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December 5, 2001

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: Response to RIDEM Comment Regarding Limited PRGs for Marine Sediment
Old Firefighting Training Area, Naval Station - Newport, Newport Rhode Island
Revision 1

Dear Mr. Shafer:

As you are aware, RIDEM has requested the Navy submit PRGs for marine sediment at OFFTA with a variation from that provided in previous PRG documents This revised letter and attachments are being provided to comply with that request. This material references the process and PRGs developed in the Draft Final PRGs for Marine Sediment at OFFTA (TtNUS, November 8, 2001)

The PRG document referenced above has a step in them that "limits" the number of contaminants for which remedial action is proposed. This step was originaly developed to focus the remedial actions on the contaminants that pose the highest risk, and to keep a managable list of contaminants through the remedial action. During review of the Draft version of this document, RIDEM requested that the Navy provide a list of PRGs that would be calculated if this step was excluded.

The attached tables calculate PRGs for all the PAHs which pass the toxicity screening (Step 5). Step 7, the limiting step, is modified to calculate TEV HQs for <u>all</u> these PAHs, and does <u>not</u> select the highest TEV HQ at each station All the TEV-HQs are subsequently used to calculate PRGs, which are presented on the far right column of Table B-3.10. Table B-3.11 depicts a quotient of sediment concentrations (Table 3.2) divided by these PRGs. You will note that the same stations selected in the Draft Final PRG document (Stations 3 and 5) are still the only stations where these "unlimited" PRGs are exceeded.

Attached to this letter are Tables B-3 2 (not revised, only provided for informational purposes), Table B-3.9 (revised to eliminate highlights), and Tables B-3.10 & B-3.11 (revised to show all PAHs that have TEVs)

As stated above, this material is being provided for informational purposes in response to RIDEMs request. It is not recommended that these changes be implemented for PRG development at OFFTA.

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

Very truly yours,

Stephen S. Parker
Project Manager

SSP/pmp

Enclosure

c: M. Griffin, NETC (w/encl. - 5)
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J. Trepanowski/G. Glenn, TtNUS (w/encl. - 1)
File 7397-3.2 (w/o encl.)

TABLE B-3.2
SEDIMENT RESULTS
ECOLOGICAL PRG DEVELOPMENT STEP 2
OLD FIRE FIGHTING TRAINING AREA
NAVAL STATION NEWPORT, NEWPORT RHODE ISLAND

Sample Location	OFF-1	OFF-2	OFF-3	OFF-4	OFF-5	OFF-6	OFF-7	OFF-8	OFF-9	OFF-10	OFF-11	OFF-12	OFF-13	OFF-14	OFF-15
Sample Depth Interval	0-15 cm	0-15 cm	0-15 cm	0-15 cm	0-15 cm	0-15 cm	0-15 cm	0-15 cm	0-15 cm	0-15 cm	0-15 cm	0-15 cm	0-15 cm	0-15 cm	0-15 cm
Date Sampled	3/27/98	3/27/98	3/27/98	3/27/98	3/27/98	3/27/98	3/27/98	4/7/98	4/7/98	4/3/98	4/3/98	4/3/98	4/3/98	4/7/98	4/7/98
Polyaromatic Hydrocarbons (ug/kg)															
1-Methylnaphthalene	14 8 J	52 4 J	62 2 J	35 8 J	278 J	132 J	34 6	11	1 7 J	2 2 J	6 2 J	78 8 J	43 2 J	9 4	4 6 J
1-Methylphenanthrene	132	364	539	282	1460	680	104	22	4 4 J	3 J	14 8	220	177 J	20 1	11 4
2,3,5-Trimethylnaphthalene	7 7 J	45 2 J	22 J	22 6 J	121 J	36 3 J	17 7	2 3 J	0 4 J	2 4 U	2 J	20 8 J	12 9 J	2 6 J	0 8 J
2,6-Dimethylnaphthalene	18 9 J	103 J	66 9 J	53 5 J	476 J	148 J	59 8	24 5	12 4	9 J	18 5 J	88 9 J	55 2 J	15 6	7 3 J
2-Methylnaphthalene	26 J	77 6 J	89 2 J	38 1 J	330 J	170 J	54 9	14 4	3 1 J	3 1 J	17 5 J	117 J	65 6 J	15 5	9 5
Acenaphthene	23	88 1	371	54	966	344	120	34	4 1 J	2 5 J	27 9	321	110 J	11 4	5 1 J
Acenaphthylene	93	488	350	424	509	195	169	18 5	5 7	4 1 J	9	58 3	156 J	25 2	11 9
Anthracene	255 J	1100 J	1460 J	774 J	2810 J	1170 J	393	70 1	11 3	9 8 J	64 J	572 J	482 J	51 8	35
Benzo(a)anthracene	100	3600	5690	2280	9300	4250	1160	214	57 3	35 2	168	1200	1160 J	216	106
Benzo(a)pyrene	595	2410	3450 J	2090	4830	1990	1330	218	76 1	45 1	148	1420	1150 J	255	103
Benzo(b,j,k)fluoranthene	2780	7710	17300 J	3500	25000	9390	2850	411	152	94 6	284	2730	2430 J	457	366
Benzo(e)pyrene	910 J	2370 J	5250 J	1310 J	7590 J	3270 J	966	161	58 4	41 3 J	107 J	1080 J	939 J	213	140
Benzo(g,h,i)Perylene	876 J	2520 J	5370 J	1290 J	5990 J	2630 J	1020	141	52 5	40 5 J	95 2 J	815 J	744 J	195	100
Biphenyl	7 2	22 1	38 6	6 6	151	46 7	14 7	3 2 U	3 2 U	1 2 J	3 7 J	28 8	20 5 J	3 2 U	3 2 U
Chrysene/triphenylene	790	2340	4560	1850	7300	3350	519 J	196	59 6	31 8	117	998	774 J	190	87 3
Dibenzo(a,h)Anthracene	441 J	1290 J	2810 J	352 J	3410 J	1390 J	293	41 5	6 8 U	8 6 J	23 9 J	280 J	213 J	52 2	44
Fluoranthene	1950	8350	14600	5580	19200	11200	2190	455	117	86 2	388	3120	2600 J	308	185
Fluorene	40 3 J	303 J	598 J	177 J	1360 J	392 J	160	34 7	5 3 J	2 8 J	25 1 J	271 J	123 J	17 2	7 6
Indeno(1,2,3-cd)pyrene	1010	3070	6560 J	1200	7390	3030	968	136	48 1	35 3	86 3	777	646 J	172	116
Naphthalene	31 9	171	149	136	258	161	70	22 8	4 3	4	9 8	128	61 2 J	20 6	11 3
Perylene	225	818	1490 J	607	1460	734	363	60 4	21 4	12 8	34 8	257	253 J	79 4	32 9
Phenanthrene	1060	5610	10700	3030	14600	9470	1320	261	46 3	31 3	238	2510	1440 J	130	87 4
Pyrene	1780	6750	10700	4810	16900	9770	2120	401	102	87 5	337	3020	2530 J	344	187
Sum PAHs (6 High Molecular Weight)	6660	24700	41800	16700	60900	32000	7620	1530	425	294	1180	10000	8430	1360	712
Sum PAHs (7 Low Molecular Weight)	1530	7830	13700	4640	20800	11900	2280	456	80	58	391	3980	2440	271	168
Sum PAHs (NOAA Status &Trends)	14200	49600	92100	29900	132000	64000	16300	2960	858	592	2230	20100	16200	2800	1660
Pesticides/PCBs (ug/kg)															
1a,2a,3b,4a,5a,6b-hexachlorocyclohexane (gamma-BHC)	0 3 U	0 3 U	0 3 U	0 3 U	0 3 U	0 8 J	0 2 J	0 3 J	0 1 J	0 3 U	0 3 U	0 3 U	0 3 U	0 3 U	0 5 J
2,4'-DDE	0 25 U	0 4 U	0 4 U	0 4 U	0 4 U	0 4 U	0 4 U	0 4 U	0 4 U	0 4 U	0 4 U	0 9	0 4 U	0 4 U	0 4 U
2,4'-DDT	1 1	1 8	0 7 J	2 6	1 7	1 4	0 5 U	0 5 U	0 5 U	0 5 U	0 5 U	0 6 J	1 2	0 5 U	0 5 U
4,4'-DDD	3 J	1 4 J	1 8 J	2 4 J	2 J	3 8 J	3 8	0 8 J	0 45 U	0 4 U	0 4 U	11 2 J	19 7 J	1 4	0 6 J
4,4'-DDE	1 25 U	1 25 U	1 1 U	1 U	1 5 U	3 8	3 1	0 7 J	0 45 U	0 45 U	0 45 U	6 2	10 8	0 9 J	0 5 J
4,4'-DDT	4 3	10	4	11 5	11 3	9 8	2 7	1 1	0 8	0 7	1 6	4 8	10 9	2	0 8
Aldrin	0 35 U	0 35 U	0 35 U	0 35 U	0 35 U	0 35 U	0 35 U	0 1 J	0 35 U	0 35 U	0 35 U	0 35 U	0 35 U	0 35 U	0 35 U
alpha-Chlordane	0 8	0 7 J	0 7 J	1 2	1 4	0 6 J	0 7 J	0 1 J	0 1 J	0 4 U	0 4 U	1 2	1 4	0 2 J	0 1 J
Heptachlor	0 25 U	0 25 U	0 25 U	0 7 U	0 25 U	0 25 U	0 3 J	0 25 U	0 25 U	0 25 U	0 25 U	0 25 U	0 65 U	0 2 J	0 1 J
Heptachlor Epoxide	0 25 U	0 25 U	0 25 U	0 6 J	0 25 U	0 25 U	0 25 U	0 25 U	0 25 U	0 25 U	2 8 J	2 4 J	1 1 J	0 25 U	0 25 U
Hexachlorobenzene	0 2 U	0 2 U	0 2 U	0 2 U	0 25 U	0 3 U	0 2 U	0 2 U	0 2 U	0 2 U	0 2 U	0 4 U	0 2 U	- 0 2 U	0 2 U
Mirex	0 3 J	0 3 U	0 3 U	0 3 U	0 6	0 5 J	0 4 J	0 3 U	0 3 U	0 3 U	0 3 U	0 3 U	0 3 U	0 4 J	0 4 J
PCB 101/90	0 6 U	1 05 U	1 2 U	2 9	1 1 U	1 U	2 7	0 55 U	0 3 U	0 35 U	1 1 U	4 1	5 9	2 2	0 45 U
PCB 105	0 3 U	0 6 U	0 7 U	0 35 U	1 7 J	0 35 U	0 65 UJ	0 3 U	0 3 U	0 15 U	0 65 U	1 7 J	3 5 J	0 45 UJ	0 3 U
PCB 118	0 7 J	2 1	1 8	1 3	1 1	1 6	2 3	1 1	0 5 J	0 7 J	2	3 2	6 6	2 3	0 8
PCB 126	0 25 U	0 9 J	1 3 J	1 7 J	2 5 J	0 25 UJ	0 4 U	0 25 UJ	0 25 U	0 25 U	0 7 J	1 8 J	4 9 J	1 1	0 25 UJ
PCB 128	0 6	0 6 J	0 8 J	2 1	0 9 J	1 8 J	1	0 3 U	0 2 UJ	0 25 U	0 6	1 8	4	0 4 U	0 2 UJ
PCB 138/163/164	1 9	10 7 J	11 2 J	11 4	16 2 J	3 J	5 2	2 4	1	1 2	3 5	7 7	13 3	3 1	1 7
PCB 153	1 5	2 5	2 5	1 9	4	2 7	3 5	2	1	1 1	3 3	5 4	9 3	3 4	1 7

TABLE B-3.2
SEDIMENT RESULTS
ECOLOGICAL PRG DEVELOPMENT STEP 2
OLD FIRE FIGHTING TRAINING AREA
NAVAL STATION NEWPORT, NEWPORT RHODE ISLAND

Sample Location	OFF-1	OFF-2	OFF-3	OFF-4	OFF-5	OFF-6	OFF-7	OFF-8	OFF-9	OFF-10	OFF-11	OFF-12	OFF-13	OFF-14	OFF-15
Sample Depth Interval	0-15 cm	0-15 cm	0-15 cm	0-15 cm	0-15 cm	0-15 cm	0-15 cm	0-15 cm	0-15 cm	0-15 cm	0-15 cm	0-15 cm	0-15 cm	0-15 cm	0-15 cm
Date Sampled	3/27/98	3/27/98	3/27/98	3/27/98	3/27/98	3/27/98	3/27/98	4/7/98	4/7/98	4/3/98	4/3/98	4/3/98	4/3/98	4/7/98	4/7/98
PCB 170	0 45 U	0 35 U	0 35 U	1 8	1 8	1 8 J	0 6 U	0 45 U	0 25 UJ	0 35 U	1 5	3 8	5 8	0 45 U	0 3 U
PCB 18	1 3 J	0 35 U	1 7	0 35 U	1 4	2 8	0 6 J	0 35 U	0 35 U	0 35 U	3 5	2 4	0 5 J	1 1	0 35 U
PCB 180	1 1	1 5	2 4	2	3 9	2 1 J	2 5	1 2	0 7	0 6	3 2	6 4	9 3	1 6	1 1
PCB 187/182/159	0 6	0 7	0 6	2 8	1 6	1 9 J	1 6	0 45 U	0 3 U	0 6	2	3 7	5 5	1 8	0 35 U
PCB 188	0 3 U	0 3 U	0 8	0 3 U	1 3	2 6	0 7	0 5 J	0 3 U	0 3 U	0 6 J	1	1 6	0 8	0 3 U
PCB 195	0 25 U	0 3 U	0 3 U	1 2	3 5	0 3 UJ	0 3 U	0 3 U	0 3 U	0 3 U	0 7	0 8 J	3 7	0 3 U	0 3 U
PCB 200	0 3 J	1 2	1	1 8	2	1 1 J	0 4 J	0 4 J	0 3 J	0 4 J	0 4 J	1 6	0 25 U	0 4 J	0 4 J
PCB 206	0 25 U	0 25 U	0 25 U	1 2 U	0 3 U	0 3 UJ	0 6	0 8	0 4 J	0 65 U	0 75 U	0 95 U	4	1	0 7
PCB 209	0 25 U	0 25 U	0 25 U	0 25 U	0 35 U	4 1 J	0 8	0 8	0 3 J	0 35 U	0 25 U	2 2	3	1 2	0 6
PCB 28/50	0 7	0 35 U	0 6 J	0 35 U	1 8	2 7	1	0 3 J	0 5 J	0 35 U	7 4	4 2	1 3	0 9	0 3 J
PCB 29	0 35 U	0 35 U	0 35 U	0 35 U	0 35 U	0 35 U	0 35 U	0 35 U	0 35 U	0 35 U	0 35 U	0 35 U	0 35 U	0 35 U	0 35 U
PCB 44	0 6 J	0 4 J	1 4 J	1 4 J	1 4 J	1 8 J	1 9	0 25 U	0 25 U	0 3 J	3 3 J	2 J	2 4 J	0 6	0 25 U
PCB 50	0 25 U	0 25 U	0 25 U	0 25 U	0 25 U	0 25 U	0 25 U	0 25 U	0 25 U	0 25 U	0 25 U	0 25 U	0 25 U	0 25 U	0 25 U
PCB 52	0 4 U	0 35 U	0 5 U	1 4 J	1 8 J	2 6 J	1 4	0 35 U	0 35 U	0 35 U	3 4 J	3 2 J	2 9 J	1 1	0 35 U
PCB 66/95	1 1	1 4	2	1 7	3 9	3 4	3 3	1 1	0 25 UJ	0 6	6 5	5	4 6	2 2	0 45 U
PCB 8	8 5 J	0 15 U	0 9 J	0 15 U	0 15 U	0 6	0 15 U	0 15 U	0 15 U	0 15 U	0 8	1 5	0 9	0 25 U	0 15 U
PCB 87	0 3 UJ	0 9 J	0 8 J	0 7 J	0 8 J	1 6 J	1	0 3 U	0 3 U	0 3 UJ	0 8 J	1 6 J	2 5 J	0 3 U	0 3 U
Sum of PCB Congeners	18 9	22 9	29 8	36 1	51 6	38 2	30 5	10 6	4 7	5 5	44 2	65 1	95 5	24 8	7 3
Sum of PCB Congeners X 2	37 8	45 8	59 6	72 2	103 2	76 4	61	21 2	9 4	11	88 4	130 2	191	49 6	14 6
trans-Nonachlor	0 6 J	0 4 U	0 7 J	0 4 U	1 3	0 4 U	0 8	0 2 J	0 1 J	0 4 U	0 4 U	0 6 J	1 J	0 4 J	0 2 J
Metals (mg/kg)															
Aluminum	21672 J	26984 J	23219 J	16492 J	16256 J	22707 J	21885 J	27137 J	26673 J	26244 J	19537 J	35681 J	40999 J	28276 J	26843 J
Arsenic	6 3 J	8 J	3 6 J	4 3 J	3 6 J	4 1 J	6 8 J	4 3 J	4 3 J	3 4 J	2 7 J	5 2 J	6 J	8 5 J	3 7 J
Cadmium	0 31	0 14	0 18	0 06	0 23	0 15	0 29	0 19	0 11	0 15	0 22	0 53	0 8	0 12	0 18
Chromium	31 1	36 6	26 5	24 3	27 4	23	43 1	42 3	38 6	32 1	30 2	58 6	73 7	44 9	41
Copper	58 3	23 7	12 3	31 4	16 9	11	32 8	11	6 9	9 8	9 1	37	80 8	18 9	11 6
Iron	24310 J	29487 J	22872 J	22908 J	17649 J	19993 J	27506 J	21704 J	24714 J	17985 J	14919 J	27717 J	33406 J	21879 J	21010 J
Lead	131 4	90 2	60 1	95 5	138 7	47 2	294	37 9	25 2	27 3	38 7	114 2	201 9	44 6	33 1
Manganese	353 6	302 2	387 4	369	166 8	257 5	331 6	356 2	515 8	357 1	331	368 1	335 9	324	366 5
Mercury	0 371	0 081	0 025 U	0 025 U	0 025 U	0 025 U	0 119	0 148	0 025 U	0 07	0 125	0 376	1 355	0 196	0 1
Nickel	34	26 2	22 2	20 2	19	19 3	28 1	15 8	18 3	12 5	5 45 U	21 4	29 7	15 9	14 2
Silver	0 46 J	0 065 UJ	0 065 UJ	0 065 UJ	0 065 UJ	0 065 UJ	0 18 J	0 17 J	0 065 UJ	0 065 UJ	0 17 J	0 48 J	1 06 J	0 23 J	0 19 J
Zinc	156 4	314 8	50 4 U	106	39 9 U	52 85 U	155 5	46 7 U	39 95 U	26 65 U	27 75 U	146 5	263 4	48 4 U	36 65 U
AVS/SEM (µmole/g dry weight)															
Acid Volatile Sulfide	0 05 U	0 05 U	0 23	0 05 U	23 82	26 06	38 21	6 21	4 44	7 29	13 03	24 03	48 59	10 3	7 1
Cadmium	0 001	0 001	0 001	0	0 002	0 002	0 002	0 003	0 001	0 002	0 002	0 005	0 009	0 002	0 002
Copper	0 341	0 0585 U	0 054 U	0 413	0 078 U	0 0885 U	0 045 U	0 397	0 269	0 212	0 0915 U	0 0395 U	0 031 U	0 417	0 393
Lead	0 505	0 215	0 119	0 507	0 386	0 168	0 221	0 122	0 061	0 079	0 094	0 249	0 589	0 15	0 121
Nickel	0 026 U	0 02 U	0 018 U	0 126	0 152	0 0385 U	0 034 U	0 0325 U	0 0245 U	0 031 U	0 033 U	0 0205 U	0 132	0 054 U	0 036 U
SEM-AVS	NA	NA	0 489 J	NA	-22 22 J	-24 97 J	-37 41 J	-4 68 J	-3 65 J	-6 394 J	-12 14 J	-23 08 J	-46 71 J	-8 4 J	-5 592 J
SEM/AVS	NA	NA	3 1261 J	NA	0 0672 J	0 0419 J	0 021 J	0 2465 J	0 178 J	0 1229 J	0 0681 J	0 0394 J	0 0387 J	0 1845 J	0 212 J
Zinc	0 407	0 549	0 527	0 517	0 982	0 794	0 499	0 976	0 435	0 572	0 667	0 632	1 12	1 277	0 957
Total Organic Carbon (percent)															
Total Organic Carbon	1 8	1 1	0 9	0 9	1	1 8	1 9	1 3	1 2	1 1	1 1	2 5	4	2	1 2
Grain Size (percent)															
CLAY	0 2	0 1	0 2	0 1	0 3	0 3	0 6	0 4	0 4	3 7	0 8	1	6 1	1 3	0 5
SAND	96	97 1	95 2	98 5	97 1	94 2	86 7	72 8	88 1	85 7	87 8	44 2	14 5	59 1	87 3
SILT	3 9	2 8	4 6	1 5	2 6	5 5	12 7	26 7	11 5	10 7	11 4	54 7	79 5	39 7	12 2

TABLE B-3.2
SEDIMENT RESULTS
ECOLOGICAL PRG DEVELOPMENT STEP 2
OLD FIRE FIGHTING TRAINING AREA
NAVAL STATION NEWPORT, NEWPORT RHODE ISLAND

Sample Location	OFF-16	OFF-17	OFF-18	OFF-19	OFF-20	OFF-21	OFF-22	OFF-23
Sample Depth Interval	0-15 cm	0-15 cm	0-15 cm	0-15 cm	0-15 cm	0-15 cm	0-15 cm	0-15 cm
Date Sampled	4/3/98	4/3/98	4/3/98	4/7/98	4/3/98	4/3/98	3/27/98	4/3/98
Polyaromatic Hydrocarbons (ug/kg)								
1-Methylnaphthalene	17 6 J	11 J	31 4 J	18 9	43 7 J	7 7 J	2 J	27 8
1-Methylphenanthrene	43 6 J	25 3	108	20 2	44 4	19 3	2 6 J	49 9
2,3,5-Trimethylnaphthalene	6 J	2 5 J	11 5 J	3 6 J	5 6 J	2 4 J	0 3 J	8 2
2,6-Dimethylnaphthalene	37 8 J	22 1 J	45 3 J	54 3	43 9 J	13 7 J	5 8 J	38 6
2-Methylnaphthalene	23 9 J	19 7 J	63 8 J	31 5	40 4 J	13 1 J	3 1 J	43 4
Acenaphthene	37 6 J	25 6	59 7	43 8	75 3	9 4	1 8 J	89 5
Acenaphthylene	35 8 J	41 1	141	40 6	14 8	18 3	4 4 J	77 5
Anthracene	88 J	120 J	340 J	104	217 J	47 9 J	9 5 J	348
Benzo(a)anthracene	195 J	251	730	316	320	151	35 6	616
Benzo(a)pyrene	220 J	333	964	322	257	176	38 8	758
Benzo(b,j,k)fluoranthene	435 J	654	2290	618	588	375	78 6	1540
Benzo(e)pyrene	187 J	273 J	963 J	234	197 J	158 J	49 3 J	688
Benzo(g,h,i)Perylene	181 J	270 J	899 J	201	131 J	133 J	60 4 J	700
Biphenyl	9 1 J	5 6 J	17 3	18 2	17 9	5 9 J	0 8 J	12 8
Chrysene/triphenylene	151 J	203 J	631	277	296	151	26 7	540
Dibenzo(a,h)Anthracene	49 6 J	76 1 J	273 J	57 4	50 3 J	40 4 J	12 2 J	179
Fluoranthene	444 J	528 J	1880	542	882	291	65 9	1560
Fluorene	34 1 J	30 9 J	74 8 J	51 3	92 6 J	11 3 J	2 4 J	106
Indeno(1,2,3-cd)pyrene	156 J	237	785	195	150	126	33 9	511
Naphthalene	19 9 J	25	68 1	53 3	40 1	8 7	3 2 J	41 6
Perylene	62 9 J	80 5	276	85 6	63 4	43 3	12 9	205
Phenanthrene	331 J	271	918	294	828	126	23 5	770
Pyrene	513 J	544 J	1810	523	751	334	69 2	1420
Sum PAHs (6 High Molecular Weight)	1570	1930	6290	2040	2560	1140	248	5080
Sum PAHs (7 Low Molecular Weight)	570	533	1670	619	1310	234	48	1480
Sum PAHs (NOAA Status &Trends)	3280	4050	13400	4110	5150	2250	543	10300
Pesticides/PCBs (ug/kg)								
1a,2a,3b,4a,5a,6b-hexachlorocyclohexane (gamma-BHC)	0 3 U	0 3 U	0 3 U	0 9	0 3 U	0 3 U	0 3 U	0 3 U
2,4'-DDE	0 4 U	0 4 U	0 4 U	0 4 U	0 4 U	0 4 U	0 4 U	0 4 U
2,4'-DDT	1 2	0 7 J	1 8	0 5 U	0 5 U	0 5 U	0 5 U	0 8
4,4'-DDD	2 2 J	12 9 J	15 8 J	1 1	1 1 J	2 4 J	0 4 U	7 3
4,4'-DDE	0 9 U	1 15 U	10 5	1 2	0 55 U	0 9 U	0 45 U	3 2
4,4'-DDT	1 6	4 1	9 5	1 8	1 7	2 1	0 6 J	4 1
Aldrin	0 35 U	0 35 U	0 35 U	0 2 J	0 35 U	0 35 U	0 35 U	0 35 U
alpha-Chlordane	0 9	0 4 U	1 1	0 8	0 4 U	0 4 U	0 4 U	0 8 J
Heptachlor	0 25 U	0 25 U	0 25 U	0 25 U	0 23 U	0 25 U	0 25 U	0 25 U
Heptachlor Epoxide	0 25 U	0 25 U	1 J	0 25 U	0 25 U	0 25 U	0 25 U	0 25 U
Hexachlorobenzene	0 2 U	0 2 U	0 2 U	0 9	0 2 U	0 2 U	0 2 U	0 5
Mirex	0 3 U	0 3 U	0 3 U	0 3 U	0 3 U	0 3 U	0 3 U	1 1 J
PCB 101/90	0 95 U	1 05 U	4 5	1 8	0 95 U	1 1 U	0 35 U	2 9
PCB 105	0 45 U	0 5 U	2 4 J	0 3 U	0 3 U	0 45 U	0 1 U	1 7 J
PCB 118	2 3	1 7	5 5	1 4	1 8	2	0 35 U	2 7
PCB 126	1 2 J	1 3 J	1 8 J	0 35 U	1 1 J	0 7 J	0 25 U	2
PCB 128	1	0 9	2 4	0 25 U	0 7	0 9	0 25 U	2 3
PCB 138/163/164	4 9	3 2	12 2	3	4 1	2 9	0 9	7 6
PCB 153	3 3	2 8	7 5	2 4	3 6	2 7	0 7	4 2

TABLE B-3.2
SEDIMENT RESULTS
ECOLOGICAL PRG DEVELOPMENT STEP 2
OLD FIRE FIGHTING TRAINING AREA
NAVAL STATION NEWPORT, NEWPORT RHODE ISLAND

Sample Location	OFF-16	OFF-17	OFF-18	OFF-19	OFF-20	OFF-21	OFF-22	OFF-23
Sample Depth Interval	0-15 cm	0-15 cm	0-15 cm	0-15 cm	0-15 cm	0-15 cm	0-15 cm	0-15 cm
Date Sampled	4/3/98	4/3/98	4/3/98	4/7/98	4/3/98	4/3/98	3/27/98	4/3/98
PCB 170	1 5	0 65 U	2 9	0 45 U	1 5	0 55 U	0 25 U	2 1
PCB 18	0 3 J	0 35 U	0 35 U	1 3 J	0 35 U	0 35 U	0 35 U	0 35 U
PCB 180	1 7	1 3	5 2	1 8	1 9	1 3	0 3 J	3 4
PCB 187/182/159	1 7	1 3	3 8	1 1	1 4	1 5 J	0 5	3 1
PCB 188	1	0 3 U	1 5	0 5 J	0 6	0 6	0 3 U	1
PCB 195	0 3 U	0 3 U	0 3 U	0 3 U	0 3 U	0 3 U	0 3 U	0 75 UJ
PCB 200	0 25 U	0 3 J	1 2	0 6	0 4 J	0 3 J	0 2 J	1 1
PCB 206	0 3 U	0 75 U	1 15 U	0 8	0 5 U	0 55 U	0 5 U	1 2
PCB 209	0 4 U	1 4	2 6	0 9	0 5 U	0 35 U	0 25 U	1 5
PCB 28/50	0 35 U	0 35 U	0 7	0 4 J	0 35 U	0 35 U	0 35 U	1 5
PCB 29	0 35 U	0 35 U	0 35 U	0 35 U	0 35 U	0 35 U	0 35 U	0 35 U
PCB 44	0 8 J	0 5 J	1 2 J	1 1 J	0 4 J	0 5 J	0 2 J	1 1
PCB 50	0 25 U	0 25 U	0 25 U	0 25 U	0 25 U	0 25 U	0 25 U	0 25 U
PCB 52	0 4 U	0 35 U	1 2 J	0 45 UJ	0 35 U	0 45 U	0 35 U	1 4
PCB 66/95	1 7	1 3	3 9	2 3	1 4	1 6	0 5 U	2 7
PCB 8	0 6	0 15 U	0 8	8 5	0 15 U	0 15 U	0 15 U	0 3 U
PCB 87	0 7 J	0 6 J	1 6 J	0 5 J	0 3 UJ	0 6 J	0 3 UJ	1 1
Sum of PCB Congeners	22 7	16 6	62 9	28 4	18 9	15 6	2 8	44 6
Sum of PCB Congeners X 2	45 4	33 2	125 8	56 8	37 8	31 2	5 6	89 2
trans-Nonachlor	0 4 U	0 4 U	1 J	0 7 J	0 4 U	0 4 U	0 4 U	1 2
Metals (mg/kg)								
Aluminum	29667 J	32011 J	40750 J	37770 J	33977 J	37829 J	36058 J	92358 J
Arsenic	5 J	4 7 J	6 3 J	5 8 J	4 2 J	4 9 J	3 8 J	4 8 J
Cadmium	0 36	0 38	0 69	0 21	0 25	0 39	0 19	0 43
Chromium	48	44 1	73 6	55 6	52 5	52 9	47 8	53 2
Copper	23 9	26 4	83 5	30 3	19	22 7	18 3	44 7
Iron	24706 J	24564 J	31885 J	29787 J	28355 J	25993 J	28736 J	51703 J
Lead	61 2	71 4	190 4	56	40 6	46 2	21 7	74 2
Manganese	341 6	312 4	332 9	362 9	368 4	377 9	318 5	669 7
Mercury	0 208	0 225	0 562	0 299	0 171	0 112	0 111	0 387
Nickel	18 2	18 7	28 4	24	21	26 9	21 2	42 7
Silver	0 44 J	0 4 J	1 08 J	0 18 J	0 19 J	0 16 J	0 065 UJ	0 27 J
Zinc	50 9 U	125 7	248 3	166 3	108 5	143 9	39 15 U	306 2
AVS/SEM (µmole/g dry weight)								
Acid Volatile Sulfide	23 68	14 13	39	17 26	29 52	12 93	2 74	32 95
Cadmium	0 005	0 005	0 011	0 001	0 004	0 004	0 001	0 006
Copper	0 303	0 0555 U	0 22	0 232	0 285	0 0875 U	0 234	0 083 U
Lead	0 17	0 192	0 476	0 173	0 13	0 148	0 039	0 236
Nickel	0 0265 U	0 03 U	0 028 U	0 023 U	0 036 U	0 0455 U	0 0215 U	0 038 U
SEM-AVS	-22 08 J	-12 74 J	-36 14 J	-15 85 J	-27 9 J	-11 6 J	-1 43 J	-30 84 J
SEM/AVS	0 0674 J	0 0985 J	0 0733 J	0 082 J	0 055 J	0 1026 J	0 4783 J	0 064 J
Zinc	1 091	1 11	2 123	0 984	1 166	1 042	1 015	1 753
Total Organic Carbon (percent)								
Total Organic Carbon	2 6	2 6	4	2 9	2 3	2 3	1 3	2 7
Grain Size (percent)								
CLAY	3 9	2 3	2 7	2 5	2 4	2	0 6	1 3
SAND	3 3	46 2	6 9	49 4	59 3	50 9	91 5	54 6
SILT	92 8	51 6	90 4	48 1	38 3	47 2	8	44 1

TABLE B-3.9
UNLIMITED PRG HQs
RIDEM ECOLOGICAL PRG DEVELOPMENT
OLD FIRE FIGHTING TRAINING AREA
NAVAL STATION NEWPORT, NEWPORT RHODE ISLAND

Sample Location Sample Depth Interval Date Sampled	TEV[1]	OFF-1 0-15 cm 3/27/98	OFF-2 0-15 cm 3/27/98	OFF-3 0-15 cm 3/27/98	OFF-4 0-15 cm 3/27/98	OFF-5 0-15 cm 3/27/98	OFF-6 0-15 cm 3/27/98	OFF-7 0-15 cm 3/27/98	OFF-8 0-15 cm 4/7/98	OFF-9 0-15 cm 4/7/98	OFF-10 0-15 cm 4/3/98
Polyaromatic Hydrocarbons											
2-Methylnaphthalene	1 2	1 50E-01 J	7 34E-01 J	1 03E+00 J	4 40E-01 J	3 43E+00	9 82E-01	3 01E-01	1 15E-01	2 69E-02	2 93E-02 J
Acenaphthylene	3 8	1 43E-01	1 23E+00	1 08E+00	1 30E+00	1 41E+00	3 00E-01	2 46E-01	3 94E-02	1 31E-02	1 03E-02 J
Anthracene	4 2	1 15E-01 J	8 10E-01 J	1 31E+00 J	6 97E-01 J	2 28E+00 J	5 27E-01 J	1 68E-01	4 37E-02	7 63E-03	7 22E-03 J
Benzo(a)anthracene	0 86	1 62E-02	9 53E-01	1 84E+00	7 38E-01	2 71E+00	6 88E-01	1 78E-01	4 79E-02	1 39E-02	9 32E-03
Benzo(a)pyrene	0 24	1 33E-01	8 82E-01	1 54E+00 J	9 35E-01	1 95E+00	4 45E-01	2 82E-01	6 75E-02	2 55E-02	1 65E-02
Benzo(b,j,k)fluoranthene	0 67	1 86E-01	8 45E-01	2 32E+00 J	4 69E-01	3 01E+00	6 29E-01	1 81E-01	3 81E-02	1 53E-02	1 04E-02
Benzo(g,h,i)Perylene	0 068	1 86E-01 J	8 77E-01 J	2 28E+00 J	5 49E-01 J	2 29E+00 J	5 59E-01 J	2 06E-01	4 15E-02	1 68E-02	1 41E-02 J
Chrysene/triphenylene	0 65	1 68E-01	8 15E-01	1 94E+00	7 88E-01	2 80E+00	7 13E-01	1 05E-01 J	5 78E-02	1 90E-02	1 11E-02
Dibenzo(a,h)Anthracene	0 033	1 94E-01	9 29E-01 J	2 47E+00 J	3 10E-01 J	2 70E+00 J	6 12E-01 J	1 22E-01	2 53E-02	4 49E-03 U	6 19E-03 J
Fluoranthene	16	6 27E-02	4 39E-01	9 39E-01	3 59E-01	1 11E+00	3 60E-01	6 67E-02	2 03E-02	5 64E-03	4 54E-03
Fluorene	3 0	5 50E-02 J	6 77E-01 J	1 63E+00 J	4 83E-01 J	3 34E+00 J	5 35E-01 J	2 07E-01	6 56E-02	1 09E-02 J	6 26E-03 J
Indeno(1,2,3-cd)pyrene	0 08	1 92E-01	9 56E-01	2 50E+00	4 57E-01	2 53E+00	5 76E-01	1 74E-01	3 58E-02	1 37E-02	1 10E-02
Phenanthrene	23	8 55E-02	7 40E-01	1 73E+00	4 89E-01	2 12E+00	7 63E-01	1 01E-01	2 91E-02	5 60E-03	4 13E-03
Pyrene	7 0	1 33E-01	8 25E-01	1 60E+00	7 19E-01	2 27E+00	7 30E-01	1 50E-01	4 15E-02	1 14E-02	1 07E-02
Sum PAHs (6 High Molecular Weight)	17	1 23E-01	8 42E-01	1 72E+00	7 11E-01	2 24E+00	7 05E-01	1 41E-01	4 15E-02	1 17E-02	9 76E-03
Sum PAHs (7 Low Molecular Weight)	46	9 58E-02	8 03E-01	1 51E+00	6 41E-01	2 27E+00	6 73E-01	1 67E-01	5 61E-02	1 09E-02	9 38E-03
Sum PAHs (NOAA Status &Trends)	63	1 03E-01	8 15E-01	1 57E+00	6 61E-01	2 27E+00	6 83E-01	1 60E-01	5 22E-02	1 12E-02	9 50E-03
SUM TEV_{HQ}[2]		1 82E+00	1 17E+01	2 42E+01	8 73E+00	3 40E+01	8 42E+00	2 49E+00	6 69E-01	1 90E-01	1 51E-01
MAX TEV_{HQ}		1 94E-01	1 23E+00	2 50E+00	1 30E+00	3 43E+00	9 82E-01	3 01E-01	1 15E-01	2 69E-02	2 93E-02

TABLE B-3.9
UNLIMITED PRG HQs
RIDEM ECOLOGICAL PRG DEVELOPMENT
OLD FIRE FIGHTING TRAINING AREA
NAVAL STATION NEWPORT, NEWPORT RHODE ISLAND

Sample Location	OFF-11	OFF-12	OFF-13	OFF-14	OFF-15	OFF-16	OFF-17	OFF-18	OFF-19	OFF-20	OFF-21
Sample Depth Interval	0-15 cm	0-15 cm	0-15 cm	0-15 cm	0-15 cm	0-15 cm	0-15 cm	0-15 cm	0-15 cm	0-15 cm	0-15 cm
Date Sampled	4/3/98	4/3/98	4/3/98	4/7/98	4/7/98	4/3/98	4/3/98	4/3/98	4/7/98	4/3/98	4/3/98
Polyaromatic Hydrocarbons											
2-Methylnaphthalene	1 65E-01 J	4 87E-01	1 71E-01	8 06E-02	8 23E-02	9 56E-02 J	7 88E-02 J	1 66E-01	1 13E-01	1 83E-01 J	5 92E-02 J
Acenaphthylene	2 26E-02	6 45E-02	1 08E-01 J	3 48E-02	2 74E-02	3 81E-02 J	4 37E-02	9 75E-02	3 87E-02	1 78E-02	2 20E-02
Anthracene	4 71E-02 J	1 85E-01 J	9 76E-02 J	2 10E-02	2 36E-02	2 74E-02 J	3 74E-02 J	6 89E-02 J	2 91E-02	7 64E-02 J	1 69E-02 J
Benzo(a)anthracene	4 45E-02	1 40E-01	8 45E-02 J	3 15E-02	2 57E-02	2 18E-02 J	2 81E-02	5 31E-02	3 17E-02	4 05E-02	1 91E-02
Benzo(a)pyrene	5 42E-02	2 29E-01	1 16E-01 J	5 14E-02	3 46E-02	3 41E-02 J	5 16E-02	9 71E-02	4 47E-02	4 50E-02	3 08E-02
Benzo(b,j,k)fluoranthene	3 11E-02	1 32E-01	7 32E-02 J	2 75E-02	3 68E-02	2 02E-02 J	3 03E-02	6 90E-02	2 57E-02	3 08E-02	1 96E-02
Benzo(g,h,i)Perylene	3 31E-02 J	1 25E-01 J	7 12E-02 J	3 73E-02	3 19E-02	2 67E-02 J	3 98E-02 J	8 61E-02 J	2 65E-02	2 18E-02 J	2 21E-02 J
Chrysene/triphenylene	4 08E-02	1 53E-01	7 42E-02 J	3 64E-02	2 79E-02	2 23E-02 J	2 99E-02 J	6 05E-02	3 66E-02	4 93E-02	2 52E-02
Dibenzo(a,h)Anthracene	1 72E-02 J	8 87E-02 J	4 22E-02 J	2 07E-02	2 90E-02	1 51E-02 J	2 32E-02 J	5 41E-02 J	1 57E-02	1 73E-02 J	1 39E-02 J
Fluoranthene	2 04E-02	7 23E-02	3 76E-02 J	8 92E-03	8 93E-03	9 89E-03 J	1 18E-02 J	2 72E-02	1 08E-02	2 22E-02	7 32E-03
Fluorene	5 61E-02 J	2 66E-01 J	7 56E-02 J	2 11E-02	1 56E-02	3 22E-02 J	2 92E-02 J	4 60E-02 J	4 35E-02	9 89E-02 J	1 21E-02 J
Indeno(1,2,3-cd)pyrene	2 69E-02	1 06E-01	5 53E-02 J	2 94E-02	3 31E-02	2 05E-02 J	3 12E-02	6 72E-02	2 30E-02	2 23E-02	1 88E-02
Phenanthrene	3 14E-02	1 46E-01	5 22E-02 J	9 43E-03	1 06E-02	1 85E-02 J	1 51E-02	3 33E-02	1 47E-02	5 22E-02	7 95E-03
Pyrene	4 12E-02	1 62E-01	8 50E-02 J	2 31E-02	2 10E-02	2 65E-02 J	2 81E-02 J	6 08E-02	2 42E-02	4 39E-02	1 95E-02
Sum PAHs (6 High Molecular Weight)	4 05E-02	1 50E-01	7 88E-02	2 15E-02	1 98E-02	2 26E-02	2 58E-02	5 68E-02	2 37E-02	4 33E-02	1 72E-02
Sum PAHs (7 Low Molecular Weight)	4 73E-02	2 20E-01	7 83E-02	2 59E-02	2 44E-02	3 22E-02	3 19E-02	6 13E-02	4 35E-02	7 47E-02	1 50E-02
Sum PAHs (NOAA Status &Trends)	4 55E-02	2 01E-01	7 86E-02	2 47E-02	2 32E-02	2 96E-02	3 03E-02	6 02E-02	3 82E-02	6 63E-02	1 56E-02
SUM TEV_{HQ}(2)	6 32E-01	2 36E+00	1 14E+00	4 33E-01	4 08E-01	4 09E-01	4 78E-01	9 87E-01	4 78E-01	7 21E-01	2 95E-01
MAX TEV_{HQ}	1 65E-01	4 87E-01	1 71E-01	8 06E-02	8 23E-02	9 56E-02	7 88E-02	1 66E-01	1 13E-01	1 83E-01	5 92E-02

Notes·

1 - Source of TEV is presented in Table 8

The values in this table are calculated using the following equation TEV_{HQ} = [PW]/TEV

Where TEV_{HQ} = Toxicity Effects Value Hazard Quotient

[PW] = Pore Water Concentration (ug/L) (from Table 3)

TEV = Toxicity Effects Level (ug/L) (from Table 8)

TABLE B-3.10
UNLIMITED PRG CALCULATION
RIDEM ECOLOGICAL PRG CALCULATION STEP 8
OLD FIRE FIGHTING TRAINING AREA
NAVAL STATION NEWPORT, NEWPORT RHODE ISLAND

Sample Location	OFF-1	OFF-2	OFF-3	OFF-4	OFF-5	OFF-6	OFF-7	OFF-8	OFF-9	OFF-10	OFF-11
Sample Depth Interval	0-15 cm	0-15 cm	0-15 cm	0-15 cm	0-15 cm	0-15 cm	0-15 cm	0-15 cm	0-15 cm	0-15 cm	0-15 cm
Date Sampled	3/27/98	3/27/98	3/27/98	3/27/98	3/27/98	3/27/98	3/27/98	4/7/98	4/7/98	4/3/98	4/3/98
Filtering	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT
Polyaromatic Hydrocarbons (ug/kg)											
2-Methylnaphthalene	1 73E+02	1 06E+02	8 65E+01	8 65E+01	9 61E+01	1 73E+02	1 83E+02	1 25E+02	1.15E+02	1 06E+02	1 06E+02
Acenaphthylene	6 51E+02	3 98E+02	3 25E+02	3 25E+02	3 62E+02	6 51E+02	6 87E+02	4 70E+02	4 34E+02	3 98E+02	3 98E+02
Anthracene	2 22E+03	1 36E+03	1 11E+03	1 11E+03	1 23E+03	2 22E+03	2 34E+03	1 60E+03	1 48E+03	1 36E+03	1 36E+03
Benzo(a)anthracene	6 18E+03	3 78E+03	3 09E+03	3 09E+03	3 43E+03	6 18E+03	6 52E+03	4 46E+03	4 12E+03	3 78E+03	3 78E+03
Benzo(a)pyrene	4 47E+03	2 73E+03	2 23E+03	2 23E+03	2 48E+03	4 47E+03	4 72E+03	3 23E+03	2 98E+03	2 73E+03	2 73E+03
Benzo(b,j,k)fluoranthene	1 49E+04	9 13E+03	7 47E+03	7 47E+03	8 30E+03	1 49E+04	1 58E+04	1 08E+04	9 96E+03	9 13E+03	9 13E+03
Benzo(g,h,i)Perylene	4 70E+03	2 87E+03	2 35E+03	2 35E+03	2 61E+03	4 70E+03	4 96E+03	3 40E+03	3 13E+03	2 87E+03	2 87E+03
Chrysene/triphenylene	4 70E+03	2 87E+03	2 35E+03	2 35E+03	2 61E+03	4 70E+03	4 96E+03	3 39E+03	3 13E+03	2 87E+03	2 87E+03
Dibenzo(a,h)Anthracene	2 27E+03	1 39E+03	1 14E+03	1 14E+03	1 26E+03	2 27E+03	2 40E+03	1 64E+03	1 51E+03	1 39E+03	1 39E+03
Fluoranthene	3.11E+04	1 90E+04	1 55E+04	1 55E+04	1 73E+04	3 11E+04	3 28E+04	2 25E+04	2 07E+04	1 90E+04	1 90E+04
Fluorene	7 32E+02	4 48E+02	3 66E+02	3 66E+02	4 07E+02	7 32E+02	7 73E+02	5 29E+02	4 88E+02	4 48E+02	4 48E+02
Indeno(1,2,3-cd)pyrene	5 26E+03	3 21E+03	2 63E+03	2 63E+03	2 92E+03	5 26E+03	5 55E+03	3 80E+03	3 50E+03	3 21E+03	3 21E+03
Phenanthrene	1 24E+04	7 58E+03	6 20E+03	6 20E+03	6 89E+03	1 24E+04	1 31E+04	8 96E+03	8 27E+03	7 58E+03	7 58E+03
Pyrene	1 34E+04	8 18E+03	6 69E+03	6 69E+03	7 44E+03	1 34E+04	1 41E+04	9 67E+03	8 92E+03	8 18E+03	8 18E+03
Sum PAHs (6 High Molecular Weight)	5 43E+04	2 93E+04	2 42E+04	2 35E+04	2 71E+04	4 54E+04	5 41E+04	3 68E+04	3 62E+04	3 01E+04	2 91E+04
Sum PAHs (7 Low Molecular Weight)	1 60E+04	9 75E+03	9 05E+03	7 24E+03	9 17E+03	1 77E+04	1 37E+04	8 13E+03	7 33E+03	6 18E+03	8 27E+03
Sum PAHs (NOAA Status &Trends)	1 38E+05	6 09E+04	5 85E+04	4 52E+04	5 82E+04	9 38E+04	1 02E+05	5 67E+04	7 69E+04	6 23E+04	4 90E+04

TABLE B-3.10
UNLIMITED PRG CALCULATION
RIDEM ECOLOGICAL PRG CALCULATION STEP 8
OLD FIRE FIGHTING TRAINING AREA
NAVAL STATION NEWPORT, NEWPORT RHODE ISLAND

Sample Location	OFF-12	OFF-13	OFF-14	OFF-15	OFF-16	OFF-17	OFF-18	OFF-19	OFF-20	OFF-21	
Sample Depth Interval	0-15 cm	0-15 cm	0-15 cm	0-15 cm	0-15 cm	0-15 cm	0-15 cm	0-15 cm	0-15 cm	0-15 cm	
Date Sampled	4/3/98	4/3/98	4/7/98	4/7/98	4/3/98	4/3/98	4/3/98	4/7/98	4/3/98	4/3/98	Average
Filtering	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	PRG[1]
Polyaromatic Hydrocarbons (ug/kg)											
2-Methylnaphthalene	2 40E+02	3 85E+02	1 92E+02	1 15E+02	2 50E+02	2.50E+02	3 85E+02	2 79E+02	2 21E+02	2 21E+02	185
Acenaphthylene	9 04E+02	1 45E+03	7 23E+02	4 34E+02	9 40E+02	9 40E+02	1.45E+03	1 05E+03	8.32E+02	8 32E+02	697
Anthracene	3 09E+03	4 94E+03	2 47E+03	1 48E+03	3 21E+03	3 21E+03	4 94E+03	3 58E+03	2 84E+03	2 84E+03	2380
Benzo(a)anthracene	8 58E+03	1 37E+04	6 87E+03	4 12E+03	8 93E+03	8 93E+03	1 37E+04	9 96E+03	7 90E+03	7 90E+03	6623
Benzo(a)pyrene	6 21E+03	9 93E+03	4 97E+03	2 98E+03	6 45E+03	6 45E+03	9 93E+03	7 20E+03	5 71E+03	5 71E+03	4788
Benzo(b,j,k)fluoranthene	2 07E+04	3 32E+04	1 66E+04	9 96E+03	2 16E+04	2 16E+04	3 32E+04	2 41E+04	1 91E+04	1 91E+04	16002
Benzo(g,h,i)Perylene	6 53E+03	1 04E+04	5 22E+03	3 13E+03	6 79E+03	6 79E+03	1 04E+04	7 57E+03	6 01E+03	6 01E+03	5037
Chrysene/triphenylene	6 52E+03	1 04E+04	5 22E+03	3 13E+03	6 78E+03	6 78E+03	1 04E+04	7 57E+03	6 00E+03	6 00E+03	5032
Dibenzo(a,h)Anthracene	3 16E+03	5 05E+03	2 52E+03	1 51E+03	3 28E+03	3 28E+03	5 05E+03	3 66E+03	2 90E+03	2 90E+03	2434
Fluoranthene	4 32E+04	6 91E+04	3 45E+04	2 07E+04	4 49E+04	4 49E+04	6 91E+04	5 01E+04	3 97E+04	3 97E+04	33312
Fluorene	1 02E+03	1 63E+03	8 14E+02	4 88E+02	1 06E+03	1 06E+03	1 63E+03	1 18E+03	9 36E+02	9 36E+02	785
Indeno(1,2,3-cd)pyrene	7 30E+03	1 17E+04	5 84E+03	3 50E+03	7 59E+03	7 59E+03	1 17E+04	8 47E+03	6 72E+03	6 72E+03	5633
Phenanthrene	1 72E+04	2 76E+04	1 38E+04	8 27E+03	1 79E+04	1 79E+04	2 76E+04	2 00E+04	1 58E+04	1 58E+04	13290
Pyrene	1 86E+04	2 97E+04	1 49E+04	8 92E+03	1 93E+04	1 93E+04	2 97E+04	2 16E+04	1 71E+04	1 71E+04	14343
Sum PAHs (6 High Molecular Weight)	6 65E+04	1 07E+05	6 31E+04	3 59E+04	6 96E+04	7 47E+04	1 11E+05	8 61E+04	5 91E+04	6 62E+04	53776
Sum PAHs (7 Low Molecular Weight)	1 81E+04	3 12E+04	1 05E+04	6 90E+03	1 77E+04	1 67E+04	2 72E+04	1 42E+04	1 75E+04	1 56E+04	13719
Sum PAHs (NOAA Status &Trends)	9 98E+04	2 06E+05	1 13E+05	7 16E+04	1 11E+05	1 33E+05	2 23E+05	1 08E+05	7 77E+04	1 44E+05	99417

TABLE B-3.11
UNLIMITED SEDIMENT HAZARD QUOTIENTS
RIDEM ECOLOGICAL PRG DEVELOPMENT STEP 8
OLD FIRE FIGHTING TRAINING AREA
NAVAL STATION NEWPORT, NEWPORT RHODE ISLAND

Sample Location Sample Depth Interval Date Sampled	PRG[1]	OFF-1 0-15 cm 3/27/98	OFF-2 0-15 cm 3/27/98	OFF-3 0-15 cm 3/27/98	OFF-4 0-15 cm 3/27/98	OFF-5 0-15 cm 3/27/98	OFF-6 0-15 cm 3/27/98	OFF-7 0-15 cm 3/27/98	OFF-8 0-15 cm 4/7/98	OFF-9 0-15 cm 4/7/98	OFF-10 0-15 cm 4/3/98
Polyaromatic Hydrocarbons (ug/kg)											
2-Methylnaphthalene	185	0 14 J	0 42 J	0 48 J	0 21 J	1.78 J	0 92 J	0 30	0 08	0 02 J	0 02 J
Acenaphthylene	697	0 13	0 70	0 50	0 61	0 73	0 28	0 24	0 03	0 01 J	0 01 J
Anthracene	2380	0 11	0 46	0 61	0 33	1.18	0 49	0 17	0 03	0 00	0 00 J
Benzo(a)anthracene	6623	0 02 J	0 54 J	0 86 J	0 34 J	1.40 J	0 64 J	0 18	0 03	0 01	0 01 J
Benzo(a)pyrene	4788	0 12	0 50	0 72	0 44	1.01	0 42	0 28	0 05	0 02	0 01
Benzo(b,j,k)fluoranthene	16002	0.17	0 48	1.08 J	0 22	1.56	0 59	0 18	0 03	0 01	0 01
Benzo(g,h,i)Perylene	5037	0 17	0 50	1.07 J	0 26	1.19	0 52	0 20	0 03	0 01	0 01
Chrysene/triphenylene	5032	0 16 J	0 47 J	0 91 J	0 37 J	1.45 J	0 67 J	0 10	0 04	0 01	0 01 J
Dibenzo(a,h)Anthracene	2434	0 18 J	0 53 J	1.15 J	0 14 J	1.40 J	0 57 J	0 12	0 02	0 00	0 00 J
Fluoranthene	33312	0 06	0 25	0 44	0 17	0 58	0 34	0 07	0 01 U	0 00 U	0 00 J
Fluorene	785	0 05	0 39	0 76	0 23	1.73	0 50	0 20 J	0 04	0 01	0 00
Indeno(1,2,3-cd)pyrene	5633	0 18 J	0 55 J	1.16 J	0 21 J	1.31 J	0 54 J	0 17	0 02	0 01 U	0 01 J
Phenanthrene	13290	0 08	0 42	0 81	0 23	1.10	0 71	0 10	0 02	0 00	0 00
Pyrene	14343	0 12 J	0 47 J	0 75 J	0 34 J	1.18 J	0 68 J	0 15	0 03	0 01 J	0 01 J
Sum PAHs (6 High Molecular	53776	0 12	0 46	0 78 J	0 31	1.13	0 60	0 14	0 03	0 01	0 01
Sum PAHs (7 Low Molecular	13719	0 11	0 57	1.00	0 34	1.52	0 87	0 17	0 03	0 01	0 00
Sum PAHs (NOAA Status &T	99417	0 14	0 50	0 93 J	0 30	1.33	0 64	0 16	0 03	0 01	0 01
Sum PRG_{HQ}[2]		2 1	8 2	14 0	5 0	21 6	10 0	2 9	0 5	0 1	0 1
Max PRG_{HQ}[2]		0 2	0 7	1 2	0 6	1 8	0 9	0 3	0 1	0 0	0 0
Max CoC[3]		NA	NA	Indeno(1,2,3-cd)pyre	NA	2-methylnaphthaler	NA	NA	NA	NA	NA

TABLE B-3.11
UNLIMITED SEDIMENT HAZARD QUOTIENTS
RIDEM ECOLOGICAL PRG DEVELOPMENT STEP 8
OLD FIRE FIGHTING TRAINING AREA
NAVAL STATION NEWPORT, NEWPORT RHODE ISLAND

Sample Location	OFF-11	OFF-12	OFF-13	OFF-14	OFF-15	OFF-16	OFF-17	OFF-18	OFF-19	OFF-20	OFF-21	OFF-22	OFF-23
Sample Depth Interval	0-15 cm	0-15 cm	0-15 cm	0-15 cm	0-15 cm	0-15 cm	0-15 cm	0-15 cm	0-15 cm	0-15 cm	0-15 cm	0-15 cm	0-15 cm
Date Sampled	4/3/98	4/3/98	4/3/98	4/7/98	4/7/98	4/3/98	4/3/98	4/3/98	4/7/98	4/3/98	4/3/98	3/27/98	4/3/98
Polyaromatic Hydrocarbons													
2-Methylnaphthalene	0 09 J	0 63 J	0 35 J	0 08	0 05	0 13 J	0 11 J	0 34 J	0 17	0 22 J	0 07 J	0 02 J	0 23
Acenaphthylene	0 01	0 08	0 22 J	0 04	0 02 J	0 05 J	0 06	0 20	0 06	0 02	0 03	0 01 J	0 11
Anthracene	0 03	0 24	0 20 J	0 02	0 01	0 04 J	0 05	0 14	0 04	0 09	0 02	0 00 J	0 15
Benzo(a)anthracene	0 03 J	0 18 J	0.18 J	0 03	0 02	0 03 J	0 04 J	0 11 J	0 05	0 05 J	0 02 J	0 01 J	0 09
Benzo(a)pyrene	0 03	0 30	0 24 J	0 05	0 02	0 05 J	0 07	0 20	0 07	0 05	0 04	0 01	0 16
Benzo(b,j,k)fluoranthene	0 02	0 17	0 15 J	0 03	0 02	0 03 J	0 04	0 14	0 04	0 04	0 02	0 00	0 10
Benzo(g,h,i)Perylene	0 02	0 16	0 15 J	0 04	0 02	0 04 J	0 05	0 18	0 04	0 03	0 03	0 01	0 14
Chrysene/triphenylene	0 02 J	0 20 J	0 15 J	0 04	0 02	0 03 J	0 04 J	0 13 J	0 06	0 06 J	0 03 J	0 01 J	0 11
Dibenzo(a,h)Anthracene	0 01 J	0 12 J	0 09 J	0 02	0 02	0 02 J	0 03 J	0 11 J	0 02	0 02 J	0 02 J	0 01 J	0 07
Fluoranthene	0 01 J	0 09	0 08 J	0 01 U	0 01 U	0 01 J	0 02 J	0 06	0 02	0 03	0 01 J	0 00 J	0 05
Fluorene	0 03	0 35	0 16 J	0 02	0 01	0 04 J	0 04 J	0 10	0 07	0 12	0 01	0 00	0 14
Indeno(1,2,3-cd)pyrene	0 02 J	0 14 J	0 11 J	0 03	0 02	0 03 J	0 04 J	0 14 J	0 03	0 03 J	0 02 J	0 01 J	0 09
Phenanthrene	0 02	0 19	0 11 J	0 01	0 01	0 02 J	0 02 J	0 07	0 02	0 06	0 01	0 00	0 06
Pyrene	0 02 J	0 21 J	0 18 J	0 02	0 01	0 04 J	0 04 J	0 13 J	0 04	0 05 J	0 02 J	0 00 J	0 10
Sum PAHs (6 High Molecular	0 02	0 19	0 16 J	0 03	0 01	0 03 J	0 04	0 12	0 04	0 05	0 02	0 00	0 09
Sum PAHs (7 Low Molecular	0 03	0 29	0 18 J	0 02	0 01	0 04 J	0 04	0 12	0 05	0 10	0 02	0 00 J	0 11
Sum PAHs (NOAA Status &T	0 02	0 20	0 16 J	0 03	0 02	0 03 J	0 04	0 13	0 04	0 05	0 02	0 01	0 10
Sum PRG_{HQ} (2)	0 4	3 7	2 9	0 5	0 3	0 7	0 8	2.4	0 8	1 1	0 4	0 1	1 9
Max PRG_{HQ} (2)	0 1	0 6	0 4	0.1	0 1	0 1	0 1	0 3	0 2	0 2	0 1	0 0	0 2
Max CoC (3)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:

Shaded cells are parameters with PRG_{HQ} that are greater than 1 0

1 - Source of PRG is presented in Table 10

2 - The values in this table are calculated using the following equation PRG_{HQ} = [SD]/PRG

Where PRG_{HQ} = Preliminary Remediation Goal Hazard Quotient

[SD] = Sediment Concentration (ug/kg or mg/kg)

PRG = Preliminary Remediation Goal (ug/kg or mg/kg)