CENPS-OP-TS **19 May 1997**
Dredged Material Management Office

MEMORANDUM FOR RECORD

SUBJECT: DETERMINATION OF THE SUITABILITY OF DREDGED MATERIAL TESTED UNDER PSDDA EVALUATION PROCEDURES FOR CURTIS WHARF (97-2-00484) FOR DISPOSAL AT A PSDDA OPEN WATER DISPOSAL SITE.

1. Curtis Wharf, located in Anacortes WA, is currently under expansion. As a part of this expansion effort, the applicant (Wiliam Wooding) proposes to dredge approximately 32,700 cubic yards of sediment in the vicinity of the wharf. 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 disposal of the material at a PSDDA open-water disposal site.

2. This project was ranked "moderate" based on guidance provided in the Management Plan Report, Phase 11, Page A-10 for Guemes Channel.

3. A sampling and analysis plan was completed for this project and approved by the PSDDA agencies on 14 April 1997. Sampling for this project was performed on 23 April 1996.

SAP Approval Date	7 April 1997
Sampling dates	14 April 1996
Data Report submittal date	May 1997
Recency determination dates	14 April 2002- 14 April 2004

4. Two DMMU were characterized, one surface and one subsurface. Samples were taken at four locations and composited for each DMMU. The surface DMMU, composite C-1, represents 17,000 cubic yards and the subsurface DMMU, composite C-2, represents 15,700 cubic yards. Difficulties were encountered in sampling the subsurface unit due to heavy clay material. Although a vibracore was used, sample penetration failed to reach the full dredge depth.

5. There were no exceedances of Dredging Year 1996 PSDDA screening levels. There were no detection limits above screening level.

6. In summary, the PSDDA-approved sampling and analysis plan was followed, and quality assurance, quality control guidelines specified by PSDDA were followed. The data gathered were deemed sufficient and acceptable for Regulatory decision-making under the PSDDA program. Based on the results of the chemical testing, the consensus determination of the

PSDDA agencies is that all 32,700 cubic yards of sediment proposed to be dredged from the Curtis Wharf is suitable for disposal at a PSDDA open-water disposal site.

7. The chemical analytical data were also compared to the State Sediment Management Standards. One analyte, chromium, was not tested. All detection limits met SMS standards. All sediment in the project area meet the state Sediment Quality Standards. Based on this information, the PSDDA agencies determined that the sediments from Curtis Wharf are chemically suitable for use in beneficial uses projects. Sediment conventional data is included in Table 1.

8. This memorandum documents the suitability of proposed dredged sediments for disposal at a PSDDA open water disposal site, and the chemical suitability of the material for proposed beneficial uses. It doe not constitute final agency approval of the project. 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:

6/6/97
Date

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Seattle District Corps of Engineers

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Date

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DMMO file

Table 1. Sediment Conventional Parameters

	C-1	C-2
Total Solids (%)	85.4	78.3
Total Organic Carbon (%)	0.66	0.56
Bulk Ammonia (mg/kg)	< 1.0	1.0
Total Sulfides (mg/kg)	7.6	3.7
Grain Size (%)		
Gravel	42.6	13.5
Sand	51.6	37.8
Silt	3.6	25.9
Clay	2.0	23.9

Table 1b. DAIS Value Table - Dry Weight Basis

Project: Port of Anacortes, Curtis Wharf DMMP Characterization (DY07)

	units	C1	C2
SEDIMENT CONVENTIONALS			
Total Solids	%	85.4	78.3
Volatile Solids	%	1.78	1.74
Total Organic Carbon	%	0.66	0.56
Ammonia	MG/KG	1 u	1
Total Sulfides	MG/KG	7.6	3.7
METALS			
Antimony (1)	MG/KG	0.9 u	0.6 u
Arsenic	MG/KG	1.9	3.1
Cadmium	MG/KG	0.05	0.03
Chromium	MG/KG	-	-
Copper	MG/KG	6.4	21
Lead (1)	MG/KG	14	17
Mercury	MG/KG	0.02 u	0.03
Nickel	MG/KG	15	45
Selenium	MG/KG	-	-
LPAH			
Silver	MG/KG	0.16	0.06
Zinc	MG/KG	24	41
2-Methylnaphthalene (1)	UG/KG	16 u	17 u
Acenaphthene (1)	UG/KG	16 u	17 u
Acenaphthylene (1)	UG/KG	16 u	17 u
Anthracene (1)	UG/KG	78	17 u
Fluorene (1)	UG/KG	24	17 u
Naphthalene (1)	UG/KG	16 u	17 u
HPAH			
Phenanthrene (1)	UG/KG	250	17 u
Total LPAH (1)	UG/KG	376	51 u
Benzo(a)anthracene (1)	UG/KG	130	17 u
Benzo(a)pyrene (1)	UG/KG	120	17 u
Benzo(g,h,i)perylene (1)	UG/KG	66	17 u
Benzofluoranthenes (1)	UG/KG	186	17 u
Chrysene (1)	UG/KG	150	17 u
Dibenzo(a,h)anthracene (1)	UG/KG	16 u	17 u
Fluoranthene	UG/KG	280	17 u
Indeno(1,2,3-c,d)pyrene (1)	UG/KG	67	17 u
CHLORINATED HYDROCARBONS			
Pyrene	UG/KG	370	17 u
Total HPAH (1)	UG/KG	1366	85
1,2,4-Trichlorobenzene (1)	UG/KG	5 u	5 u
1,2-Dichlorobenzene (1)	UG/KG	2 u	3 u
1,3-Dichlorobenzene (3)	UG/KG	2 u	3 u
PHTHALATES			
1,4-Dichlorobenzene (1)	UG/KG	2 u	3 u
Hexachlorobenzene	UG/KG	9 u	10 u
Bis(2-ethylhexyl)phthalate (1)	UG/KG	16 u	17 u

Butyl benzyl phthalate (1)	UG/KG	16 u	17 u
Di-n-butyl phthalate (1)	UG/KG	16 u	17 u
Di-n-octyl phthalate (1)	UG/KG	16 u	17 u
PHENOLS			
Diethyl phthalate (1)	UG/KG	16 u	17 u
Dimethyl phthalate (1)	UG/KG	16 u	17 u
2 Methylphenol (1)	UG/KG	8 u	8 u
2,4-Dimethylphenol (1)	UG/KG	8 u	8 u
4 Methylphenol (1)	UG/KG	16 u	17 u
MISCELLANEOUS EXTRACTABLES			
Pentachlorophenol	UG/KG	39 u	42 u
Phenol (1)	UG/KG	16 u	17 u
Benzoic acid (1)	UG/KG	78 u	83 u
Benzyl alcohol (1)	UG/KG	9 u	10 u
Dibenzofuran (1)	UG/KG	16 u	17 u
Hexachlorobutadiene (1)	UG/KG	12 u	13 u
VOLATILE ORGANICS			
Hexachloroethane (1)	UG/KG	16 u	17 u
N-Nitrosodiphenylamine (1)	UG/KG	9 u	10 u
Ethylbenzene (1)	UG/KG	2 u	3 u
Tetrachloroethene (1)	UG/KG	2 u	3 u
PESTICIDES AND PCBs			
Total Xylene (1)	UG/KG	2 u	3 u
Trichloroethene (1)	UG/KG	2 u	3 u
Aldrin (3)	UG/KG	0.47 u	0.5 u
Chlordane (2)	UG/KG	1.3 u	1.3 u
Dieldrin (3)	UG/KG	0.62 u	0.67 u
Heptachlor (3)	UG/KG	0.47 u	0.5 u
Lindane (3)	UG/KG	0.47 u	0.5 u
ORGANOMETALLICS			
Total DDT	UG/KG	1.5 u	1.6 u
Total PCBs	UG/KG	38.9 u	41.7 u

A dash indicates that no data exists for this analyte in DAIS

(1) = No BT exists (2) = No ML exists (3) = No BT or ML exists

END OF REPORT

Table 1c. DAIS Suitability Determination Report

Project: Port of Anacortes,Curtis Wharf DMMP Characterization (DY97) CURTW1AF12

	SL	BT	ML	units	C1		C2
GRAINSIZE							
gravel (> 2000 um)				%	56.8		17.6
sand (62.5-2000 um)				%	37.6		33.7
silt (3.9-62.5 um)				%	2.9		24.9
clay (< 3.9 um)				%	1.8		14.2
fines (< 62.5 um)				%	4.7		39.1
SEDIMENT CONVENTIONALS							
Total Solids	---	---	---	%	85.4		78.3
Volatile Solids	---	---	---	%	1.78		1.74
Total Organic Carbon	---	---	---	%	0.66		0.56
Ammonia	---	---	---	MG/KG	1	u	1
Total Sulfides	---	---	---	MG/KG	7.6		3.7
METALS							
Antimony	150	---	200	MG/KG			
Arsenic	57	507.1	700	MG/KG			
Cadmium	5.1	11.3	14	MG/KG			
Chromium				MG/KG	-		-
Copper	390	1027	1300	MG/KG			
Lead	450	---	1200	MG/KG			
Mercury	0.41	1.5	2.3	MG/KG			
Nickel	140	370	370	MG/KG			
Selenium				MG/KG	-		-
LPAH							
Silver	6.1	6.1	8.4	MG/KG			
Zinc	410	2783	3800	MG/KG			
2-Methylnaphthalene	670	---	1900	UG/KG			
Acenaphthene	500	---	2000	UG/KG			
Acenaphthylene	560	---	1300	UG/KG			
Anthracene	960	---	13000	UG/KG			
Fluorene	540	---	3600	UG/KG			
Naphthalene	2100	---	2400	UG/KG			
HPAH							
Phenanthrene	1500	---	21000	UG/KG			
Total LPAH	5200	---	29000	UG/KG			
Benzo(a)anthracene	1300	---	5100	UG/KG			
Benzo(a)pyrene	1600	---	3600	UG/KG			
Benzo(g,h,i)perylene	670	---	3200	UG/KG			
Benzofluoranthenes	3200	---	9900	UG/KG			
Chrysene	1400	---	21000	UG/KG			
Dibenzo(a,h)anthracene	230	---	1900	UG/KG			
Fluoranthene	1700	4600	30000	UG/KG			
Indeno(1,2,3-c,d)pyrene	600	---	4400	UG/KG			
CHLORINATED HYDROCARBONS							
Pyrene	2600	11980	16000	UG/KG			
Total HPAH	12000	---	69000	UG/KG			
1,2,4-Trichlorobenzene	31	---	64	UG/KG			
1,2-Dichlorobenzene	35	---	110	UG/KG			
1,3-Dichlorobenzene	170	---	---	UG/KG			
PHTHALATES							
1,4-Dichlorobenzene	110	---	120	UG/KG			
Hexachlorobenzene	22	168	230	UG/KG			
Bis(2-ethylhexyl)phthalate	1300	---	8300	UG/KG			

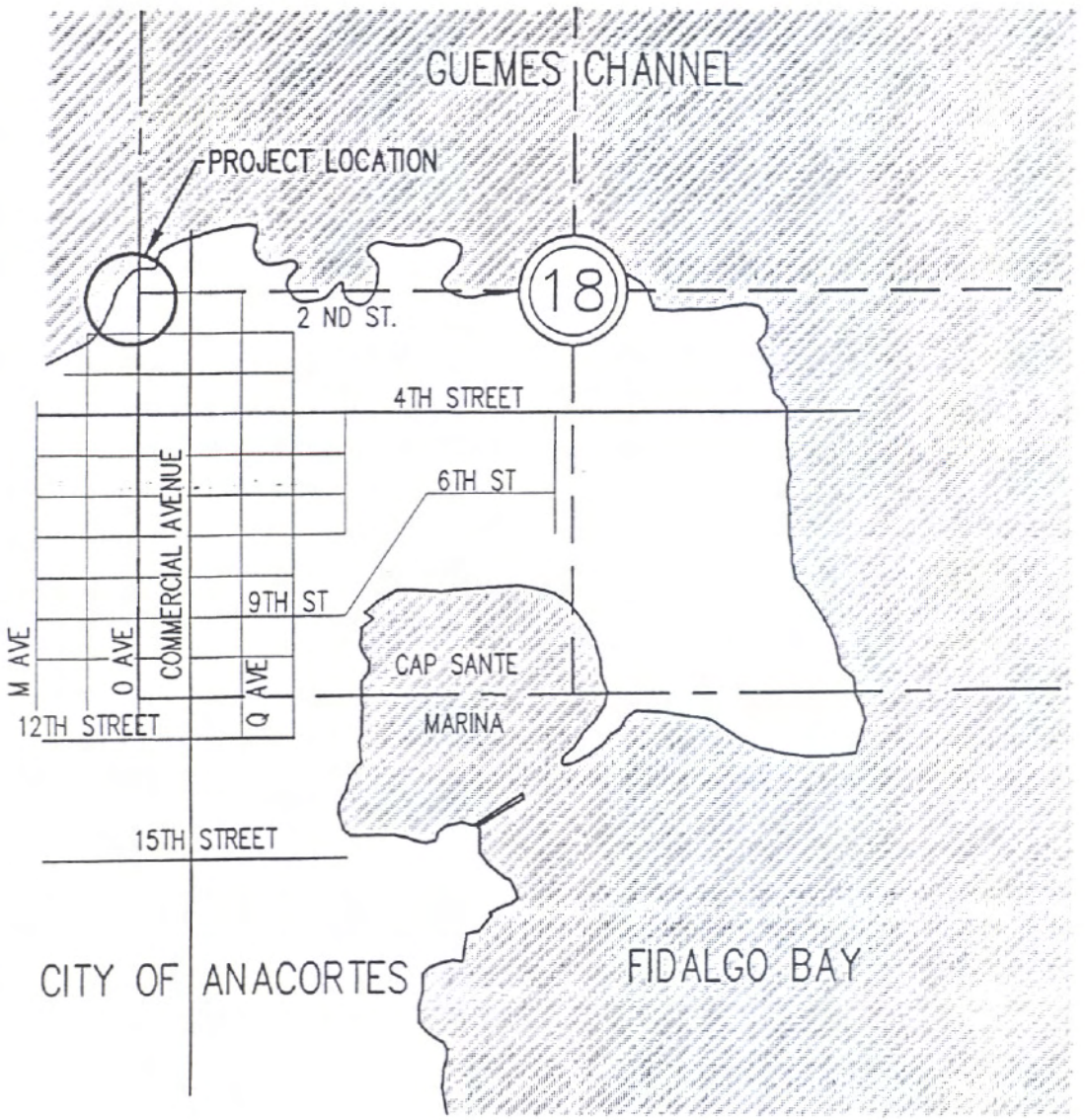
Butyl benzyl phthalate	63	---	970	UG/KG		
Di-n-butyl phthalate	1400	---	5100	UG/KG		
Di-n-octyl phthalate	6200	---	6200	UG/KG		
PHENOLS						
Diethyl phthalate	200	---	1200	UG/KG		
Dimethyl phthalate	71	---	1400	UG/KG		
2 Methylphenol	63	---	77	UG/KG		
2,4-Dimethylphenol	29	---	210	UG/KG		
4 Methylphenol	670	---	3600	UG/KG		
MISCELLANEOUS EXTRACTABLES						
Pentachlorophenol	400	504	690	UG/KG		
Phenol	420	---	1200	UG/KG		
Benzoic acid	650	---	760	UG/KG		
Benzyl alcohol	57	---	870	UG/KG		
Dibenzofuran	540	---	1700	UG/KG		
Hexachlorobutadiene	29	---	270	UG/KG		
VOLATILE ORGANICS						
Hexachloroethane	1400	---	14000	UG/KG		
N-Nitrosodiphenylamine	28	---	130	UG/KG		
Ethylbenzene	10	---	50	UG/KG		
Tetrachloroethene	57	---	210	UG/KG		
PESTICIDES AND PCBs						
Total Xylene	40	---	160	UG/KG		
Trichloroethene	160	---	1600	UG/KG		
Aldrin	10	---	---	UG/KG		
Chlordane	10	37	---	UG/KG		
Dieldrin	10	---	---	UG/KG		
Heptachlor	10	---	---	UG/KG		
Lindane	10	---	---	UG/KG		
Total DDT	6.9	50	69	UG/KG		
ORGANOMETALLICS						
Total PCBs	130	---	3100	UG/KG		
BIOASSAYS	---	38	---	MG/KG OC		
Amphipod (% mortality)	---	---	---	-	-	
Larval (% combined mort./abnor.)	---	---	---	-	-	
INTERPRETATION						
Neanthes Growth Rate	---	---	---	mg/ind/day	-	-
DMMU Volume:	---	---	---	cubic yards	17000	15700
Pass/Fail:	---	---	---	---	P	P
Suitability Code:	---	---	---	---	S1	S1

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

CMA = combined mortality and abnormality

END OF REPORT

LATITUDE: 48°31'17.67"
LONGITUDE: 122°36'53.29"

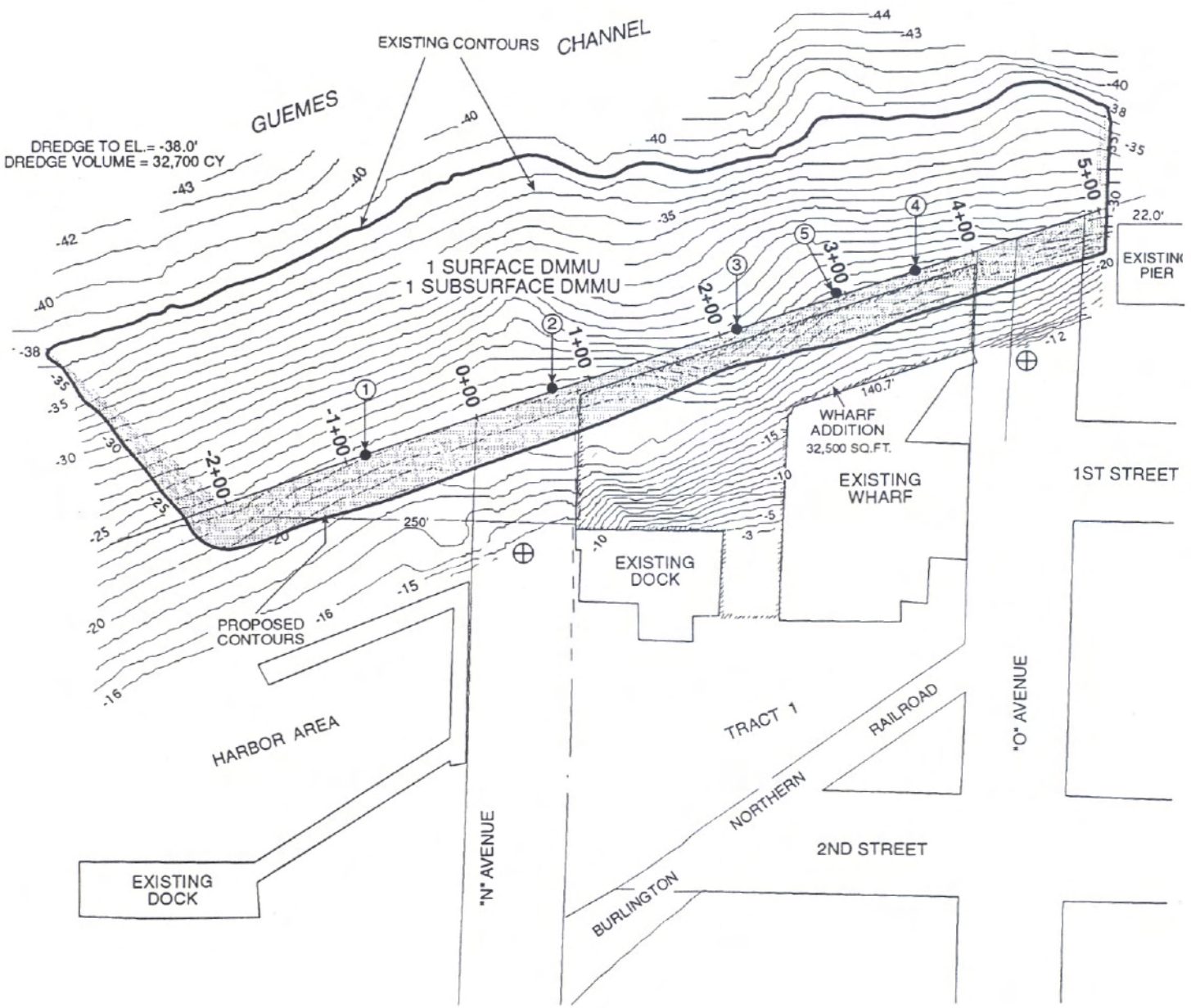


Curtis Wharf/55-3224-01(01) 3/97

N

NOT TO SCALE

Figure 1.
Vicinity Map



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SCALE IN FEET
0 125

N

⊕ Vicinity of Storm Drain

② Core Sample Station

Figure 2.
Plan View of Proposed Dredge Prism