CENWS-OD-TS-DM

MEMORANDUM FOR RECORD 4 August 2004

SUBJECT: SUPPLEMENTAL DETERMINATION ON THE SUITABILITY OF SEDIMENT PROPOSED TO BE DREDGED FROM THE BLAIR WATERWAY BRIDGE REACH WIDENING PROJECT FOR BENEFICIAL USE ALTERNATIVES, AS EVALUATED UNDER SECTION 404 OF THE CLEAN WATER ACT.

1. The following supplemental suitability determination reflects the consensus determination of the Agencies that comprise the regional Dredged Material Management Program (DMMP) for the State of Washington on the suitability of the material from the Blair Bridge Reach Widening Project located in Blair Waterway, Commencement bay, Washington for Beneficial Use alternatives. The agencies include the Corps of Engineers, Department of Ecology, Department of Natural Resources, and the Environmental Protection Agency. The initial suitability determination (11 February 2004) documented the suitability of 265,000 cubic yards of material from the Blair Bridge Reach Widening Project for in-water disposal at the Commencement Bay disposal site.

2. Relevant dates extracted from the 11 February SDM for regulatory tracking purposes are included in Table 1.

Table 1. Regulatory Tracking Information and Dates

Initial SAP submittal date: Revised SAP submittal date:	April 2, 2003 August 11, 2003
Initial SAP review/response letter date: Revised SAP approval letter date:	May 23, 2003 August 28, 2003
Sampling date(s):	November 4-5, 2003
Sediment data characterization report submittal date:	January 23, 2004
Initial Suitability Determination date:	February 11, 2004
DAIS Tracking Number	POTBB-1-A-F-193
Recency Determination Date: Moderate (5 years)	November 2009

3. The purpose of this supplemental suitability determination is to re-evaluate the data collected from the previous full characterization effort relative to the SMS program Sediment Quality Standards (SQS) Guidelines. Table 2 provides the results of the full chemistry effort. The data in this table are reported in dry weight concentrations, and are contrasted with the DMMP guidelines, and the dry weight SMS Guidelines. As shown in the table, six (e.g., BBW-C03, BBW-C05, BBW-C06, BBW-C07, BBW-C08, BBW-C09) of the nine dredged material management units (DMMUs) evaluated had Total Organic Carbon (TOC) values less than 0.5%. Therefore, the dry weight SMS values are the appropriate comparison for those six DMMUs with TOC's less than 0.5%. As noted in this table the chemicals for all nine DMMUs were reported below the SMS dry weight SQS Guidelines. The three DMMUs with TOC's greater than 0.5% were TOC normalized for comparisons to the SMS TOC-normalized guidelines, and those comparisons are depicted in Table 3. The results of these comparisons shows that all TOC-normalized values for BBW-C01, BBW-C02, BBW-C04 were all below SQS Guidelines.

4. Therefore, the results of the SMS comparisons (dry weight and TOC-normalized) with the chemical analysis results for the nine composited DMMUs, representing a total of 87,000 cy of material and the 178,000 cy of unanalyzed native sediment indicate that the entire 265,000 cy of material is determined to be suitable for a potential beneficial use alternative.

3. This memorandum documents the suitability of sediment to be dredged from the Blair Bridge Reach Widening Dredging Project for a potential beneficial use alternative. However, this suitability

determination does not constitute final agency approval of the project. A dredging plan for this project must be completed as part of the final project approval process. A final decision will be made after full consideration of agency input, and after an alternatives analysis is done under Section 404(b)(1) of the Clean Water Act.

Concur:

4 Aug 2004 Date	David Kendall, Ph.D., Seattle District Corps of Engineers
4 Aug 2004 Date	John Malek, Environmental Protection Agency
AUG. 5, 2004 Date	Tom Gries/Loree Randall, Washington Department of Ecology
Aug 5, 2004 Date	Peter Leon, Washington Department of Natural Resources

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Table 2
Summary of Dry-Weight Basis Analytical Results and Comparison with PSDDA and Applicable SMS Evaluation Criteria
(Including OC-Normalized results for PCBs and alpha-BHC for comparison with respective PSDDA OC-Normalized criteria)

Location ID	DMMP Criteria		SMS	BBW-C01	BBW-C02	BBW-C03	BBW-C04	BBW-C05	BBW-C06	BBW-C07	BBW-C08	BBW-C09
Sample ID	Screening Level	Bio Trigger	Sed Qual Std	BBW-C01SD	BBW-C02SD	BBW-C03SD	BBW-C04SD	BBW-C05SD	BBW-C06SD	BBW-C07SD	BBW-C08SD	BBW-C09SD
Sample Date				11/04/2003	11/04/2003	11/04/2003	11/04/2003	11/04/2003	11/04/2003	11/04/2003	11/04/2003	11/04/2003
Conventionals												
Preserved Total Solids (%)	---	---	---	90.1	89.0	86.8	89.8	77.5	80.4	79.7	81.9	78.7
Total Organic Carbon (%)	---	---	---	0.78	1.6	0.49	0.87	0.30	0.27	0.32	0.11	0.21
Total solids (%)	---	---	---	92.0	90.4	90.2	91.7	87.1	78.6	81.7	80.9	81.1
Total Volatile Solids (%)	---	---	---	1.6	2.4	1.1	2.1	0.99	0.99	0.98	0.71	0.83
Ammonia (mg/kg)	---	---	---	0.19 U	0.78	0.21 U	0.22	0.21 U	0.21 U	0.63	0.70	0.73
Sulfide (mg/kg)	---	---	---	1.10 U	1.10 U	1.30	1.10 U	1.30 U	1.20 U	1.20 U	2.40	1.90
Grain Size (%)												
Gravel	---	---	---	21.5	50.2	5.1	33.3	5.7	0.7	3.2	2.2	0.8
Sand	---	---	---	70.6	45.6	85.9	59.5	85.2	90	85.8	92.6	87.8
Silt	---	---	---	5.8	2.7	7.6	5.3	7.2	7.3	7.9	4.2	9.5
Clay	---	---	---	2.0	1.5	1.5	2.0	1.8	2.0	3.1	0.8	1.9
Fines	---	---	---	7.8	4.2	9.1	7.4	9.0	9.3	11	5	11.4
Atterberg Limits												
Liquid limit	---	---	---	N-P	N-P	N-P	N-P	N-P	N-P	N-P	N-P	N-P
Plastic limit	---	---	---	N-P	N-P	N-P	N-P	N-P	N-P	N-P	N-P	N-P
Plasticity index	---	---	---	N-P	N-P	N-P	N-P	N-P	N-P	N-P	N-P	N-P
Metals (mg/kg)												
Antimony	150	---	---	5 U	5 U	5 U	5 U	6 U	6 U	6 U	6 U	6 U
Arsenic	57	507.1	57	5 U	32	5 U	10	6 U	6 U	6 U	6 U	6 U
Cadmium	5.1	11.3	5.1	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.3 U	0.2 U	0.2 U	0.2 U
Chromium	---	267	260	21.7	44.3	15.4	30.3	19.0	19.5	14.7	14.9	13.6
Copper	390	1027	390	29.4	89.4	27.4	26.4	19.6	11.3	15.9	12.8	11.7
Lead	450	975	450	36	37	9	34	9	3 U	5	2 U	2 U
Mercury	0.41	1.5	0.41	0.05 U	0.05	0.08	0.05	0.04 U	0.06 U	0.05 U	0.06 U	0.05 U
Nickel	140	370	---	15	35	10	22	12	12	10	10	9
Selenium	---	3	---	0.2 U	0.5 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Silver	6.1	6.1	6.1	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.4 U	0.4 U	0.3 U	0.4 U
Zinc	410	2783	410	73.7	120	69.6	67.9	34.8	21.5	25.6	22.4	19.1
PCBs (µg/kg)												
Aroclor 1016	---	---	---	19 U	20 U	20 U	19 U	20 U	19 U	19 U	19 U	20 U
Aroclor 1221	---	---	---	38 U	40 U	39 U	38 U	40 U	39 U	39 U	39 U	40 U
Aroclor 1232	---	---	---	19 U	20 U	20 U	19 U	20 U	19 U	19 U	19 U	20 U
Aroclor 1242	---	---	---	19 U	20 U	20 U	19 U	20 U	19 U	19 U	19 U	20 U
Aroclor 1248	---	---	---	19 U	20 U	20 U	19 U	20 U	19 U	19 U	19 U	20 U
Aroclor 1254	---	---	---	19 U	63	20 U	19 U	20 U	19 U	19 U	19 U	20 U
Aroclor 1260	---	---	---	19 U	20 U	20 U	19 U	20 U	19 U	19 U	19 U	20 U
Total PCBs	---	---	130	38 U	63	39 U	38 U	40 U	39 U	39 U	39 U	40 U
Pesticides (µg/kg)												
4,4'-DDD	---	---	---	1.9 U	2.0 U	2.0 U	1.9 U	2.0 U	1.9 U	1.9 U	1.9 U	2.0 U
4,4'-DDE	---	---	---	1.9 U	6.0	2.0 U	1.9 U	2.0 U	1.9 U	1.9 U	1.9 U	2.0 U
4,4'-DDT	---	---	---	5.1	4.8 U	2.0 U	1.9 U	2.0 U	1.9 U	1.9 U	1.9 U	2.0 U
Aldrin	10	---	---	0.96 U	0.99 U	0.99 U	0.96 U	0.99 U	0.97 U	0.96 U	0.97 U	0.99 U
alpha-BHC	---	---	---	0.96 U	0.99 U	0.99 U	0.96 U	0.99 U	0.97 U	0.96 U	0.97 U	0.99 U
gamma-BHC (Lindane)	10	---	---	0.96 U	0.99 U	0.99 U	0.96 U	0.99 U	0.97 U	0.96 U	0.97 U	0.99 U
alpha-Chlordane	---	---	---	0.96 U	0.99 U	0.99 U	0.96 U	0.99 U	0.97 U	0.96 U	0.97 U	0.99 U
gamma-Chlordane	---	---	---	0.96 U	0.99 U	0.99 U	0.96 U	0.99 U	0.97 U	0.96 U	0.97 U	0.99 U
DDT (total)	6.9	50	---	5.1	6	2 U	1.9 U	2 U	1.9 U	1.9 U	1.9 U	2 U

Table 2
Summary of Dry-Weight Basis Analytical Results and Comparison with PSDDA and Applicable SMS Evaluation Criteria
(Including OC-Normalized results for PCBs and alpha-BHC for comparison with respective PSDDA OC-Normalized criteria)

Location ID	DMMP Criteria		SMS	BBW-C01	BBW-C02	BBW-C03	BBW-C04	BBW-C05	BBW-C06	BBW-C07	BBW-C08	BBW-C09
Sample ID	Screening	Bio	Sed Qual	BBW-C01SD	BBW-C02SD	BBW-C03SD	BBW-C04SD	BBW-C05SD	BBW-C06SD	BBW-C07SD	BBW-C08SD	BBW-C09SD
Sample Date	Level	Trigger	Std	11/04/2003	11/04/2003	11/04/2003	11/04/2003	11/04/2003	11/04/2003	11/04/2003	11/04/2003	11/04/2003
Dieldrin	10	---	---	1.9 U	2.0 U	2.0 U	1.9 U	2.0 U	1.9 U	1.9 U	1.9 U	2.0 U
Heptachlor	10	---	---	0.96 U	0.99 U	0.99 U	0.96 U	0.99 U	0.97 U	0.96 U	0.97 U	0.99 U
cis-Nonachlor	---	---	---	1.9 U	2.0 U	2.0 U	1.9 U	2.0 U	1.9 U	1.9 U	1.9 U	2.0 U
trans-Nonachlor	---	---	---	1.9 U	2.0 U	2.0 U	1.9 U	2.0 U	1.9 U	1.9 U	1.9 U	2.0 U
Total chlordane (PSDDA)	10	37	---	1.9 U	2 U	2 U	1.9 U	2 U	1.9 U	1.9 U	1.9 U	2 U
SVOCs (µg/kg)												
LPAHs												
Naphthalene	2100	---	2100	19 U	20 U	20 U	60	20 U	19 U	19 U	19 U	20 U
Acenaphthylene	560	---	560	19 U	20 U	20 U	19 U	20 U	19 U	19 U	19 U	20 U
Acenaphthene	500	---	500	19 U	20 U	20 U	58	20 U	19 U	19 U	19 U	20 U
Fluorene	540	---	540	19 U	20 U	20 U	52	20 U	19 U	19 U	19 U	20 U
Phenanthrene	1500	---	1500	19 U	72	20 U	220	44	19 U	19 U	19 U	20 U
Anthracene	960	---	960	19 U	15 J	20 U	39	20 U	19 U	19 U	19 U	20 U
2-Methylnaphthalene	670	---	670	19 U	20 U	20 U	44	20 U	19 U	19 U	19 U	20 U
Total LPAH	5200	---	5200	19 U	87	20 U	429	44	19 U	19 U	19 U	20 U
HPAHs												
Fluoranthene	1700	4600	1700	23	210	13 J	230	33	19 U	19 U	19 U	20 U
Pyrene	2600	11980	2600	31	280	17 J	340	30	19 U	19 U	19 U	20 U
Benzo(a)anthracene	1300	---	1300	17 J	220	12 J	210	20 U	19 U	19 U	19 U	20 U
Chrysene	1400	---	1400	29	300	19 J	320	20 U	19 U	19 U	19 U	20 U
Benzo(b)fluoranthene	---	---	---	34	510	17 J	430	20 U	19 U	19 U	19 U	20 U
Benzo(k)fluoranthene	---	---	---	27	470	14 J	440	20 U	19 U	19 U	19 U	20 U
Total benzofluoranthenes	3200	---	3200	61	980	31	870	20 U	19 U	19 U	19 U	20 U
Benzo(a)pyrene	1600	---	1600	21	460	20 U	400	20 U	19 U	19 U	19 U	20 U
Indeno(1,2,3-cd)pyrene	600	---	600	19 U	140	20 U	190	20 U	19 U	19 U	19 U	20 U
Dibenzo(a,h)anthracene	230	---	230	19 U	35	20 U	50	20 U	19 U	19 U	19 U	20 U
Benzo(g,h,i)perylene	670	---	720	19 U	80	20 U	120	20 U	19 U	19 U	19 U	20 U
Total HPAH	12000	---	12000	182	2705	92	2730	63	19 U	19 U	19 U	20 U
Chlorinated Hydrocarbons												
1,3-Dichlorobenzene	170	---	---	0.8 U	0.8 U	0.9 U	0.8 U	1.0 U	0.9 U	1.0 U	0.9 U	0.9 U
1,4-Dichlorobenzene	110	---	110	0.8 U	0.8 U	0.9 U	0.8 U	1.0 U	0.9 U	1.0 U	0.9 U	0.9 U
1,2-Dichlorobenzene	35	---	35	0.8 U	0.8 U	0.9 U	0.8 U	1.0 U	0.9 U	1.0 U	0.9 U	0.9 U
1,2,4-Trichlorobenzene	31	---	31	4.2 U	4.0 U	4.3 U	4.2 U	4.8 U	4.7 U	4.9 U	4.7 U	4.7 U
Hexachlorobenzene	22	168	22	0.96 U	0.52 J	0.99 U	0.85 J	0.99 U	0.97 U	0.96 U	0.97 U	0.99 U
Phthalates												
Dimethylphthalate	1400	---	71	19 U	59	20 U	19 U	20 U	19 U	19 U	19 U	20 U
Diethylphthalate	1200	---	48	19 U	20 U	20 U	19 U	20 U	19 U	19 U	19 U	20 U
Di-n-butylphthalate	5100	---	1400	19 U	20 U	20 U	19 U	20 U	19 U	19 U	19 U	20 U
Butylbenzylphthalate	970	---	63	19 U	20 U	20 U	19	20 U	19 U	19 U	19 U	20 U
bis(2-Ethylhexyl)phthalate	8300	---	1300	120	150	150	200	120	150	110	150	120
Di-n-octylphthalate	6200	---	420	19 U	20 U	20 U	19 U	20 U	19 U	19 U	19 U	20 U
Phenols												
Phenol	420	---	420	19 U	20 U	20 U	19 U	20 U	19 U	19 U	19 U	20 U
2-Methylphenol	63	---	63	19 U	20 U	20 U	19 U	20 U	19 U	19 U	19 U	20 U
4-Methylphenol	670	---	670	19 U	20 U	20 U	19 U	20 U	19 U	19 U	19 U	20 U
2,4-Dimethylphenol	29	---	29	19 U	20 U	20 U	19 U	20 U	19 U	19 U	19 U	20 U
Pentachlorophenol	400	504	140	97 U	98 U	98 U	95 U	98 U	96 U	97 U	97 U	98 U

Table 2
Summary of Dry-Weight Basis Analytical Results and Comparison with PSDDA and Applicable SMS Evaluation Criteria
(Including OC-Normalized results for PCBs and alpha-BHC for comparison with respective PSDDA OC-Normalized criteria)

Location ID	DMMP Criteria		SMS	BBW-C01	BBW-C02	BBW-C03	BBW-C04	BBW-C05	BBW-C06	BBW-C07	BBW-C08	BBW-C09
Sample ID	Screening	Bio	Sed Qual	BBW-C01SD	BBW-C02SD	BBW-C03SD	BBW-C04SD	BBW-C05SD	BBW-C06SD	BBW-C07SD	BBW-C08SD	BBW-C09SD
Sample Date	Level	Trigger	Std	11/04/2003	11/04/2003	11/04/2003	11/04/2003	11/04/2003	11/04/2003	11/04/2003	11/04/2003	11/04/2003
Miscellaneous												
Benzyl alcohol	57	---	57	19 U	20 U	20 U	19 U	20 U	19 U	19 U	19 U	20 U
Benzoic acid	650	---	650	190 U	200 U	200 U	190 U	200 U	190 U	190 U	190 U	200 U
Dibenzofuran	540	---	540	19 U	20 U	20 U	40	20 U	19 U	19 U	19 U	20 U
Hexachloroethane	1400	---	---	19 U	20 U	20 U	19 U	20 U	19 U	19 U	19 U	20 U
Hexachlorobutadiene	29	---	11	0.96 U	0.99 U	0.99 U	0.96 U	0.99 U	0.97 U	0.96 U	0.97 U	0.99 U
n-Nitrosodiphenylamine	28	---	28	19 U	20 U	20 U	19 U	20 U	19 U	19 U	19 U	20 U
VOC (µg/kg)												
Ethylbenzene	10	---	---	0.8 U	0.8 U	0.9 U	0.8 U	1.0 U	0.9 U	1.0 U	0.9 U	0.9 U
Tetrachloroethene	57	---	---	0.8 U	0.8 U	0.9 U	0.8 U	1.0 U	0.9 U	1.0 U	0.9 U	0.9 U
Trichloroethene	160	---	---	0.8 U	0.8 U	0.9 U	0.8 U	1.0 U	0.9 U	5.2	0.9 U	0.9 U
m,p-Xylenes	---	---	---	0.8 U	0.8 U	0.9 U	0.8 U	1.0 U	0.9 U	1.0 U	0.9 U	0.9 U
o-Xylene	---	---	---	0.8 U	0.8 U	0.9 U	0.8 U	1.0 U	0.9 U	1.0 U	0.9 U	0.9 U
Xylene (total)	40	---	---	0.8 U	0.8 U	0.9 U	0.8 U	1 U	0.9 U	1 U	0.9 U	0.9 U
Organic Carbon Normalized (mg/kg-OC)[1]												
Total PCBs	---	38	---	4.87 U	3.94	7.96 U	4.37 U	13.3 U	14.4 U	12.2 U	35.5 U	19 U
alpha-BHC	---	10	---	0.123 U	0.0619 U	0.202 U	0.11 U	0.33 U	0.359 U	0.3 U	0.882 U	0.471 U

Notes:

1--Note that Total PCBs and alpha-BHC are provided for comparison with PSDDA Organic Carbon Normalized Criteria (mg/kg-OC)

J = The result is an estimated concentration less than method reporting limit (MRL) but greater than method detection limit (MDL).

U = The compound was analyzed for, but not detected at or above the MRL/MDL.

N-P = non-plastic

Table 3
Summary of Organic Carbon-Normalized Analytical Results and Comparison with Applicable SMS Evaluation Criteria

Location ID / Sample ID / Sample Date	SMS SQS	SMS CSL	BBW-C01 BBW-C01SD 11/04/2003	BBW-C02 BBW-C02SD 11/04/2003	BBW-C04 BBW-C04SD 11/04/2003
PCBs (mg/kg-OC)					
Total PCBs	12	65	4.9 U	3.9	4.4 U
SVOCs (mg/kg-OC)					
LPAHs					
Naphthalene	99	170	2.4 U	1.3 U	6.90
Acenaphthylene	66	66	2.4 U	1.3 U	2.2 U
Acenaphthene	16	57	2.4 U	1.3 U	6.7
Fluorene	23	79	2.4 U	1.3 U	6
Phenanthrene	100	480	2.4 U	4.5	25.3
Anthracene	220	1200	2.4 U	0.9 J	4.5
2-Methylnaphthalene	38	64	2.4 U	1.3 U	5.1
Total LPAH	370	780	2.4 U	5.4	49.3
HPAHs					
Fluoranthene	160	1200	3	13	26.4
Pyrene	1000	1400	4	17.5	39.1
Benzo(a)anthracene	110	270	2.2 J	13.8	24.1
Chrysene	110	460	3.7	18.8	36.8
Total benzofluoranthenes	230	450	7.8	61.3	100
Benzo(a)pyrene	99	210	2.7	28.8	46.0
Indeno(1,2,3-cd)pyrene	34	88	2.4 U	8.8	21.8
Dibenzo(a,h)anthracene	12	33	2.4 U	2.2	5.8
Benzo(g,h,i)perylene	31	78	2.4 U	5	13.8
Total HPAH	960	5300	23.3	169	314
Chlorinated Hydrocarbons					
1,4-Dichlorobenzene	3.1	9	0.1 U	0.1 U	0.1 U
1,2-Dichlorobenzene	2.3	2.3	0.1 U	0.1 U	0.1 U
1,2,4-Trichlorobenzene	0.81	1.8	0.54 U	0.3 U	0.48 U
Hexachlorobenzene	0.38	2.3	0.12 U	0.03 J	0.10 J
Phthalates					
Dimethylphthalate	53	53	2.4 U	3.7	2.2 U
Diethylphthalate	61	110	2.4 U	1.3 U	2.2 U
Di-n-butylphthalate	220	1700	2.4 U	1.3 U	2.2 U
Butylbenzylphthalate	4.9	64	2.4 U	1.3 U	2.2
bis(2-Ethylhexyl)phthalate	47	78	15.4	9.4	23
Di-n-octylphthalate	58	4500	2.4 U	1.3 U	2.2 U
Miscellaneous					
Dibenzofuran	15	58	2.4 U	1.3 U	4.6
Hexachlorobutadiene	3.9	6.2	0.1 U	0.1 U	0.1 U
n-Nitrosodiphenylamine	11	11	2.4 U	1.3 U	2.2 U

Notes:

J = The result is an estimated concentration less than method reporting limit (MRL) but greater than method detection limit (MDL).

U = The compound was analyzed for, but not detected at or above the MRL/MDL.