



①

BLASLAND & BOUCK ENGINEERS, P.C.

ENGINEERS & GEOSCIENTISTS

6723 Towpath Road, Box 66, Syracuse, New York 13214 (315) 446-9120
FAX: (315) 449-0017

January 15, 1991

Ms. Bonnie L. Eleder
Remedial Project Manager
USEPA
Region V
230 South Dearborn Street
Chicago, IL 60604

Re: Sheboygan River and Harbor
Alternative Specific Remedial
Investigation
File: 176.07 #2

Dear Bonnie:

Enclosed please find, for your review, the December 1990 Status Report for activities associated with the above-referenced project.

Should you have any questions concerning the enclosed, please feel free to contact us.

Very truly yours,

BLASLAND & BOUCK ENGINEERS, P.C.

Dawn S. Foster SOM/FL

Dawn S. Foster, P.E.
Manager, Engineering

SDM/nlg
Enclosure

cc: Mark A. Thimke, Esq., Foley & Lardner, w/encl.
Robin R. Schmidt, Wisconsin Department of Natural Resources, w/encl.
Francis J. Trcka, Wisconsin Department of Natural Resources, w/encl.

SHEBOYGAN RIVER AND HARBOR
ALTERNATIVE SPECIFIC REMEDIAL INVESTIGATION
DECEMBER 1990 MONTHLY STATUS REPORT

1. Action Taken During this Time Period

- a. The following activities were conducted during this period:
 - Winter shut-down activities for the project continued as scheduled.
- b. No meetings or conference calls were held in December.

2. USEPA Decisions

- On December 21, 1990, USEPA provided verbal approval to extend the submittal deadlines for the Armoring, Fish Monitoring, and Biodegradation Reports to January 1991.

3. Results of Sampling and Tests

Data summaries for determinations made, and for analytical results received, this month are attached as follows:

- a. The 1990 Chinook Salmon data is presented in Tables 1 through 3.
- b. The weekly PCB, TSS, and turbidity results for the period covering October 28, 1990 to November 3, 1990 are presented in Table 4.
- c. Table 5 presents results from water column samples taken within curtained sediment areas prior to curtain removal.
- d. Table 6 presents the Fall 1990 water column monitoring results for PCB, TSS, and VSS.
- e. Table 7 presents a summary of water quantities removed from the CTF Leak Detection System (LDS) during the month of December.

The laboratory data sheets are presented in Attachment 1.

4. Anticipated Problems//Recommended Solutions

- None.

5. Problems Encountered/Resolved

- None.

6. Deliverables Submitted to USEPA/WDNR

Date Submitted

- November Status Report December 12, 1990

7. Upcoming Events/Activities Planned

- Winter operation and maintenance activities will continue.

8. Key Personnel Changes

- None.

TABLES

TABLE 1
SHEBOYGAN RIVER AND HARBOR
ALTERNATIVE SPECIFIC REMEDIAL INVESTIGATION

DATA FOR CHINOOK SALMON
(KIWANIS PARK)

Date Sampled: 10/1/90

I. Raw Data

<u>Sample Number</u>	<u>Length (cm)</u>	<u>Weight (grams)</u>	<u>Sex/ Reproductive Cond'n</u>	<u>Total^a PCBs (mg/kg)</u>	<u>Lipids (%)</u>
FS-130	76.0	3800	GF	3.42	10.37
FS-131	66.0	2900	RM	2.47	3.87
FS-132	98.0	9400	GF	1.73	1.86
FS-133	55.0	1350	RM	2.38	3.86
FS-134	95.0	6800	RM	0.81	2.57
FS-135	85.5	5450	RM	3.39	2.15
FS-136	83.0	6900	GF	2.92	3.39
FS-137	92.0	8100	GF	3.25	1.86
FS-138	56.0	2000	RM	2.02	2.63
FS-139	81.5	6600	GF	2.35	2.46
FS-139 MS				3.88	2.50
FS-139 DUP				2.39	2.48
FS-140	85.0	6900	GF	3.06	2.37
FS-141	89.0	6300	GF	2.32	1.63
FS-142	98.0	10100	GF	2.37	1.64
FS-143	85.0	5850	RM	2.47	3.47
FS-144	56.5	1950	RM	3.45	4.16
FS-145	59.0	2450	GM	1.70	6.01
FS-146	86.5	6300	RF	5.44	1.11
FS-147	85.0	5950	RM	3.24	4.92
FS-148	85.0	5950	GF	1.11	2.23
FS-149	112.5	9950	RM	3.19	3.91
FS-149 MS				4.49	3.74
FS-149 DUP				2.93	3.84
FS-150	83.0	5250	RM	2.00	2.10
FS-151	57.5	2050	RM	2.50	4.21
FS-152	95.5	9500	GF	2.05	1.92
FS-153	91.0	7600	GF	1.68	1.83
FS-154	90.5	8600	GF	1.38	6.03
FS-155	82.0	5800	GF	1.76	1.15
FS-156	58.0	2350	RM	1.56	6.01
FS-157	96.0	8650	GF	2.85	2.99
FS-158	85.0	6350	GF	2.02	2.90
FS-159	59.5	2200	GF	1.45	5.43
FS-159 MS				2.97	5.84

TABLE 1 (Cont'd)
(Kiwanis Park)

<u>Sample Number</u>	<u>Length (cm)</u>	<u>Weight (grams)</u>	<u>Sex/ Reproductive Cond'n</u>	<u>Total^a PCBs (mg/kg)</u>	<u>Lipids (%)</u>
FS-159 DUP				1.39	4.99
FS-160	84.5	5500	RM	2.18	2.04
FS-161	97.0	6650	RM	2.88	2.74
FS-162	84.0	6000	RF	2.58	1.25
FS-163	58.0	2200	GF	0.76	5.65
FS-164	86.5	4850	RM	2.45	1.37
FS-165	56.5	1850	RM	2.70	4.17
FS-166	63.0	3850	RM	2.78	4.7
FS-167	82.0	5900	GF	2.14	0.91
FS-168	83.0	5800	RM	3.28	3.63
FS-169	94.0	7750	GM	2.48	2.93
FS-169 MS				3.94	3.10
FS-169 DUP				2.49	3.13
FS-170	54.5	1600	RM	0.70	4.14
FS-171	63.0	2400	GM	3.22	3.74

II. Means

Total PCBs (mg/kg)	2.39 +0.85
Lipids (%)	3.32 +1.75
Length (cm)	79.4 +15.2
Weight (grams)	5421.4 +2511.5

Notes:

F = Female,

M = Male

G = Green

R = Ripe

^a = Breakdown of total PCBs by Aroclor is available in lab data sheets
(Note: sample number in this table corresponds to the sample location in lab data sheets).

TABLE 2
SHEBOYGAN RIVER AND HARBOR
ALTERNATIVE SPECIFIC REMEDIAL INVESTIGATION

DATA FOR CHINOOK SALMON
(STRAWBERRY CREEK)
Date Sampled: 10/3/90

I. Raw Data

<u>Sample Number</u>	<u>Length (cm)</u>	<u>Weight (grams)</u>	<u>Sex/ Reproductive Cond'n</u>	<u>Total^a PCBs (mg/kg)</u>	<u>Lipids (%)</u>
FS-172	82.5	5450	RM	3.27	2.70
FS-173	80.0	4500	RM	1.69	4.22
FS-174	94.0	7350	RM	3.17	1.87
FS-175	61.0	2350	GM	1.56	3.91
FS-176	83.0	5850	RM	3.49	2.82
FS-177	82.5	5250	RM	3.13	3.39
FS-178	74.5	4200	GM	2.84	2.97
FS-179	74.5	4200	RM	3.82	4.56
FS-179 MS				5.36	4.48
FS-179 DUP				2.95	4.35
FS-180	85.5	5650	RM	2.46	3.67
FS-181	94.0	7300	RM	2.74	1.47
FS-182	77.0	5300	GF	4.72	2.20
FS-183	83.5	6500	GF	2.60	1.88
FS-184	84.5	5650	GF	4.86	1.83
FS-185	91.5	7600	GF	2.75	1.11
FS-186	87.0	7650	GF	1.68	2.19
FS-187	81.5	4650	RM	3.44	2.26
FS-188	94.0	8750	GF	2.98	3.42
FS-189	55.0	1700	RM	3.28	3.60
FS-189 MS				4.87	3.93
FS-189 DUP				3.28	3.71
FS-190	96.0	8200	GF	2.84	3.32
FS-191	86.5	6400	RM	2.72	4.24
FS-192	58.0	2050	RM	1.59	3.40
FS-193	77.5	4550	RM	3.07	1.78
FS-194	82.0	5850	RM	2.85	2.44
FS-195	85.5	5750	RM	3.08	2.18
FS-196	61.0	2600	RM	3.71	4.41
FS-197	95.0	9650	GF	2.89	1.45
FS-198	77.5	6050	GF	2.36	2.74
FS-199	88.0	6950	GF	3.13	2.53
FS-199 MS				4.07	2.53
FS-199 DUP				2.62	2.68
FS-200	86.5	6750	RM	2.61	5.69
FS-201	86.0	6000	RM	3.57	0.95
FS-202	73.5	3800	RM	3.24	3.33

TABLE 2 (Cont'd)
(Strawberry Creek)

<u>Sample Number</u>	<u>Length (cm)</u>	<u>Weight (grams)</u>	<u>Sex/ Reproductive Cond'n</u>	<u>Total^a PCBs (mg/kg)</u>	<u>Lipids (%)</u>
FS-203	59.0	2150	RM	2.07	5.13
FS-204	88.0	7000	RM	3.47	2.01
FS-205	87.0	7100	RM	4.04	3.86
FS-206	85.0	6000	RM	3.05	2.71
FS-207	79.5	5700	RM	2.77	2.91
FS-208	94.5	7800	RM	3.40	2.41
FS-209	85.0	6700	RM	2.91	2.35
FS-209 MS				4.03	2.30
FS-209 DUP				2.91	2.33
FS-210	84.5	6700	RM	1.70	5.95
FS-211	85.0	5950	RM	1.10	4.12
FS-212	83.5	5600	RM	3.30	2.76
FS-213	86.0	6000	RM	1.90	2.99

II. Means

Total PCBs (mg/kg)	2.91 +0.76
Lipids (%)	3.02 +1.12
Length (cm)	81.8 +10.1
Weight (grams)	5742.9 +1781.5

Notes:

F = Female,

M = Male

G = Green,

R = Ripe

^a = Breakdown of total PCBs by Aroclor is available in lab data sheets
(Note: sample number in this table corresponds to the sample location in lab data sheets)

TABLE 3
SHEBOYGAN RIVER AND HARBOR
ALTERNATIVE SPECIFIC REMEDIAL INVESTIGATION

DATA FOR CHINOOK SALMON
(LOWER HARBOR)
Date Sampled: 10/3, 10/4/90

I. Raw Data

<u>Sample Number</u>	<u>Length (cm)</u>	<u>Weight (grams)</u>	<u>Sex/ Reproductive Cond'n</u>	<u>Total^a. PCBs (mg/kg)</u>	<u>Lipids (%)</u>
FS-214	73.0	4450	RM	1.7	3.32
FS-215	55.5	2000	RM	1.1	3.09
FS-216	89.0	6400	RM	2.9	3.80
FS-217	71.5	3950	GF	1.9	5.52
FS-218	80.0	5200	RM	2.8	2.04
FS-219	53.5	1750	RM	1.2	2.77
FS-219 DUP				1.2	2.67
FS-219 MS				3.6	2.63
FS-220	80.5	5450	GF	2.0	2.12
FS-221	86.5	4550	RM	3.1	1.01
FS-222	82.0	5450	GF	2.3	1.04

II. Means

Total PCBs (mg/kg)	2.02 +0.70
Lipids (%)	2.74 1.27
Length (cm)	74.6 +12.0
Weight (grams)	4355.6 +1484.6

Notes:

F = Female,
G = Green,

M = Male
R = Ripe

^a = Breakdown of total PCBs by Aroclor is available in lab data sheets
(Note: sample number in this table corresponds to the sample location in lab data sheets)

TABLE 4

SHEBOYGAN RIVER AND HARBOR
ALTERNATIVE SPECIFIC REMEDIAL INVESTIGATION

Weekly PCB/TSS/Turbidity Water Column Monitoring

<u>Sample Date</u>	<u>Week</u>	<u>Activity</u>	<u>Time</u>	<u>Fixed Location</u>	<u>Location</u>	<u>Depth of Water (ft)</u>	<u>Depth of Sample (ft)</u>	<u>PCB Filtered (ppb)</u>	<u>PCB¹ Total (ppb)</u>	<u>TSS¹ (mg/l)</u>	<u>Turbidity¹ (ntu)</u>
10/31/90	10/28-11/3/90	Armoring Areas 2 and 3	10:20	W-11	Upstream	1.2	0.6	<0.05	<0.05	8.9(8.5)	9.2 (9.0)
			10:45	W-16	Downstream	2.5	1.2	<0.05	<0.05	9.0(9.1)	9.8 (7.8)
			11:00	W-15	Downstream	3.8	1.9	<0.05	0.14	9.6(9.9)	8.8 (9.0)
					All Areas ²						

Notes:

¹ Values in parentheses represent duplicate analyses.

² Sample was taken downstream of confluence of the Sheboygan and Onion Rivers.

TABLE 5

SHEBOYGAN RIVER AND HARBOR
ALTERNATIVE SPECIFIC REMEDIAL INVESTIGATION

Summary of Post Clean-Up Water Samples Within Curtained Sediment Areas

<u>Sediment Area</u>	<u>Activity</u>	<u>Work Activity Ended</u>	<u>Curtains Removed</u>	<u>Date Sampled</u>	<u>Time</u>	<u>Sample Locations Per Area¹</u>	<u>Average depth of Water (ft)</u>	<u>Average depth of Sample (ft)</u>	<u>PCB Filtered (ppb)</u>	<u>PCB Total (ppb)</u>	<u>TSS (mg/l)</u>	<u>Turbidity (ntu)</u>
2	Armoring	11/11/90	11/2/90	11/1/90	7:30	3	2.0	1.0	0.27(0.26)	0.35(0.37)	7.1(8.9)	9.8(9.6)
3	Armoring	10/30/90	11/6/90	11/1/90	10:15	2	2.0	1.0	0.36	0.82	9.1(8.4)	27(26)
4	Armoring	10/30/90	11/6/90	11/1/90	10:30	2	2.0	1.0	0.29	0.57	6.4(6.6)	14(17)

Notes:

¹Locations composited in field using equal volumes.
Values in parentheses represent results of duplicate analyses

TABLE 6

SHEBOYGAN RIVER AND HARBOR
ALTERNATIVE SPECIFIC REMEDIAL INVESTIGATION

Summary of the Fall 1990 PCB/TSS/VSS Water Column Monitoring Episode

<u>Location</u>	<u>Date</u>	<u>Time</u>	<u>River Width (ft.)</u>	<u>Average Depth (ft.)</u>	<u>Average Velocity (fps)</u>	<u>Cal. Q (cfs)</u>	<u>USGS Q (cfs)</u>	<u>Sample Location Depth (ft.)</u>	<u>pH</u>	<u>Temp °C</u>	<u>Conduct umhos/cm</u>	<u>Secchi Disc (ft.)</u>	<u>TSS (mg/l)</u>	<u>VSS (mg/l)</u>	<u>PCB Filtered (ppb)</u>	<u>PCB Total (ppb)</u>
W-1	11/5/90	14:45	174	4.05	0.278	196	240	7.1	8.30	6	653	2.5	6.9(6.4)	3.2	<0.05	<0.05
W-16	11/6/90	8:40	63	2.65	1.39	232	440	3.3	8.14	4	NA	1.5	13.8(13.1)	4.5	<0.05	<0.05
W-12	11/6/90	10:20	88	4.01	1.21	427	440	5.4	8.40	4	723	1.1	31.7(30.6)	6.7(6.7)	<0.05	<0.05
W-15	11/6/90	11:50	129	4.10	0.71	376	440	5.0	8.43	5	714	1.0	37.0(37.1)	7.6	0.15	0.77
W-13	11/6/90	14:10	128	2.92	1.10	411	440	3.0	8.43	5	719	1.1	25.2(23.5)	5.7	<0.05(<0.05)	0.10(<0.05)
W-14	11/6/90	15:15	98	5.10	0.994	497	440	6.6	8.50	5	726	1.3	22.6(22.6)	5.7	<0.05	0.11
W-3	11/7/90	9:30	135	5.16	0.488	340	360	6.1	8.11	3	688	2.2	10.8(11.0)	3.9	<0.05	<0.05
W-4	11/7/90	11:15	127	6.18	0.47	369	360	6.6	7.87	3	694	2.2	9.3(8.7)	3.0	<0.05	<0.05

Notes:

Values in parentheses represent duplicate analyses
NA - sample not analyzed

TABLE 7

SHEBOYGAN RIVER AND HARBOR
ALTERNATIVE SPECIFIC REMEDIAL INVESTIGATION

Summary of Water Removed from Leak Detection System (gals.)

<u>Date</u>	<u>Cell No.</u>			
	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>
12/1/90	150	0	0	1000
12/2/90	150	0	0	1000
12/3/90	150	0	0	1000
12/4/90	150	0	0	1000
12/5/90	150	0	0	1000
12/6/90	150	0	0	1000
12/7/90	150	0	0	1000
12/8/90	150	0	0	1000
12/9/90	150	0	0	1000
12/10/90	150	0	0	1000
12/11/90	150	0	0	1000
12/12/90	150	0	0	1000
12/13/90	150	0	0	1000
12/14/90	150	0	0	1000
12/15/90	150	0	0	1000
12/16/90	150	0	0	1000
12/17/90	150	0	0	1000
12/18/90	150	0	0	1000
12/19/90	150	0	0	1000
12/20/90	150	0	0	1000
12/21/90	150	0	0	1000
12/22/90	150	0	0	1000
12/23/90	150	0	0	1000
12/24/90	150	0	0	1000
12/25/90	150	0	0	1000
12/26/90	150	0	0	1000
12/27/90	150	0	0	1000
12/28/90	150	0	0	1000
12/29/90	150	0	0	1000
12/30/90	150	0	0	1000
12/31/90	150	0	0	1000

ATTACHMENT 1

BLASLAND & BOUCK
SHEBOYGAN RIVER SALMON
SET #1

SAMPLE NUMBER	SAMPLE LOCATION	DATE RECEIVED	DATE EXTRACTED	PERCENT LIPIDS	PCB 1242 (ug/Kg)	PCB 1248 (ug/Kg)	PCB 1254 (ug/Kg)	PCB 1260 (ug/Kg)	TOTAL PCB
01000369	FS-130	10/02/90	10/15/90	10.37	<100	870	2100	450	3420
01000370	FS-131	10/02/90	10/15/90	3.87	<100	300	1700	470	2470
01000371	FS-132	10/02/90	10/15/90	1.86	<100	220	1200	310	1730
01000372	FS-133	10/02/90	10/15/90	3.86	550	<100	1400	430	2380
01000373	FS-134	10/02/90	10/15/90	2.57	210	<100	430	170	810
01000374	FS-135	10/02/90	10/15/90	2.15	<100	420	2300	670	3390
01000375	FS-136	10/02/90	10/15/90	3.39	<100	570	1800	550	2920
01000376	FS-137	10/02/90	10/15/90	1.86	<100	410	2200	640	3250
01000377	FS-138	10/02/90	10/15/90	2.63	310	<100	1300	410	2020
01000378	FS-139	10/02/90	10/15/90	2.46	<100	390	1700	280	2350
01000379	FS-139 HS	10/02/90	10/15/90	2.50	1600	<100	1800	480	3880
01000380	FS-139DUP	10/02/90	10/15/90	2.48	<100	360	1800	430	2390
01000381	FS-140	10/02/90	10/15/90	2.37	<100	440	2000	620	3060
01000382	FS-141	10/02/90	10/15/90	1.63	<100	310	1500	510	2320
01000383	FS-142	10/02/90	10/15/90	1.64	450	<100	1700	220	2370
01000384	FS-143	10/02/90	10/15/90	3.47	<100	490	1600	380	2470
01000385	FS-144	10/02/90	10/15/90	4.16	820	<100	2000	630	3450
01000386	FS-145	10/02/90	10/15/90	6.01	370	<100	1000	330	1700
01000387	FS-146	10/02/90	10/15/90	1.11	920	<100	3600	920	5440
01000388	FS-147	10/02/90	10/15/90	4.92	480	<100	2400	380	3240
01000389	FS-148	10/02/90	10/15/90	2.23	<100	270	670	170	1110
01000390	FS-149	10/02/90	10/15/90	3.91	<100	580	2100	510	3190
01000391	FS-149 HS	10/02/90	10/15/90	3.74	1700	<100	2300	490	4490
01000392	FS-149DUP	10/02/90	10/15/90	3.84	<100	540	2000	390	2930
Control Blank			10/15/90	0.81	<100	<100	<100	<100	<100
Control Spike			10/15/90	0.83	1300	<100	1300	<100	2600
Method Blank			10/15/90	***	<100	<100	<100	<100	<100

NOTE: PCB-1016, PCB-1221, and PCB-1232 not found in any sample.

The control spike was fortified with 2000 ug/Kg of Aroclor 1242 and Aroclor 1254. The recovery of the Aroclor 1242 was 65%. The recovery of the Aroclor 1254 was 65%.

The matrix spikes were fortified with 2000 ug/Kg of Aroclor 1242. The recovery of the spike from samples FS-139 and FS-149 was 61% and 57% respectively.

BLASLAND & BOUCK
SHEBOYGAN RIVER SALMON
SET #2

SAMPLE NUMBER	SAMPLE LOCATION	DATE RECEIVED	DATE EXTRACTED	PERCENT LIPIDS	PCB 1242 (ug/Kg)	PCB 1248 (ug/Kg)	PCB 1254 (ug/Kg)	PCB 1260 (ug/Kg)	TOTAL PCB
01000393	FS-150	10/02/90	10/17/90	2.10	<100	370	1400	230	2000
01000394	FS-151	10/02/90	10/17/90	4.21	270	<100	1700	530	2500
01000395	FS-152	10/02/90	10/17/90	1.92	330	<100	1500	220	2050
01000396	FS-153	10/02/90	10/17/90	1.83	300	<100	1200	180	1680
01000397	FS-154	10/02/90	10/17/90	6.03	250	<100	1000	130	1380
01000398	FS-155	10/02/90	10/17/90	1.15	<100	230	1300	230	1760
01000398	FS-156	10/02/90	10/17/90	6.01	<100	240	1100	220	1560
01000400	FS-157	10/02/90	10/17/90	2.99	700	<100	1800	350	2850
01000401	FS-158	10/02/90	10/17/90	2.90	<100	360	1400	260	2020
01000402	FS-158	10/02/90	10/17/90	5.43	460	<100	850	140	1450
01000403	FS-158 MS	10/02/90	10/17/90	5.84	1800	<100	1000	170	2970
01000404	FS-158DUP	10/02/90	10/17/90	4.98	440	<100	820	130	1390
01000405	FS-160	10/02/90	10/17/90	2.04	<100	500	1400	280	2180
01000406	FS-161	10/02/90	10/17/90	2.74	<100	470	2000	410	2880
01000407	FS-162	10/02/90	10/17/90	1.25	<100	370	1800	410	2580
01000408	FS-163	10/02/90	10/17/90	5.65	250	<100	510	<100	760
01000409	FS-164	10/02/90	10/17/90	1.37	330	<100	1700	420	2450
01000410	FS-165	10/02/90	10/17/90	4.17	780	<100	1600	320	2700
01000411	FS-166	10/02/90	10/17/90	4.70	370	<100	1900	510	2780
01000412	FS-167	10/02/90	10/17/90	0.91	350	<100	1500	290	2140
01000413	FS-168	10/02/90	10/17/90	3.63	760	<100	2100	420	3280
01000414	FS-168	10/02/90	10/17/90	2.93	570	<100	1600	310	2480
01000415	FS-168 MS	10/02/90	10/17/90	3.10	1800	<100	1700	340	3840
01000416	FS-168DUP	10/02/90	10/17/90	3.13	570	<100	1600	320	2480
Control Blank			10/17/90	0.87	<100	<100	<100	<100	<100
Control Spike			10/17/90	0.94	1400	<100	1300	<100	2700
Method Blank			10/17/90	***	<100	<100	<100	<100	<100

NOTE: PCB-1016, PCB-1221, and PCB-1232 not found in any sample.

The control spike was fortified with 2000 ug/Kg of Aroclor 1242 and Aroclor 1254. The recovery of the Aroclor 1242 was 70%. The recovery of the Aroclor 1254 was 75%.

The matrix spikes were fortified with 2000 ug/Kg of Aroclor 1242. The recovery of the spike from samples FS-158 and FS-169 was 68% and 67% respectively.

BLASLAND & BOUCK
SHEBOYGAN RIVER SALMON
SET #3

SAMPLE NUMBER	SAMPLE LOCATION	DATE RECEIVED	DATE EXTRACTED	PERCENT LIPIDS	PCB 1242 (ug/Kg)	PCB 1248 (ug/Kg)	PCB 1254 (ug/Kg)	PCB 1260 (ug/Kg)	TOTAL PCB
01000417	FS-170	10/02/90	10/19/90	4.14	<100	120	440	140	700
01000418	FS-171	10/02/90	10/19/90	3.74	800	<200	1800	620	3220
01000665	FS-172	10/03/90	10/19/90	2.70	<200	990	1800	480	3270
01000666	FS-173	10/03/90	10/19/90	4.22	<100	400	1000	290	1690
01000667	FS-174	10/03/90	10/26/90	1.87	<200	610	2000	560	3170
01000668	FS-175	10/03/90	10/19/90	3.91	<100	280	970	310	1560
01000669	FS-176	10/03/90	10/25/90	2.82	<200	790	2100	600	3490
01000670	FS-177	10/03/90	10/25/90	3.38	<200	860	1800	470	3130
01000671	FS-178	10/03/90	10/19/90	2.97	<200	560	1700	580	2840
01000672	FS-179	10/03/90	10/26/90	4.56	<200	910	2200	710	3820
01000673	FS-179 MS	10/03/90	10/19/90	4.48	2500	<300	2200	660	5360
01000674	FS-179DUP	10/03/90	10/19/90	4.35	<200	720	1700	530	2950
01000675	FS-180	10/03/90	10/19/90	3.67	<200	550	1500	410	2460
01000676	FS-181	10/03/90	10/19/90	1.47	<200	600	1700	440	2740
01000677	FS-182	10/03/90	10/19/90	2.20	<300	620	3100	1000	4720
01000678	FS-183	10/03/90	10/19/90	1.88	<200	580	1600	420	2600
01000679	FS-184	10/03/90	10/19/90	1.83	<300	790	3100	970	4860
01000680	FS-185	10/03/90	10/19/90	1.11	<200	350	1800	600	2750
01000681	FS-186	10/03/90	10/19/90	2.19	<100	360	1000	320	1680
01000682	FS-187	10/03/90	10/19/90	2.26	<200	550	2100	790	3440
01000683	FS-188	10/03/90	10/19/90	3.42	<200	540	1800	640	2980
01000684	FS-189	10/03/90	10/19/90	3.60	<200	540	2000	740	3280
01000685	FS-189 MS	10/03/90	10/19/90	3.93	2100	<200	2000	770	4870
01000686	FS-189DUP	10/03/90	10/19/90	3.71	<200	540	2000	740	3280
Control Blank			10/19/90	0.97	<100	<100	<100	<100	<100
Control Blank			10/25/90	***	<100	<100	<100	<100	200 <100
Control Blank			10/26/90	***	<100	<100	<100	<100	<100
Control Spike			10/19/90	1.07	2200	<300	2000	<300	4200
Method Blank			10/19/90	***	<100	<100	<100	<100	<100

NOTE: PCB-1016, PCB-1221, and PCB-1232 not found in any sample.

The control spike was fortified with 2000 ug/Kg of Aroclor 1242 and Aroclor 1254. The recovery of the Aroclor 1242 was 110%. The recovery of the Aroclor 1254 was 100%.

The matrix spikes were fortified with 2000 ug/Kg of Aroclor 1242. The recovery of the spike from samples FS-179 and FS-189 was 84% and 78% respectively.

BLASLAND & BOUCK
SHEBOYGAN RIVER SALMON
SET #4

SAMPLE NUMBER	SAMPLE LOCATION	DATE RECEIVED	DATE EXTRACTED	PERCENT LIPIDS	PCB 1242 (ug/Kg)	PCB 1248 (ug/Kg)	PCB 1254 (ug/Kg)	PCB 1260 (ug/Kg)	TOTAL PCB
01000687	FS-190	10/02/90	11/1/90	3.32	<200	620	1700	520	2840
01000688	FS-191	10/02/90	11/1/90	4.24	<200	530	1700	490	2720
01000689	FS-192	10/03/90	11/1/90	3.40	<100	530	840	220	1590
01000690	FS-193	10/03/90	11/1/90	1.78	<200	930	1700	440	3070
01000691	FS-194	10/03/90	11/1/90	2.44	<200	700	1700	450	2850
01000692	FS-195	10/03/90	11/1/90	2.18	<200	600	1900	580	3080
01000693	FS-196	10/03/90	11/1/90	4.41	<200	590	2300	820	3710
01000694	FS-197	10/03/90	11/1/90	1.45	<200	600	1800	490	2890
01000695	FS-198	10/03/90	11/1/90	2.74	<200	530	1400	430	2360
01000696	FS-198	10/03/90	11/1/90	2.53	<200	780	1800	540	3130
01000697	FS-199 MS	10/03/90	11/1/90	2.53	<300	<300	3400	670	4070
01000698	FS-199DUP	10/03/90	11/1/90	2.68	<200	600	1800	220	2620
01000699	FS-200	10/03/90	11/1/90	5.69	<200	700	1500	410	2610
01000700	FS-201	10/03/90	11/1/90	0.95	<200	690	2200	680	3570
01000701	FS-202	10/03/90	11/1/90	3.33	<200	620	2000	620	3240
01000702	FS-203	10/03/90	11/1/90	5.13	<100	630	1100	340	2070
01000703	FS-204	10/03/90	11/1/90	2.01	<200	790	2100	580	3470
01000704	FS-205	10/03/90	11/1/90	3.86	<200	1100	2300	640	4040
01000705	FS-206	10/03/90	11/1/90	2.71	<200	910	1600	540	3050
01000706	FS-207	10/03/90	11/1/90	2.91	<200	720	1600	450	2770
01000707	FS-208	10/03/90	11/1/90	2.41	<200	800	2000	600	3400
01000708	FS-209	10/03/90	11/1/90	2.35	<200	720	1700	490	2910
01000709	FS-209 MS	10/03/90	11/1/90	2.30	<200	<200	3400	630	4030
01000710	FS-209DUP	10/03/90	11/1/90	2.33	<200	860	1600	450	2910
Control Spike			11/1/90	0.92	1700	<100	<100	<100	1700
Method Blank			11/1/90	***	<100	<100	<100	<100	<100

NOTE: PCB-1016, PCB-1221, and PCB-1232 not found in any sample.

The control spike was fortified with 2000 ug/Kg of Aroclor 1242.
The recovery of Aroclor 1242 was 85%.

The matrix spikes were fortified with 2000 ug/Kg of Aroclor 1254. The recovery of the spike from samples FS-199 and FS-209 was 80% and 88% respectively.

BLASLAND & BOUCK
SHEBOYGAN RIVER SALMON
SET # 5

SAMPLE NUMBER	SAMPLE LOCATION	DATE RECEIVED	DATE EXTRACTED	PERCENT LIPIDS	PCB 1242 (ug/Kg)	PCB 1248 (ug/Kg)	PCB 1254 (ug/Kg)	PCB 1260 (ug/Kg)	TOTAL PCB
01000711	FS-210	10/03/90	11/14/90	5.95	<200	<200	1100	570	1700
01000712	FS-211	10/03/90	11/14/90	4.12	<100	<100	820	270	1100
01000713	FS-212	10/03/90	11/14/90	2.76	<200	<200	2300	970	3300
01000714	FS-213	10/03/90	11/14/90	2.99	<200	<200	1400	510	1900
01001038	FS-214	10/05/90	11/14/90	3.32	440	<100	920	320	1700
01001039	FS-215	10/05/90	11/14/90	3.09	<100	<100	820	310	1100
01001040	FS-216	10/05/90	11/14/90	3.80	<200	700	1600	600	2900
01001041	FS-217	10/05/90	11/14/90	5.52	<200	380	1100	390	1900
01001042	FS-218	10/05/90	11/14/90	2.04	<200	<200	2200	620	2800
01001043	FS-219	10/05/90	11/14/90	2.77	<100	<100	830	360	1200
01001044	FS-219 MS	10/05/90	12/04/90	2.63	<100	<100	3100	500	3600
01001045	FS-219 DUP	10/05/90	11/14/90	2.67	<100	<100	800	360	1200
01001046	FS-220	10/05/90	11/14/90	2.12	<200	<200	1400	610	2000
01001047	FS-221	10/05/90	11/14/90	1.01	<200	<200	2200	860	3100
01001048	FS-222	10/05/90	11/14/90	1.04	<200	<200	1700	640	2300
Control Spike			11/14/90	0.95	1300	<200	<200	<200	1300
Method Blank			11/14/90	***	<100	<100	<100	<100	<100
Method Blank			12/04/90	***	<100	<100	<100	<100	<100

NOTE: PCB-1016, PCB-1221, and PCB-1232 not found in any sample.

The control spike was fortified with 2000 ug/Kg of Aroclor 1242.
The recovery of Aroclor 1242 was 65%.

The matrix spikes were fortified with 2000 ug/Kg of Aroclor 1254. The recovery of the spike from samples FS-219 was 114%.

BLASLAND AND BOUCK
SHEBOYGAN RIVER PROJECT---WATER
PROJECT # 176.07.03
PCB ANALYSIS

SAMPLE NUMBER	SAMPLE NAME	DATE REC.	DATE EXTRACT	TSS mg/L	VSS mg/L	AR-1242 ug/L	AR-1248 ug/L	AR-1254 ug/L	TOTAL PCB
Method Blank			11/08/90	<1.0	2.3	<0.05	<0.05	<0.05	<0.05
Method Blank 2				<1.0	1.9				
Control Spike			11/08/90			0.36	<0.05	<0.05	0.36
01101350	W-1 Total	11/07/90	11/08/90	6.9	3.2	<0.05	<0.05	<0.05	<0.05
01101351	W-1 Filtered	11/07/90	11/08/90			<0.05	<0.05	<0.05	<0.05
01101352	W-1 Total Dup	11/07/90		6.4					
01101353	W-16 Total	11/07/90	11/08/90	13.8	4.5	<0.05	<0.05	<0.05	<0.05
01101354	W-16 Filtered	11/07/90	11/08/90			<0.05	<0.05	<0.05	<0.05
01101355	W-16 Total Dup	11/07/90		13.1					
01101356	W-12 Total	11/07/90	11/08/90	31.7	6.7	<0.05	<0.05	<0.05	<0.05
01101357	W-12 Filtered	11/07/90	11/08/90			<0.05	<0.05	<0.05	<0.05
01101358	W-12 Total Dup	11/07/90		30.6	6.7				
01101359	W-12 Total MS	11/07/90	11/08/90			<0.05	0.41	<0.05	0.41
01101360	W-12 Filtered MS	11/07/90	11/08/90			<0.05	0.34	<0.05	0.34
01101361	W-15 Total	11/07/90	11/08/90	37.0	7.6	0.53	<0.05	0.24	0.77
01101362	W-15 Filtered	11/07/90	11/08/90			0.15	<0.05	<0.05	0.15
01101363	W-15 Total Dup	11/07/90		37.1					
01101364	W-13 Total	11/07/90	11/08/90	25.2	5.7	0.10	<0.05	<0.05	0.10
01101365	W-13 Filtered	11/07/90	11/08/90			<0.05	<0.05	<0.05	<0.05
01101366	W-13 Total Dup	11/07/90	11/08/90	23.5		<0.05	<0.05	<0.05	<0.05
01101367	W-13 Filtered Dup	11/07/90	11/08/90			<0.05	<0.05	<0.05	<0.05
01101368	W-14 Total	11/07/90	11/08/90	22.6	5.7	0.11	<0.05	<0.05	0.11
01101369	W-14 Filtered	11/07/90	11/08/90			<0.05	<0.05	<0.05	<0.05
01101370	W-14 Total Dup	11/07/90		22.6					

PCB-1016, PCB-1221, PCB-1232, and PCB-1260 not detected in any samples.

The Control Spike was fortified with 0.50 ug/L of Aroclor 1242. The Percent recovery was 72%.

The matrix spikes of samples W-12 Total and W-12 Filtered were fortified with 0.47 ug/L 0.48 ug/L of Aroclor 1248. The recoveries of the Aroclor 1248 were 82% and 68% respectively.

BLASLAND AND BOUCK
 SHEBOYGAN RIVER PROJECT---WATER
 PROJECT # 884.01
 PCB ANALYSIS

SAMPLE NUMBER	SAMPLE NAME	DATE REC.	DATE EXTRACT	TSS mg/L	AR-1242 ug/L	AR-1248 ug/L	AR-1254 ug/L	TOTAL PCB
Method Blank			11/05/90	<1.0	<0.05	<0.05	<0.05	<0.05
Method Blank 2				<1.0				
Control Spike			11/05/90		0.39	<0.05	<0.05	0.39
01100061	W-11 Total	11/01/90	11/05/90	8.9	<0.05	<0.05	<0.05	<0.05
01100062	W-11 Filtered	11/01/90	11/05/90		<0.05	<0.05	<0.05	<0.05
01100063	W-11 Filtered Dup.	11/01/90		8.5				
01100064	W-16 Total	11/01/90	11/05/90	9.0	<0.05	<0.05	<0.05	<0.05
01100065	W-16 Filtered	11/01/90	11/05/90		<0.05	<0.05	<0.05	<0.05
01100066	W-16 Total Dup	11/01/90		9.1				
01100067	W-15 Total	11/01/90	11/05/90	9.6	0.09	<0.05	0.05	0.14
01100068	W-15 Filtered	11/01/90	11/05/90		<0.05	<0.05	<0.05	<0.05
01100069	W-15 Total Dup	11/01/90		9.9				
01100401	A-2 Total	11/02/90	11/05/90	7.1	0.35	<0.05	<0.05	0.35
01100402	A-2 Filtered	11/02/90	11/05/90		0.27	<0.05	<0.05	0.27
01100403	A-2 Total Dup	11/02/90	11/05/90	8.9	0.37	<0.05	<0.05	0.37
01100404	A-2 Filtered Dup	11/02/90	11/05/90		0.26	<0.05	<0.05	0.26
01100405	A-3 Total	11/02/90	11/05/90	9.1	0.51	<0.05	0.31	0.82
01100406	A-3 Filtered	11/02/90	11/05/90		0.26	<0.05	0.10	0.36
01100407	A-3 Total Dup	11/02/90		8.4				
01100408	A-4 Total	11/02/90	11/05/90	6.4	0.44	<0.05	0.13	0.57
01100409	A-4 Filtered	11/02/90	11/05/90		0.29	<0.05	<0.05	0.29
01100410	A-4 Total Dup	11/02/90		6.6				
01100411	A-4 Total MS	11/02/90	11/05/90		<0.05	0.69	0.17	0.86
01100412	A-4 Filtered MS	11/02/90	11/05/90		<0.05	0.53	0.12	0.65

PCB-1016, PCB-1221, PCB-1232, and PCB-1260 not detected in any samples.

The Control Spike was fortified with 0.50 ug/L of Aroclor 1242. The Percent recovery of the Aroclor 1242 was 78%.

The matrix spikes of samples A-4 Total and A-4 Filtered were fortified with 0.48 ug/L and 0.47 ug/L of Aroclor 1248 respectively. The recoveries of the 1248 were 52% and 51%.

BLASLAND AND BOUCK
 SHEBOYGAN RIVER PROJECT---WATER
 PROJECT # 176.07.03
 PCB ANALYSIS

SAMPLE NUMBER	SAMPLE NAME	DATE REC.	DATE EXTRACT	TSS mg/L	VSS mg/L	AR-1242 ug/L	AR-1248 ug/L	AR-1254 ug/L	TOTAL PCB
Method Blank			11/09/90	<1.0	<1.0	<0.05	<0.05	<0.05	<0.0
Method Blank 2				<1.0	<1.0				
Control Spike			11/09/90			0.38	<0.05	<0.05	0.3
01101744	Field Blank Total	11/08/90	11/09/90			<0.05	<0.05	<0.05	<0.0
01101745	Field Blank Filte	11/08/90	11/09/90			lost	lost	lost	
01101746	W-3 Total	11/08/90	11/09/90	10.8	3.9	<0.05	<0.05	<0.05	<0.0
01101747	W-3 Filtered	11/08/90	11/09/90			<0.05	<0.05	<0.05	<0.0
01101748	W-3 Total Dup	11/08/90		11.0					
01101749	W-4 Total	11/08/90	11/09/90	9.3	3.0	<0.05	<0.05	<0.05	<0.0
01101750	W-4 Filtered	11/08/90	11/09/90			<0.05	<0.05	<0.05	<0.0
01101751	W-4 Total Dup	11/08/90		8.7					
01101752	Trip Blank	11/08/90	11/09/90			<0.05	0.30	<0.05	<0.0

PCB-1016, PCB-1221, PCB-1232, and PCB-1260 not detected in any samples.

The Control Spike was fortified with 0.50 ug/L of Aroclor 1242. The Percent recovery was 76%.

0.30



BLASLAND & BOUCK ENGINEERS, P.C.

ENGINEERS & GEOSCIENTISTS

6723 Towpath Road, Box 66, Syracuse, New York 13214 (315) 446-9120

FAX: (315) 449-0017

File
Rec'd
SED
12/18/90

December 12, 1990

Ms. Bonnie L. Eleder
Remedial Project Manager
USEPA
Region V
230 South Dearborn Street
Chicago, IL 60604

Re: Sheboygan River and Harbor

File: 176.07 #2

Dear Bonnie:

Enclosed please find, for your review, the November 1990 Status Report for activities associated with the above-referenced project.

Should you have any questions concerning the enclosed, please feel free to contact us.

Very truly yours,

BLASLAND & BOUCK ENGINEERS, P.C.

Dawn S. Foster, P.E.
Manager, Engineering

KJ/nlg
Enclosure

cc: Mark A. Thimke, Esq., Foley & Lardner, w/encl.
Robin R. Schmidt, Wisconsin Department of Natural Resources, w/encl.
Francis J. Trcka, Wisconsin Department of Natural Resources, w/encl.

SHEBOYGAN RIVER AND HARBOR
ALTERNATIVE SPECIFIC REMEDIAL INVESTIGATION
NOVEMBER 1990 MONTHLY STATUS REPORT

1. Action Taken During this Time Period

- a. The following activities were conducted during November:
- Armoring and bank restoration activities in the Sheboygan River were completed during November 1990. Details were presented during various telephone conversations.
 - Water column monitoring was conducted during the week of November 5, 1990.
 - Winter shut-down activities were initiated for the project.
 - Sediment samples were collected from the CTF (cell #4) for congener specific PCB analysis on November 27th and 28th.
- b. No meetings or conference calls were held in November.

2. USEPA Decisions

- On November 1, 1990, USEPA provided a revised schedule for the remainder of the RI/FS activities.
- On November 7, 1990 USEPA provided verbal approval to commence sediment sampling of CTF cell #4.
- On November 30, 1990, USEPA verbally acknowledged the postponement of armored port sampling from December 1990 to **March/April 1991.** This action was taken in order to allow a six month duration from the previous sampling round which had to be repeated.

3. Results of Sampling and Tests

Data summaries for determinations made, and for analytical results received, this month are attached as follows:

- a. Table 1 presents CWTF sampling results received in November. The sampling locations are depicted in Figure 1.
- b. Table 2 presents a summary of water quantities removed from the CTF Leak Detection System (LDS) during the month of November.
- c. The weekly PCB, TSS, and turbidity water column monitoring results for the period October 7, 1990 to November 3, 1990 are presented in Table 3.
- d. Table 4 presents results from water column samples taken within curtailed sediment Area 1 after removal operations were completed.

The laboratory data sheets are presented in Attachment 1.

4. Anticipated Problems//Recommended Solutions

- None.

5. Problems Encountered/Resolved

- None.

6. Deliverables Submitted to USEPA/WDNR

Date Submitted

- | | |
|---|-------------------|
| - October Status Report | November 12, 1990 |
| - Floodplain sample location figures | November 21, 1990 |
| - Summary of CWTF operation (letter) | November 30, 1990 |
| - "Water Column Sampling and
Additional Transport Studies"
Draft report | November 30, 1990 |
| - Draft Alternative Array Document | November 30, 1990 |

7. Upcoming Events/Activities Planned

- None.

8. Key Personnel Changes

- None.

TABLES

TABLE 1

SHEBOYGAN RIVER AND HARBOR
ALTERNATIVE SPECIFIC REMEDIAL INVESTIGATION

Results of CWTF Sampling - Phase I

<u>Date</u>	<u>Sample</u>	<u>Total PCBs (ug/L)</u>	<u>TSS (mg/L)</u>	<u>TOC (mg/L)</u>	<u>Oil & Grease (mg/L)</u>
10/25/90	SP-1 Influent-Total	6.0	62.8*	11	300
	SP-1 Influent-Filtered	3.8	ND	10	<1.0
	SP-2 Filtered-Total	4.8	1.4*	10	<1.0
	SP-2 Filtered-Filtered	3.6	ND	10	<1.0
	SP-3 Effluent-Total	0.13	<1.0*	0.37	3.4
	SP-3 Effluent-Filtered	0.09	ND	0.71	<1.0

* Average of duplicates
ND - Not Determined

Note: This run was performed without chemical addition.

TABLE 2

SHEBOYGAN RIVER AND HARBOR
ALTERNATIVE SPECIFIC REMEDIAL INVESTIGATION

Summary of Water Removed from Leak Detection System (gals.)

<u>Date</u>	<u>Cell No.</u>			
	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>
11/1/90	150	0	0	1000
11/2/90	150	0	0	1000
11/3/90	150	0	0	1000
11/4/90	150	0	0	1000
11/5/90	150	0	0	1000
11/6/90	150	0	0	1000
11/7/90	150	0	0	1000
11/8/90	150	0	0	1000
11/9/90	150	0	0	1000
11/10/90	150	0	0	1000
11/11/90	150	0	0	1000
11/12/90	150	0	0	1000
11/13/90	150	0	0	1000
11/14/90	150	0	0	1000
11/15/90	150	0	0	1000
11/16/90	150	0	0	1000
11/17/90	150	0	0	1000
11/18/90	150	0	0	1000
11/19/90	150	0	0	1000
11/20/90	150	0	0	1000
11/21/90	150	0	0	1000
11/22/90	150	0	0	1000
11/23/90	150	0	0	1000
11/24/90	150	0	0	1000
11/25/90	150	0	0	1000
11/26/90	150	0	0	1000
11/27/90	150	0	0	1000
11/28/90	150	0	0	1000
11/29/90	150	0	0	1000
11/30/90	150	0	0	1000

TABLE 3
SHEBOYGAN RIVER AND HARBOR
ALTERNATIVE SPECIFIC REMEDIAL INVESTIGATION
Weekly PCB/TSS/Turbidity Water Column Monitoring

<u>Sample Date</u>	<u>Week</u>	<u>Activity</u>	<u>Time</u>	<u>Fixed Location</u>	<u>Location</u>	<u>Depth of Water (ft)</u>	<u>Depth of Sample (ft)</u>	<u>PCB Filtered (ppb)</u>	<u>PCB¹ Total (ppb)</u>	<u>TSS¹ (mg/l)</u>	<u>Turbidity¹ (ntu)</u>	
10/11/90	10/7-10/13/90	Armoring Area 1	11:15	W-11	Upstream	1.5	0.7	<0.05	<0.05	12.3(11.1)	19	(20)
			11:35	W-16	Downstream	2.8	1.4	<0.05	0.11(0.14)	10.8(13.6)	19	(18)
			11:50	W-15	Downstream	4.0	2.0	<0.05	0.17	17.4(18.1)	25	(23)
					All Areas ²							
10/16/90	10/14-10/20/90	Armoring Banks and Areas 2,3, and 4	10:35	W-11	Upstream	1.4	0.7	<0.05	<0.05	11.6(11.2)	12	(12)
			11:25	W-12	Downstream	4.9	2.4	<0.05	<0.05	15.3(15.3)	14	(15)
			11:10	W-2	Onion River	3.5	1.7	<0.05	<0.05	17.3(16.1)	21	(21)
10/26/90	10/21-10/27/90	Armoring Areas 2 and 4	8:10	W-16	Upstream	2.8	1.4	<0.05	<0.05	4.7(4.8)	4.4	(4.5)
			8:20	W-12	Downstream	4.8	2.4	<0.05	<0.05	6.6(7.7)	6.2	(6.1)
			8:05	W-2	Onion River	2.5	1.2	<0.05	<0.05	8.0(8.3)	8.9	(8.6)
10/31/90	10/28-11/3/90	Armoring Areas 2 and 3	10:20	W-11	Upstream	1.2	0.6	*	*	*	9.2	(9.0)
			10:45	W-16	Downstream	2.5	1.2				9.8	(7.8)
			11:00	W-15	Downstream	3.8	1.9				8.8	(9.0)
					All Areas ²							

*Analytical results were not received, data forthcoming in a subsequent Status Report.

¹ Values in parentheses represent duplicate analyses.

² Sample was taken downstream of confluence of the Sheboygan and Onion Rivers.

TABLE 4

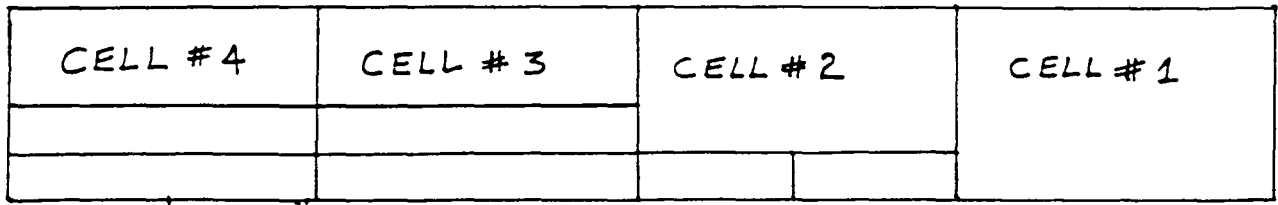
SHEBOYGAN RIVER AND HARBOR
ALTERNATIVE SPECIFIC REMEDIAL INVESTIGATION

Summary of Post Clean-Up Water Samples Within Curtained Sediment Areas

<u>Sediment Area</u>	<u>Activity</u>	<u>Work Activity Ended</u>	<u>Curtains Removed</u>	<u>Date Sampled</u>	<u>Time</u>	<u>Sample Locations Per Area¹</u>	<u>Average depth of Water (ft)</u>	<u>Average depth of Sample (ft)</u>	<u>PCB Filtered (ppb)</u>	<u>PCB Total (ppb)</u>	<u>TSS (mg/l)</u>	<u>Turbidity (ntu)</u>
1	Armoring	10/11/90	10/24/90	10/16/90	15:25	2	2.0	1.0	0.76	0.97	11.4(9.5)	19 (20)

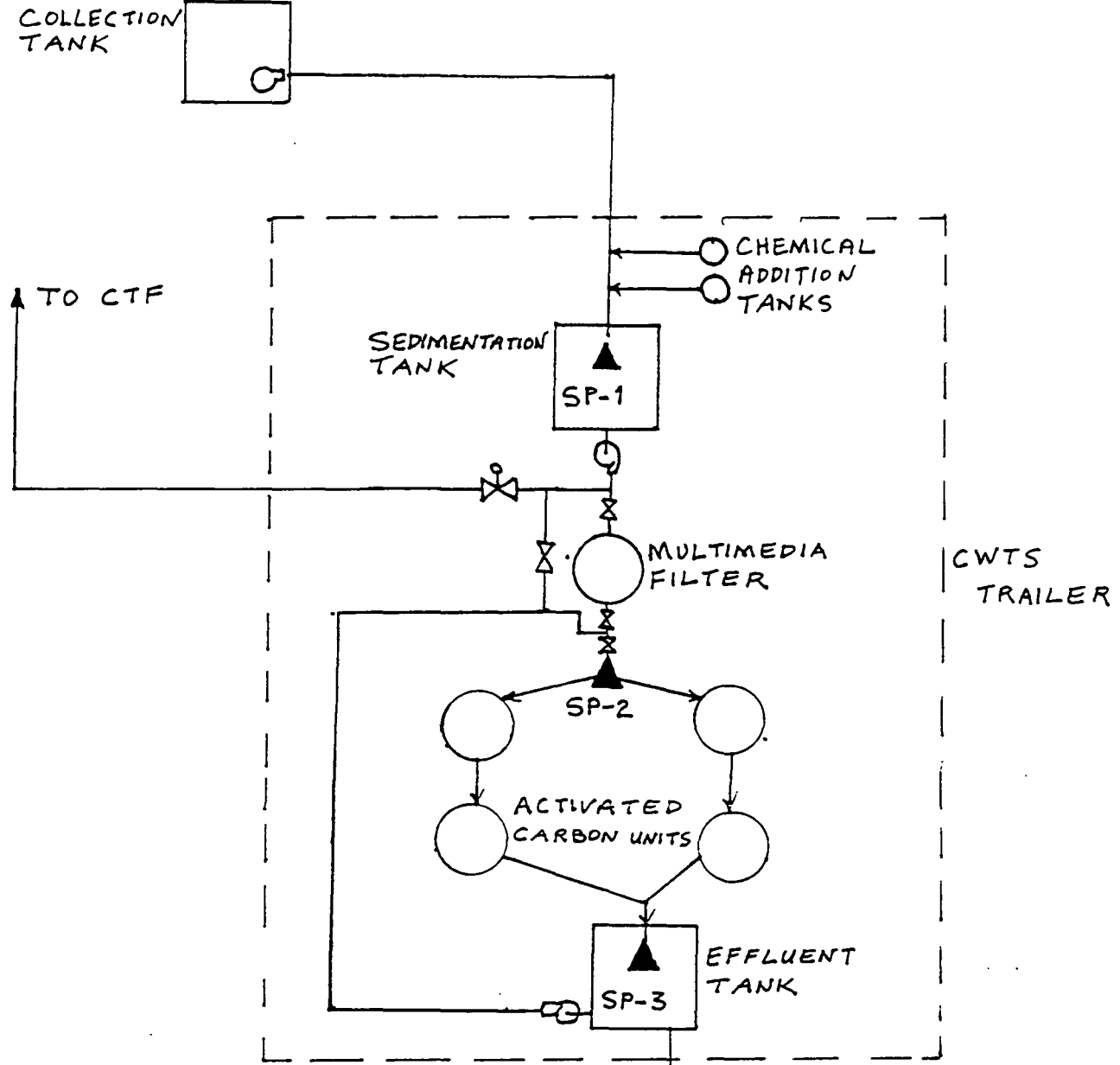
¹Locations composited in field using equal volumes.
Values in parentheses represent results of duplicate analyses

FIGURES



LEAK DETECTION PIPING

COLLECTION TANK



▲ SAMPLING POINT

↓ OVERFLOW

CONTINGENCY WATER TREATMENT SYSTEM



STALARD & BOUCK ENGINEERS, P.C.
ENGINEERS & ARCHITECTS

ATTACHMENTS

BLASLAND AND BOUCK
 SHEBOYGAN RIVER PROJECT—WATER
 PROJECT # 884.01
 PCB ANALYSIS

SAMPLE NUMBER	SAMPLE LOCATION	DATE REC.	DATE EXTRACT	TSS mg/L	PCB1242 ug/L	PCB1248 ug/L	PCB1254 ug/L	Total-PCB ug/L
01002462	Field Blank-Total	10/12/90	10/17/90	N D	<0.05	<0.05	<0.05	<0.05
01002463	Field Blank-Filtered	10/12/90	10/17/90	N D	<0.05	<0.05	<0.05	<0.05
01002464	W-15 Total	10/12/90	10/17/90	17.4	0.17	<0.05	<0.05	0.17
01002465	W-15 Total Duplicate	10/12/90	10/17/90	18.1	N D	N D	N D	N D
01002466	W-15 Total MS	10/12/90	10/17/90	N D	<0.05	0.31	<0.05	0.31
01002467	W-15 Filtered	10/12/90	10/17/90	N D	<0.05	<0.05	<0.05	<0.05
01002468	W-15 Filtered MS	10/12/90	10/17/90	N D	<0.05	0.48	<0.05	0.48
01002469	W-11 Total	10/12/90	10/17/90	12.3	<0.05	<0.05	<0.05	<0.05
01002470	W-11 Total Dup	10/12/90	10/17/90	11.1	N D	N D	N D	N D
01002471	W-11 Filtered	10/12/90	10/17/90	N D	<0.05	<0.05	<0.05	<0.05
01002472	W-16 Total	10/12/90	10/17/90	10.8	0.11	<0.05	<0.05	0.11
01002473	W-16 Total Dup	10/12/90	10/17/90	13.8	0.14	<0.05	<0.05	0.14
01002474	W-16 Filtered	10/12/90	10/17/90	N D	<0.05	<0.05	<0.05	<0.05
01002475	W-16 Filtered Dup	10/12/90	10/17/90	N D	<0.05	<0.05	<0.05	<0.05
Control Spike			10/17/90	N D	0.48	<0.05	<0.05	0.48
Method Blank			10/17/90	<1.0	<0.05	<0.05	<0.05	<0.05
01003064	W-2 Total	10/17/90	10/18/90	17.3	<0.05	<0.05	<0.05	<0.05
01003065	W-2 Total dup	10/17/90	10/18/90	18.1	N D	N D	N D	N D
01003066	W-2 Filtered	10/17/90	10/18/90	N D	<0.05	<0.05	<0.05	<0.05
01003067	W-11 Total	10/17/90	10/18/90	11.6	<0.05	<0.05	<0.05	<0.05
01003068	W-11 Total Dup	10/17/90	10/18/90	11.2	N D	N D	N D	N D
01003069	W-11 Filtered	10/17/90	10/18/90	N D	<0.05	<0.05	<0.05	<0.05
01003070	W-12 Total	10/17/90	10/18/90	15.3	<0.05	<0.05	<0.05	<0.05
01003071	W-12 Total Dup	10/17/90	10/18/90	15.3	N D	N D	N D	N D
01003072	W-12 Filtered	10/17/90	10/18/90	N D	<0.05	<0.05	<0.05	<0.05
01003073	A-1 Total	10/17/90	10/18/90	11.4	0.82	<0.05	0.15	0.97
01003074	A-1 Total Dup	10/17/90	10/18/90	9.5	N D	N D	N D	N D
01003075	A-1 Filtered	10/17/90	10/18/90	N D	0.76	<0.05	<0.05	0.76
Control Spike			10/18/90	N D	0.38	<0.05	<0.05	0.38
Method Blank			10/18/90	<1.0	<0.05	<0.05	<0.05	<0.05
01005261	Field Blank Total	10/27/90	10/30/90	N D	<0.05	<0.05	<0.05	<0.05
01005262	Field Blank Filtered	10/27/90	10/30/90	N D	<0.05	<0.05	<0.05	<0.05
01005263	W-2 Total	10/27/90	10/30/90	8.0	<0.05	<0.05	<0.05	<0.05
01005264	W-2 Filtered	10/27/90	10/30/90	N D	<0.05	<0.05	<0.05	<0.05
01005265	W-2 Total Dup	10/27/90	10/30/90	8.3	N D	N D	N D	N D
01005266	W-16 Total	10/27/90	10/30/90	4.7	<0.05	<0.05	<0.05	<0.05
01005267	W-16 Filtered	10/27/90	10/30/90	N D	<0.05	<0.05	<0.05	<0.05
01005268	W-16 Total Dup	10/27/90	10/30/90	4.8	N D	N D	N D	N D
01005269	W-16 Total MS	10/27/90	10/30/90	N D	<0.05	0.42	<0.05	0.42
01005270	W-16 Filtered MS	10/27/90	10/30/90	N D	<0.05	0.41	<0.05	0.41
01005271	W-12 Total	10/27/90	10/30/90	6.6	<0.05	<0.05	<0.05	<0.05
01005272	W-12 Filtered	10/27/90	10/30/90	N D	<0.05	<0.05	<0.05	<0.05
01005273	W-12 Total Dup	10/27/90	10/30/90	7.7	N D	N D	N D	N D
01005274	W-12 Total Dup	10/27/90	10/30/90	N D	<0.05	<0.05	<0.05	<0.05
01005275	W-12 Filtered Dup	10/27/90	10/30/90	N D	<0.05	<0.05	<0.05	<0.05
Control Spike			10/30/90	N D	0.43	<0.05	<0.05	0.43
Method Blank			10/30/90	<1.0	<0.05	<0.05	<0.05	<0.05

ND = not needing to be determined

Note: PCB-1016, PCB-1221, PCB-1232, and PCB-1260 not detected in any samples.

Note: The Control Spikes were fortified with 0.50 ug/L of Aroclor 1242. The Percent recoveries were 96%, 76%, and 86% respectively.

Note: The matrix spikes were fortified with 0.50 ug/L of Aroclor 1248. The recovery of the Aroclor 1248 from samples W-15 Total, W-15 Filtered, W-16 Total and W-16 Filtered was 28%, 96%, 84% and 82% respectively.

BLASLAND AND BOUCK
 SHEBOYGAN RIVER PROJECT—WATER
 PROJECT # 884.01
 PCB ANALYSIS

SAMPLE NUMBER	SAMPLE LOCATION	DATE REC.	DATE EXTRACT	TSS mg/L	GREASE/OIL mg/L	TOC mg/L	Total-PCB ug/L
01004904	SP-1 Influent-Total	10/26/90	10/26/90	63.7	300	11	6.0
01004905	SP-1 Influent-Filtered	10/26/90	10/26/90	N D	<1.0	10	3.8
01004906	SP-1 Influent-Tot Dup	10/26/90	10/26/90	61.9	N D	N D	N D
01004911	SP-2 Filtered-Total	10/26/90	10/26/90	1.2	<1.0	10	4.8
01004912	SP-2 Filtered-Filtered	10/26/90	10/26/90	N D	<1.0	10	3.6
01004913	SP-2 Filtered-Total Dup	10/26/90	10/26/90	1.5	N D	N D	N D
01004918	SP-3 Effluent-Total	10/26/90	10/26/90	<1.0	3.4	0.37	0.13
01004919	SP-3 Effluent-Filtered	10/26/90	10/26/90	N D	<1.0	0.71	0.09
01004920	SP-3 Effluent-Tot. Dup	10/26/90	10/26/90	<1.0	N D	N D	N D
Control Spike			10/26/90	N D	N D	N D	0.41
Method Blank			10/26/90	<1.0	<1.0	N D	<0.05

ND = not needing to be determined

Note: PCB-1016, PCB-1221, PCB-1232, and PCB-1260 not detected in any samples.

Note: The Control Spike was fortified with 0.50 ug/L of Aroclor 1242. The Percent recovery was 82%.



BLASLAND & BOUCK ENGINEERS, P.C.
ENGINEERS & GEOSCIENTISTS

6723 Towpath Road, Box 66, Syracuse, New York 13214 (315) 446-9120
FAX: (315) 449-0017

November 12, 1990

Ms. Bonnie L. Eleder
Remedial Project Manager
USEPA
Region V
230 South Dearborn Street
Chicago, IL 60604

Re: Sheboygan River and Harbor

File: 176.07 #2

Dear Bonnie:

Enclosed please find, for your review, the October 1990 Status Report for activities associated with the above-referenced project.

Should you have any questions concerning the enclosed, please feel free to contact us.

Very truly yours,

BLASLAND & BOUCK ENGINEERS, P.C.

Dawn S. Foster

Dawn S. Foster, P.E.
Manager, Engineering

DSF/nlg
Enclosure

cc: Mark A. Thimke, Esq., Foley & Lardner, w/encl.
Robin R. Schmidt, Wisconsin Department of Natural Resources, w/encl.
Francis J. Trcka, Wisconsin Department of Natural Resources, w/encl.

SHEBOYGAN RIVER AND HARBOR
MONTHLY STATUS REPORT

OCTOBER 1990

1. Action Taken During this Time Period

- a. The following activities were conducted during October:
- Armoring and bank restoration activities in the Sheboygan River continued. Details were presented during various telephone conversations.
 - Restoration activities (repairing of park roadway) were performed in Rochester Park on October 8 and 9, 1990.
 - Performed chinook sampling from October 1 to October 4, 1990.
 - Performed weekly CWF influent and effluent sampling on October 3, 1990 (during processing of excess CTF water), and system troubleshooting sampling on October 25, 1990.
- b. The following meetings/conference calls were held in October:
- A conference call was held with USEPA/WDNR on October 22, 1990 to discuss the project status.

2. USEPA Decisions

- On October 22, 1990, USEPA/WDNR provided verbal approval for implementing the proposed winter O&M activities, as provided in the October 3, 1990 letter from Mr. Donald Kenney (BBL Environmental Services) to Ms. Bonnie L. Eleder (USEPA).
- On October 22, 1990, USEPA/WDNR agreed that baseline sediment samples could be collected from the CTF for congener specific PCB analysis, prior to initiating the CTF treatability studies (described in the Final ASRI Work Plan/QAPP on page 2-42).
- On October 25, 1990, WDNR stated that Wisconsin's Hazardous Substance Discharge Program requirements do not apply to work activities conducted as part of the Sheboygan River and Harbor project, since both Federal and State agencies are aware of on-going activities at the site.

3. Results of Sampling and Tests

Data summaries for analytical results received this month are attached as follows:

- a. Table 1 presents results from water column samples taken within curtailed sediment areas after removal operations were completed.

- b. The weekly PCB, TSS, and turbidity water column monitoring results for the period covering September 9, 1990 to October 27, 1990 are presented in Table 2.
- c. PCB results for sediment collected from storm sewers located near Thomas Industries are presented in Table 3. The storm sewer and sampling locations are identified in Figures 1 and 2.
- d. Floodplain sampling PCB results are presented in Table 4. A discussion of the results will be presented under separate cover.
- e. Table 5 presents a summary of water quantities removed from the CTF Leak Detection System (LDS) during the month of October.
- f. Area 4 post-removal sediment sampling results (individual sample analyses) are presented in Table 6.
- g. The weekly CWTF influent and effluent sampling results for the period covering September 26, 1990 to October 5, 1990 are presented in Table 7.
- h. The daily turbidity results for the period covering October 9, 1990 to October 31, 1990 are presented in Table 8.

The laboratory data sheets are presented in Attachment 1.

4. Anticipated Problems/Recommended Solutions

- None.

5. Problems Encountered/Resolved

- A broken wrist injury was sustained by a machine operator on October 8, 1990. He was taken to the Sheboygan Clinic for treatment.
- A rip in the silt curtain at Area 1 was discovered and repaired on October 9, 1990.
- On September 26 and October 3, 1990, effluent samples were collected from the CWTF. The preliminary data, obtained on October 5th and October 15, 1990, respectively, indicated that these samples contained PCBs at concentrations above 0.05 ug/l (detection limit). It should be noted that CWTF treatment/discharge was complete prior to receipt of either round of preliminary sampling results.

Since PCB influent and effluent concentrations from the first round of samples (collected on August 28, 1990; see September 1990 monthly status report for results) were below the detection limit, the preliminary results from the September 26, 1990 sampling event were in question. Upon receipt of the October 3, 1990 preliminary results which also indicated PCB concentrations above 0.05 ppb, USEPA was immediately contacted (October 16) and informed. On October 22,

1990, a conference call was held with USEPA/WDNR to discuss further.

On October 25, 1990, additional testing was performed to identify a cause/remedy for the exceedences (data pending). No water has been discharged from the CWTF since receipt of the September 26, 1990 results. Water which is collected in the leak detection system is currently being recirculated back into the CTF.

- On August 8, 1990 a post-removal sediment composite sample collected from Area 4 contained 63 ppm PCBs. Individual samples comprising the composite were subsequently analyzed to determine if this elevated PCB concentration was caused by an individual elevated sample. Results indicated that only one of the four individual samples contained PCBs at elevated concentrations (see Table 6 for results). The portion of Area 4 which contains elevated sediments PCBs will subsequently be armored.

6. Deliverables Submitted to USEPA/WDNR

Date Submitted

- | | |
|---|------------------|
| - September Status Report | October 15, 1990 |
| - Letter discussing operation and maintenance activities scheduled for the winter 1990. | October 3, 1990 |

7. Upcoming Events/Activities Planned

- Armoring and bank restoration activities will be continued with completion anticipated by November 9, 1990.
- Quarterly collection of water column and CTF sediment samples are anticipated to be conducted during the weeks of November 5 and 12, 1990.

8. Key Personnel Changes

- None.

TABLE 1
SHEBOYGAN RIVER AND HARBOR
ALTERNATIVE SPECIFIC REMEDIAL INVESTIGATION

Summary of Post Clean-Up Water Samples Within Curtained Sediment Areas

<u>Sediment Area</u>	<u>Activity</u>	<u>Work Activity Ended</u>	<u>Curtains Removed</u>	<u>Date Sampled</u>	<u>Time</u>	<u>Sample Locations Per Area¹</u>	<u>Average depth of Water (ft)</u>	<u>Average depth of Sample (ft)</u>	<u>PCB Filtered (ppb)</u>	<u>PCB Total (ppb)</u>	<u>TSS mg/l</u>	<u>Turbidity (ntu) (Duplicate)</u>
1	Armoring	10/11/90	10/24/90	10/16/90	15:25	2	2.0	1.0	*	*	*	19 (20)

*Analytical results are unavailable; data will be reported in a subsequent report.

¹Locations composited in field using equal volumes.

TABLE 2
SHEBOYGAN RIVER AND HARBOR
ALTERNATIVE SPECIFIC REMEDIAL INVESTIGATION

Weekly PCB/TSS/Turbidity River Monitoring

Sample Date	Week	Activity	Time	Fixed Location	Location	Depth of Water (ft)	Depth of Sample (ft)	PCB Filtered (ppb)	PCB Total (ppb)	TSS mg/l	Turbidity (ntu)	
											Duplicate	
9/13/90	9/9-9/15/90	None	9:15	W-12	Upstream	5.0	2.5	<0.05	0.07	43.8	36	
			9:30	W-15	Downstream	3.3	1.6	0.07	0.11	44.0 (dup) 44.8 47.0 (dup)	39	
10/11/90	10/7-10/13/90	Armoring Area 1	11:15	W-11	Upstream	1.5	0.7	*	*	*	19	(20)
			11:35	W-16	Downstream	2.8	1.4				19	(18)
			11:50	W-15	Downstream All Areas ²	4.0	2.0				25	(23)
10/16/90	10/14-10/20/90	Armoring Banks and Areas 2,3, and 4	10:35	W-11	Upstream	1.4	0.7	*	*	*	12	(12)
			11:25	W-12	Downstream	4.9	2.4				14	(15)
			11:10	W-2	Onion River	3.5	1.7				21	(21)
10/26/90	10/21-10/27/90	Armoring Areas 2 and 4	8:10	W-16	Upstream	2.8	1.4	*	*	*	4.4	(4.5)
			8:20	W-12	Downstream	4.8	2.4				6.2	(6.1)
			8:05	W-2	Onion River	2.5	1.2				8.9	(8.6)

*Analytical results were not received, data forthcoming in a subsequent Status Report.

¹Analytical result in question due to poor precision of duplicate analysis.

²Sample was taken downstream of confluence of the Sheboygan and Onion Rivers.

TABLE 3
SHEBOYGAN RIVER AND HARBOR
ALTERNATIVE SPECIFIC REMEDIAL INVESTIGATION

ADDITIONAL PCB SOURCE IDENTIFICATION: STORM SEWER SAMPLING

<u>Location</u>	<u>Date Sampled</u>	<u>Time</u>	<u>Sediment Description</u>	<u>Sediment</u>	<u>Water¹</u>	
				<u>PCB Total (ppm)</u>	<u>PCB Total (ppb)</u>	<u>PCB Filtered (ppb)</u>
TISS-1	8/28/90	10:15	Fine brown sand with wood; trace, tan coarse sand	25.00	<0.05	<0.05
TISS-2	8/28/90	10:30	Fine brown sand with coarse tan sand	3.70	<0.05	<0.05
TISS-4	8/28/90	11:40	Brown fine and coarse sand with dead vegetation	0.96 0.91 (dup)	0.05	<0.05
TISS-5	8/28/90	11:50	Coarse tan sand and gravel	0.15	Not Sampled	Not Sampled

Notes:

¹ Laboratory data sheet for water samples provided with September 1990 Status Report.

TABLE 4
SHEBOYGAN RIVER AND HARBOR
ALTERNATIVE SPECIFIC REMEDIAL INVESTIGATION
FLOODPLAIN SOIL SAMPLING⁽¹⁾

<u>Section</u>	<u>Location</u>	<u>River Bank²</u>	<u>No. of Locations Composited³</u>	<u>Date</u>	<u>Time</u>	<u>Approximate Distance from Bank (ft.)</u>	<u>USGS Elevation</u>	<u>Sample Description</u>	<u>Total PCB (ppm)</u>
1 Background	FPL 1	Left	3	7/23/90	14:40	12	633.7	FPL1-1 -Light brown sand & gravel	0.24
					14:55	20	635.8	FPL1-2 -Light brown silt & sand, some gravel, organics	
					15:05	30	625.8	FPL1-3 -Light brown sand & silt, moist, organics.	
2	FPL 2	Left	3	7/23/90	16:30	20	624.3	FPL2-1 -Light brown sand & gravel, shells, some organics, roots, dry.	4.10
					17:00	240	625.3	FPL2-2 -Light brown silt, organics, root zone, trace of gravel	
					17:05	50	625.2	FPL2-3 -Light brown silt & fine sand organics, roots.	
2	FPR2	Right	4	7/24/90	9:05	20	627.6	FPR2-1 -Light brown fine sand & silt, some organics.	6.40
					9:10	100	625.1	FPR2-2 -Light brown silt, sand, roots	
					9:20	100	626.2	FPR2-3 -Light brown silt, some fine sand, trace organics.	
					9:30	170	622.4	FPR2-4 -Light & Dark brown sandy - silt, trace organics	

Notes:

- 1 All sample depths are 0-3 inches.
- 2 Downstream orientation
- 3 Samples composited in the laboratory.

TABLE 4
SHEBOYGAN RIVER AND HARBOR
ALTERNATIVE SPECIFIC REMEDIAL INVESTIGATION

FLOODPLAIN SOIL SAMPLING¹
(Continued)

<u>Section</u>	<u>Location</u>	<u>River Bank²</u>	<u>No. of Locations Composited³</u>	<u>Date</u>	<u>Time</u>	<u>Approximate Distance from Bank (ft.)</u>	<u>USGS Elevation</u>	<u>Sample Description</u>	<u>Total PCB (ppm)</u>
3	FPL3	Left	3	7/24/90	10:55	25	622.9	FPL3-1 -Brown fine sand & silt, trace clay, some fine gravel trace organics.	6.00
					11:10	60	622.7	FPL3-2 -Brown silt, trace fine sand, organics.	
					11:20	12	622.3	FPL3-3 -Brown silt grades to fine sand and silt, moist.	
3	FPR3	Right	5	7/24/90	11:55	50	628.4	FPR3-1 -Brown silt, little fine sand	10.30
					12:00	50	625.1	FPR3-2 -Light brown silty sand, dry	
					12:15	180	626.6	FPR3-3 -Light brown silt, damp, little fine sand	
					12:40	40	625.9	FPR3-4 -Light brown silt, damp.	
					12:50	250	627.1	FPR3-5 -Light brown silt, dry.	
4	FPR4	Right	6	7/24/90	13:30	80	625.6	FPR4-1 -Damp, light brown silt	5.40
					14:05	200	625.7	FPR4-2 -Brown silt, some sand.	
					14:10	230	626.1	FPR4-3 -Brown damp silt.	
					14:35	60	622.5	FPR4-4 -Brown damp silt.	
				7/25/90	15:40	8	623.4	FPR4-5 -Brown silt, some sand, dry.	
				16:15	8	624.6	FPR4-6 -Brown silt, trace brown sand, dry.		

Notes:

1 All sample depths are 0-3 inches.

2 Downstream orientation

3 Samples composited in the laboratory.

TABLE 4
SHEBOYGAN RIVER AND HARBOR
ALTERNATIVE SPECIFIC REMEDIAL INVESTIGATION

FLOODPLAIN SOIL SAMPLING¹
(Continued)

<u>Section</u>	<u>Location</u>	<u>River Bank²</u>	<u>No. of Locations Composited³</u>	<u>Date</u>	<u>Time</u>	<u>Approximate Distance from Bank (ft.)</u>	<u>USGS Elevation</u>	<u>Sample Description</u>	<u>Total PCB (ppm)</u>
4	FPL4	Left	6	7/24/90	15:00	30	625.9	FPL4-1 -Brown silt, some fine sand, damp.	119.00 107.00 (dup)
					15:20	35	625.6	FPL4-2 -Brown silt and fine sand, damp.	
					15:40	50	624.3	FPL4-3 -Brown silt, little fine sand, damp.	
					15:50	30	625.3	FPL4-4 -Brown fine sand, dry.	
					16:00	35	624.5	FPL4-5 -Brown silt, some fine sand, dry.	
					16:10	40	623.3	FPL4-6 -Brown silt, trace fine sand, dry.	
5	FPR5	Right	2	7/25/90	16:30	20	623.9	FPR5-1 -Brown fine sand, trace silt, damp.	33.00
					16:45	40	622.6	FPR5-2 -Brown silt, some fine sand, damp.	
5	FPL5	Left	5	9/12/90	9:50	30	624.3	FPL5-1 -Dark brown silt, some fine sand, damp.	2.70 2.90 (dup)
					9:55	30	625.3	FPL5-2 -Dark & Light brown silt, some fine sand, moist.	
					10:00	90	624.2	FPL5-3 -Dark brown silt, trace fine sand, moist.	
					10:20	20	621.9	FPL5-4 -Light brown sand, silt, dry.	
					10:25	20	624.8	FPL5-5 -Light brown silt, fine sand, damp.	

Notes:

- 1 All sample depths are 0-3 inches.
- 2 Downstream orientation
- 3 Samples composited in the laboratory.

TABLE 4
SHEBOYGAN RIVER AND HARBOR
ALTERNATIVE SPECIFIC REMEDIAL INVESTIGATION

FLOODPLAIN SOIL SAMPLING¹
(Continued)

<u>Section</u>	<u>Location</u>	<u>River Bank²</u>	<u>No. of Locations Composited³</u>	<u>Date</u>	<u>Time</u>	<u>Approximate Distance from Bank (ft.)</u>	<u>USGS Elevation</u>	<u>Sample Description</u>	<u>Total PCB (ppm)</u>
6	FPL6	Left	2	9/12/90	11:40	15	622.7	FPL6-1 -Light brown sandy silt, dry.	0.88
					11:45	25	623.9	FPL6-2 -Light brown sandy silt, dry.	
6	FPR6	Right	6	9/12/90	10:45	40	624.5	FPR6-1 -Light brown sand and silt, damp.	96.00
					10:50	170	624.2	FPR6-2 -Light brown silt, some fine sand, damp.	
					11:15	340	623.7	FPR6-3 -Dark brown silt, trace fine sand, damp.	
					11:10	100	619.4	FPR6-4 -Very moist dark brown silt, trace of clay.	
					10:35	75	624.3	FPR6-5 -Dark brown silt, trace fine sand, damp.	
					11:00	45	623.1	FPR6-6 -Light brown fine sand, some silt, damp.	
7	FPR7	Right	3	7/25/90	14:10	50	621.2	FPR7-1 -Brown silt, trace fine sand, damp, organics.	16.40
						30	620.6	FPR7-2 -Brown damp silt.	
						50	620.1	FPR7-3 -Brown damp silt, trace sand.	

Notes:

- 1 All sample depths are 0-3 inches.
- 2 Downstream orientation
- 3 Samples composited in the laboratory.

TABLE 4
SHEBOYGAN RIVER AND HARBOR
ALTERNATIVE SPECIFIC REMEDIAL INVESTIGATION

FLOODPLAIN SOIL SAMPLING¹
(Continued)

<u>Section</u>	<u>Location</u>	<u>River Bank²</u>	<u>No. of Locations Composited³</u>	<u>Date</u>	<u>Time</u>	<u>Approximate Distance from Bank (ft.)</u>	<u>USGS Elevation</u>	<u>Sample Description</u>	<u>Total PCB (ppm)</u>
7	FPL7	Left	10	7/25/90	10:15	125	622.7	FPL7-1 -Brown silt, some fine sand, dry.	0.48
					10:20	210	622.4	FPL7-2 -Brown silt, some fine sand, dry.	
					10:40	85	622.0	FPL7-3 -Brown silt, some fine sand, dry.	
					10:50	320	622.6	FPL7-4 -Brown silt, some fine sand, dry.	
					11:10	170	624.5	FPL7-5 -Brown silt, some fine sand, dry.	
					11:30	90	621.8	FPL7-6 -Brown damp silt.	
					11:50	365	623.3	FPL7-7 -Brown dry silt.	
					12:30	265	622.9	FPL7-8 -Brown silt, little fine sand, dry.	
					12:40	170	622.4	FPL7-9 -Brown silt, trace fine sand, damp.	
					12:50	70	621.7	FPL7-10 -Brown silt, little fine sand, damp.	
8	FPR8	Right	2	9/12/90	12:25	60	620.5	FPR8-1 -Damp, light brown sandy silt.	6.20
					12:35	80	619.8	FPR8-2 -Light brown silt and some fine sand, dry.	
8	FPL8	Left	2	9/12/90	12:45	95	619.0	FPL8-1 -Light brown sandy silt, dry.	14.00
					13:00	60	617.9	FPL8-2 -Dark brown & light brown silt with a trace of fine sand, dry.	

Notes:

- 1 All sample depths are 0-3 inches.
- 2 Downstream orientation
- 3 Samples composited in the laboratory.

TABLE 4
SHEBOYGAN RIVER AND HARBOR
ALTERNATIVE SPECIFIC REMEDIAL INVESTIGATION

FLOODPLAIN SOIL SAMPLING¹
(Continued)

<u>Section</u>	<u>Location</u>	<u>River Bank²</u>	<u>No. of Locations Composited³</u>	<u>Date</u>	<u>Time</u>	<u>Approximate Distance from Bank (ft.)</u>	<u>USGS Elevation</u>	<u>Sample Description</u>	<u>Total PCB (ppm)</u>
9	FPR9	Right	5	9/12/90	13:15	55	617.0	FPR9-1 -Light brown silt, trace fine sand, damp.	7.70
					14:00	120	617.0	FPR9-2 -Light brown silt, trace fine sand, damp.	
					13:45	290	615.5	FPR9-3 -Light brown silt, trace fine sand, damp.	
					13:30	60	616.7	FPR9-4 -Light brown silt, trace fine sand, damp.	
					13:20	260	617.7	FPR9-5 -Light brown silt, trace fine sand, dry.	

Notes:

- 1 All sample depths are 0-3 inches.
- 2 Downstream orientation
- 3 Samples composited in the laboratory.

TABLE 5

SHEBOYGAN RIVER AND HARBOR
ALTERNATIVE SPECIFIC REMEDIAL INVESTIGATION

Summary of Water Removed from Leak Detection Systems (gals)

<u>Date</u>	<u>Cell No.</u>			
	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>
10/1/90	320	0	0	130
10/3/90	110	0	0	140
10/4/90	120	0	0	150
10/5/90	120	0	0	150
10/6/90	120	0	0	140
10/7/90	120	5	0	140
10/8/90	120	0	0	140
10/9/90	110	0	0	150
10/10/90	120	0	0	150
10/11/90	120	0	0	150
10/12/90	120	0	0	150
10/13/90	120	0	0	150
10/14/90	120	0	0	150
10/15/90	150	0	0	150
10/16/90	150	5	6	150
10/17/90	150	0	0	150
10/18/90	150	5	0	150
10/19/90	150	0	0	150
10/20/90	150	0	0	150
10/21/90	120	0	0	150
10/22/90	120	5	0	150
10/23/90	120	0	0	150
10/24/90	150	0	0	150
10/25/90	120	0	0	150
10/26/90	150	0	0	150
10/27/90	150	0	0	1,000
10/28/90	150	0	0	1,000
10/29/90	150	0	0	1,000
10/30/90	150	0	0	1,000
10/31/90	150	0	0	1,000

TABLE 6

SHEBOYGAN RIVER AND HARBOR
ALTERNATIVE SPECIFIC REMEDIAL INVESTIGATIONPCB Concentrations of Individual Area Four Sediment Samples*

<u>Sediment Area</u>	<u>Sample Location</u>	<u>Sample Depth (in.)</u>	<u>Sample Type</u>	<u>Total PCB (ppm)</u>
4	1	0-3	Individual	0.72
4	2	0-3	Individual	0.92
4	3	0-3	Individual	170.00
4	4	0-3	Individual	2.10

*Samples were collected on August 8, 1990, and portions of each sample were composited for PCB analysis (see September monthly status report for results). Due to elevated PCB concentration in the composite, the individual samples were extracted on September 19, 1990, and separately analyzed.

TABLE 7
SHEBOYGAN RIVER AND HARBOR
ALTERNATIVE SPECIFIC REMEDIAL INVESTIGATION

Weekly CWTF Influent and Effluent Results

<u>Sample Date</u>	<u>Week</u>	<u>Cell Number</u>	<u>Influent</u>			<u>Effluent</u>		
			<u>TSS (mg/l)</u>	<u>PCBs (ppb) Total</u>	<u>Filtered</u>	<u>TSS (mg/l)</u>	<u>Total PCBs (ppb)</u>	<u>Filtered</u>
9/26/90	9/24-9/28	1	61.6 60.6 (dup)	44.00	9.00	1.8 1.6 (dup)	1.40 1.30 (dup)	0.32 0.34 (dup)
10/3/90	10/1-10/5	4	4.2 4.2 (dup)	9.80	9.80	2.0 2.6 (dup)	1.30	1.30

TABLE 8
SHEBOYGAN RIVER AND HARBOR
ALTERNATIVE SPECIFIC REMEDIAL INVESTIGATION

DAILY TURBIDITY RESULTS

Area	Date	Activity	Time	Location	Depth of Water (ft.)	Depth of Sample (ft.)	Turbidity Results (ntu)		Comments
							(Duplicate)		
1	10/9/90	Armoring	15:00	100' Upstream	1.5	0.7	7.0	(7.2)	
			15:05	100' Downstream	2.0	1.0	6.5	(6.2)	
1	10/10/90	Armoring	8:40	100' Upstream	1.5	0.7	8.0	(7.0)	
			8:30	100' Downstream	2.0	1.0	6.8	(6.1)	
			9:05	Fixed W-11	1.4	0.7	6.1	(5.5)	Upstream
			8:25	Fixed W-16	2.3	1.1	6.5	(6.2)	Downstream
1	10/11/90	Armoring	12:05	100' Upstream	1.8	0.9	13	(13)	
			12:00	100' Downstream	3.8	1.9	16	(17)	
			11:15	Fixed W-11	1.5	0.7	19	(20)	Upstream
			11:35	Fixed W-16	2.8	1.4	19	(18)	Downstream
4	10/12/90	Armoring Bank	12:05	100' Upstream	2.3	1.1	12	(11)	Same as fixed W-16
			12:10	100' Downstream	2.8	1.4	12	(12)	
			12:05	Fixed W-16	2.3	1.1	12	(11)	Upstream
			12:25	Fixed W-12*	2.4	1.2	14	(13)	Downstream
			12:15	Fixed W-2	2.4	1.2	27	(27)	Onion River
2	10/15/90	Amoring Bank	14:40	100' Upstream	4.5	2.2	15	(14)	
			14:45	100' Downstream	4.5	2.2	15	(14)	
			15:50	Fixed W-11	1.5	0.7	15	(15)	Upstream
			14:50	Fixed W-16	2.5	1.2	14	(13)	Downstream

*Note: Fixed location W-12 is downstream after confluence of the Sheboygan and Onion River.

TABLE 8
(Cont'd)
SHEBOYGAN RIVER AND HARBOR
ALTERNATIVE SPECIFIC REMEDIAL INVESTIGATION

DAILY TURBIDITY RESULTS

Area	Date	Activity	Time	Location	Depth of Water (ft.)	Depth of Sample (ft.)	Turbidity Results (ntu)		Comments
							(Duplicate)		
4	10/15/90	Armoring	12:03	100' Upstream	2.5	1.2	15	(14)	Same as fixed W-16 Upstream Downstream Onion River
			12:00	100' Downstream	4.6	2.3	15	(14)	
			12:03	Fixed W-16	2.5	1.2	15	(14)	
			11:50	Fixed W-12*	4.8	2.4	17	(17)	
			11:55	Fixed W-2	3.8	1.9	20	(19)	
3	10/15/90	Armoring	12:05	100' Upstream	2.5	1.2	15	(15)	Upstream Downstream
			12:07	100' Downstream	3.8	1.9	15	(14)	
			12:20	Fixed W-11	1.5	0.7	15	(15)	
			12:03	Fixed W-16	2.5	1.2	15	(14)	
2	10/16/90	Armoring	11:50	100' Upstream	3.3	1.6	11	(11)	Upstream Downstream
			11:55	100' Downstream	3.5	1.7	10	(11)	
			10:35	Fixed W-11	1.4	0.7	12	(12)	
			12:00	Fixed W-16	2.3	1.1	10	(11)	
4	10/23/90	Armoring	14:00	100' Upstream	2.5	1.2	17	(17)	
			14:10	100' Downstream	4.6	2.4	15	(15)	
4	10/24/90	Armoring	14:25	100' Upstream	2.5	1.2	11	(10)	Same as fixed W-16 Upstream Downstream Onion River
			14:30	100' Downstream	4.0	2.0	11	(11)	
			14:25	Fixed W-16	2.5	1.2	11	(10)	
			14:40	Fixed W-12*	4.6	2.3	12	(11)	
			14:35	Fixed W-2	2.8	1.4	16	(15)	

*Note: Fixed location W-12 is downstream after confluence of the Sheboygan and Onion River.

TABLE 8
(Cont'd)
SHEBOYGAN RIVER AND HARBOR
ALTERNATIVE SPECIFIC REMEDIAL INVESTIGATION

DAILY TURBIDITY RESULTS

Area	Date	Activity	Time	Location	Depth of Water (ft.)	Depth of Sample (ft.)	Turbidity Results (ntu)		Comments
							(Duplicate)		
2	10/25/90	Armoring	14:50	100' Upstream	3.0	1.5	3.8	(4.0)	Upstream Downstream
			14:55	100' Downstream	4.0	2.0	4.0	(4.2)	
			15:15	Fixed W-11	1.8	0.9	3.6	(3.8)	
			14:58	Fixed W-16	2.6	1.3	4.1	(4.2)	
4	10/25/90	Armoring	14:58	100' Upstream	2.6	1.3	4.1	(4.2)	Same as Fixed W-16 Upstream Downstream Onion River
			14:57	100' Downstream	4.3	2.1	4.2	(3.8)	
			14:58	Fixed W-16	2.6	1.3	4.1	(4.2)	
			15:05	Fixed W-12*	5.0	2.5	4.4	(4.5)	
			15:00	Fixed W-2	4.5	2.2	6.8	(6.1)	
2	10/26/90	Armoring	11:15	100' Upstream	4.2	2.1	3.3	(3.8)	Upstream Downstream
			11:25	100' Downstream	3.8	1.9	3.8	(3.5)	
			11:05	Fixed W-11	1.6	1.3	3.5	(3.7)	
			11:30	Fixed W-16	2.8	1.4	3.5	(3.4)	
3	10/29/90	Armoring	14:27	100' Upstream	1.4	0.7	4.0	(3.9)	Upstream Downstream
			14:20	100' Downstream	2.6	1.3	4.5	(4.5)	
			14:45	Fixed W-11	1.5	0.7	3.5	(3.7)	
			14:15	Fixed W-16	2.5	1.2	4.0	(4.6)	
2	10/29/90	Armoring	14:30	100' Upstream	2.5	1.2	4.3	(4.1)	Upstream Downstream
			14:25	100' Downstream	3.8	1.9	3.4	(3.8)	
			14:45	Fixed W-11	1.5	0.7	3.5	(3.7)	
			14:15	Fixed W-16	2.5	1.2	4.0	(4.6)	

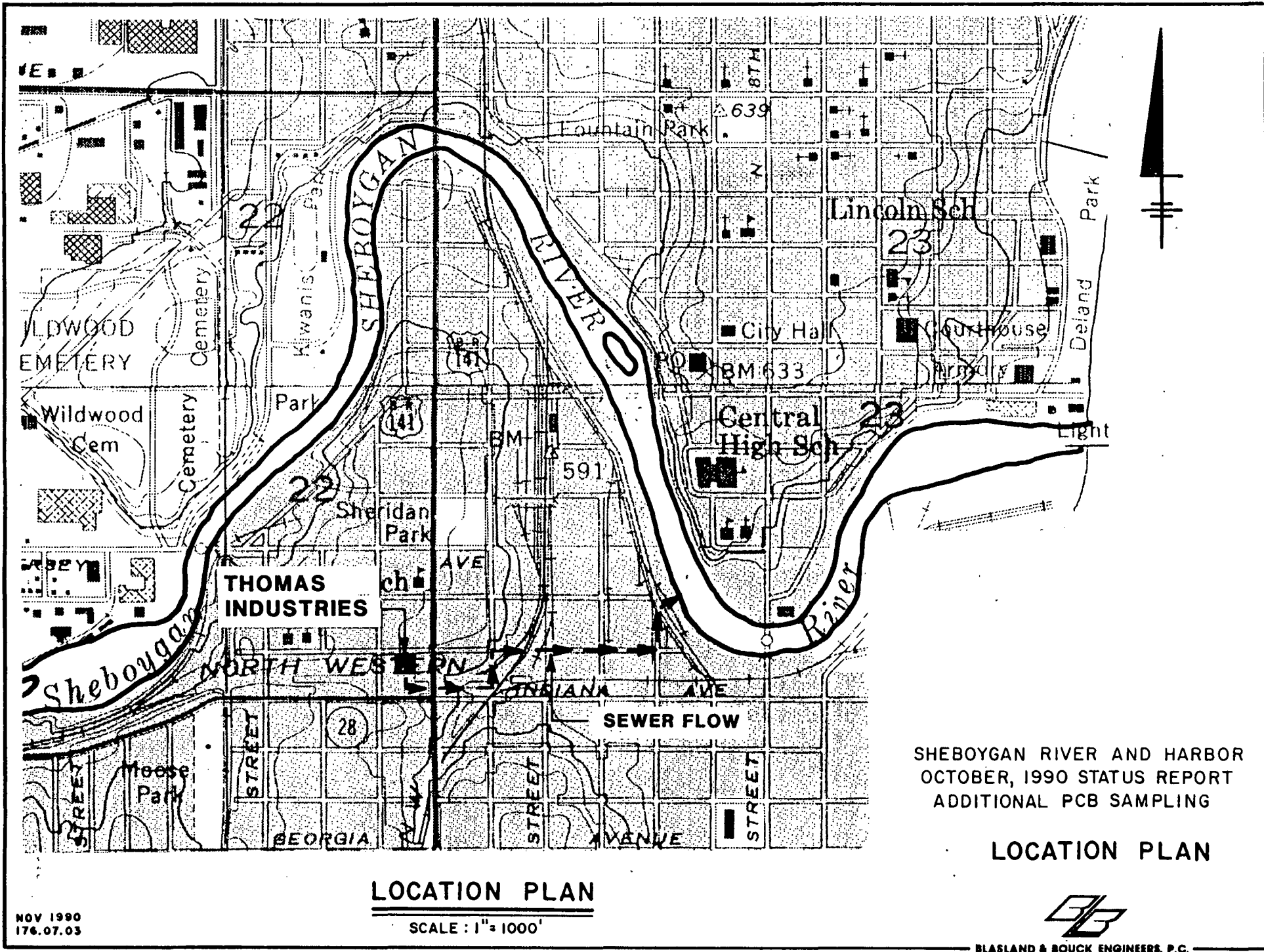
*Note: Fixed location W-12 is downstream after confluence of the Sheboygan and Onion River.

TABLE 8
(Cont'd)
SHEBOYGAN RIVER AND HARBOR
ALTERNATIVE SPECIFIC REMEDIAL INVESTIGATION

DAILY TURBIDITY RESULTS

Area	Date	Activity	Time	Location	Depth of Water (ft.)	Depth of Sample (ft.)	Turbidity Results (ntu)		Comments
							(Duplicate)		
4	10/30/90	Armoring	14:48	100' Upstream	2.4	1.2	6.2	(6.0)	Same as fixed W-16 Upstream Downstream Onion River
			14:45	100' Downstream	4.4	2.2	6.5	(6.6)	
			14:48	Fixed W-16	2.4	1.2	6.2	(6.0)	
			14:40	Fixed W-12*	4.5	2.2	6.8	(6.8)	
			14:43	Fixed W-2	3.2	1.6	15	(14)	
3	10/30/90	Amoring	14:55	100' Upstream	1.5	0.7	6.1	(6.4)	Upstream Downstream
			14:50	100' Downstream	2.4	1.2	6.3	(6.6)	
			14:25	Fixed W-11	1.6	0.8	7.1	(6.9)	
			14:48	Fixed W-16	2.4	1.2	6.2	(6.0)	
2	10/30/90	Armoring	15:00	100' Upstream	2.5	1.2	6.3	(6.3)	Upstream Downstream
			14:52	100' Downstream	3.8	1.9	6.8	(6.8)	
			14:25	Fixed W-11	1.6	0.8	7.1	(6.9)	
			14:48	Fixed W-16	2.4	1.2	6.2	(6.0)	
2	10/31/90	Armoring	11:15	100' Upstream	3.0	1.5	7.3	(7.6)	Upstream Downstream
			11:10	100' Downstream	3.5	1.7	6.7	(6.7)	
			10:20	Fixed W-11	1.2	0.6	9.2	(9.0)	
			10:45	Fixed W-16	2.5	1.2	7.8	(7.8)	

*Note: Fixed location W-12 is downstream after confluence of the Sheboygan and Onion River.



SHEBOYGAN RIVER AND HARBOR
 OCTOBER, 1990 STATUS REPORT
 ADDITIONAL PCB SAMPLING

LOCATION PLAN

LOCATION PLAN

SCALE : 1" = 1000'

NOV 1990
 176.07.03



BLASLAND & BOUCK ENGINEERS, P.C.
 ENGINEERS & GEOSCIENTISTS

FIGURE 1

ATTACHMENT 1
LABORATORY DATA SHEETS

BLASLAND AND BOUCK
SHEBOYGAN RIVER PROJECT--SEDIMENT
PROJECT # 178.08 and 884.01
PCB ANALYSIS

SAMPLE NUMBER	SAMPLE LOCATION	DATE REC.	DATE EXTRACT	Per. Moist.	PCB1242 mg/Kg	PCB1248 mg/Kg	PCB1254 mg/Kg	Total-PCB mg/Kg
00706416	FPR-4-1,2,3,4,5,6	7/26/90	8/01/90	2.44	<0.51	2.50	2.90	5.40
00706417	FPR-5-1,2	7/26/90	8/01/90	1.78	<5.10	18.00	17.00	33.00
00706418	FPR-7-1,2,3	7/26/90	8/01/90	3.68	<2.60	8.60	7.80	16.40
00706437	FPL-7-1 to 10	7/26/90	8/01/90	2.84	<0.26	0.48	<0.26	0.48
00706396	FPL-1-1,2,3	7/26/90	8/03/90	1.63	<0.05	<0.05	0.24	0.24
00706397	FPL-2-1,2,3	7/26/90	8/03/90	1.53	<0.51	1.80	2.30	4.10
00706398	FPR-2-1,2,3,4	7/26/90	8/03/90	3.93	<1.00	3.90	2.50	6.40
00706399	FPL-3-1,2,3	7/26/90	8/03/90	3.10	<0.52	3.80	2.20	6.00
00706400	FPR-3-1,2,3,4,5	7/26/90	8/03/90	1.90	<1.00	6.30	4.00	10.30
00706401	FPL-4-1,2,3,4,5,6	7/26/90	8/03/90	2.92	<26.00	63.00	56.00	119.00
00706402 (Dup)	FPL-4-1,2,3,4,5,6	7/26/90	8/03/90	2.99	<26.00	60.00	47.00	107.00
00706403 (MS)	FPL-4-1,2,3,4,5,6	7/26/90	8/03/90	2.89	<26.00	62.00	44.00	106.00
00801253	A-3-1	7/19/90	8/03/90	29.70	83.00	<18.00	35.00	118.00
00801254	A-3-2	7/19/90	8/03/90	30.00	150.00	<36.00	98.00	248.00
00801924	A-4-1,2,3,4;0-3"	8/09/90	8/10/90	23.70	63.00	<16.00	<16.00	63.00
00802428	A-1-14,15,16	8/11/90	8/11/90	32.00	<0.74	1.20	0.35	1.55
00802601	A-1-17,18,19	8/14/90	8/14/90	18.80	260.00	<31.00	35.00	295.00
Control Spike I			8/01/90		<1.00	4.20	4.60	8.80
Control Spike II			8/03/90		<1.00	2.30	2.60	4.90
Control Spike IV			8/10/90		<1.00	4.00	4.00	8.00
Control Spike V			8/11/90		<1.00	4.20	4.30	8.50
Control Spike VI			8/14/90		<1.00	3.60	3.60	7.20
Method Blank I			8/01/90		<0.05	<0.05	<0.05	<0.05
Method Blank II			8/03/90		<0.05	<0.05	<0.05	<0.05
Method Blank IV			8/10/90		<0.05	<0.05	<0.05	<0.05
Method Blank V			8/11/90		<0.05	<0.05	<0.05	<0.05
Method Blank VI			8/14/90		<0.05	<0.05	<0.05	<0.05

Note: PCB-1016, PCB-1221, PCB-1232, and PCB-1260 not detected in any samples.

Note: The Control Spike was fortified with 5.0 mg/Kg of Aroclor 1248 and Aroclor 1254. The percent recoveries for Aroclor 1248 were 84%, 46%, 88%, 84%, and 72% respectively. The percent recoveries for Aroclor 1254 were 92%, 52%, 80%, 86%, and 72% respectively.

Note: The Matrix Spikes were fortified with 5.0 mg/Kg of Aroclor 1242. The sample FPL-4-1,2,3,4,5,6 (00706401) contained a high level of Aroclor 1248. The presence of such a high level of Aroclor 1248 in the sample diluted out the Aroclor 1242 added as a spiking compound for the matrix spike FPL-4-1,2,3,4,5,6 (00706403).

BLASLAND AND BOUCK
SHEBOYGAN RIVER PROJECT--SEDIMENT
PROJECT # 176.06 and 884.01
PCB ANALYSIS

SAMPLE NUMBER	SAMPLE LOCATION	DATE REC.	DATE EXTRACT	Per. Moist.	PCB1242 mg/Kg	PCB1248 mg/Kg	PCB1254 mg/Kg	Total-PCB mg/Kg
00806068	TISS-1 Total	8/29/90	9/04/90	0.79	<2.5	12.00	13.00	25.00
00806069	TISS-2 Total	8/29/90	9/04/90	0.65	<0.50	2.40	1.30	3.70
00806070	TISS-4 Total	8/29/90	9/04/90	0.69	<0.25	0.60	0.36	0.96
00806071 (Dup)	TISS-4 Total (Dup)	8/29/90	9/04/90	0.37	<0.25	0.53	0.38	0.91
00806072 (MS)	TISS-4 Total (MS)	8/29/90	9/04/90	0.55	4.60	<0.50	0.83	5.43
00806073	TISS-5 Total	8/29/90	9/04/90	0.34	<0.05	0.15	<0.05	0.15
00903922	A-4-1;0-3"	8/09/90	9/19/90	1.10	0.72	<0.50	<0.50	0.72
00903923	A-4-2;0-3"	8/09/90	9/19/90	1.10	0.92	<0.50	<0.50	0.92
00903924	A-4-3;0-3"	8/09/90	9/19/90	0.65	170.00	<25.	<25.	170.00
00903925	A-4-4;0-3"	8/09/90	9/19/90	0.89	2.10	<0.50	<0.50	2.10
00902556	FPL5-1,2,3,4,5	9/13/90	9/19/90	5.50	<1.1	<1.1	2.70	2.70
00902557 (Dup)	FPL5-1,2,3,4,5 Dup	9/13/90	9/19/90	6.00	<1.1	<1.1	2.90	2.90
00902558 (MS)	FPL5-1,2,3,4,5 MS	9/13/90	9/19/90	5.40	4.40	<1.1	3.30	7.70
00902559	FPL6-1,2	9/13/90	9/19/90	4.10	<0.52	<0.52	0.88	0.88
00902560	FPR6-1,2,3,4,5,6	9/13/90	9/19/90	3.70	<10.	50.00	46.00	96.00
00902561	FPL8-1,2	9/13/90	9/19/90	4.10	<5.2	<5.2	14.00	14.00
00902562	FPR8-1,2	9/13/90	9/19/90	4.70	<2.6	<2.6	6.20	6.20
00902563	FPR9-1,2,3,4,5	9/13/90	9/19/90	5.50	<2.7	<2.7	7.70	7.70
00902564 (Dup) **	FPR9-1,2,3,4,5 Dup	9/13/90	9/19/90	5.80	**	**	**	**
00902565 (MS)	FPR9-1,2,3,4,5 MS	9/13/90	9/19/90	5.60	4.80	<2.7	8.80	13.60
Control Spike I			9/04/90		<1.0	5.1	5.20	10.30
Control Spike II			9/19/90		<1.0	4.5	5.80	10.30
Method Blank I			9/04/90		<0.05	<0.05	<0.05	<0.05
Method Blank II			9/19/90		<0.05	<0.05	<0.05	<0.05

Note: PCB-1016, PCB-1221, PCB-1232, and PCB-1260 not detected in any samples.

Note: The Control Spikes were fortified with 5.0 mg/Kg of Aroclor 1248 and Aroclor 1254. The percent recoveries for Aroclor 1248 were 102% and 90% respectively. The percent recoveries for Aroclor 1254 were 104% and 116% respectively.

Note: Sample FPR9-1,2,3,4,5 Dup (00902564) was lost in the lab during concentration on the steam bath.

Note: The Matrix Spikes were fortified with 5.0 mg/Kg of Aroclor 1242. The percent recoveries for TISS-4 Total (00806072), FPL5-1,2,3,4,5 (00902558), and FPR9-1,2,3,4,5 (00902565) were 81%, 88%, and 96% respectively.

BLASLAND AND BOUCK
SHEBOYGAN RIVER PROJECT---WATER
PROJECT # 884.01
PCB ANALYSIS

SAMPLE NUMBER	SAMPLE LOCATION	DATE REC.	DATE EXTRACT	TSS mg/L	PCB1242 ug/L	PCB1248 ug/L	PCB1254 ug/L	Total-PCB ug/L
00903187	W-12 Total	9/14/90	9/17/90	43.8	0.07	<0.05	<0.05	0.07
00903188	W-12 Filtered	9/14/90	9/17/90		<0.05	<0.05	<0.05	<0.05
00903190	W-15 Total	9/14/90	9/17/90	44.8	0.11	<0.05	<0.05	0.11
00903191	W-15 Filtered	9/14/90	9/17/90		0.07	<0.05	<0.05	0.07
Control Spike			9/17/90		0.38	<0.05	<0.05	0.38
Method Blank			9/17/90		<0.05	<0.05	<0.05	<0.05
00903189 (Dup)	W-12 (Dup)	9/14/90		44.0				
00903192 (Dup)	W-15 (Dup)	9/14/90		47.0				
Method Blank I					<1.0			
Method Blank II					<1.0			

Note: PCB-1016, PCB-1221, PCB-1232, and PCB-1260 not detected in any samples.

Note: The Control Spike was fortified with 0.50 ug/L of Aroclor 1242. The Percent recovery was 76%.

BLASLAND AND BOUCK
SHEBOYGAN RIVER PROJECT---WATER
PROJECT # 884.01
PCB ANALYSIS

SAMPLE NUMBER	SAMPLE LOCATION	DATE REC.	DATE EXTRACT	TSS mg/L	PCB1242 ug/L	PCB1248 ug/L	PCB1254 ug/L	Total-PCB ug/L
00905660	Influent-Total	9/27/90	9/28/90	61.6	<5.0	44.00	<5.0	44.00
00905662 (MS)	Influent-Total (MS)	9/27/90	9/28/90		<5.0	48.00	<5.0	48.00
00905663	Influent-Filtered	9/27/90	9/28/90		<1.2	9.00	<1.2	9.00
00905664 (MS)	Influent-Filtered (MS)	9/27/90	9/28/90		<1.2	9.60	<1.2	9.60
00905665	Effluent-Total	9/27/90	9/28/90	1.8	<0.25	1.40	<0.25	1.40
00905666 (Dup)	Effluent-Total (Dup)	9/27/90	9/28/90	1.6	<0.25	1.30	<0.25	1.30
00905667	Effluent-Filtered	9/27/90	9/28/90		<0.05	0.32	<0.05	0.32
00905668 (Dup)	Effluent-Filtered (Dup)	9/27/90	9/28/90		<0.05	0.34	<0.05	0.34
Control Spike			9/28/90		0.40	<0.05	<0.05	0.40
Method Blank			9/28/90		<0.05	<0.05	<0.05	<0.05
00905661 (Dup)	Influent (Dup)	9/27/90		60.6				
Method Blank I				<1.0				
Method Blank II				<1.0				

Note: PCB-1016, PCB-1221, PCB-1232, and PCB-1260 not detected in any samples.

Note: The Control Spike was fortified with 0.50 ug/L of Aroclor 1242. The Percent recovery was 80%.

Note: The Matrix Spikes were fortified with 0.50 ug/L of Aroclor 1248. The Percent recovery for Influent-Filtered (00905664) was 120%. The Influent-Total contained a high level of Aroclor 1248 which made the spike amount insignificant.

BLASLAND AND BOUCK
 SHEBOYGAN RIVER PROJECT—WATER
 PROJECT # B84.01
 PCB ANALYSIS

SAMPLE NUMBER	SAMPLE LOCATION	DATE REC.	DATE EXTRACT	TSS mg/L	PCB1242 ug/L	PCB1248 ug/L	PCB1254 ug/L	PCB Total ug/L
01000944	Influent-Total	10/05/90	10/08/90	4.2	<1.0	9.80	<1.0	9.80
01000946	Influent-Filtered	10/05/90	10/08/90		<1.0	9.80	<1.0	9.80
01000947	Effluent-Total	10/05/90	10/08/90	2.0	<0.1	1.30	<0.1	1.30
01000949	Effluent-Filtered	10/05/90	10/08/90		<0.1	1.30	<0.1	1.30
Control Spike			10/08/90		0.45	<0.05	<0.05	0.45
Method Blank			10/08/90		<0.05	<0.05	<0.05	<0.05
01000945 (Dup)	Influent (Dup)	10/05/90		4.2				
01000948 (Dup)	Effluent (Dup)	10/05/90		2.6				
Method Blank I				<1.0				
Method Blank II				<1.0				

Note: PCB-1016, PCB-1221, PCB-1232, and PCB-1260 not detected in any samples.

Note: The Control Spike was fortified with 0.50 ug/L of Aroclor 1242. The Percent recovery was 90%.

filename:BBE120



BLASLAND & BOUCK ENGINEERS, P.C.
ENGINEERS & GEOSCIENTISTS

6723 Towpath Road, Box 66, Syracuse, New York 13214 (315) 448-9120
FAX: (315) 448-0017

October 15, 1990

Ms. Bonnie L. Eleder
Remedial Project Manager
USEPA
Region V
230 South Dearborn Street
Chicago, IL 60604

Re: Sheboygan River and Harbor

File: 176.07 #2

Dear Bonnie:

Enclosed please find, for your review, the September 1990 Status Report for activities associated with the above-referenced project.

Should you have any questions concerning the enclosed, please feel free to contact us.

Very truly yours,

BLASLAND & BOUCK ENGINEERS, P.C.

Dawn S. Foster

Dawn S. Foster, P.E.
Manager, Engineering

KJ/jlr
Enclosure

cc: Mark A. Thimke, Esq., Foley & Lardner, w/encl.
Robin R. Schmidt, Wisconsin Department of Natural Resources, w/encl.
Francis J. Trcka, Wisconsin Department of Natural Resources, w/encl.

SHEBOYGAN RIVER AND HARBOR
MONTHLY STATUS REPORT

SEPTEMBER 1990

1. Action Taken During this Time Period

- a. The following activities were conducted during September:
 - completed construction of the leak detection system including installation of a double containment pipe and collection tank.
 - additional floodplain sampling was performed on September 12 and 13, 1990.
- b. The following meetings/conference calls were held in September:
 - A conference call was held with USEPA/WDNR on September 13, 1990 to discuss the project status.

2. USEPA Decisions

- a. On September 6, 1990, USEPA provided verbal approval to analyze individual Area 4 post removal sediment samples to determine what portion needed to be armored, even though the holding times for the indicated samples had been exceeded.
- b. On September 12, 1990, verbal approval was obtained from USEPA to armor Areas 1, 2, 3, and 4.
- c. On September 13, approval was obtained from USEPA for the discharging of waters from the CWTF into a nearby storm drain.
- d. Verbal approval was obtained from USEPA on September 18 to initiate use of the CWTF to treat water directly out of the cells which was removed to lower the water levels. Effluent quality will be monitored through the collection and analysis of 1 PCB and 1 TSS sample per week.

3. Results of Sampling and Tests

Data summaries for analytical results received this month are attached as follows:

- a. Table 1 presents PCB (total and filtered), total suspended solids (TSS), and turbidity results from water column samples taken within curtained sediment areas after removal operations were complete.
- b. Area 2 post removal sediment sampling results are presented in Table 2.

- c. The weekly PCB, TSS, and turbidity water column monitoring results for the period covering August 5 through September 15, 1990, are presented in Table 3.
- d. Table 4 presents the results of additional PCB sediment sampling in armored Areas 7, 8, 10, and 11.
- e. Table 5 presents a summary of water quantities removed from the CTF leak detection system (LDS).
- f. The influent and effluent analyses from the CWTF are presented in Table 6.
- g. PCB results for resident fish collected in the Sheboygan River are presented in Tables 7-12.

The laboratory data sheets are presented in Attachment 1.

4. Anticipated Problems/Recommended Solutions

- None

5. Problems Encountered/Resolved

- High water levels were present in the CTF cells which caused some concern. As such, from September 24-28, 1990, a total of 19,800 gallons of water was pumped to the CWTF for treatment/discharge.
- An incidence of vandalism occurred over the weekend of September 22 at the work areas near sediment areas 2, 3, and 4. It was decided to step-up on-site security.

6. Deliverables Submitted to USEPA/WDNR

Date Submitted

- | | |
|---|---|
| <ul style="list-style-type: none"> - August Status Report - Section 6 Tables of the RI/ES Report. (inadvertently omitted from several copies of the previous submittal) | <p>September 14, 1990</p> <p>September 17, 1990</p> |
|---|---|

7. Upcoming Events/Activities Planned

- Armoring of Areas 1, 2, 3, and 4 will be initiated. Bank restoration activities at Areas 1, 2, and 3 will follow (armoring of Area 1 has already been completed).
- Monitoring of CWTF water during treatment of CTF waters (to lower cell water levels) to determine effluent quality.

- Perform the chinook salmon sampling in the Sheboygan River and Harbor.

8. Key Personnel Changes

- None.

TABLE 1
SHEBOYGAN RIVER AND HARBOR
ALTERNATIVE SPECIFIC REMEDIAL INVESTIGATION

Summary of Post-Cleanup Water Samples Within Curtained Sediment Areas

<u>Sediment Area</u>	<u>Activity</u>	<u>Work Activity Ended</u>	<u>Curtains Removed</u>	<u>Date Sampled</u>	<u>Time</u>	<u>Number of Locations¹</u>	<u>Depth of Water (ft)</u>	<u>Depth of Sample (ft)</u>	<u>Filtered PCB (ppb)</u>	<u>Total PCB (ppb)</u>	<u>TSS (mg/l)</u>	<u>Turbidity (ntu)</u>
3	Dredging	7/16/90	No	8/23/90	14:30	1	4.5	2.2	.79	.86	27.0 28.7(dup)	25
4	Dredging	8/2/90	No	8/23/90	12:45	2	4.5	2.2	.91 1.08(dup)	1.10 1.19(dup)	8.8 7.7(dup)	10

Note:

¹Locations composited in field using equal volume.

TABLE 2
SHEBOYGAN RIVER AND HARBOR
ALTERNATIVE-SPECIFIC REMEDIAL INVESTIGATIONS

Summary of Post Cleanup Sediment Samples

<u>Sediment Area</u>	<u>Sample Date</u>	<u>Number of Locations</u>	<u>Sample Depth (in)</u>	<u>Sample Type</u>	<u>Sample Description</u>	<u>PCB Total (ppm)</u>
2	8/21/90	1	0-3	Grab	A-2-12-Trace of dark brown to black fine and coarse sand, with silt on top of gray clay with a trace of red clay.	7.7

TABLE 3

SHEBOYGAN RIVER AND HARBOR
ALTERNATE SPECIFIC REMEDIAL INVESTIGATION

Weekly PCB/TSS/Turbidity River Monitoring

<u>Sample Date</u>	<u>Week</u>	<u>Activity</u>	<u>Time</u>	<u>Sample Location</u>	<u>Location</u>	<u>Depth of Water (ft)</u>	<u>Depth of Sample (ft)</u>	<u>Filtered PCB (ppb)</u>	<u>Total PCB (ppb)</u>	<u>TSS (mg/l)</u>	<u>Turbidity (ntu)</u>
8/8/90	8/5-8/11/90	Dredging Bank and Sediment, Area #1	14:30	W-11	Upstream	1.0	0.5	<.05	<.05	52.0	34
			14:45	W-16	Downstream	1.8	0.9	.07	.39	51.4(dup) 50.8 50.4(dup)	34
8/15/90	8/12-8/18/90	Armoring Bank Area #1	9:20	W-11	Upstream	0.8	0.4	<.05	<.05	21.1	20
			8:20	W-16	Downstream	1.8	0.9	.41 ¹ .06(dup)	.09 .09(dup)	22.0 21.4(dup)	20
			8:30	W-15	Downstream All Activity	3.5	1.5	.10	.25	30.8 49.0(dup)	38 ²
8/22/90	8/19-8/25/90	Dredging Area #2	14:50	W-11	Upstream	1.8	0.9	<.05	<.05	41.0	36
			15:00	W-16	Downstream	3.2	1.6	<.05	<.05	44.4(dup) 39.6 44.0(dup)	36
9/13/90	9/9-9/15/90	None	9:15	W-12	Upstream	5.0	2.5	*	*	*	36
			9:30	W-15	Downstream	3.3	1.6	*	*	*	39

Note:

- *Analytical results were not received; data forthcoming in a subsequent Status Report.
- ¹Analytical result in question due to poor precision of duplicate analysis.
- ²Sample was taken downstream of confluence of the Sheboygan and Onion Rivers.

TABLE 4
SHEBOYGAN RIVER AND HARBOR
ALTERNATIVE SPECIFIC REMEDIAL INVESTIGATION

Summary of Armored Area Sampling¹

<u>Armored Area</u>	<u>Date</u>	<u>Time</u>	<u>Water Depth (ft)</u>	<u>Sediment Depth (ft)</u>	<u>Sediment Recovered (ft)</u>	<u>Sample Segmented (in)</u>	<u>Description</u>	<u>Total² PCB (ppm)</u>
7	8/22/90	8:20	2.3	3.3	1.8	0-6	0-2" Muck brown loose silt. 2-6" Fine black & dark brown sand, trace of silt, wood.	36.6 35.5 (dup)
						6-12	6-8" Gray dark brown silt. 8-12" coarse gray brown sand with small gravel and shell fragments.	
						12-18	Gray-dark brown coarse sand and small gravel.	
						18-22	Large gravel mixed with coarse sand.	
8	8/22/90	8:30	2.9	1.9	1.3	0-6	Fine dark brown to black loose silt with organic material, organic odor.	268.5
						6-12	Fine dark brown stiff silt with plant material, gray sand at bottom.	
						12-16	Gray fine and coarse sand, trace shells.	

Notes:

¹Samples sent to Northeast Analytical for congener specific PCB analyses. Samples composited in field.

²All sediment depths from each armored area composited for single sample analysis.

TABLE 4
SHEBOYGAN RIVER AND HARBOR
ALTERNATIVE SPECIFIC REMEDIAL INVESTIGATION

Summary of Armored Area Sampling¹
(Cont'd.)

<u>Armored Area</u>	<u>Date</u>	<u>Time</u>	<u>Water Depth (ft)</u>	<u>Sediment Depth (ft)</u>	<u>Sediment Recovered (ft)</u>	<u>Sample Segmented (in)</u>	<u>Description</u>	<u>Total² PCB (ppm)</u>
10	8/22/90	8:40	2.5	2.4	1.8	0-6	Black soft silt with trace sand, then gray fine sand with trace silt.	145.6
						6-12	Gray fine sand, shells, and wood chips.	
						12-18	White large gravel with fine gray sand with a layer of plant material.	
						18-22	Brown fine sand with trace small gravel then changing to a soft brown silt.	
11	8/22/90	8:55	2.9	2.1	1.6	0-6	Coarse light brown sand and gravel on top of dark brown to black sand with plant material.	25.2
						6-12	Fine dark brown sand with trace silt and dead vegetation changing to black fine silt and sand with dead vegetation.	
						12-17	Black soft silt with sand, changing to black coarse sand and small gravel, strong organic odor.	
						17-19	Brown soft sand with shells, some silt, small gravel and coarse sand at bottom.	

Notes:

¹Samples sent to Northeast Analytical for congener specific PCB analyses. Samples composited in field.

²All sediment depths from each armored area composited for single sample analysis.

TABLE 5
SHEBOYGAN RIVER AND HARBOR
ALTERNATIVE SPECIFIC REMEDIAL INVESTIGATION

Summary of Water Removed from
Leak Detection Systems (gals)

<u>Date</u>	<u>Cell No.</u>			
	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>
9/1/90	130	0	0	430
9/2/90	140	0	0	470
9/3/90	140	0	5	450
9/4/90	140	0	0	450
9/5/90	150	0	0	470
9/6/90	140	0	0	450
9/7/90	110	0	0	450
9/10/90	350	*	0	800
9/11/90	110	0	0	450
9/12/90	110	5	0	450
9/13/90	115	0	0	450
9/14/90	120	0	0	450
9/17/90	320	5	0	850
9/18/90	110	5	5	450
9/19/90	115	0	0	450
9/20/90	115	0	0	450
9/21/90	110	5	5	450
9/24/90	350	0	0	850
9/25/90	110	5	0	450
9/26/90	110	0	0	130
9/27/90	115	0	0	150
9/28/90	115	5	0	130

Notes:

*The LDS for this cell was not observed on the given date.

The increasing volumes of water removed from Cells 1 and 4 are due to the high water levels within the respective cells.

TABLE 6
SHEBOYGAN RIVER AND HARBOR
ALTERNATIVE SPECIFIC REMEDIAL INVESTIGATION

CWTF INFLUENT AND EFFLUENT
CELL #3 WATER

	<u>Influent</u>	<u>Effluent</u>
COD (mg/l)	38.7	<10
TOC (mg/l)	15	<.25
TSS (mg/l)	109.2	<1.0
	98.4 (dup)	1.0 (dup)
Turbidity (ntu)	69.0	7.0
Total PCBs (ppb)	51	<.05
Filtered PCBs (ppb)	10	<.05

Note:

Date sampled: August 28, 1990

TABLE 7

SHEBOYGAN RIVER AND HARBOR
ALTERNATIVE SPECIFIC REMEDIAL INVESTIGATION

SUMMARY OF DATA FOR SMALLMOUTH BASS
(ROCHESTER PARK)

Date Sampled: 7/17/90

I. Raw Data

<u>SAMPLE NUMBER</u>	<u>LENGTH (cm)</u>	<u>WEIGHT (grams)</u>	<u>TOTAL PCBs^a (mg/kg)</u>	<u>LIPIDS (%)</u>
FB-10	38.6	830	8.30	0.86
FB-11	33.0	450	2.60	0.37
FB-12	38.2	750	4.20	0.58
FB-13	33.2	530	5.00	0.88
FB-14	30.2	370	3.70	0.76
FB-15	30.5	430	10.60	1.11
FB-15 DUP	NA	NA	9.60	0.98
FB-15 MS	NA	NA	11.60	1.05
FB-16	25.6	230	3.60	0.79
FB-17	30.0	350	10.60	0.47
FB-18	18.3	100	6.90	0.61

II. Means

Total PCBs (mg/kg)	6.11 ±2.98
Lipids (%)	0.71 ±0.22
Length (cm)	30.84 ±6.23
Weight (grams)	448.89 ±231.43

Notes:

NA = Not Applicable
a = Breakdown of total PCBs by Aroclor is available in lab data sheets

(Note: sample number in this table corresponds to the sample location in the lab data sheet)

TABLE 8

SHEBOYGAN RIVER AND HARBOR
ALTERNATIVE SPECIFIC REMEDIAL INVESTIGATION

SUMMARY OF DATA FOR SMALLMOUTH BASS
(BETWEEN KOHLER DAMS)

Date Sampled: 7/17/90

I. Raw Data

<u>SAMPLE NUMBER</u>	<u>LENGTH (cm)</u>	<u>WEIGHT (grams)</u>	<u>TOTAL PCBs* (mg/kg)</u>	<u>LIPIDS (%)</u>
FB-1	32.2	480	6.40	1.32
FB-2	24.2	230	6.10	1.37
FB-3	34.0	550	4.10	0.73
FB-4	31.9	400	2.50	0.56
FB-5	31.0	380	4.10	0.78
FB-5 DUP	NA	NA	0.77	0.80
FB-6	25.2	200	3.70	0.96
FB-7	24.4	220	2.30	0.85
FB-8	28.0	250	7.20	0.85
FB-9	34.5	530	6.00	0.52

II. Means

Total PCBs (mg/kg)	4.53 ±1.92
Lipids (%)	0.88 ±0.30
Length (cm)	29.49 ±4.11
Weight (grams)	360.00 ±139.46

Notes:

NA = Not Applicable

a = Breakdown of total PCBs by Aroclor is available in lab data sheets

(Note: sample number in this table corresponds to the sample location in the lab data sheet)

TABLE 9
SHEBOYGAN RIVER AND HARBOR
ALTERNATIVE SPECIFIC REMEDIAL INVESTIGATION

SUMMARY OF DATA FOR SMALLMOUTH BASS
(KIWANIS PARK)

Date Sampled: 7/18/90

I. Raw Data

<u>SAMPLE NUMBER</u>	<u>LENGTH (cm)</u>	<u>WEIGHT (grams)</u>	<u>TOTAL PCBs^a (mg/kg)</u>	<u>LIPIDS (%)</u>
FB-19	34.0	500	3.00	1.61
FB-20	27.5	330	3.70	1.66
FB-21	26.2	270	1.97	0.63
FB-22	17.6	100	2.16	0.69
FB-23	30.2	370	1.11	1.52
FB-24	23.5	190	2.15	0.71
FB-25	36.3	720	1.59	1.48
FB-25 DUP	NA	NA	1.91	1.59
FB-25 MS	NA	NA	4.20	1.40

II. Means

Total PCBs (mg/kg)	2.26 ±0.85
Lipids (%)	1.19 ±0.49
Length (cm)	27.90 ±6.35
Weight (grams)	354.29 ±205.98

Notes:

NA = Not Applicable
a = Breakdown of total PCBs by Aroclor is available in lab data sheets

(Note: sample number in this table corresponds to the sample location in the lab data sheet)

TABLE 10

SHEBOYGAN RIVER AND HARBOR
ALTERNATIVE SPECIFIC REMEDIAL INVESTIGATION

SUMMARY OF DATA FOR RIVER CARP
(ROCHESTER PARK)

Date Sampled: 7/17/90

L. Raw Data

<u>SAMPLE NUMBER</u>	<u>LENGTH (cm)</u>	<u>WEIGHT (grams)</u>	<u>TOTAL PCBs^a (mg/kg)</u>	<u>LIPIDS (%)</u>
FX-101	33.0	500	64.0	6.9
FX-102	31.0	460	28.5	7.4
FX-103	30.7	430	7.1	4.2
FX-104	30.3	420	19.6	3.0
FX-105	29.3	370	9.8	3.9
FX-106	33.5	580	52.0	3.7
FX-107	32.6	490	36.0	3.6
FX-108	32.3	450	98.0	3.5
FX-109	32.0	440	61.0	4.2
FX-109 DUP	NA	NA	51.0	4.4
FX-109 MS	NA	NA	56.0	4.2
FX-110	36.5	700	60.0	4.4
FX-111	32.5	450	250.0	5.3
FX-112	32.8	510	24.7	4.4
FX-113	32.5	470	25.3	3.3
FX-114	28.3	350	69.0	5.2
FX-115	30.9	380	51.0	3.0
FX-116	29.5	340	79.0	2.8
FX-117	30.0	410	52.0	4.0
FX-118	42.1	1000	84.0	6.0
FX-119	44.6	1050	61.0	2.7
FX-119 DUP	NA	NA	58.0	2.7
FX-119 MS	NA	NA	67.0	2.8
FX-120	31.6	440	127.0	3.5
FX-121	30.5	400	46.0	5.5
FX-122	30.5	380	79.0	3.4

TABLE 10 (cont'd)

SHEBOYGAN RIVER AND HARBOR
 ALTERNATIVE SPECIFIC REMEDIAL INVESTIGATION
 (ROCHESTER PARK)

II. Means

Total PCBs (mg/kg)	62.91 ±51.00
Lipids (%)	4.27 ± 1.29
Length (cm)	32.59 ± 3.91
Weight (grams)	500.91 ±187.33

Notes:

NA = Not Applicable
 a = Breakdown of total PCBs by Aroclor is available in lab data sheets

(Note: sample number in this table corresponds to the sample location in the lab data sheet)

TABLE 11

SHEBOYGAN RIVER AND HARBOR
ALTERNATIVE SPECIFIC REMEDIAL INVESTIGATION

SUMMARY OF DATA FOR RIVER CARP
(BETWEEN KOHLER DAMS)
Date Sampled 7/17/90

I. Raw Data

<u>SAMPLE NUMBER</u>	<u>LENGTH (cm)</u>	<u>WEIGHT (grams)</u>	<u>TOTAL PCBs^a (mg/kg)</u>	<u>LIPIDS (%)</u>
FX-76	30.4	400	60.0	7.5
FX-77	31.6	420	18.2	4.8
FX-78	33.0	460	7.3	4.2
FX-79	38.2	720	20.8	8.2
FX-80	32.6	500	33.0	5.6
FX-81	34.5	550	20.6	6.7
FX-82	34.5	550	16.8	4.6
FX-83	34.0	490	17.4	3.7
FX-84	34.3	450	28.0	4.9
FX-85	33.3	450	25.4	4.8
FX-85 DUP	NA	NA	15.4	4.8
FX-85 MS	NA	NA	31.0	5.0
FX-86	29.4	300	6.6	3.4
FX-87	28.5	270	9.8	1.4
FX-88	33.2	460	22.5	3.9
FX-89	33.3	480	27.0	4.4
FX-90	35.2	600	21.4	4.8
FX-91	31.0	400	6.3	6.1
FX-92	33.6	520	28.0	7.5
FX-93	40.5	950	69.0	4.5
FX-94	40.3	930	37.0	7.6
FX-95	33.7	510	25.0	5.7
FX-95 DUP	NA	NA	26.0	6.0
FX-95 MS	NA	NA	29.0	5.9
FX-96	29.8	320	15.0	3.9
FX-97	32.3	450	26.0	5.5
FX-98	32.5	440	37.0	3.3
FX-99	26.5	300	11.4	3.5
FX-100	29.7	320	11.6	2.0

TABLE 11 (cont'd)

SHEBOYGAN RIVER AND HARBOR
ALTERNATIVE SPECIFIC REMEDIAL INVESTIGATION
(BETWEEN KOHLER DAMS)

II. Means

Total PCBs (mg/kg)	24.03 ±15.06
Lipids (%)	4.90 ± 1.70
Length (cm)	33.12 ± 3.15
Weight (grams)	489.80 ±169.25

Notes:

NA = Not Applicable

a = Breakdown of total PCBs by Aroclor is available in lab data sheets

(Note: sample number in this table corresponds to the sample location in the lab data sheet)

TABLE 12 (cont'd)
 SHEBOYGAN RIVER AND HARBOR
 ALTERNATIVE SPECIFIC REMEDIAL INVESTIGATION
 (KIWANIS PARK)

II. Means

Total PCBs (mg/kg)	7.09 ± 2.73
Lipids (%)	3.06 ± 1.35
Length (cm)	33.72 ± 3.10
Weight (grams)	528.40 ± 144.39

Notes:

NA = Not Applicable
 a = Breakdown of total PCBs by Aroclor is available in lab data sheets

(Note: sample number in this table corresponds to the sample location in the lab data sheet)



BLASLAND & BOUCK ENGINEERS, P.C.
ENGINEERS & GEOSCIENTISTS

6723 Towpath Road, Box 66, Syracuse, New York 13214 (315) 446-9120
FAX: (315) 449-0017

September 14, 1990

Ms. Bonnie L. Eleder
Remedial Project Manager
USEPA
Region V
230 South Dearborn Street
Chicago, IL 60604

Re: Sheboygan River and Harbor

File: 176.07 #2

Dear Bonnie:

Enclosed please find, for your review, the August 1990 Status Report for activities associated with the above-referenced project.

Should you have any questions concerning the enclosed, please feel free to contact us.

Very truly yours,

BLASLAND & BOUCK ENGINEERS, P.C.

Dawn S. Foster, P.E.
Manager, Engineering

DEP/nlg
Enclosure

cc: Mark A. Thimke, Esq., Foley & Lardner, w/encl.
Robin R. Schmidt, Wisconsin Department of Natural Resources, w/encl.
Francis J. Trcka, Wisconsin Department of Natural Resources, w/encl.
William H. Bouck, P.E., Blasland & Bouck Engineers, P.C.
Richard P. DiFiore, Blasland & Bouck Engineers, P.C., w/encl.

SHEBOYGAN RIVER AND HARBOR
MONTHLY STATUS REPORT

AUGUST 1990

1. Action Taken During this Time Period

a. The following activities were conducted during August:

- Armoring and removal activities in the Sheboygan River continued. Details were presented during various conference calls.
- Installation of confined treatment facility (CTF) discharge piping was initiated.
- The contingency water treatment facility (CWTF) was tested on August 28, utilizing water from Cell #3.
- Sediment was resampled from the armored ports on August 22 and sent to Northeast Analytical for congener specific PCB analyses.

b. No meetings were held in August, however, conference calls were held on August 9, 14, and 23, 1990.

2. USEPA Decisions

- a. On August 2, 1990, Tecumseh received written notice from the USEPA that the Sheboygan River and Harbor site is being considered for a Superfund Innovative Technology Evaluation (SITE) demonstration of the Desorption and Vapor Extraction (DAVE) system.
- b. USEPA/WDNR approved use of discharge water from Cell #3 to test the CWTF on August 9, 1990.
- c. USEPA/WDNR verbally approved the leak detection system (LDS) water piping for the CTF on August 14, 1990.
- d. The WDNR agreed to conduct an additional caged fish study this fall. Tecumseh agreed to provide the cages and fish for use in this additional study. The WDNR will conduct the study and perform the analytical work at their expense.
- e. Post sampling results for Area 2 indicated a small area (approximately 25 ft x 15 ft) contained 800 ppm of PCBs (Table 2). Tecumseh recommended performing an additional pass along this portion of Area 2. Both the USEPA and WDNR agreed with this recommendation. Further discussion resulted in a decision to utilize a clamshell, rather than a backhoe, for this removal activity.
- f. USEPA provided verbal approval on August 14, 1990 of the final ASRI Quality Assurance Project Plan (QAPP) which was submitted in July.

- g. Due to the bank condition resulting from removal activities within the curtained portion of Areas 2, 3, and 4, Tecumseh proposed bank stabilization efforts. These efforts would include some regrading of the bank, placement of Mirafi^R (geotextile), and gablons to reduce erosion. The USEPA/WDNR provided verbal approval of this activity on August 23, 1990.
- h. During the August 9 conference call, the USEPA/WDNR indicated that the 800 ppm in Area 2 was of concern with the agencies and the other sediments with lower PCB concentrations reflected the ability of the removal equipment utilized. However, in a phone conversation on August 23, 1990, the USEPA/WDNR indicated that further action would be required at some of the other areas with lower PCB concentrations. Tecumseh indicated that they would review the options available and contact the agencies regarding a proposal for these additional areas.

3. Results of Sampling and Tests

Data summaries for analytical results received this month are attached as follows:

- a. Table 1 presents PCB (total and filtered), total suspended solids (TSS), and turbidity results from water column samples taken within curtained sediment areas after removal operations were complete.
- b. Post removal sediment sampling results are presented in Table 2.
- c. The daily water column monitoring data (turbidity) collected during river activities is presented in Table 3.
- d. The weekly PCB, TSS, and turbidity water column monitoring results for the period covering June 17 through August 4, 1990, are presented in Table 4.
- e. Table 5 presents the results of additional sampling in armored Areas 7, 8, 10, and 11.
- f. Table 6 presents a summary of water removed from the leak detection system (LDS).
- g. Leach tests were conducted on the sawdust, crumb rubber, and peat moss being used in the Permeable Treatment Wall (PTW). The sawdust and crumb rubber were analyzed in early December, 1989 and the peat moss in July, 1990. The parameters evaluated were: Color, Chemical Oxygen Demand (COD), Total Organic Carbon (TOC), Total Kjeldahl Nitrogen (TKN), Cadmium, Chromium and Lead. Deionized water or supernatant (900 mg) with 45 grams of material were tumbled for 18 hours and extracted using ASTM Method D 3987-85. The parameters were analyzed according to Standard Methods (16th Edition). The results of the analyses are presented in Table 7.

- h. Table 8 presents the data for the purplish black water contained in Cell #3.
- i. Field turbidity results for the influent and effluent (Cell #3 water) utilized in the testing of the CWTF were 69 and 7 ntu, respectively.

The laboratory data sheets are presented in Attachment 1.

4. Anticipated Problems/Recommended Solutions

- Although bank restoration activities have been approved, Tecumseh will await an USEPA decision regarding the possibility of further action in Areas 1, 2, 3, and 4 prior to proceeding with the bank restoration activities.
- The CTF is reaching capacity and the water level within the cells is becoming unacceptably high. It is important to resolve any remaining issues concerning the processing of this water through the CWTF in the very near future. High water levels are the reason for the large volumes of water being removed from several of the leak detection systems.

5. Problems Encountered/Resolved

- Hazleton Laboratories exceeded the holding times for some of the soil samples taken in the floodplain. Therefore, it is necessary to resample the floodplain for proper analysis.
- On August 20, 1990, the curtain at Area 2 was damaged due to high water. Repairs were made the next day. No other curtains were damaged.
- In response to the identification of the 800 ppm sediment remaining in Area 2, an additional 36 cy of sediment were removed beginning August 17, 1990 using a clamshell dredge, instead of a backhoe, to reduce resuspension of sediment.

6. Deliverables Submitted to USEPA/WDNR

Date Submitted

- July Status Report August 14, 1990

7. Upcoming Events/Activities Planned

- A proposal regarding the remaining sediment in Areas 1, 2, 3, and 4 will be discussed in the near future. All river activities were halted (including bank restoration activities) during the last week of August and will resume when this issue is resolved.

8. Key Personnel Changes

- None.

9. Schedule

- Completion of the LDS water piping for the CTF is anticipated during September.
- Floodplain soil sampling (for those locations that the holding times were compromised) will be conducted in early September, 1990.

TABLE 1
SHEBOYGAN RIVER AND HARBOR
ALTERNATIVE SPECIFIC REMEDIAL INVESTIGATION

Summary of Post-Cleanup Water Samples Within Curtained Sediment Areas

<u>Sediment Area</u>	<u>Activity</u>	<u>Work Activity Ended</u>	<u>Curtains Removed</u>	<u>Date Sampled</u>	<u>Time</u>	<u>Number of Locations¹</u>	<u>Average Depth of Water (ft)</u>	<u>Average Depth of Sample (ft)</u>	<u>PCB Filtered (ppb)</u>	<u>PCB Total (ppb)</u>	<u>TSS (mg/l)</u>	<u>Turbidity (ntu)</u>
3	Dredging	7/16/90	No	8/23/90	14:30	1	4.5	2.2	*	*	*	25
4	Dredging	8/2/90	No	8/23/90	12:45	2	4.5	2.2	*	*	*	10

Note:

¹Locations composited in field using equal volume.

*Analytical results not received this month, data to be forthcoming in an appropriate Status Report.

TABLE 2
SHEBOYGAN RIVER AND HARBOR
ALTERNATIVE-SPECIFIC REMEDIAL INVESTIGATIONS

Summary of Post Cleanup Sediment Samples

<u>Sediment Area</u>	<u>Sample Date</u>	<u>Number of Locations</u>	<u>Sample Depth (in)</u>	<u>Sample Type¹</u>	<u>Sample Description</u>	<u>Results PCB Total (ppm)</u>
2	7/12/90	2	0-3	Composite	A-2-1-Fine silt on top of fine sand, trace gravel. Strong organic odor, oil sheen visible. A-2-2-Fine silt with some fine sand. Organic odor, oil sheen visible.	393
		5	0-3	Composite	A-2-3-Gray-brown sand, trace silt, coarse sand, and rocks. A-2-4-Gray-brown silt, trace gravel. A-2-5-Brown fine to coarse sand with gravel. A-2-7-Red-brown clay, trace silt, fine to coarse sand. A-2-8-Gray-brown coarse sand and gravel, some rocks and silt.	26.5
		1	0-3	Grab	A-2-6-Fine silt and sand, trace gravel and rocks. Organic odor, oil sheen visible.	700
2	7/25/90	2	0-3	Composite	A-2-9-Brown-gray coarse sand and gravel. A-2-10-Brown-gray fine to coarse sand with gravel.	136
		1	0-3	Grab	A-2-11-Brown-gray fine to coarse sand with gravel.	800

Note:

¹Equal weights composited by laboratory.

TABLE 2
SHEBOYGAN RIVER AND HARBOR
ALTERNATIVE-SPECIFIC REMEDIAL INVESTIGATIONS

Summary of Post Cleanup Sediment Samples
(Cont'd.)

<u>Sediment Area</u>	<u>Sample Date</u>	<u>Number of Locations</u>	<u>Sample Depth (in)</u>	<u>Sample Type¹</u>	<u>Sample Description</u>	<u>Results PCB Total (ppm)</u>
3	7/19/90	2	0-3	Composite	A-3-1-Brown-gray silt with sand and gravel. A-3-2-Gray-brown silt and fine sand with gravel and plant material.	148
4	8/8/90	4	0-3	Composite	A-4-1-Trace of sand and gravel on top of gray clay. A-4-2-Trace of brown sand, silt, and gravel on top of gray clay. A-4-3-Brown sandy silt and gravel on top of gray clay. A-4-4-Trace of sand, silt, and gravel on top of gray clay.	63
1 Bank Area	8/10/90	3	0-3	Composite	A-1-14-Trace of sand on top of red-brown clay. A-1-15-Brown-gray silt and fine sand with plant material, peat. Sulphurous odor. A-1-16-Brown fine sand and gravel with silt.	1.55
1 Sediment Area	8/13/90	3	0-3	Composite	A-1-17-Gray clay with trace of sand. A-1-18-Gray-light brown clay, trace of sand. A-1-19-Red-brown clay, trace of sand.	295

Note:

¹Equal weights composited by laboratory.

FROM BBPC SYR1
TO 14142638483
09/14/1990 13:43
P.09

TABLE 2
SHEBOYGAN RIVER AND HARBOR
ALTERNATIVE-SPECIFIC REMEDIAL INVESTIGATIONS

Summary of Post Cleanup Sediment Samples
(Cont'd.)

<u>Sediment Area</u>	<u>Sample Date</u>	<u>Number of Locations</u>	<u>Sample Depth (in)</u>	<u>Sample Type¹</u>	<u>Sample Description</u>	<u>Results PCB Total (ppm)</u>
2	8/21/90	1	0-3	Grab	A-2-12-Trace of dark brown to black fine and coarse sand, with silt on top of gray clay with a trace of red clay.	*

Notes:

¹Equal weights composited by laboratory.

*Analytical results not received this month, data to be forthcoming in an appropriate Status Report.

TABLE 3

**SHEBOYGAN RIVER AND HARBOR
ALTERNATE SPECIFIC REMEDIAL INVESTIGATION**

River Monitoring Data
(During Construction)

<u>Area</u>	<u>Date</u>	<u>Activity</u>	<u>Time</u>	<u>Location</u>	<u>Depth of Water (ft.)</u>	<u>Depth of Sample (ft.)</u>	<u>Turbidity Results (ntu)</u>	<u>Comments</u>
4	8/1/90	Dredging	11:10	100' Upstream	1.6	0.8	29	Same as Fixed W-16
			11:35	100' Downstream	3.0	1.5	28	
			11:10	Fixed W-16	1.6	0.8	29	
			11:20	Fixed W-12	3.6	1.8	35	
			11:00	Fixed W-2	1.5	0.7	59	
4	8/2/90	Dredging	8:30	100' Upstream	1.7	0.8	26	Same as Fixed W-16
			8:50	100' Downstream	2.5	1.2	26	
			8:30	Fixed W-16	1.7	0.8	26	
			8:55	Fixed W-12	2.5	1.2	42	
			8:45	Fixed W-2	1.5	0.7	76	
1	8/7/90	Bank and Sediment Excavation	14:15	100' Upstream	1.7	0.8	43	Upstream Downstream
			14:05	100' Downstream	2.0	1.0	42	
			13:55	Fixed W-11	1.0	0.5	43	
			14:10	Fixed W-16	2.0	1.0	42	
1	8/8/90	Bank and Sediment Excavation	14:40	100' Upstream	2.3	1.1	38	Upstream Downstream
			14:45	100' Downstream	2.3	1.1	39	
			14:30	Fixed W-11	1.0	0.5	34	
			14:45	Fixed W-16	1.8	0.9	34	
1	8/9/90	Dredging	11:00	100' Upstream	1.7	0.8	33	Upstream Downstream
			10:50	100' Downstream	2.5	1.2	32	
			10:35	Fixed W-11	1.0	0.5	33	
			10:45	Fixed W-16	1.9	0.9	32	

Note:

*Fixed location W-12 is downstream after confluence of the Sheboygan and Onion Rivers.

TABLE 3

**SHEBOYGAN RIVER AND HARBOR
ALTERNATE SPECIFIC REMEDIAL INVESTIGATION**

River Monitoring Data
(During Construction)
(Cont'd.)

<u>Area</u>	<u>Date</u>	<u>Activity</u>	<u>Time</u>	<u>Location</u>	<u>Depth of Water (ft.)</u>	<u>Depth of Sample (ft.)</u>	<u>Turbidity Results (ntu)</u>	<u>Comments</u>
1	8/10/90	Dredging	9:10	100' Upstream	1.5	0.7	29	
			9:00	100' Downstream	2.3	1.1	30	
			9:35	Fixed W-11	1.0	0.5	29	Upstream
			8:50	Fixed W-16	1.9	0.8	30	Downstream
1	8/13/90	Armoring Bank	14:55	100' Upstream	2.3	1.1	29	
			14:50	100' Downstream	2.5	1.2	29	
			15:00	Fixed W-11	1.0	0.5	30	Upstream
			14:45	Fixed W-16	1.9	0.9	29	Downstream
1	8/14/90	Armoring Bank	13:15	100' Upstream	1.2	0.6	23	
			13:05	100' Downstream	2.0	1.0	24	
			13:20	Fixed W-11	1.0	0.5	23	Upstream
			13:00	Fixed W-16	1.8	0.9	24	Downstream
1	8/15/90	Armoring Bank	8:40	100' Upstream	0.9	0.5	21	
			8:35	100' Downstream	2.0	1.0	20	
			9:20	Fixed W-11	0.8	0.4	20	Upstream
			8:20	Fixed W-16	1.8	0.9	20	Downstream
2	8/17/90	Dredging	12:15	100' Upstream	1.5	0.7	22	
			12:10	100' Downstream	2.5	1.2	30	
			12:20	Fixed W-11	1.3	0.6	22	Upstream
			12:05	Fixed W-16	2.1	1.0	28	Downstream

TABLE 3

SHEBOYGAN RIVER AND HARBOR
ALTERNATE SPECIFIC REMEDIAL INVESTIGATION

River Monitoring Data
(During Construction)
(Cont'd.)

<u>Area</u>	<u>Date</u>	<u>Activity</u>	<u>Time</u>	<u>Location</u>	<u>Depth of Water (ft.)</u>	<u>Depth of Sample (ft.)</u>	<u>Turbidity Results (ntu)</u>	<u>Comments</u>
2	8/20/90*	Dredging	13:23	100' Upstream	4.0	2.0	46	
			13:20	100' Downstream	5.0	2.5	47	
			13:25	Fixed W-11	2.5	1.2	46	Upstream
			13:10	Fixed W-16	4.0	2.0	47	Downstream
2	8/21/90	Dredging	11:15	100' Upstream	2.5	1.2	39	
			10:00	100' Downstream	3.5	1.7	43	
			9:40	Fixed W-11	2.3	1.1	40	Upstream
			10:05	Fixed W-16	3.5	1.7	39	Downstream

Note:

*Rain over weekend. River up 2 feet.

TABLE 4
SHEBOYGAN RIVER AND HARBOR
ALTERNATE SPECIFIC REMEDIAL INVESTIGATION

Weekly PCB/TSS/Turbidity River Monitoring

<u>Sample Date</u>	<u>Week</u>	<u>Activity</u>	<u>Time</u>	<u>Sample Location</u>	<u>Location</u>	<u>Depth of Water (ft)</u>	<u>Depth of Sample (ft)</u>	<u>Filtered PCB (ppb)</u>	<u>Total PCB (ppb)</u>	<u>TSS (mg/l)</u>	<u>Turbidity (ntu)</u>
6/21/90	6/17-6/23/90	Excavation	9:30	W-11	Upstream	1.2	0.6	<.05	<.05	39.3	34.0
			10:00	W-16	Downstream	2.5	1.2	<.05	<.05	45.4(dup) 43.8	34.0
			10:10	W-15	Downstream of all areas	3.6	1.5	.09	.14	43.2(dup) 42.3 38.9(dup)	34.0
6/27/90	6/24-6/30/90	None-High Flow Due to Rain	13:30	W-11	Upstream	1.0	0.5	<.05	<.05	50.7	30.0
			13:45	W-16	Downstream	2.5	1.7	<.05	<.05	52.0(dup) 49.7 48.2(dup)	32.0
7/5/90	7/1-7/7/90	Dredging	13:25	W-11	Upstream	1.0	0.5	<.05	<.05	41.2	35
			14:10	W-16	Downstream	2.2	1.0	.05	.08	41.4(dup) 46.2	36
			14:20	W-15	Downstream All Activity	3.2	1.5	<.05(dup) .08	.07(dup) .23	41.4(dup) 69.8 58.4(dup)	51
7/12/89	7/8-7/14/90	Dredging	13:40	W-11	Upstream	1.5	0.7	<.05	<.05	58.0	44
			14:05	W-16	Downstream	2.1	1.0	<.05	<.05	57.9(dup) 60.4 60.0(dup)	42

TABLE 4

**SHEBOYGAN RIVER AND HARBOR
ALTERNATE SPECIFIC REMEDIAL INVESTIGATION**

Weekly PCB/TSS/Turbidity River Monitoring
(Cont'd.)

<u>Sample Date</u>	<u>Week</u>	<u>Activity</u>	<u>Time</u>	<u>Sample Location</u>	<u>Location</u>	<u>Depth of Water (ft)</u>	<u>Depth of Sample (ft)</u>	<u>Filtered PCB (ppb)</u>	<u>Total PCB (ppb)</u>	<u>TSS (mg/l)</u>	<u>Turbidity (ntu)</u>	
7/19/90	7/15-7/21/90	Dredging	10:30	W-11	Upstream	1.1	0.5	<.05	<.05	44.2	37	
			10:55	W-16	Downstream	2.0	1.0	<.05	.06	44.2(dup)	37	
		Dredging	11:10	W-15	Downstream	3.5	1.4	<.05(dup)	.06(dup)	43.0(dup)	45	
			All Activity						.07 ¹	<.05	52.0	45
									52.8(dup)			
7/25/90	7/22-7/28/90	Dredging	13:50	W-16	Upstream	1.8	0.9	<.05	.06	50	36	
			14:00	W-12	Downstream	3.0	1.5	.05	.07	50.2(dup)	46	
			13:45	W-2	Upstream Onion River	1.5	0.7	<.05	<.05	68.0	63	
									100	63		
									100(dup)			
8/1/90	7/29-8/4/90	Dredging	11:10	W-16	Upstream	1.6	0.8	<.05	.27 ²	32.6	29	
			11:20	W-12	Downstream	3.6	1.8	<.05(dup)	.11 ² (dup)	33.6(dup)	35	
									.05	.07	25.2	35
											40.2(dup)	
			11:00	W-2	Upstream Onion River	1.5	0.7	<.05	<.05	64.2	59	
			11:30	W-15	Downstream	3.0	1.5	.08	.34	69.2(dup)	43	
					All Activity					51.4	43	
										49.8(dup)		

Notes:

¹Filtered PCB concentration exceeds total PCBs. Possible field or laboratory error.

²Both Aroclors 1242 and 1254 were detected in original sample at concentrations of 0.19 and 0.08 ppb, respectively. Only Aroclor 1242 was detected in the duplicate (0.11 ppb).

TABLE 4

**SHEBOYGAN RIVER AND HARBOR
ALTERNATE SPECIFIC REMEDIAL INVESTIGATION**

Weekly PCB/TSS/Turbidity River Monitoring
(Cont'd.)

<u>Sample Date</u>	<u>Week</u>	<u>Activity</u>	<u>Time</u>	<u>Fixed Location</u>	<u>Location</u>	<u>Depth of Water (ft)</u>	<u>Depth of Sample (ft)</u>	<u>Filtered PCB (ppb)</u>	<u>Total PCB (ppb)</u>	<u>TSS (mg/l)</u>	<u>Turbidity (ntu)</u>
8/8/90	8/5-8/11/90	Dredging Bank and Sediment Area	14:30	W-11	Upstream	1.0	0.5	*	*	*	34
			14:45	W-16	Downstream	1.8	0.9	*	*	*	34
8/15/90	8/12-8/18/90	Armoring Bank Area	9:20	W-11	Upstream	0.8	0.4	*	*	*	20
			8:20	W-16	Downstream	1.8	0.9	*	*	*	20
			8:30	W-15	Downstream	3.5	1.5	*	*	*	38
		All Activity									
8/22/90	8/19-8/25/90	Dredging Area #2	14:50	W-11	Upstream	1.8	0.9	*	*	*	36
			15:00	W-16	Downstream	3.2	1.6	*	*	*	36

Note:

*Analytical results not received this month, data to be forthcoming in an appropriate Status Report.

**TABLE 5
SHEBOYGAN RIVER AND HARBOR
ALTERNATIVE SPECIFIC REMEDIAL INVESTIGATION**

Summary of Armored Area Sampling

<u>Armored Area</u>	<u>Date</u>	<u>Time</u>	<u>Water Depth (ft)</u>	<u>Sediment Depth (ft)</u>	<u>Sediment Recovered (ft)</u>	<u>Sample Segmented (in)</u>	<u>Description</u>	<u>PCB Total (ppm)</u>
7	8/22/90	8:20	2.3	3.3	1.8	0-6	0-2' Muck brown loose silt. 2-6' Fine black & dark brown sand, trace of silt, wood.	*
						6-12	6-8' Gray dark brown silt. 8-12' coarse gray brown sand with small gravel and shell fragments.	
						12-18	Gray-dark brown coarse sand and small gravel.	
						18-22	Large gravel mixed with coarse sand.	
8	8/22/90	8:30	2.9	1.9	1.3	0-6	Fine dark brown to black loose silt with organic material, organic odor.	*
						6-12	Fine dark brown stiff silt with plant material, gray sand at bottom.	
						12-16	Gray fine and coarse sand, trace shells.	

Note:

Samples sent to Northeast Analytical for congener specific PCB analyses. Samples composited in field.

FROM BBPC SYR1
09/14/1990 13:46
P.17

TABLE 5
SHEBOYGAN RIVER AND HARBOR
ALTERNATIVE SPECIFIC REMEDIAL INVESTIGATION

Summary of Armored Area Sampling
(Cont'd.)

<u>Armored Area</u>	<u>Date</u>	<u>Time</u>	<u>Water Depth (ft)</u>	<u>Sediment Depth (ft)</u>	<u>Sediment Recovered (ft)</u>	<u>Sample Segmented (in)</u>	<u>Description</u>	<u>PCB Total (ppm)</u>
10	8/22/90	8:40	2.5	2.4	1.8	0-6	Black soft silt with trace sand, then gray fine sand with trace silt.	*
						6-12	Gray fine sand, shells, and wood chips.	
						12-18	White large gravel with fine gray sand with a layer of plant material.	
						18-22	Brown fine sand with trace small gravel then changing to a soft brown silt.	
11	8/22/90	8:55	2.9	2.1	1.6	0-6	Coarse light brown sand and gravel on top of dark brown to black sand with plant material.	*
						6-12	Fine dark brown sand with trace silt and dead vegetation changing to black fine silt and sand with dead vegetation.	
						12-17	Black soft silt with sand, changing to black coarse sand and small gravel, strong organic odor.	
						17-19	Brown soft sand with shells, some silt, small gravel and coarse sand at bottom.	

Note:

Samples sent to Northeast Analytical for congener specific PCB analyses. Samples composited in field.

TABLE 8

**SHEBOYGAN RIVER AND HARBOR
ALTERNATIVE SPECIFIC REMEDIAL INVESTIGATION**

Summary of Water Removed from
Leak Detection Systems (gals)

Date	Cell No.			
	1	2	3	4
8/1/90	120	*	0	18
8/3/90	140	0	0	10
8/4/90	120	0	0	0
8/5/90	140	0	0	0
8/6/90	115	0	0	20
8/7/90	125	0	0	10
8/8/90	132	0	0	18
8/13/90	135	*	*	*
8/14/90	130	0	0	110
8/15/90	133	0	0	120
8/16/90	122	0	0	44
8/17/90	115	0	0	40
8/19/90	120	0	0	55
8/20/90	142	0	0	140
8/21/90	110	0	0	140
8/23/90	230	0	0	525
8/24/90	77	0	0	407
8/25/90	130	0	0	430
8/26/90	140	0	0	470
8/27/90	135	0	0	435
8/28/90	140	0	0	438
8/29/90	130	0	8	435
8/30/90	145	0	0	450
8/31/90	145	0	5	450

Notes:

*The LDS for this cell was not observed on the given date.

The volume of water removed from Cells 1 and 4 is rising due to the high water level within the respective cells.

TABLE 7
SHEBOYGAN RIVER AND HARBOR
ALTERNATIVE SPECIFIC REMEDIAL INVESTIGATION

Summary of Leaching Tests Conducted on
Permeable Treatment Wall Materials

Parameters	Sawdust & Supernatant	Sawdust & Deionized Water	Crumb Rubber & Supernatant	Crumb Rubber & Deionized Water	100 ml Supernatant	Peat Moss & Deionized Water
Color	750 Units	750 Units	80 Units	25 Units	80 Units	25 Units
Chemical Oxygen Demand (COD)	590	510	210	210	87	120
Total Organic Carbon (TOC)	230	74	65	61	30	32
Total Kjeldahl Nitrogen (TKN)	6.1	4.3	4.4	4.9	1.9	5.6
Total Cadmium	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Total Chromium	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Total Lead	0.007	0.014	0.018	0.052	0.004	0.002

Notes:

All results are expressed as mg/l unless otherwise stated.

The materials were obtained from different sources. The peat moss was supplied by Leisner Soils, Inc. of Jackson, WI. Teunissen Shavings of Cedar Grove, WI provided the sawdust, and the crumb rubber was furnished by Composition Materials of America.

TABLE 8
SHEBOYGAN RIVER AND HARBOR
ALTERNATIVE SPECIFIC REMEDIAL INVESTIGATION

Analysis of Water from Cell #3

pH	5.3 SU
Total Suspended Solids	140 mg/l
Total Volatile Solids	69% of Total Solids
Total Volatile Suspended Solids	64 mg/l
Total Organic Carbon	310 mg/l
Total Dissolved Solids	730 mg/l



BLASLAND & BOUCK ENGINEERS, P.C.

ENGINEERS & GEOSCIENTISTS

6723 Towpath Road, Box 66, Syracuse, New York 13214 (315) 446-9120

FAX: (315) 449-0017

August 14, 1990

Ms. Bonnie L. Eleder
Remedial Project Manager
USEPA
Region V
230 South Dearborn Street
Chicago, IL 60604

Re: Sheboygan River and Harbor

File: 176.07 #2

Dear Bonnie:

Enclosed please find, for your review, the July 1990 Status Report for activities associated with the above-referenced project.

Should you have any questions concerning the enclosed, please feel free to contact us.

Very truly yours,

BLASLAND & BOUCK ENGINEERS, P.C.

Dawn S Foster

Dawn S. Foster, P.E.
Manager, Engineering

DEP/nlg
Enclosure

cc: Mark A. Thimke, Esq., Foley & Lardner, w/encl.
Robin R. Schmidt, Wisconsin Department of Natural Resources, w/encl.
Francis J. Trcka, Wisconsin Department of Natural Resources, w/encl.
William H. Bouck, P.E., Blasland & Bouck Engineers, P.C.
Robert K. Goldman, P.E., Blasland & Bouck Engineers, P.C.

SHEBOYGAN RIVER AND HARBOR
MONTHLY STATUS REPORT

JULY 1990

1. Action Taken During this Time Period

- a. The following activities were conducted during July.
 - Armoring and removal activities in the Sheboygan River continued.
 - Floodplain soil sampling occurred during the week of July 23, 1990.
 - The CWTF was tested for leakage using potable water.
 - Settleability tests were performed on the harbor sediments during the week of July 16, 1990. Results will be included in the appropriate status report provided upon receipt.
- b. No meetings were held in July.

2. EPA Decisions

- a. USEPA/WDNR approved the use of Area 1 water in the CWTF to test the backwash and treatment capability.
- b. USEPA provided verbal approval to proceed with the Area 1 sampling on July 31, 1990 as per the finalized Sampling Plan.

3. Results of Sampling and Tests

Data summaries for analytical results received during this month are attached as follows:

- a. Table 1 presents a summary of water removed from the leak detection system (LDS).
- b. Table 2 presents PCB (total and filtered), total suspended solids (TSS), and turbidity results from water column samples taken within curtained sediment areas after removal/armoring operations were complete.
- c. Post removal sediment sampling results are presented in Table 3.
- d. The daily water column monitoring data (turbidity) collected during river activities is presented in Table 4.
- e. The weekly PCB, TSS, and turbidity water column monitoring results for the period covering May 27 through July 25, 1990, are presented in Table 5.

- f. Table 6 presents the results of additional sampling in Areas 1 and 4.

The laboratory data sheets are presented in Attachment 1.

4. Anticipated Problems/Recommended Solutions

- None.

5. Problems Encountered/Resolved

- July 5, 1990, air was noted escaping from below the sediment in cell #4. As indicated in Table 1, 600 gallons of water was removed from the leak detection system (LDS) of cell #4. It is unclear what caused this to occur. The LDS was monitored closely for a number of days after the incident. USEPA's on-site representative was notified shortly after the discovery of the problem.
- July 9, 1990, a box accidentally tore the primary liner in aerobic cell #3 while unloading sediments. The tear was approximately one foot above the water level and was repaired by Geosynthetics Construction, Inc. of Waukesha, Wisconsin on July 17, 1990. The USEPA was notified shortly after the accident occurred.
- July 11, 1990 - discharge in the PTW of cell #3 appeared to be purplish black. A core taken from the PTW material showed that the sawdust layer was bright purple. It is suspected that tannic acid and/or humic decomposition is the cause of the color change. Samples of water were sent to the laboratory for analysis. Results will be included in the appropriate status report provided upon receipt.
- Northeast Analytical Laboratories did not composite the armored sediment cores properly. Therefore, it is necessary to resample the armored sediments for proper analysis.

6. Deliverables Submitted to USEPA/WDNR

Date Submitted

- | | |
|------------------------------|---------------|
| - Area 1 Final Sampling Plan | July 2, 1990 |
| - June Status Report | July 13, 1990 |
| - Final ASRI Work Plan/QAPP | July 16, 1990 |

7. Upcoming Events/Activities Planned

Sediment samples from the armoring ports will be resampled before the end of August.

8. Key Personnel Changes

- Dawn S. Foster, P.E., of Blasland & Bouck Engineers, P.C., will replace Robert K. Goldman, P.E., as designated Project Coordinator.

9. Schedule

- Anticipate minor activities related to the discharge piping and CWTF testing with water from cell #3.
- Anticipate all removal activities to be complete by the end of August.

TABLE 1
SHEBOYGAN RIVER AND HARBOR
ALTERNATIVE SPECIFIC REMEDIAL INVESTIGATION

Summary of Water Removed from
Leak Detection Systems (gals)

Date	Cell No.			
	1	2	3	4
7/2/90	292	*	*	*
7/5/90	*	0	5	600
7/6/90	230	0	2	60
7/9/90	270	5	0	80
7/11/90	230	10	0	20
7/13/90	235	10	0	20
7/17/90	140	0	3	30
7/20/90	350	10	0	30
7/23/90	290	2	0	30
7/24/90	140	2	0	16
7/25/90	135	*	*	12
7/26/90	145	*	*	15
7/27/90	210	0	0	15
7/28/90	190	*	*	15
7/29/90	120	*	*	15
7/30/90	110	0	0	30
7/31/90	105	0	0	15

Note:

*The LDS for this cell was not observed on the given date.

TABLE 2
SHEBOYGAN RIVER AND HARBOR
ALTERNATIVE SPECIFIC REMEDIAL INVESTIGATION

Summary of Post-Cleanup Water Samples Within Curtained Sediment Areas

<u>Sediment Area</u>	<u>Activity</u>	<u>Work Activity Ended</u>	<u>Curtains Removed</u>	<u>Date Sampled</u>	<u>Time</u>	<u>Number of Locations</u>	<u>Average Depth of Water (ft)</u>	<u>Average Depth of Sample (ft)</u>	<u>PCB Filtered (ppb)</u>	<u>PCB Total (ppb)</u>	<u>TSS (mg/l)</u>	<u>Turbidity (ntu)</u>
14	Excavation	5/24/90	5/30/90	5/29/90	11:25	2	5.0	2.5	<.05	<.05	14.7 14.3(dup)	13.0
7	Armoring	5/30/90	5/31/90	5/31/90	9:05	1	3.0	1.5	.08	.25	52.8 53.3(dup)	65.0
8 & 10 ¹	Armoring	5/31/90	6/1/90	6/1/90	7:30	3	4	2	<.05	.05	24.7 24.7(dup)	24.0

Note:

¹Sample composited in the field (equal volumes).

TABLE 3
SHEBOYGAN RIVER AND HARBOR
ALTERNATIVE-SPECIFIC REMEDIAL INVESTIGATIONS

Summary of Post Cleanup Sediment Samples

<u>Sediment Area</u>	<u>Sample Date</u>	<u>Number of Locations</u>	<u>Sample Depth (in)</u>	<u>Sample Type¹</u>	<u>Sample Description</u>	<u>Results PCB Total (ppm)</u>
14	5/24/90	2	0-3	Composite	A-14-3-Light brown clay. A-14-4-Light brown clay.	.14 .45(dup)
1	6/6/90	3	0-3	Composite	A-1-11-Tight fine red brown clay. A-1-12-Moist fine brown clay, trace sand. A-1-13-Tight fine red brown clay, trace sand.	192
2	7/12/90	8	0-3	Composite	A-2-1-Fine silt on top of fine sand, trace gravel. Strong organic odor, oil sheen visible. A-2-2-Fine silt with some fine sand, organic odor, oil sheen visible.	*
				Composite	A-2-3-Gray-brown sand, trace silt, coarse sand and rocks. A-2-4-Gray-brown silt, trace gravel. A-2-5-Brown fine to coarse sand with gravel. A-2-7-Red-brown clay, trace silt, fine to coarse sand. A-2-8-Gray-brown coarse sand and gravel, some rocks and silt.	*
				Grab	A-2-6-Fine silt and sand, trace gravel and rocks. Organic odor, oil sheen visible.	*

Notes:

¹Equal weights composited by laboratory.

*Analytical results not received in July, data to be forthcoming in August Status Report.

TABLE 3
SHEBOYGAN RIVER AND HARBOR
ALTERNATIVE-SPECIFIC REMEDIAL INVESTIGATIONS

Summary of Post Cleanup Sediment Samples
(Cont'd.)

<u>Sediment Area</u>	<u>Sample Date</u>	<u>Number of Locations</u>	<u>Sample Depth (in)</u>	<u>Sample Type¹</u>	<u>Sample Description</u>	<u>Results PCB Total (ppm)</u>
2	7/25/90	3	0-3	Composite	A-2-9-Brown-gray coarse sand and gravel. A-2-10-Brown-gray fine to coarse sand with gravel.	*
				Grab	A-2-11-Brown-gray fine to coarse sand with gravel.	*
3	7/19/90	2	0-3	Composite	A-3-1-Brown-gray silt with sand and gravel. A-3-2-Gray-brown silt and fine sand with gravel and plant material.	*

Notes:

¹Equal weights composited by laboratory.

*Analytical results not received in July, data to be forthcoming in August Status Report.

TABLE 4

SHEBOYGAN RIVER AND HARBOR
ALTERNATE SPECIFIC REMEDIAL INVESTIGATION

River Monitoring Data
(During Construction)

<u>Area</u>	<u>Date</u>	<u>Activity</u>	<u>Time</u>	<u>Location</u>	<u>Depth of Water (ft.)</u>	<u>Depth of Sample (ft.)</u>	<u>Turbidity Results (ntu)</u>	<u>Comments</u>
2	7/2/90	Dredging	14:10	100' Upstream	2.5	1.0	52	
			14:00	100' Downstream	2.5	1.0	54	
			14:20	Fixed W-11	2.0	1.0	52	Upstream
			14:30	Fixed W-16	3.0	1.5	52	Downstream
2	7/3/90	Dredging	10:55	100' Upstream	2.5	1.0	45	
			10:50	100' Downstream	2.5	1.0	46	
			10:15	Fixed W-11	1.0	0.5	44	Upstream
			10:25	Fixed W-16	2.3	1.0	45	Downstream
2	7/5/90	Dredging	13:45	100' Upstream	1.0	0.5	36	
			13:50	100' Downstream	3.3	1.5	38	
			13:25	Fixed W-11	1.0	0.5	35	Upstream
			14:10	Fixed W-16	2.2	1.0	36	Downstream
2	7/6/90	Dredging	10:05	100' Upstream	2.0	1.0	42	
			10:20	100' Downstream	2.5	1.0	48	
			9:50	Fixed W-11	1.2	0.6	43	Upstream
			9:55	Fixed W-16	2.0	1.0	43	Downstream
2	7/9/90	Dredging	13:25	100' Upstream	2.0	1.0	39	
			13:35	100' Downstream	2.5	1.0	43	
			13:10	Fixed W-11	1.2	0.6	40	Upstream
			13:20	Fixed W-16	2.2	1.1	40	Downstream

TABLE 4
SHEBOYGAN RIVER AND HARBOR
ALTERNATE SPECIFIC REMEDIAL INVESTIGATION

River Monitoring Data
(During Construction)
(Cont'd.)

<u>Area</u>	<u>Date</u>	<u>Activity</u>	<u>Time</u>	<u>Location</u>	<u>Depth of Water (ft.)</u>	<u>Depth of Sample (ft.)</u>	<u>Turbidity Results (ntu)</u>	<u>Comments</u>
2	7/10/90	Dredging	10:30	100' Upstream	2.0	1.0	42	
			10:15	100' Downstream	2.5	1.3	47	
			9:50	Fixed W-11	1.5	0.7	43	Upstream
			10:00	Fixed W-16	2.1	1.0	43	Downstream
3	7/12/90	Dredging	14:30	100' Upstream	1.2	0.6	42	
			14:25	100' Downstream	1.8	0.9	43	
			13:40	Fixed W-11	1.5	0.7	44	Upstream
			14:05	Fixed W-16	2.1	1.0	42	Downstream
3	7/13/90	Dredging	8:35	100' Upstream	1.1	0.5	48	
			8:30	100' Downstream	2.3	1.1	48	
			9:00	Fixed W-11	1.2	0.6	47	Upstream
			8:25	Fixed W-16	2.1	1.0	47	Downstream
3	7/16/90	Dredging	10:35	100' Upstream	1.0	0.5	44	
			10:40	100' Downstream	2.2	1.1	43	
			10:25	Fixed W-11	1.2	0.6	43	Upstream
			10:35	Fixed W-16	2.0	1.0	44	Downstream
2	7/17/90	Dredging	11:00	100' Upstream	1.5	0.7	40	
			10:50	100' Downstream	2.5	1.0	44	
			11:10	Fixed W-11	1.2	0.6	40	Upstream
			10:55	Fixed W-16	2.1	1.0	40	Downstream

TABLE 4

SHEBOYGAN RIVER AND HARBOR
ALTERNATE SPECIFIC REMEDIAL INVESTIGATION

River Monitoring Data
(During Construction)
(Cont'd.)

<u>Area</u>	<u>Date</u>	<u>Activity</u>	<u>Time</u>	<u>Location</u>	<u>Depth of Water (ft.)</u>	<u>Depth of Sample (ft.)</u>	<u>Turbidity Results (ntu)</u>	<u>Comments</u>
2	7/18/90	Dredging	10:10	100' Upstream	1.2	0.6	40	
			10:00	100' Downstream	2.5	1.2	42	
			9:45	Fixed W-11	1.2	0.6	40	Upstream
			9:55	Fixed W-16	2.0	1.0	40	Downstream
4	7/23/90	Dredging	14:00	100' Upstream	2.0	1.0	40	Same as Fixed W-16
			14:10	100' Downstream	2.5	1.3	40	
			14:00	Fixed W-16	2.0	1.0	40	Upstream
			14:15	Fixed W-12*	2.5	1.3	57	Downstream*
			14:05	Fixed W-2	2.3	1.1	65	Onion River
			16:00	Fixed W-2	1.5	0.7	68	Onion River Upstream of bridge construction Highway PP
4	7/24/90	Dredging	13:50	100' Upstream	2.0	1.0	40	Same as Fixed W-16
			14:00	100' Downstream	2.8	1.4	40	
			13:50	Fixed W-16	2.0	1.0	40	Upstream
			14:05	Fixed W-12*	2.5	1.3	53	Downstream*
			13:55	Fixed W-2	2.5	1.3	66	Onion River

Note:

*Fixed location W-12 is downstream after confluence of the Sheboygan and Onion Rivers.

TABLE 4

SHEBOYGAN RIVER AND HARBOR
ALTERNATE SPECIFIC REMEDIAL INVESTIGATION

River Monitoring Data
(During Construction)
(Cont'd.)

<u>Area</u>	<u>Date</u>	<u>Activity</u>	<u>Time</u>	<u>Location</u>	<u>Depth of Water (ft.)</u>	<u>Depth of Sample (ft.)</u>	<u>Turbidity Results (ntu)</u>	<u>Comments</u>	
4	7/25/90	Dredging	13:50	100' Upstream	1.8	0.9	36	Same as Fixed W-16	
			14:05	100' Downstream	3.0	1.5	36		
			13:50	Fixed W-16	1.8	0.9	36		Upstream
			14:00	Fixed W-12*	3.0	1.5	46		Downstream*
			13:45	Fixed W-2	1.5	0.7	63		Onion River
4	7/26/90	Dredging	10:30	100' Upstream	1.8	0.9	33	Same as Fixed W-16	
			10:45	100' Downstream	2.5	1.2	33		
			10:30	Fixed W-16	1.8	0.9	33		Upstream
			11:20	Fixed W-12*	3.0	1.5	62		Downstream*
			10:35	Fixed W-2	1.5	0.7	84		Onion River
4	7/27/90	Dredging	10:50	100' Upstream	1.8	0.9	29	Same as Fixed W-16	
			11:25	100' Downstream	2.5	1.2	29		
			10:50	Fixed W-16	1.8	0.9	29		Upstream
			10:55	Fixed W-12*	2.5	1.2	37		Downstream*
			11:20	Fixed W-2	1.5	0.7	62		Onion River
4	7/30/90	Dredging	11:10	100' Upstream	1.8	0.9	35	Same as Fixed W-16	
			11:40	100' Downstream	2.5	1.2	35		
			11:10	Fixed W-16	1.8	0.9	35		Upstream
			11:20	Fixed W-12*	3.0	1.5	76		Downstream*
			11:30	Fixed W-2	1.5	0.7	73		Onion River

Note:

*Fixed location W-12 is downstream after confluence of the Sheboygan and Onion Rivers.

TABLE 4

SHEBOYGAN RIVER AND HARBOR
ALTERNATE SPECIFIC REMEDIAL INVESTIGATION

River Monitoring Data
(During Construction)
(Cont'd.)

<u>Area</u>	<u>Date</u>	<u>Activity</u>	<u>Time</u>	<u>Location</u>	<u>Depth of Water (ft.)</u>	<u>Depth of Sample (ft.)</u>	<u>Turbidity Results (ntu)</u>	<u>Comments</u>
4	7/31/90	Dredging	10:40	100' Upstream	1.7	0.8	37	Same as Fixed W-16
			11:10	100' Downstream	2.5	1.2	35	
			10:40	Fixed W-16	1.7	0.8	37	Upstream
			10:45	Fixed W-12*	2.5	1.2	52	Downstream*
			11:05	Fixed W-2	1.5	0.7	59	Onion River

Note:

*Fixed location W-12 is downstream after confluence of the Sheboygan and Onion Rivers.

TABLE 5
SHEBOYGAN RIVER AND HARBOR
ALTERNATIVE-SPECIFIC REMEDIAL INVESTIGATION

Weekly PCB/TSS/Turbidity River Monitoring

<u>Sample Date</u>	<u>Week</u>	<u>Activity</u>	<u>Time</u>	<u>Sample Location</u>	<u>Location</u>	<u>Depth of Water (ft)</u>	<u>Depth of Sample (ft)</u>	<u>Filtered PCB (ppb)</u>	<u>Total PCB (ppb)</u>	<u>TSS (mg/l)</u>	<u>Turbidity (ntu)</u>
5/30/90	5/27-6/2/90	Dredging (Area 1)	11:15	W-11	Upstream	1.5	0.5	<.05	<.05	35	25.0
			12:40	W-2	Upstream	3.5	1.5	.14	<.05	37.5	26.0
		12:50	W-15	Downstream	4.5	2.0	<.05	.16	41.4	28.0	
		Armoring (Area 7)						.06(dup)	.19(dup)	40.7(dup)	
6/7/90	6/3-6/9/90	No Dredging or Armoring Sampling	11:25	W-12	Upstream	5.0	2.5	.18	.15	35.8	27.0
			11:35	W-15	Downstream	3.8	1.5	.11	.13	34.4	25.0
								.11(dup)	.15(dup)	35.3(dup)	
6/12/90	6/10-6/16/90	No Dredging or Armoring Sampling	11:20	W-12	Upstream	4.8	2.0	.05	.06	26.4	20.0
			11:30	W-15	Downstream	3.6	1.5	.05	.12	25.5(dup)	24.4
								.06(dup)	.11(dup)	23.7(dup)	
6/21/90	6/17-6/23/90	Excavation	9:30	W-11	Upstream	1.2	0.6	*	*	*	34.0
			10:00	W-16	Downstream	2.5	1.2	*	*	*	34.0
			10:10	W-15	Downstream of all areas	3.6	1.5	*	*	*	34.0
6/27/90	6/24-6/30/90	None-High Flow Due to Rain	13:30	W-11	Upstream	1.0	0.5	*	*	*	30.0
			13:45	W-16	Downstream	2.5	1.7	*	*	*	32.0

Note:

*Analytical results not received in July, data to be forthcoming in August Status Report.

TABLE 5
SHEBOYGAN RIVER AND HARBOR
ALTERNATIVE-SPECIFIC REMEDIAL INVESTIGATION

Weekly PCB/TSS/Turbidity River Monitoring
(Cont'd.)

<u>Sample Date</u>	<u>Week</u>	<u>Activity</u>	<u>Time</u>	<u>Sample Location</u>	<u>Location</u>	<u>Depth of Water (ft)</u>	<u>Depth of Sample (ft)</u>	<u>Filtered PCB (ppb)</u>	<u>Total PCB (ppb)</u>	<u>TSS (mg/l)</u>	<u>Turbidity (ntu)</u>
7/5/90	7/1-7/7/90	Dredging	13:25	W-11	Upstream	1.0	0.5	*	*	*	35
			14:10	W-16	Downstream	2.2	1.0	*	*	*	36
			14:20	W-15	Downstream	3.2	1.5	*	*	*	51
All Activity											
7/12/89	7/8-7/14/90	Dredging	13:40	W-11	Upstream	1.5	0.7	*	*	*	44
			14:05	W-16	Downstream	2.1	1.0	*	*	*	42
7/19/90	7/15-7/21/90	Dredging	10:30	W-11	Upstream	1.1	0.5	*	*	*	37
			10:55	W-16	Downstream	2.0	1.0	*	*	*	37
		Dredging	11:10	W-15	Downstream	3.5	1.4	*	*	*	45
All Activity											
7/25/90	7/22-7/28/90	Dredging	13:50	W-16	Upstream	1.8	0.9	*	*	*	36
			14:00	W-12	Downstream	3.0	1.5	*	*	*	46
			13:45	W-2	Upstream	1.5	0.7	*	*	*	63
Onion River											

Note:

*Analytical results not received in July, data to be forthcoming in August Status Report.

TABLE 6
SHEBOYGAN RIVER AND HARBOR
ALTERNATIVE SPECIFIC REMEDIAL INVESTIGATION

Summary of Additional Sampling

<u>Area</u>	<u>Location</u>	<u>Date</u>	<u>Time</u>	<u>Water Depth (ft)</u>	<u>Sediment Depth (ft)</u>	<u>Sediment Recovered (ft)</u>	<u>Sample Segmented (in)</u>	<u>Description</u>	<u>PCB Total (ppm)</u>
4	A-4	6/7/90	11:45	0.4	1.0	0.7	0-8.4	0"-6"-Light brown silt 6"-7.2"-Dark brown to black silt. Strong organic odor 7.2"-8.4"-Light brown medium to coarse sand	2,250
1	A-1-8	5/25/90	9:00	0	1.5	1.5	0-6	Fine brown silt, plant material	43
							6-12	Fine brown silt, plant material, some brown sand	3,390
							12-18	Brown fine silt with roots, wet at bottom. Ground water reached	4,700
1	A-1-9	5/25/90	9:30	0	4	4	0-6	Fine brown silt, roots	18.4
							6-12	Fine brown silt, roots	68
							12-24	Fine brown silt, roots	2.25
							24-36	Fine brown silt roots, wet silt. Ground water reached	.85 .33(dup)
							36-48	Fine dark brown sand	.239
1	A-1-10	5/25/90	10:00	0	3	3	0-6	Dark brown silt, plant material	3.1
							6-12	Dark brown silt, plant material	3.2
							12-24	Dark brown silt, plant material	.195
							24-36	Dark brown silt, trace sand	.28

ATTACHMENT 1
LABORATORY DATA SHEETS

BLASLAND AND BOUCK
SHEBOYGAN RIVER PROJECT SEDIMENT
PROJECT # 884.01
PCB ANALYSIS

SAMPLE NUMBER	SAMPLE LOCATION	DATE RECEIVED	DATE EXTRACTED	% Mois	PCB-1242 ug/Kg	PCB-1248 ug/Kg	PCB-1254 ug/Kg	TOTAL ug/Kg
00505550	A-14-3,4;0-3"	05/29/90	05/29/90	27.5	140	<69	<69	140
00505551 (MS)	A-14-3,4;0-3"	05/29/90	05/29/90	26.3	4000	<68	<68	4000
00505552 (DUP)	A-14-3,4;0-3"	05/29/90	05/29/90	25.7	450	<68	<68	450
00505556	A-1-8;0-6"	05/29/90	05/29/90	40.1	<8400	25000	18000	43000
00505557	A-1-8;6-12"	05/29/90	05/29/90	41.4	<430000	2400000	990000	3390000
00505558	A-1-8;12-18"	05/29/90	05/29/90	44.9	<450000	1600000	3100000	4700000
00505559	A-1-9;0-6"	05/29/90	05/29/90	35.4	<7800	8800	9600	18400
00505560	A-1-9;6-12"	05/29/90	05/29/90	30.1	<7200	39000	29000	68000
00505561	A-1-9;12-24"	05/29/90	05/29/90	21.2	<320	1600	650	2250
00505562	A-1-9;24-36"	05/29/90	05/29/90	25.1	<67	500	350	850
00505563 (DUP)	A-1-9;24-36"	05/29/90	05/29/90	21.5	<64	220	110	330
00505564 (MS)	A-1-9;24-36"	05/29/90	05/29/90	22.6	5200	<65	470	5670
00505565	A-1-9;36-48"	05/29/90	05/29/90	22.9	<65	160	79	239
00505566	A-1-10;0-6"	05/29/90	05/29/90	30.0	<7200	<7200	3100	3100
00505567	A-1-10;6-12"	05/29/90	05/29/90	23.9	<660	<660	3200	3200
00505568	A-1-10;12-24"	05/29/90	05/29/90	16.5	<60	85	110	195
00505569	A-1-10;24-36"	05/29/90	05/29/90	17.3	<61	140	140	280
CONTROL SPIKE		—	05/29/90	—	<50	4000	3200	7200
METHOD BLANK I		—	05/29/90	—	<50	<50	<50	<50

Note: PCB-1016, PCB-1221, PCB-1232, and PCB-1260 not detected in any samples.

Note: The Control Spike was spiked with 5000 ug/Kg of Aroclor 1248 and Aroclor 1254. The percent recoveries were 80% and 64% respectively.

Note: The Matrix Spikes were spiked with 5000ug/Kg of Aroclor 1242. The percent recoveries for A-14-3,4;0-3" (00505551) and A-1-9;24-36" (00505564) were 74% and 97% respectively.

BLASLAND AND BOUCK
SHEBOYGAN HARBOR PROJECT--WATER
PROJECT # 884.01
PCB ANALYSIS

SAMPLE NUMBER	SAMPLE LOCATION	DATE REC'D	DATE EXT.	TSS mg/L	PCB-1242 ug/L	PCB-1248 ug/L
00506246	W-11; Total	05/31/90	5/31/90	35.0	<0.05	<0.05
00506248 (MS)	W-11; Total (MS)	05/31/90	5/31/90		<0.05	0.21
00506249	W-11; Filtered	05/31/90	5/31/90		<0.05	<0.05
00506250 (MS)	W-11; Filtered (MS)	05/31/90	5/31/90		<0.05	0.18
00506251	W-2; Total	05/31/90	5/31/90	37.5	<0.05	<0.05
00506253	W-2; Filtered	05/31/90	5/31/90		0.14	<0.05
00506254	W-15; Total	05/31/90	5/31/90	41.4	0.16	<0.05
00506255 (Dup)	W-15; Total (Dup)	05/31/90	5/31/90	40.7	0.19	<0.05
00506256	W-15; Filtered	05/31/90	5/31/90		<0.05	<0.05
00506257 (Dup)	W-15; Filtered (Dup)	05/31/90	5/31/90		0.06	<0.05
00506258	Field Blank; Total	05/31/90	5/31/90		<0.05	<0.05
00506259	Field Blank; Total	05/31/90	5/31/90		<0.05	<0.05
00502660	A-14 Total	05/31/90	5/31/90	14.7	<0.05	<0.05
00502662	A-14 Filtered	05/31/90	5/31/90		<0.05	<0.05
00601875	A-7 Total	06/05/90	6/05/90	52.8	0.25	<0.05
00601877	A-7 Filtered	06/05/90	6/05/90		0.08	<0.05
00601878	A-10 Total	06/05/90	6/05/90	24.7	0.05	<0.05
00601880	A-10 Filtered	06/05/90	6/05/90		<0.05	<0.05
Control Spike I	PCB		5/31/90		0.36	<0.05
Control Spike II	PCB		6/05/90		0.41	<0.05
Method Blank I	PCB		5/31/90		<0.05	<0.05
Method Blank II	PCB		6/05/90		<0.05	<0.05
00506247 (Dup)	W-11 (Dup)	05/31/90		35.9		
00506252 (Dup)	W-2 (Dup)	05/31/90		30.2		
00506261 (Dup)	A-14 (Dup)	05/31/90		14.3		
00601876 (Dup)	A-7 (Dup)	06/05/90		53.3		
00601879 (Dup)	A-10 (Dup)	06/05/90		24.7		
Method Blank I	TSS			<1.0		
Method Blank II	TSS			<1.0		
Method Blank III	TSS			<1.0		
Method Blank IV	TSS			<1.0		

Note: PCB-1016, PCB-1221, PCB-1232, PCB-1254, and PCB-1260 not detected in any samples.

Note: The Control Spikes were fortified with 0.5 ug/L of Aroclor 1242.
The percent recoveries for Control Spike I, and Control Spike II were 72% and 82% respectively.

Note: The Matrix Spikes were fortified with 0.5 ug/L of Aroclor 1248.
The percent recoveries for W-11 Total (00506248) and W-11 Filtered (00506250) were 42% and 36% respectively.

BLASLAND AND BOUCK
SHEBOYGAN HARBORAN HARBOR PROJECT--WATER
PROJECT # 884.01
PCB ANALYSIS

SAMPLE NUMBER	SAMPLE LOCATION	DATE RECEIVED	DATE EXTRACTED	TSS mg/L	PCB-1242 ug/L	PCB-1248 ug/L
00603023	W-12 Total	06/08/90	06/08/90		0.15	<0.05
00603025 (MS)	W-12 Total (MS)	06/08/90	06/08/90		<0.05	0.57
00603026	W-12 Filtered	06/08/90	06/08/90		0.18	<0.05
00603027 (MS)	W-12 Filtered (MS)	06/08/90	06/08/90		<0.05	0.51
00603028	W-15 Total	06/08/90	06/08/90		0.13	<0.05
00603029 (Dup)	W-15 Total (Dup)	06/08/90	06/08/90		0.15	<0.05
00603030	W-15 Filtered	06/08/90	06/08/90		0.11	<0.05
00603031 (Dup)	W-15 Filtered (Dup)	06/08/90	06/08/90		0.11	<0.05
00603032	Field Blank Total	06/08/90	06/08/90		<0.05	<0.05
00603033	Field Blank Filtered	06/08/90	06/08/90		<0.05	<0.05
00604607	Field Blank Total	06/14/90	06/14/90		<0.05	<0.05
00604608	Field Blank Filtered	06/14/90	06/14/90		<0.05	<0.05
00604609	W-12 Total	06/14/90	06/14/90		0.06	<0.05
00604611 (MS)	W-12 Total (MS)	06/14/90	06/14/90		<0.05	0.41
00604612	W-12 Filtered	06/14/90	06/14/90		0.05	<0.05
00604613 (MS)	W-12 Filtered (MS)	06/14/90	06/14/90		<0.05	0.42
00604614	W-15 Total	06/14/90	06/14/90		0.12	<0.05
00604615 (Dup)	W-15 Total (Dup)	06/14/90	06/14/90		0.11	<0.05
00604616	W-15 Filtered	06/14/90	06/14/90		0.06	<0.05
00604617 (Dup)	W-15 Filtered (Dup)	06/14/90	06/14/90		0.06	<0.05
Control Spike III			06/08/90		0.51	<0.05
Control Spike IV			06/14/90		0.40	<0.05
Method Blank III	PCB		06/08/90		<0.05	<0.05
Method Blank IV	PCB		06/14/90		<0.05	<0.05
00603023	W-12 Total	06/08/90		35.8	<0.05	<0.05
00603024 (Dup)	W-12 Total (Dup)	06/08/90		34.7		
00603028	W-15 Total	06/08/90		34.4		
00603029 (Dup)	W-15 Total (Dup)	06/08/90		35.3		
00604609	W-12 Total	06/14/90		26.4		
00604610 (Dup)	W-12 Total (Dup)	06/14/90		25.5		
00604614	W-15 Total	06/14/90		24.4		
00604615 (Dup)	W-15 Total (Dup)	06/14/90		23.7		
Method Blank I	TSS			<1.0		
Method Blank II	TSS			<1.0		
Method Blank III	TSS			<1.0		
Method Blank IV	TSS			<1.0		

Note: PCB-1016, PCB-1221, PCB-1232, PCB-1254, and PCB-1260 not detected in any samples.

Note: The Control Spike was fortified with 0.50 ug/L of Aroclor 1242.
The percent recoveries for Control Spike III and Control Spike IV were 102% and 80% respectively.

Note: The percent recoveries for W-12 Total (00603025 MS), W-12 Filtered (00603027 MS), W-12 Total (00604611 MS), and W-12 Filtered (00604613 MS) were 89%, 69%, 74%, and 79% respectively.

BLASLAND AND BOUCK
SHEBOYGAN RIVER PROJECT--SEDIMENTS
PROJECT # 884.01
PCB ANALYSIS

SAMPLE NUMBER	SAMPLE LOCATION	DATE RECEIVED	DATE EXTRACTED	% Moist.	PCB-1242 ug/Kg	PCB-1248 ug/Kg	PCB-1254 ug/Kg
00603040	A-1-11, 12, 13; 0-3"	06/08/90	06/08/90	24.2	160000	<99000	32000
00603041	A-4; 0-0.7'	06/08/90	06/08/90	44.4	2100000	<270000	150000
00603042	A-4; 0-1'	06/08/90		41.6			
00603043	CTF-1; 0-1'	06/08/90		24.7			
00603044	CTF-2; 1-2'	06/08/90		26.8			
Control Spike			06/08/90		<3000	6300	3200
Method Blank			06/08/90		<3000	<3000	<3000

Note: PCB-1016, PCB-1221, PCB-1232, and PCB-1260 not detected in any samples.

Note: The Control Spike was fortified with 5000 ug/Kg of Aroclor 1248 and Aroclor 1254. The percent recoveries were 126% and 64% respectively.



BLASLAND & BOUCK ENGINEERS, P.C.

ENGINEERS & GEOSCIENTISTS

6723 Towpath Road, Box 66, Syracuse, New York 13214 (315) 446-9120

FAX: (315) 449-0017

July 13, 1990

Ms. Bonnie L. Eleder
Remedial Project Manager
USEPA
Region V
230 South Dearborn Street
Chicago, IL 60604

Re: Sheboygan River and Harbor

File: 176.07 #2

Dear Bonnie:

Enclosed please find, for your review, the June 1990 Status Report for activities associated with the above-referenced project.

Should you have any questions concerning the enclosed, please feel free to contact us.

Very truly yours,

BLASLAND & BOUCK ENGINEERS, P.C.

Dawn S. Foster, P.E.
Manager, Engineering

DEP/nlg
Enclosure

cc: Mark A. Thimke, Esq., Foley & Lardner, w/encl.
Robin R. Schmidt, Wisconsin Department of Natural Resources, w/encl.
Francis J. Trcka, Wisconsin Department of Natural Resources, w/encl.
William H. Bouck, P.E., Blasland & Bouck Engineers, P.C.
Robert K. Goldman, P.E., Blasland & Bouck Engineers, P.C.

SHEBOYGAN RIVER AND HARBOR
MONTHLY STATUS REPORT

JUNE 1990

1. Actions Taken During this Time Period

a. The following activities were conducted during June:

- Armoring and removal activities in the Sheboygan River continued (details have been presented during the biweekly construction coordination meetings).
- Access negotiations continued with the Kohler Company, as well as with landowners on the south side of the Sheboygan River.
- Park restoration activities were concluded this month.

b. The following meetings were held in June:

- June 1, 1990 - construction coordination meeting with USEPA and WDNR regarding project status and schedule.
- June 4, 1990 - meeting with Kohler regarding access agreement.
- June 26, 1990 - conference call with USEPA and WDNR regarding project status and schedule.

SHEBOYGAN RIVER AND HARBOR
MONTHLY STATUS REPORT

JUNE 1990

2. EPA Decisions

- a. The analytical laboratory had requested clarification concerning archiving of fish tissue samples (for possible reanalysis) from the fish monitoring program. Due to the large fish size, sample archiving requirements were discussed with the USEPA/WDNR. The USEPA/WDNR concurred that the laboratory should retain the original extract previously analyzed or if an insufficient amount remained, enough fish tissue to reanalyze, if this should be necessary in the future. All other fish tissue not needed to meet this requirement, could be discarded properly.
- b. USEPA requested that a composite of the sample obtained from area 4, for in-situ density, be submitted for PCB analysis. Based on the sample results, it was agreed to remove area 4 and place the sediment in the CTF.
- c. Based on post removal sampling results in area 1, it was proposed (and agreed by the agencies) to deal with both the curtained area and bank together, therefore the curtains would remain in place until the proposed additional sampling was conducted and a recommendation was put forth.
- d. Area 1 Additional Sampling Plan - approved by USEPA/WDNR with minor changes discussed during a phone conversation with B.L.

SHEBOYGAN RIVER AND HARBOR
MONTHLY STATUS REPORT

JUNE 1990

Eleder on June 26, 1990. Sampling was conducted on June 26 and 27, 1990.

- e. USEPA/WDNR suggested that wooden "mats" be placed in the river to minimize river bed disturbance while moving tracked equipment to south side of river for sediment removal at area 2. This was done.
- f. Based on a phone conversation with B.L. Eleder regarding outstanding issues associated with the congener specific analytical protocol, the protocol was approved on June 28, 1990. The final version of this protocol will be provided with the final ASRI Work Plan/QAPP.

3. Results of Sampling and Tests

Data summaries for analytical results received during this month are attached as follows:

- a. Table 1 presents a summary of water removed from the leak detection systems (LDS) during the month of June.
- b. Table 2 presents PCB (total and filtered), TSS, and turbidity results from water column samples taken within curtained sediment areas after removal/armoring operations were complete. The laboratory data sheets are presented in Attachment 1.

SHEBOYGAN RIVER AND HARBOR
MONTHLY STATUS REPORT

JUNE 1990

- c. Post removal sediment sampling results are presented in Table 3.
- d. The water column monitoring data (turbidity) collected during river activities is presented in Table 4.
- e. The weekly PCB, TSS, and turbidity water column monitoring results for the period covering May 20 through June 30, 1990, are presented in Table 5. The laboratory data sheets are presented in Attachment 1.
- f. Table 6 presents the results of calculations for in-situ sediment densities.

4. Anticipated Problems/Recommended Solutions

None.

5. Problems Encountered/Resolved

- June 25, 1990, river levels were up three to four feet due to four inches of rainfall over the weekend. Subsequently, river work was halted. Water topped the curtains at area 1 and the downstream portion of the curtain around area 2 was knocked down. On June

SHEBOYGAN RIVER AND HARBOR
MONTHLY STATUS REPORT

JUNE 1990

29, 1990, repairs began on the curtain at area 2. There was minor damage to restoration efforts in the Park also.

- An access agreement was in place for removal of sediments from area 2 on June 12, 1990.
- Access agreements were in place for removal of sediments from areas 3 and 4 on June 27, 1990.
- Sediment samples were obtained from armored areas for congener specific PCB analysis. Since the congener specific analytical protocol was not final at the time of sampling, USEPA agreed to send samples to laboratory for storage until the protocol was finalized (June 28, 1990).

6.	<u>Deliverables Submitted to USEPA/WDNR</u>	<u>Date Submitted</u>
-	Final RI/ES Report	6/1/90
-	May Status Report	6/14/90
-	Revised ASRI/QAPP	6/22/90
-	Additional Sampling Plan for area 1	6/22/90

SHEBOYGAN RIVER AND HARBOR
MONTHLY STATUS REPORT

JUNE 1990

7. Upcoming Events/Activities Planned

- Floodplain soil sampling tentatively scheduled for the week of July 23, 1990. This is subject to change should it not be possible to conduct this sampling while removal operations are in progress.

8. Key Personnel Changes

William A. Ayling of Blasland & Bouck will replace D.J. Hughes concerning Laboratory Quality Assurance of this project.

9. Schedule

- Anticipate minor activities related to the permeable treatment walls, discharge piping, etc., at the CTF to be completed in July.
- Anticipate removal activities at areas 2, 3, and 4 to be completed in July.

TABLE 1
SHEBOYGAN RIVER AND HARBOR
ALTERNATIVE SPECIFIC REMEDIAL INVESTIGATION

Summary of Water Removed from
Leak Detection Systems (gals)

<u>Date</u>	<u>Cell No.</u>			
	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>
6/1/90	90	0	0	5
6/6/90	420	0	2	8
6/8/90	190	0	0	4
6/11/90	390	0	2	4
6/13/90	200	0	2	5
6/14/90	System drained, volumes not quantified by technicians.			
6/15/90	90	0	0	5
6/18/90	309	0	5	5
6/19/90	95	0	0	8
6/22/90	400	0	2	7
6/25/90	292	*	*	*
6/27/90	280	*	*	*
6/29/90	292	*	*	*

Note:

*The LDS for this cell was not observed or water removed on the given date.

TABLE 2
SHEBOYGAN RIVER AND HARBOR
ALTERNATIVE SPECIFIC REMEDIAL INVESTIGATION

Summary of Post-Cleanup Water Samples Within Curtained Sediment Areas

<u>Sediment Area</u>	<u>Activity</u>	<u>Work Activity Ended</u>	<u>Curtains Removed</u>	<u>Date Sampled</u>	<u>Time</u>	<u>Number of Locations</u>	<u>Average Depth of Water (ft)</u>	<u>Average Depth of Sample (ft)</u>	<u>PCB Filtered (ppb)</u>	<u>PCB Total (ppb)</u>	<u>TSS (mg/l)</u>	<u>Turbidity (ntu)</u>
5A	Armoring	5/24/90	5/25/90	5/25/90	7:30	1	3.0	1.5	0.12	0.07	17.9 16.5(dup)	25.0
14	Excavation	5/24/90	5/30/90	5/29/90	11:25	2	5.0	2.5	*	*	*	13.0
7	Armoring	5/30/90	5/31/90	5/31/90	9:05	1	3.0	1.5	*	*	*	65.0

Note:

*Analytical results not received in June, data to be forthcoming in July Status Report.

TABLE 3
SHEBOYGAN RIVER AND HARBOR
ALTERNATIVE-SPECIFIC REMEDIAL INVESTIGATIONS

Summary of Post Cleanup Sediment Samples

<u>Sediment Area</u>	<u>Sample Date</u>	<u>Number of Locations</u>	<u>Sample Depth (in)</u>	<u>Sample Type¹</u>	<u>Sample Description</u>	<u>Results PCB Total (ppm)</u>
14	5/24/90	2	0-3	Composite	A-14-3-Light brown clay. A-14-4-Light brown clay.	*
1	6/6/90	3	0-3	Composite	A-1-11-Tight fine red brown clay. A-1-12-Moist fine brown clay, trace sand. A-1-13-Tight fine red brown clay, trace sand.	*

Notes:

¹Equal weights composited by laboratory.

*Analytical results not received in June, data to be forthcoming in July Status Report.

TABLE 4

SHEBOYGAN RIVER AND HARBOR
ALTERNATE SPECIFIC REMEDIAL INVESTIGATION

River Monitoring Data
(During Construction)

<u>Area</u>	<u>Date</u>	<u>Activity</u>	<u>Time</u>	<u>Location</u>	<u>Depth of Water (ft.)</u>	<u>Depth of Sample (ft.)</u>	<u>Turbidity Results (ntu)</u>	<u>Comments</u>
2	6/19/90	Background	9:45	100' Upstream	1.7	0.8	33	
			10:10	100' Downstream	3.2	1.6	34	
			9:30	Fixed W-11	1.2	0.6	33	Upstream
			10:30	Fixed W-16	2.3	1.0	32	Downstream
2	6/20/90	Excavation	15:15	100' Upstream	2.2	1.1	31	
			15:30	100' Downstream	2.6	1.3	29	
			15:00	Fixed W-11	1.2	0.6	27	Upstream
			15:45	Fixed W-16	2.4	1.2	28	Downstream
2	6/21/90	Excavation	10:30	100' Upstream	2.0	1.0	34	
			10:20	100' Downstream	3.7	1.8	34	
			9:30	Fixed W-11	1.2	0.6	34	Upstream
			10:00	Fixed W-16	2.5	1.2	34	Downstream
2	6/22/90	Excavation	9:00	100' Upstream	1.6	0.8	32	
			8:45	100' Downstream	2.2	1.0	34	
			8:20	Fixed W-11	1.5	0.5	37	Upstream
			8:30	Fixed W-16	2.2	1.0	32	Downstream

TABLE 5
SHEBOYGAN RIVER AND HARBOR
ALTERNATIVE-SPECIFIC REMEDIAL INVESTIGATION

Weekly PCB/TSS/Turbidity River Monitoring

<u>Sample Date</u>	<u>Week</u>	<u>Activity</u>	<u>Time</u>	<u>Sample Location</u>	<u>Location</u>	<u>Depth of Water (ft)</u>	<u>Depth of Sample (ft)</u>	<u>Filtered PCB (ppb)</u>	<u>Total PCB (ppb)</u>	<u>TSS (mg/l)</u>	<u>Turbidity (ntu)</u>
5/23/90	5/20-5/26/90	Armoring	9:05	W-16	Upstream Sheboygan	4.0	2.0	<.05	<.05	27.1	21.0
			8:55	W-2	Upstream Onion River	4.0	2.0	<.05(dup)	<.05(dup)	27.6(dup)	32.0
		Excavation	9:15	W-15	Downstream	5.0	2.5	<.05	.23	44.9(dup) 35.5 33.8(dup)	26.0
5/30/90	5/27-6/2/90	Dredging	11:15	W-11	Upstream	1.5	0.5	*	*	*	25.0
			12:40	W-2	Upstream Onion River	3.5	1.5	*	*	*	26.0
		Armoring	12:50	W-15	Downstream	4.5	2.0	*	*	*	28.0
6/7/90	6/3-6/9/90	Post Activity Sampling	11:25	W-12	Upstream	5.0	2.5	*	*	*	27.0
			11:35	W-15	Downstream	3.8	1.5	*	*	*	25.0
6/12/90	6/10-6/16/90	Post Activity Sampling	11:20	W-12	Upstream	4.8	2.0	*	*	*	20.0
			11:30	W-15	Downstream	3.6	1.5	*	*	*	20.0
6/21/90	6/17-6/23/90	Excavation	9:30	W-11	Upstream	1.2	0.6	*	*	*	34.0
			10:00	W-16	Downstream	2.5	1.2	*	*	*	34.0
			10:10	W-15	Downstream of all areas	3.6	1.5	*	*	*	34.0
6/27/90	6/24-6/30/90	None-High Flow Due to Rain	13:30	W-11	Upstream	1.0	0.5	*	*	*	30.0
			13:45	W-16	Downstream	2.5	1.7	*	*	*	32.0

Note:

*Analytical results not received in June, data to be forthcoming in July Status Report.

TABLE 6
SHEBOYGAN RIVER AND HARBOR
ALTERNATIVE SPECIFIC REMEDIAL INVESTIGATION

In-Situ Sediment Densities

<u>Sample Location</u>	<u>Wet Weight (g)</u>	<u>Wet Density (lb/ft³)</u>	<u>Dry Density (lb/ft³)</u>
Area 4	678.8	68.58	73.75
Top of CTF (0-1')	787.3	79.54	87.41
Bottom of CTF (2-3')	918.3	92.78	112.88

BLASLAND AND BOUCK
SHEBOAN HARBOR PROJECT--WATER
PROJECT # 884.01
PCB ANALYSIS

SAMPLE NUMBER	SAMPLE LOCATION	DATE REC'D	DATE EXT.	TSS mg/L	PCB-1242 ug/L	PCB-1248 ug/L	PCB-1254 ug/L
00504800	W-2;Total	05/24/90	05/24/90		<0.05	<0.05	<0.05
00504802 (MS)	W-2;Total MS	05/24/90	05/24/90		<0.05	0.54	<0.05
00504803	W-2;Filtered	05/24/90	05/24/90		<0.05	<0.05	<0.05
00504804 (MS)	W-2;Filtered MS	05/24/90	05/24/90		<0.05	0.49	<0.05
00504805	W-16;Total	05/24/90	05/24/90		<0.05	<0.05	<0.05
00504806 (Dup)	W-16;Total Dup	05/24/90	05/24/90		<0.05	<0.05	<0.05
00504807	W-16;Filtered	05/24/90	05/24/90		<0.05	<0.05	<0.05
00504808 (Dup)	W-16;Filtered Dup	05/24/90	05/24/90		<0.05	<0.05	<0.05
00504809	W-15;Total	05/24/90	05/24/90		0.06	<0.05	0.17
00504811	W-15;Filtered	05/24/90	05/24/90		<0.05	<0.05	<0.05
00504812	Field Blank;Total	05/24/90	05/24/90		<0.05	<0.05	<0.05
00504813	Field Blank;Filtered	05/24/90	05/24/90		<0.05	<0.05	<0.05
00505553	5A Total	05/29/90	05/31/90		<0.05	0.07	<0.05
00505554	5A Filtered	05/29/90	05/31/90		<0.05	0.12	<0.05
Control Spike I			05/24/90		0.41	<0.05	<0.05
Control Spike II			05/31/90		0.40	<0.05	<0.05
Method Blank I	PCB		05/24/90		<0.05	<0.05	<0.05
Method Blank II	PCB		05/31/90		<0.05	<0.05	<0.05
00504800	W-2;Total	05/24/90		43.4			
00504801 (Dup)	W-2;Total (Dup)	05/24/90		44.9			
00504805	W-16;Total	05/24/90		27.1			
00504806 (Dup)	W-16;Total (Dup)	05/24/90		27.6			
00504809	W-15;Total	05/24/90		35.5			
00504810 (Dup)	W-15;Total (Dup)	05/24/90		33.8			
00505553	5A Total	05/29/90		17.9			
00505555 (Dup)	5A Total (Dup)	05/29/90		16.5			
Method Blank I	TSS			<1.0			
Method Blank II	TSS			<1.0			
Method Blank III	TSS			<1.0			
Method Blank IV	TSS			<1.0			

Note: PCB-1016, PCB-1221, PCB-1232, and PCB-1260 not detected in any samples.

Note: The Control Spikes were fortified with 0.50 ug/L of Aroclor 1242.
The percent recoveries for Control Spike I and Control Spike II were 82% and 80% respectively.

Note: The Matrix Spikes were fortified with 0.5 ug/L of Aroclor 1248.
The percent recoveries for W-2;Total (00504802) and W-2;Filtered (00504804) were 108% and 98% respectively.

filename: B&BH20.WR1



BLASLAND & BOUCK ENGINEERS, P.C.

ENGINEERS & GEOSCIENTISTS

6723 Towpath Road, Box 66, Syracuse, New York 13214 (315) 446-9120

FAX: (315) 449-0017

June 14, 1990

Ms. Bonnie L. Eleder
Remedial Project Manager
USEPA
Region V
230 South Dearborn Street
Chicago, IL 60604

Re: Sheboygan River and Harbor

File: 176.07 #2

Dear Bonnie:

Enclosed please find, for your review, the May 1990 Status Report for activities associated with the above-referenced project.

Should you have any questions concerning the enclosed, please feel free to contact us.

Very truly yours,

BLASLAND & BOUCK ENGINEERS, P.C.

Dawn S. Foster

Dawn S. Foster, P.E.
Manager, Engineering

SDM/nlg
Enclosure

cc: Mark A. Thimke, Esq., Foley & Lardner, w/encl.
Ms. Robin R. Schmidt, Wisconsin Department of Natural Resources, w/encl.
Mr. Francis J. Trcka, Wisconsin Department of Natural Resources, w/encl.
Mr. William H. Bouck, P.E. Blasland & Bouck Engineers, P.C.
Mr. Robert K. Goldman, P.E., Blasland & Bouck Engineers, P.C.

SHEBOYGAN RIVER AND HARBOR
MONTHLY STATUS REPORT

May, 1990

1. Actions Taken During this Time Period

The following activities were conducted during May:

- Removal activities in the Sheboygan River were resumed and armoring activities initiated. Briefly, these activities included completion of removal operations at areas 5 and 15, removal of approximately 100 cy of additional sediments from area 1, removal of sediment area 14 and armoring of 5A, 7, 8, 10, and 11. Based on post removal sampling results, curtains were removed from around various sediment areas. (details presented during the bi-weekly construction coordination meetings).
- Access negotiations continue with Kohler Company. Access is also being pursued from landowners on the south side of Sheboygan River (to access sediment areas 2 and 3).
- Restoration activities at Rochester Park initiated the week of May 28, 1990.
- Additional sampling was conducted in and around sediment areas 1. Results will be forthcoming.
- As indicated in the April status report, each of the leak detection systems are checked periodically for accumulated water and drained as necessary. During the last two weeks of April, each leak detection system was checked daily and water drained as appropriate. Table 1 presents an updated compilation of the leak detection system water removal activities. During the month of May the frequency lessened to every other day or every several days with water being drained accordingly. Generally, very little water is removed from cells 2, 3, and 4. On the average, it appears that approximately 80-90 gallons accumulate on a daily basis and this is periodically drained and placed back into one of the cells. It is unclear if this water is continuing to be released from the leak detection sand layer or if a small leak exists in the primary liner. All leak detection systems will continue to be monitored at the current frequency at least until the permanent piping and tank system is fully operational.
- Biodegradation bench scale tests are still in progress at the University of Michigan. The aerobic work is going well. The researchers have established numerous biphenyl enrichments which are capable of degrading mono-, di-, and some tri-chlorobiphenyls with existing organisms from the Sheboygan River. Degradation activity has been noted to occur in a two week period. Efforts are being concentrated on finding a native organism with a broader

range of degradation capabilities. Samples will be taken from the CTF next week to provide additional materials to be utilized in future experiments.

On the anaerobic side, things are proceeding slower, mostly due to the time frames needed to observe dechlorination. We still have seen no activity in the original set of experiments set up in November 1989. The researchers are now concentrating on duplicating a set of experiments conducted by General Electric's Corporate Research and Development researchers (GE CRD) which looked at Sheboygan sediments, with and without, the addition of Hudson River sediments. This set of experiments showed evidence of anaerobic dechlorination in Sheboygan sediments (with and without Hudson) after 12 weeks. The University of Michigan researchers will be setting up a series of experiments with the new CTF sediments and also continue another set of studies that were initiated in late March. If the results of these experiments are positive, the researchers feel we may have operating parameters for the CTF in four to six months.

The following meetings were held in May:

- May 11, 1990 - meeting with USEPA and WDNR regarding the project status and schedule.

2. EPA Decisions

- a. On May 11, 1990, USEPA/WDNR approved movement of sand in the Sheboygan River in order to access and armor area 5A via barge.
- b. USEPA/WDNR provided approval to remove area 14 rather than armor, and to leave the "island" as is. The decision was based upon review of sediment analytical results and driven by the concern over potential negative impacts of restricting river flows by armoring area 14, the island and area 11.
- c. USEPA/WDNR agreed to allow use of a single curtain system (outside geomembrane curtain only) for armoring activities due to the effectiveness of the system.
- d. USEPA/WDNR agreed that an acceptable correlation between TSS and turbidity exists, such that future river monitoring during construction could be reduced to monitoring turbidity only.
- e. USEPA/WDNR agreed that gabions used for armoring near the shore in the vicinity of Rochester Park should be covered with run of bank material to fill in the exposed wire.
- f. USEPA/WDNR requested that the RI/ES Report and ASRI Work Plan/QAPP be finalized with comments provided last fall. No additional comments will be forthcoming at this time.

- g. USEPA comments on the first revision of the ASRI Quality Assurance Project Plan were received in mid May 18, 1990. USEPA has requested that the comments be addressed in the final version of the Work Plan/QAPP.

3. Results of Sampling and Tests

Data summaries for the following analytical results received during this month are attached:

- a. The turbidity monitoring data collected during river activities is presented in Table 2.
- b. The weekly PCB, TSS and turbidity water column monitoring results for the period covering April 14 through May 19, 1990 are presented in Table 3. The laboratory data sheets are presented in Attachment 1.
- c. Table 4 presents PCB (filtered and unfiltered), TSS, and turbidity results from water column samples taken within curtained sediment areas after removal operations were complete. The laboratory data sheets are presented in Attachment 1.
- d. Post removal sediment sampling results are presented in Table 5. The laboratory results are presented in Attachment 1.
- e. Table 6 presents PCB results from sediment samples collected on the island and Area 14. The results were utilized to decide what action was appropriate for each area. The laboratory results are presented in Attachment 1.
- f. PCB results for steelhead trout collected from the Sheboygan River between 22nd Street and the Route 28 Bridge are presented in Table 7. The laboratory data sheets are presented in Attachment 1.
- g. The results of the Enseco clam and minnow "sediment capping study" are presented in Table 8. Laboratory data sheets are included in Attachment 1.

4. Anticipated Problems/Recommended Solutions

- None.

5. Problems Encountered/Resolved

- Some delays were encountered with armor/removal activities due to high waters. On May 16, 1990, removal activities at Area 1 were halted after the geomembrane curtain was torn between two stanchions by the force of high water flows. The curtain was repaired on May 25, 1990. Removal activities resumed on May 29, 1990 and were completed on May 31, 1990.

6. Deliverables Submitted Date Submitted

- April Status Report 5/15/90
- 1989 Sheboygan River
carp data to Jim Amrhein, WDNR 5/24/90

7. Upcoming Events/Activities Planned

- Removal activities at Areas 2 and 3. Access agreements which will allow removal activities to begin are being finalized.
- Complete armoring activities in Rochester Park area.
- Complete the restoration of Rochester Park by mid June.
- * - Other ASRI sampling activities are tentatively scheduled to begin the week of June 11, 1990.

8. Key Personnel Changes

None.

9. Schedule

- Anticipate continuation of water work (armoring at area 7), and demobilization of water portion and access areas in Rochester Park by first week in June.
- Anticipate completion of park restoration work by mid June.
- Anticipate access to sediment areas 2 and 3 shortly; where upon removal of those areas will be immediately initiated.
- Anticipate completion of construction CTF activities by end of June.

TABLE 1

SHEBOYGAN RIVER AND HARBOR
ALTERNATIVE SPECIFIC REMEDIAL INVESTIGATION

SUMMARY OF WATER REMOVED FROM
LEAK DETECTION SYSTEMS (GALS)

Date	Cell No.			
	1	2	3	4
4/12/90	1800	0	0	0
4/13/90	50	0	0	0
4/14/90	30	0	0	0
4/15/90	30	0	0	0
4/16/90	30	0	0	0
4/17/90	30	0	0	180
4/18/90	0	250	0	0
4/19/90	144	112	15	135
4/23/90	206	84	10	180
4/24/90	216	5	10	32
4/25/90	45	5	10	20
4/26/90	90	5	0	5
4/27/90	210	0	5	10
5/1/90	240	0	5	10
5/2/90	196	0	0	10
5/4/90	258	0	0	5
5/7/90	175	0	0	10
5/8/90	120	0	3	10
5/10/90	171	0	5	5
5/11/90	54	0	0	10
5/14/90	162	0	0	10
5/15/90	131	0	4	8
5/17/90	162	0	4	6
5/25/90	175	0	0	5
5/30/90	250	0	4	8
6/1/90	90	0	0	5
6/6/90	420	0	2	8

TABLE 2

SHEBOYGAN RIVER AND HARBOR
ALTERNATE SPECIFIC REMEDIAL INVESTIGATION

RIVER MONITORING DATA
(During Construction)

<u>Area</u>	<u>Date</u>	<u>Activity</u>	<u>Time</u>	<u>Location</u>	<u>Depth of Water (ft.)</u>	<u>Depth of Sample (ft.)</u>	<u>Turbidity Results</u>	<u>Comments</u>
15	5/1/90	Dredging	11:20	100' Upstream	3.0	1.5	15	
			11:25	100' Downstream	4.5	2.0	14	
			11:10	Fixed W-12	4.0	2.0	15	Upstream
			11:25	Fixed W-15	4.5	2.0	14	Downstream
8	5/1/90	Armoring	11:13	100' Upstream	6.5	3.0	15	
			11:15	100' Downstream	2.5	1.0	14	
			11:10	Fixed W-12	4.0	2.0	15	Upstream
			11:25	Fixed W-15	4.5	2.0	14	Downstream
15	5/2/90	Dredging	14:00	100' Upstream	2.0	1.0	14	
			13:55	100' Downstream	4.0	2.0	15	
			14:05	Fixed W-12	4.5	2.0	14	Upstream
			13:55	Fixed W-15	4.0	2.0	15	Downstream
5	5/2/90	Dredging	8:20	100' Upstream	3.5	1.5	15.5	
			8:10	100' Downstream	5.0	2.5	15	
			8:25	Fixed W-16	2.0	1.0	16	Upstream
			8:15	Fixed W-12	4.5	2.0	14	Downstream
			8:05	Fixed W-2	4.0	2.0	11	Onion River Upstream
15	5/3/90	Dredging	11:45	100' Upstream	2.5	1.0	17	
			11:40	100' Downstream	4.0	2.0	16	
			11:50	Fixed W-12	4.5	2.0	16	Upstream
			11:40	Fixed W-15	4.0	2.0	16	Downstream

TABLE 2
(Cont'd.)
SHEBOYGAN RIVER AND HARBOR
ALTERNATE SPECIFIC REMEDIAL INVESTIGATION

RIVER MONITORING DATA
(During Construction)

<u>Area</u>	<u>Date</u>	<u>Activity</u>	<u>Time</u>	<u>Location</u>	<u>Depth of Water (ft.)</u>	<u>Depth of Sample (ft.)</u>	<u>Turbidity Results</u>	<u>Comments</u>
15	5/7/90	Dredging	14:00	100' Upstream	3.5	1.5	16	
			13:50	100' Downstream	4.0	2.0	16	
			14:15	Fixed W-12	4.0	2.0	13	Upstream
			13:50	Fixed W-15	4.0	2.0	16	Downstream
10	5/7/90	Armoring	14:05	100' Upstream	5.5	2.5	16	Barges moving in vicinity
			14:10	100' Downstream	1.0	0.5	21	
			14:15	Fixed W-12	4.0	2.0	13	Upstream
			13:50	Fixed W-15	4.0	2.0	16	Downstream
10	5/8/90	Armoring	14:45	100' Upstream	4.0	2.0	17	Workers wading outside curtained area
			14:40	100' Downstream	1.5	0.5	23	
			14:50	Fixed W-12	4.0	2.0	16	Upstream
			14:35	Fixed W-15	3.5	2.0	16	Downstream
1	5/9/90	Dredging	14:50	100' Upstream	2.0	1.0	15	
			14:55	100' Downstream	2.5	1.0	16	
			14:45	Fixed W-11	1.0	0.5	15	Upstream
			14:40	Fixed W-16	2.5	1.0	15	Downstream
10	5/9/90	Armoring	12:05	100' Upstream	4.5	2.0	16	
			11:50	100' Downstream	2.5	1.0	17	
			12:00	Fixed W-12	3.5	1.5	16	Upstream
			11:45	Fixed W-15	3.5	1.5	16	Downstream

TABLE 2
(Cont'd.)
SHEBOYGAN RIVER AND HARBOR
ALTERNATE SPECIFIC REMEDIAL INVESTIGATION

RIVER MONITORING DATA
(During Construction)

<u>Area</u>	<u>Date</u>	<u>Activity</u>	<u>Time</u>	<u>Location</u>	<u>Depth of Water (ft.)</u>	<u>Depth of Sample (ft.)</u>	<u>Turbidity Results</u>	<u>Comments</u>
10	5/11/90	Armoring	10:30	100' Upstream	5.0	2.5	27	Heavy rain/snow 5/10/90 Upstream Downstream
			10:25	100' Downstream	5.0	2.5	39	
			10:10	Fixed W-12	6.0	3.0	37	
			10:20	Fixed W-15	5.0	2.5	31	
10	5/14/90	Armoring	13:10	100' Upstream	6.5	3.0	15	Upstream Downstream
			13:05	100' Downstream	3.0	1.5	15	
			13:15	Fixed Location W-12	5.5	2.5	13	
			13:00	Fixed Location W-15	4.5	2.0	15	
1	5/14/90	Dredging	13:50	100' Upstream	2.5	1.0	13	Upstream Downstream
			13:30	100' Downstream	4.0	2.0	13	
			13:45	Fixed W-11	2.5	1.0	12	
			13:25	Fixed W-16	3.0	1.5	13	
10	5/15/90	Armoring	8:45	100' Upstream	5.5	2.5	14	Upstream Downstream
			9:05	100' Downstream	1.5	0.5	14	
			8:40	Fixed W-12	5.0	2.5	14	
			8:50	Fixed W-15	4.5	2.0	17	
11	5/15/90	Armoring	9:05	100' Upstream	6.0	3.0	14	Upstream Downstream
			9:00	100' Downstream	3.5	1.5	14	
			8:40	Fixed W-12	5.0	2.5	14	
			8:50	Fixed W-15	4.5	2.0	17	

TABLE 2
(Cont'd.)
SHEBOYGAN RIVER AND HARBOR
ALTERNATE SPECIFIC REMEDIAL INVESTIGATION

RIVER MONITORING DATA
(During Construction)

<u>Area</u>	<u>Date</u>	<u>Activity</u>	<u>Time</u>	<u>Location</u>	<u>Depth of Water (ft.)</u>	<u>Depth of Sample (ft.)</u>	<u>Turbidity Results</u>	<u>Comments</u>
1	5/15/90	Dredging	10:05	100' Upstream	1.5	0.7	13	
			9:50	100' Downstream	4.0	2.0	13	
			10:00	Fixed W-11	2.0	1.0	13	Upstream
			9:45	Fixed W-16	3.0	1.5	14	Downstream
1	5/16/90	Dredging	11:00	100' Upstream	2.0	1.0	26	Rain overnight
			10:45	100' Downstream	4.5	2.0	29	
			10:00	Fixed W-11	2.5	1.0	32	Upstream
			10:30	Fixed W-16	3.5	1.5	30	Downstream
10	5/16/90	Armoring	13:35	100' Upstream	6.5	3.0	25	Rain overnight
			13:30	100' Downstream	3.0	1.5	25	
			13:40	Fixed W-12	6.0	3.0	26	Upstream
			13:25	Fixed W-15	5.0	2.5	25	Downstream
5A Onion River	5/17/90	Armoring	14:35	100' Upstream	4.0	2.0	43	Onion River very muddy
			14:30	100' Downstream	3.5	1.5	43	upstream of work activities
			14:40	Fixed W-16	3.5	1.5	20	Upstream
			14:45	Fixed W-12	6.0	3.0	32	Downstream
			14:35	Fixed W-2	4.0	2.0	43	Upstream Onion River
5A Onion River	5/18/90	Armoring	9:18	100' Upstream	3.5	1.5	29	Onion River remains
			9:15	100' Downstream	4.0	2.0	29	visibly muddy
			9:20	Fixed W-16	3.5	1.5	18	Upstream
			9:25	Fixed W-12	5.5	2.5	20	Downstream
			9:18	Fixed W-2	3.5	1.5	29	Upstream Onion River visibly muddy

TABLE 2
(Cont'd.)
SHEBOYGAN RIVER AND HARBOR
ALTERNATE SPECIFIC REMEDIAL INVESTIGATION

RIVER MONITORING DATA
(During Construction)

<u>Area</u>	<u>Date</u>	<u>Activity</u>	<u>Time</u>	<u>Location</u>	<u>Depth of Water (ft.)</u>	<u>Depth of Sample (ft.)</u>	<u>Turbidity Results</u>	<u>Comments</u>
5A Onion River	5/22/90	Armoring	13:50	100' Upstream	4.0	2.0	44	Heavy rains over weekend Work shutdown 5/21/90 Upstream Downstream Upstream Onion River
			13:34	100' Downstream	3.5	1.5	44	
			13:55	Fixed W-16	4.0	2.0	22	
			13:50	Fixed W-12	6.5	3.0	32	
			13:50	Fixed W-2	4.0	2.0	44	
14	5/22/90	Dredging	13:45	100' Upstream	3.5	1.5	31	Upstream Downstream
			13:40	100' Downstream	4.5	2.0	34	
			13:50	Fixed W-12	6.5	3.0	32	
			13:43	Fixed W-15	5.5	2.5	31	
14	5/23/90	Dredging	9:19	100' Upstream	3.5	1.5	25	Upstream Downstream
			9:18	100' Downstream	4.0	2.0	26	
			9:20	Fixed W-12	5.5	2.5	25	
			9:15	Fixed W-15	5.0	2.5	26	
5A Onion River	5/23/90	Armoring	8:55	100' Upstream	4.0	2.0	32	Upstream Downstream Upstream Onion River
			9:25	100' Downstream	3.5	1.5	32	
			9:05	Fixed W-16	4.0	2.0	21	
			9:20	Fixed W-12	5.5	2.5	25	
			8:55	Fixed W-2	4.0	2.0	32	
5A Onion River	5/24/90	Armoring	13:30	100' Upstream	4.0	2.0	31	Upstream Downstream Upstream Onion River
			13:33	100' Downstream	3.5	1.5	30	
			13:35	Fixed W-16	3.5	1.5	22	
			13:28	Fixed W-12	5.5	2.5	27	
			13:30	Fixed W-12	4.0	2.0	31	

TABLE 2
(Cont'd.)
SHEBOYGAN RIVER AND HARBOR
ALTERNATE SPECIFIC REMEDIAL INVESTIGATION

RIVER MONITORING DATA
(During Construction)

<u>Area</u>	<u>Date</u>	<u>Activity</u>	<u>Time</u>	<u>Location</u>	<u>Depth of Water (ft.)</u>	<u>Depth of Sample (ft.)</u>	<u>Turbidity Results</u>	<u>Comments</u>
14	5/24/90	Dredging	13:24	100' Upstream	3.5	1.5	25	
			13:20	100' Downstream	4.0	2.0	25	
			13:28	Fixed W-12	5.5	2.5	27	Upstream
			13:15	Fixed W-15	4.5	2.0	25	Downstream
1	5/29/90	Dredging	14:00	100' Upstream	2.0	1.0	24	
			13:40	100' Downstream	3.5	1.5	23	
			13:50	Fixed W-11	2.5	1.0	25	Upstream
			13:35	Fixed W-16	3.5	1.5	24	Downstream
7	5/29/90	Armoring	13:25	100' Upstream	4.5	2.0	24	
			13:20	100' Downstream	5.5	2.5	25	
			13:30	Fixed W-12	2.0	2.5	24	Upstream
			13:15	Fixed W-15	3.5	1.5	30	Downstream; barges moving by Area 14 when W-15 sample collected
1	5/30/90	Dredging	14:55	100' Upstream	1.5	0.5	23	
			14:40	100' Downstream	3.5	1.5	23	
			15:00	Fixed W-11	2.5	1.0	23	Upstream
			14:35	Fixed W-16	3.0	1.5	23	Downstream
7	5/30/90	Armoring	14:30	100' Upstream	5.5	2.5	24	
			14:28	100' Downstream	4.5	2.0	24	
			14:35	Fixed W-1	4.5	2.0	23	Upstream
			14:25	Fixed W-15	4.0	2.0	25	Downstream

TABLE 2
 (Cont'd.)
 SHEBOYGAN RIVER AND HARBOR
 ALTERNATE SPECIFIC REMEDIAL INVESTIGATION

RIVER MONITORING DATA
 (During Construction)

<u>Area</u>	<u>Date</u>	<u>Activity</u>	<u>Time</u>	<u>Location</u>	<u>Depth of Water (ft.)</u>	<u>Depth of Sample (ft.)</u>	<u>Turbidity Results</u>	<u>Comments</u>
1	5/31/90	Dredging	10:45	100' Upstream	1.5	0.5	22	
			10:30	100' Downstream	2.5	1.0	22	
			10:40	Fixed W-11	1.5	0.5	23	Upstream
			10:25	Fixed W-16	2.5	1.0	22	Downstream
10	5/31/90	Armoring	14:45	100' Upstream	6.0	3.0	25	
			14:40	100' Downstream	1.0	0.5	23	
			14:25	Fixed W-12	4.5	2.0	25	Upstream
			14:30	Fixed W-15	3.8	1.5	26	Downstream

TABLE 3
SHEBOYGAN RIVER AND HARBOR
ALTERNATIVE-SPECIFIC REMEDIAL INVESTIGATION

Weekly PCB/TSS/Turbidity River Monitoring

<u>Sample Date</u>	<u>Week</u>	<u>Activity</u>	<u>Time</u>	<u>Sample Location</u>	<u>Location</u>	<u>Depth of Water (ft)</u>	<u>Depth of Sample (ft)</u>	<u>Filtered PCB (ppb)</u>	<u>Total PCB (ppb)</u>	<u>TSS mg/l</u>	<u>Turbidity (ntu)</u>
4/19/90	4/15-4/21/90	Excavating Area 5	14:45	W-16	Upstream Sheboygan	3.0	1.5	<0.05	<0.05	7.4	6.0 ²
			14:30	W-2	Upstream Onion River	3.5	1.5	<0.05(dup)	<0.05(dup)	9.4(dup)	6.9 ²
		15:00	W-15	Downstream	4.5	2.0	<0.05	<0.05	8.2	4.5 ²	
4/25/90	4/22-4/28/90	Armoring Area 11	11:40	W-12	Upstream	4.5	2.0	<0.05	<0.05	15.6	8.7
			11:50	W-15	Downstream	4.0	2.0	<0.05(dup)	<0.05(dup)	16.0(dup)	8.8
5/2/90	4/29-5/5/90	Excavating Area 5	10:10	W-16	Upstream Sheboygan	2.5	1.0	<0.05	<0.05	21.1	15
			10:00	W-2	Upstream Onion River	3.5	1.5	<0.05(dup)	<0.05(dup)	21.3(dup)	11
			10:20	W-12	Downstream	4.0	2.0	<0.05	<0.05	18.4	14.5
5/11/90	5/6-5/12/90	Armoring Area 10	10:10	W-12	Upstream	6.0	3.0	<0.05	<0.05	71.2	37.0
			10:20	W-15	Downstream	5.0	2.5	<0.05(dup)	<0.05(dup)	68.3(dup)	31.0
5/16/90	5/13-5/19/90	Excavating Area 1	10:00	W-11	Upstream	2.5	1.0	<0.05	<0.05	33.4	32.0
			10:30	W-16	Downstream	3.5	1.5	0.12	0.38	33.6(dup)	30.0
								0.14(dup)	0.47(dup)	27.3(dup)	

Notes:

1. Outside geomembrane curtain torn by high water flows.
2. Turbidity samples taken at 13:45, 13:35, and 13:50 respectively.

TABLE 4
SHEBOYGAN RIVER AND HARBOR
ALTERNATIVE SPECIFIC REMEDIAL INVESTIGATION

Summary of Post-Cleanup Water Samples Within Curtained Sediment Areas¹

<u>Sediment Area</u>	<u>Activity</u>	<u>Work Activity Ended</u>	<u>Curtains Removed</u>	<u>Date Sampled</u>	<u>Time</u>	<u>Number of Locations</u>	<u>Average Depth of Water (ft)</u>	<u>Average Depth of Sample (ft)</u>	<u>PCB Filtered (ppb)</u>	<u>PCB Total (ppb)</u>	<u>TSS mg/l</u>	<u>Turbidity (ntu)</u>
9	Excavation	4/17/90	5/29/90	4/24/90	12:15	2	5.0	2.5	0.18	0.27	15.5	6.8
5	Excavation	5/2/90	5/25/90	5/15/90	14:15	2	5.0	2.5	0.10	0.14	9.0 8.4(dup)	12.0
15A	Excavation	5/7/90	5/17/90	5/15/90	15:00	2	4.5	2.0	0.73	1.39	12.9	13.0
11	Armoring	5/15/90	5/18/90	5/17/90	11:45	2	2.5	1.0	0.12	0.26	24.2 24.7(dup)	30.0
5A	Armoring	5/24/90	5/25/90	5/25/90	7:30	1	3.0	1.5	Analytical			25.0
14	Excavation	5/24/90	5/30/90	5/29/90	11:25	2	5.0	2.5	Results not			13.0
7	Armoring	5/30/90	5/31/90	5/31/90	9:05	1	3.0	1.5	Reported to Date			65.0

Notes:

1. Water samples collected after cleanup activities were completed.
2. Locations composited in field using equal volume.

TABLE 5
SHEBOYGAN RIVER AND HARBOR
ALTERNATIVE-SPECIFIC REMEDIAL INVESTIGATIONS

Summary of Post Cleanup Sediment Samples

<u>Sediment Area</u>	<u>Sample Date</u>	<u>Number of Locations</u>	<u>Sample Depth</u>	<u>Sample Type¹</u>	<u>Sample Description</u>	<u>Results PCB Total (ppm)</u>
9	4/25/90	4	0-3"	Composite	A-9-1-Light brown to gray clay. A-9-2-Light brown gray clay some muck and plant material. A-9-3-Light gray clay. A-9-4-Light gray sand and clay.	4.9
5	5/7/90	2	0-3"	Composite	A-5-1-Dark brown to black medium sand. A-5-2-Dark brown to black medium sand.	2.52
15	5/10/90	3	0-3"	Composite	A-15-6-Brown fine sand, some silt, plant material. A-15-7-Brown fine sand, trace silt, plant material. A-15-8-Light brown clay.	0.49
14	5/24/90	2	0-3"	Composite	A-14-3-Light brown clay. A-14-4-Light brown clay.	None to date

Notes:

1. Equal weights composited by laboratory.

TABLE 6

SHEBOYGAN RIVER AND HARBOR
ALTERNATIVE SPECIFIC REMEDIAL INVESTIGATION

Sediment Samples from the Island and Area 14

<u>Location</u>	<u>Sample Area</u>	<u>Sample Date</u>	<u>Time</u>	<u>Sample Segmented</u>	<u>Description</u>	<u>Total PCB (ppm)</u>
14-1	14	5/9/90	11:25	0-3"	Brown to gray silt with sand and plant material.	3.41
				3-6"	Black organics, gray silt and fine sand with trace clay.	81.2
14-2	14	5/9/90	11:30	0-3"	Brown to gray fine sand and silt with black organic material.	53.6
				3-6"	Brown to gray fine silt with clay.	38.3 43.4(dup)
I-1	Island	5/11/90	9:30	0-0.5'	Brown fine silt, some sand, round gravel, plant material.	7.2
				0.5-0.8'	Brown fine sand and gravel, trace silt plant material.	18.0
I-2	Island	5/11/90	9:40	0-3"	Fine brown sand, trace silt with small gravel.	29.0
				3-6"	Brown fine sand with coarse sand and gravel.	2.7
I-3	Island	5/11/90	9:50	0-3"	Brown fine sand, small gravel, trace silt	4.5
				3-6"	Dark brown to black sand with coarse sand and gravel.	41.0
				6-9"	Dark brown to black coarse sand and gravel.	6.9

TABLE 7
SHEBOYGAN RIVER AND HARBOR
ALTERNATIVE SPECIFIC REMEDIAL INVESTIGATION

SUMMARY OF DATA FOR RIVER STEELHEAD
(From 22nd St. to Rt. 28 Bridge)
Date Sampled: 4/12/90

<u>Number⁽¹⁾</u>	<u>Sex⁽²⁾</u>	<u>Physical Data</u>		<u>Lipid Content (%)</u>	<u>PCB Conc., ppm⁽⁴⁾</u>
		<u>Length (in)</u>	<u>Weight (kg)</u>		
FT-28	FS	24.41	2.50	2.77	0.25
FT-29	FS	26.50	3.20	4.62	0.37
FT-30	FS	29.13	3.35	3.57	1.51
FT-31	FS	24.02	1.90	1.50	1.13
FT-32	FR	29.92	3.40	2.57	0.71
FT-33	MR	28.15	2.70	2.02	0.94
FT-34	FS	30.31	3.85	1.68	0.87
FT-35	MR	28.35	3.20	4.24	0.70
FT-36	MR	28.35	3.10	5.84	0.53
FT-37	FG	28.35	3.30	3.35 ⁽³⁾	0.57 ⁽³⁾
FT-38	FS	28.54	2.60	2.70	0.66
FT-39	FS	25.20	2.40	1.22	0.46
FT-40	MS	30.71	4.90	0.97	1.00
FT-41	MR	20.67	1.40	5.60	0.30
FT-42	FR	29.53	3.20	2.75	1.24
FT-43	MR	26.18	2.45	4.24	0.64
FT-44	FR	28.35	3.00	3.68	1.12
FT-45	FR	28.74	3.35	4.05	1.15
FT-46	FR	24.02	2.30	1.43	0.26
FT-47	FG	29.13	3.60	2.26 ⁽³⁾	0.77 ⁽³⁾
FT-48	FR	30.71	4.25	1.74	1.25
FT-49	FR	27.56	3.40	3.74	0.40
FT-50	FS	29.13	3.10	1.65	0.73
FT-51	FR	27.17	3.40	1.46	0.64

Notes:

- (1) Sample number in this table corresponds to the sample location in the laboratory data sheets.
- (2) F = Female
S = "Spent" (No eggs)
G = "Green" (Immature)
M = Male
R = "Ripe" (Mature)
- (3) Average of duplicate analyses
- (4) Breakdown of total PCBs by Aroclor available in lab data sheets, PCB concentrations calculated on a wet weight basis for filleted samples.
- (5) It should be noted that a brown trout was captured during the steelhead trout sampling. The total PCB concentration was 3.5 ppm and the lipid content was 6.24 percent. This data will not be utilized in the analytical evaluation.

TABLE 8

SHEBOYGAN RIVER AND HARBOR
ALTERNATIVE SPECIFIC REMEDIAL INVESTIGATION

SUMMARY OF PCB AND LIPIDS RESULTS FOR SEDIMENT
CAPPING STUDY (ENSECO)

	Tank Replicates	<u>Clams (Corbicula)</u>		<u>Fathead Minnows</u>		<u>Sediments</u>	<u>Cap Material</u>
		<u>Total PCB Conc. (ppm)</u>	<u>% Lipid</u>	<u>Total PCB Conc. (ppm)</u>	<u>% Lipid</u>	<u>Total PCB Conc. (ppm)</u>	<u>Total PCB Conc. (ppm)</u>
(1) Uncovered Sediments	A	4.50	2.28	7.70	5.06	26	--
	B	5.70	2.17	18.00	7.77	30	--
	C	<u>5.90</u>	2.16	<u>7.50</u>	6.44	29	--
	Avg	5.37		11.07			
(2) 4" Cap	A	0.74*	2.25*	1.50*	6.70*	32	<.05
	B	1.25**	2.17	0.28	5.67	26	<.05
	C	<u>0.15</u>	2.18	<u>0.29</u>	5.64	41	<.05
	Avg	0.71		0.69			
(3) 8" Cap	A	0.125*	2.38*	0.35*	5.68*	46	<.05
	B	0.110	2.24	0.53	6.36	56*	<.05
	C	<u>0.100</u>	2.36	<u>0.23</u>	6.37	48	<.05
	Avg	0.112		0.37			
(4) Cap Only	A	0.042	2.30	0.18	7.04	--	<.05
	B	0.044	2.22	0.23	6.72	--	<.05
	C	<u>0.16</u>	2.31	<u>0.14</u>	5.98	--	<.05
	Avg	0.082		0.18			

* Average of duplicate analysis

** Only sample reported with Aroclor 1254 and Aroclor 1242. All others reported with Aroclor 1242 only.

ATTACHMENT 1
LABORATORY DATA SHEETS

BLASLAND AND BOUCK
 ENSECO EXPOSURE STUDY
 SEDIMENT ANALYSIS

SAMPLE NUMBER	SAMPLE LOCATION	DATE RECEIVED	DATE EXTRACTED	PERCENT MOISTURE	Values in ug/kg Dry Weight		
					PCB-1242	PCB-1248	PCB-1254
00203747	Sediment 1-A	02/14/90	02/23/90	1.06	26000	<15000	<15000
00203748	Sediment 1-B	02/14/90	02/23/90	1.22	30000	<15000	<15000
00203749	Sediment 1-C	02/14/90	02/23/90	1.22	29000	<15000	<15000
00203750	Sediment 2-A	02/14/90	02/23/90	2.10	32000	<15000	<15000
00203751	Sediment 2-B	02/14/90	02/23/90	1.23	26000	<15000	<15000
00203752	Sediment 2-C	02/14/90	02/23/90	1.31	41000	<15000	<15000
00203753	Sediment 3-A	02/14/90	02/23/90	1.19	46000	<15000	<15000
00203754	Sediment 3-B	02/14/90	02/23/90	1.87	52000	<15000	<15000
00203755	Sediment 3-C	02/14/90	02/23/90	1.27	48000	<15000	<15000
00203756	Reference 2-A	02/14/90	02/23/90	0.07	<50	<50	<50
00203757	Reference 2-B	02/14/90	02/23/90	0.10	<50	<50	<50
00203758	Reference 2-C	02/14/90	02/23/90	0.05	<50	<50	<50
00203759	Reference 3-A	02/14/90	02/23/90	0.10	<50	<50	<50
00203760	Reference 3-B	02/14/90	02/23/90	0.05	<50	<50	<50
00203761	Reference 3-C	02/14/90	02/23/90	0.06	<50	<50	<50
00203762	Reference 4-A	02/14/90	02/23/90	0.11	<50	<50	<50
00203763	Reference 4-B	02/14/90	02/23/90	0.10	<50	<50	<50
00203764	Reference 4-C	02/14/90	02/23/90	0.10	<50	<50	<50
00303570	Sediment 3-B DUP	02/14/90	02/23/90	1.77	51000	<15000	<15000
00303571	Sediment 3-B MS	02/14/90	02/23/90	1.87	49000	<15000	<15000
00303572	Reference 4-C DUP	02/14/90	02/23/90	0.06	<50	<50	<50
00303573	Reference 4-C MS	02/14/90	02/23/90	0.06	4000	<2000	<2000
Control Spike			02/23/90		<50	3100	3200
Method Blank			02/23/90		<50	<50	<50

Note: PCB-1016, PCB-1221, PCB-1232, PCB-1248, PCB-1254, and PCB-1260 not present in any sample

* Control Spike was spiked at 5000 ug/Kg with Aroclor 1248 and Aroclor 1254.
 The percent recoveries were 62% and 64% respectively.

The matrix spikes were fortified with 5000 ug/Kg of Aroclor 1242. The recovery of the Aroclor 1242 from the spike of sample Sediment 3-B was not measurable due to the relatively high concentration of PCB's in the sample. The recovery of the Aroclor 1242 spike from sample Reference 4-C was 80%.

BLASLAND AND BOUCK
ENSECO PROJECT PCB ANALYSIS
PROJECT NO. 91684-AM3833

SAMPLE NUMBER	SAMPLE LOCATION	DATE RECEIVED	DATE EXTRACTED	Values in ug/Kg			%Lipids
				PCB-1242	PCB-1248	PCB-1254	
00301012	1A Fatheads	03/06/89	03/08/90	7700	<1400	<1400	5.06
00301013	1A Corbicula	03/06/89	03/08/90	4500	<1000	<1000	2.28
00301014	1B Fatheads	03/06/89	03/08/90	18000	<1300	<1300	7.77
00301015	1B Corbicula	03/06/89	03/08/90	5700	<1000	<1000	2.17
00301016	1C Fatheads	03/06/89	03/08/90	7500	<1500	<1500	6.44
00301017	1C Corbicula	03/06/89	03/08/90	5900	<1300	<1300	2.16
00301018	2A Fatheads	03/06/89	03/08/90	1600	<140	<140	5.39
00301019 Dup	2A Fatheads Thin	03/06/89	03/08/90	1400	<160	<160	8.02
00301020	2A Corbicula	03/06/89	03/08/90	770	<100	<100	2.20
00301021 Dup	2A Corbicula Thin	03/06/89	03/08/90	710	<100	<100	2.29
00301022	2B Fatheads	03/06/89	03/08/90	280	<160	<160	5.67
00301023	2B Corbicula	03/06/89	03/08/90	470	<100	780	2.17
00301024	2C Fatheads	03/06/89	03/08/90	290	<130	<130	5.64
00301025	2C Corbicula	03/06/89	03/08/90	150	<100	<100	2.18
00301026	3A Fatheads	03/06/89	03/09/90	400	<150	<150	6.34
00301027 Dup	3A Fatheads Thick	03/06/89	03/09/90	300	<170	<170	5.03
00301028	3A Corbicula	03/06/89	03/09/90	110	<110	<110	2.33
00301029 Dup	3A Corbicula Thick	03/06/89	03/09/90	140	<100	<100	2.43
00301030	3B Fatheads	03/06/89	03/09/90	530	<160	<160	6.36
00301031	3B Corbicula	03/06/89	03/09/90	110	<110	<110	2.24
00301032	3C Fatheads	03/06/89	03/09/90	230	<150	<150	6.37
00301033	3C Corbicula	03/06/89	03/09/90	100	<100	<100	2.36
00301034	4A Fatheads	03/06/89	03/09/90	180	<160	<160	7.04
00301035 MS	4A Fatheads MS	03/06/89	03/09/90	<750	7800	<750	6.41
00301036	4A Corbicula	03/06/89	03/09/90	42	<50	<50	2.30
00301037 MS	4A Corbicula MS	03/06/89	03/09/90	<520	5600	<520	2.38
00301038	4B Fatheads	03/06/89	03/09/90	230	<130	<130	6.72
00301039	4B Corbicula	03/06/89	03/09/90	44	<50	<50	2.22
00301040	4C Fatheads	03/06/89	03/09/90	140	<160	<160	5.98
00301041	4C Corbicula	03/06/89	03/09/90	160	<100	<100	2.31
Control Spike I			03/08/90	590	<100	510	1.05
Control Spike II			03/09/90	590	<100	590	1.13
Method Blank I			03/08/90	<50	<50	<50	
Method Blank II			03/09/90	<50	<50	<50	

Note: PCB-1016, PCB-1221, PCB-1232, PCB-1248, PCB-1254 and PCB-1260 not detected in any sample.

Note: Control Spike spiked with 670 ug/Kg with Aroclor 1242 and Aroclor 1254. The percent recoveries for Aroclor 1242 in Control Spike I and Control Spike II were 88% and 88% respectively. The percent recoveries for Aroclor 1254 in Control Spike I and Control Spike II were 76% and 88% respectively.

Note: Matrix Spike spiked with 10000 ug/Kg with Aroclor 1248. The percent recoveries for 00301035 MS (4A Fatheads) and 00301037 MS (4A Corbicula) were 78% and 56% respectively.

BLASLAND AND BOUCK
 STEELHEAD TROUT
 PROJECT # 1760712

SAMPLE NUMBER	SAMPLE LOCATION	DATE RECEIVED	DATE EXTRACTED	PERCENT LIPIDS	PCB 1242 (ug/Kg)	PCB 1254 (ug/Kg)	TOTAL PCB
00402318	FT-28	4-16-90	4-20-90	2.77	130	120	250
00402319	FT-29	4-16-90	4-20-90	4.62	130	240	370
00402320	FT-30	4-16-90	4-20-90	3.57	970	540	1510
00402321	FT-31	4-16-90	4-20-90	1.50	580	550	1130
00402322	FT-32	4-16-90	4-20-90	2.57	260	450	710
00402323	FT-33	4-16-90	4-20-90	2.02	430	510	940
00402324	FT-34	4-16-90	4-20-90	1.68	390	480	870
00402325	FT-35	4-16-90	4-20-90	4.24	270	430	700
00402326	FT-36	4-16-90	4-20-90	5.84	160	370	530
00402327	FT-37	4-16-90	4-20-90	3.31	310	380	690
00402328	FT-38	4-16-90	4-20-90	2.70	360	300	660
00402329	FT-39	4-16-90	4-20-90	1.22	250	210	460
00402330	FT-40	4-16-90	4-20-90	0.97	450	550	1000
00402331	FT-41	4-16-90	4-20-90	5.60	130	170	300
00402332	FT-42	4-16-90	4-20-90	2.75	550	690	1240
00402333	FT-43	4-16-90	4-20-90	4.24	260	380	640
00402334	FT-44	4-16-90	4-20-90	3.68	550	570	1120
00402335	FT-45	4-16-90	4-20-90	4.05	560	590	1150
00402336	FT-46	4-16-90	4-20-90	1.43	98	160	258
00402337	FT-47	4-16-90	4-20-90	2.05	260	520	780
00402338	FT-48	4-16-90	4-20-90	1.74	590	660	1250
00402339	FT-49	4-16-90	4-20-90	3.74	92	310	402
00402340	FT-50	4-16-90	4-20-90	1.65	350	380	730
00402341	FT-51	4-16-90	4-20-90	1.46	210	430	640
00402342	FT-52	4-16-90	4-20-90	6.24	2200	1300	3500
00403271	FT-37 DUP	4-16-90	4-20-90	3.38	200	240	440
00403272	FT-37 MS	4-16-90	4-20-90	3.57	1500	460	1960
00403273	FT-47 DUP	4-16-90	4-20-90	2.47	270	490	760
00403274	FT-47 MS	4-16-90	4-20-90	2.38	1400	560	1960
Control Blank			4-20-90	1.14	<50	<50	<50
Control Spike			4-20-90	1.04	1300	940	2240
Method Blank			4-20-90		<50	<50	<50

Note: PCB 1016, 1221, 1232, 1248, and 1260 not found in any sample.

The control spike was fortified with 2000 ug/Kg of Aroclor 1242 and Aroclor 1254. The recovery of the spikes was 65% and 47% respectively.

The matrix spikes were fortified with 2000 ug/Kg of Aroclor 1242. The recovery of the Aroclor 1242 spike from sample FT-37 was 62%. The recovery from sample FT-47 was 57%.

BLASLAND AND BOUCK
SHEBOYGAN HARBOR PROJECT--WATER
PROJECT # 884.01
PCB ANALYSIS

SAMPLE NUMBER	SAMPLE LOCATION	DATE REC'D	DATE EXT.	PCB-1242 ug/L	PCB-1248 ug/L	PCB-1254 ug/L
00500894	W-2;Total	5/03/90	5/04/90	<0.05	<0.05	<0.05
00500895 MS	W-2;Total MS	5/03/90	5/04/90	<0.05	0.41	<0.05
00500896	W-2;Filtered	5/03/90	5/04/90	<0.05	<0.05	<0.05
00500897 MS	W-2;Filtered MS	5/03/90	5/04/90	<0.05	0.49	<0.05
00500898	W-16;Total	5/03/90	5/04/90	<0.05	<0.05	<0.05
00500899	W-16;Total Dup	5/03/90	5/04/90	<0.05	<0.05	<0.05
00500900	W-16;Filtered	5/03/90	5/04/90	<0.05	<0.05	<0.05
00500901	W-16;Filtered Dup	5/03/90	5/04/90	<0.05	<0.05	<0.05
00500902	W-12;Total	5/03/90	5/04/90	<0.05	<0.05	<0.05
00500903	W-12;Filtered	5/03/90	5/04/90	<0.05	<0.05	<0.05
00500904	Field Blank;Total	5/03/90	5/04/90	<0.05	<0.05	<0.05
00500905	Field Blank;Filtered	5/03/90	5/04/90	<0.05	<0.05	<0.05
00502600	W-12;Total	5/14/90	5/15/90	<0.05	<0.05	<0.05
00502601 Dup	W-12;Total Dup	5/14/90	5/15/90	<0.05	<0.05	<0.05
00502602	W-12;Filtered	5/14/90	5/15/90	<0.05	<0.05	<0.05
00502603 Dup	W-12;Filtered Dup	5/14/90	5/15/90	<0.05	<0.05	<0.05
00502604	W-15;Total	5/14/90	5/15/90	<0.05	<0.05	<0.05
00502605 MS	W-15;Total MS	5/14/90	5/15/90	<0.05	0.43	<0.05
00502606	W-15;Filtered	5/14/90	5/15/90	<0.05	<0.05	<0.05
00502607 MS	W-15;Filtered MS	5/14/90	5/15/90	<0.05	0.40	<0.05
00502608	Field Blank;Total	5/14/90	5/15/90	<0.05	<0.05	<0.05
00502609	Field Blank;Filtered	5/14/90	5/15/90	<0.05	<0.05	<0.05
00503170	A-5-1,A-5-2;Total	5/17/90	5/17/90	0.14	<0.05	<0.05
00503171	A-5-1,A-5-2;Filtered	5/17/90	5/17/90	0.10	<0.05	<0.05
00503173	A-15-6,A-15-8; Total	5/17/90	5/17/90	1.3	<0.05	0.09
00503174	A-15-6,A-15-8 Filtered	5/17/90	5/17/90	0.62	<0.05	0.11
00503176	W-11; Total	5/17/90	5/17/90	<0.05	<0.05	<0.05
00503178 MS	W-11; Total MS	5/17/90	5/17/90	<0.05	0.39	<0.05
00503179	W-11; Filtered	5/17/90	5/17/90	<0.05	<0.05	<0.05
00503180 MS	W-11; Filtered MS	5/17/90	5/17/90	<0.05	0.38	<0.05
00503181	W-16; Total	5/17/90	5/17/90	0.31	<0.05	0.07
00503182 Dup	W-16; Total Dup	5/17/90	5/17/90	0.39	<0.05	0.08
00503183	W-16; Filtered	5/17/90	5/17/90	0.12	<0.05	<0.05
00503184 Dup	W-16; Filtered Dup	5/17/90	5/17/90	0.14	<0.05	<0.05
005031885	Field Blank;Total	5/17/90	5/17/90	<0.05	<0.05	<0.05
005031886	Field Blank;Filtered	5/17/90	5/17/90	0.14	<0.05	0.16
00503468	A-11-1,A-11-2; Total	5/18/90	5/18/90	0.21	<0.05	0.05
00503469	A-11-1,A-11-2;Filtered	5/18/90	5/18/90	0.12	<0.05	<0.05
Control Spike I			5/04/90	0.41	<0.05	<0.05
Control Spike II			5/15/90	0.39	<0.05	<0.05
Control Spike III			5/17/90	0.31	<0.05	<0.05
*Control Spike IV			5/18/90	0.82	<0.05	<0.05
Method Blank I			5/04/90	<0.05	<0.05	<0.05
Method Blank II			5/15/90	<0.05	<0.05	<0.05
Method Blank III			5/17/90	<0.05	<0.05	<0.05
Method Blank IV			5/18/90	<0.05	<0.05	<0.05

Note: PCB-1016, PCB-1221, PCB-1232, and PCB-1260 not detected in any samples.

Note: The Control Spikes were spiked with 0.50 ug/L with Aroclor 1242.

The percent recoveries for Control Spike I, Control Spike II, and Control Spike III were 82%, 78%, and 62% respectively. Control Spike IV was spiked at 1.0 ug/L with Aroclor 1242. The percent recovery was 82%.

Note: The Matrix Spikes were spiked with 0.5 ug/L with Aroclor 1248.

The percent recoveries for W-2:Total, W-2:Filtered, W-15;Total, W-15;Filtered,

BLASLAND AND BOUCK
 SHEBOYGAN HARBOR PROJECT--WATER
 PROJECT # 884.01
 TSS ANALYSIS

SAMPLE NUMBER	SAMPLE LOCATION	DATE REC'D	TSS DATE	TSS mg/L
0500894	W-2;Total	5/03/90	5/07/90	22.5
0500898	W-16;Total	5/03/90	5/07/90	21.1
0500899	W-16;Total Dup	5/03/90	5/07/90	21.3
0500902	W-12;Total	5/03/90	5/07/90	18.4
0502600	W-12;Total	5/14/90	5/15/90	71.2
0502601 Dup	W-12;Total Dup	5/14/90	5/15/90	68.3
0502604	W-15;Total	5/14/90	5/15/90	58.9
0502605 Dup	W-15;Total Dup	5/14/90	5/15/90	61.6
0503170	A-5-1,A-5-2;Total	5/17/90	5/18/90	9.0
0503172	A-5-1,A-5-2; Dup	5/17/90	5/18/90	8.4
0503173	A-15-6,A-15-8; Total	5/17/90	5/18/90	12.9
0503175	A-15-6,A-15-8; Total	5/17/90	5/18/90	12.5
0503176	W-11; Total	5/17/90	5/18/90	33.4
0503177 Dup	W-11; Total Dup	5/17/90	5/18/90	33.6
0503181	W-16; Total	5/17/90	5/18/90	30.5
0503182 Dup	W-16; Total Dup	5/17/90	5/18/90	27.3
0503468	A-11-1,A-11-2; Total	5/18/90	5/18/90	24.2
0503470	A-11-1,A-11-2; Dup	5/18/90	5/18/90	24.7
ethod Blank I			5/07/90	<1.0
ethod Blank II			5/07/90	<1.0
ethod Blank III			5/15/90	<1.0
ethod Blank IV			5/15/90	<1.0
ethod Blank V			5/18/90	<1.0
ethod Blank VI			5/18/90	<1.0

BLASLAND AND BOUCK
 SHEBOYGAN HARBORAN HARBOR PROJECT - WATER
 PROJECT # 884.01 and 884.01.15
 PCB ANALYSIS

SAMPLE NUMBER	SAMPLE LOCATION	DATE RECEIVED	DATE EXTRACTED	TSS mg/L	PCB-1242 ug/L	PCB-1260 ug/L
00402960	W-16 Total	04/20/90	04/23/90		<0.05	<0.05
00402961 Dup	W-16 Total Dup	04/20/90	04/23/90		<0.05	<0.05
00402962	W-16 Filtered	04/20/90	04/23/90		<0.05	<0.05
00402963	W-15 Total	04/20/90	04/23/90		<0.05	<0.05
00402964	W-15 Filtered Dup	04/20/90	04/23/90		<0.05	<0.05
00402965 MS	W-15 Filtered MS	04/20/90	04/23/90		<0.05	0.37
00402966	W-2 Total	04/20/90	04/23/90		<0.05	<0.05
00402967	W-2 Filtered	04/20/90	04/23/90		<0.05	<0.05
00402968	Field Blank	04/20/90	04/23/90		<0.05	<0.05
00403889	A-9 Total	04/26/90	04/27/90		0.27	<0.05
00403890	A-9 Filtered	04/26/90	04/27/90		0.18	<0.05
00403891	Field Blank Total	04/26/90	04/27/90		<0.05	<0.05
00403892	Field Blank Filtered	04/26/90	04/27/90		<0.05	<0.05
00403893	W-12 Total	04/26/90	04/27/90		<0.05	<0.05
00403894 Dup	W-12 Total Dup	04/26/90	04/27/90		<0.05	<0.05
00403895	W-12 Filtered	04/26/90	04/27/90		<0.05	<0.05
00403896 Dup	W-12 Filtered Dup	04/26/90	04/27/90		<0.05	<0.05
00403897	W-15 Total	04/26/90	04/27/90		<0.05	<0.05
00403898 MS	W-15 Total MS	04/26/90	04/27/90		<0.05	0.16
00403899	W-15 Filtered	04/26/90	04/27/90		<0.05	<0.05
00403900 MS	W-15 Filtered MS	04/26/90	04/27/90		<0.05	0.19
Control Spike I			04/23/90		0.46	<0.05
Control Spike II			04/27/90		0.29	<0.05
Method Blank I	PCB		04/23/90		<0.05	<0.05
Method Blank II	PCB		04/27/90		<0.05	<0.05
00402960	W-16 Total	04/20/90		7.4		
00402961	W-16 Total Dup	04/20/90		9.4		
00402963	W-15 Total	04/20/90		8.2		
00402966	W-2 Total	04/20/90		5.1		
00403889	A-9 Total	04/26/90		15.5		
00403893	W-12 Total	04/26/90		15.6		
00403894	W-12 Total Dup	04/26/90		16.0		
00403897	W-15 Total	04/26/90		15.6		
Method Blank I	TSS			<1.0		
Method Blank II	TSS			<1.0		
Method Blank III	TSS			<1.0		
Method Blank IV	TSS			<1.0		

Note: PCB-1016, PCB-1221, PCB-1232, PCB-1254, and PCB-1260 not detected in any samples.

Note: The Control Spike was spiked of 0.50 ug/L of Aroclor 1242. The percent recoveries for Control Spike I and Control Spike II were 92% and 58% respectively.

Note: The Matrix Spike was spiked with 0.50 ug/L of Aroclor 1248. The percent recovery of the Aroclor 1248 from sample W-15 Filtered (00402965 MS) was 74%. W-15 Total and W-15 Filtered (00403898 MS and 00403900 MS) were spiked with 0.25 ug/L of Aroclor. The percent recoveries were 64% and 76% respectively.

BLASLAND AND BOUCK
SHEBOYGAN RIVER SEDIMENTS
PROJECT # 884.01
PCB ANALYSIS

SAMPLE NUMBER	SAMPLE LOCATION	DATE RECEIVED	DATE EXTRACTED	Corr. Factor	PCB-1242 ug/Kg	PCB-1254 ug/Kg	TOTAL PCB
00502084	A-5-1,2; 0-3" Comp.	05/10/90	05/10/90	1.38	2200	320	2520
00502085	A-14-1; 0-3"	05/10/90	05/10/90	1.42	2700	710	3410
00502086	A-14-1; 3-6"	05/10/90	05/10/90	1.56	75000	6200	81200
00502087	A-14-2; 0-3"	05/10/90	05/10/90	1.53	49000	4600	53600
00502088	A-14-2; 3-6"	05/10/90	05/10/90	1.64	35000	3300	38300
00502093 Dup	A-14-2; 3-6" Dup	05/10/90	05/10/90	1.56	41000	2400	43400
Control Spike			05/10/90	1.00	4400	2900	
Method Blank I			05/10/90	1.00	<50	<50	

Note: PCB-1016, PCB-1221, PCB-1232, PCB-1248, and PCB-1260 not detected in any samples

Note: The Control Spike was spiked with 5000 ug/Kg of Aroclor 1242 and Aroclor 1254. The percent recoveries were 88% and 58% respectively.

BLASLAND AND BOUCK
 SHEBOYGAN AN HARBOR PROJECT--SEDIMENT
 PROJECT # 884.01
 PCB ANALYSIS

SAMPLE NUMBER	SAMPLE LOCATION	DATE RECEIVED	DATE EXTRACTED	Corr. Factor	PCB-1242 ug/Kg	PCB-1248 ug/Kg	PCB-1254 ug/Kg
00502415	A-15-6,7,8; 0-3"	05/11/90	05/11/90	1.41	490	<100	<100
00502610	I-1; 0-0.5'	05/14/90	05/15/90	1.10	<2500	7200	<2500
00502611	I-1; 0.5-0.8'	05/14/90	05/15/90	1.02	<2500	18000	<2500
00502612	I-2; 0-3"	05/14/90	05/15/90	1.08	<15000	29000	<15000
00502613	I-2; 3-6"	05/14/90	05/15/90	1.00	<1300	2700	<1300
00502614	I-3; 0-3"	05/14/90	05/15/90	1.03	<2500	4500	<2500
00502615	I-3; 3-6"	05/14/90	05/15/90	1.02	<15000	41000	<15000
00502616	I-3; 6-9"	05/14/90	05/15/90	1.00	<2500	6900	<2500
Control Spike I			05/11/90	<1.00	5300	<2000	3700
Method Blank I			05/11/90	<1.00	<50	<50	<50
Method Blank II			05/15/90	<1.00	<50	<50	<50

Note: PCB-1016, PCB-1221, PCB-1232, and PCB-1260 not detected in any samples.

Note: The Control Spike was spiked with 5000 ug/Kg of Aroclor 1242 and Aroclor 1254. The percent recoveries were 106% and 74% respectively.

BLASLAND AND BOUCK
 SHEBOYGAN HARBORAN HARBOR PROJECT—SEDIMENT
 PROJECT # 884.01.15
 PCB ANALYSIS

SAMPLE NUMBER	SAMPLE LOCATION	DATE RECEIVED	DATE EXTRACTED	PCB-1242 ug/Kg	PCB-1254 ug/Kg
00403901	A-9 Composite 1,2,3,4	04/26/90	04/30/90	4900	<1500
Control Spike			04/30/90	4200	3600
Method Blank			04/30/90	<50	<50

Note: PCB-1016, PCB-1221, PCB-1232, PCB-1248, and PCB-1260 not detected in any samples.

Note: The Control Spike was spiked with 5000 ug/Kg of Aroclor 1242 and Aroclor 1254. The percent recoveries were 84% and 72% respectively.



BLASLAND & BOUCK ENGINEERS, P.C.

ENGINEERS & GEOSCIENTISTS

6723 Towpath Road, Box 66, Syracuse, New York 13214 (315) 446-9120

FAX: (315) 449-0017

May 15, 1990

Ms. Bonnie L. Eleder
Remedial Project Manager
USEPA
Region V
230 South Dearborn Street
Chicago, IL 60604

Re: Sheboygan River and Harbor

File: 176.07 #2

Dear Bonnie:

Enclosed please find, for your review, the April 1990 Status Report for activities associated with the above-referenced project.

Should you have any questions concerning the enclosed, please feel free to contact us.

Very truly yours,

BLASLAND & BOUCK ENGINEERS, P.C.

Dawn S. Foster

Dawn S. Foster, P.E.
Manager, Engineering

SDM/nlg
Enclosure

cc: Mark A. Thimke, Esq., Foley & Lardner, w/encl.
Ms. Robin R. Schmidt, Wisconsin Department of Natural Resources, w/encl.
Mr. Francis J. Trcka, Wisconsin Department of Natural Resources, w/encl.
Mr. William H. Bouck, P.E. Blasland & Bouck Engineers, P.C.
Mr. Robert K. Goldman, P.E., Blasland & Bouck Engineers, P.C.

3

SHEBOYGAN RIVER AND HARBOR
MONTHLY STATUS REPORT

April, 1990

1. Actions Taken During this Time Period:

The following activities were conducted during April:

- Armoring and removal activities in the Sheboygan River (details presented during the bi-weekly construction coordination meetings).
- Assessment and subsequent repair of damage to silt curtains from winter/spring conditions.
- Sheboygan River water depth study in the vicinity of the Kohler horse farm property.

The following meetings were held in April:

- April 4, 1990 - Meeting with Kohler regarding access agreement.
- April 19, 1990 - Meeting with USEPA/WDNR regarding project status and schedule.

2. EPA Decisions

- a. USEPA stated that the Work Plan/QAPP and RI/ES reports should be finalized without further comments from the reviewing agencies (with the possible exception of the QAPP).
- b. USEPA/WDNR provided approval to drop the daily river TSS analysis from the sample protocol (now only sampled daily for turbidity) as well as concurrence that an additional fish caged study during construction was not necessary.

3. Results of Sampling and Tests

Data summaries for the following analytical results received during this month are attached:

- a. The turbidity monitoring data collected during river activities is presented in Table 1.
- b. PCB/TSS results from the weekly monitoring during river activities are presented in Table 2. Laboratory data sheets are included in Attachment 1.
- c. Analytical data from the ENSECO clam and minnow "sediment capping study" was received in late April, and is currently being reviewed by B&B. The results will be presented upon completion of the review.

4. Anticipated Problems/Recommended Solutions

The Area #15 armor sampling port was installed in Area #11, since Area #15 was removed instead of armored.

5. Problems Encountered/Resolved

- a. On April 11, 1990, approximately 6,000 gallons of clean water from the rinsate tanks (used to counter any bouyant conditions during winter shutdown) was added to the anaerobic study cell (cell #1) of the CTF. On April 12, 1990, a leak was detected in cell #1, evidenced by water "boiling" up from beneath the sheet piling (northeast corner), and drippage at the drain and leak detection piping. Immediately upon discovery, a sump was constructed to collect water from the sheeting and water was transferred from cell #1 to cell #4. Also, approximately 2000 gallons of water was pumped from the cell #1 leak detection system to cell #4. By mid-afternoon (4/12), the leakage had stopped. Upon inspection of the cell #1 liner, a crescent shaped hole was found in the primary liner approximately 11 inches from the top of the CTF, under the liner flap. The cause of the tear is unknown.

Samples were taken from the water near the sheeting, and from the leak detection system. Both samples contained <0.5 ppb PCB.

The hole in the liner was repaired on April 18, 1990. As a result, all leak detection systems are checked every other day and drained as necessary.

- b. Difficulties have been encountered accessing sediment areas 2, 3, and 5A due to low water levels. Potential alternatives for reaching these areas include the use of smaller barges, use of a tracked vehicle in the river, or performing the work from the south shore. All options are currently being evaluated.

6. Deliverables Submitted

Date Submitted

- | | |
|--|---------|
| - March Status Report | 4/16/90 |
| - Sent 1989 Sheboygan River Fish Monitoring Data to John Nelson, County Fish Manager | 4/23/90 |

7. Upcoming Events/Activities Planned

Sheboygan River dredging/armoring and monitoring activities to continue.

8. Key Personnel Changes

None.

9. Schedule

Removal/armoring activities are continuing. These activities are expected to continue through the end of May. Access area restoration activities would be initiated shortly thereafter. Rochester Park restoration is anticipated to be complete by June 15, 1990.

TABLE 1
SHEBOYGAN RIVER AND HARBOR
ALTERNATIVE SPECIFIC REMEDIAL INVESTIGATION

RIVER MONITORING DATA
(DURING CONSTRUCTION)

Area	Date	Activity	Time	Location	Depth of Water (ft)	Depth of Sample (ft)	Turbidity Results (ntu)	Comments
15	4/11/90	Background	10:00	100' Upstream	4.5	2.0	8	
			10:10	100' Downstream	4.0	2.0	9	
15	4/11/90	Dredging	14:15	100' Upstream	4.5	2.0	8	
			14:30	100' Downstream	4.0	2.0	10	
15	4/12/90	Dredging	10:40	100' Upstream	4.5	2.0	5.2	
			10:30	100' Downstream	4.0	2.0	5.1	
			10:45	Fixed W-12	5.0	2.5	5.0	Upstream
			10:35	Fixed W-15	4.0	2.0	5.1	Downstream
9	4/13/90	Dredging	10:25	100' Upstream	4.0	2.0	6.2	
			10:30	100' Downstream	4.0	2.0	5.5	
			10:40	Fixed W-12	3.5	2.0	5.5	Upstream
			10:35	Fixed W-15	3.5	2.0	6.9	Downstream
9	4/16/90	Dredging	13:37	100' Upstream	6.5	3.0	5.0	
			13:40	100' Downstream	2.5	1.0	5.0	
			13:35	Fixed W-12	5.0	2.5	5.0	Upstream
			13:45	Fixed W-15	4.5	2.0	6.0	Downstream
9	4/17/90	Dredging	14:58	100' Upstream	7.5	3.5	4.6	
			14:55	100' Downstream	2.5	1.0	4.4	
			15:00	Fixed W-12	5.0	2.5	4.5	
			14:57	Fixed W-15	3.5	1.5	6.5	

TABLE 1
(Continued)

SHEBOYGAN RIVER AND HARBOR
ALTERNATIVE SPECIFIC REMEDIAL INVESTIGATION

RIVER MONITORING DATA
(DURING CONSTRUCTION)

Area	Date	Activity	Time	Location	Depth of Water (ft)	Depth of Sample (ft)	Turbidity Results (ntu)	Comments
5	4/18/90	Dredging	11:35	100' Upstream	3.0	1.5	5.0	
			11:25	100' Downstream	4.0	2.0	5.2	
			11:40	Fixed W-16	3.0	1.5	5.0	Upstream
			11:20	Fixed W-12	5.5	2.5	4.5	Downstream
			11:30	Fixed W-2	4.0	2.0	3.5	Onion River Upstream
5	4/19/90	Dredging	13:45	100' Upstream	3.0	1.5	6.0	
			13:40	100' Downstream	3.5	1.5	6.2	
			13:47	Fixed W-16	2.5	1.0	7.8	Upstream
			13:35	Fixed W-12	5.5	3.0	6.9	Downstream
			13:50	Fixed W-2	3.0	1.5	4.5	Onion River Upstream
11	4/19/90	Armoring	13:25	100' Upstream	5.0	2.5	5.1	
			13:30	100' Downstream	4.0	2.0	5.0	
			13:35	Fixed W-12	5.5	3.0	6.9	Upstream
			13:33	Fixed W-15	4.5	2.0	5.6	Downstream
11	4/20/90	Armoring	10:45	100' Upstream	4.0	2.0	5.5	
			10:40	100' Downstream	2.5	1.0	5.5	
			10:50	Fixed W-12	4.5	2.0	5.3	Upstream
			10:43	Fixed W-15	4.5	2.0	7.5	Downstream
11	4/23/90	Armoring	13:57	100' Upstream	5.5	2.5	7.2	
			14:00	100' Downstream	3.0	1.5	7.2	
			13:55	Fixed W-12	5.0	2.5	7.0	Upstream
			14:03	Fixed W-15	3.5	1.5	7.3	Downstream

TABLE 1
(Continued)

SHEBOYGAN RIVER AND HARBOR
ALTERNATIVE SPECIFIC REMEDIAL INVESTIGATION

RIVER MONITORING DATA
(DURING CONSTRUCTION)

Area	Date	Activity	Time	Location	Depth of Water (ft)	Depth of Sample (ft)	Turbidity Results (ntu)	Comments
5	4/23/90	Dredging	13:35	100' Upstream	4.0	2.0	7.5	
			13:50	100' Downstream	4.0	2.0	7.2	
			13:40	Fixed W-16	2.5	1.0	7.8	Upstream
			13:55	Fixed W-12	5.0	2.5	7.0	Downstream
			13:45	Fixed W-2	2.5	1.0	6.0	Onion River Upstream
11	4/24/90	Armoring	11:30	100' Upstream	2.5	1.0	6.5	
			11:33	100' Downstream	3.0	1.5	7.5	
			11:25	Fixed W-12	4.5	2.0	6.8	Upstream
			11:35	Fixed W-15	4.0	2.0	7.2	Downstream
11	4/25/90	Armoring	12:05	100' Upstream	1.5	0.8	8.7	
			12:00	100' Downstream	3.0	1.5	8.4	
			11:40	Fixed W-12	4.5	2.0	8.7	Upstream
			11:50	Fixed W-15	4.0	2.0	8.8	Downstream
15	4/26/90	Dredging Extension	13:15	100' Upstream	3.0	1.5	14	
			13:20	100' Downstream	4.0	2.0	16	
			13:10	Fixed W-12	4.5	2.0	12	Upstream
			13:20	Fixed W-15	4.0	2.0	16	Downstream
15	4/27/90	Dredging	8:03	100' Upstream	2.5	1.0	15	
			8:00	100' Downstream	4.0	2.0	15	
			8:10	Fixed W-12	4.5	2.0	14	Upstream
			8:00	Fixed W-15	4.0	2.0	15	Downstream

TABLE 1
(Continued)

SHEBOYGAN RIVER AND HARBOR
ALTERNATIVE SPECIFIC REMEDIAL INVESTIGATION

RIVER MONITORING DATA
(DURING CONSTRUCTION)

Area	Date	Activity	Time	Location	Depth of Water (ft)	Depth of Sample (ft)	Turbidity Results (ntu)	Comments
8	4/27/90	Armoring	8:07	100' Upstream	8.0	4.0	15	
			8:05	100' Downstream	5.0	2.5	15	
			8:10	Fixed W-12	4.5	2.0	14	Upstream
			8:00	Fixed W-15	4.0	2.0	15	Downstream
8	4/30/90	Armoring	10:40	100' Upstream	6.0	3.0	16	
			10:45	100' Downstream	5.0	2.5	16	
			10:35	Fixed W-12	4.5	2.0	15	Upstream
			10:48	Fixed W-15	4.0	2.0	16	Downstream
15	4/30/90	Dredging	10:50	100' Upstream	2.5	1.0	16	
			10:48	100' Downstream	4.0	2.0	16	
			10:35	Fixed W-12	4.5	2.0	15	Upstream
			10:48	Fixed W-15	4.0	2.0	16	Downstream

TABLE 2

SHEBOYGAN RIVER AND HARBOR
ALTERNATIVE SPECIFIC REMEDIAL INVESTIGATION

WEEKLY PCB/TSS RIVER MONITORING

Sample Date	Week	Activity	Time	Sample Location	Depth of Water (ft)	Depth of Sample (ft)	Results		
							Total PCBs (ppb)	Filtered PCBs (ppb)	TSS mg/l
4/13/90	4/9-4/13/90	Dredging	10:40	W-12	3.5	2.0	<0.05	<0.05	39
		Area 15	10:35	W-15	3.5	2.0	0.08	0.07	8.1

ATTACHMENT 1
LABORATORY DATA SHEETS

BLASLAND AND BOUCK
SHEBOYGAN HARBOR PROJECT--WATER
PROJECT # 884.01
PCB ANALYSIS

SAMPLE NUMBER	SAMPLE LOCATION	DATE RECEIVED	DATE EXTRACTED	TSS mg/L	PCB-1242 ug/L	PCB-1248 ug/L	PCB-1254 ug/L
00402344	W-12 TOTAL	04/13/90	04/16/90		<0.05	<0.05	<0.05
00402345	W-12 FILTERED	04/13/90	04/16/90		<0.05	<0.05	<0.05
00402347	W-15 TOTAL	04/13/90	04/16/90		0.08	<0.05	<0.05
00402348	W-15 FILTERED	04/13/90	04/16/90		0.07	<0.05	<0.05
CONTROL SPIKE			04/16/90		0.33	<0.05	<0.05
METHOD BLANK	PCB		04/16/90		<0.05	<0.05	<0.05
METHOD BLANK I	TSS			<1.0			
METHOD BLANK II	TSS			<1.0			
00402346	W-12	04/13/90		39			
00402349	W-15	04/13/90		8.1			

Note: PCB-1016, PCB-1221, PCB-1232, and PCB-1260 not detected in any samples.

Note: The Control Spike was spiked with 0.50 ug/L with Aroclor 1242.
The percent recovery was 66% .



BLASLAND & BOUCK ENGINEERS, P.C.

ENGINEERS & GEOSCIENTISTS

6723 Towpath Road, Box 66, Syracuse, New York 13214 (315) 446-9120

FAX: (315) 449-0017

April 16, 1990

Ms. Bonnie L. Eleder
Remedial Project Manager
USEPA
Region V
230 South Dearborn Street
Chicago, IL 60604

Re: Sheboygan River and Harbor

File: 176.07 #2

Dear Bonnie:

Enclosed please find, for your review, the March 1990 Status Report for activities associated with the above-referenced project.

Should you have any questions concerning the enclosed, please feel free to contact us.

Very truly yours,

BLASLAND & BOUCK ENGINEERS, P.C.

Dawn S. Foster, P.E.
Manager, Engineering

DSF/nlg
Enclosure

cc: Mark A. Thimke, Esq., Foley & Lardner, w/encl.
Ms. Robin R. Schmidt, Wisconsin Department of Natural Resources, w/encl.
Mr. Francis J. Trcka, Wisconsin Department of Natural Resources, w/encl.
Mr. William H. Bouck, P.E., Blasland & Bouck Engineers, P.C.
Mr. Robert K. Goldman, P.E., Blasland & Bouck Engineers, P.C.

SHEBOYGAN RIVER AND HARBOR
MONTHLY STATUS REPORT

March, 1990

1. Actions Taken During This Time Period

The following activities were conducted during March:

- a. Weekly inspections of CTF and access areas.
- b. Remobilization for sediment removal and armoring activities was initiated on March 19, 1990.

The following meetings were held in March:

March 1, 1990 - Meeting with Kohler regarding access at the horse farm.

2. EPA Decisions

- a. Received March 5, 1990 letter from Bonnie Eleder to Bob Goldman providing approval of the ASRI Pilot Project.
- b. Received WDNR approval of Scientific Collectors Permit for the 1990 collection of resident and migratory species from the Sheboygan River and Harbor.
- c. The EPA/WDNR agreed that the hay bales previously utilized for erosion control and removed for winter shutdown did not have to be replaced. Rather, the erosion control silt curtains would be keyed 4-6 inches into the ground.
- d. The EPA agreed that the gabions for armoring, installed along the river bank could be 9 inches high, rather than 12 inches, and the decon trailer would be installed at access area #1, instead of #3.

3. Results of Sampling and Tests

Data summaries for the following analytical results received during this month are attached:

- a. PCB results for carp collected from the Sheboygan River and Harbor is presented in Tables 1-3. The laboratory data sheets are included in Attachment 1.
- b. PCB sediment samples for Area 15 were collected from locations already dredged (A-15), and locations yet to be dredged (R-267 and R-268). Results are presented in Table 4. The laboratory data sheet is included in Attachment 1.

4. Anticipated Problems/Recommended Solutions

None

5. Problems Encountered/Resolved

On March 13, 1990, during observations of the site, the valve at the terminus of the anaerobic study cell permeable treatment wall discharge was noted to be dislodged from the piping. The valve was immediately replaced and no evidence of discharge was noted. Presumably rain water or water remaining after liner testing could have been contained within this compartment.

6. Deliverables Submitted

Date Submitted

- February Status Report

3/14/90

7. Upcoming Events/Activities Planned

- Spring collection of rainbow trout from the Sheboygan River and Harbor is scheduled for April 10 and 11.

8. Key Personnel Changes

None

9. Schedule

- Mobilization for spring sediment removal and armoring activities near Rochester Park began in late March.

- Assessment and subsequent repair of damage to silt curtains began on April 9, 1990.

TABLE 1
SHEBOYGAN RIVER AND HARBOR
ALTERNATIVE SPECIFIC REMEDIAL INVESTIGATION

SUMMARY OF DATA FOR RIVER CARP
(BETWEEN KOHLER DAMS)
Date Sampled: 10/23/89

I. Raw Data

<u>SAMPLE NUMBER</u>	<u>LENGTH (cm)</u>	<u>WEIGHT (grams)</u>	<u>TOTAL PCBs^a (mg/kg)</u>	<u>LIPIDS (%)</u>
FX-1	28.7	285.0	9.40	1.98
FX-2	28.2	267.0	15.00	2.75
FX-3	24.1	200.0	14.40	2.29
FX-4	30.2	356.0	12.20	1.80
FX-5	26.7	246.0	14.20	1.90
FX-6	29.0	327.0	21.00	2.95
FX-7	27.7	262.0	9.70	1.88
FX-8	29.2	306.0	15.00	2.19
FX-9	26.7	247.0	12.50	1.82
FX-10	25.7	239.0	15.50	2.78
FX-10 DUP	NA	NA	12.70	2.86
FX-10 MS	NA	NA	17.20	2.82
FX-11	31.0	393.0	21.0	1.45
FX-12	28.7	317.0	11.50	1.71
FX-13	26.2	225.0	10.40	1.41
FX-14	30.0	344.0	15.90	2.53
FX-15	29.7	335.0	20.40	2.12
FX-16	29.2	320.0	13.50	2.13
FX-17	31.0	358.0	18.70	1.71
FX-18	30.2	340.0	14.50	2.35
FX-19	31.0	397.0	15.40	2.10
FX-20	29.0	316.0	15.90	2.89
FX-20 DUP	NA	NA	12.20	2.66
FX-20 MS	NA	NA	14.90	3.10

SHEBOYGAN RIVER AND HARBOR
ALTERNATIVE SPECIFIC REMEDIAL INVESTIGATION

Table 1 (Cont'd)
(Between Kohler Dams)

<u>SAMPLE NUMBER</u>	<u>LENGTH (cm)</u>	<u>WEIGHT (grams)</u>	<u>TOTAL PCBS^a (mg/kg)</u>	<u>LIPIDS (%)</u>
FX-21	29.2	351.0	14.80	2.30
FX-22	29.0	308.0	5.70	1.48
FX-23	27.9	269.0	10.20	2.50
FX-24	30.0	341.0	9.90	2.11
FX-25	28.7	305.0	8.60	1.84

II. Means

Total PCBs (mg/kg)	13.87
	± 3.64
Lipids %	2.22
	± 0.48
Length (cm)	28.67
	± 1.70
Weight (grams)	306.16
	± 50.30

Notes:

NA = Not applicable

a = Breakdown of total PCBs by Aroclor is available in lab data sheets
(Note sample number in this table corresponds to the sample location in the lab data sheets)

TABLE 2

SHEBOYGAN RIVER AND HARBOR
ALTERNATIVE SPECIFIC REMEDIAL INVESTIGATION

SUMMARY OF DATA FOR RIVER CARP
(NEAR ROCHESTER PARK)
Date Sampled: 10/25/89

I. Raw Data

<u>SAMPLE NUMBER</u>	<u>LENGTH (cm)</u>	<u>WEIGHT (grams)</u>	<u>TOTAL PCBs^a (mg/kg)</u>	<u>LIPIDS (%)</u>
FX-26	27.7	242.0	27.10	1.46
FX-27	29.2	278.0	7.10	1.08
FX-28	24.1	165.0	10.50	1.59
FX-29	34.8	470.0	29.00	2.84
FX-30	23.4	138.0	5.10	1.26
FX-30 DUP	NA	NA	6.10	1.32
FX-30 MS	NA	NA	7.90	1.90
FX-31	34.5	540.0	41.00	5.07
FX-32	21.3	105.0	7.90	2.72
FX-33	19.3	86.0	10.20	1.65
FX-34	21.3	115.0	6.30	1.05
FX-35	25.7	187.0	8.70	0.59
FX-36	26.7	264.0	13.30	3.07
FX-37	31.5	405.0	11.50	3.96
FX-38	28.7	276.0	13.40	0.78
FX-39	41.7	900.0	3.60	4.82
FX-40	40.1	773.0	49.00	3.62
FX-40 DUP	NA	NA	69.00	3.98
FX-40 MS	NA	NA	41.00	4.09
FX-41	43.7	1070.0	24.40	5.39
FX-42	45.5	1115.0	8.90	2.62
FX-43	20.6	102.0	8.60	2.24
FX-44	46.5	1185.0	27.00	5.77
FX-45	40.1	907.0	36.00	4.86

SHEBOYGAN RIVER AND HARBOR
ALTERNATIVE SPECIFIC REMEDIAL INVESTIGATION

Table 2 (Cont'd)
(Near Rochester Park)

<u>SAMPLE NUMBER</u>	<u>LENGTH (cm)</u>	<u>WEIGHT (grams)</u>	<u>TOTAL PCBs^a (mg/kg)</u>	<u>LIPIDS (%)</u>
FX-46	44.2	1125.0	2.13	3.29
FX-47	47.5	1215.0	1.65	1.76
FX-48	46.2	1372.0	15.50	2.97
FX-49	49.0	1523.0	47.00	4.80
FX-50	46.7	1582.0	5.80	5.18
FX-50 DUP	NA	NA	6.10	5.22
FX-50 MS	NA	NA	10.20	5.09

II. Means

Total PCBs (mg/kg)	18.10 ± 16.48
Lipids (%)	3.10 ± 1.59
Length (cm)	34.40 ± 9.97
Weight (grams)	645.60 ± 495.20

Notes:

NA = Not applicable

a = Breakdown of total PCBs by Aroclor is available in lab data sheets
(Note sample number in this table corresponds to the sample location in
the lab data sheets)

TABLE 3

SHEBOYGAN RIVER AND HARBOR
ALTERNATIVE SPECIFIC REMEDIAL INVESTIGATION

SUMMARY OF DATA FOR RIVER CARP
(NEAR KIWANIS PARK)

Date Sampled: 11/2/89

I. Raw Data

<u>SAMPLE NUMBER</u>	<u>LENGTH (cm)</u>	<u>WEIGHT (grams)</u>	<u>TOTAL PCBs^a (mg/kg)</u>	<u>LIPIDS (%)</u>
FX-51	26.9	254.0	6.00	2.53
FX-52	32.0	424.0	6.80	2.77
FX-53	29.0	330.0	4.40	2.20
FX-54	32.5	487.0	6.60	3.44
FX-55	31.0	370.0	9.40	3.98
FX-56	33.8	580.0	6.50	6.28
FX-57	31.5	445.0	5.70	3.13
FX-58	33.0	563.0	1.82	0.90
FX-59	41.1	883.0	5.20	5.71
FX-60	61.5	3735.0	30.00	7.89
FX-60 DUP	NA	NA	27.40	7.80
FX-60 MS	NA	NA	29.60	7.81
FX-61	63.2	3690.0	27.20	12.15
FX-62	48.5	2265.0	101.00	16.11
FX-63	50.3	1782.0	21.50	3.93
FX-64	54.6	2587.0	31.00	12.93
FX-65	58.9	3215.0	26.90	11.94
FX-66	33.8	574.0	4.30	4.22
FX-67	65.8	4865.0	28.60	15.75
FX-68	62.0	4335.0	55.00	9.14
FX-68 DUP	NA	NA	56.00	8.78
FX-68 MS	NA	NA	45.00	8.81

SHEBOYGAN RIVER AND HARBOR
ALTERNATIVE SPECIFIC REMEDIAL INVESTIGATION

Table 3 (Cont'd)
(Near Kiwanis Park)

II. Means

Total PCBs (mg/kg)	24.36
	± 23.28
Lipids (%)	7.19
	± 4.33
Length (cm)	43.86
	± 13.59
Weight (grams)	1743.56
	± 1551.51

Notes:

NA = Not applicable

a = Breakdown of total PCBs by Aroclor is available in lab data sheets
(Note sample number in this table corresponds to the sample location in
the lab data sheets)

TABLE 4

SHEBOYGAN RIVER AND HARBOR
ALTERNATIVE SPECIFIC REMEDIAL INVESTIGATIONS
SUMMARY OF POST-REMOVAL SEDIMENT SAMPLES¹
AREA 15

<u>Sample Number</u>	<u>Date</u>	<u>No. of Locations</u>	<u>Sample Depth (in.)</u>	<u>Sample Type</u>	<u>Sample Description</u>	<u>Total PCB mg/kg (Dry Weight)</u>
A-15 _w ²	1/16/90	4	0-3	Composite	A-15-1- sand and gravel A-15-2- sand and gravel A-15-3- sand and gravel A-15-4- silt and sand	1.1
A-15 _v ²	1/16/90	4	0-3	Composite	A-15-1- sand and gravel A-15-2- sand and gravel A-15-3- sand and gravel A-15-4- silt and sand	1.4
A-15-5	1/16/90	1	0-3	Grab	silt with some sand; trace of oil visible; some black staining	160.0
R-267 ³	1/16/90	1	0-6	Grab	dark brown to black silt; strong organic odor	1,100.0 1,200.0(dup)
			6-12		dark brown to black silt; organic odor	760.0
			12-21.6		dark brown silt; some fine sand; organic odor	670.0
R-268 ³	1/16/90	1	0-6	Grab	dark brown silt; organic odor	960.0
			6-12		dark brown silt; slight organic odor	280.0

Notes:

¹Sediment samples collected after sediment removal activities were halted for winter shutdown.

²Represent composites of the same grab samples. A-15_w was composited in the laboratory by weight, prior to analysis. A-15_v was composited in the laboratory by volume, prior to analysis.

ATTACHMENT 1
LABORATORY DATA SHEETS

BLASLAND & BOUCK
SHEBOYGAN RIVER CARP
(SET 1)

SAMPLE NUMBER	SAMPLE LOCATION	DATE RECEIVED	DATE EXTRACTED	PERCENT LIPIDS	PCB 1242 (ug/Kg)	PCB 1248 (ug/Kg)	PCB 1254 (ug/Kg)	TOTAL PCB
91005154	FX-1	10/26/89	1/23/90	1.98	3700	<750	5700	9400
91005155	FX-2	10/26/89	1/23/90	2.75	7300	<750	7700	15000
91005156	FX-3	10/26/89	1/23/90	2.29	7000	<750	7400	14400
91005157	FX-4	10/26/89	1/23/90	1.80	5700	<750	6500	12200
91005158	FX-5	10/26/89	1/23/90	1.90	6000	<750	8200	14200
91005159	FX-6	10/26/89	1/23/90	2.95	12000	<1000	9000	21000
91005160	FX-7	10/26/89	1/23/90	1.88	4300	<500	5400	9700
91005161	FX-8	10/26/89	1/23/90	2.19	8800	<750	6200	15000
91005162	FX-9	10/26/89	1/23/90	1.82	6000	<750	6500	12500
91005163	FX-10	10/26/89	1/23/90	2.78	8600	<750	6900	15500
91005164	FX-11	10/26/89	1/23/90	1.45	11000	<750	10000	21000
91005165	FX-12	10/26/89	1/23/90	1.71	5600	<750	5900	11500
91005166	FX-13	10/26/89	1/23/90	1.41	4900	<750	5500	10400
91005167	FX-14	10/26/89	1/23/90	2.53	7700	<750	8200	15900
91005168	FX-15	10/26/89	1/23/90	2.12	11000	<1000	9400	20400
91005169	FX-16	10/26/89	1/23/90	2.13	6700	<750	6800	13500
91005170	FX-17	10/26/89	1/23/90	1.71	8700	<750	10000	18700
91005171	FX-18	10/26/89	1/23/90	2.35	7800	<750	6700	14500
91005172	FX-19	10/26/89	1/23/90	2.10	7700	<750	7700	15400
91005173	FX-20	10/26/89	1/23/90	2.89	6700	<750	9200	15900
00202337	FX-10 DUP	10/26/89	1/23/90	2.86	7400	<1000	5300	12700
00202338	FX-10 MS	10/26/89	1/23/90	2.82	12000	<1200	5200	17200
00202339	FX-20 DUP	10/26/89	1/23/90	2.66	6200	<1000	6000	12200
00202340	FX-20 MS	10/26/89	1/23/90	3.10	8000	<1000	6900	14900
Control Blank			1/23/90	0.59	<50	<50	<50	<50
Control Spike			1/23/90	0.59	1500	<250	980	2480
Method Blank			1/23/90		<50	<50	<50	<50

NOTE: PCB-1016, PCB-1221, PCB-1232 and PCB-1260 not found in any sample.

The control spike was fortified with 2000 ug/Kg of Aroclor 1242 and Aroclor 1254. The recovery of the spikes was 75% and 49% respectively.

The matrix spikes were fortified with 2000 ug/Kg of Aroclor 1242. The recovery of the spike from sample FX-10 was 200%. The recovery of the Aroclor 1242 from sample FX-20 was 78%.

BLASLAND & BOUCK
SHEBOYGAN RIVER CARP
(SET 2)

SAMPLE NUMBER	SAMPLE LOCATION	DATE RECEIVED	DATE EXTRACTED	PERCENT LIPIDS	PCB 1242 (ug/Kg)	PCB 1248 (ug/Kg)	PCB 1254 (ug/Kg)	TOTAL PCB
91005174	FX-21	10/26/89	2/08/90	2.30	7400	<750	7400	14800
91005175	FX-22	10/26/89	2/08/90	1.48	2300	<450	3400	5700
91005176	FX-23	10/26/89	2/08/90	2.50	5300	<600	4900	10200
91005177	FX-24	10/26/89	2/08/90	2.11	4100	<600	5800	9900
91005178	FX-25	10/26/89	2/08/90	1.84	4200	<450	4400	8600
91005188	FX-26	10/26/89	2/08/90	1.46	<1500	9100	18000	27100
91005189	FX-27	10/26/89	2/08/90	1.08	3000	<450	4100	7100
91005190	FX-28	10/26/89	2/08/90	1.59	<750	4800	5700	10500
91005191	FX-29	10/26/89	2/08/90	2.84	14000	<1500	15000	29000
91005192	FX-30	10/26/89	2/08/90	1.26	3100	<450	2000	5100
91005193	FX-31	10/26/89	2/08/90	5.07	22000	<1500	19000	41000
91005194	FX-32	10/26/89	2/08/90	2.72	4500	<750	3400	7900
91005195	FX-33	10/26/89	2/08/90	1.65	<750	5900	4300	10200
91005196	FX-34	10/26/89	2/08/90	1.05	<450	3900	2400	6300
91005197	FX-35	10/26/89	2/08/90	0.59	<600	2500	6200	8700
91005198	FX-36	10/26/89	2/08/90	3.07	8300	<750	5000	13300
91005199	FX-37	10/26/89	2/08/90	3.96	8800	<750	2700	11500
91005200	FX-38	10/26/89	2/08/90	0.78	<750	5800	7600	13400
91005201	FX-39	10/26/89	2/08/90	4.82	1800	<450	1800	3600
91005202	FX-40	10/26/89	2/08/90	3.62	33000	<1500	16000	49000
00202341	FX-30 DUP	10/26/89	2/08/90	1.32	3600	<450	2500	6100
00202342	FX-30 MS	10/26/89	2/08/90	1.90	4900	<450	3000	7900
00202343	FX-40 DUP	10/26/89	2/08/90	3.98	44000	<1500	25000	69000
00202344	FX-40 MS	10/26/89	2/08/90	4.09	28000	<1500	13000	41000
Control Blank			2/08/90	0.52	<50	<50	<50	<50
Control Spike			2/08/90	0.50	1400	<150	1200	2600
Method Blank			2/08/90		<50	<50	<50	<50

NOTE: PCB-1016, PCB-1221, PCB-1232 and PCB-1260 not found in any sample.

The control spike was fortified with 2000 ug/Kg of Aroclor 1242 and Aroclor 1254. The recovery of the spikes was 70% and 60% respectively.

The matrix spikes were fortified with 2000 ug/Kg of Aroclor 1242. The recovery of the spike from sample FX-30 was 78%. The spike of sample FX-40 could not be calculated because of the relatively high concentration of PCB's in the sample.

BLASLAND & BOUCK
SHEBOYGAN RIVER CARP
(SET 3)

SAMPLE NUMBER	SAMPLE LOCATION	DATE RECEIVED	DATE EXTRACTED	PERCENT LIPIDS	PCB 1242 (ug/Kg)	PCB 1248 (ug/Kg)	PCB 1254 (ug/Kg)	TOTAL PCB
91005203	FX-41	10/26/89	2/12/90	5.39	<2500	15000	9400	24400
91005204	FX-42	10/26/89	2/12/90	2.62	<750	4600	4300	8900
91005205	FX-43	10/26/89	2/12/90	2.24	<750	5000	3600	8600
91005206	FX-44	10/26/89	2/12/90	5.77	<2000	11000	16000	27000
91005207	FX-45	10/26/89	2/12/90	4.86	20000	<5000	16000	36000
91005208	FX-46	10/26/89	2/12/90	3.29	830	<250	1300	2130
91005209	FX-47	10/26/89	2/12/90	1.76	730	<250	920	1650
91005210	FX-48	10/26/89	2/12/90	2.97	<2000	6600	8900	15500
91005211	FX-49	10/26/89	2/12/90	4.80	<5000	19000	28000	47000
91005212	FX-50	10/26/89	2/12/90	5.18	2100	<500	3700	5800
91100957	FX-51	11/03/89	2/12/90	2.53	<500	3600	2400	6000
91100958	FX-52	11/03/89	2/12/90	2.77	<500	4000	2800	6800
91100959	FX-53	11/03/89	2/12/90	2.20	1700	<500	2700	4400
91100960	FX-54	11/03/89	2/12/90	3.44	<500	3800	2700	6600
91100961	FX-55	11/03/89	2/12/90	3.98	<1000	4800	4600	9400
91100962	FX-56	11/03/89	2/12/90	6.28	<500	4100	2400	6500
91100963	FX-57	11/03/89	2/12/90	3.13	<500	2900	2800	5700
91100964	FX-58	11/03/89	2/12/90	0.90	<250	1100	720	1820
91100965	FX-59	11/03/89	2/12/90	5.71	2300	<500	2900	5200
91100966	FX-60	11/03/89	2/12/90	7.89	<2500	12000	18000	30000
00202345	FX-50 DUP	11/03/89	2/12/90	5.22	2200	<500	3900	6100
00202346	FX-50 MS	11/03/89	2/12/90	5.09	4300	<2000	5900	10200
00202347	FX-60 DUP	11/03/89	2/12/90	7.80	<2500	8400	19000	27400
00202348	FX-60 MS	11/03/89	2/12/90	7.81	7600	<2500	22000	29600
Control Blank			2/12/90	0.57	<50	<50	<50	<50
Control Spike			2/12/90	0.55	930	<200	1000	1930
Method Blank			2/12/90		<50	<50	<50	<50

NOTE: PCB-1016, PCB-1221, PCB-1232 and PCB-1260 not found in any sample.

The control spike was fortified with 2000 ug/Kg of Aroclor 1242 and Aroclor 1254. The recovery of the spikes was 47% and 50% respectively.

~~The matrix spikes were fortified with 2000 ug/Kg of Aroclor 1242. The recovery of the spike from sample FX-50 was 108%. The recovery of the Aroclor 1242 from sample FX-60 was not measurable.~~

BLASLAND & BOUCK
SHEBOYGAN RIVER CARP
(SET 4)

SAMPLE NUMBER	SAMPLE LOCATION	DATE RECEIVED	DATE EXTRACTED	PERCENT LIPIDS	PCB 1242 (ug/Kg)	PCB 1248 (ug/Kg)	PCB 1254 (ug/Kg)	TOTAL PCB
91100967	FX-61	11/03/89	2/14/90	12.15	7200	<1500	20000	27200
91100968	FX-62	11/03/89	2/14/90	16.11	<6000	36000	65000	101000
91100969	FX-63	11/03/89	2/14/90	3.93	<1500	6500	15000	21500
91100970	FX-64	11/03/89	2/14/90	12.93	11000	<1500	20000	31000
91100971	FX-65	11/03/89	2/14/90	11.94	9900	<1500	17000	26900
91100972	FX-66	11/03/89	2/14/90	4.22	1700	<300	2600	4300
91100973	FX-67	11/03/89	2/14/90	15.75	<3000	5600	23000	28600
91100974	FX-68	11/03/89	2/14/90	9.14	<3000	19000	36000	55000
00300815	FX-68 DUP	11/03/89	2/14/90	8.78	<3000	20000	36000	56000
00300816	FX-68 MS	11/03/89	2/14/90	8.81	12000	<3000	33000	45000
Control Blank			2/14/90	0.46	<50	<50	<50	<50
Control Spike			2/14/90	0.48	1300	<300	1300	2600
Method Blank			2/14/90		<50	<50	<50	<50

NOTE: PCB-1016, PCB-1221, PCB-1232 and PCB-1260 not found in any sample.

The control spike was fortified with 2000 ug/Kg of Aroclor 1242 and Aroclor 1254. The recovery of the spikes was 65% for both.

The matrix spike was fortified with 2000 ug/Kg of Aroclor 1242. The recovery of the spike was not measurable because of the high PCB content in the sample.

Blasland & Bouck
Sheboygan River Carp

<u>Hazleton No.</u>	<u>Sample No.</u>	<u>Weight (g)</u>	
		<u>Whole Fish</u>	<u>Gutted</u>
91005154	FX-1	285	250
91005155	FX-2	267	232
91005156	FX-3	200	167
91005157	FX-4	356	310
91005158	FX-5	246	228
91005159	FX-6	327	269
91005160	FX-7	262	227
91005161	FX-8	306	265
91005162	FX-9	247	210
91005163	FX-10	239	208
91005164	FX-11	393	342
91005165	FX-12	317	271
91005166	FX-13	225	188
91005167	FX-14	344	288
91005168	FX-15	335	291
91005169	FX-16	320	271
91005170	FX-17	358	310
91005171	FX-18	340	306
91005172	FX-19	397	335
91005173	FX-20	316	274
91005174	FX-21	351	307
91005175	FX-22	308	261
91005176	FX-23	269	229
91005177	FX-24	341	286
91005178	FX-25	305	259
91005188	FX-26	242	210
91005189	FX-27	278	249
91005190	FX-28	165	148
91005191	FX-29	470	425
91005192	FX-30	138	120
91005193	FX-31	540	475
91005194	FX-32	105	95
91005195	FX-33	86	75
91005196	FX-34	115	100
91005197	FX-35	187	163
91005198	FX-36	264	230
91005199	FX-37	405	360
91005200	FX-38	276	242
91005201	FX-39	900	823
91005202	FX-40	773	621
91005203	FX-41	1,070	944
91005204	FX-42	1,115	1,003
91005205	FX-43	102	90
91005206	FX-44	1,185	1,040
91005207	FX-45	907	751
91005208	FX-46	1,125	881
91005209	FX-47	1,215	1,030
91005210	FX-48	1,372	1,124
91005211	FX-49	1,523	1,304
91005212	FX-50	1,582	1,165

BLASLAND AND BOUCK
SHEBOYGAN HARBOR SOIL
PCB ANALYSIS

SAMPLE NUMBER	SAMPLE LOCATION	DATE RECEIVED	DATE EXTRACTED	PERCENT MOISTURE	Values in ug/kg Dry Weight		
					PCB-1242	PCB-1248	PCB-1254
12810	A-15 Composite-volume	01/18/90	01/23/90	0.17	1100	<500	<500
	A-15 Composite-weight	01/18/90	02/23/90	0.15	1400	<500	<500
12811	A-15-5	01/18/90	01/23/90	0.62	160000	<30000	<30000
12812	R-267(0.05')	01/18/90	01/23/90	1.16	1100000	<150000	<150000
12813(MS)	R-267(0.05')(MS)	01/18/90	01/23/90	1.16	1100000	<150000	<150000
12814(Dup)	R-267(0.05')(Dup)	01/18/90	01/23/90	1.16	1200000	<150000	<150000
12815	R-267(0.5'-1.0')	01/18/90	01/23/90	0.91	760000	<150000	<150000
12816	R-267(1.0'-1.8')	01/18/90	01/23/90	0.96	670000	<91000	<91000
12817	R-268(0.05')	01/18/90	01/23/90	1.51	960000	<150000	<150000
12818	R-268(0.5'-1.0')	01/18/90	01/23/90	0.93	280000	<45000	<45000
Control Spike			01/23/90		<3000	3700	3000
Method Blank			01/23/90		<50	<50	<50

PCB-1018, PCB-1221, PCB-1232 and PCB-1260 not detected in any sample.

Matrix Spike. PCB-1242 added at 5000 ug/kg. This amount was insignificant in relation to the concentration present in the sample itself.

Control Spike was spiked at 5000 ug/Kg with Aroclor 1242 and Aroclor 1254. The percent recoveries were 74% and 80% respectively.

Composite sample A-15 was originally measured by volume instead of weight. Both values are reported.

RECEIVED

MAR 16 1990

BUREAU OF SOLID -
HAZARDOUS WASTE MANAGEMENT

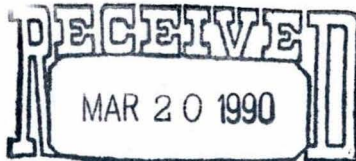


BLASLAND & BOUCK ENGINEERS, P.C.
ENGINEERS & GEOSCIENTISTS

6723 Towpath Road, Box 66, Syracuse, New York 13214 (315) 446-9120
FAX: (315) 449-0017

March 14, 1990

Ms. Bonnie L. Eleder
Remedial Project Manager
United States Environmental
Protection Agency
Region V
230 South Dearborn Street
Chicago, IL 60604



**D.N.R. SED Hqtrs.
Milwaukee, WI**

Re: Sheboygan River and Harbor

File: 176.07 #2

Dear Bonnie:

Enclosed please find, for your review, the February 1990 Status Report for activities associated with the above-referenced project.

Should you have any questions concerning the enclosed, please feel free to contact us.

Very truly yours,

BLASLAND & BOUCK ENGINEERS, P.C.

Dawn S. Foster JPD
Dawn S. Foster, P.E.
Manager, Engineering

JPD/nlg
Enclosures

cc: Mark A. Thimke, Esq., Foley & Lardner, w/encl.
Ms. Robin R. Schmidt, Wisconsin Department of Natural Resources, w/encl.
Mr. Francis J. Trcka, Wisconsin Department of Natural Resources, w/encl.
Mr. William H. Bouck, P.E., Blasland & Bouck Engineers, P.C., w/encl.
Mr. Robert K. Goldman, P.E., Blasland & Bouck Engineers, P.C. w/encl.

SHEBOYGAN RIVER AND HARBOR
MONTHLY STATUS REPORT

FEBRUARY, 1990

1. Actions Taken During This Time Period

The following field activities were conducted during February:

- a. Weekly inspections of CTF and access areas as specified in January 23, 1990 letter from Don Kenney (BBLES) to Roger Wagner (Wagner Excavating).
- b. Bench-scale activities for the armoring experiment were completed. Supporting analytical work is underway.

The following meetings were held in February:

- 2/28/90 - Meeting with USEPA and WDNR to discuss project status, start up activities and revised project schedule.
- 2/2/90 - Meeting with the City of Sheboygan Falls/EPA/WDNR to discuss project status and schedule for completion of Rochester Park activities, including restoration.

2. EPA Decisions

- The EPA/WDNR agreed, in concept, to the revised project schedule presented in the 2/28/90 meeting.

3. Results of Sampling and Tests

Data summaries for the following analytical results received during this month are attached:

- a. PCB/TSS results from water samples taken within curtailed sediment area 15 after sediments were removed, in Table 1. The laboratory data sheet is included in Attachment 1.
- b. River salmon data is presented in Tables 2-4. The laboratory data sheets are included in Attachment 1.

4. Anticipated Problems/Recommended Solutions - None

5. Problems Encountered/Resolved

- a. Negotiations with Kohler regarding obtaining access to the River are continuing.

6.	<u>Deliverables Submitted</u>	<u>Date Submitted</u>
	January Status Report	2/12/90
	Responses to EPA comments on ASRI QAPP	2/15/90
	Summary of Pilot Study activities since 12/12/89	2/27/90

7. Upcoming Events/Activities Planned

Remobilization for sediment removal and armoring activities will start as early as March 19, 1990, weather pending.

8. Key Personnel Changes - None

9. Schedule

Sediment removal/armoring activities at Rochester Park were affected by winter weather conditions and are scheduled to start again April 1, 1990, weather permitting. A detailed anticipated schedule was distributed and discussed at the February 28, 1990 status meeting.

TABLE 1
 SHEBOYGAN RIVER AND HARBOR
 ALTERNATIVE SPECIFIC REMEDIAL INVESTIGATION
 SUMMARY OF POST-REMOVAL WATER SAMPLES
 WITHIN CURTAINED SEDIMENT AREAS¹

<u>Sediment Area</u>	<u>Sample Collection</u>		<u>No. of Locations²</u>	<u>Average Depth of Water (ft.)</u>	<u>Average Depth of Sample (ft.)</u>	<u>Results</u>		
	<u>Date</u>	<u>Time</u>				<u>Filtered PCBs (ppb)</u>	<u>Total PCBs (ppb)</u>	<u>TSS (mg/l)</u>
15	1/16/90	10:15 a.m.	3	2.7	1.3	3.0	7.1	30 ³

Notes:

- 1 Water samples collected after sediment removal activities were completed (Area 15 completed 12/29/89).
- 2 Locations composited in field using equal volumes.
- 3 Average of duplicate analyses.

TABLE 2
SHEBOYGAN RIVER AND HARBOR
ALTERNATIVE SPECIFIC REMEDIAL INVESTIGATION

SUMMARY OF DATA FOR RIVER SALMON
(STRAWBERRY CREEK; CONTROL LOCATION)

Date Sample Prepared: 10/23/89

I. Raw Data

<u>Sample Number</u>	<u>Length (cm)</u>	<u>Sex/ Reprod. Cond'n</u>	<u>Weight (grams)</u>	<u>Total^b PCBs (mg/kg)</u>	<u>Lipids (%)</u>
FS-82	80.0	MR	4550.0	2.19	1.46
FS-83	82.6	MR	5850.0	1.28	1.82
FS-84	83.8	MR	5600.0	1.46	3.66
FS-84 DUP	NA	NA	NA	1.41	3.24
FS-84 MS	NA	NA	NA	2.23	3.34
FS-85	85.3	MR	5250.0	1.03	1.38
FS-86	82.6	MR	6000.0	1.84	2.25
FS-87	81.0	MR	5000.0	1.58	2.00
FS-88	57.7	MR	2000.0	1.40	2.52
FS-89	60.7	MR	2600.0	2.52	4.01
FS-90	67.6	MR	2700.0	0.78	2.25
FS-91	59.7	MR	2100.0	1.59	2.18
FS-92	60.2	MR	2450.0	1.17	3.87
FS-93	61.7	MR	2450.0	1.74	3.43
FS-94	55.1	MR	1800.0	1.21	2.33
FS-94 DUP	NA	NA	NA	1.09	2.32
FS-94 MS	NA	NA	NA	1.96	2.18
FS-95	57.9	MR	2250.0	1.27	2.59
FS-96	55.9	MR	1900.0	1.53	3.17
FS-97	60.5	MR	2570.0	1.29	1.36
FS-98	58.7	MR	2100.0	1.29	4.55
FS-99	62.7	MR	2450.0	1.02	3.31
FS-100	71.6	MR	3250.0	1.98	1.32
FS-101	62.7	MR	2950.0	1.23	3.87

SHEBOYGAN RIVER AND HARBOR
ALTERNATIVE SPECIFIC REMEDIAL INVESTIGATION

TABLE 2 (Cont'd)
(Strawberry Creek)

<u>Sample Number</u>	<u>Length (cm)</u>	<u>Sex/Reprod Cond'n</u>	<u>Weight (grams)</u>	<u>Total^b PCBs (mg/kg)</u>	<u>Lipids (%)</u>
FS-103	64.8	MR	2800.0	2.49	4.44
FS-103 DUP	NA	NA	NA	0.87	5.17
FS-103 MS	NA	NA	NA	1.84	5.00
FS-104	83.3	MR	5300.0	1.60	2.26
FS-105	57.9	MR	2000.0	2.20	2.81
FS-106	84.1	MR	5850.0	1.04	1.77
FS-107	73.7	MR	3650.0	2.50	1.81
FS-108	74.7	MR	4150.0	1.45	1.78
FS-109	81.0	MR	5650.0	1.95	2.39
FS-110	71.9	MR	3520.0	1.45	0.96
FS-111	76.2	MR	4150.0	1.17	2.00
FS-112	59.2	MR	1950.0	2.01	3.25
FS-113	76.5	MR	4400.0	0.87	2.46
FS-113 DUP	NA	NA	NA	2.40	2.19
FS-113 MS	NA	NA	NA	3.53	2.26
FS-114	59.7	MR	2300.0	1.14	3.17
FS-115	76.2	MR	3600.0	1.70	1.03
FS-116	59.4	MR	2000.0	1.34	1.76
FS-117	60.7	MR	2500.0	1.44	4.05
FS-118	62.2	MR	2250.0	2.02	3.78
FS-119	67.3	MR	3050.0	1.01	2.47
FS-120	82.8	MR	5350.0	1.26	3.04
FS-120 DUP	NA	NA	NA	1.56	2.68
FS-120 MS	NA	NA	NA	2.57	3.13
FS-121	83.8	MR	5650.0	1.56	1.94
FS-122	77.7	MR	4150.0	1.88	2.60

SHEBOYGAN RIVER AND HARBOR
ALTERNATIVE SPECIFIC REMEDIAL INVESTIGATION

TABLE 2 (Cont'd)
(Strawberry Creek)

II. Means

	<u>Fish</u>	<u>Eggs</u>
Total PCBs (mg/kg)	1.62 ±0.54	NO EGG SAMPLES TAKEN
Lipids (%)	2.69 ±0.995	
Length (cm)	69.5 ±10.1	
Weight (grams)	3502.3 ±1386.6	

Notes:

F = Female

M = Male

G = Green

R = Ripe

NA = Not applicable

^b = Breakdown of total PCBs by Aroclor is available in lab data sheets.

(Note sample number in this table corresponds to the sample location in the lab data sheets)

TABLE 3
SHEBOYGAN RIVER AND HARBOR
ALTERNATIVE SPECIFIC REMEDIAL INVESTIGATION

SUMMARY OF DATA FOR RIVER SALMON
(KIWANIS PARK)

Date Sampled: 9/26/89

I. Raw Data

<u>Sample Number</u>	<u>Length (cm)</u>	<u>Sex/Reprod Cond'n</u>	<u>Weight (grams)</u>	<u>Total^b PCBs (mg/kg)</u>	<u>Lipids (%)</u>
FS-1	86.4	MG	6072.0	2.79	3.94
FS-2	76.2	MR	5079.0	0.97	1.99
FS-3	83.3	MR	5552.0	1.60	2.44
FS-4	80.3	MR	4710.0	0.60	0.97
FS-5*	94.7	FG	10045.0	1.36	2.09
FS-6	91.9	MG	7065.0	1.49	1.36
FS-7*	86.6	FG	6640.0	0.83	5.89
FS-8	89.4	FG	8484.0	0.90	1.61
FS-9*	89.9	FG	9392.0	3.30	2.19
FS-10	93.2	FG	9761.0	1.18	2.30
FS-11	91.4	FG	7321.0	0.86	1.65
FS-12	81.3	FG	5951.0	0.77	1.23
FS-13	83.6	MR	8938.0	0.85	1.25
FS-14	81.3	MG	5533.0	1.69	2.20
FS-15	96.3	FR	10329.0	1.47	2.06
FS-15 DUP	NA	NA	NA	1.20	1.76
FS-15 MS	NA	NA	NA	3.10	2.28
FS-16 ^a	90.7	MG	7690.0	1.83	4.15
FS-17	99.8	MR	9676.0	1.15	1.18
FS-18	79.5	MR	5619.0	1.58	4.26
FS-19	60.5	MR	2838.0	0.96	5.31
FS-20 ^a	85.3	MR	6072.0	1.40	3.55
FS-21	94.0	MG	8059.0	1.52	1.67
FS-22	91.4	FG	7832.0	1.44	1.25
FS-23	96.0	MR	11435.0	1.53	3.29

SHEBOYGAN RIVER AND HARBOR
ALTERNATIVE SPECIFIC REMEDIAL INVESTIGATION

TABLE 3 (Cont'd)
(Kiwanis Park)

<u>Sample Number</u>	<u>Length (cm)</u>	<u>Sex/Reprod Cond'n</u>	<u>Weight (grams)</u>	<u>Total^b PCBs (mg/kg)</u>	<u>Lipids (%)</u>
FS-24	87.6	MR	7349.0	1.36	1.75
FS-25	93.2	FG	9591.0	1.41	1.48
FS-25 DUP	NA	NA	NA	1.82	1.52
FS-25 MS	NA	NA	NA	3.20	1.65
FS-26	93.2	FG	9137.0	1.59	2.25
FS-27	95.3	FG	9222.0	1.37	3.33
FS-28	74.4	MR	4313.0	0.95	4.53
FS-29	94.7	MG	8399.0	1.00	2.93
FS-30	91.4	MR	8286.0	0.81	0.95
FS-31	78.7	MG	4256.0	1.04	2.09
FS-32	91.4	MR	7576.0	1.77	3.14
FS-33	91.7	FG	7860.0	1.02	1.92
FS-34	85.6	MG	6044.0	1.61	4.34
FS-35	83.1	MR	5335.0	3.20	2.05
FS-36	87.6	FG	5902.0	1.62	2.01
FS-37	83.6	MR	8087.0	1.70	2.71
FS-38	83.8	FG	7037.0	1.42	2.24
FS-39	91.9	FG	8881.0	1.96	2.43
FS-40	81.3	MR	5136.0	1.29	3.68
ES-1 (FS-5)	NA	NA	1334.0	1.59	6.13
ES-1 DUP	NA	NA	NA	1.82	7.02
ES-1 MS	NA	NA	NA	3.90	7.44
ES-2 (FS-7)	NA	NA	795.0	1.79	6.95
ES-3 (FS-9)	NA	NA	1362.0	2.22	7.62

SHEBOYGAN RIVER AND HARBOR
ALTERNATIVE SPECIFIC REMEDIAL INVESTIGATION

TABLE 3 (Cont'd)
(Kiwanis Park)

II. Means

	<u>Fish</u>	<u>Eggs</u>
Total PCBs (mg/kg)	1.51 ±0.66	2.26 ±0.84
Lipids (%)	2.47 ±1.17	7.03 ±0.52
Length (cm)	87.3 ±7.4	
Weight (grams)	7312.7 ±1931.2	

Notes:

F = Female

M = Male

G = Green

R = Ripe

^a = Tagged fish (FS-16 - A, FS-20 - RM)

* = Egg sample taken

NA = Not applicable

^b = Breakdown of total PCBs by AROCLOR available in lab data sheets.

(Note sample number in this table corresponds to the sample location in the lab data sheets)

TABLE 4
SHEBOYGAN RIVER AND HARBOR
ALTERNATIVE SPECIFIC REMEDIAL INVESTIGATION

SUMMARY OF DATA FOR RIVER SALMON
Date Sampled: (LOWER HARBOR)
9/27/89

I. Raw Data

<u>Sample Number</u>	<u>Length (cm)</u>	<u>Sex/ Reprod Cond'n</u>	<u>Weight (grams)</u>	<u>Total^b PCBs (mg/kg)</u>	<u>Lipids (%)</u>
FS-41	69.3	MR	4029.0	1.03	3.60
FS-42*	93.2	FG	8541.0	1.37	4.09
FS-43	93.0	MG	8229.0	1.15	2.65
FS-44	86.1	MG	6867.0	1.21	2.83
FS-45	103.4	MR	11038.0	1.41	2.57
FS-45 DUP	NA	NA	NA	1.54	2.67
FS-45 MS	NA	NA	NA	2.05	2.32
FS-46	73.7	MG	4200.0	1.49	3.71
FS-47	81.3	MG	6299.0	1.18	6.76
FS-48	81.5	MG	5533.0	1.17	4.98
FS-49	78.5	FG	6299.0	1.07	2.46
FS-50	85.9	MR	5874.0	1.38	3.71
FS-51	88.4	FG	7576.0	1.30	2.21
FS-51 DUP	NA	NA	NA	1.27	1.98
FS-51 MS	NA	NA	NA	2.90	2.30
FS-52	92.2	MR	6952.0	1.14	3.51
FS-53	80.8	MG	4483.0	1.36	3.29
FS-54	92.5	FG	8740.0	1.19	2.16
FS-55	89.4	MG	8144.0	1.61	3.84
FS-56**	87.1	FG	7406.0	0.98	1.85
FS-57	94.7	MR	9591.0	1.13	6.22
FS-58	92.7	MG	7917.0	0.05	0.28
FS-59*	103.1	FG	10187.0	1.33	1.92
FS-60	54.1	MG	1816.0	1.06	4.79

SHEBOYGAN RIVER AND HARBOR
ALTERNATIVE SPECIFIC REMEDIAL INVESTIGATION

Table 4 (cont'd)
(Lower Harbor)

<u>Sample Number</u>	<u>Length (cm)</u>	<u>Sex/Reprod Cond'n</u>	<u>Weight (grams)</u>	<u>Total^b PCBs (mg/kg)</u>	<u>Lipids (%)</u>
FS-61	92.7	MG	7633.0	1.17	2.42
FS-62	85.6	FG	6697.0	1.20	1.83
FS-63	86.9	MG	7207.0	1.67	6.41
FS-64	84.6	MR	6980.0	1.28	3.32
FS-65	80.5	MG	5930.0	1.94	5.16
FS-66	97.3	MR	9194.0	1.44	3.33
FS-67	85.9	FG	7434.0	1.47	2.96
FS-68	85.3	FG	7576.0	2.20	3.19
FS-69	52.3	MG	1930.0	0.65	4.28
FS-70	86.9	FG	7321.0	1.13	1.48
FS-70 DUP	NA	NA	NA	1.08	1.61
FS-70 MS	NA	NA	NA	2.30	1.62
FS-71	90.9	MR	7690.0	1.53	3.88
FS-72	61.0	MG	2894.0	0.96	4.13
FS-73 ^a	89.7	MG	8626.0	1.57	3.90
FS-74	80.5	MR	5845.0	1.48	4.65
FS-75	88.4	FG	8427.0	1.17	1.25
FS-76	85.9	MR	6725.0	2.22	2.06
FS-77	82.0	MR	5221.0	1.19	2.50
FS-77 DUP	NA	NA	NA	1.28	2.45
FS-77 MS	NA	NA	NA	2.60	2.32
FS-78	90.4	FG	7803.0	1.39	2.57
FS-79	93.2	MG	9137.0	2.20	2.47
FS-80	90.9	FG	7576.0	2.40	2.64
FS-81	80.0	FG	5391.0	1.32	3.73
ES-4 (FS-42)	NA	NA	NA	1.81	10.93
ES-5 (FS-56)	NA	NA	NA	1.34	8.16
ES-5 DUP	NA	NA	NA	1.08	8.01
ES-5 MS	NA	NA	NA	2.54	8.29
ES-6 (FS-59)	NA	NA	1589.0	1.52	7.84

SHEBOYGAN RIVER AND HARBOR
ALTERNATIVE SPECIFIC REMEDIAL INVESTIGATION

TABLE 4 (Cont'd)
(Lower Harbor)

II. Means

	<u>Fish</u>	<u>Eggs</u>
Total PCBs (mg/kg)	1.43 ±0.50	1.66 ±0.50
Lipids (%)	3.12 ±1.33	8.65 ±1.15
Length (cm)	85.2 ±10.7	
Weight (grams)	6901.4 ±2001.0	

Notes:

F = Female

M = Male

G = Green

R = Ripe

^a = Tagged fish (FS-56 - ad, FS-73 - ad)

* = Egg sample taken

NA = Not applicable

^b = Breakdown to total PCBs by AROCLOR is available in lab data sheets.

(Note sample number in this table corresponds to the sample location in the lab data sheets)

ATTACHMENT 1
LABORATORY DATA
SHEETS

BLASLAND AND BOUCK
SHEBOYGAN RIVER WATER
PROJECT #884.01

SAMPLE NUMBER	SAMPLE LOCATION	DATE RECEIVED	DATE EXTRACTED	TSS mg/L	PCB 1242 (ug/L)	PCB 1248 (ug/L)	PCB 1254 (ug/L)
00102819	A-15-1,2,3 Total	01/18/90	01/19/90		7.1	<0.21	<0.21
00102820 Dup	A-15-1,2,3 Total Dup	01/18/90	01/19/90		*	*	*
00102821	A-15-1,2,3 Filtered	01/18/90	01/19/90		3.0	<0.21	<0.21
00102822 (MS)	A-15-1,2,3 Filtered MS	01/18/90	01/19/90		3.1	<0.20	<0.20
Method Blank			01/19/90		<0.05	<0.05	<0.05
Control Spike			01/19/90		0.49	<0.05	<0.05
00102823	A-15-1,2,3 (TSS)	01/18/90		27			
00102824	A-15-1,2,3 (TSS Dup)	01/18/90		33			
Blank I	TSS			<1.0			
Blank II	TSS			<1.0			

Note: Aroclor 1016, 1221, 1232 and 1260 is not present in any samples.

Control Spike: Aroclor 1242 added at 0.50 ug/L. Recovery of the Aroclor 1242 was 98%.

Matrix Spike: Aroclor 1248 added at 0.50 ug/L to sample A-15-1,2,3 Filtered (00102822). The Aroclor 1248 spike cannot be quantitated because the Aroclor 1242 present in the sample masks the Aroclor 1248.

* This sample was lost in a lab accident.

BLASLAND AND BOUCK
SHEBOYGAN RIVER SALMON
PCB ANALYSIS (SET 1)

SAMPLE NUMBER	SAMPLE LOCATION	DATE RECEIVED	DATE EXTRACTED	PERCENT LIPIDS	PCB 1242 (ug/Kg)	PCB 1254 (ug/Kg)	PCB 1260 (ug/Kg)
91001122	FS-1	9/27/89	01/03/90	3.94	990	<750	1800
91001123	FS-2	9/27/89	01/03/90	1.99	210	<38	760
91001124	FS-3	9/27/89	01/03/90	2.44	400	<150	1200
91001125	FS-4	9/27/89	01/03/90	0.97	190	<30	410
91001126	FS-5	9/27/89	01/03/90	2.09	530	<60	830
91001127	FS-6	9/27/89	01/03/90	1.36	490	<150	1000
91001128	FS-7	9/27/89	01/03/90	5.89	460	<60	370
91001129	FS-8	9/27/89	01/03/90	1.61	360	<60	540
91001130	FS-9	9/27/89	01/03/90	2.19	1700	<150	1600
91001131	ES-1	9/27/89	01/03/90	6.13	290	<30	1300
91001132	ES-2	9/27/89	01/03/90	6.95	1100	<150	690
91001133	FS-10	9/27/89	01/03/90	2.30	530	<150	650
91001134	FS-11	9/27/89	01/03/90	1.65	400	<150	460
91001135	FS-12	9/27/89	01/03/90	1.23	280	<60	490
91001136	FS-13	9/27/89	01/03/90	1.25	330	<60	520
91001137	FS-14	9/27/89	01/03/90	2.20	490	<30	1200
91001138	FS-30	9/27/89	01/03/90	0.95	210	<60	600
91001140	ES-3	9/27/89	01/03/90	7.62	920	<750	1300
91001141	FS-15	9/28/89	01/03/90	2.06	470	<150	1000
00102645	ES-1 DUP	9/27/89	01/03/90	7.02	320	<30	1500
00102646	ES-1 MS	9/27/89	01/03/90	7.44	1700	<300	2200
00102647	FS-15 DUP	9/28/89	01/03/90	1.76	400	<150	800
00102648	FS-15 MS	9/28/89	01/03/90	2.28	1400	<150	1700
Control Blank			01/03/90	1.01	<30	<30	<30
Control Spike			01/03/90	0.60	1100	920	<60
Method Blank			01/03/90		<30	<30	<30

Note: PCB-1016, PCB-1221, PCB-1232, and PCB-1248 not found in any samples.

The control spikes were fortified with 2000 ug/Kg Aroclor 1242 and Aroclor 1254. The recovery of the Aroclor 1242 and 1254 was 55% and 48% respectively.

The matrix spikes were fortified with 2000 ug/Kg of Aroclor 1242. Recovery of the Aroclor 1242 was 70% for ES-1 (00102646) and 48% for FS-15 (00102648).

BLASLAND AND BOUCK
SHEBOYGAN RIVER SALMON
PCB ANALYSIS (SET 2)

SAMPLE NUMBER	SAMPLE LOCATION	DATE RECEIVED	DATE EXTRACTED	PERCENT LIPIDS	PCB 1242 (ug/Kg)	PCB 1248 (ug/Kg)	PCB 1254 (ug/Kg)	PCB 1260 (ug/Kg)
91001142	FS-17	9/28/89	01/05/90	1.18	<150	460	<150	690
91001143	FS-32	9/28/89	01/05/90	3.14	<150	670	<150	1100
91001144	FS-34	9/28/89	01/05/90	4.34	<150	720	<150	890
91001145	FS-35	9/28/89	01/05/90	2.05	1600	<300	<300	1600
91001146	FS-36	9/28/89	01/05/90	2.01	820	<150	<150	800
91001147	FS-38	9/28/89	01/05/90	2.24	630	<150	<150	790
91001148	FS-39	9/28/89	01/05/90	2.43	1100	<150	<150	860
91001149	FS-40	9/28/89	01/05/90	3.68	<120	570	<120	720
91001150	FS-76	9/28/89	01/05/90	2.06	<300	920	<300	1300
91001151	FS-77	9/28/89	01/05/90	2.50	<150	450	<150	740
91001152	FS-80	9/28/89	01/05/90	2.64	<300	1000	<300	1400
91001153	FS-16	9/27/89	01/05/90	4.15	<150	1000	<150	830
91001154	FS-18	9/27/89	01/05/90	4.26	<150	800	<150	780
91001155	FS-19	9/27/89	01/05/90	5.31	<120	570	<120	390
91001156	FS-20	9/27/89	01/05/90	3.55	<150	750	<150	650
91001157	FS-21	9/27/89	01/05/90	1.67	<150	680	<150	840
91001158	FS-22	9/27/89	01/05/90	1.25	<150	620	<150	820
91001159	FS-23	9/27/89	01/05/90	3.29	<150	800	<150	730
91001160	FS-24	9/28/89	01/05/90	1.75	650	<150	<150	710
91001161	FS-25	9/27/89	01/05/90	1.48	540	<150	<150	870
00102649	FS-25 DUP	9/27/89	01/05/90	1.52	820	<150	<150	1000
00102650	FS-25 MS	9/27/89	01/05/90	1.65	2000	<300	<300	1200
00102651	FS-77 DUP	9/28/89	01/05/90	2.45	<150	480	<150	800
00102652	FS-77 MS	9/28/89	01/05/90	2.32	1600	<300	<300	1000
Control Blank			01/05/90	0.22	<30	<30	<30	<30
Control Spike			01/05/90	0.90	1000	<150	1000	<150
Method Blank			01/05/90		<30	<30	<30	<30

Note: PCB-1016, PCB-1221, PCB-123 not found in any samples.

The control spikes were fortified with 2000 ug/Kg Aroclor 1242 and Aroclor 1254. The recovery of the Aroclor 1242 and 1254 was 50% for both.

The matrix spikes were fortified with 2000 ug/Kg of Aroclor 1242. Recovery of the Aroclor 1242 was 66% for FS-25 (00102650) and 57% for FS-77 (00102652).

BLASLAND AND BOUCK
SHEBOYGAN RIVER SALMON
PCB ANALYSIS (SET 3)

SAMPLE NUMBER	SAMPLE LOCATION	DATE RECEIVED	DATE EXTRACTED	PERCENT LIPIDS	PCB 1242 (ug/Kg)	PCB 1248 (ug/Kg)	PCB 1254 (ug/Kg)	PCB 1260 (ug/Kg)	TOTAL PCB
91001139	FS-31	9/27/89	01/08/90	2.09	240	<30	<30	800	1040
91001162	FS-26	9/27/89	01/08/90	2.25	900	<300	<300	690	1590
91001163	FS-27	9/27/89	01/08/90	3.33	620	<300	<300	750	1370
91001164	FS-28	9/27/89	01/08/90	4.53	380	<30	<30	570	950
91001165	FS-29	9/27/89	01/08/90	2.93	<300	500	<300	500	1000
91001166	FS-33	9/27/89	01/08/90	1.92	500	<300	<300	520	1020
91001167	FS-41	9/27/89	01/08/90	3.60	<30	420	<30	610	1030
91001168	FS-42	9/28/89	01/08/90	4.09	<30	270	<30	1100	1370
91001169	FS-43	9/28/89	01/08/90	2.65	640	<300	<300	510	1150
91001170	FS-44	9/28/89	01/08/90	2.83	390	<30	<30	820	1210
91001171	FS-45	9/28/89	01/08/90	2.57	630	<300	<300	780	1410
91001172	FS-46	9/28/89	01/08/90	3.71	<300	490	<300	1000	1490
91001173	FS-47	9/28/89	01/08/90	6.76	540	<300	<300	640	1180
91001174	FS-48	9/28/89	01/08/90	4.98	490	<300	<300	680	1170
91001175	FS-49	9/28/89	01/08/90	2.46	<60	380	<60	690	1070
91001176	FS-50	9/28/89	01/08/90	3.71	660	<300	<300	720	1380
91001177	FS-52	9/28/89	01/08/90	3.51	490	<300	<300	650	1140
91001178	ES-4	9/28/89	01/08/90	10.93	<300	710	<300	1100	1810
91001179	FS-79	9/28/89	01/08/90	2.47	<300	1100	<300	1100	2200
91001180	FS-81	9/28/89	01/08/90	3.73	<300	460	<300	860	1320
91001181	FS-51	9/28/89	01/08/90	2.21	570	<300	<300	730	1300
00102655	FS-45 DUP	9/28/89	01/08/90	2.67	440	<30	<30	1100	1540
00102656	FS-45 MS	9/28/89	01/08/90	2.32	1200	<300	<300	850	2050
00102653	FS-51 DUP	9/28/89	01/08/90	1.98	470	<150	<150	800	1270
00102654	FS-51 MS	9/28/89	01/08/90	2.30	1600	<300	<300	1300	2900
Control Blank			01/08/90	0.65	<30	<30	<30	<30	<30
Control Spike			01/08/90	0.63	1300	<150	1300	<150	2600
Method Blank			01/08/90		<30	<30	<30	<30	<30

Note: PCB 1016, 1221 and 1232 not found in any sample.

The control spike was fortified with 2000 ug/Kg of Aroclor 1242 and Aroclor 1254. The recovery of the Aroclor 1242 and Aroclor 1254 was 65%.

The matrix spikes were fortified with 2000 ug/Kg of Aroclor 1242. The recovery of the Aroclor 1242 spike from sample FS-45 was 33%. The recovery for sample FS-51 was 54%.

BLASLAND AND BOUCK
SHEBOYGAN RIVER SALMON
PCB ANALYSIS (SET 4)

SAMPLE NUMBER	SAMPLE LOCATION	DATE RECEIVED	DATE EXTRACTED	PERCENT LIPIDS	PCB 1242 (ug/Kg)	PCB 1248 (ug/Kg)	PCB 1254 (ug/Kg)	PCB 1260 (ug/Kg)	TOTAL PCB
91001182	FS-53	9/28/89	01/11/90	3.29	<150	470	<150	890	1360
91001183	FS-54	9/28/89	01/11/90	2.16	<120	520	<120	670	1190
91001184	FS-55	9/28/89	01/11/90	3.84	<150	810	<150	800	1610
91001185	FS-56	9/28/89	01/11/90	1.85	<120	400	<120	580	980
91001186	FS-57	9/28/89	01/11/90	6.22	<150	450	<150	680	1130
91001187	FS-58	9/28/89	01/11/90	0.28	<30	<30	<30	50	50
91001188	FS-59	9/28/89	01/11/90	1.92	<150	520	<150	810	1330
91001189	FS-60	9/28/89	01/11/90	4.79	<120	390	<120	670	1060
91001190	FS-62	9/28/89	01/11/90	1.83	530	<120	<120	670	1200
91001191	ES-5	9/28/89	01/11/90	8.16	<150	520	<150	820	1340
91001192	ES-6	9/28/89	01/11/90	7.84	<150	660	<150	860	1520
91001193	FS-61	9/28/89	01/11/90	2.42	<120	490	<120	680	1170
91001194	FS-63	9/28/89	01/11/90	6.41	<150	670	<150	1000	1670
91001195	FS-64	9/28/89	01/11/90	3.32	<120	530	<120	750	1280
91001196	FS-65	9/28/89	01/11/90	5.16	1100	<150	<150	840	1940
91001197	FS-66	9/28/89	01/11/90	3.33	750	<150	<150	690	1440
91001198	FS-67	9/28/89	01/11/90	2.96	650	<150	<150	820	1470
91001199	FS-68	9/28/89	01/11/90	3.19	1000	<150	<150	1200	2200
91001200	FS-69	9/28/89	01/11/90	4.28	220	<60	<60	430	650
91001201	FS-70	9/28/89	01/11/90	1.48	490	<120	<120	640	1130
00102657	ES-5 DUP	9/28/89	01/11/90	8.01	<150	450	<150	630	1080
00102658	ES-5 MS	9/28/89	01/11/90	8.29	1600	<150	<150	940	2540
00102659	FS-70 DUP	9/28/89	01/11/90	1.61	490	<120	<120	590	1080
00102660	FS-70 MS	9/28/89	01/11/90	1.62	1600	<120	<120	700	2300
Control Blank			01/11/90	0.70	<30	<30	<30	<30	<30
Control Spike			01/11/90	0.67	1400	<150	1100	<150	2500
Method Blank			01/11/90		<30	<30	<30	<30	<30

Note: PCB 1016, 1221 and 1232 not found in any sample.

The control spike was fortified with 2000 ug/Kg of Aroclor 1242 and Aroclor 1254. The recovery of the Aroclor 1242 and Aroclor 1254 was 70% and 55% respectively.

The matrix spikes were fortified with 2000 ug/Kg of Aroclor 1242. The recovery of the Aroclor 1242 spike from sample ES-5 was 56%. The recovery for sample FS-51 was 56%.

BLASLAND AND BOUCK
SHEBOYGAN RIVER SALMON
PCB ANALYSIS (SET 5)

SAMPLE NUMBER	SAMPLE LOCATION	DATE RECEIVED	DATE EXTRACTED	PERCENT LIPIDS	PCB 1242 (ug/Kg)	PCB 1248 (ug/Kg)	PCB 1254 (ug/Kg)	PCB 1260 (ug/Kg)	TOTAL PCB
91001202	FS-71	9/28/89	01/15/90	3.88	630	<250	<250	900	1530
91001203	FS-72	9/28/89	01/15/90	4.13	<250	260	<250	700	960
91001204	FS-73	9/28/89	01/15/90	3.90	<250	670	<250	900	1570
91001205	FS-74	9/28/89	01/15/90	4.65	<250	630	<250	850	1480
91001206	FS-75	9/28/89	01/15/90	1.25	400	<250	<250	770	1170
91001207	FS-78	9/28/89	01/15/90	2.57	<250	460	<250	930	1390
91004849	FS-37	9/28/89	01/15/90	2.71	<250	500	<250	1200	1700
91004850	FS-82	10/24/89	01/15/90	1.46	<250	590	<250	1600	2190
91004851	FS-83	10/24/89	01/15/90	1.82	<250	520	<250	760	1280
91004852	FS-84	10/24/89	01/15/90	3.66	<250	630	<250	830	1460
91004853	FS-85	10/24/89	01/16/90	1.38	<250	500	<250	530	1030
91004854	FS-86	10/24/89	01/15/90	2.25	<250	640	<250	1200	1840
91004855	FS-87	10/24/89	01/15/90	2.00	<250	580	<250	1000	1580
91004856	FS-88	10/24/89	01/15/90	2.52	<250	460	<250	940	1400
91004857	FS-89	10/24/89	01/15/90	4.01	<250	620	<250	1900	2520
91004858	FS-90	10/24/89	01/15/90	2.25	<250	260	<250	520	780
91004859	FS-91	10/24/89	01/15/90	2.18	<250	490	<250	1100	1590
91004860	FS-92	10/24/89	01/15/90	3.87	<250	450	<250	720	1170
91004861	FS-93	10/24/89	01/15/90	3.43	<250	750	<250	990	1740
91004862	FS-94	10/24/89	01/15/90	2.33	<250	620	<250	600	1210
00102661	FS-84 DUP	10/24/89	01/15/90	3.24	<250	540	<250	870	1410
00102662	FS-84 MS	10/24/89	01/15/90	3.34	1400	<250	<250	830	2230
00102663	FS-94 DUP	10/24/89	01/15/90	2.32	<250	490	<250	600	1090
00102664	FS-94 MS	10/24/89	01/15/90	2.18	1300	<250	<250	660	1960
Control Blank			01/15/90	0.63	<50	<50	<50	<50	<50
Control Spike			01/15/90	0.62	1300	<50	750	<250	2050
Method Blank			01/15/90		<50	<50	<50	<50	<50
Method Blank			01/16/90		<50	<50	<50	<50	<50

Note: PCB 1016, 1221 and 1232 not found in any sample.

The control spike was fortified with 2000 ug/Kg of Aroclor 1242 and Aroclor 1254. The recovery of the Aroclor 1242 and Aroclor 1254 was 65% and 38% respectively.

The matrix spikes were fortified with 2000 ug/Kg of Aroclor 1242. The recovery of the Aroclor 1242 spike from sample FS-84 was 41% and from FS-94 it was 38%.

BLASLAND AND BOUCK
SHEBOYGAN RIVER SALMON
PCB ANALYSIS (SET 6)

SAMPLE NUMBER	SAMPLE LOCATION	DATE RECEIVED	DATE EXTRACTED	PERCENT LIPIDS	PCB 1242 (ug/Kg)	PCB 1248 (ug/Kg)	PCB 1254 (ug/Kg)	PCB 1260 (ug/Kg)	TOTAL PCB
91004863	FS-95	10/24/89	01/17/90	2.59	<150	710	<150	560	1270
91004864	FS-96	10/24/89	01/17/90	3.17	<150	590	<150	940	1530
91004865	FS-97	10/24/89	01/17/90	1.36	<150	590	<150	700	1290
91004866	FS-98	10/24/89	01/17/90	4.55	<150	810	<150	480	1290
91004867	FS-99	10/24/89	01/17/90	3.31	<150	470	<150	550	1020
91004868	FS-100	10/24/89	01/17/90	1.32	<150	780	<150	1200	1980
91004869	FS-121	10/24/89	01/17/90	1.94	<150	590	<150	970	1560
91004870	FS-122	10/24/89	01/17/90	2.60	<150	780	<150	1100	1880
91004871	FS-101	10/24/89	01/17/90	3.87	<150	680	<150	550	1230
91004872	FS-103	10/24/89	01/17/90	4.44	<150	530	<150	460	990
91004873	FS-104	10/24/89	01/17/90	2.26	<150	790	<150	1700	2490
91004874	FS-105	10/24/89	01/17/90	2.81	<150	800	<150	800	1600
91004875	FS-106	10/24/89	01/17/90	1.77	<150	1200	<150	1000	2200
91004876	FS-107	10/24/89	01/17/90	1.81	<150	520	<150	520	1040
91004877	FS-108	10/24/89	01/17/90	1.78	<150	1500	<150	1000	2500
91004878	FS-109	10/24/89	01/17/90	2.39	<150	590	<150	860	1450
91004879	FS-110	10/24/89	01/17/90	0.96	<150	990	<150	960	1950
91004880	FS-111	10/24/89	01/17/90	2.00	<150	580	<150	870	1450
91004881	FS-112	10/24/89	01/17/90	3.25	<150	670	<150	500	1170
91004882	FS-113	10/24/89	01/19/90	2.46	<150	1200	<150	810	2010
00202331	FS-103 DUP	10/24/89	01/17/90	5.17	<150	450	<150	420	870
00202332	FS-103 MS	10/24/89	01/17/90	5.00	1400	<150	<150	440	1840
00202333	FS-113 DUP	10/24/89	01/17/90	2.19	<150	1400	<150	1000	2400
00202334	FS-113 MS	10/24/89	01/17/90	2.26	2600	<150	<150	930	3530
Control Blank			01/17/90	0.69	<50	<50	<50	<50	<50
Control Spike			01/17/90	0.63	1500	<150	1400	<150	2900
Method Blank			01/17/90		<50	<50	<50	<50	<50
Method Blank			01/19/90		<50	<50	<50	<50	<50

Note: PCB 1016, 1221 and 1232 not found in any sample.

The control spike was fortified with 2000 ug/Kg of Aroclor 1242 and Aroclor 1254. The recovery of the Aroclor 1242 and Aroclor 1254 was 75% and 70% respectively.

The matrix spikes were fortified with 2000 ug/Kg of Aroclor 1242. The recovery of the Aroclor 1242 spike from sample FS-103 was 46%. The recovery for sample FS-113 was 65%.

BLASLAND AND BOUCK
SHEBOYGAN RIVER SALMON
PCB ANALYSIS (SET 7)

SAMPLE NUMBER	SAMPLE LOCATION	DATE RECEIVED	DATE EXTRACTED	PERCENT LIPIDS	PCB 1242 (ug/Kg)	PCB 1248 (ug/Kg)	PCB 1254 (ug/Kg)	PCB 1260 (ug/Kg)	TOTAL PCB
91004883	FS-114	10/24/89	01/22/90	3.17	<250	520	<250	620	1140
91004884	FS-115	10/24/89	01/22/90	1.03	<250	700	<250	1000	1700
91004885	FS-116	10/24/89	01/22/90	1.76	<250	840	<250	500	1340
91004886	FS-117	10/24/89	01/22/90	4.05	<250	850	<250	590	1440
91004887	FS-118	10/24/89	01/22/90	3.78	<250	620	<250	1400	2020
91004888	FS-119	10/24/89	01/22/90	2.47	<250	460	<250	550	1010
91004889	FS-120	10/24/89	01/22/90	3.04	<250	560	<250	700	1260
00202335	FS-120 DUP	10/24/89	01/22/90	2.68	<250	660	<250	900	1560
00202336	FS-120 MS	10/24/89	01/22/90	3.13	1600	<250	<250	970	2570
Control Blank			01/22/90	0.77	<50	<50	<50	<50	<50
Control Spike			01/22/90	0.68	1400	<250	1100	<250	2500
Method Blank			01/22/90		<50	<50	<50	<50	<50

Note: PCB 1016, 1221 and 1232 not found in any sample.

The control spike was fortified with 2000 ug/Kg of Aroclor 1242 and Aroclor 1254. The recovery of the Aroclor 1242 and Aroclor 1254 was 70% and 55% respectively.

The matrix spike was fortified with 2000 ug/Kg of Aroclor 1242. The recovery of the Aroclor 1242 from the spike of sample FS-120 was 50%.



BLASLAND & BOUCK ENGINEERS, P.C.

ENGINEERS & GEOSCIENTISTS

6723 Towpath Road, Box 66, Syracuse, New York 13214 (315) 446-9120
FAX: (315) 449-0017

July 23, 1990

Ms. Bonnie L. Eleder
Remedial Project Manager
United States Environmental
Protection Agency
Region V
230 South Dearborn Street
Chicago, IL 60604

Re: Sheboygan River and Harbor

File: 176.07 #2

Dear Bonnie,

In the February, 1990 Status Report (submitted March 14, 1990) errors were found in the calculated means for percent lipids in Tables 2, 3, and 4. Please replace Tables 2, 3, and 4 with the revised tables enclosed.

Very truly yours,

BLASLAND & BOUCK ENGINEERS, P.C.

Dawn S Foster

Dawn S. Foster, P.E.
Manager Engineering

JLC/jlr

Enclosures

cc: Mark A. Thimke, Esq., Foley & Lardner, w/encl.

Ms. Robin R. Schmidt, Wisconsin Department of Natural Resources, w/encl.

Mr. Francis J. Trcka, Wisconsin Department of Natural Resources, w/encl.

William H. Bouck, P.E., Blasland & Bouck Engineers, P.C.

Robert K. Goldman, P.E., Blasland & Bouck Engineers, P.C.

TABLE 2

SHEBOYGAN RIVER AND HARBOR
ALTERNATIVE SPECIFIC REMEDIAL INVESTIGATION

SUMMARY OF DATA FOR RIVER SALMON
(STRAWBERRY CREEK; CONTROL LOCATION)

Date Sample Prepared: 10/23/89

I. Raw Data

<u>Sample Number</u>	<u>Length (cm)</u>	<u>Sex/ Reprod. Cond'n</u>	<u>Weight (grams)</u>	<u>Total^b PCBs (mg/kg)</u>	<u>Lipids (%)</u>
FS-82	80.0	MR	4550.0	2.19	1.46
FS-83	82.6	MR	5850.0	1.28	1.82
FS-84	83.8	MR	5600.0	1.46	3.66
FS-84 DUP	NA	NA	NA	1.41	3.24
FS-84 MS	NA	NA	NA	2.23	3.34
FS-85	85.3	MR	5250.0	1.03	1.38
FS-86	82.6	MR	6000.0	1.84	2.25
FS-87	81.0	MR	5000.0	1.58	2.00
FS-88	57.7	MR	2000.0	1.40	2.52
FS-89	60.7	MR	2600.0	2.52	4.01
FS-90	67.6	MR	2700.0	0.78	2.25
FS-91	59.7	MR	2100.0	1.59	2.18
FS-92	60.2	MR	2450.0	1.17	3.87
FS-93	61.7	MR	2450.0	1.74	3.43
FS-94	55.1	MR	1800.0	1.21	2.33
FS-94 DUP	NA	NA	NA	1.09	2.32
FS-94 MS	NA	NA	NA	1.96	2.18
FS-95	57.9	MR	2250.0	1.27	2.59
FS-96	55.9	MR	1900.0	1.53	3.17
FS-97	60.5	MR	2570.0	1.29	1.36
FS-98	58.7	MR	2100.0	1.29	4.55
FS-99	62.7	MR	2450.0	1.02	3.31
FS-100	71.6	MR	3250.0	1.98	1.32
FS-101	62.7	MR	2950.0	1.23	3.87

SHEBOYGAN RIVER AND HARBOR
ALTERNATIVE SPECIFIC REMEDIAL INVESTIGATION

TABLE 2 (Cont'd)
(Strawberry Creek)

<u>Sample Number</u>	<u>Length (cm)</u>	<u>Sex/ Reprod Cond'n</u>	<u>Weight (grams)</u>	<u>Total^b PCBs (mg/kg)</u>	<u>Lipids (%)</u>
FS-103	64.8	MR	2800.0	2.49	4.44
FS-103 DUP	NA	NA	NA	0.87	5.17
FS-103 MS	NA	NA	NA	1.84	5.00
FS-104	83.3	MR	5300.0	1.60	2.26
FS-105	57.9	MR	2000.0	2.20	2.81
FS-106	84.1	MR	5850.0	1.04	1.77
FS-107	73.7	MR	3650.0	2.50	1.81
FS-108	74.7	MR	4150.0	1.45	1.78
FS-109	81.0	MR	5650.0	1.95	2.39
FS-110	71.9	MR	3520.0	1.45	0.96
FS-111	76.2	MR	4150.0	1.17	2.00
FS-112	59.2	MR	1950.0	2.01	3.25
FS-113	76.5	MR	4400.0	0.87	2.46
FS-113 DUP	NA	NA	NA	2.40	2.19
FS-113 MS	NA	NA	NA	3.53	2.26
FS-114	59.7	MR	2300.0	1.14	3.17
FS-115	76.2	MR	3600.0	1.70	1.03
FS-116	59.4	MR	2000.0	1.34	1.76
FS-117	60.7	MR	2500.0	1.44	4.05
FS-118	62.2	MR	2250.0	2.02	3.78
FS-119	67.3	MR	3050.0	1.01	2.47
FS-120	82.8	MR	5350.0	1.26	3.04
FS-120 DUP	NA	NA	NA	1.56	2.68
FS-120 MS	NA	NA	NA	2.57	3.13
FS-121	83.8	MR	5650.0	1.56	1.94
FS-122	77.7	MR	4150.0	1.88	2.60

SHEBOYGAN RIVER AND HARBOR
ALTERNATIVE SPECIFIC REMEDIAL INVESTIGATION

TABLE 2 (Cont'd)
(Strawberry Creek)

II. Means

	<u>Fish</u>	<u>Eggs</u>
Total PCBs (mg/kg)	1.54 +0.41	NO EGG SAMPLES TAKEN
Lipids (%)	2.57 +0.959	
Length (cm)	69.5 +10.1	
Weight (grams)	3502.3 +1386.6	

Notes:

F = Female

M = Male

G = Green

R = Ripe

NA = Not applicable

^b = Breakdown of total PCBs by Aroclor is available in lab data sheets.

(Note sample number in this table corresponds to the sample location in the lab data sheets)

TABLE 3
 SHEBOYGAN RIVER AND HARBOR
 ALTERNATIVE SPECIFIC REMEDIAL INVESTIGATION
 SUMMARY OF DATA FOR RIVER SALMON
 (KIWANIS PARK)
 Date Sampled: 9/26/89

I. Raw Data

<u>Sample Number</u>	<u>Length (cm)</u>	<u>Sex/Reprod Cond'n</u>	<u>Weight (grams)</u>	<u>Total^b PCBs (mg/kg)</u>	<u>Lipids (%)</u>
FS-1	86.4	MG	6072.0	2.79	3.94
FS-2	76.2	MR	5079.0	0.97	1.99
FS-3	83.3	MR	5552.0	1.60	2.44
FS-4	80.3	MR	4710.0	0.60	0.97
FS-5*	94.7	FG	10045.0	1.36	2.09
FS-6	91.9	MG	7065.0	1.49	1.36
FS-7*	86.6	FG	6640.0	0.83	5.89
FS-8	89.4	FG	8484.0	0.90	1.61
FS-9*	89.9	FG	9392.0	3.30	2.19
FS-10	93.2	FG	9761.0	1.18	2.30
FS-11	91.4	FG	7321.0	0.86	1.65
FS-12	81.3	FG	5951.0	0.77	1.23
FS-13	83.6	MR	8938.0	0.85	1.25
FS-14	81.3	MG	5533.0	1.69	2.20
FS-15	96.3	FR	10329.0	1.47	2.06
FS-15 DUP	NA	NA	NA	1.20	1.76
FS-15 MS	NA	NA	NA	3.10	2.28
FS-16 ^a	90.7	MG	7690.0	1.83	4.15
FS-17	99.8	MR	9676.0	1.15	1.18
FS-18	79.5	MR	5619.0	1.58	4.26
FS-19	60.5	MR	2838.0	0.96	5.31
FS-20 ^a	85.3	MR	6072.0	1.40	3.55
FS-21	94.0	MG	8059.0	1.52	1.67
FS-22	91.4	FG	7832.0	1.44	1.25
FS-23	96.0	MR	11435.0	1.53	3.29

SHEBOYGAN RIVER AND HARBOR
ALTERNATIVE SPECIFIC REMEDIAL INVESTIGATION

TABLE 3 (Cont'd)
(Kiwanis Park)

<u>Sample Number</u>	<u>Length (cm)</u>	<u>Sex/ Reprod Cond'n</u>	<u>Weight (grams)</u>	<u>Total^b PCBs (mg/kg)</u>	<u>Lipids (%)</u>
FS-24	87.6	MR	7349.0	1.36	1.75
FS-25	93.2	FG	9591.0	1.41	1.48
FS-25 DUP	NA	NA	NA	1.82	1.52
FS-25 MS	NA	NA	NA	3.20	1.65
FS-26	93.2	FG	9137.0	1.59	2.25
FS-27	95.3	FG	9222.0	1.37	3.33
FS-28	74.4	MR	4313.0	0.95	4.53
FS-29	94.7	MG	8399.0	1.00	2.93
FS-30	91.4	MR	8286.0	0.81	0.95
FS-31	78.7	MG	4256.0	1.04	2.09
FS-32	91.4	MR	7576.0	1.77	3.14
FS-33	91.7	FG	7860.0	1.02	1.92
FS-34	85.6	MG	6044.0	1.61	4.34
FS-35	83.1	MR	5335.0	3.20	2.05
FS-36	87.6	FG	5902.0	1.62	2.01
FS-37	83.6	MR	8087.0	1.70	2.71
FS-38	83.8	FG	7037.0	1.42	2.24
FS-39	91.9	FG	8881.0	1.96	2.43
FS-40	81.3	MR	5136.0	1.29	3.68
ES-1 (FS-5)	NA	NA	1334.0	1.59	6.13
ES-1 DUP	NA	NA	NA	1.82	7.02
ES-1 MS	NA	NA	NA	3.90	7.44
ES-2 (FS-7)	NA	NA	795.0	1.79	6.95
ES-3 (FS-9)	NA	NA	1362.0	2.22	7.62

SHEBOYGAN RIVER AND HARBOR
ALTERNATIVE SPECIFIC REMEDIAL INVESTIGATION

TABLE 3 (Cont'd)
(Kiwanis Park)

II. Means

	<u>Fish</u>	<u>Eggs</u>
Total PCBs (mg/kg)	1.43 +0.58	1.91 +0.22
Lipids (%)	2.54 +1.20	7.04 +0.43
Length (cm)	87.3 +7.4	
Weight (grams)	7312.7 +1931.2	

Notes:

F = Female

M = Male

G = Green

R = Ripe

^a = Tagged fish (FS-16 - A, FS-20 - RM)

* = Egg sample taken

NA = Not applicable

^b = Breakdown of total PCBs by AROCLOR available in lab data sheets.

(Note sample number in this table corresponds to the sample location in the lab data sheets)

TABLE 4
SHEBOYGAN RIVER AND HARBOR
ALTERNATIVE SPECIFIC REMEDIAL INVESTIGATION

SUMMARY OF DATA FOR RIVER SALMON
Date Sampled: (LOWER HARBOR)
9/27/89

I. Raw Data

<u>Sample Number</u>	<u>Length (cm)</u>	<u>Sex/ Reprod Cond'n</u>	<u>Weight (grams)</u>	<u>Total^b PCBs (mg/kg)</u>	<u>Lipids (%)</u>
FS-41	69.3	MR	4029.0	1.03	3.60
FS-42*	93.2	FG	8541.0	1.37	4.09
FS-43	93.0	MG	8229.0	1.15	2.65
FS-44	86.1	MG	6867.0	1.21	2.83
FS-45	103.4	MR	11038.0	1.41	2.57
FS-45 DUP	NA	NA	NA	1.54	2.67
FS-45 MS	NA	NA	NA	2.05	2.32
FS-46	73.7	MG	4200.0	1.49	3.71
FS-47	81.3	MG	6299.0	1.18	6.76
FS-48	81.5	MG	5533.0	1.17	4.98
FS-49	78.5	FG	6299.0	1.07	2.46
FS-50	85.9	MR	5874.0	1.38	3.71
FS-51	88.4	FG	7576.0	1.30	2.21
FS-51 DUP	NA	NA	NA	1.27	1.98
FS-51 MS	NA	NA	NA	2.90	2.30
FS-52	92.2	MR	6952.0	1.14	3.51
FS-53	80.8	MG	4483.0	1.36	3.29
FS-54	92.5	FG	8740.0	1.19	2.16
FS-55	89.4	MG	8144.0	1.61	3.84
FS-56* ^a	87.1	FG	7406.0	0.98	1.85
FS-57	94.7	MR	9591.0	1.13	6.22
FS-58	92.7	MG	7917.0	0.05	0.28
FS-59*	103.1	FG	10187.0	1.33	1.92
FS-60	54.1	MG	1816.0	1.06	4.79

SHEBOYGAN RIVER AND HARBOR
ALTERNATIVE SPECIFIC REMEDIAL INVESTIGATION

Table 4 (cont'd)
(Lower Harbor)

<u>Sample Number</u>	<u>Length (cm)</u>	<u>Sex/ Reprod Cond'n</u>	<u>Weight (grams)</u>	<u>Total^b PCBs (mg/kg)</u>	<u>Lipids (%)</u>
FS-61	92.7	MG	7633.0	1.17	2.42
FS-62	85.6	FG	6697.0	1.20	1.83
FS-63	86.9	MG	7207.0	1.67	6.41
FS-64	84.6	MR	6980.0	1.28	3.32
FS-65	80.5	MG	5930.0	1.94	5.16
FS-66	97.3	MR	9194.0	1.44	3.33
FS-67	85.9	FG	7434.0	1.47	2.96
FS-68	85.3	FG	7576.0	2.20	3.19
FS-69	52.3	MG	1930.0	0.65	4.28
FS-70	86.9	FG	7321.0	1.13	1.48
FS-70 DUP	NA	NA	NA	1.08	1.61
FS-70 MS	NA	NA	NA	2.30	1.62
FS-71	90.9	MR	7690.0	1.53	3.88
FS-72	61.0	MG	2894.0	0.96	4.13
FS-73 ^a	89.7	MG	8626.0	1.57	3.90
FS-74	80.5	MR	5845.0	1.48	4.65
FS-75	88.4	FG	8427.0	1.17	1.25
FS-76	85.9	MR	6725.0	2.22	2.06
FS-77	82.0	MR	5221.0	1.19	2.50
FS-77 DUP	NA	NA	NA	1.28	2.45
FS-77 MS	NA	NA	NA	2.60	2.32
FS-78	90.4	FG	7803.0	1.39	2.57
FS-79	93.2	MG	9137.0	2.20	2.47
FS-80	90.9	FG	7576.0	2.40	2.64
FS-81	80.0	FG	5391.0	1.32	3.73
ES-4 (FS-42)	NA	NA	NA	1.81	10.93
ES-5 (FS-56)	NA	NA	NA	1.34	8.16
ES-5 DUP	NA	NA	NA	1.08	8.01
ES-5 MS	NA	NA	NA	2.54	8.29
ES-6 (FS-59)	NA	NA	1589.0	1.52	7.84

SHEBOYGAN RIVER AND HARBOR
ALTERNATIVE SPECIFIC REMEDIAL INVESTIGATION

TABLE 4 (Cont'd)
(Lower Harbor)

II. Means

	<u>Fish</u>	<u>Eggs</u>
Total PCBs (mg/kg)	1.35 +0.42	1.51 +0.25
Lipids (%)	3.31 +1.36	8.95 +1.40
Length (cm)	85.2 +10.7	
Weight (grams)	6901.4 +2001.0	
Factor K	1.088 +0.108	

Notes:

F = Female

M = Male

G = Green

R = Ripe

^a = Tagged fish (FS-56 - ad, FS-73 - ad)

* = Egg sample taken

NA = Not applicable

^b = Breakdown fo total PCBs by AROCLOR is available in lab data sheets.

(Note sample number in this table corresponds to the sample location in the lab data sheets)

DNR OFFICE MEMO
Form 9500-43 Rev. 5-89

To Tom Wentland - SED Date 2/14 Time

From Frank Trcka

Of

Phone Received by

Please Call Returning Your Call Will Call Again Called to See You

Comment
 For Your Information

See Me
 Take Action

Approve
 Sign

Revise
 Prepare Reply For My Signature

Reply Direct
 Per Your Request

Code
 Route to:

Return
 File

Tom - I found this on the bottom of a pile of papers. It should be in the Superfund file for Sheboygan



→ TrackA-SED

BLASLAND & BOUCK ENGINEERS, P.C.
CONSULTANTS
6723 Towne
New York 13214 (315) 446-9120

copy for
TrackA

Water Column
samples at
fresh sites

February 12, 1990

RECEIVED

FEB 14 1990

BUREAU OF SOLID -
HAZARDOUS WASTE MANAGEMENT

Ms. Bonnie L. Eleder
Remedial Project Manager
United States Environmental
Protection Agency
Region V
230 South Dearborn Street
Chicago, IL 60604

Re: Sheboygan River and Harbor
File: 176.07 #2

Dear Bonnie:

Enclosed please find, for your review, the January 1990 Status Report for activities associated with the above-referenced project.

Should you have any questions concerning the enclosed, please feel free to contact us.

Very truly yours,

BLASLAND & BOUCK ENGINEERS, P.C.

Dawn S. Foster JPD

Dawn S. Foster, P.E.
Manager, Engineering

JPD/nlg
Enclosures

cc: Mark A. Thimke, Esq., Foley & Lardner
Ms. Robin R. Schmidt, Wisconsin Department of Natural Resources
Mr. William H. Bouck, P.E., Blasland & Bouck Engineers, P.C.
Mr. Robert K. Goldman, P.E., Blasland & Bouck Engineers, P.C.

SHEBOYGAN RIVER AND HARBOR
MONTHLY STATUS REPORT

JANUARY 1990

1. Actions Taken During This Time Period

The following field activities were conducted during January:

- a. River activities were suspended due to winter conditions. Field activities consisted of securing equipment and facilities until sediment removal and armoring activities resume this spring.
- b. Post removal sediment samples were taken from Sediment Area 15 on January 16, 1990.
- c. The Kohler Horse Farm was observed for potential use as an access area.

A meeting regarding access to Kohler property was held on January 5, 1990.

2. EPA Decisions

The EPA/WDNR agreed to the suspension of the Pilot Study activities until Spring, 1990. They also agreed to the procedures for demobilization and securing of the site as per our January 12, 1990 conference call, which was summarized in a January 12, 1990 memo from B.L. Eleder.

The EPA/WDNR did not provide any comments regarding the laboratory armoring study procedures as outlined in draft Work Plan/QAPP. Hence this study has been initiated as described in the draft document.

3. Results of Sampling and Tests

Data summaries for the following analytical results received during this month are attached:

- a. Caged fish collected during river activities, in Table 1. Laboratory data sheets are included in Attachment 1.
- b. Turbidity and total suspended solids (TSS) for river monitoring during river activities, in Table 2.
- c. PCB/TSS results from weekly river monitoring during river activities, in Table 3. Laboratory data sheets are included in Attachment 1.
- d. PCB/TSS results from water samples taken within curtained sediment areas after sediments were removed, in Table 4. Laboratory data sheets are included in Attachment 1.
- e. PCB results from sediment samples taken after removal was complete, in Table 5. Laboratory data sheets are included in Attachment 1.

- f. Fourth round of water column sampling, in Tables 6 and 7. Laboratory data sheets are included in Attachment 1.
- g. Pre-exposure minnow and clam samples for the laboratory armoring study were analyzed for initial PCB content. Trace levels of Aroclors 1242 and 1254 below the method detection limit (50 ppb) were reported.

4. Anticipated Problems/Recommended Solutions - None

5. Problems Encountered/Resolved

- a. Negotiations with Kohler regarding obtaining access to the River are continuing.

6. <u>Deliverables Submitted</u>	<u>Date Submitted</u>
Operations Plan to Robin Schmidt	1/4/90
Summary of Fish Sampling Activities to WDNR	1/9/90
December Status Report	1/11/90
Figures 6 and 7 from RI/ES	1/18/90

7. Upcoming Events/Activities Planned

Organism acclimation for the bench-scale armoring experiment was initiated in late January. The actual 10-day study will be conducted in February. This study is being performed by ENSECO, Inc. at their facility in Marblehead, Massachusetts.

8. Key Personnel Changes - None

9. Schedule

Sediment removal/armoring activities at Rochester Park have been affected by winter weather conditions and will not start again until Spring, 1990.

TABLE 1
SHEYBOYGAN RIVER AND HARBOR
ALTERNATIVE SPECIFIC REMEDIAL INVESTIGATION
SUMMARY OF CAGED FISH
MONITORING RESULTS^{1,2}
(CONSTRUCTION PHASE)

Location	Cage No.	1st Week (11/2/89)		3rd Week (11/16/89)		6th Week (12/7/89)		8th Week (12/21/89)		8-Week Mortality	
		PCB (ppm)	Lipids (%)	PCB (ppm)	Lipids (%)	PCB (ppm)	Lipids (%)	PCB (ppm)	Lipids (%)	Cage No.	Mortality (%)
A. Sheboygan Falls (W-1)	1/2 ⁵	<.03	1.76	NA	NA	NA	NA	NA	NA		
	1	NA ⁵	NA ⁵	<.03	2.02	<.07	2.26	<.03	1.43	#1 35/250	14%
	2	NA ⁵	NA ⁵	<.03	2.05	<.07	2.38	<.04	1.98	#2 33/250	13%
	Mean ⁴	<.03	1.76	<.03	2.03	<.07	2.32	<.03	1.70		
B. Rochester Park (W-12)	3	2.80	1.88	3.0	1.86	2.31	2.17	2.92	2.07		
	3	NA	NA	2.17	1.89	NA	NA	NA	NA	#3 142/250	32%
	4	1.82	1.76	3.0	2.00	2.86	2.23	2.25	2.02	#4 74/385	19%
	4	NA	NA	NA	NA	2.11	2.21	2.30	2.14		
	Mean ⁴	2.31	1.82	2.72	1.92	2.43	2.20	2.49	2.08		
C. Kohler Property (W-13)	5	1.19	2.18	1.66	1.91	1.83	2.30	1.08	2.33		
	5	NA	NA	1.98	1.96	1.82	2.21	0.63	2.34	#5 55/450	12%
	6	1.74	2.24	2.30	2.25	1.73	1.14	-- ³	-- ³	#6 Unknown ³	
	6	NA	NA	NA	NA	2.60	2.54	-- ³	-- ³		
	Mean ⁴	1.47	2.30	1.98	2.04	2.00	2.05	0.855	2.34		

Notes:

NA Not analyzed due to the initial fish quantity and extended study duration.

¹Triplicate samples of the pre-exposure minnow population were collected and analyzed for PCBs. None were detected below the detection limit. Lipid C was approximately 1.83%.

²Control spike recoveries were 72% and 73% for Aroclor 1242, and 85% and 87% for Aroclor 1254.

³The eight week sample from Cage 6 consisted of only six minnows due to the accidental release of most minnows during cage retrieval. The six minnows analyzed as one sample, and were reported with a concentration of 14.2 ppm PCBs. However, due to the small sample size, this data is probably not

⁴Mean value for all fish sampled and analyzed at each location during each sampling round.

⁵Due to the extended study duration, a composite sample from Cages 1 and 2 (50 percent of total fish sample from each cage) was analyzed for first week only.

TABLE 2

SHEBOYGAN RIVER AND HARBOR
ALTERNATIVE SPECIFIC REMEDIAL INVESTIGATIONRIVER MONITORING DATA
(DURING CONSTRUCTION)

Date	Activity	Parameter ¹	Monitoring Location			
			Upstream ²	Downstream ²	W-12	W-15
12/7/89	Dredge Area 13	TSS	3	3	4	3
		Turb	2	3	3	3
12/8/89	Dredge Area 13	TSS	4	4	4	3
		Turb	3	3	2	3
12/9/89	Dredge Area 15	TSS	8	9	47 ³	9
		Turb	4	5	24 ³	5
12/10/89	Dredge Area 15	TSS	7	16	4	17
		Turb	6	9	3	7
12/11/89	Dredge Area 15	TSS	11	5	9	5
		Turb	6	4	5	3
12/12/89	Dredge Area 15	TSS	6	8	6	8
		Turb	4	5	4	5
12/13/89	Dredge Area 15	TSS	5	10	6	7
		Turb	5	7	5	5
12/14/89	Dredge Area 15	TSS	4	6	35 ³	5
		Turb	3	4	10 ³	4
12/14/89	Dredge Area 9	TSS	50 ⁴	23	35 ³	5
		Turb	22 ⁴	15	10 ³	4
12/15/89	Dredge Area 9	TSS	10	9	7	6
		Turb	5	4	4	5
12/15/89	Dredge Area 15	TSS	--	--	7	6
		Turb	--	--	4	5
12/16/89	Dredge Area 15	TSS	12	17	12	18
		Turb	6	9	6	10
12/19/89	Dredge Area 9	TSS	4	14 ⁵	4	5
		Turb	3	12 ⁵	3	3

TABLE 2
(Continued)

SHEBOYGAN RIVER AND HARBOR
ALTERNATIVE SPECIFIC REMEDIAL INVESTIGATION

RIVER MONITORING DATA
(DURING CONSTRUCTION)

<u>Date</u>	<u>Activity</u>	<u>Parameter</u> ¹	<u>Monitoring Location</u>			
			<u>Upstream</u> ²	<u>Downstream</u> ²	<u>W-12</u>	<u>W-15</u>
12/28/89	Dredge Area 15	TSS	2	3	2	3
		Turb	2	3	3	3

<u>Date</u>	<u>Activity</u>	<u>Parameter</u> ¹	<u>Monitoring Location</u>				
			<u>Upstream</u> ²	<u>Downstream</u> ²	<u>W-16</u>	<u>W-12</u>	<u>W-2</u>
12/18/89	Dredge Area 5	TSS	<1	3	5	5	<1
		Turb	2	3	3	3	2

Notes:

- 1 - Values listed are TSS-mg/l, Turbidity-NTU
- 2 - These locations are approximately 100 feet upstream and downstream of that day's river activity, as described in Work Plan/QAPP
- 3 - Fixed Location W-12 was sampled while barges were moving in vicinity
- 4 - Barges were moving and ice breaking was occurring 100 feet upstream of Area 9 at sample time
- 5 - Barges may have been moving and ice breaking occurring just upstream of the 100' downstream monitoring location for Area 9.

Dashes indicate no analyses performed because of minimal activity in the area.

TABLE 3
SHEBOYGAN RIVER AND HARBOR
ALTERNATIVE SPECIFIC REMEDIAL INVESTIGATION
WEEKLY PCB/TSS RIVER MONITORING

Sample Date	Week	Activity	Time	Sample Location	Depth of Water (ft.)	Depth of Sample (ft.)	Results		
							Filtered PCBs (ppb)	Total PCBs (ppb)	TSS (mg/l)
12/1/89	11/27-12/1/89	Dredging	14:45	W-11	1.0	0.5	**	<.040	16.0
		Area 1	15:30	W-16	3.5	1.5	.070	.316	74.0
12/6/89	12/4-12/8/89	Dredging	12:00	W-12	3.5	1.8	<.041	<.040	3.8*
		Area 13	12:45	W-15	3.0	1.5	.040	<.040	3.8
12/19/89	12/11-12/15/89	Dredging	12:00	W-12	3.6	1.5	.042	.056	19.2
		Area 15	12:20	W-15	3.1	1.5	.047	.085	5.4
12/20/89	12/18-12/22/89	Dredging	10:10	W-16	2.0	1.0	.041*	.046*	3.2
		Areas 15,	10:30	W-12	2.7	1.4	.041	.044	3.8
		9, and 5	11:30	W-15	3.4	1.7	<.040	<.041	2.6

Notes:

- * Average of duplicate analyses
- ** Sample lost at laboratory

TABLE 4

SHEBOYGAN RIVER AND HARBOR
ALTERNATIVE SPECIFIC REMEDIAL INVESTIGATION

SUMMARY OF POST-REMOVAL WATER SAMPLES
WITHIN CURTAINED SEDIMENT AREAS¹

Sediment Area	Sample Collection		No. of Locations ²	Average Depth of Water (ft.)	Average Depth of Sample (ft.)	Results		
	Date	Time				Filtered PCBs (ppb)	Total PCBs (ppb)	TSS mg/l
1	12/19/89	11:30	1	2.0	1.0	9.8	9.3	4.6
13	12/19/89	10:00	2	3.3	1.6	2.2	8.3	5.8

Notes:

¹ Water samples collected after sediment removal activities were completed (Area 1 completed 12/3/89; Area 13 completed 12/8/89).

² Locations composited in field using equal volumes.

TABLE 5
 SHEBOYGAN RIVER AND HARBOR
 ALTERNATIVE SPECIFIC REMEDIAL INVESTIGATIONS
 SUMMARY OF POST-REMOVAL SEDIMENT SAMPLES¹

Sediment Area	Date	No. of Locations	Sample Depth (in.)	Sample Type ²	Sample Description	Total PCB mg/kg (dry wt.)
1	12/14/89	3	0-3	Composite	A1-1 - Coarse sand and gravel A1-2 - Coarse sand and gravel A1-3 - Clayey silt, some black staining, slight organic odor	17.6
13	12/18/89	4	0-3	Composite	A13-1- Fine to medium sand, trace dark brown silt A13-2- Fine to medium sand, trace dark brown silt A13-3- Fine to medium sand, some dark brown silt A13-4- Sand and gravel	38.7

Notes:

- ¹ Sediment samples collected after sediment removal activities were completed (Area 1 completed 12/3/89, Area 13 Completed 12/8/89).
² Equal weights composited by laboratory prior to analysis.

TABLE 6
 SHEBOYGAN RIVER AND HARBOR
 ALTERNATIVE SPECIFIC REMEDIAL INVESTIGATION
 WATER COLUMN SAMPLING SUMMARY
 DECEMBER 1989

Location	Date	Time	River Width (ft.)	Average Depth (ft.)	Average ¹ Velocity (fps)	Calculated Q (cfs)	USGS ² Read. (cfs)	Sample Location Depth (ft.)	pH	Temp. °C	Secchi disc (ft.)	Conduct. (µmho/cm)
W-1	12/12/89	10:00	174.0	3.96	.0425	29.3 ³	95	6.8	7.60	1.0	4.0	737
W-11	12/12/89	12:15	63.0	.84	1.18	62.4	95	.8	8.01	1.0	.8	769
W-3	12/12/89	15:15	130.0	4.68	.118	71.8	95	5.3	7.51	1.0	4.3	764
W-5	12/13/89	10:05	94.0	2.67	.179	45.0 ³	95	4.3	7.97	0	4.3	804
W-6	12/13/89	13:00	165.0	6.1	.088	88.6	95	8.2	7.62	1.0	3.4	823

Notes:

- ¹ Low water temperature and ice possibly affected accuracy of meter.
- ² Gauge reading obtained each morning.
- ³ Velocities were effected by ice covering the river.

TABLE 7
 SHEBOYGAN RIVER AND HARBOR PROJECT
 ALTERNATIVE SPECIFIC REMEDIAL INVESTIGATION

WATER COLUMN ANALYSES SUMMARY
DECEMBER 1989)

<u>Location (ordered upstream to downstream)</u>		<u>TSS¹</u> <u>(mg/l)</u>	<u>VSS¹</u> <u>(mg/l)</u>	<u>TOC</u> <u>(mg/l)</u>	<u>DOC</u> <u>(mg/l)</u>	<u>Chlorophyll¹</u> <u>(ug/l)</u>	<u>Algae</u> <u>(#/ml)</u>	<u>Total PCBs, ppb^{2,3}</u>	
<u>No.</u>	<u>Description</u>							<u>Unfiltered</u>	<u>Filtered</u>
W-1	Behind Sheboygan Falls Dam	7.0	4.9	--	--	--	--	<0.040	<0.041
W-11	Just upstream of Tecumseh	8.9	4.6	10	9.5	51.0	470	<0.041	<0.043
W-11 (Dup)		--	--	10	9.4	49.3	--	<0.042	<0.042
W-3	Behind upper Kohler Dam	6.6	4.4	8.9	8.4	37.4	1600	<0.040	<0.040
W-5	USGS gaging station	7.6	4.5	9.5	8.9	34.5	1500	<0.040	<0.040
W-6	14th Street bridge	9.0	4.4	9.4	8.8	45.3	900	0.059	<0.040
Field Blank		<1.0	1.0	--	--	--	--	<0.041	<0.040

Notes:

- (1) Average of duplicate analyses.
- (2) All PCBs quantified as Aroclor 1242. Filtrations performed with 0.7 micron glass fiber filter.
- (3) Matrix Spike recoveries (Aroclor 1248) were 112% for W-1, Unfiltered; 131% for W-1, Filtered. Control spike recoveries (Aroclor 1242) were 70% and 120%.

Abbreviations:

TSS = Total Suspended Solids
 VSS = Volatile Suspended Solids
 TOC = Total Organic Carbon
 DOC = Dissolved Organic Carbon (Water filtered with 0.7 micron glass fiber filter)

Dashes indicate no analysis performed

SHEBOYGAN RIVER AND HARBOR
ALTERNATIVE SPECIFIC REMEDIAL INVESTIGATION

ATTACHMENT 1

LABORATORY DATA SHEETS

BLASLAND AND BOUCK
SHEBOYGAN RIVER MINNOW STUDY
PROJECT # 176.07.12

HLA SAMPLE #	Location	Date Received	Date Extracted	Percent Lipids	PCB-1242 ug/Kg	PCB-1254 ug/Kg
91005104	FM-37	10/27/89	10/30/89	1.63	<31	<31
91005105	FM-38	10/27/89	10/30/89	1.85	<31	<31
91005106	FM-39	10/27/89	10/30/89	2.01	<30	<30
91101206	FM-41	11/06/89	12/09/89	1.76	<35	<35
91101207	FM-42	11/06/89	12/09/89	1.88	1400	1400
91101208	FM-43	11/06/89	12/09/89	1.76	520	1300
91101209	FM-44	11/06/89	12/09/89	2.18	580	610
91101210	FM-45	11/06/89	12/09/89	2.42	630	1100
91104607	FM-46	11/17/89	12/09/89	2.02	<32	<32
91104608	FM-47	11/17/89	12/09/89	2.05	<34	<34
91104609	FM-48	11/17/89	12/09/89	1.86	1700	1300
91104610	FM-49	11/17/89	12/09/89	1.89	670	1500
91104611	FM-50	11/17/89	12/09/89	2.00	900	2100
91104612	FM-51	11/17/89	12/09/89	1.91	560	1100
91104613	FM-52	11/17/89	12/09/89	1.96	480	1500
91104614	FM-53	11/17/89	12/09/89	2.25	1100	1200
91202706	FM-54	12/08/89	12/27/89	2.26	<77	<77
91202707	FM-54A	12/08/89	12/27/89	2.38	<71	<71
91202708	FM-57	12/08/89	12/27/89	2.17	710	1500
91202709	FM-58	12/08/89	12/27/89	2.23	760	2100
91202710	FM-59	12/08/89	12/27/89	2.21	610	1500
91202711	FM-60	12/08/89	12/27/89	2.30	530	1300
91202712	FM-61	12/08/89	12/27/89	2.21	620	1200
91202713	FM-62	12/08/89	12/27/89	1.14	530	1100
91202714	FM-63	12/08/89	12/27/89	2.54	1300	1300
91204530	FM-64	12/22/89	12/27/89	1.43	<36	<36
91204531	FM-65	12/22/89	12/27/89	1.98	<49	<49
91204532	FM-66	12/22/89	12/27/89	2.07	820	2100
91204533	FM-67	12/22/89	12/27/89	2.02	750	1500
91204534	FM-68	12/22/89	12/27/89	2.14	700	1600
91204535	FM-69	12/22/89	12/27/89	2.33	450	630
91204536	FM-70	12/22/89	12/27/89	2.34	240	390
91204537	FM-71	12/22/89	12/27/89	2.50	4500	9700
91200919 MS		12/06/89	12/09/89	2.76	570	<500
91200920 MS		12/06/89	12/09/89	3.13	530	<500
91200921 MS		12/06/89	12/27/89	2.56	550	<500
91200922 MS		12/06/89	12/27/89	2.55	600	<500
Method Blank #1			12/09/89		<10	<10
Method Blank #2			12/27/89		<10	<10
Method Blank #3			10/30/89		<10	<10
Control Blank #1			12/09/89	0.93	10	<10
Control Blank #2			12/27/89	0.88	<10	<10
Control Spike #1			12/09/89	1.00	490	570
Control Spike #2			12/27/89	0.99	480	580

Note: PCB-1016, PCB-1221, PCB-1232, PCB-1248 and PCB-1260 not detected in any samples.

Note: The Control Spike was spiked with 670 ug/Kg Aroclor 1242 and Aroclor 1254. The percent recoveries for Aroclor 1242 were 73% and 72% respectively. The percent recoveries for Aroclor 1254 were 85% and 87% respectively.

Note: The Matrix Spike was spiked with 670 ug/Kg Aroclor 1242. The percent recoveries for 91200919, 91200920, 91200921, and 91200922 were 85%, 79%, 82% and 90% respectively.

BLASLAND AND BOUCK
SHEBOYGAN RIVER WATER
PROJECT # 884.01

SAMPLE NUMBER	SAMPLE LOCATION	DATE RECEIVED	DATE EXTRACTED	TSS mg/L	PCB 1242 (ug/L)	PCB 1254 (ug/L)
91200508	W-11 Total	12/05/89	12/05/89		<0.040	<0.040
91200509	W-16 Filtered	12/05/89	12/05/89		0.070	<0.043
91200510	W-16 Total	12/05/89	12/05/89		0.24	0.076
Method Blank	PCB's		12/05/89		<0.050	<0.050
Control Spike			12/05/89		42	<5.0
91200511	W-11	12/05/89	12/05/89	16		
91200512	W-16	12/05/89	12/05/89	74		
Method Blank	TSS		12/05/89	<1.0		

Note: Aroclor 1016, 1221, 1232, 1254 and 1260 not detected in any samples.

Control Spike: Aroclor 1242 added at 50 ug/L. Recovery of the Aroclor 1242 was 84%.

BLASLAND AND BOUCK
SHEBOYGAN RIVER WATER
PROJECT # 884.01

SAMPLE NUMBER	SAMPLE LOCATION	DATE RECEIVED	DATE EXTRACTED	TSS mg/L	PCB 1242 (ug/L)	PCB 1248 (ug/L)
91201285 Dup	W-12 Total Dup	12/07/89	12/11/89		<0.040	<0.040
91201286	W-12 Filtered	12/07/89	12/11/89		<0.041	<0.041
91201287 Dup	W-12 Filtered Dup	12/07/89	12/11/89		<0.041	<0.041
91201288	Field Blank Total	12/07/89	12/11/89		<0.042	<0.042
91201289	W-15 Total	12/07/89	12/11/89		<0.040	<0.040
91201290 MS	W-15 Total MS	12/07/89	12/11/89		<0.040	0.41
91201291	W-15 Filtered	12/07/89	12/11/89		<0.040	<0.040
91201293	Field Blank Filtered	12/07/89	12/11/89		<0.040	<0.040
Method Blank	PCB's		12/11/89		<0.050	<0.050
Control Spike			12/11/89		0.30	<0.050
91201294	W-12	12/07/89	12/11/89	4.0		
91201295	W-12 DUP	12/07/89	12/11/89	3.6		
91201296	W-15	12/07/89	12/11/89	3.8		
Method Blank	TSS		12/11/89	<1.0		

Note: Aroclor 1016, 1221, 1232, 1254 and 1260 not present in any samples.

Control Spike: Aroclor 1242 added at 0.50 ug/L.
Recovery of the Aroclor 1242 was 60%.

Matrix Spike: Aroclor 1248 added at 0.50 ug/L.
Recovery of the Aroclor 1248 was 82%.

Samples W-12 Total and W-15 Filtered (MS) were lost in a laboratory accident.

BLASLAND AND BOUCK
SHEBOYGAN RIVER WATER
PROJECT # 884.01

SAMPLE NUMBER	SAMPLE LOCATION	DATE RECEIVED	DATE EXTRACTED	TSS mg/L (ug/L)	PCB 1242 (ug/L)	PCB 1248 (ug/L)
91203187	W-12 Total	12/15/89	12/18/89		0.056	<0.040
91203188	W-12 Filtered	12/15/89	12/18/89		0.042	<0.041
91203189	W-15 Total	12/15/89	12/18/89		0.085	<0.040
91203190	W-15 Filtered	12/15/89	12/18/89		0.047	<0.040
Method Blank	PCB's		12/18/89		<0.050	<0.050
Control Spike			12/18/89		0.60	<0.050
91203191	W-12	12/15/89	12/18/89	19.2		
91203192	W-15	12/15/89	12/18/89	5.4		
Method Blank	TSS		12/18/89	<1.0		

Note: Aroclor 1016, 1221, 1232, 1254 and 1260 not present in any samples.

Control Spike: Aroclor 1242 added at 0.50 ug/L.
Recovery of the spike was 120%.

BLASLAND AND BOUCK
SHEBOYGAN RIVER WATER
PROJECT # 884.01

SAMPLE NUMBER	SAMPLE LOCATION	DATE RECEIVED	DATE EXTRACTED	TSS mg/L	PCB 1242 (ug/L)	PCB 1248 (ug/L)	PCB 1254 (ug/L)
91204418	A-1 Total	12/21/89	12/26/89		9.3	<0.41	<0.41
91204419	A-1 Filtered	12/21/89	12/26/89		9.8	<0.41	<0.41
91204420	A-13 Total	12/21/89	12/26/89		8.3	<0.41	<0.41
91204421	A-13 Filtered	12/21/89	12/26/89		2.2	<0.21	<0.21
91204480	W-12 Total	12/22/89	12/26/89		0.045	<0.042	<0.042
91204483 (Dup)	W-12 Total (Dup)	12/22/89	12/26/89		0.042	<0.041	<0.041
91204481	W-12 Filtered	12/22/89	12/26/89		0.042	<0.041	<0.041
91204484 (Dup)	W-12 Filtered (Dup)	12/22/89	12/26/89		0.040*	<0.041	<0.041
91204504	W-16 Total	12/26/89	12/26/89		0.046	<0.041	<0.041
91204507 (MS)	W-16 Total (MS)	12/26/89	12/26/89		<0.042	0.55	<0.042
91204505	W-16 Filtered	12/26/89	12/26/89		0.041	<0.041	<0.041
91204508 (MS)	W-16 Filtered (MS)	12/26/89	12/26/89		<0.041	0.49	<0.041
91204509	W-15 Total	12/26/89	12/26/89		<0.041	<0.041	<0.041
91204510	W-15 Filtered	12/26/89	12/26/89		<0.040	<0.040	<0.040
Method Blank	PCB's		12/26/89		<0.050	<0.050	<0.050
Control Spike			12/26/89		0.34	<0.050	<0.050
91204422	A-1	12/21/89	12/26/89	4.6			
91204423	A-13	12/21/89	12/26/89	5.8			
91204482	W-12	12/22/89	12/26/89	3.8			
91204506	W-16	12/26/89	12/26/89	3.2			
91204511	W-15	12/26/89	12/26/89	2.6			
Method Blank	TSS		12/26/89	<1.0			
Method Blank	TSS		12/26/89	<1.0			

Note: Aroclor 1016, 1221, 1232 and 1260 is not present in any samples.

Control Spike: Aroclor 1242 added at 0.50 ug/L. Recovery of the Aroclor 1242 was 68%.

Matrix Spike: Aroclor 1248 added at 0.50 ug/L to samples W-16 Total (91204507) and W-16 Filtered (91204508) were 110% and 98% respectively.

* = quantitated result is below the method detection limit but in the analysts opinion it is present.



HAZLETON

LABORATORIES AMERICA, INC.

3301 KINSMAN BLVD., P.O. BOX 7545

MADISON, WI 53707 USA

January 15, 1990

Don Hughes
Blasland & Bouck Engineers
6723 Towpath Road
Syracuse, NY 13214

Dear Don,

Enclosed is the data package for the PCB analyses of the composite sediments from the Sheboygan River which we received December 21, 1989. The dried sediments were ground using a mortar and pestle and an equal weight of each sample was combined to form the composite. The composites were extracted on December 27, 1989 and analyzed for PCB's using the sediment analysis procedure used for previous Sheboygan River sediments. Please note the following concerning these samples:

The method blank for this group had no PCB's present above the detection limit.

The control spike consisted of dried river sand spiked with 5.0 mg/kg Aroclor 1242 and Aroclor 1254. The percent recovery of PCB-1242 and PCB-1254 from this spike was 110% and 94% respectively.

Results:

Sample	mg/Kg		
	PCB-1242	PCB-1248	PCB-1254
A-1 Composite	14	<1.5	3.6
A-13 Composite	29	<1.5	9.7

PHONE (608) 241-4471
FACSIMILE (608) 241-7227
TELEX TLX 703956 HAZRAL MDS UD

a CORNING Laboratory Services Company

Aroclor patterns present in the quantitation run were checked in the confirmation run. All quantitation and recognition decisions were based on the quantitation run.

If you have any questions concerning these results please call.

Sincerely,

Tod Noltemeyer

Tod Noltemeyer
Project Manager
Hazleton Laboratory

cc: Dave Hills

central file

BLASLAND AND BOUCK
SHEBOYGAN RIVER WATER
PCB ANALYSIS
PROJECT # 176.07

SAMPLE NUMBER	SAMPLE LOCATION	DATE RECEIVED	DATE EXTRACTED	PCB 1242 (ug/L)	PCB 1248 (ug/L)
91203127	W-3 Total	12/15/89	12/15/89	<0.040	<0.040
91203128	W-3 Filtered	12/15/89	12/15/89	<0.040	<0.040
91203129	W-5 Total	12/15/89	12/15/89	<0.040	<0.040
91203130	W-5 Filtered	12/15/89	12/15/89	<0.040	<0.040
91203131	W-11 Total	12/15/89	12/15/89	<0.041	<0.041
91203132 Dup	W-11 Total Dup	12/15/89	12/15/89	<0.042	<0.042
91203133	W-11 Filtered	12/15/89	12/15/89	<0.043	<0.043
91203134 Dup	W-11 Filtered Dup	12/15/89	12/15/89	<0.042	<0.042
91203135	W-1 Total	12/15/89	12/15/89	<0.040	<0.040
91203136 MS	W-1 Total MS	12/15/89	12/15/89	<0.040	0.56
91203137	W-1 Filtered	12/15/89	12/15/89	<0.041	<0.041
91203138 MS	W-1 Filtered MS	12/15/89	12/15/89	<0.040	0.66
91203193	W-6 Total	12/15/89	12/18/89	0.059	<0.041
91203194	W-6 Filtered	12/15/89	12/18/89	<0.040	<0.040
91203195	Field Blank Total	12/15/89	12/18/89	<0.041	<0.041
91203196	Field Blank Filtered	12/15/89	12/18/89	<0.040	<0.040
Method Blank 1			12/15/89	<0.050	<0.050
Method Blank 2			12/18/89	<0.050	<0.050
Control Spike 1			12/15/89	0.35	<0.050
Control Spike 2			12/18/89	0.66	<0.050

Note: PCB-1016, PCB-1221, PCB-1232, PCB1254, and PCB-1250 not detected in any samples.

QC Matrix Spike. PCB-1248 added at 0.5ug/L.
Percent recoveries for W-1 Total and W-1 Filtered (91203136 and 91203138) were 112% and 131% respectively.

Control Spike. PCB-1242 added at 0.5ug/L.
Percent recoveries for Control Spike #1 and Control Spike #2 were 70% and 120% respectively.

BLASLAND & BOUCK
 MINNOW AND CLAM EXPOSURE STUDY
 ENSECO PROJECT # 91684

HLA SAMPLE #	Location	Date Received	Date Extracted	Percent Lipids	PCB-1242 ug/Kg	PCB-1254 ug/Kg
91204288	T-5	12/21/89	01/05/90	2.17	12	27
91204289	T-4	12/21/89	01/05/90	9.68	18	34
Control Spike			01/05/90	0.83	440	450
Method Blank			01/05/90		<10	<10

Note: PCB-1016, PCB-1221, PCB-1232, PCB-1248 and PCB-1260 not detected in any samples.

Note: The Control Spike was spiked with 670 ug/Kg Aroclor 1242 and Aroclor 1254. The percent recoveries were 66% and 68% respectively.