20	<0.22	0.27	0.34	<2.6	<50	NA	6.5	169	10.0	100	7.70	0.8	0.1
07/21/98	<0.13	<0.20	<0.22	<0.23	<0.29	<0.16	<50	NA	8.7	165	18.0	100	7.80	0.2	0.1
10/07/98	1.9	0.46	0.67	1.4	2.9	<0.16	51	NA	2.2	-042	15.0	100	7.60	3.0	1.0
01/19/99	<0.13	<0.20	<0.22	<0.23	0.38	<0.16	<50	NA	1.4	045	NM	NM	NM	NM	NM
04/06/99	<0.13	<0.20	<0.22	<0.23	<0.29	<0.16	<50	NA	0.8	072	NM	NM	NM	NM	NM
07/27/99	***5.5***	1.8	11	13	45.48	<1.2	540	NA	0.4	-017	NM	NM	NM	NM	NM
03/20/00	<0.13	<0.20	<0.22	<0.23	<0.51	<0.16	NA	NA	6.1	182	NM	NM	NM	NM	NM

Table 1
Groundwater Chemistry and In-Field Biodegradation Summary
Schroeder Oil Former Bulk Terminal
Shawano, Wisconsin
Delta Project No. 1092-500

MW-9

Parameter / Date Sampled	Volatile Organic Compounds: Benzene µg/L	Toluene µg/L	Ethyl-benzene µg/L	Total Xylenes µg/L	Total TMB µg/L	MTBE µg/L	GRO µg/L	Naph-thalene µg/L	In-field Biodegradation Measurements: DO ppm	REDOX mV	Temp °C	Conductivity µmhos/cm	pH	Total Iron (Fe^{3+}) ppm	Soluble Iron (Fe^{3+}) ppm
NR 140 ES	***5***	***343***	***700***	***620***	***480***	***60***		***40***							
05/30/91	***26000***	***47000***	***8500***	***93000***	NA	NA	480000	NA	---	---	---	---	---	---	---
02/21/92	***21000***	***33000***	***2400***	***22000***	***6300***	***1000***	140000	NA	---	---	---	---	---	---	---
05/21/92	***16000***	***29000***	***15000***	***19000***	***6900***	***200***	120000	NA	---	---	---	---	---	---	---
08/26/92	***18000***	***32000***	***2600***	***21000***	***5400***	***100***	110000	NA	---	---	---	---	---	---	---
11/17/92	***11000***	***27000***	***5000***	***23000***	***15000***	***5000***	250000	NA	---	---	---	---	---	---	---
02/16/93	***15000***	***30000***	***4400***	***39000***	***19500***	***500***	230000	NA	---	---	---	---	---	---	---
05/18/93	***6000***	***26000***	***2300***	***23000***	***8600***	***500***	83000	NA	---	---	---	---	---	---	---
08/17/93	***14000***	***40000***	***2600***	***26000***	***1530***	***250***	180000	NA	---	---	---	---	---	---	---
12/13/93	***6300***	***25000***	***2000***	***25000***	***11400***	***2500***	87000	NA	3.0	---	8.0	1000	7.80	0.8	0.4
02/10/94	***2000***	***9000***	***1000***	***15000***	***5100***	***1000***	40000	NA	3.0	---	4.0	400	7.80	2.0	0.8
05/18/94	***520***	***820***	97	***4200***	***2360***	***1100***	1500	NA	5.0	---	12.0	200	7.20	0.4	0.2
08/17/94	1.3	95	3.7	220	25.8	37	520	NA	5.0	---	19.0	500	7.50	>10	>10
11/09/94	***6.8***	44	<1	360	63	16	810	15	6.0	---	16.0	500	7.70	>10	>10
02/08/95	<1	<1	<1	3	<1.0	<1	50	<1	6.0	---	3.0	400	7.70	10.0	7.0
05/10/95	<1	<1	<1	3	3.3	<1	50	1.5	6.0	---	11.0	400	7.60	>10	5.0
09/07/95	<0.5	4.2	4.3	140	296	<1	1300	1.5	3.0	---	23.0	400	7.50	10.0	8.0
11/15/95	***190***	<100	<100	420	***2350***	<100	9200	NA	3.0	---	8.0	700	7.70	3.0	2.0
02/14/96	***850***	56	13	***660***	***2800***	<10	11000	NA	1.0	---	8.0	500	6.50	>10	>10
05/21/96	<0.50	<1	<1	25	210	<1	940	NA	4.0	025	13.0	300	7.60	10.0	7.0
08/13/96	***420***	12	<10	300	***1390***	<10	6300	NA	0.8	-154	19.0	300	7.30	10.0	6.0
11/12/96	***760***	13	16	260	***890***	<5	4600	NA	1.2	-089	8.0	500	7.20	5.0	2.0
02/26/97	***2300***	260	36	460	***880***	3.9	7700	NA	4.3	-072	8.0	400	7.00	10.0	10.0
05/07/97	***3500***	***11000***	120	***2400***	***1150***	<16	23000	NA	1.1	-164	11.0	400	6.80	>10	>10
08/27/97	***710***	***1900***	32	540	150	<0.80	3800	NA	1.3	-111	16.0	300	7.00	10.0	10.0

Abandoned January 6, 1998 and replaced by MW-9A

Abandoned January 6, 1998 and replaced by MW-9A

MW-9A

Parameter / Date Sampled	Volatile Organic Compounds: Benzene µg/L	Toluene µg/L	Ethyl-benzene µg/L	Total Xylenes µg/L	Total TMB µg/L	MTBE µg/L	GRO µg/L	Naph-thalene µg/L	In-field Biodegradation Measurements: DO ppm	REDOX mV	Temp °C	Conductivity µmhos/cm	pH	Total Iron (Fe^{3+}) ppm	Soluble Iron (Fe^{3+}) ppm
NR 140 ES	***5***	***343***	***700***	***620***	***480***	***60***		***40***							
01/07/98	***870***	130	59	370	128	***330***	2300	NA	2.3	-015	9.0	100	7.60	1.0	0.8
04/14/98	<0.13	<0.20	<0.22	<0.23	<0.29	16	<50	NA	8.4	140	12.0	200	7.70	7.0	3.0
07/21/98	<0.13	<0.20	<0.22	<0.23	<0.29	<0.16	<50	NA	8.9	192	18.0	100	7.70	0.2	0.1
10/07/98	***10***	0.2	<0.22	0.52	<0.29	13	<50	NA	2.1	045	15.0	100	7.60	10	4.0
01/19/99	***19***	<0.20	1.9	0.24	1.1	23	<50	NA	0.2	-043	NM	NM	NM	NM	NM
04/06/99	***67***	1	8.7	1.8	6	30	190	NA	0.2	004	NM	NM	NM	NM	NM
07/27/99	***55***	0.3	5.6	0.3	1.6	31	130	NA	0.4	004	NM	NM	NM	NM	NM
03/20/00	<0.13	<0.20	<0.22	<0.23	<0.51	9.5	NA	NA	2.8	218	NM	NM	NM	NM	NM

Table 1
Groundwater Chemistry and In-Field Biodegradation Summary
Schroeder Oil Former Bulk Terminal
Shawano, Wisconsin
Delta Project No. 1092-500

MW-11

	Volatile Organic Compounds								In-field Biodegradation Measurements						
Parameter / Date Sampled	Benzene µg/L	Toluene µg/L	Ethyl-benzene µg/L	Total Xylenes µg/L	Total TMB µg/L	MTBE µg/L	GRO µg/L	Naph-thalene µg/L	DO ppm	REDOX mV	Temp °C	Conductivity µmhos/cm	pH	Total Iron (Fe^{3+}) ppm	Soluble Iron (Fe^{2+}) ppm
NR 140 ES	***5***	***343***	***700***	***620***	***480***	***60***		***40***							
04/28/88	***660***	180	93	***830***	NA	NA	11000	NA	---	---	---	---	---	---	---
07/14/88	***2600***	***4600***	***1500***	***3800***	NA	NA	41000	NA	---	---	---	---	---	---	---
10/07/88	***2600***	***6300***	230	***4300***	NA	NA	59000	NA	---	---	---	---	---	---	---
01/11/89	***370***	300		***660***	NA	NA	11000	NA	---	---	---	---	---	---	---
04/20/89	***2400***	***2400***	***720***	500	NA	NA	25000	NA	---	---	---	---	---	---	---
07/10/89	***1600***	***2100***	310	***1100***	NA	NA	22000	NA	---	---	---	---	---	---	---
10/19/89	***3100***	***880***	400	***1000***	NA	NA	17000	NA	---	---	---	---	---	---	---
01/29/90	***1400***	***460***	220	430	NA	NA	10000	NA	---	---	---	---	---	---	---
04/25/90	***870***	***420***	110	420	NA	NA	5700	NA	---	---	---	---	---	---	---
07/27/90	***290***	150	73	190	NA	NA	2600	NA	---	---	---	---	---	---	---
02/27/91	***60***	55	4	34	NA	NA	5	NA	---	---	---	---	---	---	---
05/30/91	<1	<1	1	5.5	NA	NA	1	NA	---	---	---	---	---	---	---
08/28/91	***46***	8	5.3	46	25	52	650	NA	---	---	---	---	---	---	---
11/26/91	2	2	2	2	<2.0	2	100	NA	---	---	---	---	---	---	---
02/21/92	2.8	6	6	160	9	8	160	NA	---	---	---	---	---	---	---
05/21/92	<1	<1	<1	<1	<1.0	<1	50	NA	---	---	---	---	---	---	---
08/26/92	3.6	2.7	2.9	16	8.3	<1	65	NA	---	---	---	---	---	---	---
11/17/92	<1	<1	<1	3	<1.0	<1	50	NA	---	---	---	---	---	---	---
02/16/93	***79.4***	***4200***	310	***6900***	***2280***	***100***	21000	NA	---	---	---	---	---	---	---
05/18/93	<1	<1	<1	3	<1.0	<1	50	NA	---	---	---	---	---	---	---
08/17/93	<1	<1	<1	3	<1.0	<1	50	NA	---	---	---	---	---	---	---
12/13/93	<1	<1	<1	3	<1.0	6	50	NA	4.0	---	8.0	600	7.90	3.0	1.0
02/10/94	<1	<1	<1	3	<1.0	<1	50	NA	4.0	---	2.0	400	8.00	10.0	1.0
05/18/94	<1	<1	<1	3	<1.0	<1	50	NA	5.0	---	11.0	300	8.00	0.6	0.4
08/16/94	<1	<1	<1	3	<1.0	<1	50	NA	3.0	---	18.0	600	7.80	6.0	1.0
11/07/94	<1	<1	<1	3	<1.0	3.1	50	NA	4.0	---	14.0	500	7.80	7.0	2.0
02/07/95	<1	<1	<1	3	<1.0	<1	50	NA	4.0	---	2.0	200	7.70	6.0	3.0
05/10/95	NA	NA	NA	NA	NA	NA	NA	NA	NM	---	NM	NM	NM	NM	NM
09/07/95	<1	<1	<1	3	<1.0	3.1	50	NA	4.0	---	20.0	400	7.80	3.0	0.8
11/15/95	<0.5	<1	<1	<3	<1.0	<1	<50	NA	4.0	---	10.0	600	7.90	1.0	0.4
02/14/96	<0.5	<1	<1	<3	<1.0	<1	<50	NA	3.0	---	8.0	300	6.70	1.0	0.1
05/21/96	NA	NA	NA	NA	NA	NA	NA	NA	NM	NM	NM	NM	NM	NM	NM
08/13/96	NA	NA	NA	NA	NA	NA	NA	NA	4.5	216	NM	NM	NM	NM	NM
11/12/96	NA	NA	NA	NA	NA	NA	NA	NA	5.4	088	NM	NM	NM	NM	NM
02/26/97	<0.13	<0.2	<0.22	<0.23	<0.29	<0.16	<50	NA	5.9	064	8.0	600	7.20	0.6	0.8
05/07/97	NA	NA	NA	NA	NA	NA	NA	NA	6.2	044	NM	NM	NM	NM	NM
08/27/97	<0.13	<0.20	<0.22	<0.23	<0.29	<0.16	<50	NA	4.7	020	18.0	300	7.00	1.0	0.2
01/07/98	NA	NA	NA	NA	NA	NA	NA	NA	3.8	028	NM	NM	NM	NM	NM
04/14/98	NA	NA	NA	NA	NA	NA	NA	NA	8.8	175	NM	NM	NM	NM	NM
07/21/98	<0.13	<0.20	<0.22	<0.23	<0.29	<0.16	<50	NA	4.1	169	18.0	100	7.80	0.2	0.1
10/07/98	NA	NA	NA	NA	NA	NA	NA	NA	1.6	049	NM	NM	NM	NM	NM
01/19/99	NA	NA	NA	NA	NA	NA	NA	NA	1.3	054	NM	NM	NM	NM	NM
04/06/99	NA	NA	NA	NA	NA	NA	NA	NA	0.7	042	NM	NM	NM	NM	NM
07/27/99	<0.13	<0.20	<0.22	<0.23	<0.29	<0.16	<50	NA	0.8	047	NM	NM	NM	NM	NM

Table 1
Groundwater Chemistry and In-Field Biodegradation Summary
Schroeder Oil Former Bulk Terminal
Shawano, Wisconsin
Delta Project No. 1092-500

MW-15

	Volatile Organic Compounds								In-field Biodegradation Measurements						
Parameter / Date Sampled	Benzene µg/L	Toluene µg/L	Ethyl-benzene µg/L	Total Xylenes µg/L	Total TMB µg/L	MTBE µg/L	GRO µg/L	Naph-thalene µg/L	DO ppm	REDOX mV	Temp °C	Conductivity µmhos/cm	pH	Total Iron (Fe^{3+}) ppm	Soluble Iron (Fe^{3+}) ppm
NR 140 ES	***5***	***343***	***700***	***620***	***480***	***60***		***40***							
08/17/93	***22000***	***30000***	***1500***	***19000***	***3920***	***8100***	86000	NA	---	---	---	---	---	---	---
12/13/93	***1200***	***2900***	470	***22000***	***4900***	***500***	54000	NA	2.0	---	8.0	700	7.90	1.0	0.8
02/10/94	***95***	190	7.8	***6300***	***2800***	***220***	18000	NA	2.0	---	4.0	500	7.70	10.0	10.0
05/18/94	***21***	56	25	350	***610***	***100***	3000	NA	4.0	---	12.0	300	7.90	0.2	0.1
08/17/94	***34***	7.8	2	57	193	2	2000	NA	4.0	---	18.0	1000	7.50	0.8	0.6
11/09/94	1	1	1	3	12.7	2.1	340	2.4	2.0	---	15.0	500	7.90	2.0	1.0
02/08/95	1	1	1	3	2.2	1	63	1	2.0	---	5.0	600	7.80	1.0	0.2
05/10/95	1	1	1	3	3	1	59	1	3.0	---	11.0	400	7.90	2.0	0.8
09/07/95	<0.5	1	1	<3	<2.0	<1	<50	<1	4.0	---	20.0	400	7.70	4.0	2.0
11/15/95	***15***	1	1	3.4	1.1	<1	66	NA	4.0	---	8.0	700	7.80	4.0	0.4
02/14/96	4.7	<1	2	5.2	4.8	<1	55	NA	4.0	---	8.0	500	7.10	3.0	0.8
05/21/96	<0.5	<1	<1	<3	<1.0	<1	<50	NA	5.0	078	14.0	300	7.80	5.0	1.0
08/13/96	2.4	<1	<1	<3	<1.0	1.2	<50	NA	2.1	013	18.0	200	7.30	2.0	0.8
11/12/96	3.5	<1	1.5	<3	1.6	<1	<50	NA	4.8	044	9.0	300	7.40	8.0	0.8
02/26/97	***44***	1.9	34	29	26	2.4	360	NA	3.7	005	8.0	400	7.40	8.0	4.0
05/07/97	***190***	26	69	290	207	<0.80	3700	NA	4.1	-056	12.0	300	7.20	3.0	2.0
08/27/97	***370***	8.1	95	85	98	<0.16	1600	NA	1.9	-107	17.0	300	7.00	10.0	10.0
01/07/98	***15***	0.4	12	8.6	18.7	<0.16	190	NA	2.4	-005	9.0	200	7.70	10.0	2.0
04/14/98	1.1	0.24	2.4	5.6	60.3	<3.4	100	NA	9.9	130	11.0	100	7.80	2.0	0.8
07/21/98	<0.13	<0.20	<0.22	<0.23	<0.29	<1.3	<50	NA	6.8	153	18.0	100	7.70	1.0	0.6
10/07/98	3.1	0.22	<0.22	0.75	0.3	<0.16	<50	NA	1.3	031	15.0	200	7.60	7.0	3.0
01/19/99	<0.13	<0.20	<0.22	<0.23	0.24	<0.16	<50	NA	0.7	036	NM	NM	NM	NM	NM
04/06/99	<0.13	<0.20	<0.22	<0.23	<0.29	<0.16	<50	NA	0.5	027	NM	NM	NM	NM	NM
07/27/99	4	0.38	0.56	0.83	1	2	89	NA	0.5	016	NM	NM	NM	NM	NM
03/20/00	<0.13	<0.20	<0.22	<0.23	<0.51	<0.16	NA	NA	NM	NM	NM	NM	MN	NM	NM

Table 1
Groundwater Chemistry and In-Field Biodegradation Summary
Schroeder Oil Former Bulk Terminal
Shawano, Wisconsin
Delta Project No. 1092-500

MW-16

	Volatile Organic Compounds								In-field Biodegradation Measurements						
Parameter / Date Sampled	Benzene µg/L	Toluene µg/L	Ethyl-benzene µg/L	Total Xylenes µg/L	Total TMB µg/L	MTBE µg/L	GRO µg/L	Naph-thalene µg/L	DO ppm	REDOX mV	Temp °C	Conductivity µmhos/cm	pH	Total Iron (Fe^{3+}) ppm	Soluble Iron (Fe^{3+}) ppm
NR 140 ES	***5***	***343***	***700***	***620***	***480***	***60***		***40***							
01/07/98	***530***	***690***	110	530	106	<1.6	2400	NA	2.2	-002	9.0	200	7.50	0.3	0.2
04/14/98	***710***	***750***	21	400	47	***340***	2400	NA	6.7	179	11.0	200	7.80	3.0	0.6
07/21/98	***0.25***	<0.20	<0.22	<0.23	<0.29	<2.8	<50	NA	9.1	186	18.0	100	7.80	0.8	0.4
10/07/98	***200***	3.9	3.2	32	10.4	***100***	440	NA	2.9	052	15.0	100	7.80	6.0	2.0
01/19/99	***780***	74	120	300	153	***110***	2600	NA	0.2	-064	NM	NM	NM	NM	NM
04/06/99	***840***	74	210	***690***	269	<29	4000	NA	0.2	-116	NM	NM	NM	NM	NM
07/27/99	***830***	39	200	340	172	***84***	3100	NA	0.2	-011	NM	NM	NM	NM	NM
03/20/00	**130**	42	180	210	139.3	<4.0	NA	NS	2.5	-024	NM	NM	NM	NM	NM

MW-17

	Volatile Organic Compounds								In-field Biodegradation Measurements						
Parameter / Date Sampled	Benzene µg/L	Toluene µg/L	Ethyl-benzene µg/L	Total Xylenes µg/L	Total TMB µg/L	MTBE µg/L	GRO µg/L	Naph-thalene µg/L	DO ppm	REDOX mV	Temp °C	Conductivity µmhos/cm	pH	Total Iron (Fe^{3+}) ppm	Soluble Iron (Fe^{3+}) ppm
NR 140 ES	***5***	***343***	***700***	***620***	***480***	***60***		***40***							
01/07/98	<0.13	0.25	<0.22	0.55	0.37	<0.16	<50	NA	2.2	-002	9.0	200	7.50	0.3	0.2
04/14/98	NA	NA	NA	NA	NA	NA	NA	NA	9.5	195	NM	NM	NM	NM	NM
07/21/98	<0.13	<0.20	<0.22	<0.23	<0.29	<0.16	<50	NA	8.5	188	18.0	100	7.80	0.8	0.4
10/07/98	NA	NA	NA	NA	NA	NA	NA	NA	1.8	050	NM	NM	NM	NM	NM
01/19/99	NA	NA	NA	NA	NA	NA	NA	NA	1.2	051	NM	NM	NM	NM	NM
04/06/99	NA	NA	NA	NA	NA	NA	NA	NA	0.9	039	NM	NM	NM	NM	NM
07/27/99	<0.13	<0.20	<0.22	<0.23	<0.29	<0.16	<50	NA	0.4	013	NM	NM	NM	NM	NM

Table 1

Groundwater Chemistry and In-Field Biodegradation Summary
Schroeder Oil Former Bulk Terminal
Shawano, Wisconsin
Delta Project No. 1092-500

	Volatile Organic Compounds								In-field Biodegradation Measurements						
Parameter / Date Sampled	Benzene µg/L	Toluene µg/L	Ethyl-benzene µg/L	Total Xylenes µg/L	Total TMB µg/L	MTBE µg/L	GRO µg/L	Naph-thalene µg/L	DO ppm	REDOX mV	Temp °C	Conductivity µmhos/cm	pH	Total Iron (Fe^{3+}) ppm	Soluble Iron (Fe^{3+}) ppm
NR 140 ES	***5***	***343***	***700***	***620***	***480***	***60***		***40***							
01/27/88	<1	<1	<1	<1	NA	NA	<1	NA	---	---	---	---	---	---	---
04/28/88	<1	<1	<1	<1	NA	NA	<10	NA	---	---	---	---	---	---	---
02/27/91	<1	<1	<1	<1	NA	NA	<5	NA	---	---	---	---	---	---	---
08/26/92	<1	<1	<1	<1	<1.0	<1	<50	NA	---	---	---	---	---	---	---
08/17/93	<1	<1	<1	<3	<1.0	<1	<50	NA	---	---	---	---	---	---	---
12/13/93	NA	NA	NA	NA	NA	NA	NA	NA	1.0	---	8.0	300	8.00	0.0	0.0
02/10/94	NA	NA	NA	NA	NA	NA	NA	NA	2.0	---	5.0	300	7.80	0.1	0.0
08/16/94	<1	<1	<1	<3	<1.0	<1	<50	NA	2.0	---	13.0	200	7.90	0.6	0.2
09/07/95	<0.5	<1	<1	<3	<2.0	<1	<50	NA	3.0	---	14.0	200	7.90	1.0	0.1
11/15/95	<0.5	<1	<1	<3	<1.0	<1	<50	NA	4.0	---	7.0	300	7.90	1.0	0.2
02/14/96	<0.5	<1	<1	<3	<1.0	<1	<50	NA	4.0	---	10.0	200	7.10	1.0	0.2
05/21/96	NA	NA	NA	NA	NA	NA	NA	NA	NM	NM	NM	NM	NM	NM	NM
08/13/96	NA	NA	NA	NA	NA	NA	NA	NA	NM	267	NM	NM	NM	NM	NM
11/12/96	NA	NA	NA	NA	NA	NA	NA	NA	4.2	051	NM	NM	NM	NM	NM
02/26/97	<0.13	<0.20	<0.22	<0.23	0.59	<0.16	<50	NA	3.3	071	11.0	200	7.00	0.4	0.2
08/27/97	<0.13	<0.20	<0.22	<0.23	<0.29	<0.16	<50	NA	1.8	-017	15.0	200	7.40	0.8	0.4
01/07/98	NA	NA	NA	NA	NA	NA	NA	NA	4.6	018	NM	NM	NM	NM	NM
04/14/98	NA	NA	NA	NA	NA	NA	NA	NA	0.9	189	NM	NM	NM	NM	NM
07/21/98	<0.13	<0.20	<0.22	<0.23	<0.29	<0.16	<50	NA	3.3	172	16.0	100	7.70	0.4	0.1
10/07/98	NA	NA	NA	NA	NA	NA	NA	NA	0.8	036	NM	NM	NM	NM	NM
01/19/99	NA	NA	NA	NA	NA	NA	NA	NA	0.7	041	NM	NM	NM	NM	NM
04/06/99	NA	NA	NA	NA	NA	NA	NA	NA	0.8	048	NM	NM	NM	NM	NM
07/27/99	NA	NA	NA	NA	NA	NA	NA	NA	0.9	042	NM	NM	NM	NM	NM

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Schroeder Oil Former Bulk Terminal
Shawano, Wisconsin
Delta Project No. 1092-500

	Volatile Organic Compounds								In-field Biodegradation Measurements						
Parameter / Date Sampled	Benzene µg/L	Toluene µg/L	Ethyl-benzene µg/L	Total Xylenes µg/L	Total TMB µg/L	MTBE µg/L	GRO µg/L	Naph-thalene µg/L	DO ppm	REDOX mV	Temp °C	Conductivity µmhos/cm	pH	Total Iron (Fe^{3+}) ppm	Soluble Iron (Fe^{3+}) ppm
NR 140 ES	***5***	***343***	***700***	***620***	***480***	***60***		***40***							
09/02/87	5	3.3	<1	4.9	NA	NA	NA	NA	---	---	---	---	---	---	---
01/27/88	<1	<1	<1	<1	NA	NA	<1	NA	---	---	---	---	---	---	---
04/28/88	3	<1	<1	<1	NA	NA	<10	NA	---	---	---	---	---	---	---
02/27/91	<1	<1	<1	<1	NA	NA	<5	NA	---	---	---	---	---	---	---
08/26/92	<1	<1	<1	<1	<1.0	<1	<50	NA	---	---	---	---	---	---	---
08/17/93	<1	<1	<1	<3	<1.0	<1	<50	NA	---	---	---	---	---	---	---
12/13/93	NA	NA	NA	NA	NA	NA	NA	NA	1.0	---	10.0	400	7.90	0.1	0.0
02/10/94	NA	NA	NA	NA	NA	NA	NA	NA	2.0	---	5.0	300	7.80	0.0	0.0
08/16/94	<1	<1	<1	<3	<1.0	<1	<50	NA	5.0	---	14.0	300	7.90	0.3	0.1
09/07/95	<0.5	<1	<1	<3	<2.0	<1	<50	NA	5.0	---	16.0	300	7.80	0.6	0.2
11/15/95	<0.5	<1	<1	<3	<1.0	<1	<50	NA	4.0	---	6.0	400	7.90	0.6	0.2
02/14/96	<0.5	<1	<1	<3	<1.0	<1	<50	NA	6.0	---	10.0	300	6.90	0.4	0.1
05/21/96	NA	NA	NA	NA	NA	NA	NA	NA	NM	NM	NM	NM	NM	NM	NM
08/13/96	NA	NA	NA	NA	NA	NA	NA	NA	1.8	247	NM	NM	NM	NM	NM
11/12/96	NA	NA	NA	NA	NA	NA	NA	NA	4.8	105	NM	NM	NM	NM	NM
02/26/97	<0.13	<0.2	<0.22	<0.23	<0.29	<0.16	<50	NA	6.8	062	9.0	300	7.90	0.3	0.2
05/07/97	NA	NA	NA	NA	NA	NA	NA	NA	3.1	045	NM	NM	NM	NM	NM
08/27/97	<0.13	<0.20	<0.22	<0.23	<0.29	<0.16	<50	NA	3.0	012	15.0	200	7.10	0.4	0.2
01/07/98	NA	NA	NA	NA	NA	NA	NA	NA	4.6	020	NM	NM	NM	NM	NM
04/14/98	NA	NA	NA	NA	NA	NA	NA	NA	4.1	193	NM	NM	NM	NM	NM
07/21/98	<0.13	<0.20	<0.22	<0.23	<0.29	<0.16	<50	NA	3.5	151	16.0	100	7.90	0.6	0.4
10/07/98	NA	NA	NA	NA	NA	NA	NA	NA	1.7	048	NM	NM	NM	NM	NM
01/19/99	NA	NA	NA	NA	NA	NA	NA	NA	0.9	048	NM	NM	NM	NM	NM
04/06/99	NA	NA	NA	NA	NA	NA	NA	NA	0.7	037	NM	NM	NM	NM	NM
07/27/99	<0.13	<0.20	<0.22	<0.23	<0.29	<0.16	<50	NA	0.7	051	NM	NM	NM	NM	NM

NOTES:

B =..... Benzene
T =..... Toluene
E =..... Ethylbenzene
X =..... Xylenes
TMB =..... Tri-methyl Benzene
MTBE =..... Methyl Tertiary-butyl Ether
GRO =..... Gasoline Range Organic Compounds
NR 140 ES =..... Wisconsin Adm. Code Ch. NR 140 Enforcement Standard (Rev. 09/01/95)

Monitoring Well
Ground Water
Dissolved Oxygen
Reduction/Oxidation
Iron; Total
Iron; Soluble

µg/L =..... micrograms/Liter
msl =..... mean sea level
ppm =..... parts per million
°C =..... Degrees Celsius
µmhos/cm =..... micromhos/centimeter
NA =..... Not analyzed
"-" =..... Not measured