Appendix M

Sediment Bed Model

M-1 Goodness of Fit Tests
M-2 Confidence Interval Calculations

Table M-1

Deposit N
November 1998 Sample Results
(FRRAT Data)

Sample	ID	In-Place Density g/cm^3	Aroclor 1016 ug/kg	Aroclor 1221 ug/kg	Aroclor 1232 ug/kg	Aroclor 1242 ug/kg	Aroclor 1248 ug/kg	Aroclor 1254 ug/kg	Aroclor 1260 ug/kg
9	S1.0-6	0.32	0	0	0	6900	0	0	0
19	S2-POG	0.86	0	0	0	3000	0	0	0
5	S3.0-4	0.32	0	0	0	24000	0	0	0
6	S3.4-12	0.34	0	0	0	42000	0	0	0
10	S4.0-4	0.34	0	0	0	7700	0	0	0
11	S4.4-13	0.3	0	0	0	27000	0	0	0
20	S5.0-6	0.62	0	0	0	10000	0	0	0
13	S6.0-4	0.37	0	0	0	38000	0	0	0
22	S6.12-21	0.3	0	0	0	32000	0	0	0
21	S6.4-12	0.32	0	0	0	30000	0	0	0
1	S7.0-4	0.55	0	0	0	2000	0	0	0
24	S7.12-22	0.27	0	0	0	13000	0	0	0
23	S7.4-12	0.25	0	0	0	2400	0	0	0
30	S8.0-5	0.33	0	0	0	10000	0	0	0
27	S9.0-21	0.28	0	0	0	24000	0	0	0
15	S9.0-4	0.34	0	0	0	13000	0	0	0
26	S9.12-21	0.31	0	0	0	40000	0	0	0
25	S9.4-12	0.33	0	0	0	28000	0	0	0
3	S10.0-4	0.57	0	0	0	34000	0	0	0
31	S10.24-33	0.28	0	0	0	32000	0	0	0
28	S10.4-12	0.31	0	0	0	15000	0	0	0
29	S10-12-24	0.3	0	0	0	24000	0	0	0
34	S11.0-3	0.73	0	0	0	2600	0	0	0
37	S12.0-24	0.29	0	0	0	24000	0	0	0
7	S12.0-4	0.39	0	0	0	29000	0	0	0
36	S12.12-24	0.31	0	0	0	26000	0	0	0
35	S12.4-12	0.3	0	0	0	32000	0	0	0
38	S13.0-4	0.31	0	0	0	18000	0	0	0
41	S13.12-24	0.28	0	0	0	35000	0	0	0
43	S13.24-35	0.24	0	0	0	53000	0	0	0
39	S13.4-12	0.33	0	0	0	13000	0	0	0
66	S14-POG	-	0	0	0	750	0	0	0
49	S15.0-12	0.29	0	0	0	72000	0	0	0
17	S15.0-4	0.35	0	0	0	21000	0	0	0

Table M-1 *(Continued)*

Sample	ID	In-Place Density g/cm^3	Aroclor 1016 ug/kg	Aroclor 1221 ug/kg	Aroclor 1232 ug/kg	Aroclor 1242 ug/kg	Aroclor 1248 ug/kg	Aroclor 1254 ug/kg	Aroclor 1260 ug/kg
18	S15.4-11	0.31	0	0	0	34000	0	0	0
44	S16.0-4	0.27	0	0	0	72000	0	0	0
47	S16.12-22	0.36	0	0	0	31000	0	0	0
45	S16.4-12	0.29	0	0	0	160000	0	0	0
50	S17.0-4	1.29	0	0	0	770	0	290	0
67	S19-POG	-	0	0	0	3600	0	0	0
51	S20.0-4	0.66	0	0	0	770	0	0	0
52	S20.4-11	0.66	0	0	0	36	0	0	0
53	S21.0-3	1.18	0	0	0	520	0	0	0
54	S22.0-24	1.18	0	0	0	13000	0	0	0
55	S23.0-12	1.01	0	0	0	23000	0	0	0
56	S24.0-3	0.87	0	0	0	320	0	0	0
57	S25.0-4	1.08	0	0	0	560	0	0	0
60	S26.0-20	1.21	0	0	0	8500	0	0	0
58	S26.4-12	1.12	0	0	0	5600	0	0	0
62	S27.0-23	0.92	0	0	0	8400	0	0	0
63	S28.0-23	1.2	0	0	0	10000	0	0	0
64	S29.0-28	1.2	0	0	0	1800	0	0	0
65	S30.0-13	1.18	0	0	0	7600	0	2200	0

Prepared by: SGL
Checked by: JBH1

Table M-2

Deposit N
January 1999 Sample Results
(FRRAT Data)

ID	In-Place Density g/cm^3	Aroclor 1016 ug/kg	Aroclor 1221 ug/kg	Aroclor 1232 ug/kg	Aroclor 1242 ug/kg	Aroclor 1248 ug/kg	Aroclor 1254 ug/kg	Aroclor 1260 ug/kg
S01-BOT	-	0	0	0	1300	0	0	0
S02-BOT	-	0	0	0	920	0	0	0
S03_0-8	0.37	0	0	0	27000	0	0	0
S03-BOT	0.19	0	0	0	19000	0	0	0
S04-BOT	-	0	0	0	20000	0	0	0
S05_0-8	0.4	0	0	0	18000	0	0	0
S05-BOT	-	0	0	0	20000	0	0	0
S06_0-9	0.24	0	0	0	43000	0	0	0
S06-BOT	-	0	0	0	27000	0	0	0
S07-BOT	-	0	0	0	4800	0	0	0
S08-BOT	-	0	0	0	27000	0	0	0
S09_0-8	0.25	0	0	0	19000	0	0	0
S09-BOT	-	0	0	0	35000	0	0	0
S10_0-13	0.28	0	0	0	12000	0	0	0
S10_0-13_TD	-	0	0	0	14000	0	0	0
S10-BOT	0.42	0	0	0	8800	0	0	0
S12_0-9	-	0	0	0	37000	0	0	0
S13-BOT	-	0	0	0	1300	0	0	0
S14-BOT	-	0	0	0	3600	0	0	0
S15-BOT	-	0	0	0	12000	0	0	0
S16_0-9	0.67	0	0	0	11000	0	0	0
S17-BOT	-	0	0	0	4400	0	0	0
S18_0-6	0.41	0	0	0	2800	0	0	0
S18_0-6MS	-	0	0	0	3800	0	1400	0
S18_0-6MSD	-	0	0	0	3800	0	820	0
S19-BOT	-	0	0	0	3800	0	0	0
S20-BOT	-	0	0	0	35	0	0	0
S20-BOT_SD	-	0	0	0	83	0	0	0
S21-BOT	-	0	0	0	440	0	80	0
S23_0-11	-	0	0	0	660	0	0	0
S24_0-8	1.25	0	0	0	0	0	0	2100
S25_0-6	-	0	0	0	1000	0	0	0
S26_0-17	0.88	0	0	0	1800	0	0	0
S27_0-24	1.03	0	0	0	1700	0	0	0

Table M-2 *(Continued)*

ID	In-Place Density g/cm^3	Aroclor 1016 ug/kg	Aroclor 1221 ug/kg	Aroclor 1232 ug/kg	Aroclor 1242 ug/kg	Aroclor 1248 ug/kg	Aroclor 1254 ug/kg	Aroclor 1260 ug/kg
S27_0-24_TD	-	0	0	0	1400	0	380	0
S28_0-16	1.13	0	0	0	1600	0	0	0
S29_0-19	1.28	0	0	0	360	0	84	0
S29_0-19_SD	-	0	0	0	320	0	130	0
S30_0-5	1.52	0	0	0	180	0	0	0
S31_0-17	1.22	0	0	0	2500	0	0	0
T02-BOT	-	0	0	0	1000	0	0	0
T05-BOT	-	0	0	0	1700	0	0	0
T08-BOT	-	0	0	0	960	0	0	0
T11-BOT	-	0	0	0	2300	0	0	0
T14-BOT	-	0	0	0	3300	0	0	0
T14-BOTMS	-	0	0	0	4000	0	0	0
T14-BOTMSD	-	0	0	0	3500	0	0	0
T17-BOT	-	0	0	0	1400	0	0	0
T20/21-BOT	-	0	0	0	180	0	0	0
T28-BOT	1.44	0	0	0	62	0	0	0
T30-BOT	1.33	0	0	0	81	0	0	0

Prepared by: SGL
Checked by: JBH1

Table M-3

Deposit N
October 1999 Sampling Results

Sample ID	Total PCB[1,2] ppm	Mercury[2] mg/kg	Solids %	TOC[4] %	Sediment Thickness[5] ft
N-PC-1-0-3	85	5.6	16.4	5.6	0.67
N-PC-2-0-1	0.65	0.19	62.1	3.2	0.0
N-PC-3-0-12	75	5.2	17.5	5	0.1
N-PC-4-0-6	49	2.8	19.4	6	1.42
N-PC-5-0-3.5	1.8	0.33	58.2	3.9	0.34
N-PC-6-0-8	130	4.1	16.6	4.4	0.87
N-PC-7-0-9	15	1.6	20	6.7	0.21
N-PC-8-0	18	0.91	32.3	6.7	0.46
N-PC-9-0-6	94	3.7	16.9	7.1	0.48
N-PC-10-0-15	78	3.3	18.1	5	0.20
N-PC-11-0-4	2.3	0.31	57	8.6	0.0
N-PC-12-0	17	1.2	28.2	8.3	0.23
N-PC-13-0-6.5	30	1.7	32.3	8.1	0.0
N-PC-14-0-1.5	1.3	0.18	62.9	1.6	0.23
N-PC-15-0-4	7	0.42	41.3	5.5	0.64
N-PC-16-0-2	14	0.8	33.3	6.4	0.0
N-PC-17-0	0.51	0.1	73.5	3.3	0.24
N-PC-18-0-1	0.27	0.13	67.5	2.4	0.35
N-PC-19-0-4	2.3	0.45	43.6	4	0.15
N-PC-20-0-14	0.37	0.36	38.6	3.6	0.57
N-PC-21-0-4	0.26	0.18	68.3	2.8	0.43
N-PC-22-0-6.5	0.15	0.098	73.7	0.94	0.50
N-PC-23-0-6	1.1	0.38[3]	67.9	1.8	0.0
N-PC-24-0-4.5	0.098	0.23	56	4.5	0.72
N-PC-25-0-5	14	0.58	57.2	2.4	0.25
N-PC-26-0-7	2.9	0.24	64.3	2.7	0.0
N-PC-27-0-10	0.65	0.16	71.2	2.3	0.0
N-PC-28-0	0.15	0.11	75.7	0.74	0.0
N-PC-29-0-10	3	0.35	67.3	1.2	0.03
N-PC-30-0-6	0.42	0.16	71	0.83	0.79

[1] PCB Samples were analyzed following SW-846 Method 8082.

[2] Reported in dry weight

[3] Spiked sample recovery not within control limits; post digestion spike recovery accepted.

[4] Reported value is an average of four replicates

[5] Sediment thickness (in tenths) reported as a result of the November 8, 1999 Miller Engineer's survey.

Prepared by: SGL
Checked by: JBH1

Table M-4
PCB Mass Estimates - Phase 1

Phase 1 Predredge[1]				Phase 1 Postdredge[2]				
West Lobe[3]		East Lobe[4]		West Lobe[3]		East Lobe[4]		
Sediment Volume (cu. yds.)	4930	Sediment Volume (cu. yds.)	250	Sediment Volume (cu. yds.)	1327.5	Sediment Volume (cu. yds.)	122.5	
Avg. PCB Concentration (ppm)	21.0	Avg. PCB Concentration (ppm)	7.6	Avg. PCB Concentration (ppm)	10.4	Avg. PCB Concentration (ppm)	1.1	
Avg. Density (lbs./cu. yd.)	781.3	Avg. Density (lbs./cu. yd.)	1859.1	Avg. Density (lbs./cu. yd.)	587.5	Avg. Density (lbs./cu. yd.)	2075.1	
Total PCB Mass (lbs.)	80.9	Total PCB Mass (lbs.)	3.5	Total PCB Mass (lbs.)	8.1	Total PCB Mass (lbs.)	0.3	
95% C.L. (Lower)[5]	44.1	95% C.L. (Lower)[5]	2.0	95% C.L. (Lower)[5]	4.3	95% C.L. (Lower)[5]	0.17	
95% C.L. (Upper)[5]	127.7	95% C.L. (Upper)[5]	5.2	95% C.L. (Upper)[5]	13.1	95% C.L. (Upper)[5]	0.37	
		Phase 1 Predredge (Combined):				Phase 1 Postdredge (Combined):		
		Total PCB Mass (lbs.)	84.4			Total PCB Mass (lbs.)	8.4	76.0
		95% C.L. (Lower)	46.1			95% C.L. (Lower)	4.5	41.7
		95% C.L. (Upper)	132.9			95% C.L. (Upper)	13.4	119.5

[1] Results from November, 1998 Miller survey and FRRAT sediment PCB sampling.
[2] Results from January, 1999 Miller survey and FRRAT sediment PCB sampling.
[3] Results between gridlines 0 and 800.
[4] Results east of gridline 800.
[5] Calculated with Type I error rate of 0.22 for both PCB concentration and sediment density, resulting in a combined Type I error rate of 0.05.

Prepared by: SGL
Checked by: JBH1

Table M-5
PCB Mass Estimates - Phase 2
Confidence Limit Method

Phase 2 Predredge[1]		Phase 2 Postdredge[2]	
Sediment Volume (cu. yds.)	5585	Sediment Volume (cu. yds.)	2834
Avg. PCB Concentration (ppm)[3]	2.8	Avg. PCB Concentration (ppm)[3]	3.0
Avg. Density (lbs./cu. yd.)[3]	1863.3	Avg. Density (lbs./cu. yd.)[3]	1851.8
Total PCB Mass (lbs.)	29.1	Total PCB Mass (lbs.)	15.7
95% C.L. (Lower)[4]	16.7	95% C.L. (Lower)[4]	7.3
95% C.L. (Upper)[4]	42.8	95% C.L. (Upper)[4]	25.7

[1] Results from July, 1999 Miller survey and January, 1999 FRRAT sediment PCB sampling.
[2] Results from November, 1999 Miller survey and FRRAT sediment PCB sampling.
[3] Results within Phase 2 dredge boundary.
[4] Calculated with Type I error rate of 0.22 for both PCB concentration and sediment density, resulting in a combined Type I error rate of 0.05.

Prepared by: SGL
Checked by: JBH1

Table M-6
PCB Mass Estimates - Phase 3
Confidence Limit Method

Phase 3 Predredge[1]		Phase 3 Postdredge[2]	
Sediment Volume (cu. yds.)	426	Sediment Volume (cu. yds.)	318
Avg. PCB Concentration (ppm)[3]	28.8	Avg. PCB Concentration (ppm)[3]	55.0
Avg. Density (lbs./cu. yd.)[3]	382.1	Avg. Density (lbs./cu. yd.)[3]	582.4
Total PCB Mass (lbs.)	4.7	Total PCB Mass (lbs.)	10.2
95% C.L. (Lower)[4]	3.3	95% C.L. (Lower)[4]	3.8
95% C.L. (Upper)[4]	6.4	95% C.L. (Upper)[4]	19.5

[1] Results from July, 1999 Miller survey and January, 1999 FRRAT sediment PCB sampling.
[2] Results from November, 1999 Miller survey and FRRAT sediment PCB sampling.
[3] Results within Phase 3 dredge boundary.
[4] Calculated with Type I error rate of 0.22 for both PCB concentration. and sediment density, resulting in a combined Type I error rate of 0.05.

Prepared by: SGL
Checked by: JBH1

Table M-7
PCB Mass Estimates - Postproject Remaining

Dredging Phase	Estimate
West Lobe (Excluding Phase 3 Area)	
Sediment Volume (cu. yds.)	1256.6
Avg. PCB Concentration (ppm)[3]	4.6
Avg. Density (lbs./cu. yd.)[3]	741.6
Total PCB Mass Remaining (lbs.)	4.3
West Lobe (Phase 3 Area)	
Total PCB Mass Remaining (lbs.)	10.2
East Lobe (Phase 1 Area)	
Total PCB Mass Remaining (lbs.)	0.3
East Lobe (Phase 2 Area)	
Total PCB Mass Remaining (lbs.)	15.7
Total of All Areas (lbs.):	30.5

Prepared by: SGL

Checked by: JBH1