

CENPS-OP-DMMO

MEMORANDUM FOR RECORD

21 August 1991

SUBJECT: DECISION ON THE SUITABILITY OF DREDGED MATERIAL TESTED UNDER PSDDA EVALUATION PROCEDURES FOR THE PORT OF SEATTLE-TERMINAL 5 DREDGING PROJECT (OYB-2-014660) TO BE DISPOSED OF AT THE ELLIOTT BAY OPEN-WATER DISPOSAL SITE.

1. The following summary reflects the PSDDA agencies' (Corps of Engineers, Department of Ecology, Department of Natural Resources and the Environmental Protection Agency) consensus decision on the acceptability of the sampling plan and all relevant test data to make a determination of suitability for the 12,000 cubic yards of material proposed for dredging from the Port of Seattle-Terminal 5 project site for disposal at the PSDDA Elliott Bay open-water disposal site.
2. The project area was ranked high. Three dredged material management units (DMMU C1, C2 and C3), each represented by two composited field samples, were subjected to concurrent chemical and biological testing.
3. Chemistry data indicated that one or more exceedances of the 1991 PSDDA screening levels (SL) occurred for test samples C1 and C2 (see Attachment 1). There were no exceedances of bioaccumulation triggers (BT) or maximum levels (ML). **see attached DAIS Values Table**
4. The SL exceedances for these two test samples would trigger the requirement for biological testing under the tiered testing approach. In this case, concurrent biological testing was conducted for all three DMMUs. The amphipod 10-day acute toxicity test, echinoderm sediment larval combined mortality and abnormality (effective mortality) test, the Neanthes 10-day acute toxicity test, and the Microtox bacterial luminescence test were conducted. PSDDA interpretation guidelines specified in the Phase II Management Plan Report (Sept 1989), modified by changes made at the second annual review meeting, were used to evaluate the bioassay data. Due to the low fines content of the test sediments, West Beach sand was used as both the control (for amphipod and Neanthes) and reference sediment (all bioassays).
5. There were no hits for any of the test sediments for any of the bioassays.

Suitability Decision
Port of Seattle-Terminal 5
OYB-2-014660

6. The PSDDA-approved sampling and testing plan was followed, and quality assurance/quality control guidelines specified by PSDDA were generally complied with. The data gathered were deemed sufficient and acceptable for regulatory decision-making under the PSDDA program. Based on the results of chemical and biological testing, the following consensus decision was made by the PSDDA agencies concerning the suitability of the characterized material for disposal at the Elliott Bay open-water disposal site:

All 12,000 cubic yards proposed for dredging are suitable for disposal at the Elliott Bay open-water site.

Concur:

Aug 28, 1991
Date

David R. Kendall
David Kendall, Ph.D
Seattle District Corps of Engineers

8/21/91
Date

David D. Fox, P.E.
David Fox
Seattle District Corps of Engineers

Aug 21, 1991
Date

John Malek
John Malek/Justine Smith
Environmental Protection Agency, Region X

Aug 28, 1991
Date

Russ McMillan
Rick Vining/Russ McMillan
Washington Department of Ecology

8/21/91
Date

Betsy Striplin
Betsy Striplin
Washington Department of Natural Resources

1 Attachment
Copies Furnished:
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EPA/John Malek/Justine Smith
DOE/Rick Vining
DNR/Betsy Striplin
DMMO file

TERMINAL 5

NORTH

DUNAHISH HEAD

ELLIOTT BAY

LOCATION, TERM. 5
BERTH NO. 4

WEST WATERWAY

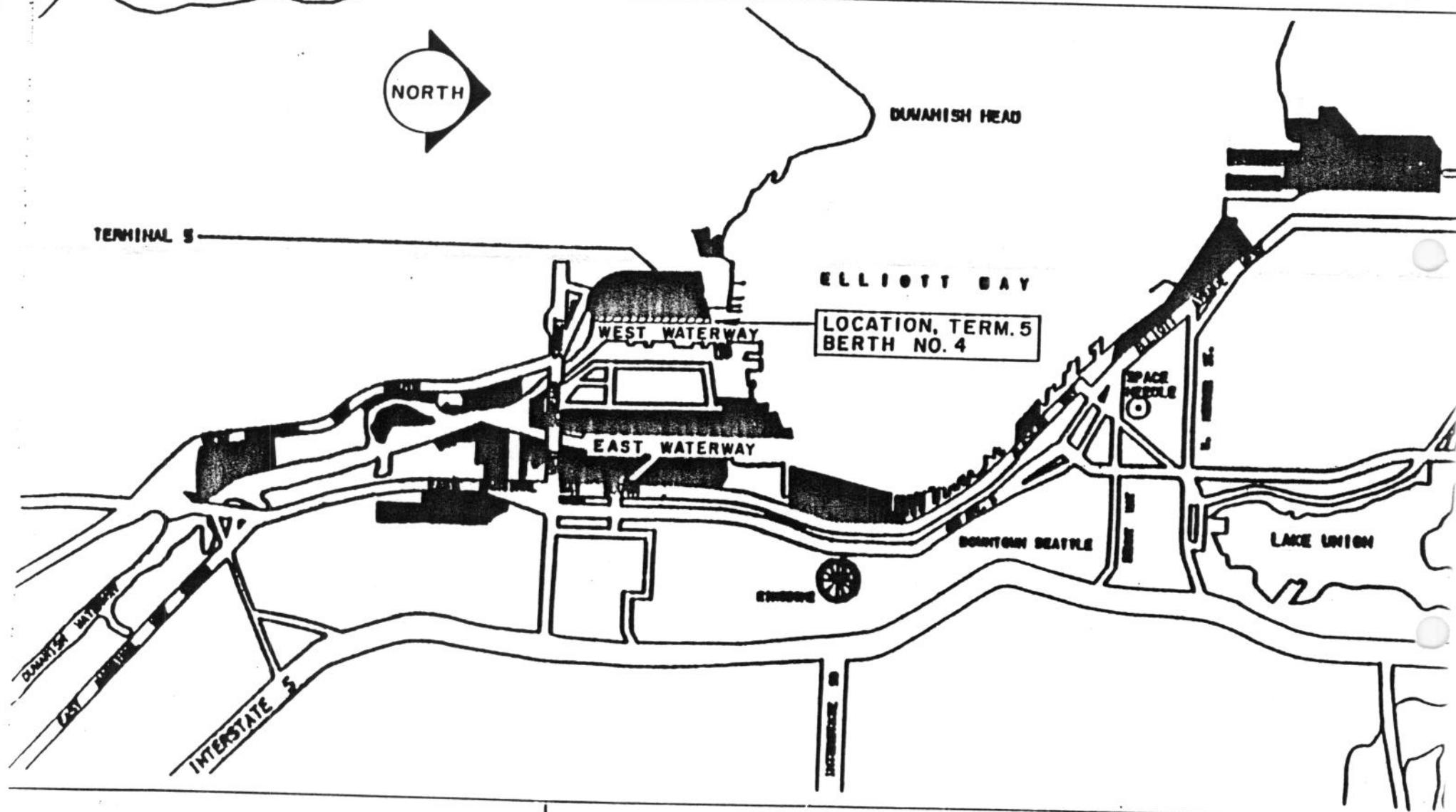
EAST WATERWAY

SPACE
NEEDLE

LAKE UNION

EMBANK.

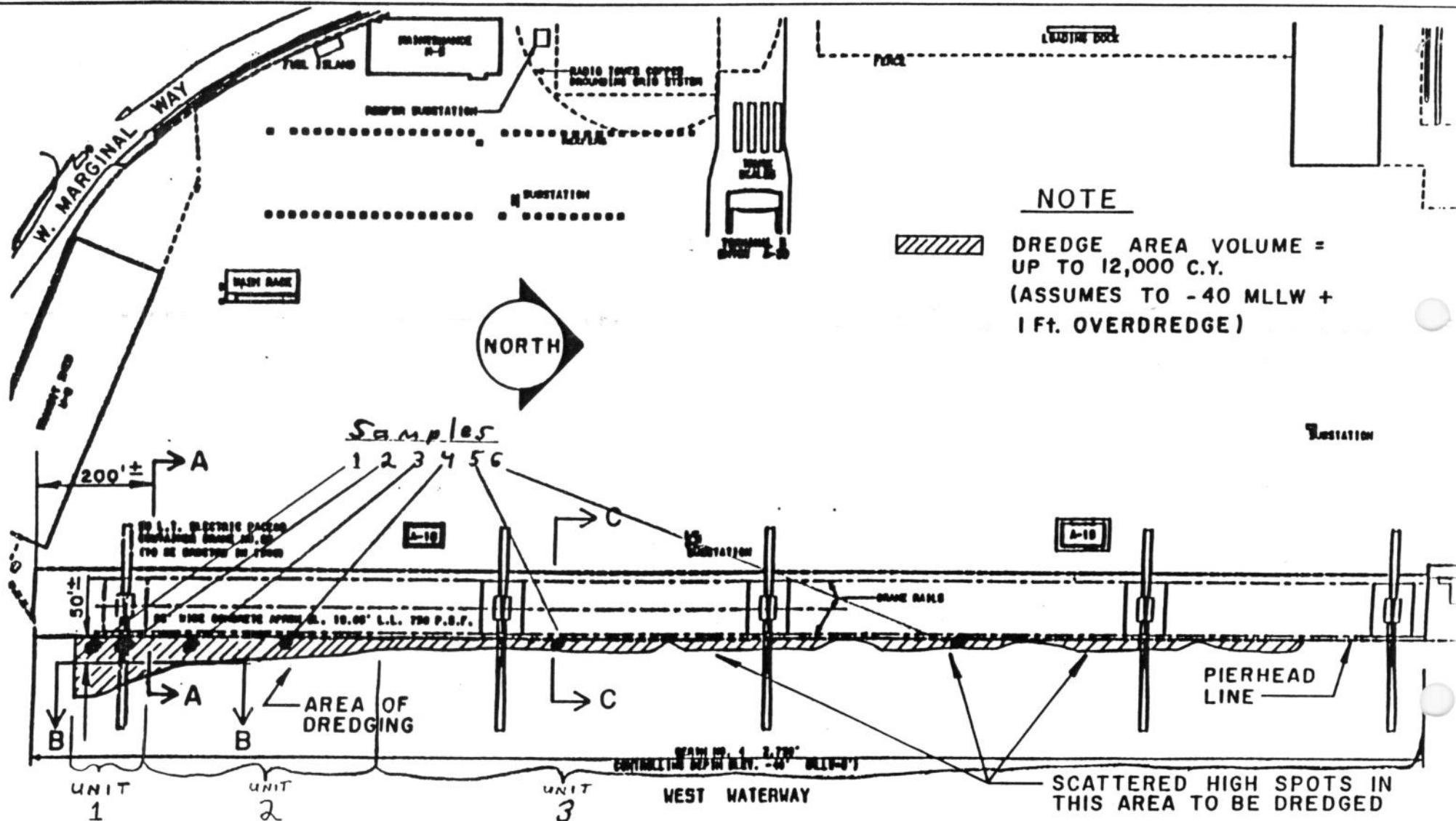
DOWNTOWN SEATTLE



**SEATTLE HARBOR
VICINITY MAP**
N.T.S.

PROPOSED MAINTENANCE DREDGING
FOR TERMINAL 5, BERTH NO. 4

Figure 1



PROPOSED MAINTENANCE DREDGING
FOR TERMINAL 5, BERTH NO. 4

PLAN VIEW

N.T.S.

Figure 2

Port of Seattle-Terminal 5
OYB-2-014660

METALS (ppm dry wgt):	1991 SL	1991 BT	1991 ML	C1	C2	C3
Lead	66	---	660		100	
Mercury	0.21	1.5	2.1		0.265	

ORGANIC CHEMICALS (ppb dry wgt):

Acenaphthene	63	---	630		72	
Fluorene	64	---	640		72	
Total LPAH	610	---	6,100		746	
Pyrene	430	---	7,300	990	2400	
Benzofluoranthenes	800	---	8,000		1060	
Indeno(1,2,3-c,d)pyrene	69	---	5,200	140	310	
Total HPAH	1,800	---	51,000	2700	5821	
Dibenzofuran	54	---	540		61	
Total DDT	6.9	50	69	7	12.8	
Total PCBs	130	---	2,500	153	169	

GRAIN SIZE (%):

	West Beach			
Sand	88	86	92	96.3
Silt	10	8	5	2.3
Clay	2	6	3	1.4

BIOASSAYS:

Amphipod (% mortality)	5	6	3	1
Sediment Larval (% effective mortality)	21.0	29.0	19.9	19.8
Neanthes (% mortality)	14	10	2	2
Microtox (% decrease luminescence)	35.7	22.6	0.2	16.6

INTERPRETATION:

Volume (cubic yards)	4000	4000	4000
Pass/Fail	Pass	Pass	Pass

DAIS SL-Normalized Table - PSDDA Guidelines

Project: Port of Seattle T5 (DY1992) POST51BF036

	SL	Units	C1	C2	C3
SEDIMENT CONVENTIONALS					
Total Solids	---	%	69	68	79
Volatile Solids	---	%	4	3.8	2.4
Total Organic Carbon	---	%	1.7	1.8	0.71
Ammonia	---	MG/KG	42	19	10
Total Sulfides	---	MG/KG	23	18	28
METALS					
Antimony	150	MG/KG	0.01	0.03	0.01
Arsenic	57	MG/KG	0.13	0.15	0.07
Cadmium	5.1	MG/KG	0.09	0.07	0.03
Chromium	---	MG/KG	-	-	-
Copper	390	MG/KG	0.11	0.19	0.08
Lead	450	MG/KG	0.13	0.22	0.1
Mercury	0.41	MG/KG	0.39	0.66	0.22
Nickel	140	MG/KG	0.41	0.24	0.21
Selenium	---	MG/KG	-	-	-
LPAH					
Silver	6.1	MG/KG	0.03	0.04	0.01 u
Zinc	410	MG/KG	0.29	0.39	0.2
2-Methylnaphthalene	670	UG/KG	0.03 u	0.06	0.03 u
Acenaphthene	500	UG/KG	0.07	0.14	0.04
Acenaphthylene	560	UG/KG	0.04 u	0.04 u	0.03 u
Anthracene	960	UG/KG	0.1	0.13	0.03
Fluorene	540	UG/KG	0.08	0.13	0.04
Naphthalene	2100	UG/KG	0.01 u	0.06	0.02
HPAH					
Phenanthrene	1500	UG/KG	0.15	0.21	0.05
Total LPAH	5200	UG/KG	0.09	0.15	0.04
Benzo(a)anthracene	1300	UG/KG	0.15	0.29	0.05
Benzo(a)pyrene	1600	UG/KG	0.12	0.28	0.06
Benzo(g,h,i)perylene	670	UG/KG	0.24	0.49	0.08
Benzofluoranthenes	3200	UG/KG	0.16	0.33	0.06
Chrysene	1400	UG/KG	0.18	0.36	0.09
Dibenzo(a,h)anthracene	230	UG/KG	0.09 u	0.22	0.08 u
Fluoranthene	1700	UG/KG	0.15	0.2	0.06
Indeno(1,2,3-c,d)pyrene	600	UG/KG	0.23	0.52	0.09
CHLORINATED HYDROCARBONS					
Pyrene	2600	UG/KG	0.38	0.92	0.15
Total HPAH	12000	UG/KG	0.23	0.49	0.09
1,2,4-Trichlorobenzene	31	UG/KG	0.2 u	0.2 u	0.17 u
1,2-Dichlorobenzene	35	UG/KG	0.07 u	0.07 u	0.07 u
1,3-Dichlorobenzene	170	UG/KG	0.03	0.01 u	0.01 u
PHTHALATES					
1,4-Dichlorobenzene	110	UG/KG	0.02 u	0.02 u	0.02 u
Hexachlorobenzene	22	UG/KG	0.55 u	0.59 u	0.5 u
Bis(2-ethylhexyl)phthalate	1300	UG/KG	0.65	0.43	0.03

	SL	Units	C1	C2	C3
Butyl benzyl phthalate	63	UG/KG	1.02	0.94	0.29 u
Di-n-butyl phthalate	1400	UG/KG	0.02 u	0.02 u	0.01 u
Di-n-octyl phthalate	6200	UG/KG	0 u	0 u	0 u
PHENOLS					
Diethyl phthalate	200	UG/KG	0.11 u	0.11 u	0.09 u
Dimethyl phthalate	71	UG/KG	0.3 u	0.3 u	0.25 u
2 Methylphenol	63	UG/KG	0.16 u	0.16 u	0.14 u
2,4-Dimethylphenol	29	UG/KG	0.34 u	0.34 u	0.31 u
4 Methylphenol	670	UG/KG	0.03 u	0.03 u	0.03 u
MISCELLANEOUS EXTRACTABLES					
Pentachlorophenol	400	UG/KG	0.16 u	0.16 u	0.14 u
Phenol	420	UG/KG	0.05 u	0.1	0.04 u
Benzoic acid	650	UG/KG	0.15 u	0.17 u	0.14 u
Benzyl alcohol	57	UG/KG	0.21 u	0.23 u	0.19 u
Dibenzofuran	540	UG/KG	0.05	0.11	0.03 u
Hexachlorobutadiene	29	UG/KG	0.72 u	0.72 u	0.62 u
VOLATILE ORGANICS					
Hexachloroethane	1400	UG/KG	0.02 u	0.02 u	0.01 u
N-Nitrosodiphenylamine	28	UG/KG	0.43 u	0.46 u	0.39 u
Ethylbenzene	10	UG/KG	0.26 u	0.24 u	0.23 u
Tetrachloroethylene	57	UG/KG	0.05 u	0.04 u	0.04 u
PESTICIDES AND PCBs					
Total Xylene	40	UG/KG	0.07 u	0.06 u	0.06 u
Trichloroethene	160	UG/KG	0.02 u	0.02 u	0.01 u
Aldrin	10	UG/KG	0.95	0.59	0.24
Chlordane	10	UG/KG	0.28	0.22 u	0.19 u
Dieldrin	10	UG/KG	0.08 u	0.09 u	0.07 u
Heptachlor	10	UG/KG	0.1 u	0.11 u	0.09 u
Lindane	10	UG/KG	0.4	0.06 u	0.06
Total DDT	6.9	UG/KG	1.32	1.86	0.38
Total PCBs	130	UG/KG	1.18	1.3	0.22

Note: a cell with a single dash indicates that no data exists for this analyte in DAIS

END OF REPORT