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Superfund Records Center

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**U.S. DEPARTMENT OF COMMERCE**  
**National Oceanic and Atmospheric Administration**  
**OCEAN ASSESSMENTS DIVISION**  
**HAZARDOUS MATERIALS RESPONSE BRANCH**  
7600 Sand Point Way, NE  
Seattle, Washington 98115  
September 20, 1991

Ms. Mary Sanderson  
U.S. EPA Waste Management Division  
J.F. Kennedy Federal Office Building  
Boston, MA 02203

Dear Ms. Sanderson:

We apologize for the delay experienced with the following submission. We recognize that we have put EPA in a difficult position with respect to meeting its' time commitments. However, coordinating the necessary communications with Mr. Mark Otis (ACOE) and Mr. Alan Fowler (Ebasco Services Inc.) was difficult from our remote locations.

The following cost estimates for recommended remediation in Upper Buzzards Bay for inclusion in the proposed plan represent a revision of estimates provided in submissions dated October 30, 1990 and January 31, 1991 from Ken Finkelstein. These revisions are based on information supplied by Mr. Otis in consultation with Mr. Fowler and include the following changes:

- 1) The cost of CDF construction was included in the dredging option for the CDE "hot spot" area. The cost of construction of CDF #8 was used for the cost estimate, since it is the appropriate size. If there were space available in an existing CDF, then the cost for this alternative would be significantly reduced.
- 2) The amount of contaminated sediment removed from the CDE hot spot area was reduced to include only the sediment with PCB levels between 10 and 50 ppm. The area with PCB levels greater than 50 ppm are already included in other EPA remedial alternatives.
- 3) It was assumed that marine sediment would not be available for use as cap material and that an upland source would be required.
- 4) The cost of a pre-design survey was included for the capping alternative of the New Bedford outfall area.
- 5) The previous estimates did not include total indirect costs, operation and maintenance, or monitoring for either the proposed dredging alternative of the CDE hot spot or the capping alternative for the New Bedford outfall area. These are all included in the revised estimates.

If you require clarification or have any questions please do not hesitate to call me in Seattle at (206-526-6404) or John Lindsay in Boston (at ext. 699)

Sincerely,

  
for Jay Field

I. New Bedford Harbor Superfund Site. Cost estimate for Remedial Action (Dredging Option) off Cornell-Dubilier Facility

The Feasibility Study contains alternatives that remediate the area off the Cornell-Dubilier Facility where PCB levels exceed 50 ppm. Our earlier cost estimates contained a proposal to dredge two areas off this facility where PCB levels exceed 10 ppm. The following is a revision of the original proposal that only addresses those areas where PCB levels are between 10 and 50 ppm, thus reducing the area to be dredged for cost estimation purposes from 1,330,000 sq. ft. to 868,000 sq.ft. This assumes that the areas where PCB levels exceed 50 ppm will be addressed by EPA as part of another remedial alternative.

Area to be dredged: 868,000 feet<sup>2</sup>

Dredging depth 1 foot = 32,000 cubic yards of sediment to be removed

Dredging: Cutterhead dredge operating 8 hours per day removing 50 cubic yards per hour. 80 days required to complete dredging at 25 days per month = 3.2 months.

Disposal: The dredged material would be pumped into a scow (3,000 cubic yard capacity) that would then be towed to the upper harbor and emptied (pumped out) into a CDF. Water would be treated in an existing facility. Assuming that there was not sufficient space in an existing CDF, a new CDF would have to be constructed to contain this additional material. CDF #8 (see Feasibility Study) is appropriately sized.

Scows (2) \$20,000/month X 3.2 months	\$64,000
Tugboat \$30,000/month X 3.2 months	96,000
Scow pumpout \$100,000/month X 3.2 months	320,000
Water treatment 107,635,200/1000 X 4.40/gallon	413,545
CDF #8 (estimate from Feasibility Study)	2,520,000
<b>TOTAL</b>	<b>\$3,713,595</b>

CDF Monitoring and Maintenance

The FS assumed that CDFs would be inspected annually and that maintenance of these facilities would consist of repairing/replacing the stage protection on the dike slopes. Maintenance of these slopes would take place once every 5 years for a 30 year period. The estimates shown below are consistent with those that appear in the FS.

Annual inspection	\$5,000
Maintenance of slope protection: 2,275 cy of stone for CDF #8 (@\$50.50/cy)	114,900

The unit cost shown above was derived from Report 11 of the Engineering Feasibility Study prepared by the Corps of Engineers and reflects the cost of material, labor, and equipment.

## II. New Bedford Harbor Superfund Site. Cost estimate for Remedial Action (Capping Option) in the vicinity of the New Bedford outfall

The site consists of an approximately 100 acre area in the vicinity of the New Bedford sewer outfall. It is assumed that the capping material would come from an upland source (availability of suitable marine sediment would reduce the cost of this alternative). This source may be difficult to locate. The estimated production rate is 1000 cy/day; thus 22 months would be necessary.

Deliver material; 468,000 cy x \$7/cy	\$3,276,000
Load material; 468,000 cy x \$5/cy	2,340,000
Scow (1) = \$5,000/month x 22 months	110,000
Tugboat = \$30,000/month x 22 months	660,000
Pre-design program (see below)	389,200
Subtotal	\$6,775,200

### Pre-Design Program

This effort would consist of several components: sediment sampling; chemical and physical analysis of sediment; a bathymetric survey; determination of current, wave, and tidal conditions at the site; and an evaluation of contaminant uptakes by organisms at the site.

A. Sediment Sampling: The 100-acre area around the outfall is divided into two components: an 11-acre area around the mound that has formed at the outfall and the 89 acres surrounding this area. The 11-acre site would be divided into 100-foot square grids with a sediment core taken in each grid (a total of 49 sediment cores). Twenty of these cores will be taken to a depth of 4 feet (area on the mound). The remaining 29 cores will be taken to a depth of 2 feet. These cores will be analyzed as follows:

#### Chemical Analysis (PCBs & Metals)

Horizon	Samples
0-6 inches	49
6-12 inches	49
12-16 inches	29
12-24 inches	20
24-36 inches	20
36-48 inches	20
	187 samples

#### Physical Analysis

Horizon	Samples
0-12 inches	49
2-24 inches	49
24-36 inches	20
	118 samples

The remaining 89 acres would be divided into 250-foot square grids (68 grids) with one sediment core taken in each grid. These cores will be analyzed as follows:

#### Chemical Analysis

Horizon	Samples
0-6 inches	62
6-12 inches	20
	82 samples

#### Physical Analysis

Horizon	Samples
0-12 inches	62

Cost estimate: Obtain 10 sediment cores per day

Obtain samples:		\$4,000/day X 11 days = \$44,000
Lab work:	Chemistry:	269 samples @ \$600 = \$161,400
	Physical:	180 samples @ \$200 = \$36,000

Sediment sampling and analysis total: \$245,400

B. Bathymetric Survey: One day required to perform survey with several additional days needed to establish offshore stations.

Total \$5,000

C. Current, wave and tidal conditions: Current meters would be deployed for 2-month periods on 4 occasions over the course of 1 year.

8 cruises @ \$4,000/cruise =	\$32,000
current meters @ \$3,600/month X 2	\$28,800

Total \$60,800

D. Contaminant uptake: Assume 20 sampling points and 5 days to sample all locations and obtain sufficient organisms for analysis.

5 sample days @ \$4,000/day =	\$12,000
Sample analysis 60 samples @ \$200 -	\$12,000

Total \$32,000

E. Data evaluation and report: \$50,000

Summary of Pre-design program Costs

Sediment sampling and analysis	\$241,400
Bathymetric survey	5,000
Current, wave and tidal conditions	60,800
Contaminant uptake	32,000
Data evaluation and report	50,000

TOTAL \$389,200

### Monitoring and maintenance of cap in the vicinity of the New Bedford outfall

A. Monitoring: Each monitoring effort would consist of a bathymetric survey, sediment sampling and analysis, and contaminant uptake. Monitoring is to take place annually for a 30-year period, which is consistent with the other capping alternatives that appear in the Feasibility Study.

#### 1. Obtain sediment cores (24 inch) at 20 locations

Obtain:	3 days @ \$4000/day -	\$12,000
Lab work:	chemistry--30 samples X \$600 =	\$18,000
	Physical--10 samples X \$200 =	2,000
		\$32,000

2. Bathymetric survey \$5,000

#### 3. Contaminant uptake

obtain samples:	2 days @ \$4,000/day =	\$8,000
lab work:	15 samples @ \$200 =	3,000
		\$11,000

4. Data evaluation and report \$20,000

TOTAL Annual Cost \$68,000

B. Maintenance: Maintenance of the cap would consist of placing 10% of the original cap volume once every 5 years for a 30-year period. This level of effort is consistent with the other capping alternatives that appear in the Feasibility Study.

47,000 cubic yards of material placed per event - 47 days

Deliver material (land source)	47,000 X \$7/cubic yard =	\$329,000
Load material	47,000 X \$5 =	235,000
Scow (1)	\$5,000 month X 2	10,000
Tugboat	\$30,000 month X 2	60,000
	Subtotal	\$634,100
	20% contingency	126,800
	TOTAL	\$760,800

New Bedford Harbor Superfund Site: Estimated total cost of recommended alternatives for remediation of Cornell-Dubilier outfall area and New Bedford outfall area.

I. DIRECT CAPITAL COSTS

A. Cornell-Dubilier Outfall Area

1. Dredging	\$240,000
2. Scows	64,000
3. Tugboat	96,000
4. Scow pumpout operation	320,000
5. Water treatment	473,600
6. Construction of CDF #8	2,520,000

Subtotal \$3,713,600

B. New Bedford Outfall Area

1. Deliver material	\$3,276,000
2. Load material	2,340,000
3. Scow	110,000
4. Tugboat	660,000
5. Pre-design Program	389,200

Subtotal \$6,775,200

TOTAL DIRECT COST \$10,488,800

II. INDIRECT COSTS

A. Health and safety (@ 5% for activities A 2, 3, 4)	24,000
B. Legal, administrative and permitting (@6%)	629,300
C. Engineering (@ 10%)	1,048,900
D. Services during construction (@10%)	1,048,900
E. Turnkey contractor fees (@15%)	1,573,300

TOTAL INDIRECT COST 4,324,400

III. TOTAL CAPITAL COSTS

A. Total Direct Costs + Indirect Costs	14,813,200
B. Contingency (@20%)	2,962,600

TOTAL CAPITAL COSTS 17,775,800

IV. ESTIMATED TOTAL COST

A. Present worth costs	17,527,800
B. O&M (CDF and cap)	2,333,800
C. Monitoring costs (present worth @ 5% for 30 years)	1,045,300

ESTIMATED TOTAL COST OF BOTH ALTERNATIVES \$20,906,900