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June 1, 1999

Project Number 7397

Mr. James Shafer
Remedial Project Manager
Northern Division, Naval Facilities Engineering Command
10 Industrial Highway, Mail Stop 82
Lester, Pennsylvania 19113

Reference: CLEAN Contract No. N62472-90-D-1298
Contract Task Order No. 0269

Subject: Transmittal of Additional Text for Uncertainty
Draft Marine Ecological Risk Assessment Report, Old Firefighting Training Area
Naval Station - Newport, Newport Rhode Island

Dear Mr. Shafer:

Attached you will find additional text proposed for the uncertainty sections of the draft final Marine Ecological Risk Assessment report for the Old Firefighting Training Area (Site 09), at Naval Station Newport, in Newport Rhode Island. This material has been developed as discussed at the conference call held May 24, 1999. At the conclusion of that call, it was agreed that the Navy would provide this material to the review parties, who would review it, and render a recommendation as to whether to include it in the revised report. June 14, 1999 was agreed to as a possible date for a follow-up call to discuss this material.

If you have any questions regarding this material, please do not hesitate to contact me.

Very truly yours,

Stephen S. Parker
Project Manager

enclosure

c: M. Griffin, NETC (w/encl. - 4)
K. Keckler, USEPA (w/encl. - 3)
P. Kulpa, RIDEM (w/encl. - 4)
J. Stump, Gannett Fleming (w/encl. - 2)
K. Finkelstein, NOAA (w/encl. - 1)
D. Egan, TAG (w/encl. - 1)
J. Trepanowski/G. Glenn, B&RE (w/encl. - 1)
File 7397-3.2 (w/o encl.)

Section 4.4. Uncertainty (con't)

OFFTA Reference Data Comparability To Baseline Reference Conditions.

Uncertainty exists with regard to the appropriateness of reference site data for use in evaluation of baseline ecological risks for the OFFTA site. The root of the uncertainty is related to the obserevation that the OFFTA reference stations have elevated CoC concentrations relative to that observed for other lower Narragansett Bay reference stations, potentially as a result of localized CoC sources other than the OFFTA site itself. As discussed in Section 4.1 and 4.2, possible non-site related sources associated with the Navy Hospital, Newport Bridge, and Newport outfall.

Figures 4.3-1 to 4.3-7 provide graphical presentations of OFFTA reference station (Coasters Harbor) data relative to other reference sites in Narragansett Bay used for recent Navy ecorisk assessments of Allen Harbor, McAllister Point and Derecktor Shipyard. These other reference stations are referred to as baseline. As indicated in the comments, concentrations of organics (Total PAHs and Total PCBs, Figures 4.3-1 and 4.3-2, respectively) are elevated at OFFTA station 23 relative to baseline reference stations, while intertidal OFF station OFF-22 is comparable to baseline conditions. Higher % TOC was observed at OFF-23 (2.7%) compared to Station OFF-22 (1.3%) and baseline (1.1%, Figure 4.3-3), suggesting that TOC, as an indicator of the depositional regime and absorptive capacity of the sediment for organics, may account for some part of the observed elevations.

A similar pattern was observed for copper, lead and mercury, again with Station OFF-23 trending higher than baseline reference stations (Figures 4.3-4 to 4.3-6, respectively). As was indicated for organics, metals concentrations in sediments can be expected to increase due to the depositional nature of the sampling location. The % silt value for OFF-23 is also significantly elevated over OFF-22 and baseline with a value of 44.1 compared to 8.0 and a mean of 8.6, respectively (Figure 4.3-7). Higher % TOC and % silt makes for finer grains that tend to trap contaminants. Therefore, these higher concentrations are simply a function of the nature of sedimentation at this location. These sediments collect metals derived from terrestrial (soil erosion) or regional contamination sources.

To address the uncertainty of differences between chemical concentrations of OFFTA ERA reference stations (OFF-22 and OFF-23) and baseline reference stations, detailed data comparisons were performed. Sediment concentrations were normalized to aluminum for metals and total organic carbon (TOC) for organics. The purpose of the normalization was to account for differences in depositional regime that may be responsible for differences in CoC concentration which, in turn, might result in increased bioavailability of CoCs to receptor species. These normalization techniques were also employed in the ERA to elucidate potential site-related patterns in sediment CoC distribution (Section 4.1).

Similar normalization techniques were conducted on the tissue concentrations. Whereas results for tissue metals were reported as straight OFFTA/baseline tissue concentration ratios without normalization, the tissue organic concentration were reported as normalized lipid ratios. This normalization technique was also employed in Section 4.2 to elucidate potential species differences in CoC bioaccumulation.

Prior to performing the normalizations, those OFFTA sediment-based and tissue-based values assigned a ND (non-detect) as a data qualifier were removed. This was done because it was assumed that reliable ratios could not be derived if the numerator value in the ratio was uncertain. In contrast, baseline reference data were available for all analytes. As per EPA guidance, the baseline reference data flagged as U (for non-detect) was substituted with one-half the MDL value (at the time the ERA was prepared).

Using the normalized data, the ratio of the OFFTA reference to baseline reference values were calculated. For example, for sediment metals, the sediment-based concentration ratio was ((OFFTA reference sediment conc./Al)/(baseline sediment conc./Al)). Similarly, for sediment organics, the sediment-based concentration was ((OFFTA sediment conc./%TOC)/(baseline sediment conc./%TOC)). For tissue metals, the OFFTA tissue-based concentration was divided into the baseline tissue-based concentration. For tissue organics, the tissue-based concentration was normalized to the lipid content for each species and then divided into one another ((OFFTA reference tissue conc./lipid)/(baseline reference tissue conc./lipid)) for a lipid normalized ratio. For each OFFTA reference station, ratios were developed for both the average (AVG) and upper 95% confidence limit ranges of the baseline data sets.

Results of site/baseline ratios for normalized sediment and tissue concentrations is summarized in Tables 1 and 2, respectively. Individual normalized sediment and tissue data by station and analyte are reported in Appendix Tables A1-A2 and B1-B2, respectively. In each Table, ratios using average and UCL baseline values are included and are segregated depending if the site concentration was less or greater than the baseline value. In Table 1, for example, the AVG-based ratio for cadmium in OFF-22 sediments indicate that the aluminum-normalized concentration is 4.5-fold less than the baseline. This corresponds to the reciprocal of an actual site/ref ratio of 0.17 (Table A1). The data are expressed in this manner such that the scale representing the degree of departure from equivalency (equivalency is met when the ratio is equal to one) would be the same regardless if the OFFTA values were less than or greater than baseline. This presentation also permits the "sum of means" calculation, which represents the CoC class-wide trend. For example, results in Table 1 show that metals in OFF-22 sediments are, as a whole, about one (-1.3) to three (-3.1) times lower than average and upper range baseline concentrations, respectively. This interpretive approach was applied to a full suite of sediment and tissue data, discussed below.

For sediment metals, results generally show that less than a three-fold difference exists between OFFTA reference and baseline reference stations. Exceptions where

CoCs at the site exceed baseline include arsenic (OFF-22, Avg ratio = 3.1) and zinc (OFF-23, UCL ratio = 3.6). Even these elevations may not represent departure from baseline conditions since overall, metals as a class show lower metals concentrations at the site than for baseline (sum of means < -1).

Results for sediment organic concentrations for Station OFF-22 also shows less than a 2-fold difference between OFFTA reference and baseline reference stations, thus sediment concentrations are well within the range of expected concentrations. However, OFF-23 does differ substantially from baseline for the PAHs, exhibiting up to a 30 to 40-fold increase over baseline (acenapthene), while PAHs as a class are 7.6 to 11.8-fold higher than baseline for this location. Thus, in contrast to Station OFF-22, this elevation could indicate that this station is not typical of baseline conditions (although not necessarily site related). Pesticides also appeared to be somewhat elevated relative to reference at 3-5 fold above reference. By comparison, PCBs did not seem to be particularly elevated as the UCL comparison indicated concentrations at OFF-23 were within 3-fold of baseline.

An important element of the analysis was to determine whether elevated concentrations observed in sediments were also reflected in tissues. The result of tissue ratios for metal tissue-based concentrations for four receptor groups, infaunal - hard clams (HC), epifaunal- blue mussels (BM), scavenger- lobster (LOB) and pelagic community - deployed mussels (DEP) generally show elevations for cadmium, chromium, mercury and nickel (Table 2). Based on the UCL comparisons, metals as a class do not appear to be elevated for indigenous (BM) and deployed (DEP) mussels (sum of means < 3), whereas elevations are apparent for hard clams and lobster (sum of means = 8.0 and 11.1, respectively). It is noted that potential natural causes of this variation could not be addressed by normalization procedures because the proper normalizing variables for metals in tissue are not known. Such variation could be due to internal regulation of these metals. Regardless, sediments did not show similar enrichment, such that it does not appear likely that the elevated residues in clams and lobsters are the result of increased exposure from sediment.

In contrast to the metals, the results for organic contaminants in tissues generally show very good agreement between OFFTA reference and baseline reference values. Only rarely are individual CoC ratios above three-fold, and many analytes are found at concentrations which are less than the average baseline condition (ratio < 0). Overall, results for PAH, PCB and pesticide groups (sum of means, Table 2) suggesting lower concentrations exist in OFFTA reference biota than is found for the baseline reference stations.

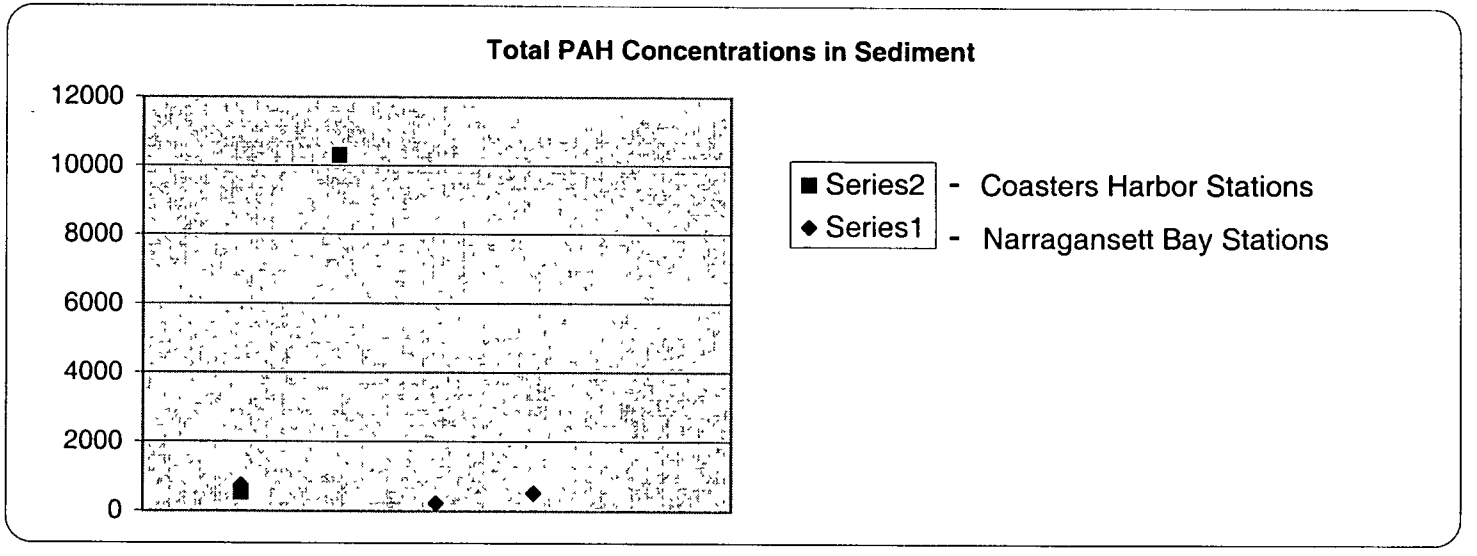
In summary, the results of the analysis show that natural factors such as %fines using Al as a surrogate, TOC and lipid content of organisms account for the majority of apparent elevations in bulk sediment and tissue residue concentrations at OFFTA reference sites relative to baseline reference conditions. Noted uncertainties include apparent elevation of PAHs in sediments which were not reflected in bivalve tissue (that

do not metabolize PAHs), and apparent elevation of metals in some species that are not readily explained by corresponding trends in sediment concentrations. Even allowing these uncertainties, the comparability of data between OFFTA and baseline reference would appear sufficient to justify their appropriateness for the ERA evaluation. The data also serve to indicate the importance of comparable habitats in the selection of reference locations: had a reference station with lower TOC/grain size stations been selected, a potentially erroneous conclusion of elevated site chemistry would be inferred from the site-reference comparisons.

Section 6.7. Uncertainty (con't)

It is also noted that the Tissue Concentration Ratios (TCR) results employed as a weight of evidence for exposure directly depend upon use of reference data, such that the quantitative evaluation of ecological risk at a given station is generally not dependent upon the reference condition. Elevated concentrations of metals were observed in hard clams and lobsters collected from OFF-23 relative to that observed at baseline reference stations (see discussion in Section 4.3), such that TCR ratios may be reduced and thus underestimate site-related risk. However, given the multiple species used for the TCR determination, and other, numerous lines of evidence for potential effects, it is concluded that the reference data are valid for the risk assessment, and the calculations performed to derive risk are not unduely influenced over this issue.

Figure 4.3-1
PAH Concentrations in Narragnasett Bay Reference Stations
NSN Newport Ecorisk

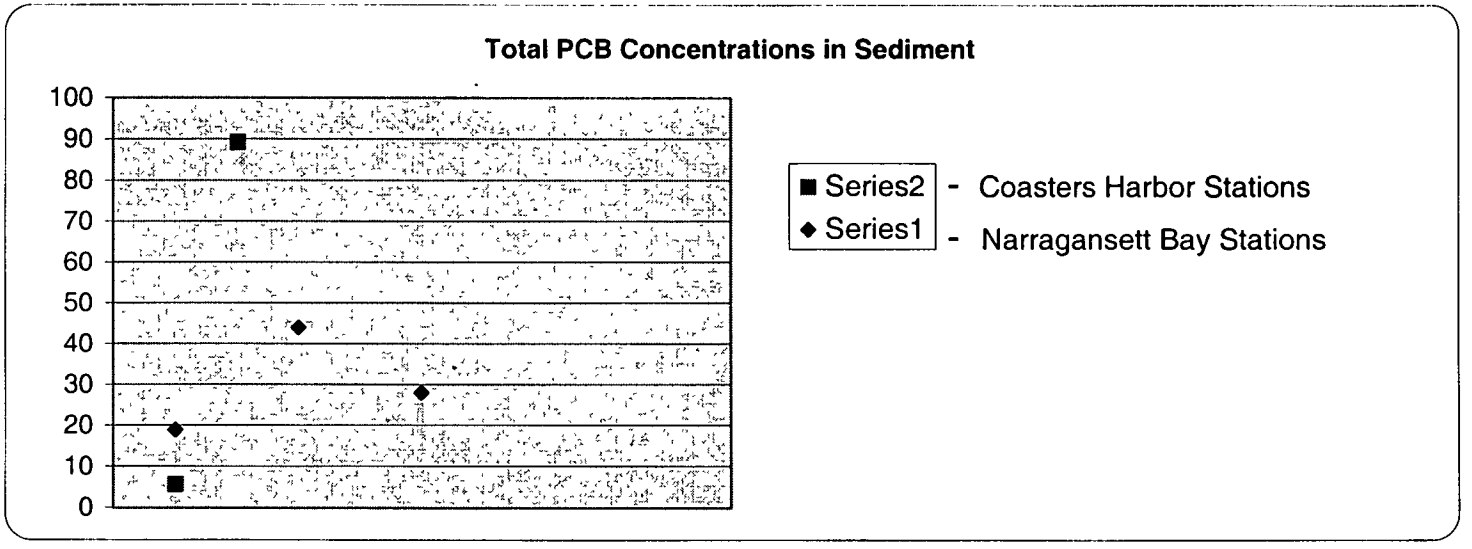


Narragansett Bay	
Station ID	Concentration
JPC 1	746
JPC 2	
JCC-1	223
JCC-2	511
CHC 1	

Coasters Harbor	
Station ID	Concentration
CH 22	543
CH 23	10300

PAH Concentrations are expressed in ng/g, or ppb

Figure 4.3-2
PCB Concentrations in Narragnasett Bay Reference Stations
NSN Newport Ecorisk

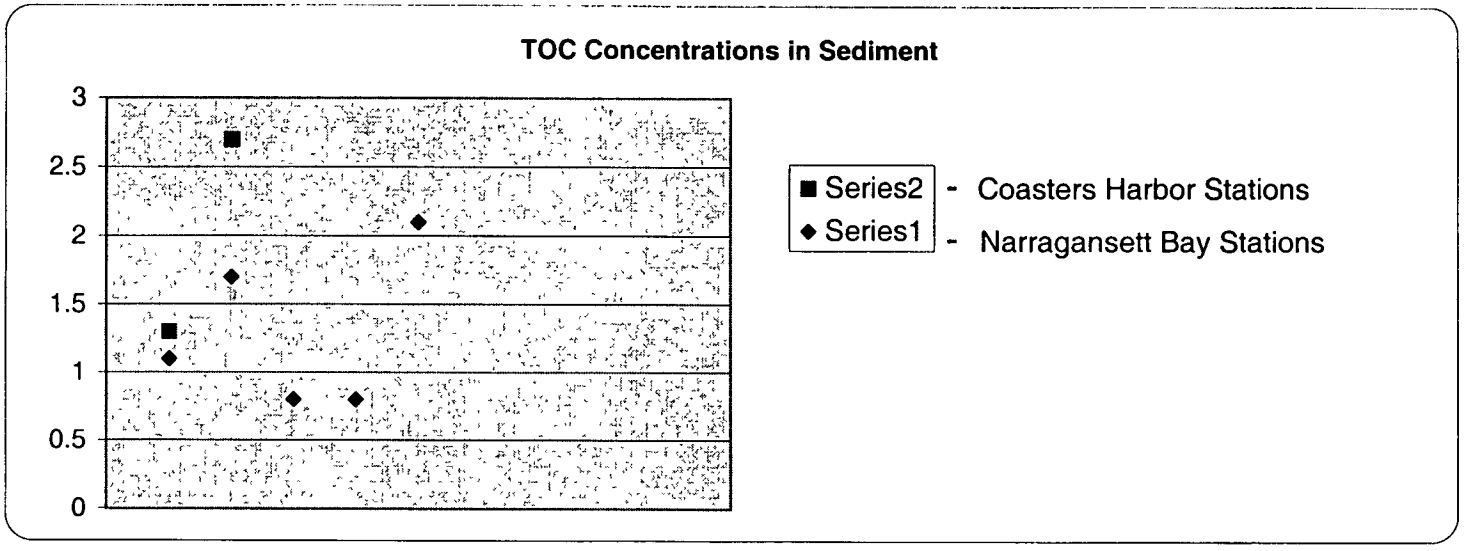


Narragansett Bay	
Station ID	Concentration
JPC 1	18.91
JPC2	
JCC-S1	44
JCC-M1	
JCC-D1	28
CHC 1	

Coasters Harbor	
Station ID	Concentration
CH 22	5.6
CH 23	89.2

PCB Concentrations are expressed in ng/g, or ppb

Figure 4.3-3
TOC Concentrations in Narragnasett Bay R ference Stations
NSN Newport Ecorisk

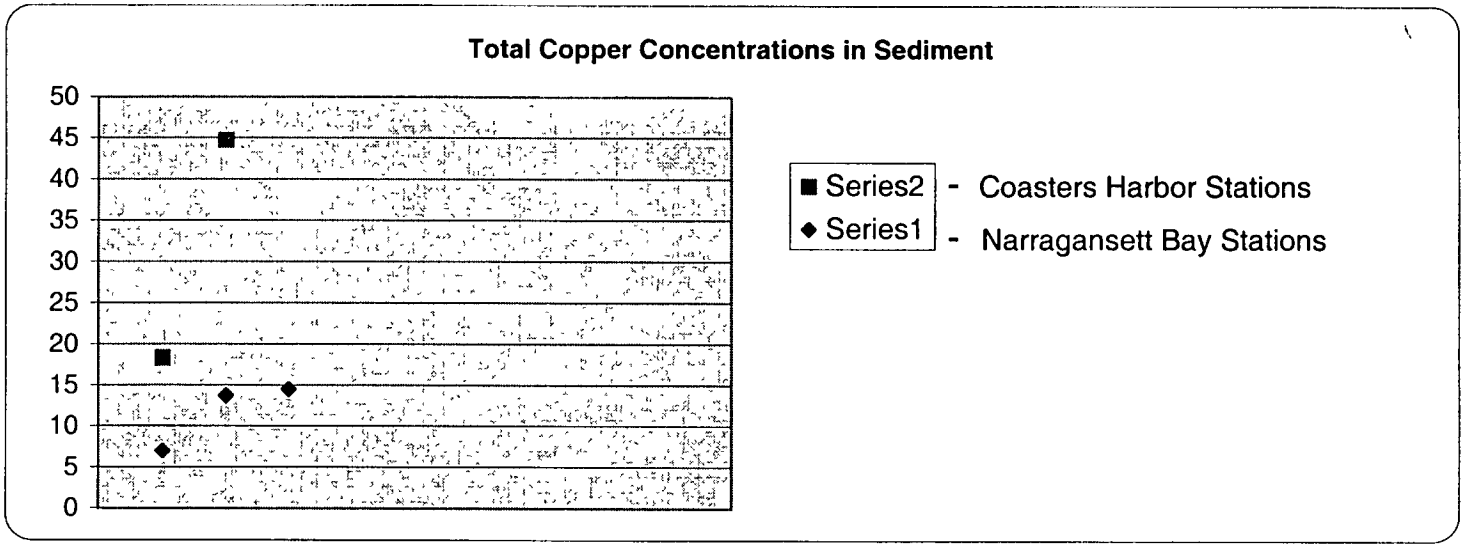


Narragansett Bay	
Station ID	Concentration
JPC 1	1.1
JPC2	1.7
JCC-S1	0.8
JCC-M1	0.8
JCC-D1	2.1
CHC 1	

Coasters Harbor	
Station ID	Concentration
CH 22	1.3
CH 23	2.7

PCB Concentrations are expressed in ng/g, or ppb

Figur 4.3-4
Copper Concentrations in Narragnasett Bay Referenc Stations
NSN Newport Ecorisk

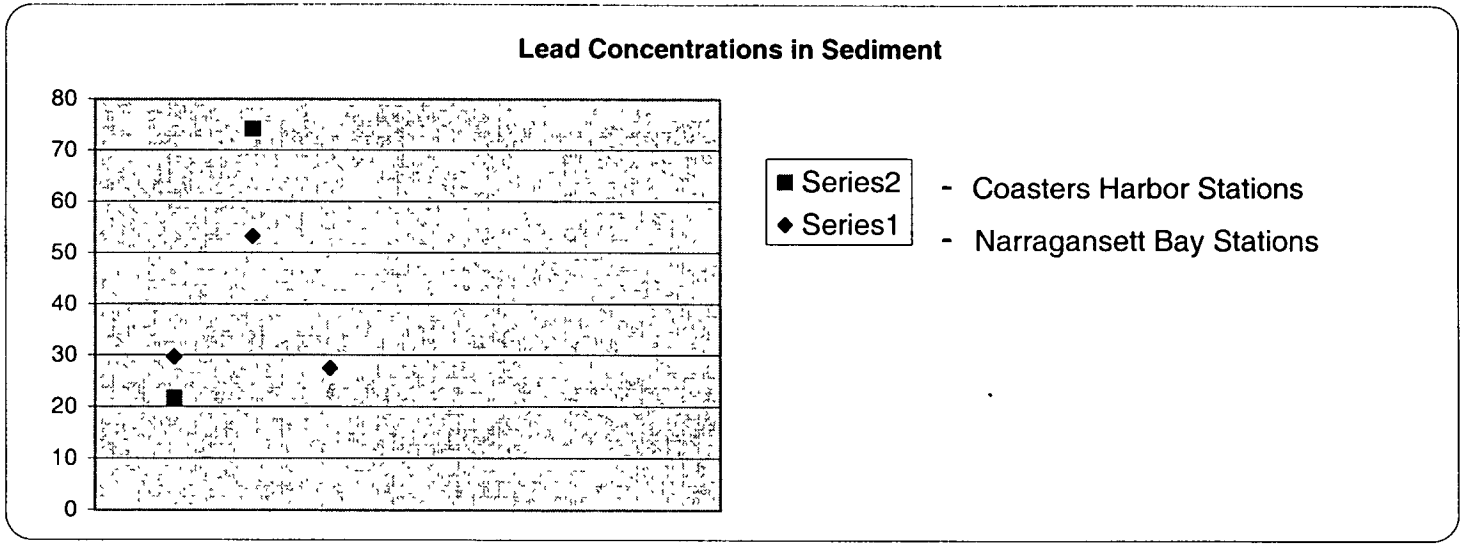


Narragansett Bay	
Station ID	Concentration
JPC 1	7
JPC2	13.75
JCC-S1	14.5
JCC-M1	
JCC-D1	
CHC 1	

Coasters Harbor	
Station ID	Concentration
CH 22	18.3
CH 23	44.7

PCB Concentrations are expressed in ng/g, or ppb

Figure 4.3-5
Lead Concentrations in Narragnasett Bay Reference Stations
NSN Newport Ecorisk

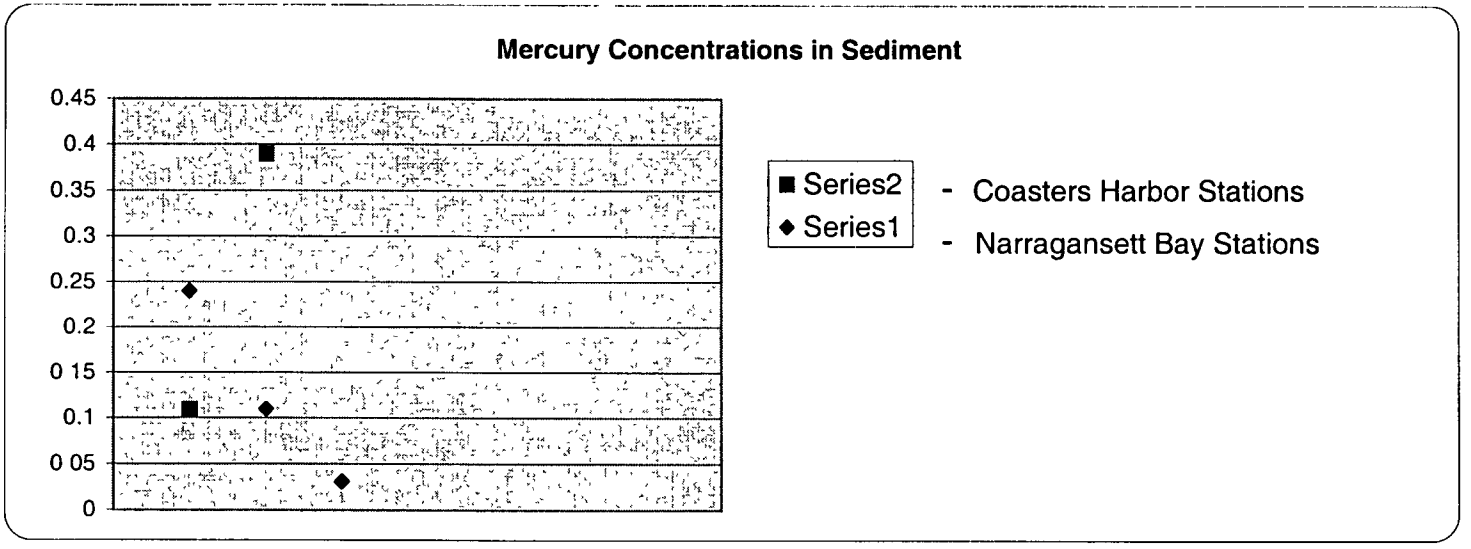


Narragansett Bay	
Station ID	Concentration
JPC 1	29.7
JPC2	53.2
JCC-S1	27.5
JCC-M1	
JCC-D1	
CHC 1	

Coasters Harbor	
Station ID	Concentration
CH 22	21.7
CH 23	74.2

Lead concentrations are expressed in ug/g, or ppm

Figure 4.3-6
Mercury Concentrations in Narragnasett Bay R ference Stations
NSN Newport Ecorisk

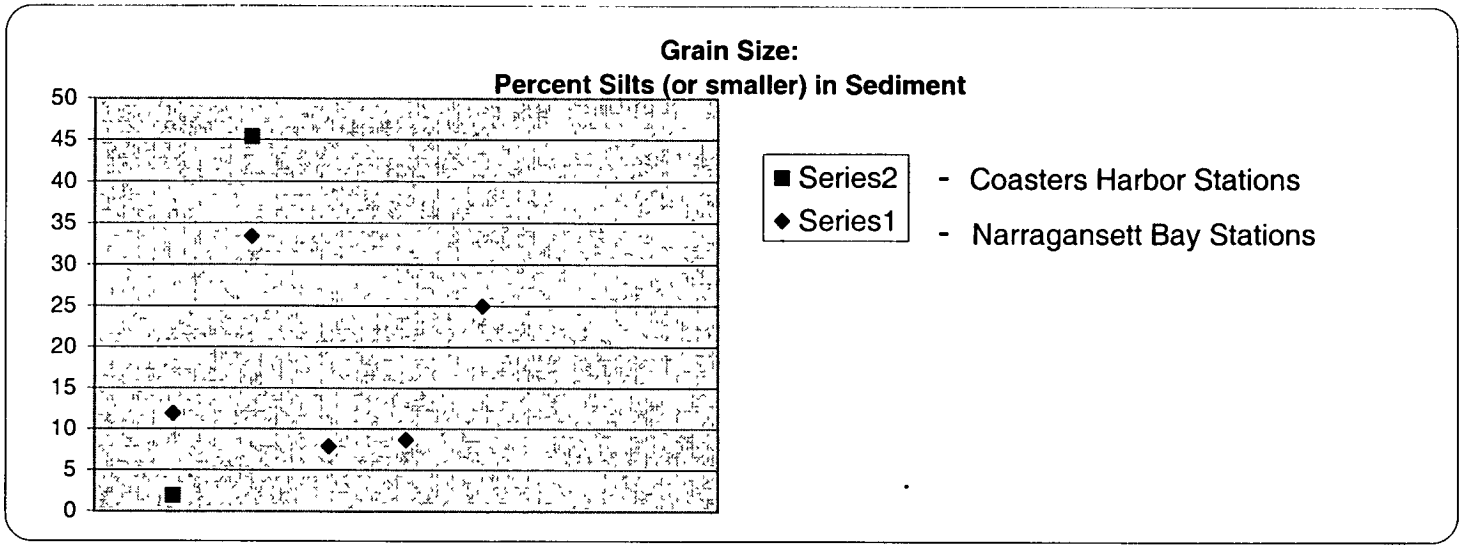


Narragansett Bay	
Station ID	Concentration
JPC 1	0.24
JPC2	0.11
JCC-S1	0.031
JCC-M1	
JCC-D1	
CHC 1	

Coasters Harbor	
Station ID	Concentration
CH 22	0.11
CH 23	0.39

Mercury Concentrations are expressed in ug/g, or ppm

Figure 4.3-7
Grain Size Summary in Narragnasett Bay Reference Stations
NSN Newport Ecorisk



Narragansett Bay	
Station ID	Concentration
JPC 1	11.9
JPC2	33.4
JCC-S1	7.9
JCC-M1	8.7
JCC-D1	25
CHC 1	

Coasters Harbor	
Station ID	Concentration
CH 22	1.9
CH 23	45.4

Grain Size as described is presented as % of particles that are silt or smaller in samples collected.

Table 1. Comparison of Site and Baseline Reference sediment concentrations for the OFFTA ERA[1,2].

Station-Sample	OFF-22-SED				OFF-23-SED			
	Avg Ratio		95% UCL Ratio		Avg Ratio		95% UCL Ratio	
Analyte	Site < Base	Site ≥ Base	Site < Base	Site ≥ Base	Site < Base	Site ≥ Base.	Site < Base	Site ≥ Base
Arsenic		3.1		2.4		1.5		1.2
Cadmium	-4 5		-5.9		-5.1		-6.7	
Chromium		1.8		1.6	-1.3		-1.5	
Copper		2 5		1.9		2.4		1.8
Lead		1.5		1 1		2 0		1.5
Mercury	-2.5		-3.9		-1.8		-2.8	
Nickel		2.2		1.9		1 7		1.5
Silver	ND	ND	ND	ND	-6.6		-9.3	
Zinc	ND	ND	ND	ND		5 4		3.6
Mean	-3 5	2.2	-4.9	1.8	-3.7	2.6	-5.1	1.9
Sum of Means	-1 3		-3.1		-1.1		-3.1	
1,6,7-Trimethylnaphthalene	-4.7		-7.6			2.8		1.7
1-Methylnaphthalene		1.3	-1.1			8.8		5.9
1-Methylphenanthrene	-2.7		-4.2			3.4		2.2
2,6-Dimethylnaphthalene		1.8		1.2		5.9		4.0
2-Methylnaphthalene		1.2	-1 1			8.0		5.9
Acenaphthene		1 6		1.1		37.9		26.8
Acenaphthylene	1.1		-1.7			8.1		5.0
Anthracene		1.2	-1.3			20.5		13.2
Benzo(a)anthracene		1.4	-1.1			11.7		7.3
Benzo(a)pyrene		1.3	-1.3			12.0		7.4
Benzo(b+k)fluoranthene		1.3	1.3			12.6		7.3
Benzo(e)pyrene		2 0		1.2		13.3		8.3
Benzo(g,h,i)perylene		2 5		1.7		13.8		9.3
Benzo(k)fluoranthene								
Biphenyl	-2.2		-3 1			3.5		2.5
Chrysene	-1.2		-2.0			8 2		5.0
Dibenz(a,h)anthracene		2 3		1.4		16.4		9.9
Fluoranthene	1.1		-1.7			10.7		6 8
Fluorene		1.0	-1.7			21 5		12.4
Indeno(1,2,3-cd)pyrene		1.6		1.0		11 6		7.4
Naphthalene	-1.5		-1.9			4.1		3.4
Perylene		1 5		1.0		11.5		7.8
Phenanthrene	-1.2		-2.0			13.3		7.8
Pyrene		1 1	-1.4			10 9		7.1
LMW PAHs		1.2	-1.2			18 4		12.9
HMW PAHs	-1 6		-2.5			6 4		4.0
Total PAHs		1.3	-1 2			11.7		7 4
Mean	-1.4	1 5	-2.0	1.2		11.8		7.6
Sum of Means	0.1		-0 8		11 8		7.6	
Total PCBs	-0.4		-0.3			3 0		2 3
Aldrin	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorobenzene	ND	ND	ND	ND		2 4		1 3
Mirex	ND	ND	ND	ND		6 0		4.6
o,p'-DDE	ND	ND	ND	ND	ND	ND	ND	ND
p,p'-DDE	ND	ND	ND	ND		5.1		3.7
Mean						4.5		3 2

1 - Comparison based on ratio of OFFTA conc to average (Avg) and Upper 95% Confidence Limits (UCL) of "baseline" stations (previously used reference locations in Narragansett Bay, see text)

2 - Aluminum normalization used for metals ((OFFTA Conc /Al Conc)/(Baseline Conc /Al Conc)), TOC normalization used for organics ((OFFTA Conc /TOC Conc)/(Baseline Conc /TOC Conc))

ND = Non-Detect for OFFTA stations

Table 2 Comparison of Site and Baseline Reference tissue concentrations for the OFFTA ERA[1,2].

Station-Sample	OFF-22-BM				OFF-23-DEP				OFF-23-HC				OFF-23-LOB			
	Avg Ratio		95% UCL Ratio		Avg Ratio		95% UCL Ratio		Avg Ratio		95% UCL Ratio		Avg Ratio		95% UCL Ratio	
Analyte	Site < Base	Site ≥ Base	Site < Base	Site ≥ Base	Site < Base	Site ≥ Base	Site < Base	Site ≥ Base	Site < Base	Site ≥ Base	Site < Base	Site ≥ Base	Site < Base	Site ≥ Base	Site < Base	Site ≥ Base
Arsenic	-2.9		-3.9		-3.7		-5.6		-2.1		-3.2		-2.2		-2.4	
Cadmium		23.6		23.2		16.1		12.3		16.2		10.5		25.9		13.0
Chromium	ND	ND	ND	ND		9.0		6.1	ND	ND	ND	ND		13.5		7.1
Copper	-6.0		-8.0		-1.3		-1.8		ND	ND	ND	ND		1.1	-1.4	
Lead		2.8		1.3		4.1		1.4		7.8		4.8		58.6		35.6
Mercury		9.6		8.9		12.3		10.5		44.7		23.2		5.9		3.9
Nickel		6.2		2.1		3.1		2.4		4.2		2.8		27.5		15.8
Silver	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		1.1	-1.5	
Zinc		1.7		1.6		1.7		1.3	-1.1		-1.4			2.2		2.0
Mean	-4.5	8.8	-5.9	7.4	-2.5	7.7	-3.7	5.7	-1.6	18.2	-2.3	10.3	-2.2	17.0	-1.8	12.9
Sum of Means	4.3		1.5		5.2		1.9		16.6		8.0		14.8		11.1	
1,6,7-Trimethylnaphthalene	-1.2		-1.5			1.0	-1.2		-9.8		-13.3		-5.6		-6.2	
1-Methylnaphthalene		2.5	-1.2		-2.7		-6.2		ND	ND	ND	ND	ND	ND	ND	ND
1-Methylphenanthrene	-1.8		-2.4		-2.1		-3.6		-3.4		-7.9		-48.9		-55.7	
2,6-Dimethylnaphthalene	-2.3		-5.4		-6.0		-16.5		-2.8		-3.8		-5.1		-5.6	
2-Methylnaphthalene		2.4	-1.2		-3.8		-9.5		ND	ND	ND	ND	-1.2		-1.3	
Acenaphthene		1.6		1.2	-9.1		-9.8			1.4		1.1	-2.4		-2.7	
Acenaphthylene	-3.7		-6.3		-4.6		-12.5		-2.1		-2.8		ND	ND	ND	ND
Anthracene	-2.1		-4.2		-2.2		-4.0			2.0		1.2	-4.2		-4.8	
Benzo(a)anthracene	-1.8		-4.0		-1.0		-2.1			3.0		1.4		2.3		2.1
Benzo(a)pyrene	-2.4		-5.8		-1.6		-4.0			2.4		1.5		2.1		1.9
Benzo(b + k)fluoranthene	-1.5		-3.4		-1.4		-2.9			3.3		2.8		3.0		2.7
Benzo(e)pyrene	-1.4		-3.2			1.0	-1.9			3.3		2.1		2.3		2.0
Benzo(g,h,i)perylene		1.1	-2.7			8.3		6.8		1.7		1.2		2.8		2.5
Biphenyl	-3.2		-4.3		-5.4		-6.6		-5.3		-6.7		-9.5		-10.5	
Chrysene		1.2	-1.8			2.2		1.1		1.8		1.7		3.3		3.0
Dibenzo(a,h)anthracene		3.8		2.9	-6.5		-18.8		-2.6		-3.9		ND	ND	ND	ND
Fluoranthene		1.2	-1.6			2.4		1.3		1.9		1.7		3.9		2.7
Fluorene	-2.3		-4.9			3.2		2.6	-1.6		-2.1		-5.7		-13.6	
Indeno(1,2,3-cd)pyrene		1.1	-2.5			3.8		3.1		2.2		1.6		2.2		2.0
Naphthalene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		4.7		4.3
Perylene	NA	NA	NA	NA	-2.1		-5.6		ND	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	-1.0		-1.8		-1.5		-2.0			1.2	-1.2		-1.7		-1.8	
Pyrene		1.2	-1.7			1.7		1.0		2.0		1.8		2.4		1.5
LMW PAHs	-1.1		-2.2		-2.7		-4.6		-1.6		-2.2		-1.6		-1.9	
HMW PAHs	-1.2		-2.4			1.3	-1.5			1.1	-1.1			2.0		1.5
Total PAHs		1.0	-2.2			1.0	-2.0			1.5		1.3		1.3		1.3
Mean	-2.1	1.8	-3.2	2.0	-3.6	2.9	-6.7	2.6	-3.9	2.2	-5.2	1.6	-9.4	2.9	-11.3	2.5
Sum of Means	-0.3		-1.1		-0.6		-4.0		-1.8		-3.6		-6.5		-8.9	
Total PCBs	-2.1		-2.1		-1.7		-2.1		-2.2		-3.5		-2.4		-3.1	
Aldrin	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorobenzene	ND	ND	ND	ND	-5.2		-12.6			1.7		1.3	-19.3		-42.2	
Mirex	ND	ND	ND	ND	ND	ND	ND	ND	-1.2		-2.0		-10.7		-15.6	
o,p'-DDE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p,p'-DDE		2.4		1.9		1.8		1.4	-1.8		-2.2			1.2	-1.4	
Mean		2.4		1.9	-5.2	1.8	-12.6	1.4	-1.5	1.7	-2.1	1.3	-15.0	1.2	-19.8	
Sum of Means	2.4		1.9		-3.4		-11.2		0.2		-0.8		-13.8		-19.8	

1 Comparison based on ratio of OFFTA conc to average (Avg) and Upper 95% Confidence Limits (UCL) of "baseline" stations (previously used reference locations in Narragansett Bay, see text)

2 - Tissue ratio used for metals (OFFTA Tiss Conc /Baseline Tiss Conc),

Lipid normalization used for organics ((OFFTA Tiss Conc./Lipid Conc)/(Baseline Tiss Conc./Lipid Conc))

ND = Non-Detect for OFFTA stations

NA = Not Available for Baseline

BM = Indigenous Blue Mussel

DEP = Deployed Blue Mussel

HC = Hard Clam (*Mercenaria mercenaria*)

LOB = Lobster

Table A-1. Comparison of Site and Baseline Reference sediment metal concentrations for the OFFTA ERA using aluminum normalized data.

	Ratio1		Normalized to Al2																				
Analyte	OFF-22-SED	OFF-23-SED	OFF-22-SED	OFF-23-SED	JCC-D1	JCC-M1	JCC-S1	JPC-1	JPC-2	JSC-D1	JSC-DC11	JSC-V1	JSC-W1	PCC-D1	PCC-DC12	PCC-V1	PCC-W1	Mean of Baseline	S D	95% Confidence	UCL	OFFTA-22/UCL	OFFTA-23/UCL
Arsenic	3 07	1 52	1 05E-04	5 20E-05	4 46E-05	1 44E-05	1 44E 05	5 45E-05	8 49E-05	2 88E-05	2 37E-05	1 97E-05	2 16E-05	3 88E-05	2 69E-05	3 63E-05	3 73E-05	3 43E-05	1 93E-05	1 05E-05	4 48E-05	2 35	1 16
Cadmium	0 22	0 19	5 27E-06	4 66E-06	1 44E-05	1 44E 05	1 44E-05	6 05E-06	2 98E-06	3 21E-05	2 63E-05	2 19E-05	2 40E-05	4 31E-05	2 99E-05	4 03E-05	4 14E-05	2 39E-05	1 32E-05	7 16E-06	3 11E-05	0 17	0 15
Chromium	1 81	0 79	1 33E-03	5 76E-04	6 14E 04	6 88E-04	8 44E-04	7 62E 04	8 60E-04	8 72E-04	7 16E-04	4 20E-04	4 99E-04	6 90E-04	5 26E-04	1 16E-03	8 61E-04	7 32E-04	1 96E-04	1 07E-04	8 38E-04	1 58	0 69
Copper	2 54	2 42	5 08E 04	4 84E-04	4 16E-05	4 16E-05	1 66E-04	1 46E-04	2 41E-04	3 59E-04	1 32E-04	1 09E-04	2 69E-04	2 16E-04	1 50E-04	2 02E-04	5 30E-04	2 00E-04	1 32E-04	7 20E-05	2 72E-04	1 86	1 78
Lead	1 49	1 99	6 02E-04	8 03E-04	5 14E-04	5 14E-04	6 28E-04	6 20E 04	9 33E-04	1 54E-04	1 26E-04	1 75E-04	2 30E-04	3 45E-04	9 57E-05	4 52E 04	4 64E-04	4 04E-04	2 46E-04	1 34E-04	5 38E-04	1 12	1 49
Mercury	0 40	0 54	3 08E-06	4 19E-06	2 22E-06	2 22E-06	2 21E-06	5 10E-06	1 86E-06	7 69E-06	6 32E-06	5 25E-06	3 07E-05	1 03E-05	7 18E-06	9 68E-06	9 93E-06	7 75E-06	7 56E-06	4 11E-06	1 19E-05	0 26	0 35
Nickel	2 17	1 70	5 88E-04	4 62E-04	2 34E-04	3 11E-04	3 68E-04	2 98E-04	2 46E-04	2 56E-04	2 11E-04	1 75E-04	1 92E-04	3 45E-04	2 39E-04	3 23E-04	3 31E-04	2 71E-04	6 18E-05	3 36E-05	3 05E-04	1 93	1 52
Silver*		0 15	3 61E-06	2 92E-06	3 33E-06	7 35E-06	1 44E-06	2 87E 06	4 61E-06	2 88E-05	2 37E-05	1 97E-05	2 16E-05	3 88E-05	2 69E-05	3 63E-05	3 73E-05	1 94E-05	1 40E-05	7 64E-06	2 71E-05	0 13	0 11
Zinc*		5 37	2 17E-03	3 32E-03	1 01E-03	1 01E-03	1 38E 03	1 21E-03	1 39E-03	5 77E-05	4 74E-05	2 54E-04	4 32E-05	7 76E-05	5 38E-05	8 55E-04	6 29E-04	6 18E-04	5 49E-04	2 98E-04	9 16E-04	2 37	3 62

* - Non-Detects for OFFTA Stations

1 - OFFTA Normalized Al Conc /Baseline Normalized Al Conc

2 - Sediment Conc /Aluminum

Table A-2. Comparison of Site and Baseline Reference sediment organic concentrations for the OFFTA ERA using TOC normalized data.

	Normalized to TOC1																Ratio2						
	UCC-D1	UCC-M1	UCC-S1	UPC-1	UPC-2	USC-D1	USC-DC11	USC-V1	USC-W1	PCC-D1	PCC-DC12	PCC-V1	PCC-W1	Avg	OFF-22	OFF-23	OFF-22	OFF-23	S D	95% Confidence	UCL	OFFTA-22/UCL	OFFTA-23/UCL
%TOC	0 84	0 85	2 07	1 06	1 71	0 45	0 45	0 67	0 65	0 39	0 39	1 60	1 36		1 30	2 70							
1,6,7-Trimethylnaphthalene	0 84	1 20	0 60	1 37		0 27	0 11	1 37	2 02	0 36	0 25	0 11	4 50	1 08	0 23	3 04	0 21	2 80	1 24	0 67	1 75	0 13	1 73
1-Methylnaphthalene	0 36	0 35	1 15	2 43		0 87	0 76	1 73	1 73	0 33	0 61	0 17	3 62	1 18	1 54	10 30	1 31	8 75	1 04	0 56	1 74	0 88	5 92
1-Methylphenanthrene	9 82	12 23	2 66	8 95		0 65	0 25	3 92	9 40	0 23	0 36	0 41	15 71	5 38	2 00	18 48	0 37	3 43	5 53	3 01	8 39	0 24	2 20
2,6-Dimethylnaphthalene	2 51	5 83	4 05	5 82		0 63	0 58	1 23	1 75	0 53	0 94	0 20	4 97	2 42	4 46	14 30	1 84	5 91	2 16	1 18	3 60	1 24	3 97
2-Methylnaphthalene	1 94	1 92	2 75	3 61		1 19	1 19	1 95	2 42	0 66	1 04	0 27	5 08	2 00	2 38	16 07	1 19	8 03	1 34	0 73	2 73	0 87	5 88
Acenaphthene	1 14	1 19	1 50	1 34		0 47	0 11	0 44	1 36	0 33	0 28	0 14	2 20	0 88	1 38	33 15	1 58	37 87	0 67	0 36	1 24	1 12	26 78
Acenaphthylene	3 83	4 90	2 23	10 04		0 47	0 16	2 96	5 32	0 48	0 33	0 12	11 86	3 56	3 38	28 70	0 95	8 06	3 94	2 14	5 70	0 59	5 03
Anthracene	7 46	7 37	9 43	19 99		1 46	0 43	3 29	11 95	0 48	0 61	0 21	12 96	6 30	7 31	129	1 16	20 45	6 37	3 46	9 77	0 75	13 20
Benzo(a)anthracene	12 40	12 27	21 51	42 50		2 04	0 83	27 11	58 70	1 17	1 25	0 71	54 40	19 57	27 38	228	1 40	11 66	21 58	11 73	31 31	0 87	7 29
Benzo(a)pyrene	12 06	11 93	16 25	59 25		3 16	1 08	35 83	73 17	2 14	1 86	0 95	62 11	23 32	29 85	281	1 28	12 04	27 06	14 71	38 02	0 78	7 38
Benzo(b+k)fluoranthene						7 62	2 09	63 62	139	5 06	3 69	2 29	138	45 16	60 46	570	1 34	12 63	61 16	33 25	78 41	0 77	7 27
Benzo(e)pyrene	11 80	11 67	13 03	50 12		3 07	0 92	27 18	51 80	2 19	1 65	0 90	55 41	19 15	37 92	255	1 98	13 31	21 47	11 67	30 82	1 23	8 27
Benzo(g,h,i)perylene	19 04	18 83	30 09	35 13		3 00	0 94	24 31	45 65	2 52	1 68	0 75	42 76	18 73	46 46	259	2 48	13 84	16 98	9 23	27 96	1 66	9 27
Biphenyl	0 93	1 67	1 44	1 27		0 96	0 70	1 46	1 46	3 92	0 66	0 16	1 86	1 37	0 62	4 74	0 45	3 45	0 94	0 51	1 88	0 33	2 52
Chrysene	12 18	12 04	17 50	47 04		3 41	1 12	35 50	75 22	2 29	1 78	1 18	83 19	24 37	20 54	200	0 84	8 21	29 46	16 01	40 38	0 51	4 95
Dibenz(a,h)anthracene	0 90	0 89	4 68	9 52		0 63	0 18	6 25	12 44	0 51	0 28	0 21	12 15	4 05	9 38	66 30	2 32	16 36	4 85	2 64	6 69	1 40	9 91
Fluoranthene	51 38	50 81	65 89	93 56		5 49	1 91	55 00	153	3 41	2 37	2 06	164	54 03	50 69	578	0 94	10 69	57 62	31 32	85 35	0 59	6 77
Fluorene	0 21	0 21	1 71	4 30		0 56	0 31	1 29	4 03	0 51	0 43	0 24	8 14	1 83	1 85	39 26	1 01	21 46	2 46	1 34	3 17	0 58	12 40
Indeno(1,2,3-cd)pyrene	10 00	9 89	21 32	32 59		3 05	0 83	22 83	47 39	2 29	1 45	0 72	42 62	16 25	26 08	189	1 60	11 65	16 92	9 20	25 44	1 02	7 44
Naphthalene	2 28	2 26	4 40	5 09		3 88	3 95	4 07	4 28	3 41	3 61	0 99	6 86	3 76	2 46	15 41	0 66	4 10	1 49	0 81	4 57	0 54	3 37
Perylene	8 94	8 84	9 59	18 16		1 30	0 67	6 22	12 97	0 56	1 96	0 29	9 66	6 60	9 92	75 93	1 50	11 51	5 76	3 13	9 73	1 02	7 81
Phenanthrene	15 78	15 61	17 62	41 20		2 60	1 32	12 63	55 44	1 81	1 96	1 43	90 46	21 49	18 08	285	0 84	13 27	27 62	15 02	36 50	0 50	7 81
Pyrene	49 79	49 23	62 75	92 28		5 02	1 95	52 32	126	3 54	3 56	1 79	131	48 33	53 23	526	1 10	10 88	48 00	26 09	74 42	0 72	7 07
Aldrin	0 12	0	0 05	0 09		0 09	0 08	0 05	0 06	0 10	0 09	0 03	0 24	0 08	0 54	0 26	6 43	3 10	0 06	0 03	0 12	4 62	2 22
Hexachlorobenzene	0 40	0 09	0 04	0 08		2 02E-03	6 28E-03	0 20	5 37E-03	0 03	4 32E-03	0 04	0 03	0 08	0 31	0 19	3 93	2 37	0 12	0 06	0 14	2 17	1 31
Mirex	0 12	0 12	0 05	0 09		4 48E-04	0 08	0 05	0 06	0 10	0 09	0 01	0 04	0 07	0 46	0 41	6 79	5 99	0 04	0 02	0 09	5 18	4 57
o,p'-DDE	0 29	0 83	0 17	0 51		0 01	0 01	0 07	0 11	0 12	0 12	9 22E-03	0 03	0 19	0 62	0 30	3 21	1 55	0 25	0 14	0 33	1 88	0 91
p,p'-DDE	0 57	0 45	0 35	0 27		0 04	0 13	0 14	0 23	0 10	0 14	0 02	0 34	0 23	0 69	1 19	3 00	5 13	0 17	0 09	0 32	2 14	3 66
LMW PAHs	31 32	39 14	31 91	64 21		11 41	8 54	23 70	45 73	11 24	9 13	3 02	77 76	29 76	36 92	548	1 24	18 42	23 64	12 85	42 61	0 87	12 86
HMW PAHs	204	202	280	639		40 41	13 84	369	851	27 47	23 47	13 28	886	296	191	1881	0 64	6 36	326	177	473	0 40	3 98
Total PAHs	236	241	312	703		51 82	22 38	393	896	38 71	32 60	16 30	964	326	418	3815	1 28	11 72	347	189	514	0 81	7 42
Total PCBs	18 30	12 75	11 36	17 82		5 37	4 67	9 46	13 52	18 94	9 16	1 31	9 91	11 05	4 31	33 04	0 39	2 99	5 60	3 04	14 09	0 31	2 34

1 - Sediment Conc /%TOC

2 - OFFTA Normalized TOC Conc /Baseline Normalized TOC Conc

Table B-1. Comparison of Site and Baseline Reference tissue metal concentrations for the OFFTA ERA.

	Ratio1,2			
Analyte	OFF-22-BM	OFF-23-DEP	OFF23-HC	OFF-23-LOB
Arsenic	0.35	0 27	0.47	0 45
Cadmium	23.59	16.09	16.17	25.88
Chromium		9.01		13.45
Copper	0.17	0.77		1.13
Lead	2.76	4.09	7.80	58.60
Mercury	9.58	12.26	44.67	5.95
Nickel	6.20	.3.12	4.17	27.53
Silver				1.14
Zinc	1.66	1.74	0.87	2.17

1 - Blank cells = Non-detects.

2 - OFFTA Tissue Conc./Baseline Tissue Conc.

Table B-2 (p 1 of 2) Comparison of Site and Baseline Reference tissue organic concentrations for the OFFTA ERA using lipid normalized data.

	Normalized to Lipid1																		Ratio2			
	OFF-22-BM	OFF-23-DEP	OFF-23-HC	OFF-23-LOB	CHC-1-BM	JPC-1-BM	CHC-1-LOB	JPC-1-LOB	JSCD1-HCND	PCCD1-HCND	PCCW1-HCND	JPC-1-MM	JPC-1-DEP	CHC-1-DEP	Baseline Avg for BM	Baseline Avg for DEP	Baseline Avg for HC	Baseline Avg for LOB	OFF-BM/Baseline BM	OFF-DEP/Baseline DEP	OFF-HC/Baseline HC	OFF-LOB/Baseline LOB
LIPID	4 97	8 37	4 05	4 01	4 28	6 07	2 28	2 53	2 32	3 03	1 93	2 59	7 66	6 10								
1,6,7-Trimethylnaphthalene	0 65	0 57	0 22	0 28	0 88	0 62	1 65	1 48	2 54	1 53	3 11	1 45	0 49	0 62	0 75	0 55	2 16	1 56	0 86	1 04	0 10	0 18
1-Methylnaphthalene	1 64	0 82	ND	ND	1 32	0	2 48	2 24	2 15	1 25	3 43	2 19	0 74	3 64	0 66	2 19	2 26	2 36	2 48	0 37		
1-Methylphenanthrene	0 99	0 87	1 12	0 79	2 11	1 49	35 83	41 28	0 85	1 84	1 20	11 42	1 18	2 50	1 80	1 84	3 83	38 56	0 55	0 47	0 29	0 02
2,6-Dimethylnaphthalene	1 33	1 02	0 54	0 43	5 18	0 87	2 30	2 07	0 99	1 07	1 90	2 03	0 69	11 61	3 02	6 15	1 50	2 19	0 44	0 17	0 36	0 20
2-Methylnaphthalene	2 68	1 36	ND	3 33	2 20	0	4 12	3 71	3 04	2 42	4 79	3 63	1 23	9 09	1 10	5 16	3 47	3 92	2 44	0 26		0 85
Acenaphthene	0 85	0 96	1 21	0 45	0 62	0 44	1 16	1 05	0 62	1 05	0 86	1 02	8 40	9 04	0 53	8 72	0 89	1 10	1 62	0 11	1 36	0 41
Acenaphthylene	0 81	0 76	0 62	ND	4 08	1 86	1 26	1 14	1 51	0 90	1 81	1 01	0 38	6 54	2 97	3 46	1 31	1 20	0 27	0 22	0 47	
Anthracene	1 85	2 25	2 30	0 70	5 86	1 94	2 79	3 16	0 63	0 58	1 04	2 34	2 84	7 02	3 90	4 93	1 15	2 97	0 48	0 46	2 00	0 24
Benzo(a)anthracene	3 81	4 73	4 51	3 19	11 05	2 60	1 47	1 33	0 79	0 63	0 58	4 07	2 16	7 44	6 83	4 80	1 52	1 40	0 56	0 98	2 97	2 28
Benzo(a)pyrene	1 74	1 27	2 02	3 19	7 24	1 29	1 58	1 43	0 57	0 51	0 65	1 62	0 47	3 56	4 26	2 02	0 84	1 51	0 41	0 63	2 40	2 12
Benzo(b + k)fluoranthene	10 25	7 26	7 00	7 72	25 61	5 89	2 72	2 45	1 58	2 18	2 34	2 39	4 68	15 55	15 75	10 12	2 12	2 58	0 65	0 72	3 30	2 99
Benzo(e)pyrene	8 63	7 65	5 29	3 66	20 12	4 35	1 71	1 54	1 45	2 70	1 89	0 42	4 17	11 07	12 23	7 62	1 61	1 62	0 71	1 00	3 27	2 25
Benzo(g,h,i)perylene	3 86	1 91	1 61	1 79	7 10	0 26	0 68	0 61	0 67	1 49	1 04	0 60	0 20	0 26	3 68	0 23	0 95	0 65	1 05	8 33	1 69	2 76
Biphenyl	0 35	0 16	0 36	0 25	1 33	0 94	2 50	2 25	1 96	1 14	2 28	2 20	0 74	0 93	1 14	0 84	1 89	2 37	0 31	0 19	0 19	0 10
Chrysene	8 95	8 41	6 83	7 21	11 56	2 79	2 30	2 08	3 24	3 63	4 22	3 77	1 82	5 91	7 17	3 87	3 72	2 19	1 25	2 17	1 84	3 29
Dibenzo(a,h)anthracene	0 37	0 27	0 18	0 19	0 11	0 08	0 21	0 19	0 56	0 35	0 72	0 19	0 06	3 47	0 10	1 77	0 46	0 20	3 84	0 15	0 39	0 94
Fluoranthene	16 47	27 63	19 20	20 26	19 83	7 62	6 34	4 03	10 62	9 61	11 58	8 34	6 28	16 95	13 72	11 61	10 04	5 18	1 20	2 38	1 91	3 91
Fluorene	1 07	0 91	0 84	0 51	3 90	1 06	0 85	4 96	1 58	0 78	1 58	1 43	0 25	0 32	2 48	0 29	1 34	2 91	0 43	3 17	0 62	0 18
Indeno(1,2,3-cd)pyrene	2 08	0 87	1 13	1 41	3 62	0 25	0 67	0 61	0 23	0 69	0 51	0 59	0 20	0 25	1 94	0 23	0 51	0 64	1 07	3 82	2 22	2 20
Naphthalene	ND	ND	ND	ND	0 39	0	0 74	0 66	6 64	3 74	6 14	0 65	0 22	0 28	0 20	0 25	4 29	0 70				
Perylene	5 39	1 64	ND	0 88	NA	NA	1 53	1 38	0 29	0 59	0 44	1 64	0 46	6 34	NA	3 40	0 74	1 46	NA	0 48		0 61
Phenanthrene	4 83	2 88	4 50	3 65	6 78	2 92	6 33	6 14	5 16	1 87	5 56	2 27	3 63	5 06	4 85	4 34	3 72	6 23	1 00	0 66	1 21	0 58
Pyrene	13 27	18 32	15 84	15 73	17 26	5 76	8 57	4 76	6 85	8 95	6 80	8 32	7 37	14 53	11 51	10 95	7 73	6 67	1 15	1 67	2 05	2 36
Aldrin	ND	ND	ND	ND	0 04	0 02	0 07	0 06	0 11	0 07	0 04	0 06	0 02	0 02	0 03	0 02	0 07	0 06				
Hexachlorobenzene	ND	0 07	0 17	0 07	0 04	0 02	2 29	0 56	0 11	0 12	0 12	0 06	0 59	0 10	0 03	0 34	0 10	1 43		0 19	1 73	0 05
Mirex	ND	ND	0 05	0 05	0 44	0 21	0 64	0 39	0 08	0 05	0 10	0	0 35	0 19	0 32	0 27	0 06	0 51			0 86	0 09
o,p'-DDE	ND	ND	ND	ND	0 34	0 52	3 74	0 06	0 11	0 08	0 36	0 47	0 57	0 78	0 43	0 67	0 25	1 90				
p,p'-DDE	3 02	2 25	0 71	3 03	1 43	1 10	3 40	1 62	1 01	1 39	1 62	1 21	1 04	1 42	1 27	1 23	1 31	2 51	2 38	1 83	0 54	1 21
Total PAHs	94 10	93 58	79 45	80 62	149	38 09	60 03	61 20	54 52	49 51	64 48	49 06	41 35	139	93 64	90 34	54 40	60 61	1 00	1 04	1 46	1 33
Total PCBs	44 27	42 29	19 54	73 28	90 79	93 05	202	157	21 95	39 67	35 25	78 97	80 49	63 29	91 92	71 89	43 96	179	0 48	0 59	0 44	0 41
HMW PAHs	36 74	43 94	33 68	34 93	67 06	20 13	20 49	13 81	32 02	33 20	36 35	26 32	18 17	51 88	43 60	35 02	31 97	17 15	0 84	1 25	1 05	2 04
LMW PAHs	14 31	10 19	12 16	12 16	23 83	8 23	17 25	20 81	22 51	16 31	28 14	12 36	16 94	37 34	16 03	27 14	19 83	19 03	0 89	0 38	0 61	0 64

1 - Sediment Conc /Lipid Content

2 - OFFTA Normalized Lipid Conc /Baseline Normalized Lipid Conc

ND = Non-Detect

NA = Not Available

Table B-2 (p.2 of 2) Comparison of Site and Baseline Reference tissue organic concentrations for the OFFTA ERA using lipid normalized data.

LIPID	SD	95% CONFIDENCE	UCL	OFF-BM/UCL	SD	95% CONFIDENCE	UCL	OFF-DEP/UCL	SD	95% CONFIDENCE	UCL	OFF-HC/UCL	SD	95% CONFIDENCE	UCL	OFF-LOB/UCL
1,6,7-Trimethylnaphthalene	0 18	0 25	1 00	0 65	0 09	0 12	0 68	0 85	0 80	0 79	2 94	0 07	0 12	0 16	1 72	0 16
1-Methylnaphthalene	0 94	1 30	1 96	0 84	2 05	2 84	5 03	0 16	0 90	0 88	3 14		0 17	0 24	2 60	
1-Methylphenanthrene	0 44	0 61	2 41	0 41	0 93	1 29	3 13	0 28	5 08	4 98	8 81	0 13	3 86	5 34	43 90	0 02
2,6-Dimethylnaphthalene	3 05	4 22	7 25	0 18	7 73	10 71	16 86	0 06	0 54	0 53	2 03	0 27	0 16	0 22	2 41	0 18
2-Methylnaphthalene	1 55	2 15	3 25	0 83	5 56	7 70	12 86	0 11	1 01	0 99	4 46		0 29	0 40	4 31	0 77
Acenaphthene	0 13	0 18	0 71	1 21	0 45	0 63	9 35	0 10	0 20	0 19	1 08	1 12	0 08	0 11	1 22	0 37
Acenaphthylene	1 57	2 17	5 14	0 16	4 36	6 04	9 50	0 08	0 43	0 42	1 73	0 36	0 09	0 12	1 32	
Anthracene	2 77	3 84	7 74	0 24	2 96	4 10	9 02	0 25	0 82	0 81	1 95	1 18	0 26	0 36	3 34	0 21
Benzo(a)anthracene	5 98	8 28	15 11	0 25	3 74	5 18	9 98	0 47	1 70	1 67	3 19	1 42	0 10	0 14	1 54	2 07
Benzo(a)pyrene	4 21	5 83	10 10	0 17	2 19	3 03	5 05	0 25	0 53	0 52	1 35	1 49	0 11	0 15	1 66	1 92
Benzo(b + k)fluoranthene	13 94	19 32	35 08	0 29	7 69	10 65	20 77	0 35	0 37	0 37	2 49	2 82	0 19	0 26	2 85	2 71
Benzo(e)pyrene	11 15	15 45	27 69	0 31	4 88	6 76	14 38	0 53	0 95	0 93	2 55	2 08	0 12	0 17	1 79	2 05
Benzo(g,h,i)perylene	4 84	6 71	10 39	0 37	0 04	0 05	0 28	6 81	0 41	0 40	1 35	1 19	0 05	0 07	0 71	2 50
Biphenyl	0 28	0 38	1 52	0 23	0 13	0 19	1 03	0 15	0 52	0 51	2 40	0 15	0 17	0 24	2 62	0 10
Chrysene	6 21	8 60	15 77	0 57	2 89	4 01	7 88	1 07	0 40	0 40	4 11	1 66	0 16	0 22	2 41	2 99
Dibenzo(a,h)anthracene	0 02	0 03	0 13	2 87	2 41	3 34	5 11	0 05	0 24	0 23	0 69	0 26	0 02	0 02	0 22	0 85
Fluoranthene	8 64	11 97	25 69	0 64	7 54	10 45	22 06	1 25	1 39	1 36	11 40	1 68	1 63	2 26	7 44	2 72
Fluorene	2 01	2 78	5 26	0 20	0 05	0 06	0 35	2 60	0 38	0 37	1 72	0 49	2 90	4 02	6 93	0 07
Indeno(1,2,3-cd)pyrene	2 38	3 30	5 24	0 40	0 04	0 05	0 28	3 12	0 20	0 20	0 70	1 60	0 05	0 07	0 71	1 99
Naphthalene	0 28	0 38	0 58		0 04	0 06	0 30		2 74	2 68	6 98		0 05	0 07	0 77	
Perylene	NA				4 16	5 77	9 17	0 18	0 61	0 60	1 34		0 11	0 15	1 61	0 55
Phenanthrene	2 73	3 78	8 63	0 56	1 01	1 40	5 74	0 50	1 91	1 87	5 59	0 80	0 14	0 19	6 43	0 57
Pyrene	8 13	11 27	22 78	0 58	5 06	7 02	17 97	1 02	1 08	1 06	8 79	1 80	2 70	3 74	10 41	1 51
Aldrin	0 007	0 01	0 04		0 004	0 005	0 03		0 03	0 03	0 10		0 005	0 01	0 07	
Hexachlorobenzene	0 007	0 01	0 04		0 35	0 49	0 83	0 08	0 03	0 03	0 13	1 35	1 22	1 69	3 12	0 02
Mirex	0 16	0 22	0 54		0 11	0 16	0 43		0 04	0 04	0 10	0 49	0 17	0 24	0 75	0 06
o,p'-DDE	0 13	0 18	0 61		0 15	0 21	0 88		0 19	0 19	0 44		2 60	3 61	5 51	
p,p'-DDE	0 23	0 32	1 59	1 90	0 27	0 38	1 61	1 40	0 26	0 25	1 56	0 45	1 26	1 75	4 26	0 71
Total PAHs	78 57	109	203	0 46	69 28	96 02	186	0 50	7 17	7 02	61 42	1 29	0 83	1 15	61 76	1 31
Total PCBs	1 60	2 22	94 13	0 47	12 16	16 86	88 75	0 48	24 52	24 03	67 99	0 29	31 95	44 28	224	0 33
HMW PAHs	33 19	45 99	89 59	0 41	23 83	33 03	68 05	0 65	4 19	4 11	36 08	0 93	4 72	6 54	23 69	1 47
LMW PAHs	11 03	15 29	31 32	0 46	14 43	19 99	47 13	0 22	6 94	6 80	26 63	0 46	2 52	3 49	22 52	0 54

1 - Sediment Conc /Lipid Content
2 - OFFTA Normalized Lipid Conc /Baseline Normalized Lipid Conc
ND = Non-Detect
NA = Not Available