

**COMPENDIUM OF ENVIRONMENTAL DATA  
FOR ESTUARIES SAMPLED  
IN THE NORTH CAROLINA PORTION  
OF THE EMAP CAROLINIAN PROVINCE  
DURING SUMMER 1994-1996**

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## INTRODUCTION

This report is the Year 3 data summary and final deliverable under Cooperative Agreement No. NA57OA0035 between NOAA and the University of Charleston, SC. The data presented are the results of sampling in estuaries in the North Carolina portion of the EMAP Carolinian Province during summer 1994-96. A total of 135 randomly located stations was sampled according to a probabilistic sampling design, and included measurements of: 1) general habitat condition (depth, physical properties of water, sediment grain-size, organic carbon content), (2) pollution exposure (sediment contaminant concentrations, sediment toxicity, low dissolved oxygen conditions in the water column, ammonia and sulfide in sediment porewater), (3) biotic conditions (diversity and abundance of macroinfauna), and (4) aesthetic quality (presence of anthropogenic debris, visible oil, noxious sediment odor, water clarity).

The first section of the report presents summary information on station locations, general physical characteristics of the estuaries and levels of selected environmental variables, sediment contaminant concentrations and sediment toxicity, and taxonomic composition of benthic macroinfaunal communities. Figures comparing results for all three years (1994-96) are included for infaunal richness, H' diversity, and abundance; condition of macroinfaunal assemblages based on the Benthic Index of Biotic Integrity (IBI); and sediment quality based on combined measures of sediment contamination, toxicity, and *in-situ* macroinfaunal conditions.

Appendices accompanying this report include means and ranges of parameters listed by station for all sites sampled in North Carolina during summer 1994-96. These results also include non-random, supplemental sites chosen based on some prior knowledge of the ambient environmental conditions in those areas. Supplemental sampling sites were not included in any calculations used to develop the tables and figures presented in the first section of the report.

This report represents a final data summary, and as such is purely descriptive in nature. However, these data will be used in combination with 1997 data to prepare a manuscript for publication, which will include more detailed analyses and interpretations for the overall four-year period (1994-1997).

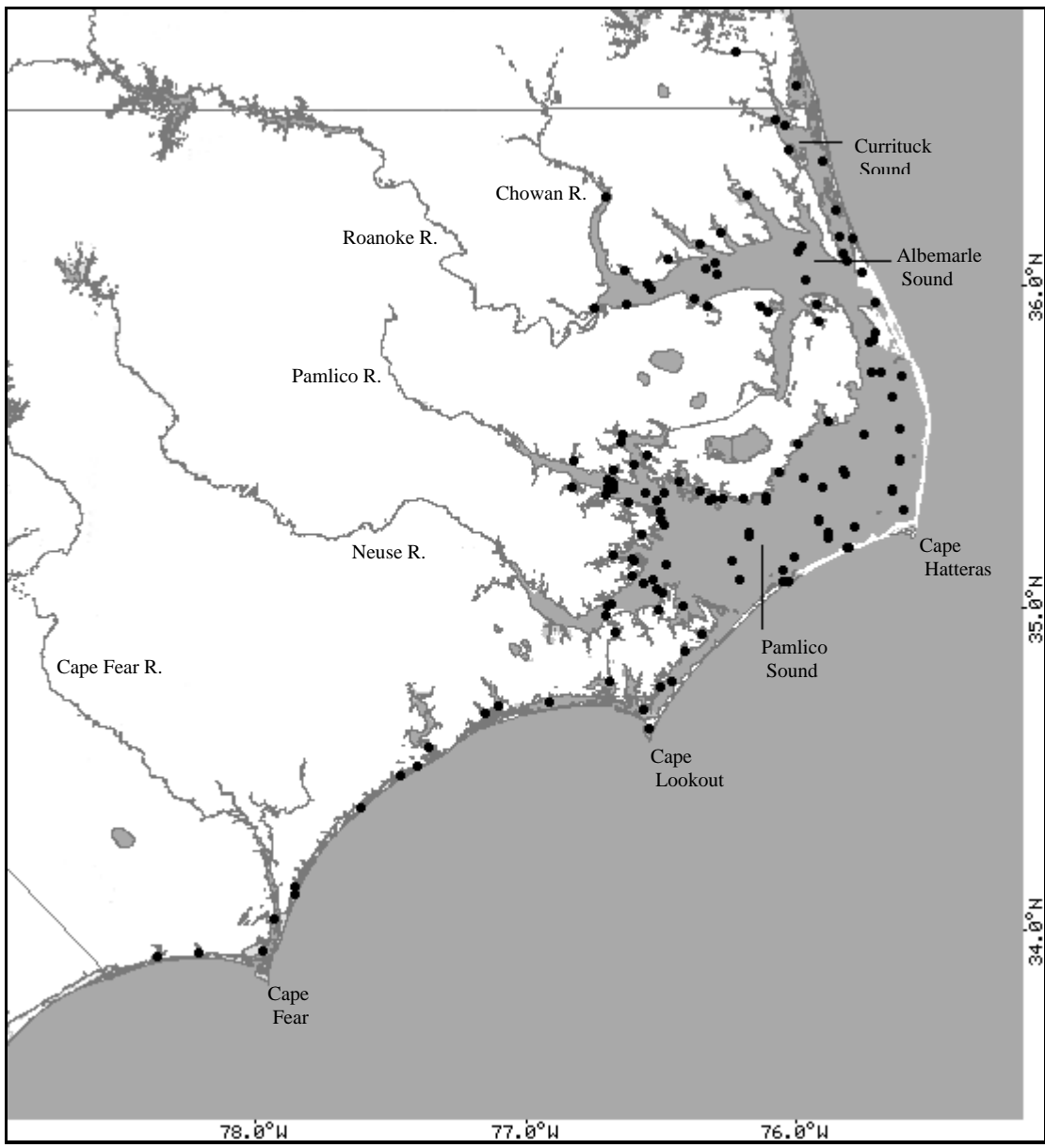
The complete database in electronic form is being provided to the EMAP Carolinian Province Office Manager, and is also available online through the EMAP web site at <http://www.epa.gov/emap/>. A copy of this report can be obtained by contacting: Manager, NOAA Carolinian Province Office, 217 Fort Johnson Road (PO Box 12559), Charleston, SC 29422-2559. Telephone: 843-762-5415.

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**Figure 1.** Sampling sites in the North Carolina portion of the EMAP Carolinian Province: Summer 1994-96.

**Table 1.** Stations sampled in the N.C. portion of the EMAP Carolinian Province during summer 1994-96, with target station coordinates. In the EMAP station number, RR = Large Tidal River, RP = Large Tidal River Replicate, SR = Small Estuary, SP = Small Estuary Replicate, and LR = Large Estuary. In area column, R = Replicate Station and NA = Not Applicable. Area refers to area of estuary (for small estuaries), area of river segment (for large tidal rivers), or area of grid cell (for large estuaries).

CPO Sta. No.	EMAP Sta. No.	State	Estuary	Latitude	Longitude	Area (km <sup>2</sup> )
CP94028	CA94SR22	NC	Lockwoods Folly River	33°55.81'	78°13.05'	4.6
CP94029	CA94SR21	NC	Topsail Sound	34°22.79'	77°37.09'	9.2
CP94030	CA94SR20	NC	Alligator Bay	34°30.33'	77°24.42'	5.8
CP94031	CA94SR19	NC	Queens Creek	34°40.15'	77°09.09'	3.5
CP94032	CA94SR18	NC	Back Sound	34°41.01'	76°33.39'	50.8
CP94033	CA94SR17	NC	Core Sound	34°46.39'	76°27.19'	222.5
CP94034	CA94RR04	NC	Neuse River	34°58.37'	76°41.77'	144.3
CP94035	CA94SR16	NC	West Bay	35°00.34'	76°24.47'	93.7
CP94036	CA94RR03	NC	Neuse River	35°04.38'	76°33.08'	268.1
CP94037	CA94LR10	NC	Pamlico Sound	35°05.00'	76°11.38'	280.0
CP94038	CA94SR14	NC	Broad Creek	35°05.74'	76°36.00'	7.0
CP94039	CA94LR11	NC	Pamlico Sound	35°07.19'	76°01.68'	280.0
CP94040	CA94LR12	NC	Pamlico Sound	35°08.41'	76°28.21'	280.0
CP94041	CA94LR13	NC	Pamlico Sound	35°09.05'	76°13.21'	280.0
CP94042	CA94LR14	NC	Pamlico Sound	35°09.60'	75°59.06'	280.0
CP94043	CA94SR13	NC	Jones Bay	35°13.85'	76°33.62'	13.9
CP94044	CA94LR15	NC	Pamlico Sound	35°15.42'	75°45.12'	280.0
CP94045	CA94LR16	NC	Pamlico Sound	35°18.34'	75°34.03'	280.0
CP94046	CA94SR08	NC	West Bluff Bay	35°20.56'	76°10.53'	5.0
CP94047	CA94SR12	NC	South Creek	35°21.27'	76°41.62'	14.9
CP94048	CA94RR01	NC	Pamlico River	35°21.44'	76°28.64'	208.7
CP94049	CA94SR09	NC	Swanquarter Bay	35°22.04'	76°20.49'	20.1
CP94050	CA94LR17	NC	Pamlico Sound	35°22.73'	75°52.56'	280.0
CP94051	CA94RP02	NC	Pamlico River	35°23.77'	76°40.48'	R
CP94052	CA94RR02	NC	Pamlico River	35°23.85'	76°41.54'	150.1
CP94053	CA94SR11	NC	Bath Creek	35°27.45'	76°49.03'	4.2
CP94054	CA94SR10	NC	Slade Creek	35°28.54'	76°32.32'	5.8
CP94055	CA94LR18	NC	Pamlico Sound	35°32.46'	75°42.96'	280.0
CP94056	CA94LR19	NC	Pamlico Sound	35°33.45'	75°34.75'	280.0
CP94057	CA94SR07	NC	Long Shoal River	35°34.78'	75°51.00'	21.4
CP94058	CA94LR20	NC	Pamlico Sound	35°39.40'	75°36.14'	280.0
CP94059	CA94LR21	NC	Pamlico Sound	35°43.10'	75°33.82'	280.0
CP94060	CA94SR06	NC	Croatan Sound	35°51.43'	75°40.07'	88.0
CP94061	CA94SR05	NC	Bull Bay	35°57.67'	76°21.12'	38.7
CP94062	CA94LR05	NC	Albemarle Sound	35°59.46'	76°31.35'	280.0
CP94063	CA94LR06	NC	Albemarle Sound	36°00.36'	76°32.15'	280.0
CP94064	CA94LR07	NC	Albemarle Sound	36°01.19'	75°55.57'	280.0
CP94065	CA94SR04	NC	Edenton Bay	36°02.72'	76°37.14'	10.2
CP94066	CA94LR08	NC	Albemarle Sound	36°03.15'	76°18.53'	280.0
CP94067	CA94SR03	NC	Yeopim River	36°05.01'	76°27.33'	8.5
CP94068	CA94LR01	NC	Currutuck Sound	36°05.90'	75°46.78'	280.0
CP94069	CA94LR09	NC	Albemarle Sound	36°07.29'	75°56.31'	280.0

TABLE 1. (Continued).

CP94070	CA94LR02	NC	Currituck Sound	36°08.68'	75°44.86'	280.0
CP94071	CA94LR03	NC	Currituck Sound	36°23.15'	75°51.30'	280.0
CP94072	CA94SR02	NC	Northwest River	36°30.86'	76°02.46'	8.8
CP94084	CA94SR01	VA	Albemarle-Chesapeake Canal	36°43.43'	76°11.26'	10.8
CP95101	CA95SR01	VA	Back Bay	36°37.27'	75°57.55'	104.9
CP95102	CA95SR02	NC	Coinjock Bay	36°25.27'	75°59.13'	13.7
CP95103	CA95SR04	NC	Chowan River	36°16.42'	76°41.36'	129.3
CP95104	CA95SR03	NC	Little River	36°10.02'	76°14.93'	26.8
CP95105	CA95LR01	NC	Currituck Sound	36°04.55'	75°46.38'	280.0
CP95106	CA95SR07	NC	Kitty Hawk Bay	36°02.48'	75°42.91'	13.0
CP95107	CA95LR02	NC	Albemarle Sound	36°02.33'	76°16.15'	280.0
CP95108	CA95LR04	NC	Albemarle Sound	35°56.42'	76°37.09'	280.0
CP95109	CA95SR05	NC	Little Alligator River	35°56.21'	76°06.09'	17.1
CP95110	CA95SP05	NC	Little Alligator River	35°55.01'	76°04.55'	R
CP95111	CA95SR06	NC	South Lake	35°53.59'	75°52.78'	7.4
CP95112	CA95LR17	NC	Pamlico Sound	35°49.84'	75°40.17'	280.0
CP95113	CA95LR16	NC	Pamlico Sound	35°43.85'	75°40.82'	280.0
CP95114	CA95SR11	NC	Pungo Creek	35°30.86'	76°38.38'	7.8
CP95115	CA95LR15	NC	Pamlico Sound	35°27.87'	75°34.52'	280.0
CP95116	CA95SR10	NC	Pongo River	35°26.96'	76°35.34'	108.3
CP95117	CA95LR14	NC	Pamlico Sound	35°25.87'	75°47.45'	280.0
CP95118	CA95SR08	NC	Wysocking Bay	35°25.30'	76°02.42'	16.3
CP95119	CA95LR13	NC	Pamlico Sound	35°24.26'	75°56.60'	280.0
CP95120	CA95SR12	NC	Durham Creek	35°22.73'	76°49.51'	3.5
CP95121	CA95RR02	NC	Pamlico River	35°22.48'	76°41.35'	150.1
CP95122	CA95RP02	NC	Pamlico River	35°22.32'	76°40.23'	R
CP95123	CA95LR12	NC	Pamlico Sound	35°22.03'	75°36.63'	280.0
CP95124	CA95RR01	NC	Pamlico River	35°21.47'	76°32.70'	208.7
CP95125	CA95LR11	NC	Pamlico Sound	35°21.04'	76°05.33'	280.0
CP95126	CA95SR09	NC	Juniper Bay	35°20.40'	76°15.13'	8.7
CP95127	CA95LR10	NC	Pamlico Sound	35°20.01'	76°18.31'	280.0
CP95128	CA95SP13	NC	Mouse Harbor	35°17.92'	76°29.42'	R
CP95129	CA95SR13	NC	Mouse Harbor	35°16.73'	76°29.44'	6.5
CP95130	CA95LR09	NC	Pamlico Sound	35°16.36'	75°53.21'	280.0
CP95131	CA95LR08	NC	Pamlico Sound	35°13.49'	76°09.11'	280.0
CP95132	CA95LR07	NC	Pamlico Sound	35°13.20'	75°51.15'	280.0
CP95133	CA95LR06	NC	Pamlico Sound	35°11.60'	75°46.73'	280.0
CP95134	CA95SR14	NC	Bonner Bay	35°08.90'	76°35.42'	4.7
CP95135	CA95LR05	NC	Pamlico Sound	35°04.94'	76°00.15'	280.0
CP95136	CA95RR03	NC	Neuse River	35°03.32'	76°30.30'	268.1
CP95137	CA95SR16	NC	Rattan Bay	35°02.78'	76°28.89'	5.0
CP95138	CA95SP14	NC	Bonner Bay	35°09.26'	76°35.97'	R
CP95139	CA95RR04	NC	Neuse River	35°00.52'	76°40.47'	144.3
CP95140	CA95SR15	NC	Adams Creek	34°55.31'	76°39.63'	8.9
CP95141	CA95SR17	NC	Thorofare Bay	34°54.96'	76°20.16'	9.9
CP95142	CA95SR19	NC	Newport River	34°46.22'	76°41.11'	36.2
CP95143	CA95SR18	NC	Jarrett Bay	34°45.25'	76°29.75'	13.2
CP95144	CA95SR20	NC	White Oak River	34°41.53'	77°06.37'	19.7



TABLE 1. (Continued).

CP95146	CA95SR22	NC	Cape Fear River	33°56.25'	77°58.85'	88.2
CP95147	CA95SP22	NC	Cape Fear River	34°02.01'	77°56.31'	R
CP95148	CA95SR23	NC	Shalotte River	33°55.11'	78°22.31'	4.2
CP96201		NC	North Landing River	36°29.72'	76°00.29'	13.5
CP96202		NC	Pasquotank River	36°16.83'	76°09.07'	90.7
CP96203		NC	Currituck Sound	36°14.19'	75°48.62'	280.0
CP96204		NC	Currituck Sound	36°09.31'	75°47.73'	280.0
CP96205		NC	Perquimans River	36°07.79'	76°19.96'	49.2
CP96206		NC	Albemarle Sound	36°06.22'	75°57.22'	280.0
CP96207		NC	Albemarle Sound	36°04.11'	76°16.41'	280.0
CP96208		NC	Roanoke Sound	35°57.09'	75°39.64'	66.1
CP96209		NC	East Lake	35°56.63'	75°53.11'	23.6
CP96210		NC	Scuppernong River	35°56.18'	76°18.13'	7.9
CP96211		NC	Cashie River	35°55.79'	76°44.17'	6.3
CP96212		NC	Pamlico Sound	35°49.66'	75°41.01'	280.0
CP96213		NC	Pamlico Sound	35°43.98'	75°38.50'	280.0
CP96214		NC	Pantego Creek	35°32.51'	76°37.92'	5.5
CP96215		NC	Far Creek	35°30.68'	75°58.03'	2.8
CP96216		NC	Pamlico Sound	35°27.57'	75°34.72'	280.0
CP96217		NC	North Creek	35°25.78'	76°40.00'	3.2
CP96218		NC	Pamlico Sound	35°25.00'	75°47.29'	280.0
CP96219		NC	Pamlico Sound	35°24.22'	75°56.69'	280.0
CP96220		NC	Rose Bay	35°23.72'	76°24.97'	42.7
CP96221		NC	Pamlico River	35°23.33'	76°40.13'	150.1
CP96222		NC	Pamlico Sound	35°22.29'	75°36.51'	280.0
CP96223		NC	Pamlico Sound	35°20.41'	76°17.21'	280.0
CP96224		NC	Pamlico Sound	35°20.33'	76°05.30'	280.0
CP96225		NC	Pamlico River	35°20.07'	76°30.01'	208.7
CP96226		NC	Goose Creek	35°19.93'	76°36.69'	13.1
CP96227		NC	Pamlico Sound	35°16.51'	75°53.36'	280.0
CP96228		NC	Big Porpoise Bay	35°15.76'	76°28.58'	2.7
CP96229		NC	Pamlico Sound	35°14.10'	75°51.00'	280.0
CP96230		NC	Pamlico Sound	35°14.09'	76°09.09'	280.0
CP96231		NC	Pamlico Sound	35°11.50'	75°46.78'	280.0
CP96232		NC	Bay River	35°10.07'	76°40.02'	51.7
CP96233		NC	Neuse River	35°05.11'	76°31.13'	268.1
CP96234		NC	Pamlico Sound	35°04.84'	76°01.45'	280.0
CP96235		NC	Neuse River	35°00.13'	76°41.35'	144.3
CP96236		NC	Turnagain Bay	34°59.43'	76°29.97'	7.8
CP96237		NC	Nelson Bay	34°51.74'	76°24.16'	7.6
CP96238		NC	Bogue Sound	34°42.30'	76°54.71'	114.8
CP96239		NC	Lookout Bight	34°37.49'	76°32.21'	4.1
CP96240		NC	New River	34°33.96'	77°21.88'	88.8
CP96241		NC	Masonboro Sound	34°08.00'	77°51.89'	6.3
CP96242		NC	Myrtle Grove Sound	34°06.52'	77°52.01'	17.0

**Table 2.** Summary of the general characteristics of estuaries sampled in the N.C. portion of the EMAP Carolinian Province during summer 1994-96 and the percent area (with 95 % C.I.s) exhibiting designated levels of selected indicators.

Indicators and Characteristics	1994	1995	1996
No. of Base Stations Sampled	45	48	42
<i>Habitat Indicators</i>			
Tidal Range > 2 m	0 ± 0	0 ± 0	0 ± 0
Salinity (Bottom Waters)			
• Oligohaline (< 5 ‰)	22 ± 14	22 ± 16	23 ± 15
• Mesohaline (5–18 ‰)	11 ± 16	25 ± 17	29 ± 19
• Polyhaline (>18–30 ‰)	48 ± 15	49 ± 4	38 ± 9
• Euhaline (> 30 ‰)	19 ± 15	4 ± 4	9 ± 9
Sig. Water Stratification, $ \Delta\sigma_t  > 2$	10 ± 8	12 ± 11	24 ± 14
Silt-Clay Content			
• Silt-clay < 20 %	60 ± 15	55 ± 16	64 ± 17
• Silt-clay > 80 %	28 ± 14	28 ± 15	24 ± 14
Total Organic Carbon (TOC) > 2 %	24 ± 12	28 ± 15	26 ± 14
<i>Exposure Indicators</i>			
Low DO (Bottom Waters)			
• DO < 5 mg/L (Instantaneous)	9 ± 9	22 ± 12	19 ± 11
• DO < 2 mg/L (Instantaneous)	3 ± 5	5 ± 5	9 ± 6
• Sig. low DO (Chronic and Acute) <sup>a</sup>			
Sediment Toxicity			
• Sig. Amphipod ( <i>A. abdita</i> ) Toxicity <sup>b</sup>	3 ± 6	0 ± 0	–
• Sig. Amphipod ( <i>A. verrilli</i> ) Toxicity <sup>b</sup>	–	–	–
• Sig. Seed Clam Toxicity <sup>b</sup>	–	38 ± 19	70 ± 16
• Sig. Microtox® Toxicity <sup>c</sup>	15 ± 11	9 ± 10	19 ± 13

TABLE 2 (Continued).

Indicators and Characteristics	94	95	96
<i>Exposure Indicators (Continued)</i>			
Sediment Contamination			
• $\geq 1$ ER-L/TEL Exceedance	34 $\pm$ 14	41 $\pm$ 18	45 $\pm$ 18
• $\geq 1$ ER-M/PEL Exceedance	3 $\pm$ 6	7 $\pm$ 9	10 $\pm$ 11
• $\geq 3$ ER-L/TEL or $\geq 1$ ER-M/PEL Exceedance	16 $\pm$ 12	24 $\pm$ 13	25 $\pm$ 15
• Alkanes $\geq 7000$ ng/g	< 1 $\pm$ < 1	23 $\pm$ 13	10 $\pm$ 11
• Tributyltin > 5 ng/g	19 $\pm$ 13	0 $\pm$ 0	0 $\pm$ 0
<i>Biotic Condition Indicators</i>			
Infauna			
• Mean Species Richness/Grab $\leq 3$	11 $\pm$ 8	16 $\pm$ 12	13 $\pm$ 13
• Mean Abundance/Grab $\leq 25$	23 $\pm$ 13	27 $\pm$ 16	31 $\pm$ 16
• Mean H'(Diversity)/Grab $\leq 1$	15 $\pm$ 10	18 $\pm$ 11	9 $\pm$ 11
Demersal Biota			
• Mean Species Richness/Trawl $\leq 2$	8 $\pm$ 10	9 $\pm$ 9	–
• Mean Abundance/Trawl $\leq 5$	8 $\pm$ 10	10 $\pm$ 12	–
• Mean # Pathologies/Trawl > 1	< 1 $\pm$ < 1	6 $\pm$ 9	–
<i>Aesthetic Indicators</i>			
Anthropogenic Marine Debris Present			
• At Sea Surface	0 $\pm$ 0	9 $\pm$ 11	0 $\pm$ 0
• On Bottom	7 $\pm$ 8	20 $\pm$ 15	–
Secchi depth < 0.5 m	< 1 $\pm$ < 1	9 $\pm$ 11	< 1 $\pm$ 1
Noxious Sediment Odors Present	12 $\pm$ 7	11 $\pm$ 9	38 $\pm$ 18
Oil Present			
• At Sea Surface	0 $\pm$ 0	0 $\pm$ 0	0 $\pm$ 0
• In Sediments	2 $\pm$ 4	< 1 $\pm$ 1	< 1 $\pm$ < 1

<sup>a</sup> DO < 2 mg/L for > 20% of continuous datasonde record or DO < 5 mg/L throughout entire continuous record or DO < 0.3 mg/L at any time during continuous record.

<sup>b</sup> Mortality relative to control  $\geq 20$  % and sig. at  $\alpha = 0.05$ .

<sup>c</sup> EC<sub>50</sub>  $\leq 0.2$  if silt-clay  $\geq 20$  %, or EC<sub>50</sub>  $\leq 0.5$  % if silt-clay < 20 %.

**Table 3.** Mean, median, and range by year for selected abiotic environmental variables.

Variable	Statistic	Year		
		1994	1995	1996
Depth (m) <sup>a</sup>	mean	2.834	2.786	2.948
	median	2.340	1.985	2.765
	range	(0.000 – 6.080)	(0.000 – 12.700)	(0.000 – 6.440)
DO (mg/L) <sup>a</sup>	mean	6.313	5.815	6.357
	median	6.700	6.300	7.100
	range	(1.200 – 12.500)	(0.300 – 10.200)	(0.500 – 9.300)
Salinity (‰) <sup>a</sup>	mean	19.702	16.787	14.176
	median	21.500	16.600	15.450
	range	(0.700 – 39.100)	(0.100 – 36.800)	(0.100 – 31.700)
Temperature (°C) <sup>a</sup>	mean	27.246	27.945	26.179
	median	27.650	28.100	26.250
	range	(19.600 – 31.300)	(23.600 – 31.500)	(22.000 – 30.200)
pH <sup>a</sup>	mean	7.787	7.815	7.598
	median	7.900	7.800	7.750
	range	(7.100 – 8.400)	(6.400 – 9.100)	(5.900 – 8.100)
% TOC <sup>b</sup>	mean	1.356	1.634	1.645
	median	0.760	0.644	0.490
	range	(0.035 – 4.548)	(0.112 – 11.783)	(0.020 – 7.520)
% Silt-Clay <sup>b</sup>	mean	40.868	38.557	35.732
	median	18.290	14.640	7.655
	range	(0.560 – 99.590)	(0.330 – 99.630)	(0.260 – 98.470)
UAN (mg/L) <sup>c</sup>	mean	0.174	0.168	0.099
	median	0.094	0.135	0.070
	range	(0.000 – 1.539)	(0.025 – 0.702)	(0.013 – 0.399)
H <sub>2</sub> S (mg/L) <sup>c</sup>	mean	– <sup>*</sup>	0.003	0.095
	median	–	0.002	0.059
	range	–	(0.000 – 0.018)	(0.010 – 0.775)

<sup>a</sup> Instantaneous measurement at bottom water depth.

<sup>b</sup> Bottom sediment.

<sup>c</sup> Sediment porewater ( \* H<sub>2</sub>S not measured in 1994).

**Table 4.** Summary of contaminant concentrations and sediment quality guideline exceedances at N.C. sites during summer 1994-96. ER-L and ER-M values are in Long et al. (1995) and Long and Morgan (1990); TEL and PEL values are in MacDonald (1994).

Contaminant	1994				1995				1996			
	Range		# Sites Exceeding		Range		# Sites Exceeding		Range		# Sites Exceeding	
	(Min - Max)	ER-L/ TEL <sup>c</sup>	ER-M/ PEL		(Min - Max)	ER-L/ TEL <sup>c</sup>	ER-M/ PEL		(Min - Max)	ER-L/ TEL <sup>c</sup>	ER-M/ PEL	
Antimony	0.0 – 2.1	2	0	0.0 – 0.9	0	0		0.0 – 1.0	0	0		
Arsenic	0.0 – 14.7	9	0	0.0 – 12.3	12	0		0.0 – 17.2	10	0		
Cadmium	0.0 – 1.1	0	0	0.0 – 1.3	1	0	< 0.1 –	1.0	0	0		
Chromium	6.2 – 130.9	6	0	0.8 – 98.1	6	0	5.2 –	247.0	13	0		
Copper	0.7 – 33.0	0	0	0.6 – 35.4	1	0	0.7 –	31.2	0	0		
Lead	3.3 – 50.8	1	0	0.9 – 40.3	0	0	2.6 –	61.4	1	0		
Mercury	0.0 – 0.3	3	0	0.0 – 0.1	0	0	< 0.1 –	0.3	3	0		
Nickel	1.1 – 34.3	12	0	0.5 – 40.3	10	0	0.7 –	88.0	16	1		
Silver	0.0 – 0.2	0	0	0.0 – 0.3	0	0	0.0 –	0.3	0	0		
Zinc	6.8 – 175.0	2	0	5.8 – 156.7	1	0	8.8 –	154.0	1	0		
Acenaphthene	< 0.1 – 4.5	0	0	0.0 – 3.7	0	0	0.0 –	46.8	1	0		
Acenaphthylene	< 0.1 – 23.7	0	0	0.0 – 25.4	0	0	0.0 –	48.7	1	0		
Anthracene	< 0.1 – 42.8	0	0	0.0 – 23.7	0	0	0.0 –	133.5	1	0		
Benzo[a]anthracene	< 0.1 – 427.0	1	0	0.0 – 76.5	0	0	0.0 –	423.5	1	0		
Benzo[a]pyrene	< 0.1 – 243.9	0	0	0.1 – 127.7	0	0	0.0 –	501.2	1	0		
Chrysene	< 0.1 – 372.3	0	0	0.1 – 112.6	0	0	0.1 –	443.4	1	0		
Dibenz[a,h]anthracene	< 0.1 – 39.9	0	0	0.0 – 17.8	0	0	0.0 –	52.3	0	0		
Fluoranthene	< 0.1 – 624.9	1	0	0.2 – 266.9	0	0	0.1 –	907.7	1	0		
Fluorene	< 0.1 – 12.6	0	0	0.1 – 11.1	0	0	0.1 –	63.9	1	0		
2-Methylnaphthalene	0.2 – 19.8	0	0	0.1 – 10.3	0	0	0.2 –	31.1	0	0		
Naphthalene	0.6 – 43.5	0	0	1.1 – 38.6	0	0	0.6 –	213.7	1	0		
Phenanthrene	0.3 – 58.9	0	0	0.3 – 46.9	0	0	0.2 –	559.2	1	0		
Pyrene	0.2 – 506.5	0	0	0.3 – 325.4	0	0	0.1 –	952.9	1	0		
Total PAHs <sup>a</sup>	3.4 – 4549.4	1	0	3.8 – 5933.0	1	0	3.7 –	7745.6	1	0		
Total PCBs	2.4 – 190.8	5	1	2.2 – 72.8	3	0	2.5 –	50.4	4	0		
Chlordane <sup>b</sup>	0.0 – 1.4	0	0	0.0 – 1.7	0	0	0.0 –	1.0	0	0		
4,4'-DDD (p,p'-DDD)	0.0 – 5.0	6	0	0.0 – 150.9	5	3	0.0 –	13.1	6	2		
4,4'-DDE (p,p'-DDE)	0.0 – 10.1	5	0	0.0 – 24.0	5	0	0.0 –	11.9	7	0		
4,4'-DDT (p,p'-DDT)	0.0 – 3.6	3	0	0.0 – 24.6	5	2	0.0 –	3.6	3	0		
Dieldrin	0.0 – 1.4	1	0	0.0 – 15.2	5	1	0.0 –	0.8	1	0		
Lindane <sup>c</sup>	0.0 – 0.8	2	0	0.0 – 13.1	6	3	0.0 –	1.3	1	1		
Total DDT <sup>d</sup>	0.0 – 18.8	13	0	0.0 – 213.2	13	2	0.0 –	29.5	10	0		

<sup>a</sup> without Perylene

<sup>b</sup> alpha-, gamma-, and oxychlordane

<sup>c</sup> gamma BHC

<sup>d</sup> all six DDD, DDE, and DDT congeners

<sup>e</sup> note that ER-M/PEL exceedances are included in the ER-L/TEL exceedance counts.

**Table 5.** Percent area (and 95% C.I.) of N.C. estuaries that showed evidence of significant sediment toxicity based on results of various bioassays conducted in 1994-96.

Bioassay Indicator	Year		
	1994	1995	1996
<i>Ampelisca abdita</i> <sup>a</sup>	3.2 ± 6.2	0.0 ± 0.0	—
<i>Ampelisca verrilli</i> <sup>b</sup>	3.2 ± 6.2	0.0 ± 0.0	—
Microtox <sup>c</sup>	15.0 ± 11.2	9.3 ± 9.9	19.3 ± 13.1
Seed Clam <sup>d</sup>	—	38.3 ± 19.3	69.6 ± 16.4
In 50% of assays <sup>e</sup>	18.2 ± 12.6	10.0 ± 12.1	71.5 ± 16.0
Any one assay	18.2 ± 12.6	40.3 ± 18.7	71.5 ± 16.0

<sup>a</sup> Sig. *A. abdita* tox. = mortality relative to control ≥ 20% and sig. at  $\alpha = 0.05$ .

<sup>b</sup> Sig. *A. verrilli* tox. = mortality relative to control ≥ 20% and sig. at  $\alpha = 0.05$ .

<sup>c</sup> Sig. Microtox tox. = EC 50 ≤ 0.2% if silt-clay content of sediment ≥ 20%, or EC50 ≤ 0.5 if silt-clay < 20%.

<sup>d</sup> Sig. Seed Clam tox. = mortality relative to control ≥ 20% and sig. at  $\alpha = 0.05$ .

<sup>e</sup> Sig. toxicity in at least 50% of assays.

**Table 6.** Relative percent composition of major benthic taxonomic groups by year.

Year	Percent Abundance				Percent Species			
	Annelida	Arthropoda	Mollusca	Other	Annelida	Arthropoda	Mollusca	Other
1994	55.6	14.9	22.6	6.9	42.4	33.1	17.9	6.6
1995	50.7	16.7	18.3	14.3	42.5	30.5	19.2	7.8
1996	48.3	16.6	30.2	4.9	46.6	26.4	20.7	6.3

**Table 7.** Comparison of dominance hierarchy between undegraded and degraded<sup>a</sup> sites in 1994-96.

1994		1995		1996	
Undegraded Sites	Degraded Sites	Undegraded Sites	Degraded Sites	Undegraded Sites	Degraded Sites
<i>Mediomastus</i> spp. (16.5%)	Unid. Oligochaete (41.8%)	<i>Phoronis</i> spp. (10.0%)	<i>Mediomastus</i> spp. (48.9%)	<i>Mediomastus</i> spp. (14.1%) (%)	<i>Mediomastus</i> spp. (19.9%) (%)
Unid. Oligochaete (25.4%)	<i>Mediomastus</i> spp. (74.5%)	<i>Mediomastus</i> spp. (18.2%)	<i>Streblospio benedicti</i> (65.4%)	<i>Streblospio benedicti</i> (25.4%)	<i>Acteocina canaliculata</i> (26.0%)
<i>Acteocina canaliculata</i> (33.7%)	<i>Streblospio benedicti</i> (79.4%)	<i>Streblospio benedicti</i> (25.2%)	Unid. Oligochaete (71.9%)	<i>Mulinia lateralis</i> (33.6%)	<i>Acanthohaustorius millsi</i> (32.0%)
<i>Acanthohaustorius millsi</i> (39.7%)	<i>Mulinia lateralis</i> (82.4%)	Unid. Oligochaete (32.2%)	<i>Corbicula fluminea</i> (77.3%)	<i>Acteocina canaliculata</i> (38.5%)	<i>Marenzelleria viridis</i> (36.6%)
<i>Mulinia lateralis</i> (45.4%)	Unid. Chironomid (85.3%)	<i>Marenzelleria viridis</i> (38.1%)	Unidentified Nemertean (79.3%)	<i>Heteromastus filiformis</i> (42.7%)	<i>Lucina multilineata</i> (41.2%)
Significant concordance <sup>g</sup> in ranking of dominants between site groups: No ( $\hat{\tau} = 0.238$ ; $\hat{p} = 0.281$ )		Significant concordance <sup>g</sup> in ranking of dominants between site groups: No ( $\hat{\tau} = 0.333$ ; $\hat{p} = 0.191$ )		Significant concordance <sup>g</sup> in ranking of dominants between site groups: No ( $\hat{\tau} = 0.214$ ; $\hat{p} = 0.274$ )	

<sup>a</sup> Defined as either low DO (<sup>b</sup>), or high sediment contamination (<sup>c</sup>), or sig. toxicity in  $\geq 50\%$  of assays at a station (<sup>d-f</sup>).

<sup>b</sup> Low near-bottom DO (one or more observations  $< 0.3$  mg/L, or  $\geq 20\%$  of the observations  $< 2.0$  mg/L, or all observations  $< 5.0$  mg/L).

<sup>c</sup>  $\geq 3$  ER-L or TEL contaminant exceedances, or  $\geq 1$  ER-M or PEL exceedance.

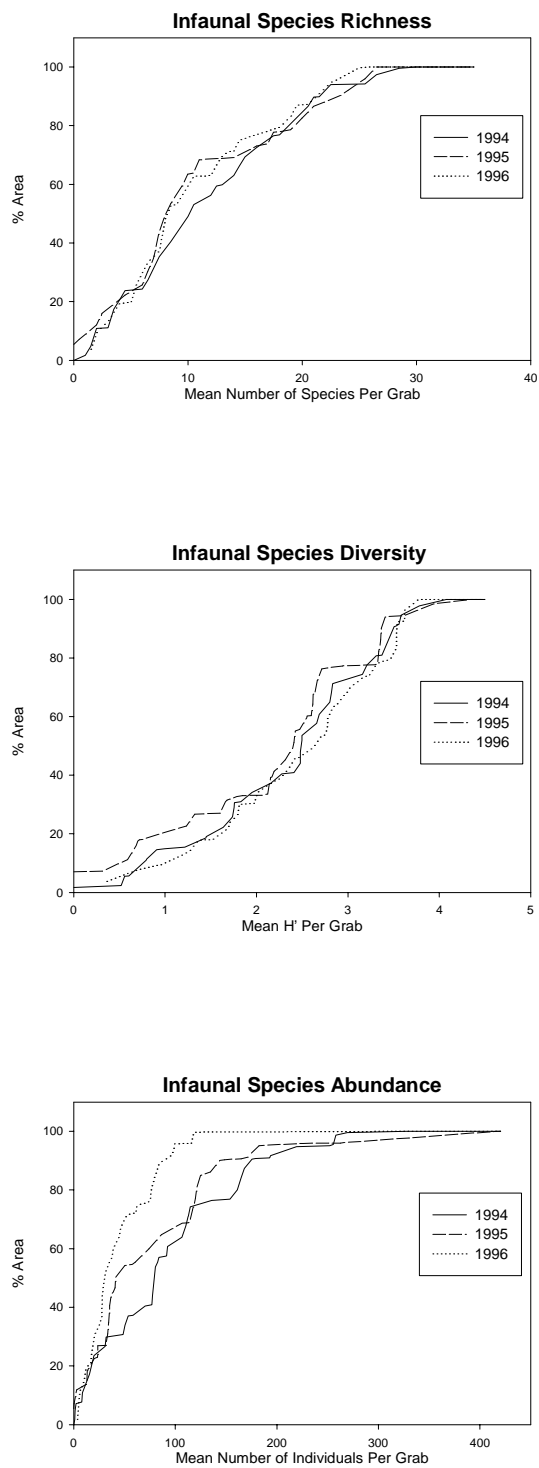
<sup>d</sup> Significant *Ampelisca* sp. toxicity (Percent survival difference relative to control  $> 20\%$ , and significant at  $\alpha = 0.05$ ).

<sup>e</sup> Significant Microtox<sup>®</sup> toxicity (Water corrected  $EC_{50} \leq 0.2\%$  if silt-clay content of sediment  $\geq 20\%$ , or  $EC_{50} \leq 0.5\%$  if silt-clay content  $< 20\%$ ).

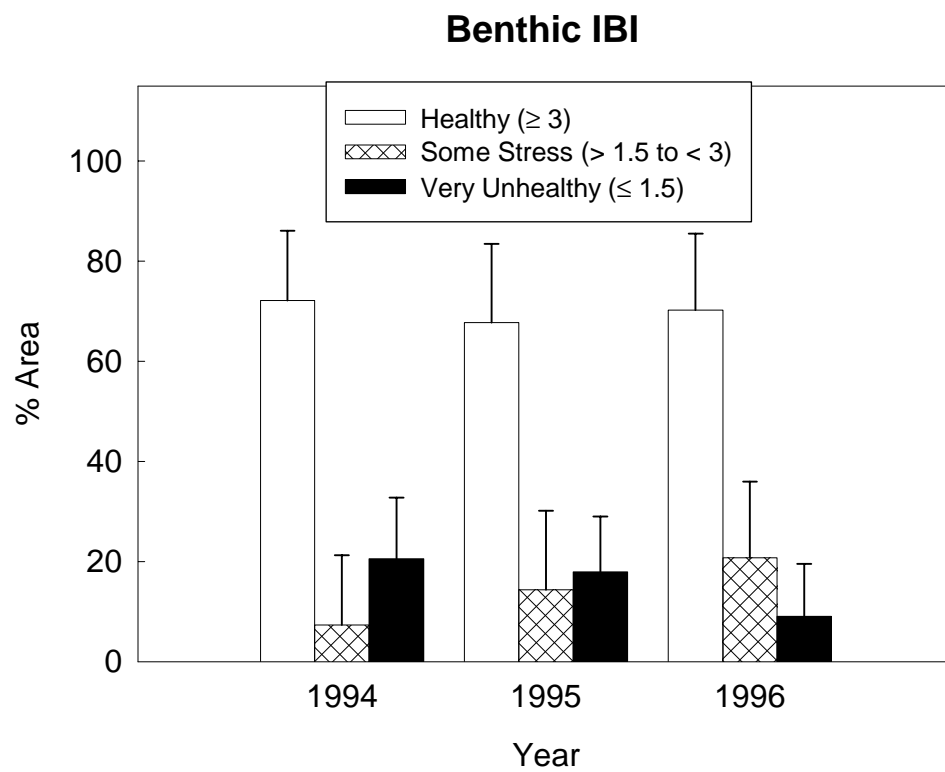
<sup>f</sup> Significant *Mercenaria mercenaria* toxicity (Percent mortality relative to control  $\geq 20\%$ , and significant at  $\alpha = 0.05$ ).

<sup>g</sup> Based on Kendall's rank concordance test.





**Figure 2.** CDFs (no C.I.s) by year for infaunal richness, H' diversity, and abundance.



**Figure 3.** Comparison of the condition of macroinfaunal assemblages based on the Benthic Index of Biotic Integrity for N.C. stations sampled during summer 1994-96.

**Table 8.** Percent area (and 95% C.I.) of N.C. estuaries with evidence of degraded benthos based on various biological indicators.

Benthic Indicator	Year		
	1994	1995	1996
• Mean Species Richness/Grab $\leq 3$	11 $\pm$ 8	16 $\pm$ 12	13 $\pm$ 13
• Mean Abundance/Grab $\leq 25$	23 $\pm$ 13	27 $\pm$ 16	31 $\pm$ 16
• Mean H'/Grab $\leq 1$	15 $\pm$ 10	18 $\pm$ 11	9 $\pm$ 11
• Benthic Index $\leq 1.5$	21 $\pm$ 12	18 $\pm$ 11	9 $\pm$ 10
• Any of the above	28 $\pm$ 14	38 $\pm$ 17	31 $\pm$ 16

**Table 9.** Stations sampled in 1994-96 that exhibited evidence of degraded biological conditions<sup>a</sup> accompanied by significant pollution exposure<sup>b</sup>.

Station	Location	Coordinates		Exposure Condition				Biological Condition				
				Low DO	Number of Contaminants $\geq$ ERL/TEL	Number of Contaminants $\geq$ ERM/PEL	Mean ERM Quotient	Significant Bioassay Results	Mean No. Species Per Grab	Mean Abundance Per Grab	Mean H' Per Grab	Benthic Index
CP94036	Neuse River	35°04.38'	76°33.08'		4	0	0.07	MTX	1.50	1.50	0.79	1.5
CP94043	Jones Bay	35°13.85'	76°33.62'	NO	1	0	0.05	MTX	2.00	8.00	0.52	1.0
CP94048	Pamlico River	35°21.44'	76°28.64'	NO	2	0	0.05	MTX	2.00	2.50	0.79	1.5
CP94051	Pamlico River	35°23.77'	76°40.48'	YES	4	0	0.08		1.00	1.00	0.00	1.0
CP94052	Pamlico River	35°23.85'	76°41.54'	YES	8	0	0.10		0.00	0.00	0.00	1.0
CP94053	Bath Creek	35°27.45'	76°49.03'	NO	8	0	0.19		3.00	91.50	0.60	1.5
CP94062	Albemarle Sound	35°59.46'	76°31.35'	NO	8	0	0.10		3.50	12.00	1.45	1.5
CP94066	Albemarle Sound	36°03.15'	76°18.53'	NO	11	1	0.17		2.00	20.00	0.91	1.0
CP94067	Yeopim River	36°05.01'	76°27.33'	NO	3	0	0.07	MTX	7.50	327.50	0.80	2.5
CP94069	Albemarle Sound	36°07.29'	75°56.31'	NO	5	0	0.08	MTX	4.00	70.50	0.56	1.5
CP95101	Back Bay	36°37.27'	75°57.55'	NO	0	0	0.03	MER	4.50	74.00	1.23	1.5
CP95107	Albemarle Sound	36°02.33'	76°16.15'	NO	5	0	0.08	MER	2.50	33.50	0.59	1.0
CP95109	Little Alligator River	35°56.21'	76°06.09'	NO	4	3	1.01	MTX, MER	5.00	13.00	1.60	2.5
CP95114	Pungo Creek	35°30.86'	76°38.38'		3	1	0.12	MER	5.00	86.00	0.72	2.5
CP95116	Pongo River	35°26.96'	76°35.34'	NO	5	0	0.09		2.00	3.00	0.69	2.0
CP95120	Durham Creek	35°22.73'	76°49.51'	NO	5	1	0.16	MER	2.00	86.50	0.32	1.5
CP95121	Pamlico River	35°22.48'	76°41.35'	YES	7	0	0.09		0.50	0.50	0.00	1.0
CP95122	Pamlico River	35°22.32'	76°40.23'	YES	4	0	0.07	MER	0.50	0.50	0.00	1.0
CP95124	Pamlico River	35°21.47'	76°32.70'	YES	3	0	0.06		0.00	0.00	0.00	1.0
CP95136	Neuse River	35°03.32'	76°30.30'	NO	3	0	0.07		0.00	0.00	0.00	1.0
CP95139	Neuse River	35°00.52'	76°40.47'	NO	4	0	0.07	MTX	4.50	41.50	0.70	1.0
CP95140	Adams Creek	34°55.31'	76°39.63'	NO	3	0	0.05		6.00	23.50	2.12	2.0
CP95145	Stump Sound	34°28.76'	77°28.35'	NO	1	0	0.05	MTX	5.00	14.00	1.68	1.5
CP96202	Pasquotank River	36°16.83'	76°09.07'	NO	10	1	0.20	MTX, MER	2.00	5.50	0.70	2.0
CP96205	Perquimans River	36°07.79'	76°19.96'	NO	3	0	0.08	MTX, MER	4.00	10.00	1.71	2.0
CP96206	Albemarle Sound	36°06.22'	75°57.22'	NO	1	1	0.08	MER	1.50	5.50	0.36	1.0
CP96207	Albemarle Sound	36°04.11'	76°16.41'	NO	7	0	0.11	MTX, MER	3.00	11.50	1.36	1.5
CP96210	Scuppernong River	35°56.18'	76°18.13'	NO	7	1	0.17	MTX, MER	5.50	16.50	2.25	2.0
CP96211	Cashie River	35°55.79'	76°44.17'	NO	6	0	0.10	MER	9.00	21.00	2.73	4.0
CP96213	Pamlico Sound	35°43.98'	75°38.50'	NO	0	0	0.03	MTX, MER	6.00	21.00	2.18	2.5
CP96219	Pamlico Sound	35°24.22'	75°56.69'	NO	1	0	0.04	MER	8.00	18.50	2.78	3.0
CP96221	Pamlico River	35°23.33'	76°40.13'	NO	1	0	0.03	MER	2.00	3.50	0.96	2.5
CP96232	Bay River	35°10.07'	76°40.02'	NO	6	0	0.10	MER	4.00	17.00	1.79	2.0
CP96233	Neuse River	35°05.11'	76°31.13'	NO	4	0	0.06	MTX, MER	5.50	6.50	2.41	2.5
CP96235	Neuse River	35°00.13'	76°41.35'	NO	6	1	0.14	MTX	4.00	14.50	1.27	1.5
CP96237	Nelson Bay	34°51.74'	76°24.16'	NO	2	0	0.04	MER	5.00	8.00	1.98	2.0

<sup>a</sup>Degraded biological conditions defined as either: [1] Low near-bottom DO (one or more observations < 0.3 mg/L, or  $\geq$  20 % of the observations < 2.0 mg/L, or all observations < 5.0 mg/L), [2]  $\geq$  3 ER-L or TEL contaminant exceedances, or  $\geq$  1 ER-M or PEL exceedance, or [3] Significant toxicity in any one assay at a station. AMP=*Ampelisca* sp. toxicity (Percent survival difference relative to control > 20 %, and significant at  $\alpha = 0.05$ ); MTX=Significant Microtox<sup>®</sup> toxicity (Water corrected EC<sub>50</sub>  $\leq$  0.2 % if silt-clay content of sediment  $\geq$  20 %, or EC<sub>50</sub>  $\leq$  0.5 % if silt-clay content < 20 %); MER=Significant *Mercenaria mercenaria* toxicity (Percent mortality relative to control  $\geq$  20%, and significant at  $\alpha = 0.05$ ).

<sup>b</sup>Significant pollution exposure defined as either: [1] Mean infaunal diversity per grab  $\leq$  1, [2] Mean infaunal richness per grab  $\leq$  3, [3] Mean infaunal abundance per grab  $\leq$  25, or [4] Benthic index score  $\leq$  1.5.

## **6. APPENDICES**

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**APPENDIX A.** Depth, dissolved oxygen, salinity, temperature, and pH records by station.

Station	Bottom Depth (m)		Dissolved Oxygen (mg/L)		Salinity (‰)		Temperature (°C)		pH	
	Profile <sup>a</sup>	Time Series <sup>c</sup>	Profile <sup>b</sup>	Time Series <sup>c</sup>	Profile <sup>b</sup>	Time Series <sup>c</sup>	Profile <sup>b</sup>	Time Series <sup>c</sup>	Profile <sup>b</sup>	Time Series <sup>c</sup>
CP94028	0.0	0.6 (0.0–0.8)	7.2 (7.0–7.3)	6.1 (5.0–6.9)	37.5 (37.4–37.5)	–	29.4 (29.4–29.4)	27.9 (25.2–30.3)	7.9 (7.9–7.9)	7.9 (7.7–7.9)
CP94029	0.5	0.4 (0.1–0.8)	7.5 (7.3–7.5)	6.9 (5.6–7.7)	36.3 (36.2–36.3)	–	28.3 (28.2–28.3)	27.4 (25.4–29.3)	7.9 (7.5–8.0)	7.9 (7.8–8.0)
CP94030	0.4	0.2 (0.1–0.3)	5.9 (5.8–5.9)	6.3 (5.8–6.8)	35.7 (35.2–35.8)	36.3 (35.3–36.9)	31.3 (31.1–31.3)	27.0 (25.9–28.3)	7.9 (7.9–7.9)	7.8 (7.8–7.8)
CP94031	0.7	0.4 (0.2–0.7)	6.9 (6.9–7.0)	5.9 (4.6–7.0)	34.9 (34.5–35.0)	34.3 (13.0–34.9)	27.9 (27.5–27.9)	27.2 (26.2–28.2)	7.9 (7.9–7.9)	7.8 (7.7–7.9)
CP94032	0.8	0.5 (0.4–0.6)	5.6 (5.6–6.1)	5.9 (5.7–6.2)	39.0 (39.0–39.2)	–	27.7 (27.2–27.7)	26.9 (26.0–28.0)	7.9 (7.9–7.9)	7.9 (7.9–7.9)
CP94033	1.6	1.0 (0.7–1.5)	6.4 (6.4–6.4)	7.7 (6.3–10.5)	38.3 (38.0–38.3)	–	27.6 (27.4–27.6)	27.4 (26.4–28.0)	7.8 (7.8–7.8)	8.0 (8.0–8.1)
CP94034	3.7	– –	9.9 (6.0–11.5)	– –	17.0 (16.5–20.7)	–	28.6 (27.9–30.1)	–	8.3 (8.0–8.5)	– (.–)
CP94035	3.3	1.6 (1.5–1.9)	6.8 (3.4–7.0)	6.7 (5.3–8.0)	23.5 (23.3–25.3)	–	29.0 (28.5–29.3)	–	7.9 (7.7–7.9)	8.0 (7.9–8.1)
CP94036	5.4	– –	6.6 (6.0–7.2)	– –	25.5 (19.4–26.0)	–	26.4 (26.4–26.5)	–	8.1 (8.0–8.1)	– (.–)
CP94037	4.2	3.5 (3.5–3.6)	6.9 (6.4–7.0)	6.2 (5.9–6.9)	29.3 (29.2–30.1)	30.0 (29.4–31.0)	25.2 (25.1–25.2)	25.1 (24.8–25.3)	8.0 (7.9–8.0)	8.0 (7.9–8.0)
CP94038	1.8	0.8 (0.7–0.9)	6.5 (4.7–6.7)	8.2 (6.9–8.5)	17.0 (16.7–18.0)	16.1 (16.1–16.2)	29.3 (29.1–29.4)	30.7 (29.4–30.9)	7.8 (7.6–7.8)	7.9 (7.8–8.0)
CP94039	2.0	1.9 (1.3–2.3)	6.3 (6.1–6.5)	7.3 (6.7–8.0)	34.4 (33.8–34.5)	32.3 (28.7–39.1)	24.2 (24.1–24.3)	24.3 (22.9–25.0)	7.8 (7.7–7.9)	8.0 (7.9–8.1)

<sup>a</sup> Bottom depths corrected to Mean Lower Low Water. Each value is the mean of two replicate bottom-depth measurements from instantaneous profile records.

<sup>b</sup> Data from instantaneous, surface-to-bottom depth profiles (taken at 1-m intervals for bottom depths > 3m; 0.5-m intervals for depths < 3m). Number outside parentheses is the mean bottom value (average of two replicates); numbers inside parentheses are the range of values from surface to bottom.

<sup>c</sup> Data from continuous, time-series measurements taken at 30-min. intervals typically over a 24-hr period at a single near-bottom depth. Number outside parentheses is the median value from the time series; numbers inside parentheses are the range.

## APPENDIX A. (Continued).

Station	Bottom Depth (m)		Dissolved Oxygen (mg/L)		Salinity (‰)		Temperature (°C)		pH	
	Profile <sup>a</sup>	Time Series <sup>c</sup>	Profile <sup>b</sup>	Time Series <sup>c</sup>	Profile <sup>b</sup>	Time Series <sup>c</sup>	Profile <sup>b</sup>	Time Series <sup>c</sup>	Profile <sup>b</sup>	Time Series <sup>c</sup>
CP94040	5.8	– –	6.8 (6.3–7.2)	– –	28.3 (27.9–28.7)	– –	26.1 (25.6–26.2)	– –	8.1 (8.1–8.1)	– (.–.)
CP94041	5.7	4.9 (4.8–4.9)	6.7 (5.9–6.8)	6.6 (5.9–7.3)	29.2 (29.1–29.7)	29.6 (29.3–29.9)	25.2 (25.0–25.2)	25.2 (25.1–25.4)	8.0 (8.0–8.0)	8.0 (7.9–8.0)
CP94042	3.5	2.9 (2.7–3.1)	7.0 (7.0–7.6)	7.2 (6.7–7.5)	26.1 (26.0–26.5)	28.8 (27.5–29.3)	24.5 (23.5–24.6)	24.7 (24.3–25.0)	7.9 (7.9–7.9)	8.0 (7.9–8.0)
CP94043	2.1	1.7 (1.6–1.8)	6.4 (3.3–7.9)	7.7 (6.8–8.5)	23.3 (23.2–25.2)	23.2 (22.9–23.4)	25.9 (24.3–26.7)	26.4 (25.3–27.3)	8.0 (7.7–8.0)	8.1 (8.0–8.1)
CP94044	2.5	1.6 (1.5–2.0)	7.3 (7.2–7.4)	7.2 (6.9–7.6)	25.8 (25.7–25.9)	24.9 (24.5–25.6)	25.0 (24.7–25.0)	24.8 (24.2–25.3)	7.9 (7.9–8.0)	8.0 (7.9–8.0)
CP94045	1.8	1.4 (1.2–1.6)	7.6 (7.5–7.6)	7.4 (6.9–8.1)	25.5 (25.4–25.7)	25.1 (24.7–25.4)	23.6 (23.3–23.7)	23.9 (23.3–24.6)	7.9 (7.8–7.9)	8.0 (7.9–8.3)
CP94046	2.2	2.0 (1.8–2.0)	7.0 (6.5–7.8)	6.9 (6.3–7.6)	21.9 (21.8–22.0)	21.7 (21.7–21.9)	28.2 (27.4–28.5)	27.9 (27.2–28.5)	8.0 (7.9–8.0)	8.0 (7.9–8.1)
CP94047	3.2	1.8 (1.8–2.0)	5.1 (1.2–7.0)	7.9 (3.2–9.9)	17.2 (15.8–21.6)	15.9 (15.6–18.0)	26.9 (26.6–27.1)	27.8 (26.5–28.4)	7.9 (7.4–8.1)	8.1 (7.5–8.3)
CP94048	5.5	4.8 (4.6–5.2)	6.8 (6.5–7.1)	6.4 (5.9–7.0)	20.2 (20.1–20.6)	20.7 (20.0–20.9)	27.5 (27.2–27.7)	27.3 (26.9–27.7)	8.0 (7.9–8.0)	8.0 (7.9–8.0)
CP94049	1.4	0.9 (0.8–1.1)	6.9 (6.8–7.0)	6.9 (6.6–7.3)	20.3 (20.3–20.4)	20.7 (20.4–20.8)	28.4 (28.3–28.4)	27.4 (26.9–28.5)	7.9 (7.9–7.9)	8.1 (8.1–8.2)
CP94050	5.3	– –	6.6 (6.4–7.0)	– –	26.4 (24.9–27.3)	– –	27.4 (27.3–27.4)	– –	8.0 (8.0–8.0)	– (.–.)
CP94051	4.6	3.7 (3.5–4.1)	7.2 (1.7–7.7)	7.4 (0.3–8.3)	17.0 (16.5–20.5)	16.7 (16.6–20.7)	27.4 (26.7–27.5)	27.8 (26.7–28.1)	8.1 (7.4–8.1)	8.1 (7.2–8.2)

<sup>a</sup> Bottom depths corrected to Mean Lower Low Water. Each value is the mean of two replicate bottom-depth measurements from instantaneous profile records.

<sup>b</sup> Data from instantaneous, surface-to-bottom depth profiles (taken at 1-m intervals for bottom depths > 3m; 0.5-m intervals for depths < 3m). Number outside parentheses is the mean bottom value (average of two replicates); numbers inside parentheses are the range of values from surface to bottom.

<sup>c</sup> Data from continuous, time-series measurements taken at 30-min. intervals typically over a 24-hr period at a single near-bottom depth. Number outside parentheses is the median value from the time series; numbers inside parentheses are the range.

APPENDIX A. (Continued).

Station	Bottom Depth (m)		Dissolved Oxygen (mg/L)		Salinity (‰)		Temperature (°C)		pH	
	Profile <sup>a</sup>	Time Series <sup>c</sup>	Profile <sup>b</sup>	Time Series <sup>c</sup>	Profile <sup>b</sup>	Time Series <sup>c</sup>	Profile <sup>b</sup>	Time Series <sup>c</sup>	Profile <sup>b</sup>	Time Series <sup>c</sup>
CP94052	4.6	3.3 (3.2–3.3)	5.4 (1.0–8.3)	7.4 (0.1–8.7)	17.6 (15.6–21.5)	16.6 (16.4–21.1)	27.4 (26.5–27.8)	27.6 (26.6–28.0)	7.8 (7.3–8.1)	8.1 (7.2–8.2)
CP94053	2.3	1.4 (1.4–1.5)	7.4 (1.3–10.0)	6.4 (5.5–8.1)	13.6 (13.0–17.6)	13.1 (12.9–13.4)	27.9 (27.5–28.8)	28.1 (27.7–28.8)	7.8 (7.1–8.1)	7.9 (7.6–8.1)
CP94054	1.9	1.0 (1.0–1.2)	5.9 (4.4–7.8)	4.9 (3.6–6.6)	13.9 (13.9–14.0)	13.8 (13.7–13.9)	28.2 (28.0–28.3)	27.7 (27.3–28.5)	7.5 (7.3–7.5)	7.3 (7.2–7.6)
CP94055	4.0	4.4 (4.1–4.6)	7.0 (5.0–7.6)	6.9 (6.1–7.5)	21.9 (21.6–22.5)	22.5 (22.3–22.6)	27.6 (26.7–28.0)	28.0 (27.5–28.5)	7.9 (7.7–8.0)	7.9 (7.9–8.0)
CP94056	4.2	4.9 (4.5–5.1)	7.5 (7.5–7.7)	6.7 (4.7–7.4)	22.6 (22.3–22.7)	16.5 (15.6–23.6)	25.6 (25.2–25.6)	28.0 (27.6–28.6)	7.9 (7.7–7.9)	8.0 (7.7–8.0)
CP94057	1.2	0.7 (0.5–0.8)	6.0 (4.5–7.2)	6.7 (6.2–7.6)	19.6 (18.2–21.0)	19.8 (19.0–21.7)	28.6 (26.6–29.5)	29.1 (28.0–30.9)	7.9 (7.6–8.0)	7.9 (7.9–8.0)
CP94058	3.7	3.1 (2.9–3.4)	7.6 (7.0–7.8)	6.7 (6.5–7.1)	18.0 (17.5–29.9)	21.8 (20.8–22.1)	23.3 (22.9–23.5)	28.5 (27.2–28.9)	8.0 (7.9–8.0)	8.0 (7.9–8.0)
CP94059	0.7	0.4 (0.3–0.6)	7.6 (7.5–7.7)	7.7 (7.1–8.4)	37.3 (37.0–37.4)	35.8 (32.9–36.3)	19.6 (19.6–19.6)	21.2 (20.2–23.9)	7.8 (7.8–7.8)	8.0 (7.9–8.1)
CP94060	3.1	2.4 (2.2–2.8)	7.3 (7.3–7.4)	– (–)	9.8 (9.7–9.8)	9.0 (7.6–9.8)	26.8 (26.6–26.8)	26.1 (24.8–26.7)	7.9 (7.9–7.9)	7.9 (7.8–8.0)
CP94061	4.0	3.4 (2.6–3.5)	7.9 (7.4–8.1)	7.7 (6.8–8.5)	3.2 (2.7–3.2)	2.7 (2.5–3.2)	28.9 (28.6–29.4)	29.2 (28.8–29.9)	8.0 (7.9–8.1)	7.9 (7.7–8.3)
CP94062	6.0	5.4 (5.2–5.6)	10.6 (7.8–12.5)	5.7 (5.2–6.2)	1.6 (1.5–2.5)	2.5 (2.5–2.6)	28.6 (28.3–29.5)	28.4 (28.3–28.5)	7.6 (7.2–7.7)	7.1 (7.1–7.3)
CP94063	1.1	1.0 (0.8–1.0)	8.8 (7.6–9.1)	7.7 (6.5–9.2)	1.5 (1.0–1.6)	1.6 (1.4–2.1)	29.6 (29.0–31.6)	28.7 (28.2–30.9)	7.8 (7.7–8.0)	7.7 (7.3–8.2)

<sup>a</sup> Bottom depths corrected to Mean Lower Low Water. Each value is the mean of two replicate bottom-depth measurements from instantaneous profile records.

<sup>b</sup> Data from instantaneous, surface-to-bottom depth profiles (taken at 1-m intervals for bottom depths > 3m; 0.5-m intervals for depths < 3m). Number outside parentheses is the mean bottom value (average of two replicates); numbers inside parentheses are the range of values from surface to bottom.

<sup>c</sup> Data from continuous, time-series measurements taken at 30-min. intervals typically over a 24-hr period at a single near-bottom depth. Number outside parentheses is the median value from the time series; numbers inside parentheses are the range.



## APPENDIX A. (Continued).

Station	Bottom Depth (m)		Dissolved Oxygen (mg/L)		Salinity (‰)		Temperature (°C)		pH	
	Profile <sup>a</sup>	Time Series <sup>c</sup>	Profile <sup>b</sup>	Time Series <sup>c</sup>	Profile <sup>b</sup>	Time Series <sup>c</sup>	Profile <sup>b</sup>	Time Series <sup>c</sup>	Profile <sup>b</sup>	Time Series <sup>c</sup>
CP94064	5.7	4.2 (4.1–4.3)	7.5 (7.2–7.8)	7.6 (7.0–8.1)	4.0 (4.0–4.0)	4.0 (3.9–4.2)	28.0 (27.6–28.1)	28.2 (28.0–28.7)	7.7 (7.0–7.9)	7.6 (7.4–7.9)
CP94065	2.4	1.1 (1.0–1.3)	8.0 (7.8–8.1)	7.5 (7.2–8.3)	0.7 (0.7–0.7)	0.8 (0.8–0.8)	29.9 (29.6–30.0)	30.0 (29.4–31.5)	7.8 (7.8–8.1)	7.5 (7.4–7.8)
CP94066	6.1	5.0 (4.9–5.1)	7.7 (6.7–8.2)	7.2 (6.7–7.8)	3.4 (3.3–3.5)	3.4 (3.3–3.5)	29.0 (28.5–30.1)	28.9 (28.7–29.6)	7.9 (7.7–8.1)	7.7 (7.6–7.9)
CP94067	2.0	1.0 (0.9–1.6)	5.9 (5.5–7.2)	6.4 (5.1–8.8)	1.5 (1.4–1.5)	1.4 (1.3–1.5)	29.8 (29.6–30.3)	30.5 (29.9–31.5)	7.6 (7.5–8.1)	7.8 (7.3–8.9)
CP94068	1.7	0.6 (0.6–0.7)	7.6 (7.3–7.7)	7.8 (7.4–8.5)	5.4 (5.4–5.4)	5.6 (4.8–5.9)	27.4 (27.4–27.7)	28.3 (27.5–29.0)	7.9 (7.9–7.9)	8.0 (7.8–8.2)
CP94069	5.4	4.1 (4.1–4.3)	7.6 (7.3–7.8)	7.8 (7.5–8.4)	3.5 (3.4–3.5)	3.4 (3.1–3.6)	28.0 (27.8–29.2)	28.2 (27.8–28.8)	7.6 (7.6–7.7)	7.7 (7.5–8.0)
CP94070	0.4	0.2 (0.1–0.4)	7.7 (7.4–7.8)	8.2 (7.7–9.4)	6.5 (6.3–6.6)	6.4 (5.9–6.7)	28.2 (28.1–28.3)	29.2 (27.6–31.3)	7.9 (7.9–7.9)	8.0 (7.7–8.5)
CP94071	0.7	1.6 (0.2–2.0)	7.9 (7.8–7.9)	8.3 (6.8–9.3)	4.6 (4.6–4.6)	4.5 (4.3–4.6)	27.2 (27.2–27.2)	27.2 (26.0–28.1)	8.4 (8.4–8.4)	8.4 (7.7–8.6)
CP94072	1.4	1.0 (0.9–1.1)	9.0 (8.8–9.1)	8.7 (7.4–9.6)	1.5 (1.5–1.5)	1.5 (1.5–1.6)	28.3 (28.3–28.3)	28.0 (27.4–28.5)	8.4 (8.4–8.4)	8.2 (7.8–8.5)
CP94084	0.0	0.5 (0.5–0.6)	5.8 (5.5–8.3)	– –	5.3 (4.6–5.5)	4.5 (3.8–5.2)	30.0 (27.1–30.2)	30.4 (29.8–31.0)	7.2 (7.1–7.6)	6.8 (6.6–7.2)
CP95101	1.4	1.1 (1.0–1.2)	8.9 (8.7–9.0)	8.8 (8.2–9.5)	5.0 (5.0–5.0)	5.0 (4.9–5.0)	24.6 (24.0–24.7)	24.4 (24.2–24.9)	8.2 (8.2–8.2)	8.1 (8.0–8.3)
CP95102	1.1	0.7 (0.7–0.8)	8.4 (8.4–8.5)	9.1 (8.0–10.6)	5.0 (5.0–5.0)	4.9 (4.9–4.9)	23.6 (23.6–23.6)	24.2 (23.5–24.6)	8.5 (8.5–8.5)	8.6 (8.5–8.7)

<sup>a</sup> Bottom depths corrected to Mean Lower Low Water. Each value is the mean of two replicate bottom-depth measurements from instantaneous profile records.

<sup>b</sup> Data from instantaneous, surface-to-bottom depth profiles (taken at 1-m intervals for bottom depths > 3m; 0.5-m intervals for depths < 3m). Number outside parentheses is the mean bottom value (average of two replicates); numbers inside parentheses are the range of values from surface to bottom.

<sup>c</sup> Data from continuous, time-series measurements taken at 30-min. intervals typically over a 24-hr period at a single near-bottom depth. Number outside parentheses is the median value from the time series; numbers inside parentheses are the range.

## APPENDIX A. (Continued).

Station	Bottom Depth (m)		Dissolved Oxygen (mg/L)		Salinity (‰)		Temperature (°C)		pH	
	Profile <sup>a</sup>	Time Series <sup>c</sup>	Profile <sup>b</sup>	Time Series <sup>c</sup>	Profile <sup>b</sup>	Time Series <sup>c</sup>	Profile <sup>b</sup>	Time Series <sup>c</sup>	Profile <sup>b</sup>	Time Series <sup>c</sup>
CP95103	3.6	3.5 (3.4–3.7)	6.9 (6.8–7.3)	6.5 (5.7–6.7)	0.1 (0.1–0.1)	0.1 (0.1–0.1)	28.1 (27.8–28.3)	27.8 (27.2–28.0)	7.4 (7.4–7.6)	– (–)
CP95104	2.0	1.6 (1.4–1.7)	7.3 (7.2–7.6)	7.3 (6.4–8.2)	2.1 (2.1–2.2)	2.2 (2.1–2.3)	26.3 (25.6–26.3)	26.5 (26.1–26.7)	9.1 (8.9–9.1)	9.0 (8.9–9.1)
CP95105	2.1	1.1 (1.1–1.3)	8.1 (7.9–8.1)	8.4 (7.8–8.8)	3.9 (3.8–4.2)	3.5 (2.7–4.3)	26.0 (26.0–26.1)	25.5 (25.2–25.9)	8.3 (8.3–8.3)	8.3 (8.1–8.5)
CP95106	1.5	0.8 (0.7–1.1)	7.6 (7.6–7.6)	7.8 (7.5–8.3)	4.7 (4.7–4.7)	4.7 (4.6–4.7)	26.3 (26.3–26.3)	25.5 (25.0–26.2)	8.2 (8.2–8.3)	8.2 (8.1–8.3)
CP95107	6.3	6.3 (6.1–6.4)	8.2 (7.5–8.3)	7.9 (7.5–8.2)	1.5 (1.4–1.9)	1.8 (1.6–2.2)	27.0 (27.0–27.0)	26.8 (26.5–27.0)	8.1 (7.8–8.1)	7.9 (7.8–8.0)
CP95108	1.0	0.8 (0.7–1.0)	7.7 (7.5–7.9)	8.3 (7.4–9.1)	0.2 (0.2–0.2)	0.3 (0.2–0.3)	24.6 (23.3–24.6)	25.5 (24.4–26.1)	7.5 (7.4–7.7)	– (–)
CP95109	2.2	2.5 (1.9–2.5)	9.5 (6.8–9.7)	7.1 (5.7–8.7)	3.4 (3.4–3.5)	3.6 (3.4–3.6)	28.0 (26.6–29.2)	26.2 (26.1–28.0)	8.2 (7.3–8.3)	7.2 (7.0–7.7)
CP95110	1.3	0.8 (0.8–0.9)	9.4 (9.3–9.4)	9.5 (7.7–10.2)	3.6 (3.6–3.6)	3.7 (3.6–3.7)	27.5 (27.0–27.7)	28.3 (27.3–29.5)	8.3 (8.2–8.3)	8.4 (7.7–8.5)
CP95111	1.3	0.6 (0.6–0.7)	8.0 (7.9–8.0)	8.2 (7.9–8.7)	4.3 (4.2–4.3)	4.3 (4.3–4.4)	26.8 (26.6–26.8)	27.8 (26.5–28.5)	7.5 (7.4–7.5)	7.7 (7.5–7.9)
CP95112	0.8	0.7 (0.6–0.8)	8.3 (7.9–8.3)	8.1 (7.2–10.1)	13.3 (13.3–13.4)	16.2 (13.0–17.3)	26.0 (26.0–26.1)	26.7 (26.0–27.8)	8.0 (8.0–8.0)	8.1 (8.0–8.3)
CP95113	3.7	3.6 (3.4–3.8)	7.5 (6.6–8.0)	6.6 (5.6–6.9)	18.5 (17.2–26.8)	25.4 (24.9–26.5)	25.5 (24.8–26.4)	25.1 (24.9–25.4)	8.0 (7.8–8.0)	8.0 (7.9–8.0)
CP95114	2.0	1.6 (1.5–1.7)	7.4 (0.8–9.1)	– (–)	7.5 (7.4–7.9)	7.5 (7.5–7.9)	30.3 (29.4–30.5)	31.1 (29.5–31.6)	8.1 (7.0–8.5)	8.5 (7.3–8.7)

<sup>a</sup> Bottom depths corrected to Mean Lower Low Water. Each value is the mean of two replicate bottom-depth measurements from instantaneous profile records.

<sup>b</sup> Data from instantaneous, surface-to-bottom depth profiles (taken at 1-m intervals for bottom depths > 3m; 0.5-m intervals for depths < 3m). Number outside parentheses is the mean bottom value (average of two replicates); numbers inside parentheses are the range of values from surface to bottom.

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## APPENDIX A. (Continued).

Station	Bottom Depth (m)		Dissolved Oxygen (mg/L)		Salinity (‰)		Temperature (°C)		pH	
	Profile <sup>a</sup>	Time Series <sup>c</sup>	Profile <sup>b</sup>	Time Series <sup>c</sup>	Profile <sup>b</sup>	Time Series <sup>c</sup>	Profile <sup>b</sup>	Time Series <sup>c</sup>	Profile <sup>b</sup>	Time Series <sup>c</sup>
CP95115	4.2	3.7 (3.5–3.8)	6.3 (6.2–7.0)	6.8 (6.4–7.1)	24.2 (24.1–24.2)	22.3 (22.2–22.3)	29.5 (29.0–29.5)	29.1 (28.8–29.5)	8.0 (8.0–8.0)	8.1 (8.1–8.1)
CP95116	3.4	2.7 (2.7–2.9)	6.6 (4.4–7.5)	5.7 (4.3–6.9)	10.2 (10.0–10.4)	10.2 (10.0–10.4)	30.1 (29.6–30.5)	29.4 (28.9–30.1)	8.0 (7.7–8.2)	7.9 (7.6–8.2)
CP95117	5.9	6.3 (5.9–6.4)	6.9 (4.8–7.0)	5.6 (3.9–6.2)	22.7 (22.6–23.8)	22.9 (22.7–23.6)	29.5 (29.2–29.7)	29.4 (29.2–29.7)	8.1 (7.9–8.1)	8.1 (7.9–8.1)
CP95118	1.5	0.7 (0.6–0.8)	6.3 (5.7–7.0)	7.5 (7.0–7.8)	20.4 (20.3–20.5)	20.3 (20.3–20.4)	27.6 (27.2–28.2)	28.5 (27.6–28.8)	7.9 (7.8–7.9)	8.0 (7.9–8.0)
CP95119	4.9	4.0 (3.9–4.1)	6.6 (5.5–6.9)	– (–)	21.0 (20.9–21.2)	20.7 (20.5–20.8)	27.6 (27.6–27.6)	27.8 (27.7–28.0)	8.0 (7.9–8.0)	8.0 (8.0–8.0)
CP95120	1.4	0.8 (0.7–0.8)	3.8 (0.2–4.9)	7.5 (3.1–10.7)	4.8 (4.7–10.1)	4.9 (4.7–5.1)	28.5 (28.2–28.7)	29.5 (27.8–30.5)	7.2 (7.1–7.3)	7.8 (6.9–8.4)
CP95121	3.6	3.1 (3.0–3.2)	7.0 (1.0–7.5)	0.0 (0.0–3.7)	7.0 (6.3–15.3)	15.0 (13.1–15.2)	28.5 (28.1–29.3)	– (–)	7.9 (7.2–8.1)	7.2 (7.1–7.3)
CP95122	3.7	3.5 (3.5–3.6)	7.0 (1.1–7.8)	0.0 (0.0–0.3)	7.5 (6.7–15.4)	15.7 (12.7–15.9)	28.4 (28.2–31.1)	28.5 (28.4–28.6)	7.9 (7.2–8.0)	– (–)
CP95123	–	4.4 (4.3–4.5)	6.2 (6.2–6.2)	6.3 (5.9–6.7)	25.8 (25.8–25.8)	– (–)	29.1 (29.1–29.1)	29.2 (29.0–29.6)	8.1 (8.1–8.1)	8.1 (8.1–8.2)
CP95124	4.7	4.0 (3.9–4.4)	7.6 (1.3–8.1)	2.5 (1.7–3.6)	8.7 (8.0–15.4)	15.9 (14.2–16.0)	29.8 (28.7–30.2)	29.0 (28.9–29.1)	8.1 (7.2–8.2)	7.2 (7.1–7.3)
CP95125	2.3	2.4 (2.2–2.5)	6.4 (6.3–7.2)	11.3 (10.6–12.2)	20.7 (20.5–20.8)	20.9 (20.7–21.0)	27.6 (26.9–27.6)	27.9 (27.6–28.5)	7.8 (7.8–7.8)	7.8 (7.8–7.9)
CP95126	1.5	0.7 (0.5–1.1)	6.3 (6.2–6.5)	6.2 (5.4–7.4)	17.7 (17.5–17.7)	17.8 (17.6–18.2)	27.6 (27.6–27.9)	28.5 (27.6–29.5)	7.7 (7.7–7.7)	7.4 (7.3–7.6)

<sup>a</sup> Bottom depths corrected to Mean Lower Low Water. Each value is the mean of two replicate bottom-depth measurements from instantaneous profile records.

<sup>b</sup> Data from instantaneous, surface-to-bottom depth profiles (taken at 1-m intervals for bottom depths > 3m; 0.5-m intervals for depths < 3m). Number outside parentheses is the mean bottom value (average of two replicates); numbers inside parentheses are the range of values from surface to bottom.

<sup>c</sup> Data from continuous, time-series measurements taken at 30-min. intervals typically over a 24-hr period at a single near-bottom depth. Number outside parentheses is the median value from the time series; numbers inside parentheses are the range.

## APPENDIX A. (Continued).

Station	Bottom Depth (m)		Dissolved Oxygen (mg/L)		Salinity (‰)		Temperature (°C)		pH	
	Profile <sup>a</sup>	Time Series <sup>c</sup>	Profile <sup>b</sup>	Time Series <sup>c</sup>	Profile <sup>b</sup>	Time Series <sup>c</sup>	Profile <sup>b</sup>	Time Series <sup>c</sup>	Profile <sup>b</sup>	Time Series <sup>c</sup>
CP95127	2.4	2.7 (2.6–2.8)	7.1 (6.9–7.3)	6.6 (3.7–8.0)	16.6 (16.3–16.7)	16.3 (16.0–16.6)	28.2 (28.0–28.9)	28.2 (28.0–28.8)	7.9 (7.9–8.0)	7.9 (7.5–8.1)
CP95128	1.7	1.1 (1.1–1.2)	6.4 (2.3–6.6)	6.3 (4.8–7.8)	14.0 (13.9–15.4)	14.4 (14.0–15.0)	29.9 (28.9–30.0)	29.7 (28.4–30.8)	7.8 (7.4–7.8)	7.8 (7.5–8.0)
CP95129	0.9	1.1 (1.0–1.2)	5.2 (5.2–5.3)	9.4 (7.9–11.3)	16.2 (16.1–16.2)	16.1 (15.8–16.2)	29.4 (29.3–29.5)	29.6 (28.6–30.6)	7.6 (7.6–7.6)	7.7 (7.6–7.9)
CP95130	4.9	3.8 (3.7–4.2)	6.4 (6.3–6.5)	6.3 (6.0–6.8)	21.9 (21.9–21.9)	22.5 (22.1–22.8)	29.7 (29.7–29.8)	29.4 (28.7–29.9)	8.1 (8.1–8.2)	8.2 (8.1–8.2)
CP95131	6.2	5.9 (5.4–6.0)	6.7 (6.5–7.1)	10.6 (8.7–11.8)	19.0 (18.4–19.4)	19.8 (18.8–20.5)	29.9 (29.8–30.1)	29.2 (28.8–29.9)	8.0 (8.0–8.1)	8.2 (8.1–8.2)
CP95132	3.9	3.8 (3.3–4.1)	6.7 (6.6–6.7)	6.7 (6.4–7.4)	24.9 (24.8–24.9)	23.9 (23.6–24.3)	29.1 (29.0–29.1)	29.6 (29.2–30.0)	8.2 (8.2–8.2)	8.1 (8.1–8.2)
CP95133	2.1	1.5 (1.1–2.5)	6.7 (6.3–6.8)	– (–)	25.6 (25.4–25.8)	35.5 (25.1–38.9)	28.9 (28.7–29.2)	27.3 (26.2–30.4)	8.2 (8.1–8.2)	8.2 (8.1–8.4)
CP95134	0.9	0.9 (0.8–1.0)	7.3 (6.1–7.8)	6.1 (3.3–7.7)	14.6 (14.5–14.6)	15.6 (15.4–16.0)	31.0 (30.0–31.6)	30.4 (29.7–31.2)	8.0 (7.8–8.1)	8.0 (7.8–8.1)
CP95135	0.8	0.8 (0.6–1.4)	6.3 (6.1–6.7)	6.8 (6.3–7.5)	27.9 (27.7–28.0)	38.0 (31.9–38.3)	27.9 (27.9–28.0)	26.1 (25.4–29.2)	8.2 (8.1–8.2)	7.8 (7.8–7.9)
CP95136	5.7	5.8 (5.7–5.9)	6.0 (4.1–8.0)	3.9 (3.2–6.2)	19.3 (19.1–19.4)	19.2 (19.0–19.8)	27.4 (27.1–29.2)	26.8 (26.6–27.5)	7.9 (7.7–8.0)	7.7 (7.6–7.9)
CP95137	–	– (–)	– (–)	– (.–)	– (.–)	– (.–)	– (.–)	– (.–)	– (.–)	– (.–)
CP95138	0.6	0.8 (0.6–0.9)	6.5 (6.2–6.7)	6.9 (5.8–8.0)	17.1 (17.0–17.2)	17.6 (17.5–17.7)	27.3 (27.1–27.7)	27.8 (27.2–28.6)	7.7 (7.7–7.8)	7.7 (7.4–7.8)

<sup>a</sup> Bottom depths corrected to Mean Lower Low Water. Each value is the mean of two replicate bottom-depth measurements from instantaneous profile records.

<sup>b</sup> Data from instantaneous, surface-to-bottom depth profiles (taken at 1-m intervals for bottom depths > 3m; 0.5-m intervals for depths < 3m). Number outside parentheses is the mean bottom value (average of two replicates); numbers inside parentheses are the range of values from surface to bottom.

<sup>c</sup> Data from continuous, time-series measurements taken at 30-min. intervals typically over a 24-hr period at a single near-bottom depth. Number outside parentheses is the median value from the time series; numbers inside parentheses are the range.

## APPENDIX A. (Continued).

Station	Bottom Depth (m)		Dissolved Oxygen (mg/L)		Salinity (‰)		Temperature (°C)		pH	
	Profile <sup>a</sup>	Time Series <sup>c</sup>	Profile <sup>b</sup>	Time Series <sup>c</sup>	Profile <sup>b</sup>	Time Series <sup>c</sup>	Profile <sup>b</sup>	Time Series <sup>c</sup>	Profile <sup>b</sup>	Time Series <sup>c</sup>
CP95139	6.5	6.2 (5.9–6.2)	6.0 (4.3–8.1)	4.6 (3.6–6.5)	17.6 (16.2–18.0)	19.0 (18.4–19.2)	26.8 (26.4–28.0)	27.2 (26.9–27.9)	7.8 (7.7–8.0)	7.7 (7.6–7.8)
CP95140	1.7	1.1 (0.9–1.2)	6.6 (6.1–7.1)	6.7 (5.6–8.4)	16.6 (16.4–16.7)	– –	27.0 (26.9–28.0)	29.9 (29.3–31.0)	7.8 (7.7–7.9)	8.0 (7.8–8.1)
CP95141	1.6	0.9 (0.2–1.0)	5.8 (5.4–6.1)	5.6 (4.5–7.6)	36.5 (36.4–36.6)	37.1 (14.7–37.3)	31.5 (31.3–31.5)	30.9 (21.8–32.7)	8.0 (8.0–8.0)	8.0 (8.0–8.0)
CP95142	0.5	1.0 (0.6–1.5)	5.5 (5.2–5.7)	6.5 (4.0–7.4)	36.2 (36.0–36.4)	37.6 (37.3–37.8)	30.3 (30.0–30.3)	30.8 (29.7–32.2)	7.9 (7.9–7.9)	8.0 (7.8–8.0)
CP95143	1.1	1.0 (0.8–1.1)	5.5 (5.5–5.6)	– –	36.8 (36.0–36.8)	38.0 (37.8–38.3)	30.5 (30.5–30.5)	30.8 (30.2–31.9)	8.0 (8.0–8.0)	8.0 (8.0–8.1)
CP95144	0.1	0.0 (0.0–0.0)	6.4 (6.3–6.4)	6.0 (4.7–7.0)	33.5 (33.4–33.5)	– –	30.9 (30.5–30.9)	30.7 (30.4–32.4)	8.0 (8.0–8.0)	7.9 (7.8–8.0)
CP95145	0.0	0.1 (0.0–0.2)	5.7 (5.5–6.1)	5.8 (4.5–8.1)	33.3 (33.3–33.4)	34.6 (34.0–35.2)	30.7 (30.4–30.8)	31.4 (30.2–33.6)	7.9 (7.9–7.9)	7.8 (7.8–7.9)
CP95146	12.7	12.3 (11.6–14.3)	4.0 (3.6–4.6)	5.1 (4.3–5.7)	9.6 (2.9–23.1)	27.3 (17.0–32.2)	26.3 (25.8–27.1)	27.6 (27.0–28.0)	6.9 (6.6–7.7)	7.9 (7.4–8.0)
CP95147	5.2	5.6 (4.6–6.3)	3.6 (3.4–5.0)	9.2 (8.5–9.8)	2.4 (0.3–4.4)	4.0 (0.1–12.1)	25.4 (25.0–25.8)	26.1 (24.9–26.7)	6.4 (6.2–6.5)	6.4 (6.1–6.9)
CP95148	1.4	1.5 (0.3–2.0)	10.2 (10.0–10.5)	7.8 (4.1–11.3)	29.2 (28.5–29.3)	26.3 (21.1–29.2)	29.1 (29.1–29.2)	29.7 (29.2–30.8)	8.2 (8.2–8.2)	8.1 (7.6–8.3)
CP96201	2.1	– –	8.9 (8.8–8.9)	– –	2.1 (2.1–2.1)	– –	22.6 (22.6–22.6)	– –	8.1 (8.1–8.1)	– (.–.)
CP96202	3.6	– –	7.4 (7.4–7.9)	– –	0.6 (0.6–0.6)	– –	23.7 (23.7–23.7)	– –	6.9 (6.9–7.0)	– (.–.)

<sup>a</sup> Bottom depths corrected to Mean Lower Low Water. Each value is the mean of two replicate bottom-depth measurements from instantaneous profile records.

<sup>b</sup> Data from instantaneous, surface-to-bottom depth profiles (taken at 1-m intervals for bottom depths > 3m; 0.5-m intervals for depths < 3m). Number outside parentheses is the mean bottom value (average of two replicates); numbers inside parentheses are the range of values from surface to bottom.

<sup>c</sup> Data from continuous, time-series measurements taken at 30-min. intervals typically over a 24-hr period at a single near-bottom depth. Number outside parentheses is the median value from the time series; numbers inside parentheses are the range.

## APPENDIX A. (Continued).

Station	Bottom Depth (m)		Dissolved Oxygen (mg/L)		Salinity (‰)		Temperature (°C)		pH	
	Profile <sup>a</sup>	Time Series <sup>c</sup>	Profile <sup>b</sup>	Time Series <sup>c</sup>	Profile <sup>b</sup>	Time Series <sup>c</sup>	Profile <sup>b</sup>	Time Series <sup>c</sup>	Profile <sup>b</sup>	Time Series <sup>c</sup>
CP96203	0.8	–	9.3	–	4.0	–	22.6	–	8.0	–
		–	(9.0–9.4)	–	(4.0–4.0)	–	(22.6–22.6)	–	(7.9–8.0)	(–.)
CP96204	2.8	–	8.5	–	7.0	–	23.3	–	8.0	–
		–	(8.4–8.5)	–	(6.9–7.1)	–	(23.3–23.3)	–	(7.7–8.1)	(–.)
CP96205	3.5	–	8.1	–	0.6	–	29.3	–	7.4	–
		–	(7.5–8.2)	–	(0.6–0.6)	–	(28.5–29.4)	–	(7.1–7.6)	(–.)
CP96206	5.6	–	8.3	–	3.2	–	24.6	–	8.1	–
		–	(8.2–8.4)	–	(3.2–3.2)	–	(24.6–24.6)	–	(8.1–8.1)	(–.)
CP96207	6.2	–	7.8	–	1.0	–	27.2	–	7.1	–
		–	(7.4–7.8)	–	(1.0–1.0)	–	(27.2–27.3)	–	(7.0–7.2)	(–.)
CP96208	2.5	–	8.5	–	5.6	–	22.4	–	8.1	–
		–	(8.1–8.8)	–	(4.9–6.3)	–	(22.0–22.7)	–	(7.8–8.3)	(–.)
CP96209	2.3	–	8.0	–	2.2	–	22.2	–	7.6	–
		–	(7.9–8.1)	–	(2.2–2.2)	–	(22.2–22.2)	–	(7.5–7.6)	(–.)
CP96210	3.1	–	7.5	–	0.7	–	29.0	–	6.0	–
		–	(7.1–7.7)	–	(0.7–0.7)	–	(28.7–29.0)	–	(5.8–6.1)	(–.)
CP96211	2.7	–	6.9	–	0.1	–	28.7	–	7.4	–
		–	(6.8–7.2)	–	(0.1–0.1)	–	(28.7–28.7)	–	(7.3–7.8)	(–.)
CP96212	3.4	–	8.3	–	3.9	–	22.8	–	7.9	–
		–	(8.1–8.4)	–	(3.8–3.9)	–	(22.6–22.9)	–	(7.8–8.0)	(–.)
CP96213	4.3	–	7.3	–	11.1	–	23.5	–	7.8	–
		–	(6.3–8.3)	–	(6.0–16.1)	–	(22.8–24.1)	–	(7.7–7.9)	(–.)
CP96214	1.4	–	8.2	–	7.5	–	30.0	–	7.6	–
		–	(6.8–8.8)	–	(7.4–7.5)	–	(29.4–30.1)	–	(7.2–8.0)	(–.)

<sup>a</sup> Bottom depths corrected to Mean Lower Low Water. Each value is the mean of two replicate bottom-depth measurements from instantaneous profile records.

<sup>b</sup> Data from instantaneous, surface-to-bottom depth profiles (taken at 1-m intervals for bottom depths > 3m; 0.5-m intervals for depths < 3m). Number outside parentheses is the mean bottom value (average of two replicates); numbers inside parentheses are the range of values from surface to bottom.

<sup>c</sup> Data from continuous, time-series measurements taken at 30-min. intervals typically over a 24-hr period at a single near-bottom depth. Number outside parentheses is the median value from the time series; numbers inside parentheses are the range.

**APPENDIX A.** (Continued).

Station	Bottom Depth (m)		Dissolved Oxygen (mg/L)		Salinity (‰)		Temperature (°C)		pH	
	Profile <sup>a</sup>	Time Series <sup>c</sup>	Profile <sup>b</sup>	Time Series <sup>c</sup>	Profile <sup>b</sup>	Time Series <sup>c</sup>	Profile <sup>b</sup>	Time Series <sup>c</sup>	Profile <sup>b</sup>	Time Series <sup>c</sup>
CP96215	1.4	–	7.4	–	16.4	–	24.7	–	7.7	–
		–	(7.4–7.4)	–	(16.4–16.4)	–	(24.7–24.7)	–	(7.6–7.7)	(.–.)
CP96216	4.7	–	7.1	–	17.7	–	25.0	–	8.0	–
		–	(6.5–7.8)	–	(15.9–19.3)	–	(24.7–25.3)	–	(7.9–8.1)	(.–.)
CP96217	0.9	–	9.8	–	6.2	–	30.6	–	7.4	–
		–	(8.6–10.1)	–	(6.1–6.2)	–	(30.2–31.8)	–	(7.1–7.5)	(.–.)
CP96218	5.8	–	5.1	–	18.6	–	25.7	–	7.8	–
		–	(3.7–6.5)	–	(18.2–19.0)	–	(25.5–25.9)	–	(7.7–7.9)	(.–.)
CP96219	5.0	–	7.6	–	18.6	–	25.2	–	8.0	–
		–	(7.5–7.6)	–	(18.5–18.6)	–	(25.2–25.2)	–	(8.0–8.0)	(.–.)
CP96220	2.6	–	8.4	–	12.8	–	28.6	–	7.4	–
		–	(7.0–9.1)	–	(12.5–13.1)	–	(28.2–29.5)	–	(7.2–7.6)	(.–.)
CP96221	4.2	–	6.2	–	8.0	–	27.8	–	6.9	–
		–	(1.3–10.0)	–	(6.6–12.7)	–	(26.7–29.1)	–	(6.4–7.7)	(.–.)
CP96222	3.9	–	7.7	–	18.2	–	24.7	–	8.1	–
		–	(7.6–7.8)	–	(17.0–19.3)	–	(24.6–24.9)	–	(8.0–8.1)	(.–.)
CP96223	1.6	–	8.5	–	14.5	–	29.0	–	7.6	–
		–	(8.2–8.5)	–	(14.5–15.2)	–	(28.1–29.2)	–	(7.5–7.6)	(.–.)
CP96224	2.2	–	7.6	–	17.1	–	25.0	–	8.0	–
		–	(7.4–7.6)	–	(17.0–17.1)	–	(25.0–25.0)	–	(7.9–8.0)	(.–.)
CP96225	4.5	–	9.0	–	11.5	–	28.0	–	7.7	–
		–	(2.0–9.5)	–	(11.0–15.2)	–	(27.0–28.1)	–	(7.0–7.9)	(.–.)
CP96226	1.5	–	8.3	–	8.8	–	28.7	–	7.9	–
		–	(7.9–8.4)	–	(8.7–9.0)	–	(27.9–29.3)	–	(7.7–8.0)	(.–.)

<sup>a</sup> Bottom depths corrected to Mean Lower Low Water. Each value is the mean of two replicate bottom-depth measurements from instantaneous profile records.

<sup>b</sup> Data from instantaneous, surface-to-bottom depth profiles (taken at 1-m intervals for bottom depths > 3m; 0.5-m intervals for depths < 3m). Number outside parentheses is the mean bottom value (average of two replicates); numbers inside parentheses are the range of values from surface to bottom.

<sup>c</sup> Data from continuous, time-series measurements taken at 30-min. intervals typically over a 24-hr period at a single near-bottom depth. Number outside parentheses is the median value from the time series; numbers inside parentheses are the range.

## APPENDIX A. (Continued).

Station	Bottom Depth (m)		Dissolved Oxygen (mg/L)		Salinity (‰)		Temperature (°C)		pH	
	Profile <sup>a</sup>	Time Series <sup>c</sup>	Profile <sup>b</sup>	Time Series <sup>c</sup>	Profile <sup>b</sup>	Time Series <sup>c</sup>	Profile <sup>b</sup>	Time Series <sup>c</sup>	Profile <sup>b</sup>	Time Series <sup>c</sup>
CP96227	6.0	–	5.5	–	21.0	–	25.4	–	7.8	–
		–	(3.3–7.5)	–	(19.6–23.3)	–	(25.3–25.5)	–	(7.5–8.1)	(–.)
CP96228	0.9	–	7.6	–	13.8	–	28.3	–	7.7	–
		–	(7.6–7.6)	–	(13.8–13.8)	–	(28.3–28.3)	–	(7.7–7.7)	(–.)
CP96229	4.4	–	7.0	–	20.5	–	25.2	–	8.0	–
		–	(6.7–7.3)	–	(20.3–20.6)	–	(25.2–25.2)	–	(8.0–8.1)	(–.)
CP96230	6.1	–	8.3	–	17.0	–	25.1	–	7.9	–
		–	(5.5–8.4)	–	(16.7–19.0)	–	(25.1–25.6)	–	(7.7–8.0)	(–.)
CP96231	0.1	–	6.0	–	29.2	–	25.3	–	8.0	–
		–	(5.9–6.0)	–	(29.0–29.2)	–	(25.2–25.6)	–	(7.8–8.0)	(–.)
CP96232	3.3	–	5.1	–	15.1	–	28.6	–	7.6	–
		–	(1.5–6.8)	–	(14.7–15.7)	–	(28.1–28.7)	–	(7.1–7.8)	(–.)
CP96233	6.4	–	5.7	–	15.6	–	28.2	–	8.1	–
		–	(0.5–11.1)	–	(14.3–18.9)	–	(26.9–29.7)	–	(7.1–8.4)	(–.)
CP96234	0.7	–	7.2	–	19.4	–	24.3	–	8.1	–
		–	(7.1–7.3)	–	(18.7–20.6)	–	(24.2–24.4)	–	(8.1–8.1)	(–.)
CP96235	5.1	–	3.0	–	14.4	–	27.7	–	7.2	–
		–	(0.7–8.3)	–	(10.3–17.2)	–	(27.0–30.6)	–	(7.0–7.9)	(–.)
CP96236	1.2	–	6.7	–	12.5	–	28.5	–	8.2	–
		–	(5.9–6.9)	–	(12.2–12.7)	–	(28.2–28.8)	–	(8.1–8.3)	(–.)
CP96237	2.5	–	5.3	–	26.9	–	26.6	–	7.8	–
		–	(5.1–7.7)	–	(14.1–27.0)	–	(26.5–27.1)	–	(7.5–7.8)	(–.)
CP96238	0.9	–	7.0	–	30.9	–	30.0	–	7.8	–
		–	(6.9–7.0)	–	(30.9–31.0)	–	(30.0–30.0)	–	(7.8–7.8)	(–.)

<sup>a</sup> Bottom depths corrected to Mean Lower Low Water. Each value is the mean of two replicate bottom-depth measurements from instantaneous profile records.

<sup>b</sup> Data from instantaneous, surface-to-bottom depth profiles (taken at 1-m intervals for bottom depths > 3m; 0.5-m intervals for depths < 3m). Number outside parentheses is the mean bottom value (average of two replicates); numbers inside parentheses are the range of values from surface to bottom.

<sup>c</sup> Data from continuous, time-series measurements taken at 30-min. intervals typically over a 24-hr period at a single near-bottom depth. Number outside parentheses is the median value from the time series; numbers inside parentheses are the range.



## APPENDIX A. (Continued).

Station	Bottom Depth (m)		Dissolved Oxygen (mg/L)		Salinity (‰)		Temperature (°C)		pH	
	Profile <sup>a</sup>	Time Series <sup>c</sup>	Profile <sup>b</sup>	Time Series <sup>c</sup>	Profile <sup>b</sup>	Time Series <sup>c</sup>	Profile <sup>b</sup>	Time Series <sup>c</sup>	Profile <sup>b</sup>	Time Series <sup>c</sup>
CP96239	2.9	–	6.3	–	31.7	–	26.0	–	8.0	–
		–	(6.2–6.3)	–	(31.6–31.7)	–	(26.0–26.0)	–	(7.9–8.0)	(.–.)
CP96240	0.3	–	6.7	–	30.3	–	28.7	–	7.8	–
		–	(6.7–7.0)	–	(25.7–31.2)	–	(28.5–29.4)	–	(7.8–7.8)	(.–.)
CP96241	0.6	–	5.8	–	25.3	–	27.9	–	7.8	–
		–	(5.7–6.1)	–	(23.1–26.3)	–	(27.7–28.7)	–	(7.8–7.8)	(.–.)
CP96242	0.0	–	4.9	–	22.7	–	26.6	–	7.8	–
		–	(4.7–5.0)	–	(22.4–22.8)	–	(26.6–26.7)	–	(7.8–7.8)	(.–.)

<sup>a</sup> Bottom depths corrected to Mean Lower Low Water. Each value is the mean of two replicate bottom-depth measurements from instantaneous profile records.

<sup>b</sup> Data from instantaneous, surface-to-bottom depth profiles (taken at 1-m intervals for bottom depths > 3m; 0.5-m intervals for depths < 3m). Number outside parentheses is the mean bottom value (average of two replicates); numbers inside parentheses are the range of values from surface to bottom.

<sup>c</sup> Data from continuous, time-series measurements taken at 30-min. intervals typically over a 24-hr period at a single near-bottom depth. Number outside parentheses is the median value from the time series; numbers inside parentheses are the range.

**APPENDIX B.** Sediment total organic carbon (TOC), percent silt-clay, porewater unionized ammonia nitrogen (UAN), and porewater unionized hydrogen sulfide (H<sub>2</sub>S) by station for N.C. sites in summer 1994-96.

Station	TOC (%)	Silt-clay (%)	UAN (mg/L)	H <sub>2</sub> S (mg/L)
CP94028	–	–	–	–
CP94029	0.148	0.56	0.2600	–
CP94030	1.205	54.44	0.0680	–
CP94031	0.175	4.47	0.3020	–
CP94032	0.190	13.51	0.2850	–
CP94033	0.060	3.82	0.3610	–
CP94034	2.130	55.78	0.1400	–
CP94035	0.410	12.56	0.1030	–
CP94036	3.935	98.51	0.0160	–
CP94037	0.195	4.29	0.0040	–
CP94038	0.252	68.14	0.0460	–
CP94039	0.040	4.44	0.4040	–
CP94040	1.225	95.61	0.0120	–
CP94041	1.750	93.84	0.1320	–
CP94042	0.135	4.87	0.1740	–
CP94043	3.765	96.22	0.2180	–
CP94044	0.165	1.18	0.0050	–
CP94045	0.200	6.42	0.0000	–
CP94046	0.180	2.68	0.3070	–
CP94047	3.418	97.97	0.5620	–
CP94048	2.660	83.96	0.0690	–
CP94049	0.240	1.49	0.0740	–
CP94050	2.065	94.85	0.0280	–
CP94051	3.900	99.59	0.0060	–
CP94052	4.090	99.42	1.5390	–
CP94053	4.548	94.14	0.3250	–
CP94054	4.025	95.12	0.1800	–
CP94055	1.020	33.01	0.0980	–
CP94056	0.895	0.60	0.0330	–
CP94057	2.505	5.55	0.1080	–
CP94058	0.085	2.78	0.0450	–
CP94059	0.060	1.12	0.0180	–
CP94060	1.110	15.64	0.1070	–
CP94061	0.035	3.44	0.0650	–

## APPENDIX B. (Continued).

Station	TOC (%)	Silt-clay (%)	UAN (mg/L)	H <sub>2</sub> S (mg/L)
CP94062	2.223	97.69	0.1470	–
CP94063	0.035	4.16	0.5100	–
CP94064	0.620	24.89	0.0590	–
CP94065	0.205	1.12	0.4960	–
CP94066	3.080	98.92	0.1980	–
CP94067	1.985	18.29	0.0610	–
CP94068	0.125	4.01	0.0000	–
CP94069	2.280	89.42	0.0300	–
CP94070	0.055	3.17	0.0940	–
CP94071	0.585	42.03	0.0640	–
CP94072	2.260	79.60	0.0120	–
CP94084	0.760	25.76	0.0500	–
CP94CF_	–	39.72	0.0880	–
CP94ES4	–	8.03	0.1130	–
CP94MI_	–	2.49	0.4690	–
CP94RC_	0.120	2.37	–	–
CP94ZI_	–	64.64	1.2460	–
CP95101	1.519	75.11	0.0400	0.015
CP95102	1.155	37.34	0.0266	0.010
CP95103	6.830	99.63	0.0416	–
CP95104	0.295	2.41	0.1428	0.002
CP95105	0.241	2.12	0.3887	0.002
CP95106	0.374	8.56	0.2025	0.003
CP95107	2.473	97.24	0.0453	0.005
CP95108	0.347	0.73	0.3722	0.003
CP95109	11.783	98.92	0.0266	0.007
CP95110	0.514	13.07	0.2244	0.003
CP95111	0.874	12.38	0.0508	0.018
CP95112	0.313	0.33	–	–
CP95113	0.114	2.18	–	0.000
CP95114	2.409	43.29	0.1850	0.005
CP95115	0.221	2.33	0.2393	0.001
CP95116	3.949	94.77	0.1095	0.003
CP95117	2.426	98.44	0.1314	0.001
CP95118	0.241	4.32	0.1380	0.002

**APPENDIX B.** (Continued).

Station	TOC (%)	Silt-clay (%)	UAN (mg/L)	H <sub>2</sub> S (mg/L)
CP95119	1.639	67.50	0.0681	0.002
CP95120	4.521	76.95	0.2010	0.009
CP95121	3.635	97.69	0.1885	0.001
CP95122	3.632	96.48	0.3407	0.002
CP95123	0.404	2.52	–	–
CP95124	3.231	98.10	0.2090	0.002
CP95125	0.493	3.63	0.1314	0.002
CP95126	0.327	7.61	0.1679	0.003
CP95127	0.378	5.37	0.1124	0.001
CP95128	0.713	16.21	0.1610	0.002
CP95129	0.389	1.71	0.3378	0.001
CP95130	0.247	1.83	0.1131	0.001
CP95131	1.666	70.66	0.1062	0.001
CP95132	0.385	1.04	0.3077	0.000
CP95133	0.153	1.68	0.1505	0.000
CP95134	0.192	0.78	0.2604	0.002
CP95135	0.152	2.24	–	–
CP95136	3.036	88.62	0.0821	0.003
CP95137	–	–	–	–
CP95138	0.297	3.19	0.7024	0.004
CP95139	4.745	96.18	0.0950	0.003
CP95140	2.642	78.90	0.2228	0.001
CP95141	1.653	62.91	0.1040	0.003
CP95142	0.653	18.31	0.0632	0.003
CP95143	1.594	89.87	0.0246	0.002
CP95144	–	–	–	–
CP95145	1.403	49.96	0.0277	0.002
CP95146	0.112	2.14	0.1017	0.002
CP95147	0.634	33.22	0.0355	0.000
CP95148	0.169	5.14	0.3897	–
CP95CB_	0.589	23.52	0.1323	0.010
CP95CF_	2.086	37.62	0.0475	0.000
CP95MI_	0.170	2.17	0.4208	0.003
CP95PR1	0.293	4.73	–	–
CP95PR2	3.752	98.32	0.0915	0.000

## APPENDIX B. (Continued).

Station	TOC (%)	Silt-clay (%)	UAN (mg/L)	H <sub>2</sub> S (mg/L)
CP95PR3	4.388	99.29	0.0756	0.000
CP95PR4	3.519	99.43	0.0832	0.000
CP95PR5	3.737	98.94	–	–
CP95RC_	0.121	2.86	0.2234	0.005
CP95ZI_	0.478	6.90	0.3251	0.001
CP96201	1.770	63.75	0.0192	0.052
CP96202	5.150	98.47	0.0985	0.044
CP96203	0.260	0.86	0.0486	0.198
CP96204	0.500	6.26	0.1950	0.132
CP96205	3.160	95.37	0.0437	0.023
CP96206	0.220	3.21	0.0555	0.016
CP96207	3.690	98.43	0.0474	0.046
CP96208	0.420	5.62	0.1555	0.107
CP96209	1.170	9.39	0.0664	0.207
CP96210	7.520	92.49	0.0529	0.094
CP96211	2.960	95.17	0.0345	0.775
CP96212	1.330	7.86	0.0920	0.020
CP96213	1.010	25.29	0.0402	0.035
CP96214	5.930	62.78	0.0225	0.113
CP96215	0.250	5.80	0.2159	0.132
CP96216	0.130	2.97	0.0696	0.100
CP96217	0.890	12.01	0.0300	0.048
CP96218	2.530	96.58	0.1029	0.045
CP96219	1.570	65.62	0.0585	0.059
CP96220	2.430	87.25	0.0129	0.046
CP96221	4.260	98.35	0.1511	0.028
CP96222	0.130	1.96	0.0943	0.162
CP96223	0.180	0.50	0.0822	0.010
CP96224	0.110	0.96	–	–
CP96225	0.480	7.45	0.0874	0.016
CP96226	0.190	0.89	–	–
CP96227	0.070	1.87	0.0279	0.256
CP96228	0.190	1.60	0.2901	0.020
CP96229	0.080	2.17	–	–
CP96230	0.530	40.46	0.0529	0.069

**APPENDIX B.** (Continued).

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Station	TOC (%)	Silt-clay (%)	UAN (mg/L)	H <sub>2</sub> S (mg/L)
CP96231	0.430	3.89	0.0259	0.086
CP96232	5.730	90.25	0.0557	0.078
CP96233	4.040	95.47	0.0780	0.062
CP96234	0.020	1.80	0.0529	0.066
CP96235	5.450	0.71	0.1463	0.018
CP96236	0.030	91.69	–	–
CP96237	2.860	91.97	0.1435	0.216
CP96238	0.220	0.26	0.2851	0.061
CP96239	0.130	2.26	0.1266	0.050
CP96240	0.130	0.77	–	–
CP96241	0.470	22.95	0.1041	0.021
CP96242	0.480	7.34	0.3991	0.021

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**APPENDIX C.** Sediment concentrations of selected aliphatic and aromatic hydrocarbons (ng/g dry wt) at sites in the N.C. portion of the EMAP Carolinian Province during summer 1994-96. Analytes in excess of reported bioeffect levels (listed at end for reference) are bolded.

Station	Acenaphthene	Acenaphthylene	Anthracene	Benzo[a]-anthracene	Benzo[a]-pyrene	Chrysene	Dibenz[a,h]-anthracene	Fluoranthene	Fluorene	2-Methyl-naphthalene	Naphthalene	Phenanthrene	Pyrene	Total Alkanes	Total PAHs w/o Perylene
CP94028	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CP94029	0.05	0.05	0.18	0.13	0.11	0.35	0.03	0.46	0.13	0.38	0.91	0.36	0.35	120.0	7.50
CP94030	0.29	0.55	1.40	4.77	4.56	7.49	0.74	9.64	0.59	1.44	3.25	2.21	8.25	799.7	110.97
CP94031	0.08	0.12	0.35	0.99	1.17	1.78	0.23	2.82	0.18	0.54	0.99	0.88	2.26	467.4	32.15
CP94032	0.11	0.31	1.22	1.83	2.03	3.58	0.30	4.69	0.45	0.63	1.29	1.68	3.34	220.4	45.94
CP94033	0.03	0.03	0.21	0.18	0.27	0.28	0.03	0.49	0.19	0.37	0.78	0.33	0.30	101.3	8.27
CP94034	0.47	3.93	3.36	19.96	18.41	16.74	1.74	34.96	1.37	1.92	3.41	6.26	39.96	2131.5	390.01
CP94035	0.08	0.23	0.25	1.13	1.33	1.24	0.16	1.96	0.29	0.55	1.29	0.89	2.21	423.9	33.85
CP94036	1.04	4.56	3.83	22.48	27.26	23.38	2.38	42.22	2.65	3.13	7.16	11.20	49.09	3824.1	493.80
CP94037	0.08	0.08	0.10	0.26	0.25	0.28	0.03	0.51	0.19	0.51	0.61	0.63	0.58	128.7	9.42
CP94038	0.33	5.17	3.30	19.69	27.74	24.14	2.97	54.74	0.90	1.81	3.60	16.30	75.95	1240.4	494.07
CP94039	0.18	0.03	0.17	0.03	0.01	0.09	0.04	0.09	0.13	0.93	0.96	0.76	0.15	115.9	9.25
CP94040	0.53	2.56	2.55	9.61	12.75	12.75	1.69	23.46	1.37	3.35	7.35	10.17	29.20	1402.5	291.17
CP94041	0.37	2.47	2.01	11.80	16.09	16.62	2.25	24.59	0.96	2.40	3.75	8.76	30.29	1179.1	307.10
CP94042	0.03	0.06	0.12	0.04	0.08	0.21	0.05	0.31	0.31	0.70	1.84	0.65	0.23	116.2	9.70
CP94043	0.71	6.60	5.14	31.98	45.08	47.91	5.87	68.95	2.35	3.95	7.59	18.63	76.05	3273.8	800.33
CP94044	0.08	0.06	0.04	0.05	0.04	0.10	0.03	0.17	0.17	0.46	1.28	0.56	0.16	93.6	6.87
CP94045	0.21	0.10	0.27	0.24	0.42	0.58	0.17	0.91	0.48	1.98	4.99	1.37	0.87	372.9	40.05
CP94046	0.04	0.05	0.15	0.02	0.11	0.23	0.02	0.25	0.13	0.73	1.46	0.59	0.28	151.6	7.58
CP94047	1.04	2.92	2.65	20.40	23.32	23.77	2.41	45.25	1.85	3.51	6.10	10.94	42.55	3922.3	407.83

<sup>a</sup> In excess of ER-L.

<sup>b</sup> In excess of ER-M.

<sup>c</sup> In excess of potential sediment toxicity level for total alkanes.

## APPENDIX C. (Continued).

Station	Acenaphthene	Acenaphthylene	Anthracene	Benzo[a]-anthracene	Benzo[a]-pyrene	Chrysene	Dibenz[a,h]-anthracene	Fluoranthene	Fluorene	2-Methyl-naphthalene	Naphthalene	Phenanthrene	Pyrene	Total Alkanes	Total PAHs w/o Perylene
CP94048	0.42	2.61	2.22	8.28	10.46	7.65	1.79	21.34	2.00	3.41	6.25	6.90	22.77	3129.8	241.89
CP94049	0.02	0.03	0.18	0.07	0.07	0.08	0.03	0.22	0.21	0.63	1.91	0.94	0.24	151.5	10.86
CP94050	0.51	2.21	1.88	9.38	13.25	14.22	1.95	22.64	1.65	4.13	9.04	10.49	27.99	2455.2	298.74
CP94051	1.98	6.76	8.12	16.16	23.93	26.54	3.28	57.25	12.57	19.80	43.51	23.45	70.13	5646.6	826.91
CP94052	1.85	6.49	19.33	32.13	45.24	42.14	8.88	63.26	4.65	7.13	11.73	25.31	69.76	6485.9	842.65
CP94053	4.47	23.67	42.77	104.45	146.01	151.58	24.13	200.96	10.06	8.88	17.09	48.93	205.46	<b>16174.8<sup>c</sup></b>	2360.19
CP94054	1.70	4.38	16.24	35.70	37.78	33.53	6.97	67.73	3.60	5.39	9.96	23.97	64.69	<b>8041.6<sup>c</sup></b>	695.84
CP94055	0.48	3.61	6.60	20.00	21.64	19.50	3.13	36.49	1.63	1.26	3.05	12.89	41.57	2196.3	364.18
CP94056	0.18	0.07	2.45	0.50	0.45	0.63	0.04	1.81	0.39	0.45	1.13	1.15	1.56	179.9	19.27
CP94057	0.22	0.13	2.34	0.71	0.80	1.02	0.13	2.16	0.40	0.59	1.18	1.30	1.94	516.6	26.49
CP94058	0.15	0.12	2.05	0.54	0.49	0.79	0.11	1.54	0.34	0.32	0.83	1.00	1.13	166.5	21.32
CP94059	0.17	0.04	2.85	0.46	0.38	0.62	0.05	1.97	0.36	0.36	0.70	1.38	1.47	100.9	18.73
CP94060	0.44	1.25	4.00	5.38	6.98	8.09	1.06	16.05	1.24	1.16	2.70	8.24	18.05	3019.8	168.83
CP94061	0.22	0.14	2.08	1.21	1.13	1.03	0.27	2.68	0.26	0.31	0.77	1.31	2.31	207.2	26.46
CP94062	0.81	7.30	8.81	35.26	42.70	34.43	7.50	60.44	2.37	3.07	8.36	18.15	62.57	3029.7	716.22
CP94063	0.05	0.04	0.08	0.25	0.37	0.35	0.03	0.58	0.07	0.19	0.60	0.28	0.56	110.5	10.44
CP94064	0.16	0.60	0.52	2.58	3.29	3.70	0.66	5.09	0.57	0.96	2.16	2.16	5.06	2089.2	78.36
CP94065	0.21	6.70	5.98	87.21	83.62	77.60	12.57	80.87	1.19	1.31	7.26	6.79	80.64	811.1	882.95
CP94066	4.09	7.41	41.93	<b>426.95<sup>b</sup></b>	243.91	372.32	39.85	<b>624.94<sup>b</sup></b>	8.32	3.99	7.61	58.94	506.51	5948.5	<b>4549.38<sup>b</sup></b>
CP94067	1.74	22.56	16.89	176.87	205.85	173.21	28.35	263.17	5.55	2.68	9.69	50.82	310.56	3983.8	2755.91
CP94068	0.03	0.04	0.16	0.11	0.18	0.19	0.02	0.32	0.12	0.19	0.75	0.34	0.29	341.0	6.98
CP94069	0.36	2.77	2.21	12.39	17.02	17.04	3.31	23.73	1.62	2.22	4.77	8.90	26.07	5084.9	325.51

<sup>a</sup> In excess of ER-L.<sup>b</sup> In excess of ER-M.<sup>c</sup> In excess of potential sediment toxicity level for total alkanes.



## APPENDIX C. (Continued).

Station	Acenaphthene	Acenaphthylene	Anthracene	Benzo[a]-anthracene	Benzo[a]-pyrene	Chrysene	Dibenz[a,h]-anthracene	Fluoranthene	Fluorene	2-Methyl-naphthalene	Naphthalene	Phenanthrene	Pyrene	Total Alkanes	Total PAHs w/o Perylene
CP94070	0.06	0.06	0.08	0.05	0.02	0.07	0.07	0.19	0.09	0.34	0.64	0.26	0.15	205.7	3.36
CP94071	0.14	0.13	0.50	1.05	1.12	1.27	0.22	3.12	0.72	0.73	1.47	1.69	2.19	1484.6	42.23
CP94072	0.45	4.25	6.27	41.54	47.49	44.14	5.84	79.70	2.78	2.14	5.61	20.82	78.36	6577.8	706.25
CP94084	0.18	0.35	0.81	3.53	3.11	4.27	0.70	6.86	0.39	0.47	1.28	2.72	7.94	2836.3	91.18
CP94CF_	0.28	0.52	1.15	2.62	2.96	3.78	0.54	7.20	0.73	1.01	3.18	1.91	7.73	<b>107335.9<sup>c</sup></b>	297.04
CP94ES4	0.25	0.25	0.47	0.45	0.36	0.54	0.17	1.57	0.59	1.26	2.32	1.59	1.22	1716.5	16.01
CP94MI_	0.06	0.17	0.54	0.31	0.29	0.69	0.11	1.02	0.14	0.30	0.91	0.55	0.92	123.5	10.34
CP94RC_	0.11	0.08	0.08	0.27	0.14	0.15	0.23	1.07	0.40	0.95	1.16	0.53	0.76	69.0	8.68
CP94ZI_	0.54	1.42	2.85	8.34	12.00	15.28	2.25	21.50	1.72	4.52	8.04	8.28	17.65	2777.7	300.45
CP95101	0.20	0.40	1.10	2.10	2.90	3.10	0.70	8.60	4.60	1.30	2.70	3.20	6.30	<b>9732.0<sup>c</sup></b>	101.00
CP95102	0.30	0.20	0.70	1.30	1.70	2.10	0.30	6.30	1.20	0.70	1.80	1.70	5.80	3035.0	120.80
CP95103	3.70	22.20	12.50	67.40	82.00	86.70	12.00	142.30	11.10	10.30	38.60	32.20	191.20	<b>24622.0<sup>c</sup></b>	<b>5933.00<sup>b</sup></b>
CP95104	0.10	0.20	0.10	0.30	0.40	0.40	0.10	0.60	0.10	0.40	1.30	0.30	0.80	659.0	22.90
CP95105	0.10	0.10	0.30	0.70	0.80	1.10	0.30	1.80	0.10	0.20	1.50	1.00	1.50	449.0	31.70
CP95106	0.30	0.20	0.30	0.50	0.70	0.70	0.20	2.10	0.50	0.40	1.70	0.80	1.70	924.0	43.30
CP95107	0.80	6.70	3.70	18.60	28.00	28.20	5.70	45.90	1.80	3.10	8.10	11.70	66.30	6732.0	533.00
CP95108	0.10	0.20	0.20	0.60	0.80	0.90	0.20	1.80	0.10	0.30	1.60	0.70	2.40	527.0	33.40
CP95109	2.50	25.40	16.30	76.50	127.70	112.60	17.80	266.90	8.20	4.40	13.90	46.90	325.40	<b>82621.0<sup>c</sup></b>	2173.70
CP95110	0.20	0.40	0.20	0.40	0.70	0.50	0.10	1.30	0.40	0.90	2.30	0.40	1.50	906.0	29.70
CP95111	0.30	2.50	1.90	19.70	22.30	18.90	2.90	39.90	0.50	1.30	3.70	4.60	39.10	3302.0	321.30
CP95112	N.D.	0.10	0.40	0.20	0.20	0.30	N.D.	0.80	0.30	0.20	1.10	0.70	1.50	412.0	18.10
CP95113	0.20	0.10	0.10	0.10	0.30	0.30	0.10	0.50	0.20	0.10	1.40	0.30	0.60	235.0	20.80

<sup>a</sup> In excess of ER-L.<sup>b</sup> In excess of ER-M.<sup>c</sup> In excess of potential sediment toxicity level for total alkanes.

## APPENDIX C. (Continued).

Station	Acenaphthene	Acenaphthylene	Anthracene	Benzo[a]-anthracene	Benzo[a]-pyrene	Chrysene	Dibenz[a,h]-anthracene	Fluoranthene	Fluorene	2-Methyl-naphthalene	Naphthalene	Phenanthrene	Pyrene	Total Alkanes	Total PAHs w/o Perylene
CP95114	0.60	2.50	2.80	6.50	11.00	9.70	1.90	16.40	1.50	1.50	7.60	5.50	17.70	5009.0	264.50
CP95115	0.50	0.80	0.30	1.30	1.80	1.90	0.30	2.70	0.50	0.90	2.90	1.00	3.10	178.0	48.50
CP95116	2.70	7.30	7.10	41.50	50.60	47.50	7.60	95.10	3.70	6.30	14.50	33.30	88.90	<b>10048.0<sup>c</sup></b>	913.60
CP95117	1.20	5.40	2.30	12.70	19.40	17.60	2.80	29.00	1.80	3.80	8.10	10.70	36.30	<b>9959.0<sup>c</sup></b>	376.70
CP95118	0.50	0.40	0.50	0.40	0.20	0.40	0.10	0.80	0.50	0.30	1.60	0.70	0.80	1225.0	13.80
CP95119	0.60	3.00	1.60	12.70	16.00	13.40	2.20	22.60	1.20	2.90	5.40	6.10	27.40	3089.0	276.90
CP95120	0.60	6.30	5.00	14.90	27.50	22.60	4.60	40.30	3.30	3.00	8.20	11.40	46.40	<b>10661.0<sup>c</sup></b>	565.60
CP95121	1.60	8.50	7.20	28.40	44.20	43.90	7.50	61.00	5.20	8.10	14.70	18.80	76.00	<b>9774.0<sup>c</sup></b>	817.60
CP95122	0.60	5.90	4.30	21.00	33.20	30.80	5.90	49.80	2.70	3.30	8.80	12.70	56.50	6793.0	609.50
CP95123	0.10	0.10	0.30	1.30	1.70	1.50	0.30	2.40	0.20	0.30	1.90	0.80	2.40	254.0	35.10
CP95124	0.70	5.80	3.70	20.60	33.40	30.70	5.40	48.30	2.50	3.30	10.90	13.80	60.70	5717.0	603.70
CP95125	0.10	0.10	0.10	0.20	0.30	0.30	0.10	0.50	0.20	0.40	2.20	0.40	0.60	298.0	21.70
CP95126	0.10	N.D.	N.D.	0.10	0.10	0.10	N.D.	0.30	0.20	0.50	2.10	0.30	0.50	685.0	21.80
CP95127	0.10	N.D.	0.10	0.10	0.10	0.20	N.D.	0.20	0.10	0.40	2.50	0.40	0.30	164.0	18.00
CP95128	0.10	0.30	0.30	1.50	1.90	2.00	0.30	3.20	0.30	0.60	2.10	0.90	3.40	919.0	51.40
CP95129	0.20	0.10	0.20	0.10	0.20	0.30	N.D.	0.60	0.30	0.50	3.50	0.50	0.80	583.0	33.60
CP95130	0.60	0.60	0.50	1.00	1.20	1.80	0.20	2.40	1.00	2.70	12.90	2.00	3.50	1209.0	111.00
CP95131	0.30	2.30	1.20	7.50	8.60	9.70	1.50	15.90	1.20	1.70	5.50	5.50	19.20	2181.0	214.20
CP95132	0.10	0.10	0.10	0.10	0.10	0.20	0.10	0.40	0.20	0.70	3.20	0.50	0.50	217.0	26.80
CP95133	0.30	0.10	0.10	0.10	0.10	0.20	N.D.	0.40	0.20	0.80	3.60	0.60	0.40	116.0	25.00
CP95134	0.20	0.20	0.20	0.10	0.20	0.30	N.D.	0.40	0.40	1.00	5.10	0.80	0.90	442.0	50.00
CP95135	0.20	0.20	0.10	0.20	0.10	0.20	0.10	0.40	0.50	1.20	4.80	0.80	0.50	330.0	43.30

<sup>a</sup> In excess of ER-L.<sup>b</sup> In excess of ER-M.<sup>c</sup> In excess of potential sediment toxicity level for total alkanes.

## APPENDIX C. (Continued).

Station	Acenaphthene	Acenaphthylene	Anthracene	Benzo[a]-anthracene	Benzo[a]-pyrene	Chrysene	Dibenz[a,h]-anthracene	Fluoranthene	Fluorene	2-Methyl-naphthalene	Naphthalene	Phenanthrene	Pyrene	Total Alkanes	Total PAHs w/o Perylene
CP95136	0.90	11.70	6.10	51.20	53.80	57.90	8.70	92.80	3.80	4.40	13.40	19.80	106.90	5792.0	1053.10
CP95137	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CP95138	0.20	0.10	0.30	0.20	0.20	0.40	N.D.	2.10	0.40	0.70	2.10	4.40	1.70	824.0	65.40
CP95139	2.20	7.40	5.60	28.50	30.40	35.70	7.10	62.90	4.70	4.70	13.30	16.70	71.60	<b>12260.0<sup>c</sup></b>	875.90
CP95140	1.40	0.70	4.10	15.10	17.00	23.40	2.40	34.30	1.80	0.20	23.30	5.80	34.80	3640.0	347.30
CP95141	0.30	1.00	1.50	2.50	4.30	4.10	0.60	9.60	1.10	1.40	4.00	3.10	8.80	1412.0	153.30
CP95142	1.20	3.70	23.70	33.40	33.50	46.40	4.90	92.70	4.60	1.50	4.10	25.50	63.60	1138.0	645.30
CP95143	0.40	2.00	3.10	8.30	11.40	11.80	1.80	22.50	1.50	1.70	4.80	6.10	18.20	1538.0	230.50
CP95144	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CP95145	0.30	0.90	1.40	1.60	2.80	2.90	0.50	6.30	1.00	1.10	2.80	2.00	6.00	908.0	83.40
CP95146	0.20	0.10	0.60	0.40	0.30	0.40	0.30	1.40	0.20	0.60	2.20	0.60	4.50	495.0	35.40
CP95147	0.90	0.60	0.60	0.60	0.70	0.80	0.10	2.20	0.80	1.50	3.80	1.20	2.20	2659.0	57.00
CP95148	0.50	0.40	0.20	N.D.	0.20	0.20	0.10	0.70	0.30	0.50	3.30	0.80	0.50	539.0	25.60
CP95CB_	0.60	0.50	1.30	1.10	1.40	1.80	0.30	4.60	2.60	2.60	3.10	2.30	3.40	<b>14440.0<sup>c</sup></b>	80.10
CP95CF_	2.30	8.50	7.40	64.90	85.50	61.10	11.60	63.40	3.80	5.20	9.60	9.00	95.10	1871.0	1167.20
CP95MI_	0.40	0.40	0.40	0.10	0.10	0.20	0.10	0.60	0.30	0.40	1.60	0.30	0.60	142.0	7.70
CP95PR1	0.10	3.50	2.10	46.30	60.90	46.70	10.40	67.70	0.50	0.60	2.40	3.40	63.20	370.0	664.90
CP95PR2	1.00	4.90	3.90	14.80	23.40	19.80	5.00	35.00	2.50	4.00	7.80	10.10	41.10	5194.0	420.40
CP95PR3	2.10	15.90	13.70	47.00	71.30	73.90	15.80	117.80	7.80	8.00	15.60	33.90	159.10	<b>13892.0<sup>c</sup></b>	1446.10
CP95PR4	1.50	13.70	8.30	32.70	48.90	43.00	11.00	73.20	4.20	5.20	10.80	23.10	88.50	<b>8120.0<sup>c</sup></b>	1023.20
CP95PR5	1.70	12.20	11.80	52.50	74.20	66.40	16.30	108.80	5.30	9.80	13.40	27.50	120.20	<b>10330.0<sup>c</sup></b>	1296.40
CP95RC_	0.20	0.20	0.30	0.50	0.40	0.50	0.10	1.50	0.30	0.30	2.10	0.60	0.90	219.0	10.30

<sup>a</sup> In excess of ER-L.

<sup>b</sup> In excess of ER-M.

<sup>c</sup> In excess of potential sediment toxicity level for total alkanes.

## APPENDIX C. (Continued).

Station	Acenaphthene	Acenaphthylene	Anthracene	Benzo[a]-anthracene	Benzo[a]-pyrene	Chrysene	Dibenz[a,h]-anthracene	Fluoranthene	Fluorene	2-Methyl-naphthalene	Naphthalene	Phenanthrene	Pyrene	Total Alkanes	Total PAHs w/o Perylene
CP95ZI_	0.20	0.60	0.40	0.80	1.00	1.00	0.20	1.70	0.50	1.50	2.30	1.10	1.80	509.0	23.50
CP96201	0.40	0.40	1.90	2.20	3.20	3.80	0.60	7.30	2.30	2.90	14.20	3.30	5.80	5421.2	134.50
CP96202	2.40	17.70	27.10	61.80	102.30	80.70	18.30	125.70	6.70	5.30	10.00	35.40	134.70	<b>19404.5<sup>c</sup></b>	1739.80
CP96203	0.20	0.10	0.10	0.10	0.10	0.10	N.D.	0.30	0.20	0.50	1.90	0.50	0.20	546.6	7.00
CP96204	0.10	0.20	0.40	0.60	0.80	0.80	0.20	1.60	0.40	0.40	1.30	0.70	1.40	974.1	24.10
CP96205	0.40	5.70	3.80	21.50	37.10	29.50	4.00	46.00	1.50	2.60	10.10	8.90	53.00	6423.8	481.00
CP96206	0.10	0.20	0.20	0.50	0.80	0.70	0.20	1.00	0.20	0.50	1.40	0.50	1.10	486.7	27.00
CP96207	1.20	11.30	5.90	30.00	48.40	44.00	5.20	67.00	3.60	5.90	24.30	16.50	71.30	<b>11079.3<sup>c</sup></b>	761.10
CP96208	0.20	0.50	0.80	1.60	2.20	2.00	0.40	4.00	0.50	0.50	1.40	1.60	3.70	769.3	42.20
CP96209	0.10	2.10	1.20	7.30	10.90	7.40	1.50	6.90	0.60	0.70	1.90	1.50	7.90	3295.9	145.10
CP96210	1.60	9.40	7.70	27.70	43.50	39.60	4.40	65.80	4.60	3.30	12.80	13.90	83.40	<b>30779.0<sup>c</sup></b>	719.00
CP96211	1.50	5.90	7.90	34.30	41.10	36.90	3.90	54.60	3.90	6.00	13.40	19.60	75.20	<b>8862.6<sup>c</sup></b>	727.90
CP96212	0.50	0.30	0.80	0.90	1.10	1.80	0.30	4.80	0.90	1.10	2.80	1.80	19.40	4661.5	90.70
CP96213	0.40	4.90	6.50	25.10	34.90	26.70	5.40	46.20	2.20	1.70	4.10	15.90	46.00	1975.9	468.60
CP96214	<b>46.80<sup>b</sup></b>	<b>48.70<sup>b</sup></b>	<b>133.50<sup>b</sup></b>	<b>423.50<sup>b</sup></b>	<b>501.20<sup>b</sup></b>	<b>443.40<sup>b</sup></b>	52.30	<b>907.70<sup>b</sup></b>	<b>63.90<sup>b</sup></b>	31.10	<b>213.70<sup>b</sup></b>	<b>559.20<sup>b</sup></b>	<b>952.90<sup>b</sup></b>	<b>11733.8<sup>c</sup></b>	<b>7745.60<sup>b</sup></b>
CP96215	0.10	0.30	0.30	0.70	0.70	0.80	0.10	1.40	0.20	0.40	1.20	0.60	1.50	434.4	22.10
CP96216	0.20	0.30	0.40	1.20	1.30	1.30	0.20	2.10	0.30	0.40	1.20	1.10	2.30	239.0	27.40
CP96217	0.60	3.10	2.70	9.90	13.60	13.10	1.40	25.70	1.90	1.30	6.50	8.50	24.70	1910.5	272.50
CP96218	0.40	6.00	4.10	19.20	33.50	22.50	4.50	35.90	2.30	2.60	5.90	10.50	46.30	4148.4	420.70
CP96219	0.30	3.80	3.20	12.00	18.50	13.40	2.70	22.30	1.60	2.20	4.30	7.50	27.30	2062.3	270.30
CP96220	0.30	1.60	1.30	3.50	6.90	6.10	0.90	9.30	0.90	1.80	8.00	3.50	12.00	2789.9	136.00
CP96221	1.30	5.20	4.50	14.20	24.00	18.00	3.10	30.40	2.70	3.50	10.00	8.80	35.50	6143.8	424.80

<sup>a</sup> In excess of ER-L.<sup>b</sup> In excess of ER-M.<sup>c</sup> In excess of potential sediment toxicity level for total alkanes.

## APPENDIX C. (Continued).

Station	Acenaphthene	Acenaphthylene	Anthracene	Benzo[a]-anthracene	Benzo[a]-pyrene	Chrysene	Dibenz[a,h]-anthracene	Fluoranthene	Fluorene	2-Methyl-naphthalene	Naphthalene	Phenanthrene	Pyrene	Total Alkanes	Total PAHs w/o Perylene
CP96222	0.10	0.10	0.10	0.30	0.40	0.40	0.10	0.50	0.20	0.30	0.80	0.50	0.60	176.0	13.10
CP96223	0.30	0.20	0.20	0.20	0.20	0.30	0.20	0.30	0.20	0.50	1.70	0.40	0.20	158.1	6.30
CP96224	N.D.	0.10	N.D.	N.D.	N.D.	0.10	N.D.	0.10	0.20	0.30	0.60	0.20	0.10	51.3	4.00
CP96225	0.40	0.50	0.40	1.80	2.60	2.30	0.40	3.20	0.40	1.50	3.40	1.40	3.40	722.2	72.80
CP96226	0.20	0.50	2.00	4.10	5.00	3.70	0.50	9.40	1.00	0.60	2.00	5.70	7.60	218.5	74.40
CP96227	0.40	0.20	0.20	0.30	0.30	0.30	0.10	0.50	0.20	0.40	3.50	0.30	0.60	93.1	8.70
CP96228	0.40	0.60	0.40	0.10	0.20	0.30	0.20	0.30	0.50	0.80	2.20	0.60	0.50	255.2	9.60
CP96229	0.30	0.10	0.30	0.20	0.20	0.30	0.10	0.40	0.30	0.30	2.90	0.50	0.50	128.6	8.30
CP96230	0.20	1.20	1.10	3.60	5.50	4.80	0.50	6.90	0.60	1.50	8.30	3.00	7.20	1196.7	113.10
CP96231	0.50	0.50	2.00	3.50	2.00	4.20	0.20	8.30	0.40	0.30	3.30	1.80	5.50	136.1	49.00
CP96232	0.90	2.20	2.50	7.10	11.50	9.00	1.70	16.70	1.00	2.50	14.00	4.70	19.60	5392.1	309.80
CP96233	2.10	5.60	3.20	15.70	25.30	21.20	3.20	29.40	2.60	4.20	12.60	9.80	33.30	6470.6	456.50
CP96234	0.10	N.D.	0.20	0.10	N.D.	0.10	N.D.	0.10	0.10	0.20	1.80	0.20	0.10	25.2	3.70
CP96235	1.40	8.40	8.80	22.60	38.20	33.20	5.00	48.40	6.00	8.10	20.30	15.40	53.90	<b>13356.4<sup>c</sup></b>	932.80
CP96236	0.50	0.20	0.20	0.20	0.20	0.10	0.20	0.40	0.30	0.50	1.70	0.60	0.30	318.0	7.40
CP96237	1.20	1.20	2.40	7.50	9.30	8.90	1.20	17.00	2.50	2.50	11.90	5.70	13.40	2848.4	206.50
CP96238	0.70	0.20	0.40	0.30	0.40	0.40	0.10	0.60	0.40	0.80	2.30	0.40	0.30	148.1	9.80
CP96239	0.10	0.30	0.70	0.90	0.90	1.00	0.10	1.50	0.30	0.50	3.60	1.00	1.10	121.9	22.90

## Bioeffect Values:

ER-L <sup>d</sup>	16	44	85.3	261	430	384	63.4	600	19	70	160	240	665	–	4022
ER-M <sup>d</sup>	500	640	1100	1600	1600	2800	260	5100	540	670	2100	1500	2600	–	44792

Total alkane potential toxicity level<sup>e</sup>

[7000]

<sup>a</sup> In excess of ER-L.<sup>b</sup> In excess of ER-M.<sup>c</sup> In excess of potential sediment toxicity level for total alkanes.<sup>d</sup> From Long et al. (1995).<sup>e</sup> From Macauley et al. (1994). Not used in estimates of percent contaminated vs. uncontaminated area.

**APPENDIX D.** Sediment concentrations (ng/g dry wgt.) of total PCBs and selected pesticides at sites in the N.C. portion of the EMAP Carolinian Province during summer 1994-96. Samples with analytes in excess of reported bioeffect levels (listed at the end for reference) are bolded. N.D. = Not detected.

Station	Total PCB	Dieldrin	Endrin	Lindane	Total Chlordane	Total DDT	4,4'-DDD	4,4'-DDE	4,4'-DDT
CP94028	–	–	–	–	–	–	–	–	–
CP94029	2.708	N.D.	N.D.	<0.01	N.D.	0.015	N.D.	<0.01	N.D.
CP94030	4.509	N.D.	N.D.	0.024	<0.01	0.257	0.047	0.179	N.D.
CP94031	2.780	N.D.	N.D.	0.016	0.014	0.083	N.D.	0.068	<0.01
CP94032	3.093	N.D.	N.D.	0.122	0.029	0.100	N.D.	0.019	0.034
CP94033	2.694	N.D.	N.D.	N.D.	<0.01	<0.01	N.D.	<0.01	N.D.
CP94034	6.714	0.062	N.D.	0.035	0.460	0.935	0.286	0.528	0.017
CP94035	2.842	0.014	N.D.	0.022	<0.01	0.090	0.036	0.043	N.D.
CP94036	11.172	0.042	N.D.	N.D.	0.754	<b>1.626<sup>a</sup></b>	0.462	0.900	0.042
CP94037	2.881	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
CP94038	4.493	N.D.	N.D.	N.D.	N.D.	<b>2.239<sup>a</sup></b>	0.408	0.380	<b>1.367<sup>a</sup></b>
CP94039	2.759	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
CP94040	4.710	N.D.	N.D.	N.D.	N.D.	0.576	0.204	0.358	N.D.
CP94041	5.220	0.018	N.D.	N.D.	N.D.	0.270	0.112	0.148	N.D.
CP94042	2.531	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
CP94043	5.820	N.D.	N.D.	N.D.	N.D.	<b>1.584<sup>a</sup></b>	0.492	0.855	N.D.
CP94044	2.643	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
CP94045	2.598	N.D.	N.D.	N.D.	<0.01	0.032	0.015	0.013	N.D.
CP94046	2.617	N.D.	N.D.	N.D.	N.D.	<0.01	N.D.	<0.01	N.D.
CP94047	12.865	N.D.	N.D.	N.D.	0.088	<b>6.123<sup>a</sup></b>	1.095	1.361	<b>3.601<sup>a</sup></b>
CP94048	4.783	0.020	N.D.	N.D.	0.086	0.844	0.284	0.541	N.D.
CP94049	2.785	<0.01	N.D.	N.D.	N.D.	0.011	N.D.	0.011	N.D.
CP94050	4.722	0.023	N.D.	N.D.	0.016	0.868	0.364	0.424	N.D.
CP94051	<b>47.862<sup>a</sup></b>	0.107	N.D.	N.D.	0.259	<b>2.851<sup>a</sup></b>	0.842	1.881	N.D.
CP94052	<b>29.240<sup>a</sup></b>	N.D.	N.D.	<b>0.406<sup>a</sup></b>	0.157	<b>6.004<sup>a</sup></b>	<b>1.512<sup>a</sup></b>	<b>3.547<sup>a</sup></b>	0.619
CP94053	<b>60.615<sup>a</sup></b>	<b>1.443<sup>a</sup></b>	N.D.	<b>0.792<sup>a</sup></b>	1.357	<b>18.812<sup>a</sup></b>	<b>5.039<sup>a</sup></b>	<b>10.145<sup>a</sup></b>	<b>2.216<sup>a</sup></b>
CP94054	20.677	0.274	N.D.	N.D.	0.065	<b>4.550<sup>a</sup></b>	1.182	<b>3.044<sup>a</sup></b>	0.208
CP94055	8.596	0.099	N.D.	0.122	0.020	0.423	0.129	0.259	N.D.
CP94056	3.291	N.D.	N.D.	N.D.	N.D.	0.019	N.D.	0.019	N.D.
CP94057	2.921	N.D.	N.D.	0.048	N.D.	0.055	0.023	0.032	N.D.
CP94058	3.197	N.D.	N.D.	N.D.	N.D.	0.018	N.D.	0.018	N.D.
CP94059	3.131	N.D.	N.D.	0.037	N.D.	N.D.	N.D.	N.D.	N.D.
CP94060	5.074	N.D.	N.D.	0.082	0.021	0.455	0.153	0.199	0.102
CP94061	2.432	N.D.	N.D.	N.D.	N.D.	0.074	0.033	0.041	N.D.
CP94062	17.199	0.287	N.D.	0.041	0.469	<b>4.560<sup>a</sup></b>	<b>1.660<sup>a</sup></b>	<b>2.232<sup>a</sup></b>	0.250
CP94063	2.655	N.D.	N.D.	N.D.	0.020	0.057	0.025	0.032	N.D.

<sup>a</sup> In excess of ER-L or TEL.

<sup>b</sup> In excess of ER-M or PEL.

## APPENDIX D. (Continued).

Station	Total PCB	Dieldrin	Endrin	Lindane	Total Chlordane	Total DDT	4,4'-DDD	4,4'-DDE	4,4'-DDT
CP94064	3.967	0.051	N.D.	0.055	0.073	0.708	0.275	0.323	0.092
CP94065	5.653	0.067	N.D.	N.D.	N.D.	0.561	0.226	0.270	0.025
CP94066	<b>190.810<sup>b</sup></b>	0.486	N.D.	0.113	0.443	<b>6.941<sup>a</sup></b>	<b>2.903<sup>a</sup></b>	<b>3.195<sup>a</sup></b>	0.304
CP94067	<b>56.017<sup>a</sup></b>	0.194	<b>0.298<sup>a</sup></b>	0.058	0.106	<b>4.054<sup>a</sup></b>	<b>1.245<sup>a</sup></b>	2.194	0.349
CP94068	2.962	N.D.	N.D.	0.033	0.017	0.030	N.D.	0.025	N.D.
CP94069	12.963	0.161	N.D.	0.158	0.248	<b>3.157<sup>a</sup></b>	<b>1.328<sup>a</sup></b>	1.460	0.248
CP94070	2.553	N.D.	N.D.	N.D.	N.D.	<0.01	N.D.	<0.01	N.D.
CP94071	2.798	N.D.	N.D.	N.D.	N.D.	0.484	0.279	0.171	N.D.
CP94072	5.378	N.D.	N.D.	0.039	0.064	<b>2.345<sup>a</sup></b>	1.220	0.951	N.D.
CP94084	3.517	0.038	N.D.	N.D.	0.029	0.242	0.086	0.104	0.040
CP94CF_	5.193	0.028	N.D.	N.D.	0.114	0.362	0.141	0.091	0.040
CP94ES4	3.924	N.D.	N.D.	N.D.	N.D.	0.112	0.067	0.045	N.D.
CP94MI_	2.760	N.D.	N.D.	N.D.	<0.01	0.017	N.D.	<0.01	N.D.
CP94RC_	3.198	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
CP94ZI_	4.818	<0.01	N.D.	N.D.	0.200	0.312	0.088	0.209	N.D.
CP95101	3.440	N.D.	N.D.	N.D.	0.140	0.600	0.180	N.D.	0.420
CP95102	2.830	N.D.	N.D.	N.D.	0.080	0.270	0.060	N.D.	0.210
CP95103	<b>32.300<sup>a</sup></b>	<b>1.350<sup>a</sup></b>	N.D.	N.D.	1.710	<b>18.060<sup>a</sup></b>	<b>8.540<sup>b</sup></b>	N.D.	<b>4.760<sup>a</sup></b>
CP95104	2.790	N.D.	N.D.	N.D.	N.D.	0.090	0.090	N.D.	N.D.
CP95105	2.780	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
CP95106	2.910	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
CP95107	6.260	N.D.	N.D.	N.D.	0.270	<b>1.630<sup>a</sup></b>	0.840	N.D.	0.420
CP95108	5.270	0.060	N.D.	<b>0.380<sup>a</sup></b>	0.150	N.D.	N.D.	N.D.	N.D.
CP95109	<b>33.780<sup>a</sup></b>	<b>3.660<sup>a</sup></b>	N.D.	N.D.	1.030	<b>213.170<sup>b</sup></b>	<b>150.910<sup>b</sup></b>	N.D.	<b>24.630<sup>b</sup></b>
CP95110	2.290	0.030	N.D.	N.D.	0.030	0.920	0.330	0.360	0.170
CP95111	3.390	0.030	N.D.	N.D.	0.060	0.590	0.280	0.290	N.D.
CP95112	2.680	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
CP95113	3.190	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
CP95114	7.560	<b>1.550<sup>a</sup></b>	<b>1.150<sup>a</sup></b>	<b>1.850<sup>b</sup></b>	0.310	<b>5.240<sup>a</sup></b>	1.000	<b>2.460<sup>a</sup></b>	0.770
CP95115	2.220	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
CP95116	10.910	N.D.	N.D.	<b>0.680<sup>a</sup></b>	0.290	<b>2.760<sup>a</sup></b>	0.680	1.720	0.290
CP95117	4.330	0.090	N.D.	N.D.	0.150	0.670	0.190	0.320	N.D.
CP95118	2.330	N.D.	N.D.	N.D.	N.D.	0.010	N.D.	0.010	N.D.
CP95119	3.880	N.D.	N.D.	N.D.	N.D.	0.330	0.110	0.220	N.D.
CP95120	16.630	<b>1.810<sup>a</sup></b>	<b>2.230<sup>a</sup></b>	<b>2.060<sup>b</sup></b>	1.180	<b>7.640<sup>a</sup></b>	<b>1.350<sup>a</sup></b>	<b>3.330<sup>a</sup></b>	<b>1.650<sup>a</sup></b>
CP95121	17.780	0.190	N.D.	N.D.	0.650	<b>6.290<sup>a</sup></b>	<b>1.730<sup>a</sup></b>	<b>3.670<sup>a</sup></b>	0.470
CP95122	6.820	N.D.	N.D.	N.D.	N.D.	<b>3.480<sup>a</sup></b>	0.610	2.130	0.360
CP95123	2.680	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
CP95124	5.740	N.D.	N.D.	N.D.	N.D.	1.520	0.470	1.050	N.D.
CP95125	2.290	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.

<sup>a</sup> In excess of ER-L or TEL.<sup>b</sup> In excess of ER-M or PEL.

## APPENDIX D. (Continued).

Station	Total PCB	Dieldrin	Endrin	Lindane	Total Chlordane	Total DDT	4,4'-DDD	4,4'-DDE	4,4'-DDT
CP95126	2.230	N.D.	<b>0.040<sup>a</sup></b>	N.D.	N.D.	0.340	N.D.	N.D.	0.020
CP95127	2.480	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
CP95128	2.320	N.D.	N.D.	N.D.	N.D.	0.230	N.D.	0.070	N.D.
CP95129	2.470	N.D.	N.D.	N.D.	N.D.	0.110	N.D.	0.110	N.D.
CP95130	4.180	N.D.	N.D.	N.D.	N.D.	0.550	N.D.	N.D.	N.D.
CP95131	2.330	N.D.	N.D.	N.D.	N.D.	0.360	N.D.	0.140	0.230
CP95132	2.260	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
CP95133	2.460	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
CP95134	5.350	N.D.	N.D.	0.040	0.400	0.650	N.D.	0.180	N.D.
CP95135	2.430	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
CP95136	5.090	N.D.	N.D.	0.280	0.020	<b>3.680<sup>a</sup></b>	0.400	1.810	N.D.
CP95137	–	–	–	–	–	–	–	–	–
CP95138	<b>72.820<sup>a</sup></b>	<b>15.220<sup>b</sup></b>	<b>20.540<sup>a</sup></b>	<b>13.100<sup>b</sup></b>	0.520	<b>78.070<sup>b</sup></b>	<b>19.340<sup>b</sup></b>	<b>24.000<sup>a</sup></b>	<b>18.380<sup>b</sup></b>
CP95139	9.520	N.D.	N.D.	N.D.	0.530	<b>2.680<sup>a</sup></b>	0.470	<b>2.220<sup>a</sup></b>	N.D.
CP95140	9.960	0.090	N.D.	0.070	0.370	<b>3.040<sup>a</sup></b>	0.360	0.760	<b>1.330<sup>a</sup></b>
CP95141	3.800	0.120	N.D.	0.110	0.060	0.640	N.D.	0.180	0.330
CP95142	4.320	0.130	N.D.	0.030	0.130	0.810	0.180	0.290	0.230
CP95143	6.370	0.040	<b>0.300<sup>a</sup></b>	0.050	0.120	<b>1.590<sup>a</sup></b>	0.070	0.690	0.280
CP95144	–	–	–	–	–	–	–	–	–
CP95145	3.490	0.300	<b>0.440<sup>a</sup></b>	<b>0.760<sup>a</sup></b>	0.040	0.770	0.050	0.310	0.240
CP95146	2.870	0.230	<b>0.260<sup>a</sup></b>	N.D.	N.D.	0.150	0.020	0.010	N.D.
CP95147	2.610	N.D.	N.D.	N.D.	N.D.	0.020	N.D.	0.020	N.D.
CP95148	2.340	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
CP95CB_	3.140	0.040	N.D.	N.D.	0.090	0.350	0.200	0.130	N.D.
CP95CF_	11.950	0.290	N.D.	N.D.	0.560	0.740	0.280	0.460	N.D.
CP95MI_	2.330	N.D.	N.D.	N.D.	0.020	N.D.	N.D.	N.D.	N.D.
CP95PR1	2.250	N.D.	N.D.	N.D.	N.D.	0.940	0.020	N.D.	N.D.
CP95PR2	8.860	N.D.	N.D.	N.D.	0.160	0.900	0.390	N.D.	0.410
CP95PR3	20.340	N.D.	N.D.	N.D.	0.530	<b>8.920<sup>a</sup></b>	<b>2.500<sup>a</sup></b>	N.D.	<b>5.360<sup>b</sup></b>
CP95PR4	14.630	N.D.	N.D.	N.D.	0.150	<b>3.350<sup>a</sup></b>	1.110	N.D.	0.980
CP95PR5	17.710	0.440	N.D.	N.D.	0.860	<b>4.790<sup>a</sup></b>	<b>1.800<sup>a</sup></b>	N.D.	<b>1.400<sup>a</sup></b>
CP95RC_	2.390	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
CP95ZI_	2.770	N.D.	N.D.	N.D.	N.D.	0.030	N.D.	0.030	N.D.
CP96201	5.300	0.070	N.D.	0.010	0.100	0.640	0.160	0.270	0.030
CP96202	<b>37.340<sup>a</sup></b>	0.570	<b>0.250<sup>a</sup></b>	0.100	1.020	<b>29.450<sup>a</sup></b>	<b>13.140<sup>b</sup></b>	<b>11.920<sup>a</sup></b>	<b>1.360<sup>a</sup></b>
CP96203	2.810	N.D.	N.D.	N.D.	0.020	0.010	N.D.	0.010	N.D.
CP96204	2.870	N.D.	N.D.	N.D.	0.010	0.060	0.020	0.030	N.D.
CP96205	12.380	0.090	N.D.	0.020	0.210	<b>4.030<sup>a</sup></b>	0.950	1.990	0.470
CP96206	2.860	0.010	N.D.	0.020	N.D.	0.070	0.030	0.040	N.D.
CP96207	20.110	0.100	N.D.	0.120	0.670	<b>7.390<sup>a</sup></b>	<b>2.400<sup>a</sup></b>	<b>3.530<sup>a</sup></b>	0.400

<sup>a</sup> In excess of ER-L or TEL.<sup>b</sup> In excess of ER-M or PEL.



## APPENDIX D. (Continued).

Station	Total PCB	Dieldrin	Endrin	Lindane	Total Chlordane	Total DDT	4,4'-DDD	4,4'-DDE	4,4'-DDT
CP96208	2.840	N.D.	N.D.	N.D.	0.020	0.080	0.020	0.030	0.030
CP96209	4.270	0.020	N.D.	N.D.	0.160	0.790	0.370	0.310	N.D.
CP96210	19.350	<b>0.810<sup>a</sup></b>	N.D.	0.070	0.820	<b>28.740<sup>a</sup></b>	<b>11.040<sup>b</sup></b>	<b>10.220<sup>a</sup></b>	<b>3.580<sup>a</sup></b>
CP96211	<b>23.300<sup>a</sup></b>	0.250	N.D.	0.250	0.610	<b>5.840<sup>a</sup></b>	<b>1.620<sup>a</sup></b>	<b>2.840<sup>a</sup></b>	0.670
CP96212	3.540	0.020	N.D.	N.D.	0.130	0.050	N.D.	0.040	N.D.
CP96213	4.820	0.020	N.D.	0.030	0.090	0.360	0.100	0.190	N.D.
CP96214	<b>32.850<sup>a</sup></b>	0.150	N.D.	N.D.	0.990	<b>12.390<sup>a</sup></b>	<b>3.070<sup>a</sup></b>	<b>4.660<sup>a</sup></b>	0.750
CP96215	3.000	N.D.	N.D.	N.D.	0.010	0.970	0.070	0.040	0.840
CP96216	2.690	N.D.	N.D.	N.D.	N.D.	0.010	N.D.	0.010	N.D.
CP96217	7.400	0.040	N.D.	0.020	0.540	1.300	0.350	0.700	0.050
CP96218	9.610	N.D.	N.D.	N.D.	0.160	0.680	0.230	0.400	N.D.
CP96219	5.950	N.D.	0.010	N.D.	0.010	0.680	0.240	0.360	N.D.
CP96220	7.310	0.040	N.D.	N.D.	0.100	0.770	0.170	0.360	0.110
CP96221	18.390	0.090	<b>0.060<sup>a</sup></b>	0.100	0.270	<b>3.310<sup>a</sup></b>	0.650	1.740	0.230
CP96222	2.780	N.D.	N.D.	N.D.	N.D.	0.010	N.D.	0.010	N.D.
CP96223	2.730	N.D.	N.D.	0.010	N.D.	0.010	N.D.	0.010	N.D.
CP96224	2.680	N.D.	N.D.	0.030	N.D.	N.D.	N.D.	N.D.	N.D.
CP96225	3.520	0.010	N.D.	N.D.	0.020	0.150	0.040	0.090	N.D.
CP96226	2.880	0.010	N.D.	N.D.	0.040	0.080	0.020	0.030	N.D.
CP96227	2.660	N.D.	N.D.	N.D.	N.D.	0.030	N.D.	N.D.	0.010
CP96228	2.940	N.D.	0.010	N.D.	0.010	0.020	N.D.	0.010	N.D.
CP96229	2.890	N.D.	N.D.	N.D.	N.D.	0.010	N.D.	0.010	N.D.
CP96230	4.600	0.020	N.D.	0.020	0.020	0.250	0.060	0.110	0.020
CP96231	2.970	N.D.	N.D.	N.D.	N.D.	0.010	N.D.	0.010	N.D.
CP96232	14.740	0.200	N.D.	0.010	0.470	<b>14.240<sup>a</sup></b>	<b>3.600<sup>a</sup></b>	<b>7.260<sup>a</sup></b>	<b>1.380<sup>a</sup></b>
CP96233	20.490	0.070	<b>0.110<sup>a</sup></b>	0.020	0.150	<b>2.080<sup>a</sup></b>	0.360	0.830	0.260
CP96234	2.550	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
CP96235	<b>50.440<sup>a</sup></b>	0.400	<b>0.300<sup>a</sup></b>	<b>1.340<sup>b</sup></b>	0.800	<b>5.880<sup>a</sup></b>	1.100	<b>2.660<sup>a</sup></b>	0.560
CP96236	3.180	0.010	N.D.	N.D.	N.D.	0.010	N.D.	0.010	N.D.
CP96237	7.840	N.D.	N.D.	0.010	0.160	1.120	0.180	0.400	0.070
CP96238	2.740	N.D.	N.D.	N.D.	0.020	0.030	N.D.	0.010	N.D.
CP96239	2.660	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
CP96240	2.540	N.D.	N.D.	N.D.	0.020	0.010	N.D.	0.010	N.D.
CP96241	3.870	0.020	<b>0.030<sup>a</sup></b>	N.D.	0.040	0.180	0.050	0.100	N.D.
CP96242	3.870	N.D.	0.020	N.D.	0.040	0.130	0.040	0.050	N.D.
<b>Bioeffect V<sup>9</sup>lues:</b>									
ER-L	22.7 <sup>c</sup>	–	[0.02 <sup>d</sup> ]	–	–	1.58 <sup>c</sup>	–	2.2 <sup>c</sup>	–
ER-M	180 <sup>c</sup>	–	[45 <sup>d</sup> ]	–	–	46.1 <sup>c</sup>	–	27 <sup>c</sup>	–
TEL	–	0.715 <sup>e</sup>	–	0.32 <sup>e</sup>	2.26 <sup>e</sup>	–	1.22 <sup>e</sup>	–	1.19 <sup>e</sup>
PEL	–	4.3 <sup>e</sup>	–	0.99 <sup>e</sup>	4.79 <sup>e</sup>	–	7.81 <sup>e</sup>	–	4.77 <sup>e</sup>

<sup>a</sup> In excess of ER-L or TEL.<sup>b</sup> In excess of ER-M or PEL.<sup>c</sup> From Long et al. 1995<sup>d</sup> From Long and Morgan 1990. Not used in estimates of percent contaminated vs. uncontaminated area.<sup>e</sup> From MacDonald 1994

**APPENDIX E.** Sediment concentrations of selected inorganic metals ( $\mu\text{g/g}$  dry wgt.) and tributyltin (TBT, as ng Sn/g dry weight) at sites in the N.C. portion of the EMAP Carolinian Province during summer 1994-96. Samples with analytes in excess of reported bioeffect values (listed at the end for reference) are bolded. N.D. = Not detectable.

Station	Ag	As	Cd	Cr	Cu	Hg	Ni	Pb	Sb	TBT	Zn
CP94028	–	–	–	–	–	–	–	–	–	–	–
CP94029	0.02	2.46	0.06	17.41	1.26	N.D.	1.18	4.07	N.D.	N.D.	12.86
CP94030	0.04	8.03	0.06	58.54	5.85	0.02	9.65	15.04	0.43	2.28	43.90
CP94031	0.02	2.69	0.07	14.76	1.50	N.D.	1.88	5.59	0.56	<b>8.66<sup>c</sup></b>	15.36
CP94032	0.02	3.41	0.02	25.33	2.30	N.D.	4.23	10.24	0.21	<b>13.69<sup>c</sup></b>	25.07
CP94033	0.01	1.27	N.D.	6.15	0.99	N.D.	1.07	3.63	N.D.	<b>9.36<sup>c</sup></b>	9.72
CP94034	0.08	6.44	0.21	53.43	10.15	0.04	12.52	19.84	<b>2.14<sup>a</sup></b>	2.11	65.86
CP94035	0.03	N.D.	0.03	36.20	2.04	0.01	3.07	10.34	N.D.	<b>10.12<sup>c</sup></b>	20.22
CP94036	0.18	<b>12.38<sup>a</sup></b>	0.49	<b>83.40<sup>a</sup></b>	21.55	0.09	<b>23.54<sup>a</sup></b>	32.76	1.26	0.34	123.32
CP94037	0.01	N.D.	N.D.	12.43	1.21	0.01	2.56	6.84	N.D.	4.34	16.80
CP94038	0.02	6.35	0.17	56.35	11.31	0.06	13.65	17.68	0.41	0.76	79.58
CP94039	N.D.	1.05	N.D.	6.42	0.68	0.01	1.14	4.06	1.01	N.D.	6.80
CP94040	0.07	<b>11.66<sup>a</sup></b>	0.24	73.23	15.92	0.07	<b>21.66<sup>a</sup></b>	28.28	0.45	0.80	99.77
CP94041	0.06	<b>9.17<sup>a</sup></b>	0.09	59.88	9.14	0.04	16.68	22.16	0.34	N.D.	74.72
CP94042	0.02	1.23	0.02	21.66	1.22	N.D.	2.04	7.12	N.D.	N.D.	16.18
CP94043	0.07	7.57	0.35	74.07	14.22	0.08	20.71	26.79	0.49	0.79	123.56
CP94044	0.02	1.54	0.01	9.38	1.08	N.D.	2.24	5.36	N.D.	N.D.	15.21
CP94045	0.02	2.12	0.03	18.93	2.95	N.D.	5.03	8.24	0.21	0.77	25.17
CP94046	0.03	1.49	N.D.	28.62	1.19	N.D.	1.78	7.06	N.D.	N.D.	12.59
CP94047	0.14	7.76	1.12	<b>81.60<sup>a</sup></b>	19.59	0.07	<b>21.72<sup>a</sup></b>	30.44	0.63	0.77	127.64
CP94048	0.07	<b>8.46<sup>a</sup></b>	0.20	75.73	11.96	0.05	<b>21.88<sup>a</sup></b>	26.86	0.46	N.D.	102.00
CP94049	0.01	0.50	N.D.	12.91	1.23	0.01	1.24	5.77	<b>2.02<sup>a</sup></b>	N.D.	12.41
CP94050	0.05	<b>14.69<sup>a</sup></b>	0.07	68.01	12.09	0.06	<b>22.02<sup>a</sup></b>	25.84	0.36	1.04	86.76
CP94051	0.14	<b>11.13<sup>a</sup></b>	0.90	80.83	19.66	0.11	<b>25.70<sup>a</sup></b>	28.61	0.78	3.18	124.10

<sup>a</sup> In excess of ER-L.

<sup>b</sup> In excess of ER-M.

<sup>c</sup> In excess of TBT potential sediment toxicity level.

## APPENDIX E. (Continued).

Station	Ag	As	Cd	Cr	Cu	Hg	Ni	Pb	Sb	TBT	Zn
CP94052	0.16	<b>9.55<sup>a</sup></b>	0.99	<b>81.50<sup>a</sup></b>	20.84	0.10	<b>26.04<sup>a</sup></b>	27.49	0.57	2.44	120.79
CP94053	0.21	7.80	0.65	80.12	25.64	0.13	<b>23.39<sup>a</sup></b>	40.97	1.14	3.04	135.05
CP94054	0.06	6.03	0.25	73.16	10.66	0.09	<b>22.05<sup>a</sup></b>	25.92	0.49	4.20	106.29
CP94055	0.02	3.96	0.04	45.29	5.24	0.03	10.31	14.20	0.29	0.24	43.03
CP94056	0.04	2.57	N.D.	23.50	1.91	N.D.	3.87	7.30	0.20	N.D.	26.47
CP94057	0.04	1.19	N.D.	13.80	1.81	N.D.	2.66	6.51	0.26	0.14	16.17
CP94058	0.04	1.48	N.D.	16.45	1.70	N.D.	3.57	6.21	N.D.	N.D.	22.04
CP94059	0.03	1.94	0.03	<b>130.85<sup>a</sup></b>	1.91	N.D.	5.55	9.05	N.D.	N.D.	65.81
CP94060	0.07	5.06	0.13	43.19	8.42	0.05	14.36	15.15	0.29	1.89	57.56
CP94061	0.02	N.D.	0.01	46.81	1.79	N.D.	2.68	8.02	N.D.	0.18	43.52
CP94062	0.16	<b>9.80<sup>a</sup></b>	0.27	<b>97.18<sup>a</sup></b>	33.05	<b>0.25<sup>a</sup></b>	<b>34.34<sup>a</sup></b>	39.13	0.91	<b>14.23<sup>c</sup></b>	<b>175.01<sup>a</sup></b>
CP94063	0.02	0.64	0.02	8.17	1.03	N.D.	1.13	4.80	N.D.	N.D.	11.17
CP94064	0.04	3.33	0.07	38.13	7.31	0.04	10.15	12.22	0.36	3.20	57.43
CP94065	0.03	N.D.	0.02	10.85	1.22	0.01	1.71	9.47	N.D.	N.D.	14.13
CP94066	0.13	<b>8.87<sup>a</sup></b>	0.25	<b>96.34<sup>a</sup></b>	32.87	<b>0.32<sup>a</sup></b>	<b>32.84<sup>a</sup></b>	39.06	0.94	N.D.	<b>154.96<sup>a</sup></b>
CP94067	0.04	2.23	0.14	25.12	4.92	0.06	6.15	12.69	0.21	0.34	35.89
CP94068	0.02	0.80	0.02	8.83	1.43	N.D.	1.83	4.36	N.D.	N.D.	11.64
CP94069	0.08	7.42	0.19	78.84	22.32	<b>0.17<sup>a</sup></b>	<b>27.66<sup>a</sup></b>	<b>50.83<sup>a</sup></b>	0.84	1.04	109.52
CP94070	0.03	1.52	0.03	43.89	1.05	0.01	2.10	3.27	N.D.	N.D.	12.02
CP94071	0.03	1.93	0.08	32.74	4.92	0.02	8.00	11.54	0.26	N.D.	38.06
CP94072	0.06	5.84	0.13	54.24	7.16	0.03	14.83	15.44	0.29	N.D.	61.54
CP94084	0.04	2.00	0.04	41.14	6.87	0.03	9.72	16.55	N.D.	0.36	31.65
CP94CF_	0.03	5.65	0.05	42.75	7.14	0.02	9.11	10.77	0.35	<b>6.43<sup>c</sup></b>	46.36
CP94ES4	0.03	1.70	0.03	28.10	2.54	0.01	4.73	7.22	N.D.	N.D.	20.18
CP94MI_	N.D.	2.06	0.03	10.65	0.87	N.D.	0.84	2.82	N.D.	0.59	8.73
CP94RC_	0.01	1.14	0.01	19.46	0.69	0.01	0.85	3.00	N.D.	N.D.	6.89

<sup>a</sup> In excess of ER-L.

<sup>b</sup> In excess of ER-M.

<sup>c</sup> In excess of TBT potential sediment toxicity level.

## APPENDIX E. (Continued).

Station	Ag	As	Cd	Cr	Cu	Hg	Ni	Pb	Sb	TBT	Zn
CP94ZI_	0.09	<b>16.47<sup>a</sup></b>	0.11	71.43	14.11	0.06	15.89	21.34	0.52	N.D.	77.83
CP95101	0.04	7.05	0.07	50.63	7.00	0.04	11.20	21.39	0.39	N.D.	43.23
CP95102	0.03	5.31	0.06	36.75	4.25	0.02	8.40	15.14	0.22	N.D.	36.11
CP95103	0.16	7.67	0.45	<b>83.11<sup>a</sup></b>	27.92	0.02	<b>29.80<sup>a</sup></b>	21.78	0.74	N.D.	<b>156.73<sup>a</sup></b>
CP95104	0.02	N.D.	N.D.	12.61	1.61	0.02	2.50	6.99	N.D.	N.D.	16.38
CP95105	0.02	0.96	0.01	11.00	2.01	N.D.	2.20	5.19	N.D.	N.D.	14.88
CP95106	0.03	1.55	0.04	23.14	2.61	0.01	4.90	9.55	N.D.	N.D.	25.26
CP95107	0.10	<b>8.40<sup>a</sup></b>	0.15	<b>95.31<sup>a</sup></b>	<b>35.41<sup>a</sup></b>	0.13	<b>40.30<sup>a</sup></b>	38.31	0.82	N.D.	134.47
CP95108	0.02	N.D.	0.04	16.80	1.48	0.01	3.80	8.49	N.D.	N.D.	26.22
CP95109	0.09	<b>8.50<sup>a</sup></b>	0.33	66.57	15.65	0.11	<b>23.20<sup>a</sup></b>	40.28	0.48	N.D.	97.81
CP95110	0.01	N.D.	N.D.	10.17	1.30	N.D.	1.70	6.66	N.D.	N.D.	11.74
CP95111	0.02	1.85	0.04	25.78	3.03	0.02	4.40	11.45	N.D.	N.D.	28.82
CP95112	N.D.	N.D.	N.D.	0.79	0.86	0.01	0.50	0.90	N.D.	N.D.	5.83
CP95113	0.01	0.80	N.D.	4.88	1.47	N.D.	1.90	3.98	N.D.	N.D.	16.35
CP95114	0.04	6.39	0.16	51.38	6.35	0.05	13.40	20.29	0.36	N.D.	70.13
CP95115	N.D.	2.48	N.D.	9.35	1.40	0.01	2.10	6.77	N.D.	N.D.	16.79
CP95116	0.07	<b>10.39<sup>a</sup></b>	0.33	<b>82.66<sup>a</sup></b>	13.78	0.08	<b>24.50<sup>a</sup></b>	30.15	0.60	N.D.	119.67
CP95117	0.06	<b>12.28<sup>a</sup></b>	0.07	71.55	11.64	0.06	<b>22.50<sup>a</sup></b>	29.55	0.25	N.D.	83.09
CP95118	0.01	1.52	0.02	19.27	1.27	0.01	1.50	6.30	N.D.	N.D.	13.92
CP95119	0.05	<b>9.91<sup>a</sup></b>	0.06	56.33	8.05	0.05	13.60	21.92	0.30	N.D.	61.19
CP95120	0.12	7.30	0.56	61.68	14.73	0.10	16.90	29.91	0.90	N.D.	85.40
CP95121	0.20	<b>11.25<sup>a</sup></b>	<b>1.30<sup>a</sup></b>	<b>92.11<sup>a</sup></b>	21.52	0.12	<b>24.70<sup>a</sup></b>	38.45	0.89	N.D.	132.67
CP95122	0.18	<b>11.33<sup>a</sup></b>	1.12	<b>98.07<sup>a</sup></b>	22.24	0.12	<b>24.20<sup>a</sup></b>	39.41	0.84	N.D.	133.89
CP95123	0.02	1.94	0.02	22.98	1.78	0.01	4.60	8.26	N.D.	N.D.	28.73
CP95124	0.11	<b>9.77<sup>a</sup></b>	0.39	<b>83.01<sup>a</sup></b>	15.81	0.08	<b>25.30<sup>a</sup></b>	33.21	0.86	N.D.	106.04
CP95125	N.D.	1.32	N.D.	18.79	1.08	0.01	1.80	7.81	N.D.	N.D.	14.76

<sup>a</sup> In excess of ER-L.<sup>b</sup> In excess of ER-M.<sup>c</sup> In excess of TBT potential sediment toxicity level.

## APPENDIX E. (Continued).

Station	Ag	As	Cd	Cr	Cu	Hg	Ni	Pb	Sb	TBT	Zn
CP95126	0.01	1.71	0.01	29.31	0.94	0.01	2.30	8.10	N.D.	N.D.	19.03
CP95127	0.01	1.93	N.D.	20.91	1.33	0.01	1.90	8.01	N.D.	N.D.	17.48
CP95128	0.02	1.72	0.07	37.08	2.77	0.01	3.70	9.44	0.23	N.D.	28.19
CP95129	N.D.	1.08	0.02	18.46	1.22	N.D.	1.40	7.33	N.D.	N.D.	24.10
CP95130	N.D.	N.D.	N.D.	6.16	0.97	N.D.	2.00	7.36	N.D.	N.D.	15.37
CP95131	0.04	<b>8.34<sup>a</sup></b>	0.06	56.20	8.06	0.04	14.90	21.40	0.39	N.D.	67.38
CP95132	N.D.	1.44	0.01	19.25	1.12	N.D.	2.40	7.00	N.D.	N.D.	27.11
CP95133	N.D.	1.48	N.D.	20.99	0.59	N.D.	1.50	4.57	N.D.	N.D.	15.11
CP95134	N.D.	N.D.	N.D.	15.25	0.84	N.D.	1.00	5.48	N.D.	N.D.	17.35
CP95135	N.D.	1.27	N.D.	7.90	0.63	N.D.	1.10	4.05	N.D.	N.D.	10.80
CP95136	0.10	<b>11.86<sup>a</sup></b>	0.19	72.75	13.21	0.06	<b>21.40<sup>a</sup></b>	30.85	0.63	N.D.	87.81
CP95137	–	–	–	–	–	–	–	–	–	–	–
CP95138	N.D.	N.D.	0.02	28.01	0.95	0.01	1.80	8.04	N.D.	N.D.	22.05
CP95139	0.26	<b>11.12<sup>a</sup></b>	0.41	75.54	21.95	0.11	<b>23.50<sup>a</sup></b>	36.62	0.61	N.D.	122.21
CP95140	0.07	<b>9.98<sup>a</sup></b>	0.15	57.82	9.42	0.05	14.30	19.26	0.33	1.75	66.37
CP95141	0.04	8.04	0.06	47.48	6.38	0.04	15.20	18.44	0.32	N.D.	48.51
CP95142	0.01	2.34	0.02	20.91	2.11	0.02	3.40	7.61	0.22	N.D.	21.36
CP95143	0.04	7.83	0.04	58.37	7.30	0.03	12.70	19.48	0.42	N.D.	60.95
CP95144	–	–	–	–	–	–	–	–	–	–	–
CP95145	0.04	6.44	0.05	45.36	3.76	0.02	6.20	13.24	0.38	N.D.	36.50
CP95146	N.D.	3.39	0.03	27.05	1.14	N.D.	1.60	5.00	N.D.	N.D.	20.46
CP95147	0.02	4.41	0.03	44.85	4.20	0.01	8.50	9.97	N.D.	N.D.	36.23
CP95148	N.D.	3.03	N.D.	10.01	0.66	N.D.	1.00	3.23	N.D.	N.D.	11.50
CP95CB_	0.01	N.D.	0.05	26.41	3.19	0.02	6.00	10.32	0.24	–	30.73
CP95CF_	0.08	6.52	0.16	49.84	8.70	0.06	11.00	15.01	0.51	–	68.86
CP95MI_	N.D.	1.77	0.01	7.85	0.69	0.01	0.80	2.47	0.08	–	11.60

<sup>a</sup> In excess of ER-L.

<sup>b</sup> In excess of ER-M.

<sup>c</sup> In excess of TBT potential sediment toxicity level.

## APPENDIX E. (Continued).

Station	Ag	As	Cd	Cr	Cu	Hg	Ni	Pb	Sb	TBT	Zn
CP95PR1	0.02	0.96	0.09	9.81	1.65	0.02	2.10	7.21	0.27	–	18.73
CP95PR2	0.17	<b>9.66<sup>a</sup></b>	0.86	<b>82.09<sup>a</sup></b>	20.18	0.11	<b>25.20<sup>a</sup></b>	36.27	0.67	–	125.91
CP95PR3	0.27	<b>8.84<sup>a</sup></b>	<b>1.66<sup>a</sup></b>	<b>83.30<sup>a</sup></b>	26.24	0.13	<b>26.20<sup>a</sup></b>	41.86	0.87	–	<b>152.60<sup>a</sup></b>
CP95PR4	0.22	<b>10.97<sup>a</sup></b>	0.28	<b>86.49<sup>a</sup></b>	31.19	0.14	<b>26.20<sup>a</sup></b>	42.79	1.03	–	<b>156.98<sup>a</sup></b>
CP95PR5	0.29	<b>10.06<sup>a</sup></b>	0.99	76.61	<b>36.42<sup>a</sup></b>	0.15	<b>23.90<sup>a</sup></b>	<b>47.43<sup>a</sup></b>	1.54	–	<b>154.73<sup>a</sup></b>
CP95RC_	0.02	1.73	0.02	18.62	1.10	0.01	1.70	5.36	N.D.	–	17.23
CP95ZI_	0.02	2.40	0.04	19.93	1.60	0.01	1.70	5.14	0.21	–	19.73
CP96201	0.03	<b>8.30<sup>a</sup></b>	0.07	5N.D.	6.48	0.03	16.60	15.90	0.38	N.D.	57.00
CP96202	0.33	<b>9.70<sup>a</sup></b>	0.54	<b>97.00<sup>a</sup></b>	24.34	<b>0.24<sup>a</sup></b>	<b>36.10<sup>a</sup></b>	<b>61.40<sup>a</sup></b>	0.71	0.28	<b>154.00<sup>a</sup></b>
CP96203	0.03	N.D.	0.03	48.00	1.81	0.01	15.20	6.80	0.12	N.D.	14.30
CP96204	0.03	0.27	0.04	68.00	2.68	0.01	<b>25.70<sup>a</sup></b>	6.10	0.06	0.09	15.20
CP96205	0.12	6.70	0.18	<b>95.00<sup>a</sup></b>	20.83	0.12	<b>35.60<sup>a</sup></b>	32.40	0.63	N.D.	113.00
CP96206	N.D.	N.D.	0.03	<b>247.00<sup>a</sup></b>	3.30	0.02	<b>88.00<sup>b</sup></b>	2.60	0.05	N.D.	1N.D.
CP96207	0.16	<b>12.40<sup>a</sup></b>	0.27	<b>105.00<sup>a</sup></b>	31.17	<b>0.28<sup>a</sup></b>	<b>38.90<sup>a</sup></b>	40.90	0.96	N.D.	149.00
CP96208	N.D.	1.70	0.04	53.00	2.87	0.02	19.40	7.60	0.10	N.D.	22.00
CP96209	0.05	0.92	0.06	4N.D.	3.44	0.02	13.60	11.50	0.17	N.D.	26.00
CP96210	0.15	7.10	0.27	<b>83.00<sup>a</sup></b>	20.17	<b>0.15<sup>a</sup></b>	<b>29.00<sup>a</sup></b>	31.50	0.61	0.73	109.00
CP96211	0.15	6.60	0.25	<b>89.00<sup>a</sup></b>	30.41	0.12	<b>32.10<sup>a</sup></b>	28.10	0.88	N.D.	135.00
CP96212	0.03	2.20	0.02	<b>125.00<sup>a</sup></b>	2.90	0.01	<b>48.90<sup>a</sup></b>	6.40	0.09	N.D.	2N.D.
CP96213	0.04	3.50	0.08	47.00	5.72	0.03	16.20	11.40	0.14	0.20	41.00
CP96214	0.10	6.50	0.39	52.00	26.47	0.11	<b>22.40<sup>a</sup></b>	34.00	0.50	1.70	132.00
CP96215	0.03	0.20	0.02	58.00	1.83	0.01	16.90	8.40	0.03	N.D.	14.50
CP96216	0.01	0.60	0.02	45.00	2.18	0.01	12.20	7.40	0.13	N.D.	18.90
CP96217	0.18	<b>12.30<sup>a</sup></b>	0.95	<b>91.00<sup>a</sup></b>	22.24	0.11	<b>29.40<sup>a</sup></b>	35.90	0.83	1.10	129.00
CP96218	0.07	<b>17.20<sup>a</sup></b>	0.08	<b>84.00<sup>a</sup></b>	12.27	0.07	<b>28.50<sup>a</sup></b>	26.10	0.39	N.D.	81.00
CP96219	0.05	<b>12.10<sup>a</sup></b>	0.08	61.00	9.75	0.05	18.10	21.40	0.32	N.D.	61.00

<sup>a</sup> In excess of ER-L.<sup>b</sup> In excess of ER-M.<sup>c</sup> In excess of TBT potential sediment toxicity level.

## APPENDIX E. (Continued).

Station	Ag	As	Cd	Cr	Cu	Hg	Ni	Pb	Sb	TBT	Zn
CP96220	0.07	<b>9.30<sup>a</sup></b>	0.12	73.00	8.15	0.05	18.50	21.50	0.38	2.60	69.00
CP96221	0.03	0.66	0.10	19.30	6.31	0.03	4.10	10.70	0.09	N.D.	37.00
CP96222	0.02	N.D.	0.01	<b>107.00<sup>a</sup></b>	1.89	0.01	<b>43.20<sup>a</sup></b>	4.10	0.04	N.D.	11.10
CP96223	N.D.	0.03	0.01	5.20	1.00	0.01	0.80	4.50	N.D.	N.D.	8.80
CP96224	0.03	0.05	0.02	22.00	2.30	0.01	1.80	7.50	0.17	N.D.	15.50
CP96225	0.03	1.40	0.05	14.80	2.14	0.02	2.80	8.30	0.12	N.D.	20.20
CP96226	0.01	N.D.	0.02	19.80	1.00	0.01	1.20	5.40	0.24	N.D.	15.40
CP96227	N.D.	N.D.	0.03	8.50	1.02	0.01	1.50	3.80	0.07	N.D.	13.30
CP96228	0.02	0.29	0.02	5.80	0.84	0.01	0.80	4.70	N.D.	N.D.	11.00
CP96229	N.D.	0.13	0.02	13.00	1.13	0.01	2.60	5.60	N.D.	N.D.	16.70
CP96230	0.04	6.10	0.05	36.00	5.29	0.02	12.80	15.30	0.32	N.D.	43.00
CP96231	0.02	1.90	0.02	9.60	0.94	0.01	1.90	4.80	0.06	N.D.	13.40
CP96232	0.10	6.20	0.46	81.00	15.86	0.12	<b>24.50<sup>a</sup></b>	30.30	0.53	N.D.	111.00
CP96233	0.17	<b>9.90<sup>a</sup></b>	0.32	81.00	18.06	0.09	<b>23.90<sup>a</sup></b>	31.10	0.45	0.40	102.00
CP96234	0.02	0.50	0.01	6.90	0.71	N.D.	1.00	3.50	0.06	N.D.	8.80
CP96235	0.31	<b>11.10<sup>a</sup></b>	0.59	<b>85.00<sup>a</sup></b>	24.75	0.13	<b>23.30<sup>a</sup></b>	37.80	0.46	0.80	133.00
CP96236	0.03	N.D.	0.02	1N.D.	1.44	0.01	1.10	5.60	0.01	N.D.	15.70
CP96237	0.05	<b>10.40<sup>a</sup></b>	0.09	61.00	10.53	0.06	<b>21.30<sup>a</sup></b>	21.90	0.27	N.D.	71.00
CP96238	0.02	1.20	0.03	11.00	0.96	0.01	1.40	6.10	0.10	N.D.	12.30
CP96239	0.02	1.60	0.02	13.90	1.06	0.01	10.70	6.70	N.D.	N.D.	14.00
CP96240	0.02	1.30	0.05	16.70	0.70	0.01	0.70	4.20	0.02	N.D.	12.30
CP96241	0.04	4.00	0.07	24.20	4.74	0.02	4.00	9.20	0.18	0.30	27.80
CP96242	0.04	2.40	0.08	17.80	2.70	0.02	2.30	8.10	0.12	N.D.	20.20
Bioeffect Values:											
ER-L1.0 <sup>d</sup>	8.2 <sup>d</sup>	1.2 <sup>d</sup>	81 <sup>d</sup>	34 <sup>d</sup>	0.15 <sup>d</sup>	20.9 <sup>d</sup>	46.7 <sup>d</sup>	2.0 <sup>e</sup>	–	150 <sup>d</sup>	
ER-M	3.7 <sup>d</sup>	70.0 <sup>d</sup>	9.6 <sup>d</sup>	370 <sup>d</sup>	270 <sup>d</sup>	0.71 <sup>d</sup>	51.6 <sup>d</sup>	218.0 <sup>d</sup>	25 <sup>e</sup>	–	410 <sup>d</sup>
TBT potential toxicity range		–	–	–	–	–	–	–	–	[>5 <sup>f</sup> ]	–

<sup>a</sup> In excess of ER-L.<sup>b</sup> In excess of ER-M.<sup>c</sup> In excess of TBT potential sediment toxicity level.<sup>d</sup> From Long et al. 1995<sup>e</sup> From Long and Morgan 1990<sup>f</sup> From Macauley 1994. Not used in estimates of percent contaminated vs. uncontaminated area.

**APPENDIX F.** Summary of toxicity testing results by station in the N.C. portion of the EMAP Carolinian Province in summer 1994-96. Significant toxicity test results are bolded. Silt-clay fraction, numbers of contaminant bioeffect guideline exceedances, porewater unionized ammonia nitrogen (UAN), and porewater hydrogen sulfide (H<sub>2</sub>S) concentrations are also reported. Microtox results are corrected for water content. *A. abdita* and *A. verrilli* results reported as percent survival relative to control. *M. mercenaria* results reported as percent growth relative to control.

Station	Microtox <sup>®a</sup> (EC <sub>50</sub> , %)	<i>A. abdita</i> <sup>b</sup> (%)	<i>A. verrilli</i> <sup>b</sup> (%)	<i>M. mercenaria</i> <sup>c</sup> (%)	Silt-clay (%)	Exceedances <sup>d</sup> ER-L/TEL, ER-M/PEL(mg/L)	UAN (mg/L)	H <sub>2</sub> S (mg/L)
CP94028	–	–	–	–	–	–, –	–	–
CP94029	2.664	92.0	–	–	0.56	0, 0	0.2600	–
CP94030	0.346	96.9	–	–	54.44	0, 0	0.0680	–
CP94031	1.908	97.9	–	–	4.47	0, 0	0.3020	–
CP94032	2.316	96.6	–	–	13.51	0, 0	0.2850	–
CP94033	10.000	97.7	–	–	3.82	0, 0	0.3610	–
CP94034	<b>0.162</b>	96.9	–	–	55.78	1, 0	0.1400	–
CP94035	3.565	95.9	–	–	12.56	0, 0	0.1030	–
CP94036	<b>0.082</b>	97.9	–	–	98.51	4, 0	0.0160	–
CP94037	10.000	97.9	–	–	4.29	0, 0	0.0040	–
CP94038	1.216	100.0	–	–	68.14	2, 0	0.0460	–
CP94039	4.923	83.3	–	–	4.44	0, 0	0.4040	–
CP94040	0.390	98.9	–	–	95.61	2, 0	0.0120	–
CP94041	0.608	95.8	–	–	93.84	1, 0	0.1320	–
CP94042	4.683	104.0	–	–	4.87	0, 0	0.1740	–
CP94043	<b>0.178</b>	100.0	–	–	96.22	1, 0	0.2180	–
CP94044	10.000	93.8	–	–	1.18	0, 0	0.0050	–
CP94045	2.947	99.0	–	–	6.42	0, 0	0.0000	–
CP94046	10.000	97.8	–	–	2.68	0, 0	0.3070	–
CP94047	0.984	96.8	–	–	97.97	4, 0	0.5620	–
CP94048	<b>0.092</b>	100.0	–	–	83.96	2, 0	0.0690	–
CP94049	7.454	97.8	–	–	1.49	1, 0	0.0740	–
CP94050	0.426	103.0	–	–	94.85	2, 0	0.0280	–
CP94051	1.098	101.0	–	–	99.59	4, 0	0.0060	–
CP94052	0.472	105.0	–	–	99.42	8, 0	1.5390	–
CP94053	0.506	97.8	–	–	94.14	8, 0	0.3250	–
CP94054	0.904	100.0	–	–	95.12	3, 0	0.1800	–
CP94055	0.649	103.0	–	–	33.01	0, 0	0.0980	–
CP94056	2.788	104.0	–	–	0.60	0, 0	0.0330	–
CP94057	2.347	103.0	–	–	5.55	0, 0	0.1080	–
CP94058	3.580	98.9	–	–	2.78	0, 0	0.0450	–
CP94059	3.702	90.2	–	–	1.12	1, 0	0.0180	–

<sup>a</sup> Significant Microtox<sup>®</sup> toxicity: EC<sub>50</sub> ≤ 0.2% if sediment silt-clay content ≥ 20%, or EC<sub>50</sub> ≤ 0.5% if sediment silt-clay content < 20%.

<sup>b</sup> Significant *Ampelisca abdita* or *Ampelisca verrilli* toxicity: survival in sample significantly less than survival in negative control (at α = 0.05), and survival in sample ≤ 80% of control survival.

<sup>c</sup> Significant *Mercenaria mercenaria* toxicity: mean growth rate in test sediment significantly different than in control sediment (at α = 0.05), and mean growth in test sediment < 80% of the mean growth in control sediment.

<sup>d</sup> First number is the number of contaminants at or exceeding ER-L/TEL bioeffect guideline values but below ER-M/PEL guidelines. Second number is the number of contaminants at or exceeding ER-M/PEL bioeffect guideline values.



## APPENDIX F. (Continued).

Station	Microtox <sup>®a</sup> (EC <sub>50</sub> , %)	<i>A. abdita</i> <sup>b</sup> (%)	<i>A. verrilli</i> <sup>b</sup> (%)	<i>M. mercenaria</i> <sup>c</sup> (%)	Silt-clay (%)	Exceedances <sup>d</sup> ER-L/TEL, ER-M/PEL	UAN (mg/L)	H <sub>2</sub> S (mg/L)
CP94060	<b>0.451</b>	105.0	–	–	15.64	0, 0	0.1070	–
CP94061	10.000	85.9	–	–	3.44	0, 0	0.0650	–
CP94062	0.472	94.6	–	–	97.69	8, 0	0.1470	–
CP94063	10.000	<b>79.3</b>	–	–	4.16	0, 0	0.5100	–
CP94064	0.423	99.0	–	–	24.89	0, 0	0.0590	–
CP94065	10.000	91.3	–	–	1.12	0, 0	0.4960	–
CP94066	0.541	100.0	–	–	98.92	11, 1	0.1980	–
CP94067	<b>0.360</b>	91.3	–	–	18.29	3, 0	0.0610	–
CP94068	10.000	101.0	–	–	4.01	0, 0	0.0000	–
CP94069	<b>0.152</b>	99.0	–	–	89.42	5, 0	0.0300	–
CP94070	10.000	95.9	–	–	3.17	0, 0	0.0940	–
CP94071	7.285	101.0	–	–	42.03	0, 0	0.0640	–
CP94072	0.804	103.0	–	–	79.60	1, 0	0.0120	–
CP94084	0.871	94.7	–	–	25.76	0, 0	0.0500	–
CP94CF_	1.400	95.8	–	–	39.72	0, 0	0.0880	–
CP94ES4	3.270	101.0	–	–	8.03	0, 0	0.1130	–
CP94MI_	10.000	104.0	–	–	2.49	0, 0	0.4690	–
CP94RC_	10.000	<b>75.9</b>	–	–	2.37	0, 0	–	–
CP94ZI_	<b>0.065</b>	104.0	–	–	64.64	1, 0	1.2460	–
CP95101	0.360	100.0	103.0	<b>66.64</b>	75.11	0, 0	0.0400	0.015
CP95102	<b>0.180</b>	98.9	98.0	62.69	37.34	0, 0	0.0266	0.010
CP95103	<b>0.170</b>	76.8	<b>63.0</b>	<b>-28.39</b>	99.63	8, 1	0.0416	–
CP95104	0.700	101.1	103.0	<b>17.05</b>	2.41	0, 0	0.1428	0.002
CP95105	9.380	104.3	97.0	<b>-25.39</b>	2.12	0, 0	0.3887	0.002
CP95106	10.000	103.2	107.0	<b>-32.84</b>	8.56	0, 0	0.2025	0.003
CP95107	0.280	102.1	94.0	<b>37.18</b>	97.24	5, 0	0.0453	0.005
CP95108	5.190	96.8	<b>60.0</b>	<b>21.24</b>	0.73	1, 0	0.3722	0.003
CP95109	<b>0.062</b>	97.9	93.0	<b>-8.78</b>	98.92	4, 3	0.0266	0.007
CP95110	5.630	101.1	108.0	<b>-32.91</b>	13.07	0, 0	0.2244	0.003
CP95111	2.220	105.4	110.0	<b>-17.98</b>	12.38	0, 0	0.0508	0.018
CP95112	10.000	91.6	94.0	–	0.33	0, 0	–	–
CP95113	10.000	95.8	100.0	<b>-6.52</b>	2.18	0, 0	–	0.000
CP95114	0.970	98.9	100.0	<b>70.02</b>	43.29	3, 1	0.1850	0.005
CP95115	10.000	92.5	105.0	107.81	2.33	0, 0	0.2393	0.001
CP95116	0.500	95.6	101.0	98.02	94.77	5, 0	0.1095	0.003
CP95117	0.360	109.8	100.0	127.33	98.44	2, 0	0.1314	0.001
CP95118	10.000	89.0	97.0	155.35	4.32	0, 0	0.1380	0.002

<sup>a</sup> Significant Microtox<sup>®</sup> toxicity: EC<sub>50</sub> ≤ 0.2% if sediment silt-clay content ≥ 20%, or EC<sub>50</sub> ≤ 0.5% if sediment silt-clay content < 20%.

<sup>b</sup> Significant *Ampelisca abdita* or *Ampelisca verrilli* toxicity: survival in sample significantly less than survival in negative control (at α = 0.05), and survival in sample ≤ 80% of control survival.

<sup>c</sup> Significant *Mercenaria mercenaria* toxicity: mean growth rate in test sediment significantly different than in control sediment (at α = 0.05), and mean growth in test sediment < 80% of the mean growth in control sediment.

<sup>d</sup> First number is the number of contaminants at or exceeding ER-L/TEL bioeffect guideline values but below ER-M/PEL guidelines. Second number is the number of contaminants at or exceeding ER-M/PEL bioeffect guideline values.

## APPENDIX F. (Continued).

Station	Microtox <sup>®a</sup> (EC <sub>50</sub> , %)	<i>A. abdita</i> <sup>b</sup> (%)	<i>A. verrilli</i> <sup>b</sup> (%)	<i>M. mercenaria</i> <sup>c</sup> (%)	Silt-clay (%)	Exceedances <sup>d</sup> ER-L/TEL, ER-M/PEL	UAN (mg/L)	H <sub>2</sub> S (mg/L)
CP95119	0.900	97.8	98.0	147.22	67.50	1, 0	0.0681	0.002
CP95120	0.770	104.9	94.0	<b>-26.29</b>	76.95	5, 1	0.2010	0.009
CP95121	0.550	104.2	103.0	135.32	97.69	7, 0	0.1885	0.001
CP95122	0.640	100.0	97.0	<b>78.71</b>	96.48	4, 0	0.3407	0.002
CP95123	9.520	92.5	104.0	<b>52.54</b>	2.52	0, 0	–	–
CP95124	0.560	94.5	96.0	62.82	98.10	3, 0	0.2090	0.002
CP95125	3.830	87.9	96.0	161.25	3.63	0, 0	0.1314	0.002
CP95126	2.190	89.0	97.0	152.74	7.61	0, 0	0.1679	0.003
CP95127	4.810	93.4	101.0	86.00	5.37	0, 0	0.1124	0.001
CP95128	0.800	92.3	96.0	79.61	16.21	0, 0	0.1610	0.002
CP95129	3.770	86.8	95.0	83.02	1.71	0, 0	0.3378	0.001
CP95130	10.000	92.5	98.0	60.46	1.83	0, 0	0.1131	0.001
CP95131	0.510	102.2	103.0	96.59	70.66	1, 0	0.1062	0.001
CP95132	10.000	93.5	107.0	110.87	1.04	0, 0	0.3077	0.000
CP95133	10.000	81.5	100.0	167.36	1.68	0, 0	0.1505	0.000
CP95134	10.000	104.9	102.0	83.71	0.78	0, 0	0.2604	0.002
CP95135	10.000	109.8	97.0	133.34	2.24	0, 0	–	–
CP95136	0.640	96.8	96.0	94.08	88.62	3, 0	0.0821	0.003
CP95137	–	–	–	–	–	–, –	–	–
CP95138	10.000	100.0	101.0	80.55	3.19	2, 5	0.7024	0.004
CP95139	<b>0.170</b>	100.0	98.0	113.91	96.18	4, 0	0.0950	0.003
CP95140	0.600	104.3	92.0	98.05	78.90	3, 0	0.2228	0.001
CP95141	0.320	97.9	97.0	113.59	62.91	0, 0	0.1040	0.003
CP95142	1.380	93.5	99.0	89.58	18.31	0, 0	0.0632	0.003
CP95143	<b>0.160</b>	96.9	96.0	98.56	89.87	1, 0	0.0246	0.002
CP95144	–	–	–	–	–	–, –	–	–
CP95145	<b>0.120</b>	102.2	91.0	99.63	49.96	1, 0	0.0277	0.002
CP95146	4.290	98.9	100.0	<b>31.69</b>	2.14	0, 0	0.1017	0.002
CP95147	0.450	102.2	101.0	81.55	33.22	0, 0	0.0355	0.000
CP95148	2.420	102.2	101.0	117.61	5.14	0, 0	0.3897	–
CP95CB_	10.000	102.1	105.0	<b>74.72</b>	23.52	0, 0	0.1323	0.010
CP95CF_	0.350	97.8	93.0	<b>-26.33</b>	37.62	0, 0	0.0475	0.000
CP95MI_	3.970	90.2	82.0	<b>41.88</b>	2.17	0, 0	0.4208	0.003
CP95PR1	–	–	–	<b>53.63</b>	4.73	0, 0	–	–
CP95PR2	0.580	101.0	104.0	<b>62.48</b>	98.32	3, 0	0.0915	0.000
CP95PR3	0.240	102.1	105.0	<b>61.67</b>	99.29	7, 1	0.0756	0.000
CP95PR4	0.540	99.0	103.0	<b>58.63</b>	99.43	5, 0	0.0832	0.000

<sup>a</sup> Significant Microtox<sup>®</sup> toxicity: EC<sub>50</sub> ≤ 0.2% if sediment silt-clay content ≥ 20%, or EC<sub>50</sub> ≤ 0.5% if sediment silt-clay content < 20%.

<sup>b</sup> Significant *Ampelisca abdita* or *Ampelisca verrilli* toxicity: survival in sample significantly less than survival in negative control (at α = 0.05), and survival in sample ≤ 80% of control survival.

<sup>c</sup> Significant *Mercenaria mercenaria* toxicity: mean growth rate in test sediment significantly different than in control sediment (at α = 0.05), and mean growth in test sediment < 80% of the mean growth in control sediment.

<sup>d</sup> First number is the number of contaminants at or exceeding ER-L/TEL bioeffect guideline values but below ER-M/PEL guidelines. Second number is the number of contaminants at or exceeding ER-M/PEL bioeffect guideline values.

## APPENDIX F. (Continued).

Station	Microtox <sup>®a</sup> (EC <sub>50</sub> , %)	<i>A. abdita</i> <sup>b</sup> (%)	<i>A. verrilli</i> <sup>b</sup> (%)	<i>M. mercenaria</i> <sup>c</sup> (%)	Silt-clay (%)	Exceedances <sup>d</sup> ER-L/TEL, ER-M/PEL	UAN (mg/L)	H <sub>2</sub> S (mg/L)
CP95PR5	–	–	–	<b>67.19</b>	98.94	9, 0	–	–
CP95RC_	9.410	103.3	95.0	<b>-13.43</b>	2.86	0, 0	0.2234	0.005
CP95ZI_	0.600	102.2	98.0	69.93	6.90	0, 0	0.3251	0.001
CP96201	0.370	–	–	<b>-56.61</b>	63.75	1, 0	0.0192	0.052
CP96202	<b>0.128</b>	–	–	<b>-87.59</b>	98.47	10, 1	0.0985	0.044
CP96203	10.000	–	–	<b>-39.93</b>	0.86	0, 0	0.0486	0.198
CP96204	1.539	–	–	<b>-17.28</b>	6.26	1, 0	0.1950	0.132
CP96205	<b>0.037</b>	–	–	<b>-19.49</b>	95.37	3, 0	0.0437	0.023
CP96206	6.527	–	–	<b>25.66</b>	3.21	1, 1	0.0555	0.016
CP96207	<b>0.017</b>	–	–	<b>5.95</b>	98.43	7, 0	0.0474	0.046
CP96208	0.961	–	–	138.73	5.62	0, 0	0.1555	0.107
CP96209	5.081	–	–	141.93	9.39	0, 0	0.0664	0.207
CP96210	<b>0.031</b>	–	–	<b>-24.73</b>	92.49	7, 1	0.0529	0.094
CP96211	0.358	–	–	–	95.17	6, 0	0.0345	0.775
CP96212	6.203	–	–	<b>-10.39</b>	7.86	2, 0	0.0920	0.020
CP96213	<b>0.153</b>	–	–	<b>-14.57</b>	25.29	0, 0	0.0402	0.035
CP96214	<b>0.195</b>	–	–	<b>63.32</b>	62.78	17, 0	0.0225	0.113
CP96215	3.633	–	–	90.58	5.80	0, 0	0.2159	0.132
CP96216	10.000	–	–	186.62	2.97	0, 0	0.0696	0.100
CP96217	0.767	–	–	77.97	12.01	3, 0	0.0300	0.048
CP96218	0.363	–	–	<b>12.08</b>	96.58	3, 0	0.1029	0.045
CP96219	0.299	–	–	<b>1.86</b>	65.62	1, 0	0.0585	0.059
CP96220	0.354	–	–	74.31	87.25	1, 0	0.0129	0.046
CP96221	0.809	–	–	<b>18.51</b>	98.35	1, 0	0.1511	0.028
CP96222	10.000	–	–	<b>30.37</b>	1.96	2, 0	0.0943	0.162
CP96223	5.094	–	–	89.31	0.50	0, 0	0.0822	0.010
CP96224	10.000	–	–	<b>24.62</b>	0.96	0, 0	–	–
CP96225	0.758	–	–	108.94	7.45	0, 0	0.0874	0.016
CP96226	10.000	–	–	92.01	0.89	0, 0	–	–
CP96227	10.000	–	–	139.29	1.87	0, 0	0.0279	0.256
CP96228	10.000	–	–	78.64	1.60	0, 0	0.2901	0.020
CP96229	10.000	–	–	<b>-3.61</b>	2.17	0, 0	–	–
CP96230	0.557	–	–	<b>1.61</b>	40.46	0, 0	0.0529	0.069
CP96231	10.000	–	–	219.42	3.89	0, 0	0.0259	0.086
CP96232	0.954	–	–	<b>28.52</b>	90.25	6, 0	0.0557	0.078
CP96233	<b>0.174</b>	–	–	<b>28.35</b>	95.47	4, 0	0.0780	0.062
CP96234	10.000	–	–	<b>28.99</b>	1.80	0, 0	0.0529	0.066

<sup>a</sup> Significant Microtox<sup>®</sup> toxicity: EC<sub>50</sub> ≤ 0.2% if sediment silt-clay content ≥ 20%, or EC<sub>50</sub> ≤ 0.5% if sediment silt-clay content < 20%.

<sup>b</sup> Significant *Ampelisca abdita* or *Ampelisca verrilli* toxicity: survival in sample significantly less than survival in negative control (at α = 0.05), and survival in sample ≤ 80% of control survival.

<sup>c</sup> Significant *Mercenaria mercenaria* toxicity: mean growth rate in test sediment significantly different than in control sediment (at α = 0.05), and mean growth in test sediment < 80% of the mean growth in control sediment.

<sup>d</sup> First number is the number of contaminants at or exceeding ER-L/TEL bioeffect guideline values but below ER-M/PEL guidelines. Second number is the number of contaminants at or exceeding ER-M/PEL bioeffect guideline values.

## APPENDIX F. (Continued).

Station	Microtox <sup>®a</sup> (EC <sub>50</sub> , %)	<i>A. abdita</i> <sup>b</sup> (%)	<i>A. verrilli</i> <sup>b</sup> (%)	<i>M. mercenaria</i> <sup>c</sup> (%)	Silt-clay (%)	Exceedances <sup>d</sup> ER-L/TEL, ER-M/PEL	UAN (mg/L)	H <sub>2</sub> S (mg/L)
CP96235	<b>0.041</b>	–	–	102.29	0.71	6, 1	0.1463	0.018
CP96236	10.000	–	–	108.47	91.69	0, 0	–	–
CP96237	0.216	–	–	<b>-7.04</b>	91.97	2, 0	0.1435	0.216
CP96238	6.681	–	–	<b>13.56</b>	0.26	0, 0	0.2851	0.061
CP96239	3.932	–	–	<b>11.29</b>	2.26	0, 0	0.1266	0.050
CP96240	10.000	–	–	101.22	0.77	0, 0	–	–
CP96241	<b>0.189</b>	–	–	81.45	22.95	0, 0	0.1041	0.021
CP96242	0.546	–	–	<b>5.02</b>	7.34	0, 0	0.3991	0.021

<sup>a</sup> Significant Microtox<sup>®</sup> toxicity: EC<sub>50</sub> ≤ 0.2% if sediment silt-clay content ≥ 20%, or EC<sub>50</sub> ≤ 0.5% if sediment silt-clay content < 20%.

<sup>b</sup> Significant *Ampelisca abdita* or *Ampelisca verrilli* toxicity: survival in sample significantly less than survival in negative control (at α = 0.05), and survival in sample ≤ 80% of control survival.

<sup>c</sup> Significant *Mercenaria mercenaria* toxicity: mean growth rate in test sediment significantly different than in control sediment (at α = 0.05), and mean growth in test sediment < 80% of the mean growth in control sediment.

<sup>d</sup> First number is the number of contaminants at or exceeding ER-L/TEL bioeffect guideline values but below ER-M/PEL guidelines. Second number is the number of contaminants at or exceeding ER-M/PEL bioeffect guideline values.

**APPENDIX G.** Mean Shannon-Weaver diversity ( $H'$ ), species richness, and abundance per infaunal grab, and benthic infaunal index score for stations in the N.C. portion of the EMAP Carolinian Province during summer 1994-96.

Station	Mean $H'$	Mean Richness	Mean Abundance	Benthic Index
CP94028	–	–	–	–
CP94029	3.55	30.00	255.50	4.5
CP94030	3.37	25.50	179.00	4.5
CP94031	3.56	21.50	113.00	5.0
CP94032	4.08	28.50	136.00	5.0
CP94033	3.51	20.50	80.50	4.0
CP94034	2.50	10.00	84.00	3.0
CP94035	2.80	17.50	165.00	4.0
CP94036	0.79	1.50	1.50	1.5
CP94037	3.78	22.50	115.00	5.0
CP94038	1.00	8.50	252.00	3.0
CP94039	1.63	10.50	219.50	3.5
CP94040	1.76	4.50	15.50	1.0
CP94041	2.69	8.50	32.00	3.0
CP94042	3.16	21.00	168.00	4.5
CP94043	0.52	2.00	8.00	1.0
CP94044	2.65	16.50	107.00	3.5
CP94045	3.58	26.50	175.50	5.0
CP94046	3.53	18.00	58.50	4.0
CP94047	1.22	6.00	194.00	2.5
CP94048	0.79	2.00	2.50	1.5
CP94049	2.48	10.50	48.50	3.0
CP94050	2.50	6.50	20.00	2.0
CP94051	0.00	1.00	1.00	1.0
CP94052	0.00	0.00	0.00	1.0
CP94053	0.60	3.00	91.50	1.5
CP94054	1.83	7.50	193.00	4.5
CP94055	2.84	12.00	112.50	3.5
CP94056	2.82	14.50	92.50	3.5
CP94057	2.72	23.00	276.00	4.0
CP94058	3.21	14.00	77.50	3.5
CP94059	3.31	15.00	50.50	4.0
CP94060	2.48	10.00	110.50	5.0
CP94061	1.76	8.50	82.50	3.0
CP94062	1.45	3.50	12.00	1.5
CP94063	2.48	7.00	31.00	3.5
CP94064	1.73	3.50	8.50	2.0
CP94065	1.74	7.00	77.00	3.5
CP94066	0.91	2.00	20.00	1.0
CP94067	0.80	7.50	327.50	2.5
CP94068	2.28	10.00	161.00	5.0
CP94069	0.56	4.00	70.50	1.5

**APPENDIX G.** (Continued).

Station	Mean H'	Mean Richness	Mean Abundance	Benthic Index
CP94070	1.95	7.50	53.50	3.5
CP94071	2.16	12.50	258.00	4.5
CP94072	1.45	7.00	91.00	3.0
CP94084	2.41	13.00	154.00	4.5
CP94CF_	0.88	7.00	119.50	4.0
CP94ES4	2.40	12.50	93.00	4.5
CP94MI_	2.84	15.00	58.00	3.5
CP94RC_	3.13	12.50	34.50	4.0
CP94ZI_	1.09	4.00	39.50	1.5
CP95101	1.23	4.50	74.00	1.5
CP95102	2.56	7.00	39.00	2.5
CP95103	2.16	8.00	35.50	3.0
CP95104	1.78	7.50	134.50	3.5
CP95105	2.32	9.50	144.00	5.0
CP95106	2.47	11.00	171.00	5.0
CP95107	0.59	2.50	33.50	1.0
CP95108	2.57	7.00	37.00	3.5
CP95109	1.60	5.00	13.00	2.5
CP95110	1.85	6.50	165.00	3.5
CP95111	2.77	10.50	114.50	5.0
CP95112	1.66	10.00	125.00	4.5
CP95113	3.34	17.50	50.50	4.5
CP95114	0.72	5.00	86.00	2.5
CP95115	3.36	21.00	117.00	5.0
CP95116	0.69	2.00	3.00	2.0
CP95117	2.55	7.00	24.00	2.0
CP95118	2.94	19.00	226.00	4.0
CP95119	2.62	6.50	13.50	2.0
CP95120	0.32	2.00	86.50	1.5
CP95121	0.00	0.50	0.50	1.0
CP95122	0.00	0.50	0.50	1.0
CP95123	3.41	20.00	120.00	5.0
CP95124	0.00	0.00	0.00	1.0
CP95125	2.47	27.50	422.50	4.5
CP95126	3.32	17.50	86.50	4.5
CP95127	2.82	17.50	123.50	5.0
CP95128	2.07	18.00	262.50	3.5
CP95129	2.17	11.50	112.50	5.0
CP95130	3.96	26.00	85.00	4.5
CP95131	2.67	7.50	20.50	3.5
CP95132	3.37	23.50	107.00	4.0
CP95133	2.43	11.00	34.50	3.5
CP95134	2.64	10.00	31.50	3.5
CP95135	1.33	8.50	182.50	3.5

**APPENDIX G.** (Continued).

Station	Mean H'	Mean Richness	Mean Abundance	Benthic Index
CP95136	0.00	0.00	0.00	1.0
CP95137	–	–	–	–
CP95138	2.60	10.50	58.00	4.0
CP95139	0.70	4.50	41.50	1.0
CP95140	2.12	6.00	23.50	2.0
CP95141	3.62	17.00	57.50	3.5
CP95142	4.36	24.00	41.00	4.0
CP95143	3.33	14.00	60.50	3.5
CP95144	–	–	–	–
CP95145	1.68	5.00	14.00	1.5
CP95146	2.41	9.50	41.50	3.0
CP95147	2.20	6.00	12.50	3.0
CP95148	0.75	6.50	148.50	3.0
CP95CB_	1.73	7.00	32.50	3.0
CP95CF_	0.81	10.00	398.00	2.5
CP95MI_	2.36	9.00	43.00	3.5
CP95PR1	1.89	9.00	126.50	4.0
CP95PR2	0.50	1.50	1.50	1.0
CP95PR3	1.10	2.50	11.50	1.5
CP95PR4	1.10	2.50	12.00	1.0
CP95PR5	0.50	1.50	1.50	2.0
CP95RC_	3.31	12.50	30.50	4.0
CP95ZI_	1.73	10.00	308.50	3.0
CP96201	2.17	7.00	72.50	3.5
CP96202	0.70	2.00	5.50	2.0
CP96203	2.01	8.00	26.00	3.0
CP96204	2.62	10.50	76.00	4.5
CP96205	1.71	4.00	10.00	2.0
CP96206	0.36	1.50	5.50	1.0
CP96207	1.36	3.00	11.50	1.5
CP96208	1.17	5.50	96.50	2.5
CP96209	3.33	13.00	37.00	4.0
CP96210	2.25	5.50	16.50	2.0
CP96211	2.73	9.00	21.00	4.0
CP96212	2.35	7.50	31.00	3.5
CP96213	2.18	6.00	21.00	2.5
CP96214	1.52	11.50	334.00	4.5
CP96215	2.44	7.50	18.50	3.5
CP96216	3.62	19.00	46.50	4.5
CP96217	2.86	14.00	127.50	5.0
CP96218	2.70	8.50	28.00	3.0
CP96219	2.78	8.00	18.50	3.0
CP96220	3.08	11.00	28.00	4.0
CP96221	0.96	2.00	3.50	2.5

**APPENDIX G.** (Continued).

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Station	Mean H'	Mean Richness	Mean Abundance	Benthic Index
CP96222	3.54	19.50	52.00	4.5
CP96223	3.03	15.00	45.50	4.0
CP96224	1.87	8.50	28.50	3.5
CP96225	2.77	13.00	62.00	4.5
CP96226	3.02	13.00	64.00	4.5
CP96227	3.77	18.00	35.00	4.5
CP96228	2.97	11.50	61.00	4.5
CP96229	3.21	22.00	79.50	4.0
CP96230	3.31	12.50	39.00	4.0
CP96231	3.60	23.50	101.50	4.0
CP96232	1.79	4.00	17.00	2.0
CP96233	2.41	5.50	6.50	2.5
CP96234	1.68	6.50	118.00	3.0
CP96235	1.27	4.00	14.50	1.5
CP96236	3.23	13.50	54.50	4.5
CP96237	1.98	5.00	8.00	2.0
CP96238	3.53	25.00	84.00	4.0
CP96239	3.52	27.00	126.00	5.0
CP96240	2.84	10.50	29.50	3.5
CP96241	3.62	20.50	56.50	4.0
CP96242	3.46	18.00	75.50	4.0

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