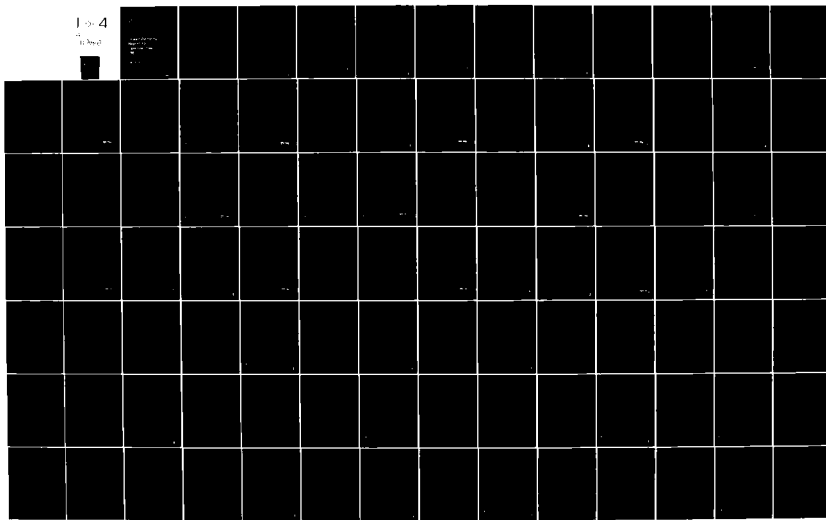


AD-A119 816 CORPS OF ENGINEERS FORT BELVOIR VA WATER RESOURCES S--ETC F/G 12/E
UNITED STATES OF AMERICA OCEAN DUMPING REPORT FOR CALENDAR YEAR--ETC(8)
JUN 82
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(12)



US Army Corps
of Engineers
Water Resources
Support Center

Summary Report 82-S02

June 1982

UNITED STATES OF AMERICA

Ocean Dumping Report for Calendar Year 1981

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DREDGED MATERIAL

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20. ABSTRACT (Continue on reverse side if necessary and identify by block number) The following Summary Report contains 81 Inter-Governmental Maritime Consulta- tive Organization (IMCO) reports. These reports were prepared by numerous Corps of Engineers employees in 20 Corps districts and divisions which have coastal boundaries. There are 36 reports which represent the CY 1981 permit- ted dredged material ocean disposal activities conducted under authority of Section 103 of the Marine Protection Research and Sanctuaries Act of 1972. The remaining 45 reports represent the CY 1981 Corps of Engineers dredged ma- terial disposal activities as authorized by the United States Congress.		

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SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

UNITED STATES OF AMERICA

OCEAN DUMPING

REPORT FOR

CALENDAR YEAR

1981

DREDGED MATERIAL

Prepared by the U. S. Army Corps of Engineers

Water Resources Support Center

Kingman Building

Ft. Belvoir, VA 22060

June 1982

Summary Report 82-S02

Copies may be purchased from:

National Technical Information Service
U.S. Department of Commerce
Springfield, Virginia 22151

This report is not to be construed as necessarily representing the views
of the Federal Government nor of the U.S. Army Corps of Engineers.

Background.

Under the authority of the Inter-Governmental Maritime Consultative Organization (IMCO), the United States and all other signatory nations to the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter are required to submit an annual report for each ocean disposal operation. The U. S. Army Corps of Engineers has been tasked with preparing the dredged material portion of these IMCO Ocean Dumping Reports for the United States.

Contents.

The following microfiche contain all 81 U. S. prepared CY 1981 IMCO Dredged Material Ocean Disposal Reports. There are 36 reports which represent the CY 1981 permitted dredged material ocean disposal activities conducted under authority of Section 103 of the Marine Protection Research and Sanctuaries Act of 1972. The remaining 45 reports represent the CY 1981 Corps of Engineers dredged material disposal activities as authorized by the United States Congress.

Summary of Data.

During CY 1981 the U. S. ocean disposed 40,909,238 cubic meters of dredged material of which 1,337,540 cubic meters were disposed under Section 103 authority and 39,571,698 cubic meters were disposed under Corps project authority.

Geographical distribution of the U. S. CY 1981 ocean-disposal dredged material was as follows:

<u>Area</u>	<u>Cubic Meters</u>
Atlantic Ocean	5,436,720
Gulf of Mexico	29,280,799
Pacific Ocean	6,191,719

Authorship.

The inclosed 81 IMCO Ocean Dumping Reports were prepared by numerous Corps of Engineers employees in 20 Corps districts and divisions which have coastal boundaries. For additional information concerning this report, the central point of contact in the United States Government is:

Water Resources Support Center (WRSC-D)
Corps of Engineers
Kingman Building
Ft. Belvoir, VA 22060



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ATLANTIC OCEAN			
GULF OF MEXICO			
PACIFIC OCEAN			
Classification			
By			
Distribution/			
Availability Codes			
Avail and/or			
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TABLE OF CONTENTS

(Companies)

Section 103 Permit Applicant

Page

1	So. Portland Shipyard and Marine Railways Corp.
5	Proprietors of Union Wharf
9	Merrill Industries, Inc.
13	Antonio Demillo
17	Antonio Demillo
21	Mass. Dept. of Environmental Quality Engr.
25	Mass. Dept. of Environmental Quality Engr.
29	Heritage Trust II
33	Shetland Properties
37	Mass. Dept. of Environmental Quality Engr.
41	Belcher New England Co.
45	Trustees of Brink & Davis Trust
49	Plymouth Yacht Club
53	Providence & Worcester Co.
57	Conrail
59	Port Authority of NY/NJ
61	Refined Syrups & Sugar
63	Bayonne Industries
65	U. S. Metals Refining Co.
67	GATX Terminals
69	Port Authority of NY/NJ
71	Linden - Roselle Sewage Authority
73	Mobil Oil Co.
75	Hills Brothers Coffee
77	Jackson Engineering
79	Celanese Chemical Corp.
81	Exxon Oil (Pier 1)
83	Exxon Oil (Pier 6)
85	Amerada Hess
87	E. I. DuPont
89	City of Perth Amboy
91	Port Authority of NY/NJ
93	Circle Line
95	U. S. Naval Air Station, Jacksonville, FL
97	Commodores Point Terminal, Inc.
101	City of Newport, CA

TABLE OF CONTENTS
(Activity Locations)
Corps of Engineers Project

<u>Page</u>	
105	Portland Harbor (Fore River), ME
109	Island End River, Chelsea, MA
113	East River, NY
115	Jamaica Bay, NY
117	Mamaroneck Harbor, NY
119	NY/NJ Channels - Kill Van Kull
121	NY/NJ Channels - Wards Point
123	Buttermilk Channel, NY
125	Bay Ridge & Red Hook Channel, NY
127	Chincoteague Inlet, VA
129	Thimble Shoal Channel, VA
131	Morehead City Harbor, NC
133	Wilmington Harbor, NC
135	Charleston Harbor, SC
139	Savannah Harbor, GA
143	Fernandina Harbor, FL
155	Canaveral Harbor, FL
157	Palm Beach Harbor, FL
159	Tampa Harbor, FL
163	Tampa Harbor, FL
167	St. Petersburg Harbor, FL
207	Pensacola Harbor, FL
211	Mobile Harbor, AL
215	Pascagoula Harbor, MS
219	Gulfport Harbor, MS
223	Mississippi River, Gulf Outlet, LA
229	Mississippi River, Southwest Pass, LA
235	Atchafalaya River, LA
241	Calcasieu River, LA
247	Sabine- Neches Waterway, TX
253	Corpus Christi, Ship Channel, TX
259	Brazos Island Harbor, TX
265	Humboldt Harbor, CA
269	Humboldt Harbor, CA
273	Humboldt Harbor, CA
277	Chetco River, OR
283	Coquille River, OR
289	Coos Bay, OR
295	Coos Bay, OR
301	Umpqua River, OR
307	Siuslaw River, OR
313	Yaquina Bay, OR
319	Mouth of Columbia River, OR and WA
325	Nome Harbor, AK
331	Honolulu Harbor, HI

(So. Portland Shipyard and Marine Railways Corp.)
IMCO DREDGED MATERIAL OCEAN DISPOSAL REPORT

CY 1981

1. Issuing authority:

Division: New England

District: N/A

2. Date issued: 6 June 1980

3. Country of origin of dredged material or other matter: United States of America, Maine

Port of loading (activity location): Portland Harbor, So. Portland, Maine

4. General description of dredged material, dredging, and transportation made:

a. Description: Mixture of sand and silt.

b. Mode of dredging: Clamshell - bucket

c. Mode of transportation: Scow

5. Form in which dredged material is presented for disposal: Saturated cohesive and noncohesive material.

6. Material quantity (volume in metric units, cubic meters) of material dumped in the ocean and dates of actual disposal during reporting calendar year:

2,792 m³ - 1 January thru 4 February 1981

7. Period for which permit is valid or project is scheduled:

6 June 1980 to 31 December 1983

8. Expected frequency of dumping: Twice daily

9. Chemical composition of the liquid phase of dredged material as described in the 11 January 1977 Federal Register which contains the Environmental Protection Agency's final regulations and criteria:

a. Liquid Phase test results: None

(1) Nutrients:

(2) Metals:

(3) Organics:

b. Other analyses: Bulk Sediment Analysis

(1) Metals: mg/kg

Cd	2.0
Cu	190.0
Zn	3.0
Pb	120.0
Hg	.001

(2) Organics: mg/kg

Oil & Grease 3,560

(3) Other:

10. Bioassay and Bioassessment Evaluations: From Federal project data.

a. Liquid Phase Bioassay: No significant effect

b. Suspend Particulate Phase Bioassay: Significant effect in only one species. See additional information.

c. Solid Phase Bioassay: No significant effect

11. Properties of the dredged material:

a. Solubility (% Water):

b. Density (gm/cc):

c. pH:

12. Method of release: Six bottom doors operated hydraulically. Material is released intermittently while scow is held at a complete halt.

13. Procedure and site for subsequent barge and hopper washing: Normally, scows are washed down at either the dump or the dredge site.

14. Approved dumping site:

a. Geographical position (latitude and longitude):

43°34.1'N x 70°1.8'W

b. Depth of water (meters): 50

c. Distance from nearest coast: 14 kilometers

15. Additional Information: Additional information may be obtained from Federal Project Data.

Although the suspended phase of the bioassay test resulted in statistically significant mortalities in one species (*Arcatia tonsa*) all other organisms showed no major effect. It is felt that with the mixing of water masses at the disposal site, any toxic substances would more than adequately be diluted to acceptable levels.

In addition, as was stated in the applicant's permit, the material disposed of by this project was capped by nearby acceptable material from a Federal project at Fore River, to further protect the aquatic ecosystem from possible contaminants.

This dump site is subject to monitoring studies under the Disposal Area Monitoring System (DAMOS) program. The program is designed to identify and evaluate impacts resulting from the disposal of dredged materials at designated dump sites. The DAMOS program continually contributes to the development of new monitoring methodologies that reflect on the efficiency of field observations and logistics, as well as time.

This program was designed to comply with Sections 228.9 and 228.10 of the Ocean Dumping Act relative to dump site monitoring and the evaluation of disposal impacts.

(Proprietors of Union Wharf)
IMCO DREDGED MATERIAL OCEAN DISPOSAL REPORT

CY 1981

1. Issuing authority:

Division: New England

District: N/A

2. Date issued: 3 January 1980

3. Country of origin of dredged material or other matter: United States of America, Maine

Port of loading (activity location): Portland Harbor, Portland, Maine

4. General description of dredged material, dredging, and transportation made:

a. Description: Mixture of sand and silt

b. Mode of dredging: Clamshell - bucket

c. Mode of transportation: Scow

5. Form in which dredged material is presented for disposal: Saturated cohesive and noncohesive material.

6. Material quantity (volume in metric units, cubic meters) of material dumped in the ocean and dates of actual disposal during reporting calendar year:

2,869 m³ - 11 April thru 21 April 1981
Previous disposal of material during July 1980.

7. Period for which permit is valid or project is scheduled:

3 January 1980 to 31 December 1983

8. Expected frequency of dumping: Twice daily

9. Chemical composition of the liquid phase of dredged material as described in the 11 January 1977 Federal Register which contains the Environmental Protection Agency's final regulations and criteria:

a. Liquid Phase test results: None

(1) Nutrients:

(2) Metals:

(3) Organics:

PRECEDING PAGE

b. Other analyses: Bulk Sediment Analysis

(1) Metals: mg/kg

	Shurtleff Salt (Union Wharf)
Pb	265.4
Cd	3.6
Zn	115.0
Cu	182.4
Hg	0.6

(2) Organics:

Oil & Grease 1733

(3) Other:

10. Bioassay and Bioassessment Evaluations: See Federal Project Data.

a. Liquid Phase Bioassay:

b. Suspend Particulate Phase Bioassay:

c. Solid Phase Bioassay:

11. Properties of the dredged material:

a. Solubility (% Water):

b. Density (gm/cc):

c. pH:

12. Method of release: Six bottom doors operated hydraulically. Material is released intermittently while scow is held at a complete halt.

13. Procedure and site for subsequent barge and hopper washing:
Normally, scows are washed down at either the dump or the dredge site.

14. Approved dumping site:

a. Geographical position (latitude and longitude):

43°34.1'N x 70°1.8'W

b. Depth of water (meters): 50

c. Distance from nearest coast: 14 kilometers

15. Additional Information: Additional information may be obtained from Federal Project Data. As was stated in the applicant's permit, the material disposed of by this project was capped by nearby acceptable material from a Federal project at Fore River, to further protect the aquatic ecosystem from possible contaminants.

This dump site is subject to monitoring studies under the Disposal Area Monitoring System (DAMOS) program. The program is designed to identify and evaluate impacts resulting from the disposal of dredged materials at designated dump sites. The DAMOS program continually contributes to the development of new monitoring methodologies that reflect on the efficiency of field observations and logistics, as well as time.

This program was designed to comply with Sections 228.9 and 228.10 of the Ocean Dumping Act relative to dump site monitoring and the evaluation of disposal impacts.

(Merrill Industries, Inc.)
IMCO DREDGED MATERIAL OCEAN DISPOSAL REPORT

CY 1981

1. Issuing authority:

Division: New England

District: N/A

2. Date issued: 13 May 1981

3. Country of origin of dredged material or other matter: United States of America, Maine

Port of loading (activity location): Fore River, Portland, Maine

4. General description of dredged material, dredging, and transportation made:

a. Description: Gray organic silt, sandy silt, gray organic clay.

b. Mode of dredging: Clamshell - bucket

c. Mode of transportation: Scow

5. Form in which dredged material is presented for disposal: Saturated cohesive and noncohesive material.

6. Material quantity (volume in metric units, cubic meters) of material dumped in the ocean and dates of actual disposal during reporting calendar year:

43,605 m³ - 19 November thru 31 December 1981
Disposal operations continued into 1982.

7. Period for which permit is valid or project is scheduled:

13 May 1981 to 31 December 1984

8. Expected frequency of dumping: Twice daily, seven days per week

9. Chemical composition of the liquid phase of dredged material as described in the 11 January 1977 Federal Register which contains the Environmental Protection Agency's final regulations and criteria:

a. Liquid Phase test results: None

(1) Nutrients:

(2) Metals:

(3) Organics:

PRECEDING PAGE

b. Other analyses: Bulk Sediment Analysis

May 1981, Sites B-204, B-205 (averaged) Core depth -19' to -21' MLW

(1) Metals: mg/kg

Zn	92.2	Ni	29.2
Pb	9.9	Cd	0.06
Hg	0.2	As	20.3
Cr	18.6	V	22.2
Cu	34.0	Fe	58,550
		Mn	690

(2) Organics: mg/kg

% Volatile Solids	0.7
% Oil & Grease	0.008

PCB's (Arochlor 1254)
(2.7-2.9' deep)

Site	Amt mg/kg
A	0.03353
B	0.09426
C	0.07978
D	0.08615
E	0.05426

(3) Other:

% Total Solids	75.5
COD (Soluble) mg/kg	1695
Total Kjeldahl N mg/kg	180
Chloride (Soluble) mg/kg	364

10. Bioassay and Bioassessment Evaluations: See Federal Project Data

a. Liquid Phase Bioassay:

b. Suspend Particulate Phase Bioassay:

c. Solid Phase Bioassay:

11. Properties of the dredged material:

a. Solubility (% Water):

	Depth	
	0'-0.3'	3.0'-3.5'
S-1	46	36
S-3	39	31
S-5	28	13

b. Density (gm/cc):

c. pH:

12. Method of release: Six bottom doors operated hydraulically. Material is released intermittently while scow is held at a complete halt.

13. Procedure and site for subsequent barge and hopper washing: Normally, scows are washed down at either the dump or the dredge site.

14. Approved dumping site:

a. Geographical position (latitude and longitude):

43°34.1'N x 70°1.8'W

b. Depth of water (meters): 50

c. Distance from nearest coast: 14 kilometers

15. Additional Information: Additional information may be obtained from Federal Project Data on Portland Harbor and Fore River, Maine. This dump site is subject to monitoring studies under the Disposal Area Monitoring System (DAMOS) program. The program is designed to identify and evaluate impacts resulting from the disposal of dredged materials at designated dump sites. The DAMOS program continually contributes to the development of new monitoring methodologies that reflect on the efficiency of field observations and logistics, as well as time.

This program was designed to comply with Sections 228.9 and 228.10 of the Ocean Dumping Act relative to dump site monitoring and the evaluation of disposal impacts.

(Antonio Demillo)
IMCO DREDGED MATERIAL OCEAN DISPOSAL REPORT

CY 1981

1. Issuing authority:

Division: New England

District: N/A

2. Date issued: 2 June 1980

3. Country of origin of dredged material or other matter: United States of America, Maine

Port of loading (activity location): Portland Harbor, Portland, Maine

4. General description of dredged material, dredging, and transportation made:

a. Description: Organic clayey silt, some sand, silty fine sand.

b. Mode of dredging: Clamshell - bucket

c. Mode of transportation: Scow

5. Form in which dredged material is presented for disposal: Saturated cohesive and noncohesive material.

6. Material quantity (volume in metric units, cubic meters) of material dumped in the ocean and dates of actual disposal during reporting calendar year:

3,290 m³ - 7 February thru 6 March 1981

7. Period for which permit is valid or project is scheduled:

2 June 1980 to 31 December 1983

8. Expected frequency of dumping: Twice daily

9. Chemical composition of the liquid phase of dredged material as described in the 11 January 1977 Federal Register which contains the Environmental Protection Agency's final regulations and criteria:

a. Liquid Phase test results: None

(1) Nutrients:

(2) Metals:

(3) Organics:

PRECEDING PAGE

b. Other analyses: Bulk Sediment Analysis

(1) Metals: (mg/kg)

Cd	1.5	Cu	126
Pb	615	Hg	0.16
Zn	527		

(2) Organics: (mg/kg)

Oil & Grease 987

(3) Other:

10. Bioassay and Bioassessment Evaluations: See Federal Project Data.

a. Liquid Phase Bioassay:

b. Suspend Particulate Phase Bioassay:

c. Solid Phase Bioassay:

11. Properties of the dredged material:

a. Solubility (% Water):

b. Density (gm/cc):

c. pH:

12. Method of release: Six bottom doors operated hydraulically. Material is released intermittently while scow is held at a complete halt.

13. Procedure and site for subsequent barge and hopper washing: Normally, scows are washed down at either the dump or the dredge site.

14. Approved dumping site:

a. Geographical position (latitude and longitude):

43°34.1'N x 70°1.8'W

b. Depth of water (meters): 50

c. Distance from nearest coast: 14 kilometers

15. Additional Information: This dump site is subject to monitoring studies under the Disposal Area Monitoring System (DAMOS) program. The program is designed to identify and evaluate impacts resulting from the disposal of dredged materials at designated dump sites. The DAMOS program continually contributes to the development of new monitoring methodologies that reflect on the efficiency of field observations and logistics, as well as time.

This program was designed to comply with Sections 228.9 and 228.10 of the Ocean Dumping Act relative to dump site monitoring and the evaluation of disposal impacts.

Dredged material from the Federal project at Fore River, Portland, Maine, has been utilized to cap dredged material from this project. Chemical analysis of the sediment from these projects indicated that it was similar in nature to the Corps project material which underwent bioassay testing. In this regard, it was determined that no further testing would be necessary provided that the material be capped by that from the Federal project.

(Antonio Demillo)
IMCO DREDGED MATERIAL OCEAN DISPOSAL REPORT

CY 1981

1. Issuing authority:

Division: New England

District: N/A

2. Date issued: 4 August 1981

3. Country of origin of dredged material or other matter: United States of America, Maine

Port of loading (activity location): Portland Harbor, Portland, Maine

4. General description of dredged material, dredging, and transportation made:

a. Description: Organic clayey silt, some sand, silty fine sand.

b. Mode of dredging: Clamshell - bucket

c. Mode of transportation: Scow

5. Form in which dredged material is presented for disposal: Saturated cohesive and noncohesive material.

6. Material quantity (volume in metric units, cubic meters) of material dumped in the ocean and dates of actual disposal during reporting calendar year:

5,891 m³ - 14 September thru 13 October 1981

7. Period for which permit is valid or project is scheduled:

4 August 1981 to 31 December 1984

8. Expected frequency of dumping: Twice daily

9. Chemical composition of the liquid phase of dredged material as described in the 11 January 1977 Federal Register which contains the Environmental Protection Agency's final regulations and criteria:

a. Liquid Phase test results: None

(1) Nutrients:

(2) Metals:

(3) Organics:

PRECEDING PAGE

b. Other analyses: Bulk Sediment Analysis

(1) Metals: (mg/kg)

Cd	1.5	Cu	126
Pb	615	Hg	0.16
Zn	527		

(2) Organics:

Oil & Grease 987

(3) Other:

10. Bioassay and Bioassessment Evaluations: See Additional Information

a. Liquid Phase Bioassay:

b. Suspend Particulate Phase Bioassay:

c. Solid Phase Bioassay:

11. Properties of the dredged material:

a. Solubility (% Water):

b. Density (gm/cc):

c. pH:

12. Method of release: Six bottom doors operated hydraulically. Material is released intermittently while scow is held at a complete halt.

13. Procedure and site for subsequent barge and hopper washing: Normally, scows are washed down at either the dump or the dredge site.

14. Approved dumping site:

a. Geographical position (latitude and longitude):

43°34.1'N x 70°1.8'W

b. Depth of water (meters): 50

c. Distance from nearest coast: 14 kilometers

15. Additional Information: Bioassay and bioaccumulation was not requested on the material to be dredged because we did not feel as though it was required. The proposed dredge site is surrounded by areas which have recently been dredged and disposed of at the Portland Disposal Area, and through comparison of physical and chemical properties this material is considered similar in nature to the material already disposed of at this site.

This dump site is subject to monitoring studies under the Disposal Area Monitoring System (DAMOS) program. The program is designed to identify and evaluate impacts resulting from the disposal of dredged materials at designated dump sites. The DAMOS program continually contributes to the development of new monitoring methodologies that reflect on the efficiency of field observations and logistics, as well as time.

This program was designed to comply with Sections 228.9 and 228.10 of the Ocean Dumping Act relative to dump site monitoring and the evaluation of disposal impacts.

(Mass. Dept. of Environmental Quality Engr.)
IMCO DREDGED MATERIAL OCEAN DISPOSAL REPORT

CY 1981

1. Issuing authority:

Division: New England

District: N/A

2. Date issued: 27 December 1979

3. Country of origin of dredged material or other matter: United States of America, Massachusetts

Port of loading (activity location): Whittier's Cove, Proctor Cove, and Manchester Harbor, Manchester, Massachusetts

4. General description of dredged material, dredging, and transportation made:

a. Description: A combination of sand and silty material.

b. Mode of dredging: Clamshell - bucket

c. Mode of transportation: Scow

5. Form in which dredged material is presented for disposal: Saturated cohesive and noncohesive material.

6. Material quantity (volume in metric units, cubic meters) of material dumped in the ocean and dates of actual disposal during reporting calendar year:

2,639 m³ - 1 January thru 10 January 1981
Previous disposal occurred starting October 1980.

7. Period for which permit is valid or project is scheduled:

27 December 1979 to 31 December 1982

8. Expected frequency of dumping: Twice daily

9. Chemical composition of the liquid phase of dredged material as described in the 11 January 1977 Federal Register which contains the Environmental Protection Agency's final regulations and criteria:

PRECEDING PAGE B

a. Liquid Phase test results: Values listed are for the receiving water and for the three sampling areas in Manchester Harbor.

	Receiving Water	Whittier's Cove	Main Channel	Proctor's Cove
(1) Nutrients: mg/l)				
Chloride	16,830			
(2) Metals: mg/l				
Cd	<0.006	<0.006	0.008	0.011
Cr	<0.03	<0.03	<0.03	0.03
Cu	0.07	0.04	0.04	0.05
Pb	0.09	0.09	0.10	0.08
Hg (ug/l)	0.02	0.03	0.03	0.03
Ni	0.01	0.06	0.06	0.06
Zn	0.05	0.05	0.12	0.05
V	<0.05	<0.05	<0.05	<0.05
As	0.013	0.003	<0.003	<0.001
(3) Organics: mg/l				
Total Volatile Solids	4,620	4,536	4,480	4,100
Oil & Grease	<2.0	4.4	<2.0	3.2
COD	160.8	386.5	174.5	174.9
Total Kjeldahl as N	0.10	7.6	1.34	6.59

b. Other analyses: Bulk Analysis. Values are from three project areas in Manchester Harbor.

	Main Channel	Whittier's Cove	Proctor's Cove
(1) Metals: mg/kg - dry wt.			
Cd	4.2	25.1	22.7
Cr	70.5	1623.2	1320.7
Pb	70.5	284.5	309.5
Hg (ug/kg)	17.5	17.9	18.5
Ni	42.3	100.4	123.8
Zn	112.7	468.5	495.3
V	<0.05	0.05	<0.05
As	0.0023	0.003	0.002

(2) Organics: mg/kg - dry wt.

Oil & Grease	161.8	340.2	2966.2
COD	1309.3	5772.6	6069.8
% Total Volatile Solids	0.7	15.3	8.7

(3) Other:

Total Kjeldahl as N	3580.3	1731.6	1850.4
% Solids	74.20	28.88	37.82

10. Bioassay and Bioassessment Evaluations:

- a. Liquid Phase Bioassay: No significant effect
- b. Suspend Particulate Phase Bioassay: No significant effect
- c. Solid Phase Bioassay: No significant effect

11. Properties of the dredged material:

- a. Solubility (% Water): 25.8 71.2 62.2
- b. Density (gm/cc):
- c. pH:
- d. Sieve Analysis:

<u>U.S. Sieve No.</u>	<u>Main Channel</u>	<u>Whittier's Cove</u>	<u>Proctor's Cove</u>
% Between Sieves			
10	0.61	0.10	0.1
14	0.23	0.16	0.2
18	0.20	0.43	0.5
25	0.33	0.36	0.7
35	0.14	6.49	4.5
45	1.2	9.67	7.1
60	10.4	9.08	7.8
80	48.6	6.62	7.0
120	31.8	6.79	6.8
170	4.5	5.97	6.1
200	0.76	2.58	3.0
230	0.37	4.17	5.4
PAN	0.52	46.4	48.3

12. Method of release: Six bottom doors operated hydraulically. Material is released intermittently while scow is held at a complete halt.

13. Procedure and site for subsequent barge and hopper washing: Normally, scows are washed down at either the dump or the dredge site.

14. Approved dumping site:

a. Geographical position (latitude and longitude):

42°25.9'N x 70°34.9'W

b. Depth of water (meters): 77

c. Distance from nearest coast: 18.3 kilometers

15. Additional Information: This dump site is subject to monitoring studies under the Disposal Area Monitoring System (DAMOS) program. The program is designed to identify and evaluate impacts resulting from the disposal of dredged materials at designated dump sites. The DAMOS program continually contributes to the development of new monitoring methodologies that reflect on the efficiency of field observations and logistics, as well as time.

This program was designed to comply with Sections 228.9 and 228.10 of the Ocean Dumping Act relative to dump site monitoring and the evaluation of disposal impacts.

(Mass. Dept. of Environmental Quality Engr.)
IMCO DREDGED MATERIAL OCEAN DISPOSAL REPORT

CY 1981

1. Issuing authority:

Division: New England

District: N/A

2. Date issued: 3 April 1981

3. Country of origin of dredged material or other matter: United States
of America, Massachusetts

Port of loading (activity location): Salem Harbor, Salem,
Massachusetts

4. General description of dredged material, dredging, and transportation
made:

a. Description: Primarily sand and silt, clay.

b. Mode of dredging: Clamshell or bucket dredge

c. Mode of transportation: Scow

5. Form in which dredged material is presented for disposal: Saturated
cohesive and noncohesive material.

6. Material quantity (volume in metric units, cubic meters) of material
dumped in the ocean and dates of actual disposal during reporting calendar
year:

59,707 m³ - 1 September 1981 thru 10 November 1981

7. Period for which permit is valid or project is scheduled:

3 April 1981 to 31 December 1984

8. Expected frequency of dumping: Twice daily, seven days a week

9. Chemical composition of the liquid phase of dredged material as
described in the 11 January 1977 Federal Register which contains the
Environmental Protection Agency's final regulations and criteria:

a. Liquid Phase test results: Elutriate test on 2 samples.

(1) Nutrients:

(2) Metals:mg/l

As - <5, <5	Hg - <0.02, <0.02
Cd - <0.1, <0.1	Ni - <5, <5
Cr - <5, <5	V - <20, <20
Cu - <1, <1	Zn - <10, <10
Pb - <1, <1	

(3) Organics: 2 samples

Oil & Grease (mg/l) - 0.10, 0.08
PCB (mg/l) - <0.01, <0.01

b. Other analyses: Bulk Sediment Analyses of 2 samples

(1) Metals: (ug/g)

As - 38, 40	Hg - 0.47, 0.68
Cd - 1.7, 2.1	Ni - 45, 45
Cr - 1,200, 1,600	V - 230, 230
Cu - 93, 105	Zn - 210, 270
Pb - 250,280	

(2) Organics:

Oil & Grease mg/g, dry sediment - 5.56, 6.78
PCB mg/g, dry sediment - 2.11, 2.81

(3) Other:

Volatile Solids (% wt) - 20.3, 15.6
CaCO₃ (% wt) - 14.1, 0.54
Sand (% wt) - 7.92, 7.73
Silt (% wt) - 30.7, 39.6
Clay (% wt) - 47.3, 52.1

Sieve analysis was performed on 2 samples. The following values are averages of those 2 samples.

Sieve #	% Retained
4	1.2
10	4.2
20	9.1
40	10.3
80	15.9
200	26.7
PAN	32.6

10. Bioassay and Bioassessment Evaluations: From three sampling stations in Salem Harbor.

- a. Liquid Phase Bioassay: No significant effect
- b. Suspend Particulate Phase Bioassay: No significant effect
- c. Solid Phase Bioassay: No significant effect

11. Properties of the dredged material: From bulk sediment test.
2 samples

- a. Solubility (% Water): Water Wt. % 70.2 75.9
- b. Density (gm/cc):
- c. pH:

12. Method of release: Six bottom doors operated hydraulically. Material is released intermittently while scow is held at a complete halt.

13. Procedure and site for subsequent barge and hopper washing: Normally, scows are washed down at either the dump or the dredge site.

14. Approved dumping site:

- a. Geographical position (latitude and longitude):
42°25.9'N x 70°34.9'W
- b. Depth of water (meters): 77
- c. Distance from nearest coast: 18.3 kilometers

15. Additional Information: Additional information may be obtained from Federal Project Data. This dump site is subject to monitoring studies under the Disposal Area Monitoring System (DAMOS) program. The program is designed to identify and evaluate impacts resulting from the disposal of dredged materials at designated dump sites. The DAMOS program continually contributes to the development of new monitoring methodologies that reflect on the efficiency of field observations and logistics, as well as time.

This program was designed to comply with Sections 228.9 and 228.10 of the Ocean Dumping Act relative to dump site monitoring and the evaluation of disposal impacts.

(Heritage Trust II)
IMCO DREDGED MATERIAL OCEAN DISPOSAL REPORT

CY 1981

1. Issuing authority:

Division: New England

District: N/A

2. Date issued: 18 November 1981

3. Country of origin of dredged material or other matter: United States of America, Massachusetts

Port of loading (activity location): South River, Salem Harbor

4. General description of dredged material, dredging, and transportation made:

a. Description: Fine sandy organic silt (OH) with marine odor, shell fragments, gray silty clay.

b. Mode of dredging: Clamshell - bucket

c. Mode of transportation: Scow

5. Form in which dredged material is presented for disposal: Saturated cohesive and noncohesive material

6. Material quantity (volume in metric units, cubic meters) of material dumped in the ocean and dates of actual disposal during reporting calendar year:

153 m³ - 4 December 1981

7. Period for which permit is valid or project is scheduled:

18 November 1981 - 31 December 1984

8. Expected frequency of dumping: 1 trip, 1 day

9. Chemical composition of the liquid phase of dredged material as described in the 11 January 1977 Federal Register which contains the Environmental Protection Agency's final regulations and criteria:

a. Liquid Phase test results: See Federal Project Information

(1) Nutrients:

PRECEDING PAGE

(2) Metals: mg/kg

Zn	0.76
Cd	0.19
As	0.95
Cn	0.57

(3) Organics: mg/kg

PCB's	0.65	Aroclor 1254

b. Other analyses: Bulk Sediment Analysis

Shetland Properties

Heritage Trust II

(1) Metals: mg/kg, dry wt

Cr	43.8	23.7
Ni	2.28	19.2
Pb	160.0	28.5
Cu	30.7	104.0
Hg	<2.4	0.9
Zn	-	229.0
Cd	.32	0.88
As	<5	52.1
V	-	8.5

(2) Organics:

O&G	1,391
COD	174,360
BODs	3,800
% V.S.	10.19
TKN	41.0

(3) Other:

PCB (ppb)	339
Amonia	<0.1
Phenols	<10
Sulfides	1,910
% T.S.	52.4
Sp. Gr.	2.02

10. Bioassay and Bioassessment Evaluations: From Corps bioassay testing in the adjacent Federal channel.

a. Liquid Phase Bioassay: No significant effect

b. Suspend Particulate Phase Bioassay: No significant effect

c. Solid Phase Bioassay: No significant effect. There was a statistically significant accumulation of Cadmium in one species. However, it is believed that no unacceptable impacts would occur to the marine ecosystem or man.

11. Properties of the dredged material:

a. Solubility (% Water): 47.6%

b. Density (gm/cc):

c. pH:

12. Method of release: Six bottom doors operated hydraulically. Material is released intermittently while scow is held at a complete halt.

13. Procedure and site for subsequent barge and hopper washing: Normally, scows are washed down at either the dump or the dredge site.

14. Approved dumping site:

a. Geographical position (latitude and longitude):

42°25.9'N x 70°34.9'W

b. Depth of water (meters): 77

c. Distance from nearest coast: 18.3 kilometers

15. Additional Information: Additional information may be obtained from Federal Project Data. This dump site is subject to monitoring studies under the Disposal Area Monitoring System (DAMOS) program. The program is designed to identify and evaluate impacts resulting from the disposal of dredged materials at designated dump sites. The DAMOS program continually contributes to the development of new monitoring methodologies that reflect on the efficiency of field observations and logistics, as well as time.

This program was designed to comply with Sections 228.9 and 228.10 of the Ocean Dumping Act relative to dump site monitoring and the evaluation of disposal impacts.

(Shetland Properties)
IMCO DREDGED MATERIAL OCEAN DISPOSAL REPORT

CY 1981

1. Issuing authority:

Division: New England

District: N/A

2. Date issued: 8 October 1981

3. Country of origin of dredged material or other matter: United States of America, Massachusetts

Port of loading (activity location): South River, Salem, Massachusetts

4. General description of dredged material, dredging, and transportation made:

a. Description: Medium and fine sand, silt.

b. Mode of dredging: Clamshell - bucket

c. Mode of transportation: Scow

5. Form in which dredged material is presented for disposal: Saturated cohesive and noncohesive material

6. Material quantity (volume in metric units, cubic meters) of material dumped in the ocean and dates of actual disposal during reporting calendar year:

842 m³ - 12 November thru 4 December 1981

7. Period for which permit is valid or project is scheduled: Three years 8 October 1981 to 31 December 1984.

8. Expected frequency of dumping: Twice daily, seven days a week

9. Chemical composition of the liquid phase of dredged material as described in the 11 January 1977 Federal Register which contains the Environmental Protection Agency's final regulations and criteria:

a. Liquid Phase test results: Elutriate tests performed by Heritage Trust II at Pickering Wharf area. See also Federal Project Data.

(1) Nutrients:

PRECEDING PAGE

(2) Metals: mg/kg

Zn	0.76	As	0.95
Cd	0.19	Cu	0.57

(3) Organics: mg/kg

PCB's 0.65 Aroclor 1254

b. Other analyses: Bulk Sediment Analysis from Pickering Wharf Area. See also Federal Project Info.

(1) Metals: Mg/kg - dry wt.

As	<5	Pb	160
Hg	<2.4	Cu	30.7
Cd	0.32	Ni	2.28
Cr	43.8		

(2) Organics:

Oil & Grease 1391 = 0.14%
PCB's (ppb) 339

(3) Other: mg/kg - dry wt.

COD	174,360	Sulfides	1910
TKN	41.0	% Volatile Solids	10.19
BOD ₅	3,800	% Total Solids	52.4
Ammonia	<0.1	Specific Gravity	2.02
Phenols	<10.0		

10. Bioassay and Bioassessment Evaluations: From a Corps bioassay test in the adjacent Federal channel.

a. Liquid Phase Bioassay: No significant effect

b. Suspend Particulate Phase Bioassay: No significant effect

c. Solid Phase Bioassay: No significant effect. There was a statistically significant accumulation of Cadmium in one species. However, it is believed that no unacceptable impacts would occur to the marine ecosystem or man.

11. Properties of the dredged material:

a. Solubility (% Water): 47.6

b. Density (gm/cc):

c. pH:

12. Method of release: Six bottom doors operated hydraulically. Material is released intermittently while scow is held at a complete halt.

13. Procedure and site for subsequent barge and hopper washing: Normally, scows are washed down at either the dump or the dredge site.

14. Approved dumping site:

a. Geographical position (latitude and longitude):

42°25.9'N x 70°34.9'W

b. Depth of water (meters): 77

c. Distance from nearest coast: 18.3 kilometers

15. Additional Information: Additional information may be obtained from Federal Project Data. This dump site is subject to monitoring studies under the Disposal Area Monitoring System (DAMOS) program. The program is designed to identify and evaluate impacts resulting from the disposal of dredged materials at designated dump sites. The DAMOS program continually contributes to the development of new monitoring methodologies that reflect on the efficiency of field observations and logistics, as well as time.

This program was designed to comply with Sections 228.9 and 228.10 of the Ocean Dumping Act relative to dump site monitoring and the evaluation of disposal impacts.

(Mass. Dept. of Environmental Quality Engr.)
IMCO DREDGED MATERIAL OCEAN DISPOSAL REPORT

CY 1981

1. Issuing authority:

Division: New England

District: N/A

2. Date issued: 17 February 1981

3. Country of origin of dredged material or other matter: United States of America, Massachusetts

Port of loading (activity location): Lynn Harbor

4. General description of dredged material, dredging, and transportation made:

a. Description: Loose, gray, organic silty sand with shells: medium compact, gray fine sand and, very stiff gray clay.

b. Mode of dredging: Clamshell - bucket

c. Mode of transportation: Scow

5. Form in which dredged material is presented for disposal: Saturated cohesive and noncohesive material.

6. Material quantity (volume in metric units, cubic meters) of material dumped in the ocean and dates of actual disposal during reporting calendar year:

35,878.5 m³ - 21 September 1981 thru 20 November 1981

7. Period for which permit is valid or project is scheduled:

17 February 1981 thru 31 December 1984

8. Expected frequency of dumping: Twice daily, seven days a week

9. Chemical composition of the liquid phase of dredged material as described in the 11 January 1977 Federal Register which contains the Environmental Protection Agency's final regulations and criteria:

a. Liquid Phase test results: Elutriate, mg/l

PRECEDING PAGE

	Site 1 (0-1 ft)	Site 2 (1-2 ft)	Site 3 (2-5 ft)	Ref Water
(1) Nutrients:				
Phosphate (TOTAL)	0.08	0.07	1.0	0.07
Amonia Nitrogen	5.9	11.9	9.0	0.48
(2) Metals:				
As	<0.08	<0.05*	<0.08	<0.08
Cu	<0.05*	<0.05*	0.12	<0.05*
Cd	<0.03	<0.03	<0.03	<0.03
Pb	<0.05	<0.05	0.10	<0.05
Hg	<0.001	<0.001	<0.001	<0.001
Zn	0.12	0.12	<0.05*	<0.05*

*Present, but not quantifiable at these low concentrations

(3) Organics:

COD	29	161	35	14
BOD	18.4	15.2	3.9	10.0

b. Other analyses: Bulk sediment

(1) Metals: (mg/kg)

Cd	<4	<4	<3
Cr	208	182	22
Cu	42	24	7
Pb	93	73	6
Hg (ppb)	168	114	15

(2) Organics:

Oil and Grease	377	334	<50	dry wt.
Volatile Solids	4.88	5.21	1.00	dry wt.
Carbon	3.42	2.92	0.04	dry wt.

(3) Other:

% Solids	56.63	57.66	79.83	As rec'd

10. Bioassay and Bioassessment Evaluations:

a. Liquid Phase Bioassay: No significant effect

b. Suspend Particulate Phase Bioassay: No significant effect

c. Solid Phase Bioassay: No significant effect

11. Properties of the dredged material:

a. Solubility (% Water): see 9.b.(3) above

b. Density (gm/cc):

c. pH:

d. Sieve Analysis:

Pan	Wt. Retained	% Passing
#4	.4	99.6
10	4.3	95.0
20	16.8	76.9
40	23.8	51.3
80	27.7	21.6
100	4.8	16.4
200	10.2	5.5

12. Method of release: Six bottom doors operated hydraulically. Material is released intermittently while scow is held at a complete halt.

13. Procedure and site for subsequent barge and hopper washing: Normally, scows are washed down at either the dump or the dredge site.

14. Approved dumping site:

a. Geographical position (latitude and longitude):

42°25.9'N x 70°34.9'W

b. Depth of water (meters): 77

c. Distance from nearest coast: 18.3 Kilometers

15. Additional Information: This dump site is subject to monitoring studies under the Disposal Area Monitoring System (DAMOS) program. The program is designed to identify and evaluate impacts resulting from the disposal of dredged material at designated dump sites. The DAMOS program continually contributes to the development of new monitoring methodologies that reflect on the efficiency of field observations and logistics, as well as time.

This program was designed to comply with Sections 228.9 and 228.10 of the Ocean Dumping Act relative to dump site monitoring and the evaluation of disposal impacts.

(Belcher New England Co.)
IMCO DREDGED MATERIAL OCEAN DISPOSAL REPORT

CY 1981

1. Issuing authority:

Division: New England

District: N/A

2. Date issued: 14 November 1980

3. Country of origin of dredged material or other matter: United States of America, Massachusetts

Port of loading (activity location): Chelsea River, Revere, Massachusetts

4. General description of dredged material, dredging, and transportation made:

a. Description: Loose gray sand, silt.

b. Mode of dredging: Clamshell - bucket

c. Mode of transportation: Scow

5. Form in which dredged material is presented for disposal: Saturated cohesive and noncohesive material.

6. Material quantity (volume in metric units, cubic meters) of material dumped in the ocean and dates of actual disposal during reporting calendar year:

8,645 m³ - 1 January thru 18 February 1981
Previous disposal occurred starting December 1980.

7. Period for which permit is valid or project is scheduled:

14 November 1980 to 31 December 1983

8. Expected frequency of dumping: Twice daily

9. Chemical composition of the liquid phase of dredged material as described in the 11 January 1977 Federal Register which contains the Environmental Protection Agency's final regulations and criteria:

a. Liquid Phase test results: None

(1) Nutrients:

(2) Metals:

(3) Organics:

PRECEDING PAGE B

b. Other analyses: Bulk Analysis: Values are composites of three samples.

(1) Metals: mg/kg

Hg	0.23	Cd	1.5	Total Cr	32.1
As	1.3	Ni	1.6		
Cu	27.0	Zn	97.4		
Pb	157	V	31.4		

(2) Organics:

% Total Volatile Solids	3.5
Oil & Grease	3,050 mg/kg
COD	40,100 mg/kg
PCB's	1.7 mg/kg

(3) Other:

% Solids	69.3
Total Kjeldahl Nitrogen	957 mg/kg

10. Bioassay and Bioassessment Evaluations:

- a. Liquid Phase Bioassay: No significant effect
- b. Suspend Particulate Phase Bioassay: No significant effect
- c. Solid Phase Bioassay: Statistically significant mortality in only one species (Neomysis).

11. Properties of the dredged material:

- a. Solubility (% Water): 30.7
- b. Density (gm/cc):
- c. pH:
- d. Particle Size Distribution:

Diameter:	Percent:
<2380 microns	4.4
2380-1680	1.4
1680- 841	7.3
841- 590	4.3
590- 397	6.8
297- 149	30.5

Diameter:

Percent:

149- 88
<33

18.4
26.6

12. Method of release: Six bottom doors operated hydraulically. Material is released intermittently while scow is held at a complete halt.

13. Procedure and site for subsequent barge and hopper washing: Normally, scows are washed down at either the dump or the dredge site.

14. Approved dumping site:

a. Geographical position(latitude and longitude):

42°25.9'N x 70°34.9'W

b. Depth of water (meters): 77

c. Distance from nearest coast: 18.3 kilometers

15. Additional Information:

Solid Bioassay: The results showed a 1% mortality rate over the 10% limit. This limit was set by subjective judgement and the size of the sample involved results in a 3% change in mortality for each individual death. Hence, the results can be considered to meet the criteria for validity.

This dump site is subject to monitoring studies under the Disposal Area Monitoring System (DAMOS) program. The program is designed to identify and evaluate impacts resulting from the disposal of dredged materials at designated dump sites. The DAMOS program continually contributes to the development of new monitoring methodologies that reflect on the efficiency of field observations and logistics, as well as time.

This program was designed to comply with Sections 228.9 and 228.10 of the Ocean Dumping Act relative to dump site monitoring and the evaluation of disposal impacts.

(Trustees of Brink & Davis Trust)
IMCO DREDGED MATERIAL OCEAN DISPOSAL REPORT

CY 1981

1. Issuing authority:

Division: New England

District: N/A

2. Date issued: 24 December 1980

3. Country of origin of dredged material or other matter: United States of America, Massachusetts

Port of loading (activity location): Plymouth Harbor, Plymouth, Massachusetts

4. General description of dredged material, dredging, and transportation made:

a. Description: Some fine gravel, medium and fine sand, gray silt and clay.

b. Mode of dredging: Clamshell

c. Mode of transportation: Scow

5. Form in which dredged material is presented for disposal: Saturated cohesive and noncohesive material.

6. Material quantity (volume in metric units, cubic meters) of material dumped in the ocean and dates of actual disposal during reporting calendar year:

55,157 m³ - 27 March thru 16 April 1981

7. Period for which permit is valid or project is scheduled:

24 December 1980 to 31 December 1983

8. Expected frequency of dumping: Twice daily, seven days a week

9. Chemical composition of the liquid phase of dredged material as described in the 11 January 1977 Federal Register which contains the Environmental Protection Agency's final regulations and criteria:

a. Liquid Phase test results: None

(1) Nutrients:

(2) Metals:

(3) Organics:

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b. Other analyses: Bulk Sediment Analysis

(1) Metals: mg/kg Averages:

Hg	0.265	Cr	128.3
Cd	not detected	Cu	299.0
Pb	118.7	Ni	50.7
As	<2.2	V	309.3

(2) Organics: mg/kg

Oil & Grease	0.069%
Volatile Solids	2.91%
PCB's (ppb)	7.925

(3) Other:

% Total Solids	75.1
Specific Gravity	2.55

10. Bioassay and Bioassessment Evaluations:

a. Liquid Phase Bioassay: No significant effect

b. Suspend Particulate Phase Bioassay: No significant effect

c. Solid Phase Bioassay: No significant NOTE: PCB values were somewhat high, however, it is believed that with proper dredging procedures, no unacceptable levels will result.

11. Properties of the dredged material:

a. Solubility (% Water): Averages: 24.9

b. Density (gm/cc):

c. pH:

12. Method of release: Six bottom doors operated hydraulically. Material is released intermittently while scow is held at a complete halt.

13. Procedure and site for subsequent barge and hopper washing: Normally, scows are washed down at either the dump or the dredge site.

14. Approved dumping site:

a. Geographical position (latitude and longitude):

42°25.9'N x 70°34.9'W

b. Depth of water (meters): 77

c. Distance from nearest coast: 18.3 kilometers

15. Additional Information: Additional information may be obtained from Federal Project Data. This dump site is subject to monitoring studies under the Disposal Area Monitoring System (DAMOS) program. The program is designed to identify and evaluate impacts resulting from the disposal of dredged materials at designated dump sites. The DAMOS program continually contributes to the development of new monitoring methodologies that reflect on the efficiency of field observations and logistics, as well as time.

This program was designed to comply with Sections 228.9 and 228.10 of the Ocean Dumping Act relative to dump site monitoring and the evaluation of disposal impacts.

(Plymouth Yacht Club)
IMCO DREDGED MATERIAL OCEAN DISPOSAL REPORT

CY 1981

1. Issuing authority:

Division: New England

District: N/A

2. Date issued: 24 December 1980

3. Country of origin of dredged material or other matter: United States of America, Massachusetts

Port of loading (activity location): Plymouth Harbor, Plymouth, Massachusetts

4. General description of dredged material, dredging, and transportation made:

a. Description: Medium and fine sand, some fine gravel, gray silt and clay, organic silt and sand.

b. Mode of dredging: Clamshell

c. Mode of transportation: Scow

5. Form in which dredged material is presented for disposal: Saturated cohesive and noncohesive material.

6. Material quantity (volume in metric units, cubic meters) of material dumped in the ocean and dates of actual disposal during reporting calendar year:

13,464 m³ - 16 April thru 20 April 1981

7. Period for which permit is valid or project is scheduled:

29 December 1980 to 31 December 1983

8. Expected frequency of dumping: Twice daily, seven days a week

9. Chemical composition of the liquid phase of dredged material as described in the 11 January 1977 Federal Register which contains the Environmental Protection Agency's final regulations and criteria:

a. Liquid Phase test results: None

(1) Nutrients:

(2) Metals:

(3) Organics:

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b. Other analyses: Bulk Sediment

(1) Metals: mg/kg

Hg	.180	Cr	25.4
Cd	<0.31	Cu	11.9
Pb	25.7	As	<2,2
Ni	50.7	V	309.3

(2) Organics: Composite of 6 samples

% Volatile Solids	3.67	
% Oil & Grease	.0182	"Freon" Extractable
PCB's (ppb)	7.925	Average of PCB, Dry Wt., % Passing

(3) Other: Average

% Total Solids 67.08

Sieve Analysis	Boring #1.0'-1.5'	#2.0'-6.5'
3/4"	71.9	100.0
1/2"	60.0	96.7
# 4	37.5	78.8
# 10	29.1	68.4
# 40	2.4	31.1
#200	0.5	2.6

10. Bioassay and Bioassessment Evaluations:

a. Liquid Phase Bioassay: No significant effect

b. Suspend Particulate Phase Bioassay: No significant effect

c. Solid Phase Bioassay: No significant effect NOTE: PCB values were somewhat high, however, it is believed that with proper dredging procedures, no unacceptable levels will result.

11. Properties of the dredged material:

a. Solubility (% Water): 32.92

b. Density (gm/cc):

c. pH:

d. Grain Size Analysis:

Size Fraction	Boring #1	% of Total by Weight			
		#3	#5	5A-1,2	5A-3,4
Coarse Gravel 64 mm	0	0	0	0	0
Fine Gravel 2-64 mm	70.9	31.6	0	7.0	8.0
Sand .063-2 mm	28.6	65.8	5.0	58.0	5.0
Silt .004-.063 mm	0.5	2.6	93.0	30.0	77.0
Clay .004	-	-	2.0	5.0	10.0
Specific Gravity	-	-	2.53	2.60	2.52

12. Method of release: Six bottom doors operated hydraulically. Material is released intermittently while scow is held at a complete halt.

13. Procedure and site for subsequent barge and hopper washing: Normally, scows are washed down at either the dump or the dredge site.

14. Approved dumping site:

a. Geographical position(latitude and longitude):

42°25.9'N x 70°34.9'W

b. Depth of water (meters): 77

c. Distance from nearest coast: 18.3 kilometers

15. Additional Information: Additional information may be obtained from Federal Project Data. This dump site is subject to monitoring studies under the Disposal Area Monitoring System (DAMOS) program. The program is designed to identify and evaluate impacts resulting from the disposal of dredged materials at designated dump sites. The DAMOS program continually contributes to the development of new monitoring methodologies that reflect on the efficiency of field observations and logistics, as well as time.

This program was designed to comply with Sections 228.9 and 228.10 of the Ocean Dumping Act relative to dump site monitoring and the evaluation of disposal impacts.

(Providence & Worcester Co.)
IMCO DREDGED MATERIAL OCEAN DISPOSAL REPORT

CY 1981

1. Issuing authority:

Division: New England

District: N/A

2. Date issued: 1 September 1981

3. Country of origin of dredged material or other matter: United States of America, Rhode Island

Port of loading (activity location): Providence River, E. Providence, Rhode Island

4. General description of dredged material, dredging, and transportation made:

a. Description: Coarsed grain and organic silt.

b. Mode of dredging: Clamshell - bucket

c. Mode of transportation: Scow

5. Form in which dredged material is presented for disposal: Saturated cohesive and noncohesive material.

6. Material quantity (volume in metric units, cubic meters) of material dumped in the ocean and dates of actual disposal during reporting calendar year:

29,606 m³ - 21 November thru 13 December 1981

7. Period for which permit is valid or project is scheduled:

1 September 1981 to 31 December 1984

8. Expected frequency of dumping: Once daily, seven days per week

9. Chemical composition of the liquid phase of dredged material as described in the 11 January 1977 Federal Register which contains the Environmental Protection Agency's final regulations and criteria:

a. Liquid Phase test results: None

(1) Nutrients:

(2) Metals:

(3) Organics:

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b. Other analyses: Bulk Sediment Analysis

(1) Metals: (mg/kg)

Zn	532	Cu	884
Hg	0.35	As	17.8
Cd	8.7	Ni	50
Pb	424	V	63
Cr	307		

(2) Organics:

% Volatile Solids	15	(as % total solids)
% Oil & Grease	1.2	(as % total solids)

(3) Other:

10. Bioassay and Bioassessment Evaluations:

- a. Liquid Phase Bioassay: No significant effect
- b. Suspend Particulate Phase Bioassay: No significant effect
- c. Solid Phase Bioassay: No significant effect

11. Properties of the dredged material:

- a. Solubility (% Water): 66
- b. Density (gm/cc):
- c. pH:

12. Method of release: Six bottom doors operated hydraulically. Material is released intermittently while scow is held at a complete halt.

13. Procedure and site for subsequent barge and hopper washing: Normally, scows are washed down at either the dump or the dredge site.

14. Approved dumping site:

- a. Geographical position(latitude and longitude):
42°25.9'N x 70° 34.9'W
- b. Depth of water (meters): 77
- c. Distance from nearest coast: 18.3 kilometers

15. Additional Information: This dump site is subject to monitoring studies under the Disposal Area Monitoring System (DAMOS) program. The program is designed to identify and evaluate impacts resulting from the disposal of dredged materials at designated dump sites. The DAMOS program continually contributes to the development of new monitoring methodologies that reflect on the efficiency of field observations and logistics, as well as time.

This program was designed to comply with Sections 228.9 and 228.10 of the Ocean Dumping Act relative to dump site monitoring and the evaluation of disposal impacts.

(Conrail)
IMCO Dredged Material Ocean Disposal Report
CY 1981

1. Issuing authority:

Division North Atlantic

District New York

2. Date issued: 22 April 1981 Permit # 11858 Conrail

3. Country of origin of dredged material or other matter:

United States of America, New York

Port of Loading (activity location):

Arthur Kill

4. General description of dredged material, dredging, and transportation made:

a. Description: Silty clay,

b. Mode of dredging: clamshell dredge ; Weeks Dredging Co.

c. Mode of transportation: towed barge, 4000 cy capacity

5. Form in which dredged material is presented for disposal:

Slurry-noncohesive character.

6. Material quantity (volume in metric units, cubic meters) of material dumped in the ocean and dates of actual disposal during reporting calendar year.

20,000 cy - 15,291 m³

7. Period for which permit is valid or project is scheduled:

Completed; disposal dates 14-19 May 1981

8. Expected frequency of dumping:

1 trip/day

9. Chemical composition of the liquid phase of dredged material as described in the 11 Jan 77 Federal Register which contains the Environmental Protection Agency's final regulations and criteria:

	Elutriate (S.D.)
Pet. Hyd	< 0.1(-)
PCB	< 0.01(-)
DDT	< 0.05(-)
Hg	< 0.2(-)
Cd	0.17(0.12)

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10. Bioassays and Bioassessment Evaluations

a. Liquid Phase Bioassay (EC50 or LC50 for each test species) @ 96 hrs.

<u>Skeletonema costatum</u>	Δ100%
<u>Mysidopsis bahia</u>	79%
<u>Menidia menidia</u>	68%

b. Suspended Particulate Phase Bioassay (EC50 or LC50 per test species) @ 96 hrs.

<u>Acartia tonsa</u>	61%
<u>Mysidopsis bahia</u>	64%
<u>Menidia menidia</u>	67%

c. Solid Phase Bioassay (% mortality difference with respect to control)

<u>Palaemonetes pugio</u>	2.4 %
<u>Mercenaria mercenaria</u>	4.0 %
<u>Nereis sp.</u>	0.0 %

(* statistical significance, 95% confidence level)

11. Properties of the dredged material:

a. Solubility: (% water):

b. Density (gm/cc):

c. % sand 15.15 % silt 53.76 % clay 31.09

12. Method of release: Immediate release from bottom opening doors

13. Procedure and site for subsequent barge and hopper washing:
Hoppers flushed at authorized disposal site.

14. Approval dumping site:

a. Geographic position (latitude and longitude):

40°22' N (lat) 73°51' W (long)

b. Depth of water (meters): 20 meters

c. Distance from nearest coast: 9 Km

15. Additional information:

(Port Authority of NY/NJ)
IMCO Dredged Material Ocean Disposal Report
CY 1981

1. Issuing authority:

Division North Atlantic

District New York

2. Date issued: June 1977

Permit # 9232 Port Authority of NY/NJ

3. Country of origin of dredged material or other matter:

United States of America, New York

Port of Loading (activity location):

Port Newark

4. General description of dredged material, dredging, and transportation made:

a. Description: Silty clay,

b. Mode of dredging: clamshell dredge; Great Lakes Dredging Co.

c. Mode of transportation: towed barge; 3,600 cy capacity

5. Form in which dredged material is presented for disposal:

Slurry-noncohesive character.

6. Material quantity (volume in metric units, cubic meters) of material dumped in the ocean and dates of actual disposal during reporting calendar year.

$$111,600 \text{ yd}^3 = 85,324 \text{ m}^3$$

7. Period for which permit is valid or project is scheduled:

Completed; disposal dates 18 May - 3 June 1981

Resumed 10-13 July 1981

8. Expected frequency of dumping:

2 trips/day

9. Chemical composition of the liquid phase of dredged material as described in the 11 Jan 77 Federal Register which contains the Environmental Protection Agency's final regulations and criteria:

Elutriate (S.D.)

Petro. hydro $< 0.2 \times 10^3 (-)$

PCB $< 0.01 (-)$

DDT $< 0.05 (-)$

Hg $< 0.2 (-)$

Cd $< 0.1 (-)$

10. Bioassays and Bioassessment Evaluations

a. Liquid Phase Bioassay (EC50 or LC50 for each test species)@ 96 hrs.

<u>Skeletonema costatum</u>	>100%
<u>Mysidopsis bahia</u>	>100%
<u>Menidia menidia</u>	>100%

b. Suspended Particulate Phase Bioassay (EC50 or LC50 per test species)@ 96 hrs.

<u>Acartia tonsa</u>	43%

<u>Mysidopsis bahia</u>	>100%
<u>Menidia menidia</u>	>100%

c. Solid Phase Bioassay (% mortality difference with respect to control)
Palaemonetes pugio -1.0% Negative number indicates greater mortality in control.

<u>Mercenaria mercenaria</u>	3.0%
<u>Nereis sp.</u>	4.0%

(* statistical significance, 95% confidence level)

11. Properties of the dredged material:

a. Solubility: (% water):

b. Density (gm/cc):

c. % sand 15.75 % silt 66.02 % clay 18.23

12. Method of release: Immediate release from bottom opening doors

13. Procedure and site for subsequent barge and hopper washing:
Hoppers flushed at authorized disposal site.

14. Approval dumping site:

a. Geographic position (latitude and longitude):

40°22' N (lat) 73°51' W (long)

b. Depth of water (meters): 20meters

c. Distance from nearest coast: 9 Km

15. Additional information:

The 10 day bioaccumulation test data shows statistically significance at the 95% confidence level with petroleum hydrocarbons in Palaemonetes (0.14), Mercenaria (0.26) Nereis (0.35) and with PCB in Mercenaria (0.05).

(Refined Syrups & Sugar)
IMCO Dredged Material Ocean Disposal Report
CY 1981

1. Issuing authority:

Division North Atlantic

District New York

2. Date issued: 21 December 1979 Permit # 9104 Refined Syrups & Sugars

3. Country of origin of dredged material or other matter:

United States of America, New York

Port of Loading (activity location):

Hudson River

4. General description of dredged material, dredging, and transportation made:

a. Description: Silty clay,

b. Mode of dredging: clamshell dredge; Weeks Dredging Co.

c. Mode of transportation: towed barge; 4000 cy capacity

5. Form in which dredged material is presented for disposal:

Slurry-noncohesive character.

6. Material quantity (volume in metric units, cubic meters) of material dumped in the ocean and dates of actual disposal during reporting calendar year.

64,400 cy = 49,237 m³

7. Period for which permit is valid or project is scheduled:

Completed; disposal dates 20 - 31 May 1981

8. Expected frequency of dumping:

10 trips/week

9. Chemical composition of the liquid phase of dredged material as described in the 11 Jan 77 Federal Register which contains the Environmental Protection Agency's final regulations and criteria:

	Elutriate (S.D.)
Petro. hydro	<0.2X10 ³ (-)
PCB	<0.1(-)
DDT	<0.05(-)
Hg	<0.20(-)
Cd	<0.10(-)

10. Bioassays and Bioassessment Evaluations

a. Liquid Phase Bioassay (EC50 or LC50 for each test species) @ 96 hrs.

<u>Skeletonema costatum</u>	>100%
<u>Mysidopsis bahia</u>	>100%
<u>Menidia menidia</u>	>100%

b. Suspended Particulate Phase Bioassay (EC50 or LC50 per test species) @ 96 hrs.

<u>Acartia tonsa</u>	62%

<u>Mysidopsis bahia</u>	>100%
<u>Menidia menidia</u>	52%

c. Solid Phase Bioassay (% mortality difference with respect to control)

<u>Palaemonetes pugio</u>	3.0

Negative numbers indicates greater mortality in control.

<u>Mercenaria mercenaria</u>	-1.0
<u>Nereis sp.</u>	-1.0

(* statistical significance, 95% confidence level)

11. Properties of the dredged material:

a. Solubility: (% water):

b. Density (g/cc):

c. % sand 7.12 % silt 43.74 % clay 49.14

12. Method of release: Immediate release from bottom opening doors

13. Procedure and site for subsequent barge and hopper washing:
Hoppers flushed at authorized disposal site.

14. Approval dumping site:

a. Geographic position (latitude and longitude):

40°22' N (lat) 73°51' W (long)

b. Depth of water (meters): 20 meters

c. Distance from nearest coast: 9 Km

15. Additional information:

The 10 day bioaccumulation test data show no statistically significant values within a 95% confidence level.

(Bayonne Industries)
IMCO Dredged Material Ocean Disposal Report
CY 1981

1. Issuing authority:

Division North Atlantic

District New York

2. Date issued: 30 June 1978

Permit # 10613 Bayonne Industries

3. Country of origin of dredged material or other matter:

United States of America, New York

Port of Loading (activity location):

Kill Van Kull

4. General description of dredged material, dredging, and transportation made:

a. Description: Silty clay,

b. Mode of dredging: clamshell dredge ; Weeks Dredging Co.

c. Mode of transportation: towed barge; 4,000 cy capacity

5. Form in which dredged material is presented for disposal:

Slurry-noncohesive character.

6. Material quantity (volume in metric units, cubic meters) of material dumped in the ocean and dates of actual disposal during reporting calendar year.

98,400 cy = 75,232m³

7. Period for which permit is valid or project is scheduled:

Completed; disposal dates 10-19 June 1981

resume 14 July - 14 August 1981

8. Expected frequency of dumping:

1 trip/day

9. Chemical composition of the liquid phase of dredged material as described in the 11 Jan 77 Federal Register which contains the Environmental Protection Agency's final regulations and criteria:

Elutriate (S.D.)

PCB 0.16 (0.03)

DDT <0.05 (-)

Hg 0.04 (0)

Cd 4.77 (0.35)

10. Bioassays and Bioassessment Evaluations

a. Liquid Phase Bioassay (EC50 or LC50 for each test species) @ 96 hours

<u>Skeletonema costatum</u>	70%
<u>Mysidopsis bahia</u>	57%
<u>Menidia menidia</u>	>100%

b. Suspended Particulate Phase Bioassay (EC50 or LC50 per test species) @ 96 hours

<u>Acartia tonsa</u>	27%

<u>Mysidopsis bahia</u>	66%
<u>Menidia menidia</u>	>100%

c. Solid Phase Bioassay (% mortality difference with respect to control)

<u>Palaemonetes</u>	-3.0%	Negative number indicates greater mortality in control
<u>Mercenaria mercenaria</u>	0.0%	
<u>Nereis sp.</u>	0.0%	

(* statistical significance, 95% confidence level)

11. Properties of the dredged material:

a. Solubility: (% water):

b. Density (gm/cc):

c. % sand 5.5 % silt 62.5 % clay 32.0

12. Method of release: Immediate release from bottom opening doors

13. Procedure and site for subsequent barge and hopper washing:
Hoppers flushed at authorized disposal site.

14. Approval dumping site:

a. Geographic position (latitude and longitude):

40°22' N (lat) 73°51' W (long)

b. Depth of water (meters): 20 meters

c. Distance from nearest coast: 9 Km

15. Additional information:

The 10-day bioaccumulation test data show statistically significant values at the 95% confidence level for Petroleum hydrocarbons in Palaemonetes (2.74), Mercenaria (0.45), Nereis (15.68) and PCB in Nereis (0.22).

(U. S. Metals Refining Co.)
IMCO Dredged Material Ocean Disposal Report
CY 1981

1. Issuing authority:

Division North Atlantic

District New York

2. Date issued: 18 June 1981

Permit # 11971 US Metals Refining Co.

3. Country of origin of dredged material or other matter:

United States of America, New York

Port of Loading (activity location):

Arthur Kill

4. General description of dredged material, dredging, and transportation made:

a. Description: Silty clay,

b. Mode of dredging: clamshell dredge; Weeks Dredging Co.

c. Mode of transportation: towed barge; 4000 cy capacity

5. Form in which dredged material is presented for disposal:

Slurry-noncohesive character.

6. Material quantity (volume in metric units, cubic meters) of material dumped in the ocean and dates of actual disposal during reporting calendar year.

56,000 cy = 42,815m³

7. Period for which permit is valid or project is scheduled:

completed; 20-28 June 1981

8. Expected frequency of dumping:

10 trips per week

9. Chemical composition of the liquid phase of dredged material as described in the 11 Jan 77 Federal Register which contains the Environmental Protection Agency's final regulations and criteria:

PCB <0.10(-)
DDT <0.05(-)
Hg <0.20(-)
Cd <0.10(-)

10. Bioassays and Bioassessment Evaluations

a. Liquid Phase Bioassay (EC50 or LC50 for each test species) @ 96 hours

<u>Skeletonema costatum</u>	44%
<u>Mysidopsis bahia</u>	>100%
<u>Menidia menidia</u>	>100%

b. Suspended Particulate Phase Bioassay (EC50 or LC50 per test species) @ 96 hours

<u>Acartia tonsa</u>	30%
<u>Mysidopsis bahia</u>	58%
<u>Menidia menidia</u>	26%

c. Solid Phase Bioassay (% mortality difference with respect to control)

<u>Palaemonetes</u>	5.32	Negative number indicates greater mortality in control.
<u>Mercenaria mercenaria</u>	0.0	
<u>Nereis sp.</u>	-3.0	

(* statistical significance, 95% confidence level)

11. Properties of the dredged material:

a. Solubility: (% water):

b. Density (gm/cc):

c. % sand 22.80 % silt 43.38 % clay 33.62

12. Method of release: Immediate release from bottom opening doors

13. Procedure and site for subsequent barge and hopper washing:
Hoppers flushed at authorized disposal site.

14. Approval dumping site:

a. Geographic position (latitude and longitude):

40°22' N (lat) 73°51' W (long)

b. Depth of water (meters): 20 meters

c. Distance from nearest coast: 9 Km

15. Additional information:

In the 10-day bioaccumulation test data, all three test organisms had statistically significant uptake of PCB.

(GATX Terminals)
IMCO Dredged Material Ocean Disposal Report
CY 1981

1. Issuing authority:

Division North Atlantic

District New York

2. Date issued: 11 June 1981 Permit # 11957 GATX Terminals

3. Country of origin of dredged material or other matter:

United States of America, New York

Port of Loading (activity location):

Arthur Kill

4. General description of dredged material, dredging, and transportation made:

a. Description: Silty clay,

b. Mode of dredging: clamshell dredge; Weeks Dredging Co.

c. Mode of transportation: towed barge ; 4000 cy capacity

5. Form in which dredged material is presented for disposal:

Slurry-noncohesive character.

6. Material quantity (volume in metric units, cubic meters) of material dumped in the ocean and dates of actual disposal during reporting calendar year.

48,400 cy = 37,004m³

7. Period for which permit is valid or project is scheduled:

completed; Disposal dates - 29 June - 15 July 1981

8. Expected frequency of dumping:

1 trip/day

9. Chemical composition of the liquid phase of dredged material as described in the 11 Jan 77 Federal Register which contains the Environmental Protection Agency's final regulations and criteria:

Petroleum Hydrocarbons	<0.1x10 ³	PPb
PCB	<0.01	
DDT	<0.05	
Hg	<0.2	
Cd	<0.1	

10. Bioassays and Bioassessment Evaluations

a. Liquid Phase Bioassay (EC50 or LC50 for each test species) @ 96 hours

<u>Skeletonema costatum</u>	>100%
<u>Mysidopsis bahia</u>	>100%
<u>Menidia menidia</u>	>100%

b. Suspended Particulate Phase Bioassay (EC50 or LC50 per test species) @ 96 hours

<u>Acartia tonsa</u>	70%

<u>Mysidopsis bahia</u>	>100%
<u>Menidia menidia</u>	66%

c. Solid Phase Bioassay (% mortality difference with respect to control)

<u>Palaemonetes</u>	6.3%

Negative number indicates
greater mortality in control.

<u>Mercenaria mercenaria</u>	0.0%
<u>Nereis sp.</u>	-1.0%

(* statistical significance, 95% confidence level)

11. Properties of the dredged material:

a. Solubility: (% water):

b. Density (gm/cc):

c. % sand	16.95	% silt	61.98	% clay	21.08

12. Method of release: Immediate release from bottom opening doors

13. Procedure and site for subsequent barge and hopper washing:
Hoppers flushed at authorized disposal site.

14. Approval dumping site:

a. Geographic position (latitude and longitude):

40°22' N (lat) 73°51' W (long)

b. Depth of water (meters): 20 meters

c. Distance from nearest coast: 9 Km

15. Additional information:

The 10 day bioaccumulation test data show statistically significant values for Petroleum hydrocarbons in the worm (0.33ppm).

(Port Authority of NY/NJ)
IMCO Dredged Material Ocean Disposal Report
CY 1981

1. Issuing authority:

Division North Atlantic

District New York

2. Date issued: 15 October 1975 Permit # 9466 Port Authority of NY/NJ

3. Country of origin of dredged material or other matter:

United States of America, New York

Port of Loading (activity location):

Gowanus Bay

4. General description of dredged material, dredging, and transportation made:

a. Description: Silty clay,

b. Mode of dredging: clamshell dredge; Great Lakes Dredging Co.

c. Mode of transportation: towed barge; 3600 cy capacity

5. Form in which dredged material is presented for disposal:

Slurry-noncohesive character.

6. Material quantity (volume in metric units, cubic meters) of material dumped in the ocean and dates of actual disposal during reporting calendar year.

248,400 cy = 189,914m³

7. Period for which permit is valid or project is scheduled:

completed; disposal dates 5 June - 9 July 1981

8. Expected frequency of dumping:

2 trips per day

9. Chemical composition of the liquid phase of dredged material as described in the 11 Jan 77 Federal Register which contains the Environmental Protection Agency's final regulations and criteria:

Elutriate (S.L.)	
Petroleum hydrocarbons	0.5x10 ³ (0)
PCB	< 0.1 (-)
DDT	< 0.05 (-)
Hg	0.53 (0.29)
Cd	< 0.1(-)

10. Bioassays and Bioassessment Evaluations

a. Liquid Phase Bioassay (EC50 or LC50 for each test species) @ 96 hours

<u>Skeletonema costatum</u>	> 100%
<u>Mysidopsis bahia</u>	> 100%
<u>Menidia menidia</u>	> 100%

b. Suspended Particulate Phase Bioassay (EC50 or LC50 per test species) @ 96 hours

<u>Acartia tonsa</u>	37%
<u>Mysidopsis bahia</u>	31%
<u>Menidia menidia</u>	43%

c. Solid Phase Bioassay (% mortality difference with respect to control)

<u>Palaeomonetes</u>	4.0%	Negative number indicates greater mortality in control.
<u>Mercenaria mercenaria</u>	-1.0%	
<u>Nereis sp.</u>	4.0%	

(* statistical significance, 95% confidence level)

11. Properties of the dredged material:

a. Solubility: (% water):

b. Density (gm/cc):

c. % sand 25.7 % silt 44.7 % clay 29.6

12. Method of release: Immediate release from bottom opening doors

13. Procedure and site for subsequent barge and hopper washing:
Hoppers flushed at authorized disposal site.

14. Approval dumping site:

a. Geographic position (latitude and longitude):

40°22' N (lat) 73°51' W (long)

b. Depth of water (meters): 20 meters

c. Distance from nearest coast: 9 Km

15. Additional information:

The 10 day bioaccumulation test data show no statistically significant values at the 95% confidence level.

(Linden - Roselle Sewage Authority)
IMCO Dredged Material Ocean Disposal Report
CY 1981

1. Issuing authority:

Division North Atlantic

District New York

2. Date issued: 3 August 1981

Permit # 12007 Linden-Roselle Sewage Authority

3. Country of origin of dredged material or other matter:

United States of America, New York

Port of Loading (activity location):

Arthur Kill

4. General description of dredged material, dredging, and transportation made:

a. Description: Silty clay,

b. Mode of dredging: clamshell dredge; Great Lakes Dredging Co.

c. Mode of transportation: towed barge; 3600 cy capacity

5. Form in which dredged material is presented for disposal:

Slurry-noncohesive character.

6. Material quantity (volume in metric units, cubic meters) of material dumped in the ocean and dates of actual disposal during reporting calendar year.

18,000 cy = 13,762m³

7. Period for which permit is valid or project is scheduled:

completed; disposal dates 3-5 August 1981

8. Expected frequency of dumping:

2 trips per day

9. Chemical composition of the liquid phase of dredged material as described in the 11 Jan 77 Federal Register which contains the Environmental Protection Agency's final regulations and criteria:

Elutriate (S.D.) ppb

Petroleum hydrocarbons	< 50 (-)
PCB	< 0.1 (-)
DDT	< 0.05 (-)
Hg	< 0.2 (-)
Cd	< 0.1 (-)

10. Bioassays and Bioassessment Evaluations

a. Liquid Phase Bioassay (EC50 or LC50 for each test species) @ 96 hours

<u>Skeletonema costatum</u>	12%
<u>Mysidopsis bahia</u>	53%
<u>Menidia menidia</u>	99%

b. Suspended Particulate Phase Bioassay (EC50 or LC50 per test species) @ 96 hours

Acartia tonsa 28%

<u>Mysidopsis bahia</u>	41%
<u>Menidia menidia</u>	66%

c. Solid Phase Bioassay (% mortality difference with respect to control)
0.0% Negative number indicates greater
% mortality in control.

<u>Mercenaria mercenaria</u>	8.0%
<u>Nereis sp.</u>	-5.0%

(* statistical significance, 95% confidence level)

11. Properties of the dredged material:

a. Solubility: (% water):

b. Density (gm/cc):

c. % sand 7.87 % silt 61.25 % clay 30.88

12. Method of release: Immediate release from bottom opening doors

13. Procedure and site for subsequent barge and hopper washing:
Hoppers flushed at authorized disposal site.

14. Approval dumping site:

a. Geographic position (latitude and longitude):

40°22' N (lat) 73°51'W (long)

b. Depth of water (meters): 20meters

c. Distance from nearest coast: 9 Km

15. Additional information:

The 10 day bioaccumulation test data show statistically significant value in the worm for Petroleum hydrocarbons.

(Mobil Oil Co.)
IMCO Dredged Material Ocean Disposal Report
CY 1981

1. Issuing authority:

Division North Atlantic

District New York

2. Date issued: 26 March 1979 Permit # 10928 Mobil Oil Corp.

3. Country of origin of dredged material or other matter:

United States of America, New York

Port of Loading (activity location):

Arthur Kill

4. General description of dredged material, dredging, and transportation made:

a. Description: Silty clay,

b. Mode of dredging: clamshell dredge; Weeks Dredging Co.

c. Mode of transportation: towed barge; 4000 cy capacity

5. Form in which dredged material is presented for disposal:

Slurry-noncohesive character.

6. Material quantity (volume in metric units, cubic meters) of material dumped in the ocean and dates of actual disposal during reporting calendar year.

48,000 cy = 36,698m³

7. Period for which permit is valid or project is scheduled:

completed; disposal dates 20 - 28 July

Resumed 1 - 8 Sept.

8. Expected frequency of dumping:

9. Chemical composition of the liquid phase of dredged material as described in the 11 Jan 77 Federal Register which contains the Environmental Protection Agency's final regulations and criteria:

Elutriate (S.D.)

Petroleum hydrocarbons	< 0.2x10 ³ ug/l (-)
PCB	< 0.1 ug/l (-)
DDT	< 0.05 ug/l (-)
Hg	0.37 ug/l (0.12)
Cd	0.23 ug/l (0.06)

10. Bioassays and Bioassessment Evaluations

a. Liquid Phase Bioassay (EC50 or LC50 for each test species)

Skeletonema costatum
Mysidopsis bahia
Menidia menidia

b. Suspended Particulate Phase Bioassay (EC50 or LC50 per test species)

Skeletonema costatum
Mysidopsis bahia
Menidia menidia

c. Solid Phase Bioassay (% mortality difference with respect to control)

Mysidopsis bahia
Mercenaria mercenaria
Nereis sp.

(* statistical significance, 95% confidence level)

11. Properties of the dredged material:

a. Solubility: (% water):

b. Density (gm/cc):

c. % sand 18.02 % silt 45.93 % clay 36.02

12. Method of release: Immediate release from bottom opening doors

13. Procedure and site for subsequent barge and hopper washing:
Hoppers flushed at authorized disposal site.

14. Approval dumping site:

a. Geographic position (latitude and longitude):

40°22' N (lat) 73°51' W (long)

b. Depth of water (meters): 20 meters

c. Distance from nearest coast: 9 Km

15. Additional information:

10-day bioaccumulation data. The following results are statistically significant:

Petroleum hydrocarbon in Nereis (0.25)

PCB in Mercenaria (0.06) and Nereis (0.11)

(Hills Brothers Coffee)
IMCO Dredged Material Ocean Disposal Report
CY 1981

1. Issuing authority:

Division North Atlantic

District New York

2. Date issued: 23 June 1981

Permit # 10716 Hills Brothers Coffee

3. Country of origin of dredged material or other matter:

United States of America, New York

Port of Loading (activity location):

Hudson River

4. General description of dredged material, dredging, and transportation made:

a. Description: Silty clay,

b. Mode of dredging: clamshell dredge; Weeks Dredging Co.

c. Mode of transportation: towed barge; 4000 cy capacity

5. Form in which dredged material is presented for disposal:

Slurry-noncohesive character.

6. Material quantity (volume in metric units, cubic meters) of material dumped in the ocean and dates of actual disposal during reporting calendar year.

16,000 cy = 12,233m³

7. Period for which permit is valid or project is scheduled:

Completed; disposal dates 23-27 Sept. 1981

8. Expected frequency of dumping:

1 trip per day

9. Chemical composition of the liquid phase of dredged material as described in the 11 Jan 77 Federal Register which contains the Environmental Protection Agency's final regulations and criteria:

Elutriate (S.D.)ppb

PCB <0.01 (-)

DDT <0.05 (-)

Hg 0.40 (0.17)

Cd <0.1 (-)

10. Bioassays and Bioassessment Evaluations

a. Liquid Phase Bioassay (EC50 or LC50 for each test species) @ 96 hours

<u>Skeletonema costatum</u>	36%
<u>Mysidopsis bahia</u>	> 100%
<u>Menidia menidia</u>	> 100%

b. Suspended Particulate Phase Bioassay (EC50 or LC50 per test species) @ 96 hours

<u>Acartia tonsa</u>	> 100%

<u>Mysidopsis bahia</u>	> 100%
<u>Menidia menidia</u>	> 100%

c. Solid Phase Bioassay (% mortality difference with respect to control)

<u>Palaemonetes</u>	3%

<u>Mercenaria mercenaria</u>	0%
<u>Nereis sp.</u>	1%

(* statistical significance, 95% confidence level)

11. Properties of the dredged material:

a. Solubility: (% water):

b. Density (gm/cc):

c. % sand	5.65	% silt	63.05	% clay	31.30

12. Method of release: Immediate release from bottom opening doors

13. Procedure and site for subsequent barge and hopper washing:
Hoppers flushed at authorized disposal site.

14. Approval dumping site:

a. Geographic position (latitude and longitude):

40°22' N (lat) 73°51' W (long)

b. Depth of water (meters): 20 meters

c. Distance from nearest coast: 9 Km

15. Additional information:

The 10 day bioaccumulation test data show statistically significant values in Petroleum hydrocarbons for oil organisms and in PCB for Palaemonetes and Nereis.

(Jackson Engineering)
IMCO Dredged Material Ocean Disposal Report
CY 1981

1. Issuing authority:

Division North Atlantic

District New York

2. Date issued: 6 May 1980 Permit # 11392 Jackson Engineering

3. Country of origin of dredged material or other matter:

United States of America, New York

Port of Loading (activity location):

Kill Van Kull

4. General description of dredged material, dredging, and transportation made:

a. Description: Silty clay,

b. Mode of dredging: clamshell dredge; Great Lakes Dredging Co.

c. Mode of transportation: towed barge 3600 cy capacity

5. Form in which dredged material is presented for disposal:

Slurry-noncohesive character.

6. Material quantity (volume in metric units, cubic meters) of material dumped in the ocean and dates of actual disposal during reporting calendar year.

36,000 cy = 27,523m³

7. Period for which permit is valid or project is scheduled:

Completed; disposal dates 28 July to 1 August 1981

8. Expected frequency of dumping:

2 trips/day

9. Chemical composition of the liquid phase of dredged material as described in the 11 Jan 77 Federal Register which contains the Environmental Protection Agency's final regulations and criteria:

Elutriate (S.D.)

PCB	0.27(0.07)
DDT	0.05 (0.00)
Hg	0.30 (0.00)
Cd	0.33 (0.02)

10. Bioassays and Bioassessment Evaluations

- a. Liquid Phase Bioassay (EC50 or LC50 for each test species) @ 96 hours

Skeletonema costatum 60%
Mysidopsis bahia > 100%
Menidia menidia > 100 %

- b. Suspended Particulate Phase Bioassay (EC50 or LC50 per test species)

Acartia tonsa 45%

Mysidopsis bahia > 100%
Menidia menidia > 100 %

- c. Solid Phase Bioassay (% mortality difference with respect to control)

Palaemonetes 0

Mercenaria mercenaria 0

Nereis sp. 0

(* statistical significance, 95% confidence level)

11. Properties of the dredged material:

- a. Solubility: (% water):

- b. Density (gm/cc):

c. % sand 12.2 % silt 69.8 % clay 18.0

12. Method of release: Immediate release from bottom opening doors

13. Procedure and site for subsequent barge and hopper washing:
Hoppers flushed at authorized disposal site.

14. Approval dumping site:

- a. Geographic position (latitude and longitude):

40°22' N (lat) 73°51'W (long)

- b. Depth of water (meters): 20meters

- c. Distance from nearest coast: 9 Km

15. Additional information:

Bioaccumulation analysis unavailable.

(Celanese Chemical Corp.)
LMCO Dredged Material Ocean Disposal Report
CY 1981

1. Issuing authority:

Division North Atlantic

District New York

2. Date issued: 12 June 1981

Permit # 9118 Celanese Chemical Corp.

3. Country of origin of dredged material or other matter:

United States of America, New York

Port of Loading (activity location):

Passaic River

4. General description of dredged material, dredging, and transportation made:

a. Description: Silty clay,

b. Mode of dredging: clamshell dredge; Great Lakes Dredging Co.

c. Mode of transportation: towed barge; 3600 cy capacity

5. Form in which dredged material is presented for disposal:

Slurry-noncohesive character.

6. Material quantity (volume in metric units, cubic meters) of material dumped in the ocean and dates of actual disposal during reporting calendar year.

36,000 cy = 27,523m³

7. Period for which permit is valid or project is scheduled:

Completed; disposal dates 20-24 October 1981

8. Expected frequency of dumping:

3 trips/day

9. Chemical composition of the liquid phase of dredged material as described in the 11 Jan 77 Federal Register which contains the Environmental Protection Agency's final regulations and criteria:

Elutriate (S.D)

PCB	0.16 (0.03)
DDT	< 0.05 (-)
Hg	0.3 (0)
Cd	< 0.1 (-)

10. Bioassays and Bioassessment Evaluations

a. Liquid Phase Bioassay (EC50 or LC50 for each test species) @ 96 hours

<u>Skeletonema costatum</u>	84%
<u>Mysidopsis bahia</u>	>100%
<u>Menidia menidia</u>	>100%

b. Suspended Particulate Phase Bioassay (EC50 or LC50 per test species) @ 96 hours

Acartia tonsa 64%

<u>Mysidopsis bahia</u>	94%
<u>Menidia menidia</u>	>100%

c. Solid Phase Bioassay (% mortality difference with respect to control)

Palaeomonetes 2.0%

<u>Mercenaria mercenaria</u>	1.0%
<u>Nereis sp.</u>	2.0%

(* statistical significance, 95% confidence level)

11. Properties of the dredged material:

a. Solubility: (% water):

b. Density (gm/cc):

c. % sand 5.2 % silt 68.7 % clay 26.1

12. Method of release: Immediate release from bottom opening doors

13. Procedure and site for subsequent barge and hopper washing:
Hoppers flushed at authorized disposal site.

14. Approval dumping site:

a. Geographic position (latitude and longitude):

40°22' N (lat) 73°51' W (long)

b. Depth of water (meters): 20 meters

c. Distance from nearest coast: 9 Km

15. Additional information:

Re-test 10-day Bioaccumulation test data show statistically significant values for Petroleum hydrocarbons in all organisms, and PCB in the worm.

(Exxon Oil Pier 1)
IMCO Dredged Material Ocean Disposal Report
CY 1981

1. Issuing authority:

Division North Atlantic District New York

2. Date issued: November 1981 Permit # 9212 Exxon Oil

3. Country of origin of dredged material or other matter:

United States of America, New York

Port of Loading (activity location): Bayonne, New Jersey
Kill Van Kull - Pier 1

4. General description of dredged material, dredging, and transportation made:

- a. Description: Silty clay,
- b. Mode of dredging: clamshell dredge
- c. Mode of transportation: towed barge

5. Form in which dredged material is presented for disposal:

Slurry-noncohesive character.

6. Material quantity (volume in metric units, cubic meters) of material dumped in the ocean and dates of actual disposal during reporting calendar year.

Pier 1 & 6 together 25,200 cy = 19,267 m³

7. Period for which permit is valid or project is scheduled:

Completed; disposal dates 16-21 December 1981

8. Expected frequency of dumping:

1 trip/day

9. Chemical composition of the liquid phase of dredged material as described in the 11 Jan 77 Federal Register which contains the Environmental Protection Agency's final regulations and criteria:

Pier 1 PCB < 0.1 ug/l (ppb)
Test results DDT < 0.05 ug/l
 Hg < 0.20 ug/l
 Cd < 0.10 ug/l

10. Bioassays and Bioassessment Evaluations

a. Liquid Phase Bioassay (EC50 or LC50 for each test species) @ 96 hrs.

<u>Skeletonema costatum</u>	>100%
<u>Mysidopsis bahia</u>	55%
<u>Menidia menidia</u>	>100%

b. Suspended Particulate Phase Bioassay (EC50 or LC50 per test species) @ 96 hrs.

<u>Acartia tonsa</u>	35%
<u>Mysidopsis bahia</u>	35%
<u>Menidia menidia</u>	>100%

c. Solid Phase Bioassay (% mortality difference with respect to control)

<u>Palaemonetes pugio</u>	-4.0

Negative number indicates greater mortality in control

<u>Mercenaria mercenaria</u>	0.0
<u>Nereis sp.</u>	3.0

(* statistical significance, 95% confidence level)

11. Properties of the dredged material:

a. Solubility: (% water): 70%

b. Density (gm/cc):

c. % sand 10.54 % silt 66.26 % clay 23.20

12. Method of release: Immediate release from bottom opening doors

13. Procedure and site for subsequent barge and hopper washing:
Hoppers flushed at authorized disposal site.

14. Approval dumping site:

a. Geographic position (latitude and longitude):

40°22' N (lat) 73°51' W (long)

b. Depth of water (meters): 20 meters

c. Distance from nearest coast: 9 Km

15. Additional information:

dredging site H₂O chemical analysis:

(S.D.)

PCB 0.1 (0)

2

DDT < 0.05 ppb (-)

Hg < 0.2 ppb (-)

Cd 0.13 (0.06)

(Exxon Oil Pier 6)
IMCO Dredged Material Ocean Disposal Report
CY 1981

1. Issuing authority:

Division North Atlantic

District New York

2. Date issued: November 1981

Permit # 9212 Exxon

3. Country of origin of dredged material or other matter:

United States of America, New York

Port of Loading (activity location): Bayonne, New Jersey

Kill Van Kull - Pier 6

4. General description of dredged material, dredging, and transportation made:

a. Description: Silty clay,

b. Mode of dredging: clamshell dredge

c. Mode of transportation: towed barge

5. Form in which dredged material is presented for disposal:

Slurry-noncohesive character.

6. Material quantity (volume in metric units, cubic meters) of material dumped in the ocean and dates of actual disposal during reporting calendar year.

Pier 1 & 6 together = 25,200 cy = 19,267 m³

7. Period for which permit is valid or project is scheduled:

Completed; disposal dates 16 - 21 December 1981

8. Expected frequency of dumping:

1 trip/day

9. Chemical composition of the liquid phase of dredged material as described in the 11 Jan 77 Federal Register which contains the Environmental Protection Agency's final regulations and criteria:

Pier 6 test data	Site H ₂ O (S.D.)	Elutriate (S.D.)
Petro hydro	<0.1x10 ³ (-)	<0.1x10 ³ (-)
PCB	<0.1 (-)	<0.1 (-)
DDT	<0.05(-)	<0.05(-)
Hg	<0.2(-)	<0.2(-)
Cd	0.13 (0.06)	<0.1(-)

10. Bioassays and Bioassessment Evaluations

a. Liquid Phase Bioassay (EC50 or LC50 for each test species) @ 96 hrs.

<u>Skeletonema costatum</u>	>100%
<u>Mysidopsis bahia</u>	>100%
<u>Menidia menidia</u>	>100%

b. Suspended Particulate Phase Bioassay (EC50 or LC50 per test species) @ 96 hrs.

<u>Acartia tonsa</u>	40%

<u>Mysidopsis bahia</u>	>100%
<u>Menidia menidia</u>	>100%

c. Solid Phase Bioassay (% mortality difference with respect to control)

<u>Palaemonetes pugio</u>	1.0

No statistical significance

<u>Mercenaria mercenaria</u>	3.0
<u>Nereis sp.</u>	4.0

(* statistical significance, 95% confidence level)

11. Properties of the dredged material:

a. Solubility: (% water):

b. Density (gm/cc):

c. % sand 47.2 % silt 39. % clay 13.74

12. Method of release: Immediate release from bottom opening doors

13. Procedure and site for subsequent barge and hopper washing:
Hoppers flushed at authorized disposal site.

14. Approval dumping site:

a. Geographic position (latitude and longitude):

40°22' N (lat) 73°51' W (long)

b. Depth of water (meters): 20 meters

c. Distance from nearest coast: 9 Km

15. Additional information:

Bioaccumulation results: Statistical significance at the 95% confidence level in
Petroleum hydrocarbon for Palaemonetes (1.16), Mercenaria (0.91), Nereis (0.86)

(Amerada Hess)
IMCO Dredged Material Ocean Disposal Report
CY 1981

1. Issuing authority:

Division North Atlantic

District New York

2. Date issued: 15 Oct 1980

Permit # 11618 Amerada Hess

3. Country of origin of dredged material or other matter:

United States of America, New York

Port of Loading (activity location):

Passaic River, NJ

4. General description of dredged material, dredging, and transportation made:

a. Description: Silty clay,

b. Mode of dredging: clamshell dredge

c. Mode of transportation: towed barge

5. Form in which dredged material is presented for disposal:

Slurry-noncohesive character.

6. Material quantity (volume in metric units, cubic meters) of material dumped in the ocean and dates of actual disposal during reporting calendar year.

$$2,000 \text{ yd}^3 = 1,529 \text{ m}^3$$

7. Period for which permit is valid or project is scheduled:

Completed; disposal 3 March 81

8. Expected frequency of dumping:

1 trip/day

9. Chemical composition of the liquid phase of dredged material as described in the 11 Jan 77 Federal Register which contains the Environmental Protection Agency's final regulations and criteria:

N/A (not available)

10. Bioassays and Bioassessment Evaluations

a. Liquid Phase Bioassay (EC50 or LC50 for each test species)

Skeletonema costatum @ 24 hr 75%
Mysidopsis bahia @ 96 hr >100%
Menidia menidia @ 96 hr >100%

b. Suspended Particulate Phase Bioassay (EC50 or LC50 per test species)

Skeletonema costatum 21.5 %
Mysidopsis bahia >100%
Menidia menidia >100%

c. Solid Phase Bioassay (% mortality difference with respect to control)

Mysidopsis bahia 2%
Mercenaria mercenaria 3%
Nereis sp. 0

(* statistical significance, 95% confidence level)

11. Properties of the dredged material:

a. Solubility: (% water): N/A

b. Density (gm/cc): N/A

c. % sand 22.23 % silt 64.70% % clay 13.00

12. Method of release: Immediate release from bottom opening doors

13. Procedure and site for subsequent barge and hopper washing:
Hoppers flushed at authorized disposal site.

14. Approval dumping site:

a. Geographic position (latitude and longitude):

40°22' N (lat) 73°51' W (long)

b. Depth of water (meters): 20 meters

c. Distance from nearest coast: 9 Km

15. Additional information:

(E. I. DuPont)
IMCO Dredged Material Ocean Disposal Report
CY 1981

1. Issuing authority:

Division North Atlantic

District New York

2. Date issued: 24 Oct 1980

Permit # 11471 E.I. DuPont

3. Country of origin of dredged material or other matter:

United States of America, New York

Port of Loading (activity location):

Arthur Kill

4. General description of dredged material, dredging, and transportation made:

a. Description: Silty clay,

b. Mode of dredging: clamshell dredge; Weeks Dredging Co.

c. Mode of transportation: towed barge; 4,000 cy capacity

5. Form in which dredged material is presented for disposal:

Slurry-noncohesive character.

6. Material quantity (volume in metric units, cubic meters) of material dumped in the ocean and dates of actual disposal during reporting calendar year.

$$4,000 \text{ yd}^3 = 3,058 \text{ m}^3$$

7. Period for which permit is valid or project is scheduled:

Complete; disposal date 31 March 1981

8. Expected frequency of dumping:

1 trip

9. Chemical composition of the liquid phase of dredged material as described in the 11 Jan 77 Federal Register which contains the Environmental Protection Agency's final regulations and criteria:

N/A (Not available)

10. Bioassays and Bioassessment Evaluations

a. Liquid Phase Bioassay (EC50 or LC50 for each test species) @ 96 Hrs.

<u>Skeletonema costatum</u>	>100%
<u>Mysidopsis bahia</u>	>100%
<u>Menidia menidia</u>	>100%

b. Suspended Particulate Phase Bioassay (EC50 or LC50 per test species) @ 96 hrs.

<u>Skeletonema costatum</u>	5%
<u>Mysidopsis bahia</u>	>100%
<u>Menidia menidia</u>	>100%

c. Solid Phase Bioassay (% mortality difference with respect to control)

<u>Mysidopsis bahia</u>	-2%	Negative number indicates greater mortality in control than test.
<u>Mercenaria mercenaria</u>	0	
<u>Nereis sp.</u>	-2%	

(* statistical significance, 95% confidence level)

11. Properties of the dredged material:

a. Solubility: (% water): 57%

b. Density (gm/cc):

c. % sand 69.5 % silt 13.4 % clay 17.1

12. Method of release: Immediate release from bottom opening doors

13. Procedure and site for subsequent barge and hopper washing:
Hoppers flushed at authorized disposal site.

14. Approval dumping site:

a. Geographic position (latitude and longitude):

40°22' N (lat) 73°51' W (long)

b. Depth of water (meters): 20 meters

c. Distance from nearest coast: 9 Km

15. Additional information:

(City of Perth Amboy)
IMCO Dredged Material Ocean Disposal Report
CY 1981

1. Issuing authority:

Division North Atlantic

District New York

2. Date issued: 24 October 1980 Permit # 11016 City of Perth Amboy**

3. Country of origin of dredged material or other matter:

United States of America, New York

Port of Loading (activity location):

Arthur Kill

4. General description of dredged material, dredging, and transportation made:

a. Description: Silty clay,

b. Mode of dredging: clamshell dredge; Great Lakes Dredging Co.

c. Mode of transportation: towed barge, 2000 cy capacity

5. Form in which dredged material is presented for disposal:

Slurry-noncohesive character.

6. Material quantity (volume in metric units, cubic meters) of material dumped in the ocean and dates of actual disposal during reporting calendar year.

$$38,800 \text{ yd}^3 = 29,665 \text{ m}^3$$

7. Period for which permit is valid or project is scheduled:

Completed; disposal dates 4 - 11 March 81

8. Expected frequency of dumping:

Average 2 trips/day

9. Chemical composition of the liquid phase of dredged material as described in the 11 Jan 77 Federal Register which contains the Environmental Protection Agency's final regulations and criteria:

	Site Water (S.D.)	Elutriate (S.D.)
Pet. hydro.	$< 0.2 \times 10^3 (-)$	$< 0.2 \times 10^3 (-)$
PCB	$< 0.01 (-)$	$< 0.01 (-)$
DDT	$< 0.05 (-)$	$< 0.05 (-)$
Hg	$< 0.2 (-)$	$< 0.2 (-)$
Cd	$< 0.1 (-)$	$< 0.1 (-)$

10. Bioassays and Bioassessment Evaluations

a. Liquid Phase Bioassay (EC50 or LC50 for each test species)@ 96 hrs

<u>Skeletonema costatum</u>	>100%
<u>Mysidopsis bahia</u>	>100%
<u>Menidia menidia</u>	>100%

b. Suspended Particulate Phase Bioassay (EC50 or LC50 per test species)

<u>Acartia tonsa</u>	>100%

<u>Mysidopsis bahia</u>	>100%
<u>Menidia menidia</u>	>100%

c. Solid Phase Bioassay (% mortality difference with respect to control)

<u>Palaemonetes pugio</u>	0	
	0	Negative number indicates higher
<u>Mercenaria mercenaria</u>	-4%	mortality in control.
<u>Nereis sp.</u>		

(* statistical significance, 95% confidence level)

11. Properties of the dredged material:

a. Solubility: (% water):

b. Density (gm/cc):

c. % sand 22.8 % silt 38.8 % clay 38.4

12. Method of release: Immediate release from bottom opening doors

13. Procedure and site for subsequent barge and hopper washing:
Hoppers flushed at authorized disposal site.

14. Approval dumping site:

a. Geographic position (latitude and longitude):

40°22' N (lat) 73°51'W (long)

b. Depth of water (meters): 20meters

c. Distance from nearest coast: 9 Km

15. Additional information:

The 10 day bioaccumulation test indicated no statistically significant up-take of contaminants at the 95% confidence level.

** Test results from Federal Project #63 (NY/NJ channels; Wards Pt. Bend) were used to establish sediment characteristics in proximity to the City of Perth Amboy dredging project.

(Port Authority of NY/NJ)
IMCO Dredged Material Ocean Disposal Report
CY 1981

1. Issuing authority:

Division North Atlantic District New York

2. Date issued: 6 March 1980 Permit # 9372 Port Authority of NY/NJ

3. Country of origin of dredged material or other matter:

United States of America, New York

Port of Loading (activity location):

Hudson River

4. General description of dredged material, dredging, and transportation made:

a. Description: Silty clay,

b. Mode of dredging: clamshell dredge; Weeks Dredging Co.

c. Mode of transportation: towed barge; 4000 cy capacity

5. Form in which dredged material is presented for disposal:

Slurry-noncohesive character.

6. Material quantity (volume in metric units, cubic meters) of material dumped in the ocean and dates of actual disposal during reporting calendar year.

$$233,200 \text{ yd}^3 = 178,293 \text{ m}^3$$

7. Period for which permit is valid or project is scheduled:

Completed; disposal dates 1 April-10 May 1981

8. Expected frequency of dumping:

10 trips/week

9. Chemical composition of the liquid phase of dredged material as described in the 11 Jan 77 Federal Register which contains the Environmental Protection Agency's final regulations and criteria:

N/A

10. Bioassays and Bioassessment Evaluations

a. Liquid Phase Bioassay (EC50 or LC50 for each test species) @ 96 hrs.

<u>Skeletonema costatum</u>	>100%
<u>Mysidopsis bahia</u>	85%
<u>Menidia menidia</u>	70%

b. Suspended Particulate Phase Bioassay (EC50 or LC50 per test species) @ 96 hrs.

<u>Acartia tonsa</u>	22%
<u>Mysidopsis bahia</u>	72%
<u>Menidia menidia</u>	63%

c. Solid Phase Bioassay (% mortality difference with respect to control)

<u>Mysidopsis bahia</u>	2	Negative number indicates greater mortality in control.
<u>Mercenaria mercenaria</u>	0	
<u>Nereis sp.</u>	-6	

(* statistical significance, 95% confidence level)

11. Properties of the dredged material:

a. Solubility: (% water):

b. Density (gm/cc):

c. % sand 13.6 % silt 66 % clay 20

12. Method of release: Immediate release from bottom opening doors

13. Procedure and site for subsequent barge and hopper washing:
Hoppers flushed at authorized disposal site.

14. Approval dumping site:

a. Geographic position (latitude and longitude):

40°23' N (lat) 73°51' W (long)

b. Depth of water (meters): 20 meters

c. Distance from nearest coast: 9 Km

15. Additional information:

(Circle Line)
IMCO Dredged Material Ocean Disposal Report
CY 1981

1. Issuing authority:

Division North Atlantic District New York

2. Date issued: 18 December 1980 Permit # 11835 Circle Line

3. Country of origin of dredged material or other matter:

United States of America, New York

Port of Loading (activity location):

Hudson River

4. General description of dredged material, dredging, and transportation made:

- a. Description: Silty clay,
 - b. Mode of dredging: clamshell dredge; Great Lakes Dredging Co.
 - c. Mode of transportation: towed barge; 3,600 cy capacity
5. Form in which dredged material is presented for disposal:
Slurry-noncohesive character.
6. Material quantity (volume in metric units, cubic meters) of material dumped in the ocean and dates of actual disposal during reporting calendar year.

131,600 yd³ = 100,614 m³

7. Period for which permit is valid or project is scheduled:

Completed; disposal dates 26 April - 8 May 1981

8. Expected frequency of dumping:

3 trips/day

9. Chemical composition of the liquid phase of dredged material as described in the 11 Jan 77 Federal Register which contains the Environmental Protection Agency's final regulations and criteria:

	Elutriate (S.D.) PPb
Pet. hydro	0.1 (-)
PCB	0.01(-)
DDT	0.05(-)
Hg	0.02(-)
Cd	0.1(-)

10. Bioassays and Bioassessment Evaluations

a. Liquid Phase Bioassay (EC50 or LC50 for each test species) @ 96 hrs

<u>Skeletonema costatum</u>	> 100%
<u>Nysidopsis bahia</u>	> 100%
<u>Menidia menidia</u>	> 100%

b. Suspended Particulate Phase Bioassay (EC50 or LC50 per test species) @ 96 hrs.

Acartia tonsa 25%

Nysidopsis bahia >100%
Menidia menidia >100%

c. Solid Phase Bioassay (% mortality difference with respect to control)

Palaemonetes pugio -0.7 Negative numbers indicate greater mortality in control.

Mercenaria mercenaria 3.0
Nereis sp. -1.6

(* statistical significance, 95% confidence level)

11. Properties of the dredged material:

a. Solubility: (% water):

b. Density (gm/cc):

c. % sand 9.05 % silt 66.15 % clay 24.80

12. Method of release: Immediate release from bottom opening doors

13. Procedure and site for subsequent barge and hopper washing:
Hoppers flushed at authorized disposal site.

14. Approval dumping site:

a. Geographic position (latitude and longitude):

40°22' N (lat) 73°51' W (long)

b. Depth of water (meters): 20 meters

c. Distance from nearest coast: 9 Km

15. Additional information:

The 10 day bioaccumulation test data revealed statistically significant value 1.5 ppm for Petroleum hydrocarbons in the worm (Nereis virens)

(U. S. Naval Air Station, Jacksonville, FL)

IMCO REPORT ON OCEAN DUMPING - CY 81

1. Issuing authority:

Division: South Atlantic

District: Jacksonville

2. Date issued: September 1981.

3. Country of origin of dredged material or other matter: United States.

Port of loading (activity location): St. Johns River, Jacksonville, Florida.

4. General description of dredged material, dredging, and transportation made:

a. Description: Silt, black.

b. Mode of dredging: Crane (floating) and clamshell.

c. Mode of transportation: Scow and tug.

5. Form in which dredged material is presented for disposal: Soupy silt.

6. Material quantity (volume in metric units, cubic meters) of material dumped in the ocean and dates of actual disposal during reporting calendar year: 121,329 cubic meters.

7. Period for which permit is valid or project is scheduled: 1981.

8. Expected frequency of dumping: Daily.

9. Chemical composition of the dredged material as reported in elutriate test concentrations or "bulk" or "total" analyses as appropriate:

a. Elutriate test results:

(1) Nutrients:

NH4-N (mg/l)-----2.36

O-PO4-P (mg/l)-----0.01

(2) Metals: (mg/l)

Pb-----0.7

Mn-----850

Hg-----1.05

Zn-----45

Fe-----16

Cu-----1.5

Ni-----3.4

Se-----<5.0

Ag-----0.3

- (3) Organics:
Oil & Grease (mg/l) - 0.6
PCB (mg/l) - <2

b. Other analyses:

- (1) Metals: None.
(2) Organics: None.
(3) Other: None.

10. Bioassay and bioassessment evaluation:

- a. Liquid phase bioassay:
b. Suspend particular phase bioassay:
c. Solid phase bioassay:

11. Properties of the dredged material:

- a. Solubility (% water):
b. Density (gm/cc):
c. pH:

12. Method of release: Dump scow.

Time to release: Minutes.

13. Procedure and site for subsequent barge and hopper washing: Wash down at work site.

14. Approved dumping site:

- a. Geographical position (latitude and longitude):
30°21'30", 81°18'34"; 30°21'30", 81°17'26"
30°20'30", 81°17'26"; 30°20'30", 81°18'34"
b. Depth of water (meters): 15 meters.
c. Distance (kilometers) from nearest coast: 9 kilometers.

15. Additional information - relevant factors listed in Annex III of the Convention, e.g., toxicity, other biological properties:

(Commodores Point Terminal, Inc.)
IMCO REPORT ON OCEAN DUMPING - CY 81

1. Issuing authority:

Division: South Atlantic

District: Jacksonville

2. Date issued: 16 November 1981.

3. Country of origin of dredged material or other matter: United States.

Port of loading (activity location): Jacksonville Harbor.

4. General description of dredged material, dredging, and transportation made:

a. Description: Silt and mud.

b. Mode of dredging: Clamshell dredging buckets.

c. Mode of transportation: Hopper barge.

5. Form in which dredged material is presented for disposal: Slurry, non-cohesive character.

6. Material quantity (volume in metric units, cubic meters) of material dumped in the ocean and dates of actual disposal during reporting calendar year: (12,000 cubic yards (9230 m³) total)
1981 - 5800 m³
1983 - 3430 m³

7. Period for which permit is valid or project is scheduled: 16 November 1981 to 15 November 1984.

8. Expected frequency of dumping: Twice during permit period.

9. Chemical composition of the dredged material as reported in elutriate test concentrations or "bulk" or "total" analyses as appropriate:

a. Elutriate test results: Analyses as per dredging permit documentation.

(1) Nutrients:

(2) Metals:

(3) Organics:

- b. Other analyses:
 - (1) Metals:
 - (2) Organics:
 - (3) Other:
- 10. Bioassay and bioassessment evaluation:
 - a. Liquid phase bioassay:
 - b. Suspend particular phase bioassay:
 - c. Solid phase bioassay:
- 11. Properties of the dredged material:
 - a. Solubility (% water):
 - b. Density (gm/cc):
 - c. pH:
- 12. Method of release: Dumping from dump scows.
 - Time to release: 17 November 1981 - 1600 hours ESDT
 - 18 November 1981 - 1450 hours ESDT
 - 19 November 1981 - 1130 hours ESDT
 - 1645 hours ESDT
- 13. Procedure and site for subsequent barge and hopper washing: Washing with seawater at dumping site after completion of dumping.
- 14. Approved dumping site:
 - a. Geographical position (latitude and longitude):
30°21'30", 81°18'34"; 30°21'30", 81°17'26"
30°20'30", 81°17'26"; 30°20'30", 81°18'34"
 - b. Depth of water (meters): 15 meters.
 - c. Distance (kilometers) from nearest coast: 9 kilometers.
- 15. Additional information - relevant factors listed in Annex III of the Convention, e.g., toxicity, other biological properties:

SOUTHERN ANALYTICAL LABORATORY

A DIVISION OF TECHNICAL SERVICES, INC.
STOCKTON STREET - P. O. BOX 628
JACKSONVILLE, FLORIDA 32201
AREA 904 / 383-6761



Industria

RESEARCH & DEVELOPMENT
RESEARCH TECHNICAL

Laboratory No. 10,448 Date Received November 11, 1974
Sample of DREDGE MATERIAL
For HARBOR ENGINEERING COMPANY, 1615 Huffingham Lane, Jacksonville, Florida.
Marks: Solids Analysis on 222
Dredge Material from Commodore Point Term

CERTIFICATE OF ANALYSIS OR TESTS

	NATURAL BASIS, ppm	NATURAL BASIS, %	DRY SOLID BASIS %
Total Phosphorus	12	0.0012	0.0093
Total Kjeldahl Nitrogen	1702	0.1702	1.3133
Oxygen Demand, Chemical	30,900	3.090	28.6813
Volatile Solids	26,591	2.6591	20.5177
Percent Moisture		87.04	
Oil and Grease	187	0.1443	0.1443
Mercury,	0.119	0.0000119	0.0000912
Arsenic	0.195	0.0000195	0.000150
Lead	18.00	0.0018	0.0139
Zinc	16.170	0.001617	0.0125
Copper	5.716	0.000572	0.0044
Chromium	5.71	0.000571	0.0044
Cadmium	0.353	0.000035	0.00027
Nickel	3.20	0.00032	0.00247

Respectfully submitted,

SOUTHERN ANALYTICAL LABORATORY

BY

Robert C. Smith, Jr.

SOUTHERN ANALYTICAL LABORATORY

A DIVISION OF TECHNICAL SERVICES, INC.
103 STOCKTON STREET - P. O. BOX 628
JACKSONVILLE, FLORIDA 32201
AREA 904 / 353-5761



Industrial Chemists

ANALYSTS OF INDUSTRIAL MATERIALS
RESEARCH - TECHNICAL REPORTS

Laboratory No. 10,448

November 27, 1974

Sample of DREDGING MATERIAL & RECEIVING WATER

Date Received November 11, 1974

For HARBOR ENGINEERING COMPANY, 1615 Huffingham Lane, Jacksonville, Fla. 3221
ATTN: BILL JONES OR LAKE PAV

Marks: Dredge Material from Commodore Point Term

CERTIFICATE OF ANALYSIS OR TESTS

RECEIVING WATER

STANDARD ELUTRIATE (1:4)

Mercury	0.0002 Mg/l	0.0003 mg/l
Arsenic	< 0.001	0.014
Lead	0.47	0.47
Zinc	0.289	0.578
Copper	0.089	0.107
Chromium	0.04	0.06
Cadmium	0.074	0.081

Respectfully submitted,

SOUTHERN ANALYTICAL LABORATORY

(City of Newport, CA)
IMCO DREDGED MATERIAL OCEAN
DISPOSAL REPORT
CY 1981

1. Issuing authority:

Division: South Pacific

District: Los Angeles

2. Date issued: 10 May 1977

3. Country of origin of dredged material or other matter:
United States of America.

Port of Loading (activity location): Newport Harbor, California.

4. General description of dredged material, dredging, and transportation made:

a. Description: Silt, Sand.

b. Mode of dredging: Suction.

c. Mode of transportation: Barge.

5. Form in which dredged material is presented for disposal: Slurry.

6. Material quantity (volume in metric units, cubic meters) of material
dumped in the ocean and dates of actual disposal during reporting calendar year:

890 cubic meters between 1 January 1981 to 31 December 1981.

7. Period for which permit is valid or project is scheduled:
10 May 1977 to 10 May 1982.

8. Expected frequency of dumping:
Daily during maintenance dredging.

9. Chemical composition of the liquid phase of dredged material as described in the 11 Jan 77 Federal Register which contains the Environmental Protection Agency's final regulations and criteria:

a. Liquid Phase test results: N/A.

b. Other analyses: Heavy metals tested.

10. Bioassay and Bioassessment Evaluations:

a. Liquid Phase Bioassay:

b. Suspend Particulate Phase Bioassay:

c. Solid Phase Bioassay:

} not performed (permit
issued prior to bioassay
implementation).

AD-A119 816 CORPS OF ENGINEERS FORT BELVOIR VA WATER RESOURCES S-ETC F/G 13/2
UNITED STATES OF AMERICA OCEAN DUMPING REPORT FOR CALENDAR YEAR-ETC(01)
JUN 82
UNCLASSIFIED WDC-SR-82-562

COOPS OF ENGINEERS FORT BELVOIR VA WATER RESOURCES S-ETC F/G 13/2
UNITED STATES OF AMERICA OCEAN DUMPING REPORT FOR CALENDAR YEAR-ETC(0)
JUN 82
WASC-2R-82-502

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11. Properties of the dredged material:

- a. Solubility (% water): None Taken.
- b. Density (gm/cc): None Taken.
- c. pH: None Taken.

12. Method of release: Bottom dumped from barge.

13. Procedure and site for subsequent barge and hopper washing:
At approved disposal site.

14. Approved dumping site:

- a. Geographical position (latitude and longitude)
33°-41'-42", 117°-54'-48"
- b. Depth of water (meters): 240 fathoms.
- c. Distance from nearest coast: 3.75 nautical miles.

15. Additional information:

(Portland Harbor (Fore River), ME
IMCO DREDGED MATERIAL OCEAN DISPOSAL REPORT

CY 1981

1. Issuing authority:

Division: New England

District: N/A

2. Date issued: N/A

3. Country of origin of dredged material or other matter: United States of America, Maine

Port of loading (activity location): (Fore River) Portland Harbor, Portland, Maine

4. General description of dredged material, dredging, and transportation made:

a. Description: Dark gray medium, light gray, and black fine sandy organic clay; clay, organic clay, and medium fine sandy clay; organic silt and silty medium fine sand.

b. Mode of dredging: Clamshell - bucket

c. Mode of transportation: Scow

5. Form in which dredged material is presented for disposal: Saturated cohesive clay, noncohesive clay and sand.

6. Material quantity (volume in metric units, cubic meters) of material dumped in the ocean and dates of actual disposal during reporting calendar year:

37,753 m³ - 3 February thru 27 April 1981

7. Period for which permit is valid or project is scheduled: Corps project performed under contract.

8. Expected frequency of dumping: Twice daily, 5 days a week

9. Chemical composition of the liquid phase of dredged material as described in the 11 January 1977 Federal Register which contains the Environmental Protection Agency's final regulations and criteria:

a. Liquid Phase test results: None

(1) Nutrients:

(2) Metals:

(3) Organics:

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b. Other analyses: Bulk sediment

(1) Metals: (mg/kg dry wt.)

Hg	0.31	Pb	66.6	Zn	124.5
As	6.6	Cd	2.9	Cr	54.1
Cu	36.3	Ni	46.7	V	82.5

(2) Organics: (mg/kg)

Oil and Grease	2,213
PCB's	0.15
DDT	0.03

(3) Other: (mg/kg)

COD	83,995.6	TKN	2,171.7
C (Total)	27,150	H	5,350
N	2,450		

10. Bioassay and Bioassessment Evaluations:

a. Liquid Phase Bioassay: No significant effect

b. Suspend Particulate Phase Bioassay: Significant effect on one species only.

c. Solid Phase Bioassay: No significant effect

11. Properties of the dredged material:

a. Solubility (% Water): 18%

b. Density (gm/cc): 0.976

c. pH: 7.3

12. Method of release: Six bottom doors operated hydraulically. Material is released intermittently while scow is held at a complete halt.

13. Procedure and site for subsequent barge and hopper washing: Normally, scows are washed at either the disposal or the dredge site.

14. Approved dumping site:

a. Geographical position(latitude and longitude):

43°34.1'N x 70°1.8'W

b. Depth of water (meters): 50

c. Distance from nearest coast: 14 kilometers

15. Additional Information: This dump site is subject to monitoring studies under the Disposal Area Monitoring System (DAMOS) program. The program is designated to identify and evaluate dump sites. The DAMOS program continually contributes to the development of new monitoring methodologies that reflect on the efficiency of field observations and logistics, as well as time.

This program was designated to comply with Sections 228.9 and 228.10 of the Ocean Dumping Act relative to dump site monitoring and the evaluation of disposal impacts.

Dredged material from this project has been utilized to cap dredged material from various permitted projects in the Portland Harbor area. Chemical analysis of the sediment from these nearby non-Federal projects indicated that it was similar in nature to the Corps project material which underwent bioassay testing. In this regard, it was determined that no further testing of the projects would be necessary provided that the material be capped by that from the Federal project. Disposal of dredged material at this site will be monitored under the DAMOS program.

(Island End River, Chelsea, MA)
IMCO DREDGED MATERIAL OCEAN DISPOSAL REPORT

CY 1981

1. Issuing authority:

Division: New England

District: N/A

2. Date issued: N/A

3. Country of origin of dredged material or other matter: United States of America, Massachusetts

Port of loading (activity location): Island End River, Chelsea, Massachusetts

4. General description of dredged material, dredging, and transportation made:

a. Description: Primarily organic silt, with some fine sands, and silty clay.

b. Mode of dredging: Clamshell - bucket

c. Mode of transportation: Scow

5. Form in which dredged material is presented for disposal: Saturated cohesive and non-cohesive material.

6. Material quantity (volume in metric units, cubic meters) of material dumped in the ocean and dates of actual disposal during reporting calendar year:

34,972 m³ - 23 November thru 31 December 1981
Disposal continued into 1982

7. Period for which permit is valid or project is scheduled: Corps project performed under contract.

8. Expected frequency of dumping: Twice daily, seven days per week

9. Chemical composition of the liquid phase of dredged material as described in the 11 January 1977 Federal Register which contains the Environmental Protection Agency's final regulations and criteria:

a. Liquid Phase test results: Standard Elutriate

	<u>Replicate 1</u>	<u>Replicate 2</u>	<u>Replicate 3</u>
(1) Nutrients:			
Nitrite (N) mg/l	0.010	0.010	0.009

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(1) Nutrients (cont'd):

Nitrate (N) mg/l	0.10	0.09	0.09
Sulfate (SO ₄) mg/l	2420	2300	2320
Phosphorus (P)			
Ortho mg/l	0.060	0.060	0.061
Total mg/l	0.131	0.129	0.129

(2) Metals: mg/l

H	<0.0005	<0.0005	<0.005
Pb	0.051	0.049	0.048
Zn	0.35	0.35	0.35
As	0.006	0.006	0.006
Cd	0.002	0.002	0.002
Cr	0.09	0.10	0.117
Cu	0.18	0.15	0.16
Ni	0.13	0.12	0.11
V	0.20	0.21	0.20

(3) Organics:

Oil & Grease mg/l	<7	<7	26
Total DDT mg/l	<0.1	<0.1	<0.1
Total PCB mg/l	26	12	13

b. Other analyses: Bulk Sediment Analysis

	<u>Station 1</u>	<u>Station 2</u>	<u>Station 3</u>
(1) Metals: mg/kg			
Hg	0.74	0.66	1.06
Pb	214	390	111
Zn	320	323	449
As	19	14	42
Cd	6.5	6.2	11.0
Cr	110	63	87
Cu	172	150	239
Ni	58	51	75
V	1,300	670	550
(2) Organics:			
Oil & Grease mg/kg	11,810	22,020	67,960
Nitrogen TKN mg/kg	18,600	16,200	13,900
COD mg/kg	321,000	308,000	497,000

(3) Other:

Liquid Limit	57	101	91
Plastic Limit	25	39	34
Plastic Index	32	62	57
Grain Size - % Fine	62.5	71.5	87.5
% Solids	32.2	43.2	41.7
Moisture Content	68.98	155.01	153.78

10. Bioassay and Bioassessment Evaluations:

- a. Liquid Phase Bioassay: No significant effect
- b. Suspend Particulate Phase Bioassay: No significant effect
- c. Solid Phase Bioassay: No significant effect

11. Properties of the dredged material:

- a. Solubility (% Water): 67.8 56.8 58.3
- b. Density (gm/cc):
- c. pH: 6.7 7.14 7.12

12. Method of release: Six bottom doors operated hydraulically. Material is released intermittently while scow is held at a complete halt.

13. Procedure and site for subsequent barge and hopper washing: Normally, scows are washed at either the disposal or the dump site.

14. Approved dumping site:

- a. Geographical position (latitude and longitude):

42°25.9'N x 70°34.9'W

- b. Depth of water (meters): 77

- c. Distance from nearest coast: 18.3 kilometers

15. Additional Information: The bioassay test on Island End River sediment samples were repeated due to questions that arose from the results of the first test. The second test revealed no statistically significant mortalities between the project samples and the receiving water samples.

This dump site is subject to monitoring studies under the Disposal Area Monitoring System (DAMOS) program. The program is designed to identify and evaluate impacts resulting from the disposal of dredged materials at designated dump sites. The DAMOS program continually contributes to the development of new monitoring methodologies that reflect on the efficiency of field observations and logistics, as well as time.

This program was designed to comply with Sections 228.9 and 228.10 of the Ocean Dumping Act relative to dump site monitoring and the evaluation of disposal impacts.

(East River, NY)
IMCO Dredged Material Ocean Disposal Report
CY 1981

1. Issuing authority:

Division North Atlantic

District New York

2. Date issued: Adopted 1915

Permit # Federal Project #37 East River

3. Country of origin of dredged material or other matter:

United States of America, New York

Port of Loading (activity location):

South Brother Island Channel, East River

4. General description of dredged material, dredging, and transportation made:

a. Description: Silty clay,

b. Mode of dredging: clamshell dredge; 13 cy, #500,506

c. Mode of transportation: towed barge; dump scow

5. Form in which dredged material is presented for disposal:

Slurry-noncohesive character.

6. Material quantity (volume in metric units, cubic meters) of material dumped in the ocean and dates of actual disposal during reporting calendar year.

420,830 cy=321,746 m³

7. Period for which permit is valid or project is scheduled:

Completed; disposal dates 22 Dec 80-19 March 81

8. Expected frequency of dumping:

2 trips/day

9. Chemical composition of the liquid phase of dredged material as described in the 11 Jan 77 Federal Register which contains the Environmental Protection Agency's final regulations and criteria:

	Elutriate (S.D.)
PCB	0.46 (0.22)
DDT	<0.05 (0)
Hg	0.8 (0.2)
Cd	1.5 (0)

10. Bioassays and Bioassessment Evaluations

a. Liquid Phase Bioassay (EC50 or LC50 for each test species)@ 96 hrs.

<u>Skeletonema costatum</u>	>100%
<u>Mysidopsis bahia</u>	>100%
<u>Menidia menidia</u>	99.5%

b. Suspended Particulate Phase Bioassay (EC50 or LC50 per test species)@ 96 hrs

<u>Acartia tonsa</u>	15.75%

<u>Mysidopsis bahia</u>	>100%
<u>Menidia menidia</u>	>100%

c. Solid Phase Bioassay (% mortality difference with respect to control)

<u>Mysidopsis bahia</u>	0
<u>Mercenaria mercenaria</u>	2.6%
<u>Nereis sp.</u>	0

(* statistical significance, 95% confidence level)

11. Properties of the dredged material:

a. Solubility: (% water):

b. Density (gm/cc):

c. % sand	47.0	% silt	20.1	% clay	32.9

12. Method of release: Immediate release from bottom opening doors

13. Procedure and site for subsequent barge and hopper washing:
Hoppers flushed at authorized disposal site.

14. Approval dumping site:

a. Geographic position (latitude and longitude):

40°22' N (lat) 73°51'W (long)

b. Depth of water (meters): 20meters

c. Distance from nearest coast: 9 Km

15. Additional information:

The 10 day bioaccumulation showed no statistically significant values

(Jamaica Bay, NY)
IMCO Dredged Material Ocean Disposal Report
CY 1981

1. Issuing authority:

Division North Atlantic

District New York

2. Date issued: Adopted 1910

Permit # Federal Project #30 Jamaica Bay

3. Country of origin of dredged material or other matter:

United States of America, New York

Port of Loading (activity location):

Rockaway Inlet

4. General description of dredged material, dredging, and transportation made:

a. Description: Silty clay,

b. Mode of dredging: clamshell dredge; 18cy

c. Mode of transportation: towed barge

5. Form in which dredged material is presented for disposal:

Slurry-noncohesive character.

6. Material quantity (volume in metric units, cubic meters) of material dumped in the ocean and dates of actual disposal during reporting calendar year.

Rock, gravel & sand
159,270 cy = 121,769 m³

7. Period for which permit is valid or project is scheduled:

Completed; disposal dates 20 Jan 81-2 June 81

8. Expected frequency of dumping:

1 trip/day

9. Chemical composition of the liquid phase of dredged material as described in the 11 Jan 77 Federal Register which contains the Environmental Protection Agency's final regulations and criteria:

N/A

10. Bioassays and Bioassessment Evaluations N/A

a. Liquid Phase Bioassay (EC50 or LC50 for each test species)

Skeletonema costatum

Mysidopsis bahia

Menidia menidia

b. Suspended Particulate Phase Bioassay (EC50 or LC50 per test species)

Skeletonema costatum

Mysidopsis bahia

Menidia menidia

c. Solid Phase Bioassay (% mortality difference with respect to control)

Mysidopsis bahia

Mercenaria mercenaria

Nereis sp.

(* statistical significance, 95% confidence level)

11. Properties of the dredged material:

a. Solubility: (% water):

b. Density (gm/cc):

c. % sand 99, plus rock gravel % silt

% clay

12. Method of release: Immediate release from bottom opening doors

13. Procedure and site for subsequent barge and hopper washing:
Hoppers flushed at authorized disposal site.

14. Approval dumping site:

a. Geographic position (latitude and longitude):

40°22' N (lat) 73°51' W (long)

b. Depth of water (meters): 20meters

c. Distance from nearest coast: 9 Km

15. Additional information:

(Mamaroneck Harbor, NY)
IMCO Dredged Material Ocean Disposal Report
CY 1981

1. Issuing authority:

Division North Atlantic

District New York

2. Date issued: Adopted 1922

Permit # Federal Project #2
Mamaroneck Harbor

3. Country of origin of dredged material or other matter:

United States of America, New York

Port of Loading (activity location):

West Basin and channel

4. General description of dredged material, dredging, and transportation made:

a. Description: Silty clay,

b. Mode of dredging: clamshell dredge; 7cy #24

c. Mode of transportation: towed barge

5. Form in which dredged material is presented for disposal:

Slurry-noncohesive character.

6. Material quantity (volume in metric units, cubic meters) of material dumped in the ocean and dates of actual disposal during reporting calendar year.

19,361 cy=14,802 m³

7. Period for which permit is valid or project is scheduled:

Completed; disposal dates 7 April-2 May 1981

8. Expected frequency of dumping:

1 trip/day

9. Chemical composition of the liquid phase of dredged material as described in the 11 Jan 77 Federal Register which contains the Environmental Protection Agency's final regulations and criteria:

PCB <50 PPb

DDT <0.05 PPb

Hg <0.20 PPb

Cd 0.57 (.04)

10. Bioassays and Bioassessment Evaluations

a. Liquid Phase Bioassay (EC50 or LC50 for each test species) @ 96 hrs.

<u>Skeletonema costatum</u>	50%
<u>Mysidopsis bahia</u>	>100%
<u>Menidia menidia</u>	90%

b. Suspended Particulate Phase Bioassay (EC50 or LC50 per test species) @ 96 hrs

<u>Acartia tonsa</u>	>100%
<u>Mysidopsis bahia</u>	>100%
<u>Menidia menidia</u>	>100%

c. Solid Phase Bioassay (% mortality difference with respect to control)

<u>Palaemonetes</u>	2%	Negative number indicates greater mortality in control
<u>Mercenaria mercenaria</u>	-2%	
<u>Nereis sp.</u>	-6%	

(* statistical significance, 95% confidence level)

11. Properties of the dredged material:

a. Solubility: (% water):

b. Density (gm/cc):

c. % sand 27.2 % silt 46.4 % clay 26.4

12. Method of release: Immediate release from bottom opening doors

13. Procedure and site for subsequent barge and hopper washing:
Hoppers flushed at authorized disposal site.

14. Approval dumping site:

a. Geographic position (latitude and longitude):

40°22' N (lat) 73°51' W (long)

b. Depth of water (meters): 20meters

c. Distance from nearest coast: 9 Km

15. Additional information:

No statistical significance in 10 day bioaccumulation test.

(NY/NJ Channels - Kill Van Kull)
IMCO Dredged Material Ocean Disposal Report
CY 1981

1. Issuing authority:

Division North Atlantic

District New York

2. Date issued: Adopted 1933 Permit # Federal Project #63 - NY/NJ channels
Kill Van Kull

3. Country of origin of dredged material or other matter:

United States of America, New York

Port of Loading (activity location):

Kill Van Kull

4. General description of dredged material, dredging, and transportation made:

a. Description: Silty clay,

b. Mode of dredging: Hopper dredge

c. Mode of transportation: Goethals

5. Form in which dredged material is presented for disposal:

Slurry-noncohesive character.

6. Material quantity (volume in metric units, cubic meters) of material dumped in the ocean and dates of actual disposal during reporting calendar year.

386,263 cy=295,317 m³

7. Period for which permit is valid or project is scheduled:

Completed; disposal dates 26 June 81-21 Aug 81

8. Expected frequency of dumping:

2.47 trips/day

9. Chemical composition of the liquid phase of dredged material as described in the 11 Jan 77 Federal Register which contains the Environmental Protection Agency's final regulations and criteria:

Elutriate (S.D.)

PCB	<0.10 (-)
DDT	<0.05 (-)
Hg	0.33 (.12)
Cd	0.5 (0)

10. Bioassays and Bioassessment Evaluations

a. Liquid Phase Bioassay (EC50 or LC50 for each test species) @ 96 hrs.

Skeletonema costatum 56% @ 4 hrs.
Mysidopsis bahia >100%
Menidia menidia >100%

b. Suspended Particulate Phase Bioassay (EC50 or LC50 per test species) @ 96 hrs.

Acartia tonsa 50% @ 24 hrs.

Mysidopsis bahia 60.5% @ 24 hrs.
Menidia menidia 51.9% @ 72 hrs.

c. Solid Phase Bioassay (% mortality difference with respect to control)

Palaemonetes -6% Negative number indicates greater mortality in control.

Mercenaria mercenaria -1%
Nereis sp. -5%

(* statistical significance, 95% confidence level)

11. Properties of the dredged material:

a. Solubility: (% water):

b. Density (gm/cc):

c. % sand 81.6 % silt 5.8 % clay 12.6

12. Method of release: Immediate release from bottom opening doors

13. Procedure and site for subsequent barge and hopper washing:
Hoppers flushed at authorized disposal site.

14. Approval dumping site:

a. Geographic position (latitude and longitude):

40°22' N (lat) 73°51'W (long)

b. Depth of water (meters): 20meters

c. Distance from nearest coast: 9 Km

15. Additional information:

Nov 1979 - 10 day Bioaccumulation test data indicates no statistical significance.

(NY/NJ Channels - Wards Point)
IMCO Dredged Material Ocean Disposal Report
CY 1981

1. Issuing authority:

Division North Atlantic

District New York

2. Date issued: Adopted 1933

Permit # Federal Project #63
NY/NJ channel.

3. Country of origin of dredged material or other matter:

United States of America, New York

Port of Loading (activity location):

Wards Point Bend

4. General description of dredged material, dredging, and transportation made:

a. Description: Silty clay,

b. Mode of dredging: Hopper dredge; Corps vessel

c. Mode of transportation: Goethals dredge

5. Form in which dredged material is presented for disposal:

Slurry-noncohesive character.

6. Material quantity (volume in metric units, cubic meters) of material dumped in the ocean and dates of actual disposal during reporting calendar year.

221,425 cy = 169,290 m³

7. Period for which permit is valid or project is scheduled:

completed; disposal dates 20 Aug-1 Sep 81

8. Expected frequency of dumping:

2.57 trips/day

9. Chemical composition of the liquid phase of dredged material as described in the 11 Jan 77 Federal Register which contains the Environmental Protection Agency's final regulations and criteria:

PCB ≤ 0.01 (-)

DDT ≤ 0.05 (-)

Hg ≤ 0.2 (-)

Cd ≤ 0.1 (-)

10. Bioassays and Bioassessment Evaluations

a. Liquid Phase Bioassay (EC50 or LC50 for each test species) @ 96 hrs.

Skeletonema costatum >100%
Mysidopsis bahia >100%
Menidia menidia >100%

b. Suspended Particulate Phase Bioassay (EC50 or LC50 per test species) @ 96 hrs.

Acartia tonsa >100%
Mysidopsis bahia >100%
Menidia menidia >100%

c. Solid Phase Bioassay (% mortality difference with respect to control)

Palaeomonetes 0 Negative number indicates greater mortality in control.
Mercenaria mercenaria 0
Nereis sp. -4%

(* statistical significance, 95% confidence level)

11. Properties of the dredged material:

a. Solubility: (% water):

b. Density (gm/cc):

c. % sand 22.8 % silt 38.8 % clay 38.4

12. Method of release: Immediate release from bottom opening doors

13. Procedure and site for subsequent barge and hopper washing:
Hoppers flushed at authorized disposal site.

14. Approval dumping site:

a. Geographic position (latitude and longitude):

40°22' N (lat) 73°51' W (long)

b. Depth of water (meters): 20 meters

c. Distance from nearest coast: 9 Km

15. Additional information:

The 10 day bioaccumulation test data showed no statistical significant values.

(Buttermilk Channel, NY)
IMCO Dredged Material Ocean Disposal Report
CY 1981

1. Issuing authority:

Division North Atlantic

District New York

2. Date issued: Adopted 1902

Permit # Federal Project #36

3. Country of origin of dredged material or other matter:

United States of America, New York

Port of Loading (activity location):

Buttermilk Channel

4. General description of dredged material, dredging, and transportation made:

a. Description: Silty clay,

b. Mode of dredging: Hopper dredge

c. Mode of transportation: Goethals hopper dredge

5. Form in which dredged material is presented for disposal:

Slurry-noncohesive character.

6. Material quantity (volume in metric units, cubic meters) of material dumped in the ocean and dates of actual disposal during reporting calendar year.

88,207cy=67,439 m³

7. Period for which permit is valid or project is scheduled:

Completed; disposal dates 31 Oct - 10 Nov 81

8. Expected frequency of dumping:

3.22 trip/day

9. Chemical composition of the liquid phase of dredged material as described in the 11 Jan 77 Federal Register which contains the Environmental Protection Agency's final regulations and criteria:

	Elutriate (S.D.)
PCB	< 0.01 (-)
DDT	< 0.05 (-)
Hg	< 0.2 (-)
Cd	< 0.1 (-)

10. Bioassays and Bioassessment Evaluations

a. Liquid Phase Bioassay (EC50 or LC50 for each test species) @96 hrs

Skeletonema costatum >100%
Mysidopsis bahia >100%
Menidia menidia >100%

b. Suspended Particulate Phase Bioassay (EC50 or LC50 per test species) @96 hrs

Acartia tonsa 45%
Mysidopsis bahia >100%
Menidia menidia >100%

c. Solid Phase Bioassay (% mortality difference with respect to control)

Palaemonetes 2.0%
Mercenaria mercenaria 1.0%
Nereis sp. 4.0%

(* statistical significance, 95% confidence level)

11. Properties of the dredged material:

a. Solubility: (% water):

b. Density (gm/cc):

c. % sand 64.3 % silt 20.3 % clay 15.4

12. Method of release: Immediate release from bottom opening doors

13. Procedure and site for subsequent barge and hopper washing:
Hoppers flushed at authorized disposal site.

14. Approval dumping site:

a. Geographic position (latitude and longitude):

40°22' N (lat) 73°51' W (long)

b. Depth of water (meters): 20 meters

c. Distance from nearest coast: 9 Km

15. Additional information:

The 10 day bioaccumulation test data show statistically significant value for petroleum hydrocarbons in all test organisms and for PCB in Nereis.

(Bay Ridge & Red Hook Channel, NY)
IMCO Dredged Material Ocean Disposal Report
CY 1981

1. Issuing authority:

Division North Atlantic

District New York

2. Date issued: Adopted 1899

Permit # Federal Project #34
Bay Ridge & Red Hook Channel

3. Country of origin of dredged material or other matter:

United States of America, New York

Port of Loading (activity location):

Bay Ridge & Red Hook Channels, NY

4. General description of dredged material, dredging, and transportation made:

a. Description: Silty clay,

b. Mode of dredging: Hopper dredge

c. Mode of transportation: Goethals hopper dredge

5. Form in which dredged material is presented for disposal:

Slurry-noncohesive character.

6. Material quantity (volume in metric units, cubic meters) of material dumped in the ocean and dates of actual disposal during reporting calendar year.

220,583cy=168,646 m³

7. Period for which permit is valid or project is scheduled:

Completed; disposal dates 1- 24 Nov 81

8. Expected frequency of dumping:

2.94 trips/day

9. Chemical composition of the liquid phase of dredged material as described in the 11 Jan 77 Federal Register which contains the Environmental Protection Agency's final regulations and criteria:

	Elutriate (S.D)
PCB	0.20 (0.03)
DDT	<0.05 (-)
Hg	<0.20 (-)
Cd	< 0.10 (-)

10. Bioassays and Bioassessment Evaluations

a. Liquid Phase Bioassay (EC50 or LC50 for each test species) @96 hrs.

<u>Skeletonema costatum</u>	23%
<u>Mysidopsis bahia</u>	>100%
<u>Menidia menidia</u>	>100%

b. Suspended Particulate Phase Bioassay (EC50 or LC50 per test species) @96 hrs

<u>Skeletonema costatum</u>	30%
<u>Mysidopsis bahia</u>	66%
<u>Menidia menidia</u>	72%

c. Solid Phase Bioassay (% mortality difference with respect to control)

<u>Palaemonetes</u>	3.6%	Negative number indicates greater mortality in control.
<u>Mercenaria mercenaria</u>	0.9%	
<u>Nereis sp.</u>	-3.4%	

(* statistical significance, 95% confidence level)

11. Properties of the dredged material:

a. Solubility: (% water):

b. Density (gm/cc):

c. % sand 50.5 % silt 32.0 % clay 17.5

12. Method of release: Immediate release from bottom opening doors

13. Procedure and site for subsequent barge and hopper washing:
Hoppers flushed at authorized disposal site.

14. Approval dumping site:

a. Geographic position (latitude and longitude):

40°22' N (lat) 73°51' W (long)

b. Depth of water (meters): 20meters

c. Distance from nearest coast: 9 Km

15. Additional information:

The 10 day Bioaccumulation test data show statistically significant values for Petroleum hydrocarbons in the worm.

(Chincoteague Inlet, VA)
IMCO Report ER 1145-2-308

CY 1981 - Chincoteague Inlet

1. North Atlantic Division, Norfolk District.
2. 1 March 1982.
3. United States of America, Virginia
Port of Loading: Chincoteague, Virginia.
4. a. Description: Fine to medium sand.
b. Mode of dredging: Trailing hopper dredge CURRITUCK.
c. Mode of transport: Hopper dredge.
5. Slurry - noncohesive sand.
6. Quantity
21,219 cubic meters.
29 Jan - 19 Mar 1981.
7. Project: 60 days.
8. Dumping frequency:
4 times daily.
9. Unknown - material is clean sand.
10. NA
11. Properties of material:
 - a. Unknown.
 - b. Unknown.
 - c. Unknown.
12. Method of release: Immediate, bottom dump.
13. Flushing: Split hull hopper, washes out at moment of dump.
14. Dumping site:
 - a. 37°52'00"N 75°24'-0"W
 - b. 3.7 meters
 - c. 0.8 km
15. NA

(Thimble Shoal Channel, VA)
IMCO REPORT ER 1145-2-308

CY 1981 - Thimble Shoal Channel

1. North Atlantic Division, Norfolk District
2. 2 March 1982.
3. United States of America, Virginia
Port of Loading: Thimble Shoal Channel, Norfolk Harbor
4. a. Description: silt and fine sand, noncohesive
b. Mode of dredging: Trailing hopper dredge "PARDE ISLAND".
c. Mode of transportation: Hopper dredge
5. Slurry - noncohesive silt and fine sand
6. Quantity:
625,649 cubic meters
29 Sep. thru 10 Dec. 81
7. Project: 85 days
8. Dumping frequency: 3 times daily
9. Unknown
10. Unknown - see Norfolk Disposal Area EIS
11. Properties of the dredged material
 - a. 60% H₂O
 - b. 1.81 gm/cc
 - c. Unknown
12. Method of release: Immediate, bottom dump
13. Procedure for flushing: Split hull hopper, washes out at moment of dump.
14. Dumping sites:

(30,584 cm)	(595,065 cm)
a. 36° 54' N 75° 38' W b. 21 meters c. 24 km	a. 36° 50' 05" N 75° 54' 19" W b. 11 meters c. 15 km
15. N/A

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(Morehead City Harbor, NC)
IMCO DREDGED MATERIAL OCEAN DISPOSAL REPORT
CY 1981

1. Issuing Authority:

Division: South Atlantic

District: Wilmington

2. Date issued: Not applicable

3. Country of origin of dredged material or other matter:

United States of America, North Carolina

Port of Loading: Morehead City, N.C.

4. General description of dredged material, dredging, and transportation made:

a. Description: Noncohesive sand to cohesive muds

b. Mode of dredging: Trailing hopper dredge DODGE ISLAND

c. Mode of transportation: Hopper dredge

5. Form in which dredged material is presented for disposal:

Slurry

6. Material quantity of material dumped in the ocean and dates of actual disposal during reporting calendar year:

615,292 cu. meters

1 Feb - 6 Apr 81

7. Period for which permit is valid or project is scheduled:

30 days

8. Expected frequency of dumping:

7 dumps per day, 7 days per week

9. Chemical composition of the liquid phase of dredged material:

a. Liquid Phase Test results:

(1) Nutrients:

(2) Metals: Data not available

(3) Organics:

PRECEDING PAGE

- b. Other analyses:
 - (1) Metals:
 - (2) Organics: Data not available
 - (3) Other:
- 10. Bioassay and Bioassessment Evaluations:
 - a. Liquid Phase: Limiting Permissible Concentration (LPC) not exceeded
 - b. Suspended Particulate Phase: LPC not exceeded
 - c. Solid Phase: LPC not exceeded
- 11. Properties of the dredged material:
 - a. Solubility (% water): 40%
 - b. Density (gm/cc): 1.90
 - c. pH: Unavailable
- 12. Method of release:

Immediate release from bottom opening doors
- 13. Procedure and site for subsequent barge and hopper washing:

Hoppers flushed at authorized disposal site
- 14. Approved dumping site:
 - a. Geographical position: 34°39'45"N 76°42'W
 - b. Depth of water: 15 meters
- 15. c. Distance from nearest coast: 4.8 Kilometers

(Wilmington Harbor, NC)
IMCO DREDGED MATERIAL OCEAN DISPOSAL REPORT
CY 1981

1. Issuing Authority:

Division: South Atlantic

District: Wilmington

2. Date issued: Not applicable

3. Country of origin of dredged material or other matter:

United States of America, North Carolina

Port of Loading: Wilmington

4. General description of dredged material, dredging, and transportation made:

a. Description: Noncohesive sand to cohesive muds

b. Mode of dredging: Trailing hopper dredge ATCHAFALAYA

c. Mode of transportation: Hopper dredge

5. Form in which dredged material is presented for disposal:

Slurry

6. Material quantity of material dumped in the ocean and dates of actual disposal during reporting calendar year:

288,210 cu. meters

1 Jan - 11 Mar 81

7. Period for which permit is valid or project is scheduled:

180 days

8. Expected frequency of dumping:

6 dumps per day, 6 days per week

9. Chemical composition of the liquid phase of dredged material:

a. Liquid Phase Test results:

(1) Nutrients:

(2) Metals: Data not available

(3) Organics:

- b. Other analyses:
 - (1) Metals:
 - (2) Organics: Data not available
 - (3) Other:
- 10. Bioassay and Bioassessment Evaluations:
 - a. Liquid Phase: Limiting Permissible Concentration (LPC) not exceeded
 - b. Suspended Particulate Phase: LPC not exceeded
 - c. Solid Phase: LPC not exceeded
- 11. Properties of the dredged material:
 - a. Solubility (% water): 55%
 - b. Density (gm/cc): 1.500
 - c. pH: Unavailable
- 12. Method of release:

Immediate release from bottom opening doors
- 13. Procedure and site for subsequent barge and hopper washing:

Hoppers flushed at authorized disposal site
- 14. Approved dumping site:
 - a. Geographical position: 33°48'N 78°02'W
 - b. Depth of water: 13 meters
 - c. Distance from nearest coast: 4.8 kilometers
- 15. Additional information:

(Charleston Harbor, SC)
IMCO DREDGED MATERIAL OCEAN DISPOSAL REPORT
CY 1981

1. Issuing Authority:

Division - South Atlantic

District - Charleston, SC
2. Date Issued: 16 February 1982
3. Country of Origin: United States of America, South Carolina
Port of Loading: Charleston, SC
4. General Description:
 - a. Description: Silty clay with sand and shell
 - b. Dredging Mode: Hopper Dredge
 - c. Transporting Mode: Hopper Dredge (DODGE ISLAND)
5. Material Disposal Form: Slurry, non-cohesive
6. Quantity and Dates: 187,070 Cubic Meters
7 April - 10 May 81
7. Period of Permit or Schedule: Not Applicable
8. Frequency of Dumping: Average 11 loads daily, seven days per week.
9. Chemical Composition (Liquid Phase): See attached.
 - a. Liquid Phase Tests -
 - b. Other Analyses -
10. Bioassay and Evaluations: See attached.
 - a. Liquid Phase -
 - b. Suspended Particulate Phase -
 - c. Solid Phase -
11. Properties: See attached.
 - a. Solubility -
 - b. Density -
 - c. ph -
12. Method of Release: Immediate release from bottom opening doors.

13. Procedure and Site for Barge or Hopper Washing: Hoppers flushed at approved dumping site.
14. Approved Dumping Site:
 - a. Geographical Position (latitude and longitude) - See attached.
 - b. Depth of Water (meters) - 10 Meters
 - c. Distance to Nearest Coast - 8.5 kilometers
15. Additional Information: NONE

Approved Dumping Site

Charleston Harbor

Geographical Position

Lat. 32°40'42"N Lat. 32°38'06"N
Long 79°47'30"W Long 79°41'57"W

Lat 32°39'04"N Lat. 32°36'28"N
Long 79°49'21"W Long 79°43'48"W

(Savannah Harbor, GA)
IMCO Report on Ocean Dumping - CY 81

1. Issuing authority:

Division South Atlantic District Savannah

2. Date Issued: January 1981

3. Country of origin of dredged material or other matter:

United States of America, Georgia

Port of Loading (activity location): Savannah Harbor

4. General description of dredged material, dredging, and transportation made.

a. Description: Sand, silt

b. Mode of dredging: Trailing Hopper Dredge "McFarland"

c. Mode of transportation: Hopper Dredge

5. Form in which dredged material is presented for disposal:

Slurry, sand

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6. Material quantity (volume in metric units, cubic meters) of material dumped in the ocean and dates of actual disposal during reporting calendar year:

271,384 meters³

7. Period for which permit is valid or project is scheduled:

November and December 1981 (2 months)

8. Expected frequency of dumping:

6 loads/day - 7 days/wk

9. Chemical composition of the liquid phase of dredged material as described in the 11 Jan 77 Federal Register which contains the Environmental Protection Agency's final regulations and criteria:
- a. Liquid Phase Test Results: not required
 - b. Other Analysis: not required
10. Bioassay and Bioassessment Evaluations:
- a. Liquid Phase Bioassay: not required
 - b. Suspend Particulate Phase Bioassay: not required
 - c. Solid Phase Bioassay: not required
11. Properties of the dredged material:
- a. Solubility (% water): not required
 - b. Density (gm/cc): 1.600 gm/cc
 - c. PH: not required
12. Method of release: Bottom Release
13. Procedure and Site for Subsequent barge and hopper washing: At site
14. Approved dumping site:
- a. Geographical position (latitude and longitude):
31° 57' N 80° 46' W
 - b. Depth of water (meters): 8.4 - 12.8 m
 - c. Distance from nearest coast: 8.5 mi 13.5 km
15. Additional information:

(Fernandina Harbor, FL)
IMCO REPORT ON OCEAN DUMPING - CY 81

1. Issuing authority:

Division: South Atlantic

District: Jacksonville

2. Date issued: May 1981.

3. Country of origin of dredged material or other matter: United States.

Port of loading (activity location): Fernandina Harbor, Florida.

4. General description of dredged material, dredging, and transportation made:

a. Description: Gray and black organic - silty and clay sizes.

b. Mode of dredging: Hopper dredge - suction.

c. Mode of transportation: Hopper dredge.

5. Form in which dredged material is presented for disposal: Slurry, non-cohesive.

6. Material quantity (volume in metric units, cubic meters) of material dumped in the ocean and dates of actual disposal during reporting calendar year: 389,502 cubic meters, 5 May - 9 July 1981.

7. Period for which permit is valid or project is scheduled: May - July 1981.

8. Expected frequency of dumping: Daily.

9. Chemical composition of the dredged material as reported in elutriate test concentrations or "bulk" or "total" analyses as appropriate:

a. Elutriate test results:

(1) Nutrients:	Range
NH4-N (mg/l)-----	0.25 - 0.26
Ortho-P (mg/l)-----	0.04 - 0.08
(2) Metals: (mg/l)	Range
Hg-----	<0.0001
Mn-----	0.0008 - 0.0080
Pb-----	<0.0002
Zn-----	0.035 - 0.061
Fe-----	0.0080 - 0.0180
Se-----	<0.0002 - 0.0004
Cd-----	0.155 - 0.325
Cu-----	0.0003 - 0.0004
Ag-----	<0.0002
Ni-----	0.0238-0.0450

- (3) Organics:
Oil & Grease - 0.2 - 0.6
PCB - None Detected
- b. Other analyses: None.
- (1) Metals:
- (2) Organics:
- (3) Other:
10. Bioassay and bioassessment evaluation: Attached.
- a. Liquid phase bioassay:
- b. Suspend particular phase bioassay:
- c. Solid phase bioassay:
11. Properties of the dredged material:
- a. Solubility (% water): Not Available.
- b. Density (gm/cc): 2590 (Absolute).
- c. pH: Not available.
12. Method of release: Bottom Dump.
- Time to release: Immediately.
13. Procedure and site for subsequent barge and hopper washing: Hoppers flushed at disposal area.
14. Approved dumping site:
- a. Geographical position (latitude and longitude):
30°42'00", 81°19'05"; 30°42'00", 81°17'55"
30°41'00", 81°17'55"; 30°41'00", 81°19'05"
- b. Depth of water (meters): 10.7 meters.
- c. Distance (kilometers) from nearest coast: 10.5 kilometers.
15. Additional information - relevant factors listed in Annex III of the Convention, e.g., toxicity, other biological properties: None.

RESULTS OF BIOASSAY EVALUATIONS
OF SEDIMENTS FROM
THE HARBOR AT FERNANDINA BEACH, FLORIDA

CONTRACT NO. DACW 17-78-C-0015

APRIL 1978

FINAL REPORT

PREPARED FOR:

Jacksonville District
U. S. Corps of Engineers

JONES, EDMUNDS AND ASSOCIATES, INC.
730 North Waldo Road
Gainesville, Florida 32601

TABLE OF CONTENTS

	Page
PART I: SUMMARY.....	1
PART II: METHODS.....	4
Static Bioassay Tests.....	4
Solid Phase Bioassay and Bioaccumulation.....	5
Collection and Handling of Animals.....	7
PART III: RESULTS.....	8
Static Bioassay Tests.....	8
Initial Mixing.....	12
Dilution.....	13
Solid Phase Bioassays.....	14
Bioaccumulation.....	14
Liquid Phase Chemical Analyses.....	15
APPENDIX A.....	A-1
Data from Tests and Analyses Performed.....	A-1
Contents.....	A-1

III. RESULTS

Static Bioassay Tests

23. a. Suspended Particulate Phase of F-1. The suspended particulate phase (SPP) of sediment No. 1 showed a slight toxic effect on mysids but not on any of the other test species.

Mysidopsis sp. Control $\bar{x}$ = 9.67; 100% SPP $\bar{x}$ = 7.33. The means are significantly different (t = 3.31, $t_{.05}$ = 2.13) at 96 hours, but not at any earlier time.

Palaemonetes sp. 96.7% survival in both control and 100% SPP.

Cyprinodon variegatus. Control $\bar{x}$ = 8.67, SPP 100% $\bar{x}$ = 9.67.

Acartia sp.

	<u>Control</u>	<u>SPP 100%</u>	<u>Comment</u>
8 hours $\bar{x}$ = 10		9.67	Not significant, even assuming homogeneous variances.
24 hours $\bar{x}$ = 10		8.0	
48 hours $\bar{x}$ = 7.33		6.67	Not significant.

24. b. Liquid phase of F-1. The liquid phase (LP) of sediment No. 1 showed no toxic effects.

Mysidopsis sp. Control $\bar{x}$ = 9.67; LP 100% $\bar{x}$ = 8.67. Not significant (t = 1.34, $t_{.05}$ = 2.13).

Palaemonetes sp. Control $\bar{x}$ = 9.67, LP 100% $\bar{x}$ = 9.0. Not significant (t = 2.01), even assuming homogeneous variances (LP 100% S^2 = zero).

Cyprinodon variegatus. Control $\bar{x}$ = 8.67, LP 100% $\bar{x}$ = 9.67.

Acartia sp.

	<u>Control</u>	<u>LP 100%</u>	<u>Comment</u>
24 hours $\bar{x}$ = 9.33		8.33	Not significant (t = 0.00).
96 hours $\bar{x}$ = 7.67		7.33	Not significant (t = 0.27).

25. c. Suspended Particulate Phase of F-2. A statistically significant effect of SPP of sediment No. 2 was detected in zooplankton after 48 hours, but none was found in other species tested.

Mysidopsis sp. Control $\bar{x}$ = 9.33, SPP 100% $\bar{x}$ = 9.0, not significant.

Palaemonetes sp. Control $\bar{x}$ = 9.67, SPP 100% $\bar{x}$ = 9.0, not significant.

Cyprinodon variegatus. 96.7% survival in both controls and SPP 100%.

Acartia sp.

	Control	SPP 100%	Comment
24 hours $\bar{x}$ =	9.33	8.67	Not significant (t = 0.60)
48 hours $\bar{x}$ =	9.0	6.0	Significant (t = 3.66)

26. d. Liquid Phase of F-2. The LP of sediment No. 3 showed a toxic effect on mysids but not on other species. Differences in zooplankton survival did not test as significant because of large variances.

Mysidopsis sp. Control $\bar{x}$ = 9.33, LP 100% $\bar{x}$ = 6.0, significant (t = 3.78, $t_{.05}$ = 2.13). Differences at other times were not significant. Because of low survival of mysids, the LP tests were repeated in one liter beakers.

Mean Number of Survivors after 96 Hours			
Control	10	LP 100%	8.0
LP 50%	9.33	LP 10%	10

Difference is significant.

Palaemonetes sp. Control $\bar{x}$ = 9.67, LP 100% $\bar{x}$ = 9.33, not significant.

Cyprinodon variegatus. 100% survival in both control and 100% LP.

Acartia sp.

	<u>Control</u>	<u>LP 100%</u>	<u>Comment</u>
24 hours $\bar{x}$ =	9.33	8.33	F = 1.06, not significant.
48 hours $\bar{x}$ =	9.0	6.33	F = 1.84, not significant.

27. e. Suspended Particulate Phase of F-3. The SPP of sediment No. 3 showed no statistically significant effects on any of the test species.

Mysidopsis sp. Control $\bar{x}$ = 10, SPP 100% $\bar{x}$ = 6.33, F = 1.68 and is not significant, even assuming homogeneous variances, because of the large variance for SPP. Survival at 72 hours was 93.3%.

Palaemonetes sp. Control $\bar{x}$ = 9.33, SPP 100% $\bar{x}$ = 9.0, not significant.

Fundulus sp. Control $\bar{x}$ = 10, SPP 100% $\bar{x}$ = 9.67.

Acartia sp.

	<u>Control</u>	<u>SPP 100%</u>	<u>Comment</u>
24 hours $\bar{x}$ =	9.67	9.0	Not significant (t = 2.01)
48 hours $\bar{x}$ =	7.33	7.33	

28. f. Liquid Phase of F-3. No toxic effect of the LP of sediment No. 3 was detectable, although technically the 10% lower survival of mysids must be considered significant since the t value is infinite.

Mysidopsis sp. Control $\bar{x}$ = 10, LP 100% $\bar{x}$ = 9.0. The significance of this 10% difference in survival cannot be statistically tested because both of the variances are zero.

Palaemonetes sp. Control $\bar{x}$ = 9.33, LP 100% $\bar{x}$ = 9.0. Not significant.

Fundulus sp. Control $\bar{x}$ = 10, LP 100% = 10.

Acartia sp.

	<u>Control</u>	<u>LP 100%</u>
24 hours $\bar{x}$ =	9.67	9.67
48 hours $\bar{x}$ =	7.33	8.33

Initial Mixing

29. Initial mixing was figured by the release zone method according to equations H2, H4 and H7 in the EPA/CE Manual, and also according to considerations in Appendix B of the Manual. The volume of initial mixing zone (V_m) is the same in both cases:

$$V_m = \pi (100)^2 d + 200 w d = (200 + w) L d \quad (H2)$$

d = water depth = 11.59 meters

w = width of disposal vessel = 21.35 meters

L = length of disposal vessel = 24.4 meters

$$V_m = 364,111 + 49,489 + 62,597 = 476,197 \text{ m}^3$$

30. According to appendix H of the EPA/CE Manual the volume of liquid phase (V_w) is calculated by the formula:

$$V_w = \frac{P_b - P_d}{P_w - P_d} (V_T) \quad (H4)$$

when: P_b , P_d and P_w are defined and assigned values in Manual, and

V_T is the total volume of disposal vessel (6120 m^3).

$$V_w = \frac{1.5 - 2.6}{1.0 - 2.6} 6120 \text{ m}^3 = 4207.5 \text{ m}^3.$$

The volume of suspended particulate phase (V_{sp}) is calculated as:

$$V_{sp} = (V_T - V_w) \frac{P_C + P_S}{100} \quad (H7)$$

where: P_C is the percent clay (assumed to be 50% in Manual)

and P_S is the percent silt (assumed to be 40% in Manual).

$$V_{sp} = (6120 - 4207.5) \frac{50 + 40}{100} = 1721.25 \text{ m}^3$$

figure the dilutions of the liquid and suspended particulate phases assayed in the laboratory. However, the formula for V_{sp} bears no relation to any liquid. Rather, it attempts to calculate the volume of the dried silt and clay in the sediment. Appendix B directs that liquid phase be prepared by filtering the suspended particulate phase. It follows that V_w should be imperceptably smaller than V_{sp} , and certainly not 2.44 times as great, as it is in the above example.

32. In the directions for preparation of suspended particulate and liquid phases in appendix B, it is assumed that the dredged sediments become diluted with four times their volume of water as they are slurried to the barge. Consistency of logic would seem to dictate that since one volume of sediment and four volumes of water are assumed to be taken onto the barge, it also must be assumed that this mixture be what is dumped. Therefore,

$$V_w = 0.80 V_T = 4896 \text{ m}^3.$$

Furthermore, since liquid phase is simply filtered suspended particulate phase,

$$V_{sp} = V_w.$$

Dilution

33. The percent of the original suspended particulate phase concentration found at the disposal site after initial mixing C_{sp} , is:

$$C_{sp} = \frac{V_{sp}}{V_m}.$$

These concentrations four hours after dilution will be:

$$\text{Appendix B} \quad C_{sp} = 0.99\%$$

$$\text{Appendix H} \quad C_{sp} = 0.88\%$$

35. Only three tests showed significant mortality due to SPP or LP, and the maximum was 33% after 48 hours (zooplankton). The dilution factor of at least 0.99% achieves the required dilution of 1% of LC_{50} , even with the exceedingly conservative assumption that, although 100% SPP does not cause 50% mortality after 96 hours, 101% SPP would cause 50% mortality after only four hours.

Solid Phase Bioassays

36. In the solid phase flow-through bioassays there were no statistically significant differences in survival of mysids (86% in controls vs. 92%, 58% and 69% in sediments Nos. 1, 2 and 3, respectively), Grass shrimp (96% vs. 95%, 93%, 93%) or clams (100% in all treatments). The results for haustoriid amphipods were inconsistent. In one test survival in harbor sediments (72%, 80%, 82%) was twice that in controls (34%). However, the mortality in controls was far too high to be acceptable, and the experiment was repeated with quite different results. Survival in experimentals (66%, 58%, 45%) was lower than in controls (94%) by an average of 37.6%. Using results of the second amphipod test, mean survival for all species was 94% in controls and 80.75% in harbor sediments. The difference (13.25%) is near the approximately 10% arbitrarily suggested by the EPA/CE Manual as a conservative, environmentally acceptable value for this parameter.

Bioaccumulation

37. Clams from all control and experimental replicates were chemically analyzed to assess the potential for bioaccumulation of metals and petroleum derived hydrocarbons. The mean concentrations of cadmium (0.1 ppm vs. 0.16, 0.08, 0.1) and mercury (0.02 ppm vs. 0.02, 0.03, 0.02) did not differ between treatments.

38. Both gravimetric and gas chromatographic data on hydrocarbon weights are given in Appendix A (p. A-21). Gravimetric weights are extremely low in these clams, and several samples exceeded the sensitivity of our analytical balance.

39. Gas chromatographic data generally support the conclusion that total hydrocarbon components are extremely low, often less than 1 ppm. Looking at all of the chromatograms of the aliphatic hydrocarbons, we found that we could place them into three groups.

40. A group which we have designated as Group I meets only a few of the criteria for oil pollution but in this group are those most likely to have some possible petroleum pollution. In these

samples are predominant n-alkanes C_{16} , C_{17} and C_{18} . Also present are some amounts of pristane and phytane, both characteristic compounds in petroleum. Pristane occurs naturally in many marine organisms, but phytane is generally absent. The ratio of these two compounds can be helpful in distinguishing between pollution and naturally occurring hydrocarbons, but only when viewed critically with the other oil distinguishing parameters. This group consists of F-1-1, F-1-2, F-1-4, F-2-4, F-2-5, F-2-3, F-3-3, F-3-4, F-3-5. Figures 2 and 3 illustrate this group of clams. A literature survey of the natural occurrence of hydrocarbons in clams indicates a lack of background information. Clams analyzed have been those with known petroleum pollution. Therefore, without good background information of clams from "clean waters", it is difficult if not impossible to ascertain petroleum pollution at the levels of hydrocarbons found in these samples. The sporadic rise of C_{16} , C_{17} and C_{18} above adjacent homologues in this group of samples does not indicate completely a petroleum source for low molecular weight hydrocarbons. However, a pollutant source could account for a fraction of these hydrocarbons.

41. Group II is distinguished by chromatograms with virtually no measurable peaks. This group consists of F-1-3, F-2-1, F-3-1, F-2-3, and F-C-2. These clams are extremely low in hydrocarbons including those indicative of petroleum pollution.

42. Group IV contained pristane as the dominant peak. However, this is not recognized as pollution since phytane is either absent or extremely small. Pristane is present in high concentrations in some marine algae and zooplankton, thus pristane in the tissue could reflect the eating habits of the clams at the time of collection. The samples in this group are listed below: FBM, F-1-5, F-2-2, F-C-1, F-C-3, F-C-4, and F-C-5. An example of the aliphatic hydrocarbons in this group is shown in Figure 4.

Liquid Phase Chemical Analyses

43. The results of the chemical analyses and a listing of the applicable standard for each are presented in Appendix A (p. A-19). For several substances there are no standards. For some, the limit

(Canaveral Harbor, FL)
IMCO REPORT ON OCEAN DUMPING - CY 81

1. Issuing authority:

Division: South Atlantic District: Jacksonville

2. Date issued: August 1981.

3. Country of origin of dredged material or other matter: United States.

Port of loading (activity location): Canaveral Harbor, Florida.

4. General description of dredged material, dredging, and transportation made:

a. Description: Material is poorly graded sand with a trace of gravel size shell fragments.

b. Mode of dredging: Dragarm - Suction.

c. Mode of transportation: Hopper Dredge.

5. Form in which dredged material is presented for disposal: Slurry, non-cohesive.

6. Material quantity (volume in metric units, cubic meters) of material dumped in the ocean and dates of actual disposal during reporting calendar year: 375,446 cubic meters, 17 August - 22 September 1981.

7. Period for which permit is valid or project is scheduled: August and September 1981.

8. Expected frequency of dumping: Daily.

9. Chemical composition of the dredged material as reported in elutriate test concentrations or "bulk" or "total" analyses as appropriate:

a. Elutriate test results:

(1) Nutrients:	mg/l	Range
NH4-N	-----	0.47 - 4.77
O-P04, P	-----	<0.005 - 0.40

(2) Metals:	Range
note (mg/l) Pb	-----1.1 - 2.8
Zn	-----18 - 77
Fe	-----1.6 - 16
Ni	-----1.0 - 2.7
Cu	-----1.2 - 25
Mn	-----0.5 - 7.5
Ag	-----<0.5
Hg	-----<0.5 - 5.0
Se	-----<5

- (3) Organics:
Oil & Grease 0.2 - 9.4
PCB's mg/l - <2

b. Other analyses:

- (1) Metals:
(2) Organics:
(3) Other:

10. Bioassay and bioassessment evaluation: N/A

- a. Liquid phase bioassay:
b. Suspend particular phase bioassay:
c. Solid phase bioassay:

11. Properties of the dredged material:

- a. Solubility (% water): Not available.
b. Density (gm/cc): 2514 (Absolute).
c. pH: Not available.

12. Method of release: Bottom dump.

Time to release: Immediate.

13. Procedure and site for subsequent barge and hopper washing: Hopper flushed at disposal site.

14. Approved dumping site:

- a. Geographical position (latitude and longitude): North & West
28°19'53", 80°31'08"; 28°18'50", 80°29'40";
28°17'35", 80°30'52"; 28°18'38", 80°32'20"
b. Depth of water (meters): 12 meters.
c. Distance (kilometers) from nearest coast: 6.7 kilometers.

15. Additional information - relevant factors listed in Annex III of the Convention, e.g., toxicity, other biological properties:

(Palm Beach Harbor, FL)
IMCO REPORT ON OCEAN DUMPING - CY 81

1. Issuing authority:

Division: South Atlantic District: Jacksonville

2. Date issued: November 1981.

3. Country of origin of dredged material or other matter: United States.

Port of loading (activity location): Palm Beach Harbor, Florida.

4. General description of dredged material, dredging, and transportation made:

a. Description: Sand, medium to coarse, quartz and shell fragments, some limestone pebbles, and gravel.

b. Mode of dredging: Dragarm - Suction.

c. Mode of transportation: Hopper dredge.

5. Form in which dredged material is presented for disposal: Slurry, non-cohesive.

6. Material quantity (volume in metric units, cubic meters) of material dumped in the ocean and dates of actual disposal during reporting calendar year: 94,564 cubic meters, 15-23 November 1981.

7. Period for which permit is valid or project is scheduled: To May 1985.

8. Expected frequency of dumping: Daily.

9. Chemical composition of the dredged material as reported in elutriate test concentrations or "bulk" or "total" analyses as appropriate:

a. Elutriate test results: None - material was predominately sand.

(1) Nutrients:

(2) Metals:

(3) Organics:

b. Other analyses:

(1) Metals:

(2) Organics:

(3) Other:

10. Bioassay and bioassessment evaluation: Not available.

a. Liquid phase bioassay:

b. Suspend particulate phase bioassay:

c. Solid phase bioassay:

11. Properties of the dredged material:

a. Solubility (% water): Not available.

b. Density (gm/cc): 2810 (Absolute).

c. pH: Not available.

12. Method of release: Bottom dump.

Time to release: Immediate.

13. Procedure and site for subsequent barge and hopper washing: Hoppers are flushed at the disposal site.

14. Approved dumping site:

a. Geographical position (latitude and longitude): North & West
26°46'00", 79°58'55"; 26°46'00", 79°57'47"
26°45'00", 79°57'47"; 26°45'00", 79°58'55"

b. Depth of water (meters): 152 meters.

c. Distance (kilometers) from nearest coast: 5.4 kilometers.

15. Additional information - relevant factors listed in Annex III of the Convention, e.g., toxicity, other biological properties:

(Tampa Harbor, FL)
IMCO REPORT ON OCEAN DUMPING - CY 81

1. Issuing authority:

Division: South Atlantic District: Jacksonville

2. Date issued: September 1981 (Award).

3. Country of origin of dredged material or other matter: United States.

Port of loading (activity location): Tampa Harbor, Florida.

4. General description of dredged material, dredging, and transportation made:

a. Description: Silt, soft gray.

b. Mode of dredging: Bucket dredge.

c. Mode of transportation: Scow and tug.

5. Form in which dredged material is presented for disposal: Soupy silt.

6. Material quantity (volume in metric units, cubic meters) of material dumped in the ocean and dates of actual disposal during reporting calendar year: 219,325 cubic meters. Nov. - Dec. 1981

7. Period for which permit is valid or project is scheduled: 1981.

8. Expected frequency of dumping: Daily.

9. Chemical composition of the dredged material as reported in elutriate test concentrations or "bulk" or "total" analyses as appropriate:

a. Elutriate test results:

(1) Nutrients:

(2) Metals:

(3) Organics:

b. Other analyses: Water Column.

(1) Metals: (Dissolved) (mg/l)

As-----<0.02

Hg-----0.0004

Cd-----<0.005

Cv-----0.11

Cu-----0.06
 Fe-----<0.05
 Pb-----0.03
 Ni-----0.29
 Zn-----0.06

(2) Organics: Dissolved mg/l
 Organic Carbon-----3.5

(3) Other: (Dissolved) mg/l
 TKN-N-----0.4
 NH4-N-----<0.1
 NO3-N-----<0.1
 NO2-N-----<0.01
 PO4-P-----0.8
 O-PO4-P-----0.6

(4) Oil & Grease-----<0.10

10. Bioassay and bioassessment evaluation:

- a. Liquid phase bioassay:
- b. Suspend particular phase bioassay:
- c. Solid phase bioassay:

11. Properties of the dredged material:

- a. Solubility (% water):
- b. Density (gm/cc):
- c. pH:

12. Method of release: Dump Scow.

Time to release: Minutes.

13. Procedure and site for subsequent barge and hopper washing: Wash down at work site, Tampa Harbor, Florida.

14. Approved dumping site:

- a. Geographical position (latitude and longitude): North & West
 27°37'34", 82°59'19"; 27°36'43", 82°59'13"
 27°36'37", 83°00'03"; 27°37'28", 83°00'09"
- b. Depth of water (meters): 15 meters.

c. Distance (kilometers) from nearest coast: 25 kilometers.

15. Additional information - relevant factors listed in Annex III of the Convention, e.g., toxicity, other biological properties:

(Tampa Harbor, FL)
IMCO REPORT ON OCEAN DUMPING - CY 81

1. Issuing authority:

Division: South Atlantic District: Jacksonville

2. Date issued: February 1981 (Award).

3. Country of origin of dredged material or other matter: United States.

Port of loading (activity location): Tampa Harbor, Florida.

4. General description of dredged material, dredging, and transportation made:

- a. Description: Section 2C - Sand, fine to medium quartz.
Shell, clay varies stiff to silty compact.

Section 4 (Rem) - Sand, shelly silt.

- b. Mode of dredging: Bucket dredge.

- c. Mode of transportation: Scow and tug.

5. Form in which dredged material is presented for disposal:

Section 4 (Rem) - Sand and shell in fairly solid form.

Section 2C - Hard sandy/clay shell material solids.

6. Material quantity (volume in metric units, cubic meters) of material dumped in the ocean and dates of actual disposal during reporting calendar year: 1,190,340 cubic meters. Jul. - Dec. 1981

7. Period for which permit is valid or project is scheduled: 1981.

8. Expected frequency of dumping: Daily.

9. Chemical composition of the dredged material as reported in elutriate test concentrations or "bulk" or "total" analyses as appropriate:

a. Elutriate test results:

(1) Nutrients:

(2) Metals:

(3) Organics:

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h. Other analyses: (Water Column)

(1) Metals: (Dissolved)

As-----<0.02 mg/l
Hg-----0.0004 mg/l
Cd-----<0.005 mg/l
Cr-----0.11 mg/l
Cu-----0.06 mg/l
Fe-----<0.05 mg/l
Pb-----0.03 mg/l
N-----0.29 mg/l
Zn-----0.06 mg/l

(3) Organics: (Dissolved)

Organic Carbon-----3.5 mg/l

b. Other analyses:

(1) Metals:

(2) Organics:

(3) Other: TKN-N (Dissolved)-----0.4 mg/l
NH4-N (Dissolved)-----<0.1 mg/l
NO3-N (Dissolved)-----<0.1 mg/l
NO2-N (Dissolved)-----<0.01 mg/l
PO4-P (Dissolved)-----0.8 mg/l
O-PO4-P (Dissolved)-----0.6 mg/l
0.14 Grease-----<0.10 mg/l

10. Bioassay and bioassessment evaluation:

- a. Liquid phase bioassay: None.
- b. Suspend particular phase bioassay: None.
- c. Solid phase bioassay: None.

11. Properties of the dredged material:

- a. Solubility (% water):
- b. Density (gm/cc):
- c. pH:

12. Method of release: Dump Scow

Time to release: Minutes.

13. Procedure and site for subsequent barge and hopper washing: Wash down at work site, Tampa Harbor, Florida.

14. Approved dumping site:

a. Geographical position (latitude and longitude): North & West
27°37'34", 82°59'19"; 27°36'43", 82°59'13";
27°36,37", 83°00'03"; 27°37'28", 83°00'09"

b. Depth of water (meters): 15 meters.

c. Distance (kilometers) from nearest coast: 25 kilometers.

15. Additional information - relevant factors listed in Annex III of the Convention, e.g., toxicity, other biological properties: None.

(St. Petersburg Harbor, FL)
IMCO REPORT ON OCEAN DUMPING - CY 81

1. Issuing authority:

Division: South Atlantic

District: Jacksonville

2. Date issued: July 1980.

3. Country of origin of dredged material or other matter: United States.

Port of loading (activity location): St. Petersburg Harbor (Tampa, Florida).

4. General description of dredged material, dredging, and transportation made:

a. Description: Sand, fine to medium, quartz slightly silty to silty, brown with organic stain, slightly shelly.

b. Mode of dredging: Bucket dredge.

c. Mode of transportation: Scow and Tug.

5. Form in which dredged material is presented for disposal: Soupy sand and silt with strong organic odor.

6. Material quantity (volume in metric units, cubic meters) of material dumped in the ocean and dates of actual disposal during reporting calendar year: 276,332 cubic meters.

7. Period for which permit is valid or project is scheduled: 1981.

8. Expected frequency of dumping: Daily.

9. Chemical composition of the dredged material as reported in elutriate test concentrations or "bulk" or "total" analyses as appropriate:

a. Elutriate test results:

(1) Nutrients:	Range
NH ₄ -N, mg/l-----	0.20 - 3.31
O-P04-P, mg/l-----	0.27 - 1.60
(2) Metals: (mg/l)	Range
Pb-----	0.4 - 0.7
Zn-----	0.5 - 33
Fe-----	4 - 6
Cu-----	1.5 - 1.8
Mn-----	0.2 - 1.7
Ag-----	<0.5
Hg-----	<0.5 - 12.2
Se-----	<0.5

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- (3) Organics:
PCB's mg/l - <2
Oil & Grease mg/l - 0.4 - 0.7

b. Other analyses: None.

(1) Metals:

(2) Organics:

(3) Other:

10. Bioassay and bioassessment evaluation: Attached.

a. Liquid phase bioassay:

b. Suspend particular phase bioassay:

c. Solid phase bioassay:

11. Properties of the dredged material:

a. Solubility (% water):

b. Density (gm/cc):

c. pH:

12. Method of release: Scow dump.

Time to release: Minutes.

13. Procedure and site for subsequent barge and hopper washing: Wash down at work site.

14. Approved dumping site:

a. Geographical position (latitude and longitude):

27°37'34", 82°59'19"; 27°36'43", 82°59'13"
27°36'37", 83°00'03"; 27°37'28", 83°00'09"

b. Depth of water (meters): 15 meters.

c. Distance (kilometers) from nearest coast: 25 kilometers.

15. Additional information - relevant factors listed in Annex III of the Convention, e.g., toxicity, other biological properties:

RESULTS OF BIOASSAY EVALUATION
OF SEDIMENTS FROM
ST. PETERSBURG HARBOR, FLORIDA

CONTRACT NO. DACW 17-79-C-0048

JUNE 1979

FINAL REPORT

PREPARED FOR:

Department of the Army
Jacksonville District, Corps of Engineers

JONES, EDMUNDS & ASSOCIATES, INC.
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TABLE OF CONTENTS

	<u>Page</u>
PART I SUMMARY AND CONCLUSION	1
PART II METHODS	2
Liquid and Suspended Particulate Phase Bioassays	2
Solid Phase Bioassay	3
Collection and Handling of Animals	4
Bioaccumulation	4
Chemical Analysis	5
PART III RESULTS AND DISCUSSION	6
Sediment SP-1 Bioassays	6
Sediment SP-2 Bioassays	6
Sediment SP-3 Bioassays	7
Liquid Phase Chemical Analyses	8
Bioaccumulation Tests	8
APPENDIX A: DATA FROM BIOASSAYS AND ANALYSES PERFORMED	
APPENDIX B: DATA FROM PHYSICAL PARAMETER MEASURED ON BIOASSAYS	

PART I SUMMARY AND CONCLUSION

1. Sediments from three locations in St. Petersburg Harbor were subjected to bioassay and bioaccumulation tests and to liquid phase chemical analyses following Federal guidelines as published in the EPA/CE Manual.*

2. No limiting permissible concentration (LPC) based on suspended particulate phase (SPP) or liquid phase (LP) bioassays would be exceeded during ocean disposal of any of the three sediments.

3. The three solid phases were not toxic to grass shrimp or clams. Survival among the polychaetes in all three test sediment (86%, 81% and 88%) was significantly different from control survival (100%) and more than 10% below control. The sediments were rerun with the polychaetes to verify the results. In the rerun tests survival of the polychaetes in all three test sediments (93%, 89% and 91%) was not significantly different from control survival (91%). Therefore the LPC would not be exceeded during ocean disposal.

4. Cadmium content of control seawater was 13.2 times the LPC, and the liquid phases made from it necessarily exceeded the LPC. None of the three liquid phases differed significantly from the control seawater concentration. The same is true for mercury, where the control seawater contains six times the LPC.

5. None of the clam tissues assayed for bioaccumulation showed a significant accumulation of either cadmium or mercury. Levels of petroleum hydrocarbons were not detectable in any of the tissues analyzed.

6. The disposal vessel traveling 2.2 m/sec, will require 180 sec to empty a full capacity load of 3823 m³. The water depth at the disposal site is 10.67 m. These figures yield a calculated dilution factor of .00223 or 0.223% after the four-hour initial mixing period.

*Environmental Protection Agency/Corps of Engineers Technical Committee on Criteria for Dredged and Fill Material, "Ecological Evaluation of Proposed Discharge of Dredged Material into Ocean Waters; Implementation Manual for Section 103 of Public Law 92-532 (Marine Protection, Research, and Sanctuaries Act of 1972)," July 1977, Environmental Effects Laboratory, U.S. Army Engineer Waterways Experiment Station, Vicksburg, Mississippi.

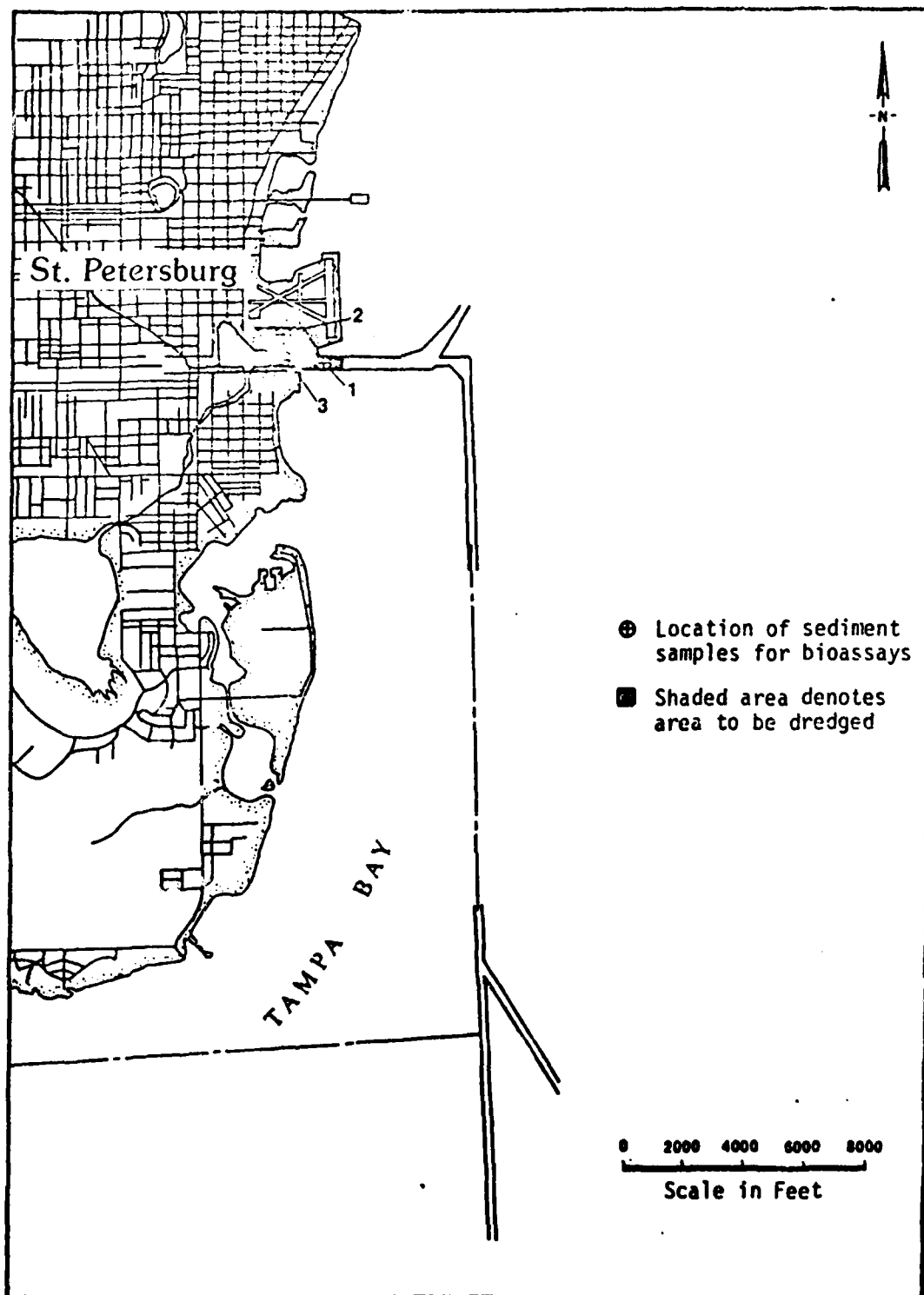


Figure 1. Sample locations for sediments used in tests.

PART II. METHODS

7. Sediment samples were collected using a Ponar grab sampler. Sediments were placed directly into 6-gallon polyethylene containers; filled to the top and tightly sealed. Sediment samples were returned to lab within 3 hours and used immediately upon receipt in the laboratory. The remaining sediment was stored in a chest freezer specially modified to maintain a temperature of $1-4^{\circ}\text{C}$. All sediment was used within two weeks.

8. Suspended particulate phase (SPP) for each sediment was prepared in a single 52-gallon linear polyethylene drum. Ten gallons of sediment and 40 gallons of sand-filtered seawater were thoroughly mixed for a half hour using a commercial mixer with stainless steel shaft and blades. The suspension was then allowed to settle for at least 1 hour. The liquid overlying the settled sediment was carefully siphoned off and placed in the appropriate test chambers.

9. Liquid phase (LP) was prepared by Millipore filtering ($0.45\ \mu\text{m}$) SPP. A new filter was used for each sediment sample, and the first half litre of filtrate was discarded. In addition to that used in bioassays, two gallons of LP were prepared for chemical analysis. One gallon was placed on ice, and one gallon was acidified ($\text{pH} < 2$) with nitric acid before cooling. Containers were 1-gallon Cubitainers. All water samples were analyzed at our laboratory.

10. All seawater used in controls, for preparation of all test liquids, and for water changes in solid phase tests was obtained from Marineland, Florida. The seawater is sand filtered at Marineland and subsequently transported in linear polyethylene tanks to the laboratory in Gainesville. Water was stored in the linear polyethylene tanks upon return to the lab.

Liquid and Suspended Particulate Phase Bioassays

11. Three control vessels with filtered seawater and three replicates each of LP and SPP were set up for three test species. All bioassays

were illuminated by Sylvania 40 watt cool white fluorescent lights on a 14 hour light/10 hour dark cycle. Laboratory temperature was maintained at $20^{\circ}\text{C} \pm 2^{\circ}\text{C}$.

12. Ten silverside minnows, Menidia menidia, were carefully transferred to 10 gallon all-glass aquaria. Menidia 6-8 cm in length were used in the test. This species is among the Group 1 test organisms, one of the most sensitive of the approved fish. Normal water volume used was 10 litres per aquaria. All aquaria were aerated continuously.

13. Mysid (Mysidopsis bahia) bioassays were performed in 1 1/2 gallon all-glass molded aquaria containing 2 litres of liquid. These assays were also aerated continuously. Mysids were fed Artemia twice daily to prevent cannibalism.

14. Zooplankton tests were performed on Palaemonetes pugio larvae. Larvae were collected from gravid females maintained in our lab and were generally used within 48 hours after hatching. Tests were run in 300 cc crystallizing dishes with 250 cc of liquid. These tests were not aerated because of the potentially significant loss of liquid phase due to evaporation.

15. The suspended particulate and liquid phase experiments were continued for 96 hours, as specified in the Register (227.27c), even though results after the first four hours do not enter into the interpretation. However, the register (227.27c) allows a shorter period for zooplankton tests because some of the test species cannot be expected to survive for the full 96 hours. This is the case for the grass shrimp larvae, which almost always starved after 48 hours.

16. The number of survivors was counted four, eight and 24 hours after set up and every 24 hours thereafter up to 96 hours. Salinity, temperature, dissolved oxygen and pH were measured at the beginning and end of the experiments. A table of these measurements are provided elsewhere in this report.

Solid Phase Bioassay

17. Solid phase bioassays were performed in 10-gallon, all-glass aquaria with continuous aeration. Sieved (500 μm) reference sediment

(clean sand) was placed in each aquarium to a 3 centimeter depth, and then 20 clams and 20 grass shrimp were added to each aquarium. The animals were allowed a two day acclimation period. After two days, 1.5 cm of reference sediment (controls) or fresh test sediment was distributed evenly through each aquarium. One hour after adding the sediments and every 48 hours thereafter, water was siphoned off and replaced with fresh filtered seawater. Survivors were counted after 10 days.

18. Solid phase bioassays using polychaetes were performed in the same manner in 1½ gallon all-glass, molded aquaria. The polychaetes Neanthes arenaceodentata were introduced into the reference sediment 48 hours before the test sediment was applied. All aquaria were aerated continuously. The water was changed precisely as described above. Survivors were counted after 10 days.

Collection and Handling of Animals

19. Clams and polychaetes used in the solid phase bioassays were obtained commercially. The clams were field collected (North Carolina) Mercenaria mercenaria of uniform size (1½" - 1¾"). Laboratory cultured polychaetes, Neanthes arenaceodentata were purchased from D.J. Reish at California State University, Long Beach.

20. Grass shrimp, and mysids used in the tests were routinely collected from the east coast of Florida. All field collected animals were well acclimated before use in the bioassays. Great care was always exercised to treat animals gently during collection and subsequent handling. Field collected gravid grass shrimp were separated and held in special containers until the larvae were released. These larvae were then used as the zooplankton species in the liquid and suspended particulate phase tests.

Bioaccumulation

21. Clams surviving the solid phase bioassay tests were prepared for chemical analysis in order to assess the potential for bioaccumulation of metals and hydrocarbons from the sediments assayed. At the end

of the solid phase bioassays, clams were kept in filtered seawater for two days in order to void their intestines. The clams were killed by freezing and were briefly thawed for cleaning. The flesh was placed in labeled plastic bags and frozen; shells were discarded. All analyses were performed at our laboratory.

Chemical Analysis

22. Mercury and its compounds were measured by the cold-vapor atomic absorption technique after low-temperature acid digestion. Cadmium and its compounds were measured on the same digest, using atomic absorption spectrophotometry.

23. Techniques for measuring petroleum hydrocarbons included saponification, ether extraction, fractionation on a silica gel column, and gas chromatography using flame ionization.

III RESULTS AND DISCUSSION

Sediment SP-1 Bioassays

24. Based on bioassays, the limiting permissible concentration (LPC) would not be approached during ocean disposal of the suspended particulate phase (SPP) or liquid phase (LP) of SP-1. Silverside minnows and grass shrimp larvae showed excellent survival. Mysid mortality did not exceed 20% even after 96 hours.

25. In the solid phase test the clams (100%) and grass shrimp (99%) survived well. Survival among the polychaetes, Neanthes arenaceodentata, differed from control survival by only slightly greater than 10% (86 vs 100). Because this difference was small and because survival among the clams and grass shrimp was so good, we decided to rerun the polychaetes to verify toxicity in the original test. (It is unusual to find a toxic effect on only one of the species tested.) The results from the rerun-test of the polychaetes showed that sediment 1 survival (93%) did not differ significantly from control survival (91%). The variability between the two tests is within the limits expected for a bioassay ($\pm 10\%$). Therefore, the LPC would not be exceeded during ocean disposal of SP-1.

Sediment SP-2 Bioassays

26. Based on bioassays, the LPC would not be reached during ocean disposal of the SPP or LP of SP-2. Both mysids and grass shrimp larvae showed better than 50% survival at the end of the tests. The mortality rate for Menidia reached 50% between 8 and 24 hours in 100% SPP and between 72 and 96 hours in 50% LP. Two fish placed in 100% LP died within 1 1/2 hours, and therefore only 50% LP was tested with the full number of fish. These results show the 4-hour LC_{50} to be over 100% for SPP and over 50% for LP. Calculated dilution during the first four hours after dumping (paragraph 6) would provide 0.446% dilution of 50% LP, which is considerably better than the required 1% dilution. Thus, the LPC would not be reached.

27. The sediment smelled strongly of hydrogen sulfide (H_2S). After mixing and settling, the H_2S smell was still strong and animals placed in the SPP were quickly asphixiated. Measurements showed the dissolved oxygen (DO) levels to be 1.5 ppm or lower. Before testing the SPP and LP of SP-2 it was necessary to aerate them vigorously in order to bring the DO level above 4 ppm (Manual paragraph D11). (When sediment was resampled in order to repeat a solid phase test, SP-2 did not smell strongly of H_2S .)

28. In the solid phase tests of SP-2 survival of clams (100%) and grass shrimp (86%) was not significantly different from controls. The few deaths among the grass shrimp occurred immediately after dumping the sediment, when DO levels dropped below 2 ppm. The survivors jumped from the water and caught on the sides of the aquaria. We continually rinsed them back into the water, and the water was changed after only 30 minutes. This brought the DO above 4 ppm, and there were no further problems with the grass shrimp.

29. In the first test with the polychaetes, their survival rate was significantly lower in SP-2 (81%) than in controls (100%). When the bioassay was repeated in order to confirm this result, there was no difference between the survival rate in SP-2 (89%) and in controls (91%). Therefore, the LPC would not be exceeded by ocean disposal of SP-2.

Sediment SP-3 Bioassays

30. Based on bioassays, the LPC would not be approached during ocean disposal of the SPP or LP of SP-3. Silverside minnows, mysids and grass shrimp larvae all survived well. Less than 20% mortality occurred among the mysids even after 96 hours.

31. In the solid phase tests, clam (100%) and grass shrimp (99%) survival was excellent. Originally, survival of the polychaetes (88%) was significantly different from the controls (100%) and differed by

greater than 10%. In the rerun-test survival was 91%, which was equal to the control survival. The LPC would not be exceeded by disposal of SP-3.

Liquid Phase Chemical Analyses

32. Results from chemical analyses of the liquid phases showed few important differences between the control and test LP concentrations. Organic nitrogen, ammonia and TKN values for SP-2 are considerably higher than the controls and the other test sediments. All three test sediments had ortho-phosphorus and total phosphorus concentrations 8-10 times greater than the control values. None of the metals analyzed showed any significant differences from control concentrations. In fact, frequently the concentrations recorded for the test LPs were less than control concentrations.

33. Control seawater had a cadmium content of .066 ppm which is 13.2 times the LPC. The three liquid phases made from this seawater, therefore also exceeded the LPC. The concentration of mercury in the control seawater was 0.60 µg/l which is six times the LPC. SP-1 and SP-2 concentrations were approximately 30% higher, while SP-3 was half the control concentration.

Bioaccumulation Tests

34. None of the clam tissues analyzed showed a significant accumulation of either mercury or cadmium. Tissue mercury and cadmium levels were less than or equal to the control concentrations for both SP-1 and SP-2. Although levels found in SP-3 were slightly greater than the controls, the difference was not significant. Petroleum hydrocarbon levels for all samples were below the limits of detection.

APPENDIX A: DATA FROM
BIOASSAYS AND ANALYSES PERFORMED

<u>Table</u>	<u>Page</u>
A-1 Summary of Bioassay Results	A1
A-2 Static Bioassays of Sediment 1	A2
A-3 Static Bioassays of Sediment 2	A4
A-4 Static Bioassays of Sediment 3	A6
A-5 Results of Solid Phase Bioassays using <u>Mercenaria mercenaria</u>	A8
A-6 Results of Solid Phase Bioassays using <u>Palaemonetes pugio</u>	A9
A-7 Results of Solid Phase Bioassays using <u>Neanthes arenaceodentata</u>	A10
A-8 Metals and Nutrients Analyses of Liquid Phase Samples	A11
A-9 Chemical Analyses from Bioaccumulation Tests	A12

Table A-1

Summary of Bioassay Results

Ratios are control/test sediments. Numbers are total numbers of survivors at the end of the test. All differences are not significant unless marked by an asterisk (*).

Suspended Particulate Phase		SP1	SP2	SP3
	Grass shrimp larvae	29/27	28/25	29/25*
	Silverside minnows	30/30	30/0	30/30
	Mysids	30/26	30/18*	30/26
Liquid Phase				
	Grass shrimp larvae (48 hr)	29/26	28/23*	29/26
	Silverside minnows	30/29	+	30/28
	Mysids	30/24	30/16*	30/25
Solid Phase				
	Hard clams	100/100	100/100	100/100
	Grass shrimp	98/99	98/86	98/99
	Polychaetes	100/86*	100/81*	100/88*
RERUN	Polychaetes	91/93	91/89	91/91

⁺See Table A-3 and discussion beginning with paragraph 26.

Table A-2
Static Bioassays of Sediment 1

		Hours After Start					
		4	8	24	48	72	96
<u>Palaemonetes pugio</u>							
Controls	1	10	10	10	10	0	
	2	10	10	10	10	0	
	3	<u>10</u>	<u>10</u>	<u>10</u>	<u>9</u>	<u>0</u>	
		30	30	30	29	0	
Suspended Particulate Phase							
100% SPP	1	10	10	10	9	0	
	2	10	10	10	10	0	
	3	<u>10</u>	<u>10</u>	<u>10</u>	<u>8</u>	<u>0</u>	
		30	30	30	27 NS	0	
Liquid Phase							
100% LP	1	10	10	10	8	0	
	2	10	10	10	8	0	
	3	<u>10</u>	<u>10</u>	<u>10</u>	<u>10</u>	<u>0</u>	
		30	30	30	26 NS	0	
		After 48 hrs the larvae starved to death.					
<u>Menidia menidia</u>							
Controls	1	10	10	10	10	10	10
	2	10	10	10	10	10	10
	3	<u>10</u>	<u>10</u>	<u>10</u>	<u>10</u>	<u>10</u>	<u>10</u>
		30	30	30	30	30	30
Suspended Particulate Phase							
100% SPP	1	10	10	10	10	10	10
	2	10	10	10	10	10	10
	3	<u>10</u>	<u>10</u>	<u>10</u>	<u>10</u>	<u>10</u>	<u>10</u>
		30	30	30	30	30	30

(Continued)

Table A-2
(Concluded)

		Hours After Start					
		<u>4</u>	<u>8</u>	<u>24</u>	<u>48</u>	<u>72</u>	<u>96</u>
Liquid Phase							
100% LP	1	10	10	10	10	10	10
	2	10	10	10	10	10	10
	3	<u>10</u>	<u>10</u>	<u>10</u>	<u>10</u>	<u>9</u>	<u>9</u>
		30	30	30	30	29	29
<u>Mysidopsis bahia</u>							
Controls	1	10	10	10	10	10	10
	2	10	10	10	10	10	10
	3	<u>10</u>	<u>10</u>	<u>10</u>	<u>10</u>	<u>10</u>	<u>10</u>
		30	30	30	30	30	30
Suspended Particulate Phase							
100% SPP	1	10	10	10	10	9	9
	2	10	10	10	10	10	8
	3	<u>10</u>	<u>10</u>	<u>10</u>	<u>9</u>	<u>9</u>	<u>9</u>
		30	30	30	29	28	26 NS
Liquid Phase							
100% LP	1	10	10	10	10	10	10
	2	10	10	10	10	10	7
	3	<u>10</u>	<u>10</u>	<u>10</u>	<u>8</u>	<u>8</u>	<u>7</u>
		30	30	30	28	28	24 NS

Table A-3
Static Bioassays of Sediment 2

		Hours After Start					
		4	8	24	48	72	96
<u>Palaemonetes pugio</u>							
Controls	1	10	10	10	9	1	
	2	10	10	10	9	3	
	3	<u>10</u>	<u>10</u>	<u>10</u>	<u>10</u>	<u>2</u>	
		30	30	30	28	6	
Suspended Particulate Phase							
100% SPP	1	10	10	10	8	2	
	2	10	10	10	9	1	
	3	<u>10</u>	<u>10</u>	<u>10</u>	<u>8</u>	<u>3</u>	
		30	30	30	25 NS	6	
Liquid Phase							
100% LP	1	10	10	10	7	0	
	2	10	10	10	7	2	
	3	<u>10</u>	<u>10</u>	<u>10</u>	<u>9</u>	<u>1</u>	
		30	30	30	23*	3	
		Larvae starved to death after 48 hours.					
<u>Menidia menidia</u>							
Controls	1	10	10	10	10	10	10
	2	10	10	10	10	10	10
	3	<u>10</u>	<u>10</u>	<u>10</u>	<u>10</u>	<u>10</u>	<u>10</u>
		30	30	30	30	30	30
Suspended Particulate Phase							
100% SPP	1	8	8	1	0	0	0
	2	8	7	0	0	0	0
	3	<u>8</u>	<u>8</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
		24*	23*	1*	0	0	0
Liquid Phase							
50% LP	1	9	9	9	6	2	0
	2	10	10	10	10	6	3
	3	<u>10</u>	<u>10</u>	<u>10</u>	<u>10</u>	<u>9</u>	<u>6</u>
		29	29	29	26 NS	17*	9*
(Continued)							

Table A-3
(Concluded)

		Hours After Start					
		<u>4</u>	<u>8</u>	<u>24</u>	<u>48</u>	<u>72</u>	<u>96</u>
Liquid Phase							
10% LP	1	10	10	10	10	10	10
	2	10	10	10	10	10	10
	3	<u>10</u>	<u>10</u>	<u>10</u>	<u>10</u>	<u>10</u>	<u>10</u>
		30	30	30	30	30	30
<u>Mysidopsis bahia</u>							
Controls	1	10	10	10	10	10	10
	2	10	10	10	10	10	10
	3	<u>10</u>	<u>10</u>	<u>10</u>	<u>10</u>	<u>10</u>	<u>10</u>
		30	30	30	30	30	30
Suspended Particulate Phase							
100% SPP	1	10	10	10	8	7	6
	2	10	10	10	10	10	7
	3	<u>10</u>	<u>9</u>	<u>9</u>	<u>9</u>	<u>9</u>	<u>5</u>
		30	29	29	27	26 NS	18*
Liquid Phase							
100% LP	1	10	10	10	10	10	6
	2	10	10	10	9	9	7
	3	<u>10</u>	<u>10</u>	<u>10</u>	<u>9</u>	<u>8</u>	<u>3</u>
		30	30	30	28	27	16*
50% LP	1	10	10	10	10	10	10
	2	10	10	10	10	10	9
	3	<u>10</u>	<u>10</u>	<u>10</u>	<u>10</u>	<u>10</u>	<u>9</u>
		30	30	30	30	30	28

Table A-4
Static Bioassays of Sediment 3

		Hours After Start					
		4	8	24	48	72	96
<u>Palaemonetes pugio</u>							
Controls	1	10	10	10	10	0	
	2	10	10	10	10	0	
	3	<u>10</u>	<u>10</u>	<u>10</u>	<u>9</u>	<u>0</u>	
		30	30	30	29	0	
Suspended Particulate Phase							
100% SPP	1	10	10	10	8	0	
	2	10	10	10	8	0	
	3	<u>10</u>	<u>10</u>	<u>10</u>	<u>9</u>	<u>0</u>	
		30	30	30	25*	0	
Liquid Phase							
100% LP	1	10	10	10	8	0	
	2	10	10	10	8	0	
	3	<u>10</u>	<u>10</u>	<u>10</u>	<u>9</u>	<u>0</u>	
		30	30	30	26	0	
		After 48 hrs the larvae starved to death.					
<u>Menidia menidia</u>							
Controls	1	10	10	10	10	10	10
	2	10	10	10	10	10	10
	3	<u>10</u>	<u>10</u>	<u>10</u>	<u>10</u>	<u>10</u>	<u>10</u>
		30	30	30	30	30	30
Suspended Particulate Phase							
100% SPP	1	10	10	10	10	10	10
	2	10	10	10	10	10	10
	3	<u>10</u>	<u>10</u>	<u>10</u>	<u>10</u>	<u>10</u>	<u>10</u>
		30	30	30	30	30	30

(Continued)

Table A-4
(Concluded)

		Hours After Start					
		<u>4</u>	<u>8</u>	<u>24</u>	<u>48</u>	<u>72</u>	<u>96</u>
Liquid Phase							
100% LP	1	10	10	10	10	10	10
	2	10	10	8	8	8	8
	3	<u>10</u>	<u>10</u>	<u>10</u>	<u>10</u>	<u>10</u>	<u>10</u>
		30	30	28	28	28	28
<u>Mysidopsis bahia</u>							
Controls	1	10	10	10	10	10	10
	2	10	10	10	10	10	10
	3	<u>10</u>	<u>10</u>	<u>10</u>	<u>10</u>	<u>10</u>	<u>10</u>
		30	30	30	30	30	30
Suspended Particulate Phase							
100% SPP	1	10	10	10	9	9	8
	2	10	10	10	10	10	9
	3	<u>10</u>	<u>10</u>	<u>10</u>	<u>10</u>	<u>10</u>	<u>9</u>
		30	30	30	29	29	26 NS
Liquid Phase							
100% LP	1	10	10	10	10	9	8
	2	10	10	10	9	9	8
	3	<u>10</u>	<u>10</u>	<u>10</u>	<u>10</u>	<u>9</u>	<u>9</u>
		30	30	30	29	27 NS	25 NS

Table A-5
Results of Solid Phase Bioassays using
Mercenaria mercenaria

		<u>Control</u>	<u>SP1</u>	<u>SP2</u>	<u>SP3</u>
Replicate	1	20	20	20	20
	2	20	20	20	20
	3	20	20	20	20
	4	20	20	20	20
	5	<u>20</u>	<u>20</u>	<u>20</u>	<u>20</u>
		100	100	100	100

Table A-6
Results of Solid Phase Bioassays using
Palaemonetes pugio

		<u>Control</u>	<u>SP1</u>	<u>SP2</u>	<u>SP3</u>
Replicate	1	19	20	18	20
	2	19	20	18	20
	3	20	19	19	20
	4	20	20	18	19
	5	<u>20</u>	<u>20</u>	<u>13</u>	<u>20</u>
		98	99	86	99
	s^2	.30	.20	5.7	.20

F = 1.384 - not significant

Note: Variances were not homogeneous even after log transformation.
The approximate test of equality (Box 13.2) of Sokal and Rohlf
was used.

Table A-7
Results of Solid Phase Bioassays using
Neanthes arenaceodentata

		<u>Control</u>	<u>SP1</u>	<u>SP2</u>	<u>SP3</u>
Replicate	1	20	20	12	18
	2	20	17	18	18
	3	20	15	17	19
	4	20	16	17	16
	5	<u>20</u>	<u>18</u>	<u>17</u>	<u>17</u>
		100	86*	81*	88*
CSS		0	14.8	22.8	5.2
s ²		0	3.7	5.7	1.3
MS _{treatments}	= 12.98				
MS _{error}	= 2.675				
F	= 4.85*				

RERUN of Neanthes arenaceodentata

		<u>Control</u>	<u>SP1</u>	<u>SP2</u>	<u>SP3</u>
Replicate	1	14	19	17	19
	2	19	18	18	19
	3	18	18	18	17
	4	20	20	18	18
	5	<u>20</u>	<u>18</u>	<u>18</u>	<u>18</u>
		91	93	89	91

* = significantly different at p = .05 level.

Table A-8

Metals and Nutrients Analyses of Liquid Phase Samples

(Values are in milligrams per litre (= ppm) except as noted.)

<u>Constituents</u>	<u>Control</u>	<u>SP-1</u>	<u>SP-2</u>	<u>SP-3</u>
NO ₂ -N ¹	0.04	0.10	< 0.02	0.09
NO ₃ -N ¹	0.24	0.03	0.05	0.10
Organic Nitrogen	< 0.20	0.50	3.7	< 0.20
NH ₃ -N ¹	0.20	1.10	14.8	0.70
TKN-N ¹	< 0.20	1.60	18.5	0.60
Ortho-phosphorus ¹	0.46	4.10	5.30	2.70
Total phosphorus ¹	0.80	4.20	5.90	2.70
Toc-C ¹	4	7	12	6
AS ¹	< 0.01	0.07	0.02	0.03
Be ¹	< 0.3	< 0.3	< 0.3	< 0.3
Cd ³ micrograms/litre	66	56	56	61
Cr ¹	8	8	8	8
Cu ⁴ micrograms/litre	13	16	9	12
Hg ⁵ micrograms/litre	0.60	1.8	1.4	0.3
Ni ⁶	0.36	0.34	0.35	0.34
Pb ⁶	0.34	0.34	0.29	0.29
Se ⁶ micrograms/litre	< 2.0	< 2.0	< 2.0	< 2.0
Zn ⁶ micrograms/litre	17	14	12	14
Va ¹	0.07	0.09	0.08	0.14
Pet. Hydrocarbons ¹	21.0	9.2	26.8	22.8

Marine standards suggested by U.S. EPA 1976 Quality Standard for Water (EPA-440/9/76/023) are: ¹none suggested; ²0.01 times the 96 hour LC₅₀ in flowing water bioassays; ³5.0 µg/litre; ⁴0.01 times the 96 hour LC₅₀; ⁵0.10 µg/litre; ⁶0.01 times the 96 hour LC₅₀.

Table A-9
Chemical Analyses from Bioaccumulation Tests
 (Values in parts per million (µg/g)
 test species Mercenaria mercenaria)

Petroleum Hydrocarbons

		<u>Control</u>	<u>SP1</u>	<u>SP2</u>	<u>SP3</u>
Replicate	1	ND ⁺	ND	ND	ND
	2	ND	ND	ND	ND
	3	ND	ND	ND	ND
	4	ND	ND	ND	ND
	5	ND	ND	ND	ND

Mercury

		<u>Control</u>	<u>SP1</u>	<u>SP2</u>	<u>SP3</u>
Replicate	1	0.05	0.03	0.02	0.02
	2	0.01	0.04	0.01	0.02
	3	0.02	0.02	0.02	0.110
	4	0.03	0.03	0.01	0.01
	5	<u>0.03</u>	<u>0.01</u>	<u>0.01</u>	<u>0.03</u>
		0.14	0.13	0.07	0.19
	s ² =	.00022			.00167
	t =	0.514 not significant			

Cadmium

		<u>Control</u>	<u>SP1</u>	<u>SP2</u>	<u>SP3</u>
Replicate	1	0.3	0.3	0.3	0.4
	2	0.3	0.3	0.3	0.3
	3	0.3	0.3	0.2	0.3
	4	0.3	0.3	0.3	0.3
	5	<u>0.3</u>	<u>0.3</u>	<u>0.2</u>	<u>0.3</u>
		1.5	1.5	1.3	1.6

⁺ None Detected.

APPENDIX B: DATA FROM
PHYSICAL PARAMETER MEASURED ON BIOASSAYS

<u>Table</u>	<u>Page</u>
B-1 Physical Parameters of Static Bioassays of Sediment 1 . . .	B1
B-2 Physical Parameters of Static Bioassays of Sediment 2 . . .	B3
B-3 Physical Parameters of Static Bioassays of Sediment 3 . . .	B5
B-4 Physical Parameters of Solid Phase Bioassays of Sediment 1	B7
B-5 Physical Parameters of Solid Phase Bioassays of Sediment 2	B9
B-6 Physical Parameters of Solid Phase Bioassays of Sediment 3	B11

Table B-1
Physical Parameters of Static Bioassays of
Sediment 1

INITIAL READINGS/FINAL READINGS					
		Temp. (°C)	Salinity (°/00)	D.O. (ppm)	pH
<u>Menidia menidia</u>					
Controls	1	20.5/19	29.5/33.5	6.8/7.0	7.7/7.6
	2	20.5/19	29.5/33.5	7.4/7.2	7.7/7.7
	3	20.5/19	29.5/32.5	7.5/5.5	7.7/7.5
100% SPP	1	20.5/19	28/31.5	8.2/7.0	7.6/7.7
	2	20.5/19	28/31.5	8.2/6.6	7.6/7.6
	3	20.5/19	28/32	8.3/4.5	7.7/7.4
100% LP	1	20.5/19	28.9/32.5	7.9/6.0	7.6/7.5
	2	20.5/19	28.9/32.5	8.0/6.6	7.7/7.7
	3	20.5/19	28.9/32.5	8.2/4.8	7.7/7.5
<u>Palaemonetes pugio</u>					
Controls	1	19.5/20	30.3/33	6.3/5.2	8.0/8.0
	2	19.5/20	30.3/33	6.3/5.0	7.9/7.9
	3	19.5/20	30.3/33	6.3/5.2	7.9/7.9
100% SPP	1	19.5/20	29.3/32.5	6.9/5.2	8.1/8.2
	2	19.5/20	29.3/32.5	6.9/5.3	8.1/8.2
	3	19.5/20	29.3/32.5	6.9/5.3	8.1/8.1
100% LP	1	19.5/20	28.7/31.7	6.1/5.0	8.2/8.2
	2	19.5/20	28.7/31.7	6.1/5.1	8.2/8.2
	3	19.5/20	28.7/31.7	6.1/5.1	8.2/8.2

(Continued)

Table B-1
(Concluded)

INITIAL READINGS/FINAL READINGS					
		Temp. (°C)	Salinity (°/00)	D.O. (ppm)	pH
<u>Mysidopsis bahia</u>					
Controls	1	20/20	30/33	7.0/7.0	8.1/8.1
	2	20/20	30/34	7.5/6.8	8.1/8.1
	3	20/20	30/34	7.4/7.0	8.1/8.1
100% SPP	1	20/20	27.8/32	7.3/7.0	8.1/8.1
	2	20/20	27.8/31	7.2/7.0	8.1/8.2
	3	20/20	27.8/31.5	7.3/6.8	8.1/8.2
100% LP	1	20/20	28.5/31	7.2/6.8	8.0/8.2
	2	20/20	28.5/31	7.4/6.8	8.0/8.2
	3	20/20	28.5/31	7.4/7.0	8.0/8.2

Table B-2
Physical Parameters of Static Bioassays of
Sediment 2

INITIAL READINGS/FINAL READINGS

		Temp. (°C)	Salinity (‰)	D.O. (ppm)	pH
<u>Menidia menidia</u>					
Controls	1	20.5/19	29.5/33.5	6.8/7.0	7.7/7.6
	2	20.5/19	29.5/33.5	7.4/7.2	7.7/7.7
	3	20.5/19	29.5/32.5	7.5/5.5	7.7/7.5
100% SPP	1	20.5/19	28.5/31.5	7.4/6.6	7.9/8.0
	2	20.5/19	28.5/32.5	7.5/7.2	8.0/8.0
	3	20.5/19	28.5/32.5	7.2/7.4	8.0/8.0
50% LP	1	20.5/19	28.5/33.5	7.4/7.3	8.1/8.0
	2	20.5/19	28.5/32.5	7.6/7.2	8.0/8.0
	3	20.5/19	28.5/32.5	8.0/6.4	8.1/7.8
10% LP	1	21/19	29.5/32.5	7.6/6.4	7.8/7.6
	2	21/19	29.5/32.5	7.1/5.0	7.8/7.5
	3	21/19	29.5/34.5	7.8/6.8	7.8/7.7
<u>Palaemonetes pugio</u>					
Controls	1	20/20	29/33	6.8/6.4	8.0/8.1
	2	20/20	29/33	6.8/7.0	8.0/8.1
	3	20/20	29/33	6.8/6.6	8.0/8.1
100% SPP	1	20/20	26/29	6.1/6.4	8.2/8.4
	2	20/20	26/29	6.1/6.0	8.2/8.4
	3	20/20	26/28.5	6.1/6.0	8.2/8.4

(Continued)

Table B-2
(Concluded)

INITIAL READINGS/FINAL READINGS					
		Temp. (°C)	Salinity (°/00)	D.O. (ppm)	pH
100% LP	1	20/20	25/28.5	6.6/6.4	8.4/8.4
	2	20/20	25/28	6.6/6.4	8.4/8.4
	3	20/20	25/29	6.6/6.0	8.4/8.4
<u>Mysidopsis bahia</u>					
Controls	1	20/20	30/33	7.0/7.0	8.1/8.1
	2	20/20	30/34	7.5/6.8	8.1/8.1
	3	20/20	30/34	7.4/7.0	8.1/8.1
100% SPP	1	20/20	27/31	7.0/6.8	8.3/8.4
	2	20/20	27/32.5	7.0/6.8	8.3/8.4
	3	20/20	27/32.5	7.0/6.9	8.3/8.4
100% LP	1	20/20	27.8/31	7.2/6.8	8.4/8.4
	2	20/20	27.8/30	7.2/6.8	8.4/8.5
	3	20/20	27.8/30.5	7.1/6.9	8.4/8.4
50% LP	1	20/20	29/31	7.2/6.8	8.1/8.4
	2	20/20	29/31	7.1/6.9	8.1/8.4
	3	20/20	29/31	7.2/7.0	8.1/8.4

Table B-3
Physical Parameters of Static Bioassays of
Sediment 3

INITIAL READINGS/FINAL READINGS		Temp. (°C)	Salinity (‰)	D.O. (ppm)	pH
<u>Menidia menidia</u>					
Controls	1	20.5/19	29.5/33.5	6.8/7.0	7.7/7.6
	2	20.5/19	29.5/33.5	7.4/7.2	7.7/7.7
	3	20.5/19	29.5/32.5	7.5/5.5	7.7/7.5
100% SPP	1	20.5/19	28.5/32	7.6/7.0	7.9/7.8
	2	20.5/19	28.5/32	7.2/7.2	7.8/7.8
	3	20.5/19	28.5/32	7.3/7.0	7.8/7.8
100% LP	1	20.5/19	28.7/32	7.5/7.0	7.7/7.7
	2	20.5/19	28.7/32	7.1/7.2	7.7/7.7
	3	20.5/19	28.7/32	6.8/7.0	7.7/7.6
<u>Palaemonetes pugio</u>					
Controls	1	19.5/20	30.3/32	6.3/5.2	8.0/8.0
	2	19.5/20	30.3/32	6.3/5.0	8.0/8.0
	3	19.5/20	30.3/32	6.3/5.2	8.0/8.0
100% SPP	1	19.5/20	28.7/32	6.3/5.0	8.2/8.2
	2	19.5/20	28.7/32	6.3/4.8	8.2/8.2
	3	19.5/20	28.7/32	6.3/4.9	8.2/8.2
100% LP	1	19.5/20	29.0/32.5	6.6/5.2	8.1/8.2
	2	19.5/20	29.0/32.5	6.6/5.0	8.1/8.2
	3	19.5/20	29.0/32.5	6.6/5.0	8.1/8.2

(Continued)

Table B-3
(Concluded)

INITIAL READINGS/FINAL READINGS					
		Temp. (°C)	Salinity (‰)	D.O. (ppm)	pH
<u>Mysidopsis bahia</u>					
Controls	1	20/20	30/33	7.0/7.0	8.1/8.1
	2	20/20	30/34	7.5/6.8	8.1/8.1
	3	20/20	30/34	7.4/7.0	8.1/8.1
100% SPP	1	20/20	28.2/31.5	7.4/7.0	8.1/8.3
	2	20/20	28.2/31.5	7.4/6.9	8.1/8.2
	3	20/20	28.2/31	7.3/6.9	8.1/8.2
100% LP	1	20/20	28/31	7.3/6.8	8.0/8.2
	2	20/20	28/30.5	7.2/6.8	8.0/8.2
	3	20/20	28/30.5	7.2/6.9	8.0/8.2

Table B-4
Physical Parameters of Solid Phase Bioassays of
Sediment 1

INITIAL READINGS/FINAL READINGS

		Temp. (°C)	Salinity (°/00)	D.O. (ppm)	pH
<u>Palaemonetes pugio</u> and					
<u>Mercenaria mercenaria</u>					
Controls	1	22/20.5	29.0/31.5	5.8/6.7	7.9/8.1
	2	22/20.5	28.5/31.5	5.9/6.8	7.9/8.1
	3	22/20.5	29.0/31.5	6.4/7.4	7.9/8.2
	4	22/20.5	28.5/31.5	6.5/6.4	7.9/8.1
	5	22/20.5	29.0/31.5	6.3/7.0	7.9/8.1
Sediment 1	1	22/20.5	28.3/31.4	6.1/6.6	8.0/8.2
	2	22/20.5	28.5/31.5	5.5/5.2	8.0/8.2
	3	22/20.5	28.5/31.5	5.8/6.0	8.0/8.2
	4	22/20.5	28.5/31.3	6.0/6.2	8.0/8.2
	5	22/20.5	28.5/30.5	5.8/6.6	8.0/8.2
<u>Neanthes arenaceodentata</u>					
Controls	1	19/20	29.5/33	7.7/7.2	7.9/8.2
	2	19/20	29/33	7.7/7.9	7.8/8.2
	3	19/20	29/33	7.8/7.4	7.8/8.2
	4	19/20	29/33	7.6/7.2	7.8/8.2
	5	19/20	29/33	7.7/7.3	7.8/7.2
Sediment 1	1	19/20	29/33	7.4/6.9	7.7/8.3
	2	19/20	30/33	7.0/6.6	7.7/8.3
	3	19/20	29/33	7.5/6.6	7.8/8.4
	4	19/20	29/33	7.2/6.8	7.7/8.3
	5	19/20	29/33	7.2/6.5	7.8/8.4

(Continued)

Temperature and dissolved oxygen were checked daily. Salinity and pH were measured initially and finally only.

Table B-4
(Concluded)

INITIAL READINGS/FINAL READINGS

		<u>Temp. (°C)</u>	<u>Salinity (°/00)</u>	<u>D.O. (ppm)</u>	<u>pH</u>
	<u>RERUN</u>	<u>Neanthes</u>	<u>arenaceodentata</u>		
Controls	1	21.5/20	31/33	8.4/7.3	8.3/8.4
	2	21.5/20	31/32	8.2/7.4	8.3/8.4
	3	21.5/20	31/33	8.3/7.5	8.3/8.4
	4	21.5/20	31/31	8.4/7.0	8.3/8.4
	5	21.5/20	31/31	8.3/7.6	8.3/8.4
Sediment 1	1	21.5/20	32/33	7.1/7.3	8.3/8.4
	2	21.5/20	32/33	7.6/7.1	8.3/8.4
	3	21.5/20	32/33	7.1/7.4	8.3/8.4
	4	21.5/20	32/33	7.4/7.2	8.3/8.4
	5	21.5/20	32/32	7.4/7.4	8.3/8.4

Table B-5
Physical Parameters of Solid Phase Bioassays of
Sediment 2

INITIAL READINGS/FINAL READINGS		Temp. (°C)	Salinity (‰)	D.O. (ppm)	pH
<u>Palaemonetes pugio</u> and					
<u>Mercenaria mercenaria</u>					
Controls	1	22/20.5	29.0/31.5	5.8/6.7	7.9/8.1
	2	22/20.5	28.5/31.5	5.9/6.8	7.9/8.1
	3	22/20.5	29.0/31.5	6.4/7.4	7.9/8.2
	4	22/20.5	28.5/31.5	6.5/6.4	7.9/8.1
	5	22/20.5	29.0/31.5	6.3/7.0	7.9/8.1
Sediment 2	1	22/20.5	30.0/32	4.0 ⁺ /7.3	7.9/8.2
	2	22/20.5	30.0/32	3.4/7.1	7.8/8.2
	3	22/20.5	30.5/32	4.0/6.3	7.7/8.1
	4	22/20.5	30.0/32	4.0/6.7	7.8/8.2
	5	22/20.5	30.0/32	5.8/6.4	7.8/8.2
<u>Neanthes arenaceodentata</u>					
Controls	1	19/20	29.5/33	7.7/7.2	7.9/8.2
	2	19/20	29/33	7.7/7.9	7.8/8.2
	3	19/20	29/33	7.8/7.4	7.8/8.2
	4	19/20	29/33	7.6/7.2	7.8/8.2
	5	19/20	29/33	7.7/7.3	7.8/7.2
Sediment 2	1	19/20	29/33	7.0/6.6	7.7/8.2
	2	19/20	29/33	6.6/6.7	7.7/8.2
	3	19/20	29/33	6.2/6.6	7.7/8.2
	4	19/20	29/33	5.4/6.8	7.7/8.2
	5	19/20	29/33	5.5/6.7	7.7/8.2

(Continued)

⁺See discussion paragraph 28.

Table B-5
(Concluded)

INITIAL READINGS/FINAL READINGS

		<u>Temp. (°C)</u>	<u>Salinity (‰)</u>	<u>D.O. (ppm)</u>	<u>pH</u>
	<u>RERUN</u>	<u>Neanthes arenaceodentata</u>			
Controls	1	21.5/20	31/33	8.4/7.3	8.3/8.4
	2	21.5/20	31/32	8.2/7.4	8.3/8.4
	3	21.5/20	31/33	8.3/7.5	8.3/8.4
	4	21.5/20	31/31	8.4/7.0	8.3/8.4
	5	21.5/20	31/31	8.3/7.6	8.3/8.4
Sediment 2	1	21.5/20	31/32.5	7.9/7.5	8.3/8.3
	2	21.5/10	31/33.5	7.4/7.4	8.3/8.3
	3	21.5/20	31/32.2	8.0/7.0	8.3/8.4
	4	21.5/20	31/32	5.9/6.8	8.3/8.3
	5	21.5/20	31/32.2	6.4/7.0	8.3/8.3

Table B-6
Physical Parameters of Solid Phase Bioassays of
Sediment 3

INITIAL READINGS/FINAL READINGS

		Temp. (°C)	Salinity (‰)	D.O. (ppm)	pH
<u>Palaemonetes pugio</u> and					
<u>Mercenaria mercenaria</u>					
Controls	1	22/20.5	29.0/31.5	5.8/6.7	7.9/8.1
	2	22/20.5	28.5/31.5	5.9/6.8	7.9/8.1
	3	22/20.5	29.0/31.5	6.4/7.4	7.9/8.2
	4	22/20.5	28.5/31.5	6.5/6.4	7.9/8.1
	5	22/20.5	29.0/31.5	6.3/7.0	7.9/8.1
Sediment 3	1	22/20.5	28.7/32.1	6.2/5.8	7.9/8.1
	2	22/20.5	28.5/32	5.5/6.2	7.9/8.1
	3	22/20.5	28.5/32	6.0/6.8	8.0/8.1
	4	22/20.5	28.5/31.7	6.2/6.2	7.9/8.1
	5	22/20.5	28.7/32	5.8/7.0	7.9/8.0
<u>Neanthes arenaceodentata</u>					
Controls	1	19/20	29.5/33	7.7/7.2	7.9/8.2
	2	19/20	29/33	7.7/7.9	7.8/8.2
	3	19/20	29/33	7.8/7.4	7.8/8.2
	4	19/20	29/33	7.6/7.2	7.8/8.2
	5	19/20	29/33	7.7/7.3	7.8/7.2
Sediment 3	1	19/20	29/33	7.2/6.8	7.8/8.2
	2	19/20	29/33	6.7/7.0	7.8/8.2
	3	19/20	26/32.8	6.7/7.0	7.8/8.2
	4	19/20	30/33	6.8/7.0	7.8/8.2
	5	19/20	30/32.5	6.8/6.9	7.8/8.2

(Continued)

Table B-6
(Concluded)

INITIAL READINGS/FINAL READINGS

		<u>Temp. (°C)</u>	<u>Salinity (°/00)</u>	<u>D.O. (ppm)</u>	<u>pH</u>
	<u>RERUN</u>	<u>Neanthes arenaceodentata</u>			
Controls	1	21.5/20	31/33	8.4/7.3	8.3/8.4
	2	21.5/20	31/32	8.2/7.4	8.3/8.4
	3	21.5/20	31/33	8.3/7.5	8.3/8.4
	4	21.5/20	31/31	8.4/7.0	8.3/8.4
	5	21.5/20	31/31	8.3/7.6	8.3/8.4
Sediment 3	1	21.5/20	32/33	7.0/8.1	8.3/8.2
	2	21.5/10	32/33	7.7/8.4	8.3/8.2
	3	21.5/20	32/33	7.8/8.2	8.3/8.2
	4	21.5/20	32/33	8.1/8.2	8.3/8.2
	5	21.5/20	32/33	7.9/8.4	8.3/8.2

February 1982

(Pensacola Harbor, FL)
US ARMY ENGINEER DISTRICT, MOBILE
IMCO Report on Ocean Dumping - CY81

1. Issuing Authority:
Division: South Atlantic District: Mobile
2. Date Issued:
3. Country of origin of dredged material or other matter:
United States of America.
Port of Loading (activity location): Pensacola Harbor, Florida
4. General description of dredged material, dredging, and transportation made:
 - a. Description: Silty-clay with low liquid limits (ML-CL)
 - b. Mode of Dredging: Hopper Dredge LANGFITT
 - c. Mode of Transportation: Hopper Dredge
5. Form in which dredged material is presented for disposal:
Slurry, Noncohesive Character
6. Material quantity (volume in metric units, cubic meters) of material dumped in the ocean and dates of actual disposal during reporting calendar year:
494,628 cubic meters 8 February thru 19 February 1981
7. Period for which permit is valid or project is scheduled: EPA Interim Agreement.
8. Expected frequency of dumping: 14 times daily, 5 days a week

9. Chemical composition of the dredged material as reported in elutriate test concentrations or "bulk" or "total" analyses as appropriate:

a. Elutriate test results:

(1) Nutrients: (Units are in ppm))

Ammonia Nitrogen	0.21
Total Kjeldahl Nitrogen	2.18
Phosphorous	0.123

(2) Metals: (Units are in ppb)

Hg	0.3	Ni	0.5
As	21.0	Cr	0.5
Cu	0.2	Fe++	10.0
Zn	40.0		
Cd	0.2		
Pb	0.5		

b. Other analyses: (Bulk)

(1) Metals: (Units are mg/kg)

Hg	0.13	Ni	1.8
As	0.7	Cr	16.8
Cu	1.8	Fe++	0.3
Zn	53.9		
Cd	0.1		
Pb	0.5		

(2) Other:

Volatile Solids	0.46%
Total Phosphate	28.4 mg/KgP
TKN	716.3 mg/KgN
Ammonia Nitrogen	37.1 mg/KgN
Oil and Grease	361 mg/Kg
COD	3.07 mg/Kg X 10 ³
TOC	1.15 mg/Kg X 10 ³

10. Bioassay and Bioassessment Evaluations:

- a. Liquid Phase Bioassay: Not required.
- b. Suspend Particulate Phase: Not required.
- c. Solid Phase Bioassay: Not required.

11. Properties of the dredged material:

- a. Solubility (% Water): Not Available.
- b. Density (gm/cc): 1.983
- c. pH: 7.5

12. Method of release: Bottom Dump

Time to release: 13 Minutes

13. Procedure and site for subsequent barge and hopper washing:

Dredge hopper is flushed at authorized disposal site.

14. Approved dumping site:

- a. Geographical position (latitude and longitude): 30°16'N, 87°20'W
- b. Depth of water (meters): 12
- c. Distance (kilometers) from nearest coast: 5.0

15. Additional information - relevant factors listed in Annex III of the Convention, e.g. toxicity, other biological properties:

Eh (m volts) 66

Pesticides analyses for one sample are as follows:

<u>PESTICIDE</u>	<u>CONCENTRATION UG/KG</u>	<u>MINIMUM DETECTABLE LEVEL</u>
Aldrin	N.D.	0.160
Chlordane	N.D.	1.438
Dieldrin	N.D.	0.220
DDD (TDE)	N.D.	0.590
DDE	N.D.	0.570
DDT	N.D.	0.746
Endrin	N.D.	0.313
Heptachlor	N.D.	0.080
Heptachlor Epoxide	N.D.	0.135
Lindane	N.D.	0.083
Methoxychlor	N.D.	1.916
Mirex	N.D.	0.534
Toxaphen	N.D.	11.496
Diazinon	0.486	0.238
Guthion	N.D.	6.945
Malthion	N.D.	3.449
Methyl Parathion	N.D.	4.086
Parathion	N.D.	4.071
PCB (AR 1242)	N.D.	2.012
PCB (AR 1254)	14.152	3.782
PCB (AR 1260)	N.D.	6.736

Notes: Results are expressed on a dry weight basis.
N.D.= Nondetectable.

February 1982

(Mobile Harbor, AL)
US ARMY ENGINEER DISTRICT, MOBILE
IMCO Report on Ocean Dumping - CY81

1. Issuing Authority:

Division: South Atlantic

District: Mobile

2. Date Issued:3. Country of origin of dredged material or other matter:

United States of America.

Port of Loading (activity location): Mobile Harbor, Alabama4. General description of dredged material, dredging, and transportation made:a. Description: Silty-clay with low liquid limits (ML-CL)b. Mode of Dredging: Hopper Dredge LANGFITTc. Mode of Transportation: Hopper Dredge5. Form in which dredged material is presented for disposal:

Slurry, Noncohesive Character

6. Material quantity (volume in metric units, cubic meters) of material dumped in the ocean and dates of actual disposal during reporting calendar year:

466,873 cubic meters

26 January thru 8 February 1981

4 March thru 11 March 1981

7. Period for which permit is valid or project is scheduled: EPA Interim Agreement.8. Expected frequency of dumping: 13 times daily, 5 days a week

9. Chemical composition of the dredged material as reported in elutriate test concentrations or "bulk" or "total" analyses as appropriate:

a. Elutriate test results:

(1) Nutrients: (Units are in ppm))

Ammonia Nitrogen	1.05
Total Kjeldahl Nitrogen	3.23
Phosphorous	0.340

(2) Metals: (Units are in ppb)

Hg	0.3	Ni	3.1
As	10.0	Cr	0.5
Cu	1.0	Fe++	22.0
Zn	22.4		
Cd	0.2		
Pb	2.3		

b. Other analyses: (Bulk)

(1) Metals: (Units are mg/kg)

Hg	0.68	Ni	5.35
As	1.05	Cr	13.6
Cu	3.5	Fe++	0.65
Zn	7.7		
Cd	0.1		
Pb	0.5		

(2) Other:

Volatile Solids	0.39%	
Total Phosphate	39.13	mg/KgP
TKN	139.4	mg/KgN
Ammonia Nitrogen	36.7	mg/KgN
Oil and Grease	473	mg/Kg
COD	2.59	mg/Kg X 10 ³
TOC	0.97	mg/Kg X 10 ³

10. Bioassay and Bioassessment Evaluations:

- a. Liquid Phase Bioassay: Not required.
- b. Suspend Particulate Phase: Not required.
- c. Solid Phase Bioassay: Not required.

11. Properties of the dredged material:

- a. Solubility (% Water): Not Available.
- b. Density (gm/cc): 1.983
- c. pH: 7.5

12. Method of release: Bottom Dump

Time to release: 13 Minutes

13. Procedure and site for subsequent barge and hopper washing:

Dredge hopper is flushed at authorized disposal site.

14. Approved dumping site:

- a. Geographical position (latitude and longitude): 30°09'N, 88°07'W
- b. Depth of water (meters): 10
- c. Distance (kilometers) from nearest coast: 6.7

15. Additional information - relevant factors listed in Annex III of the Convention, e.g. toxicity, other biological properties:

Eh (m volts) 308

Pesticides analyses for one sample are as follows:

<u>PESTICIDE</u>	<u>CONCENTRATION UG/KG</u>	<u>MINIMUM DETECTABLE LEVEL</u>
Aldrin	N.D.	0.229
Chlordane	N.D.	2.055
Dieldrin	N.D.	0.315
DDD (TDE)	N.D.	0.844
DDE	N.D.	0.815
DDT	N.D.	1.066
Endrin	N.D.	0.447
Heptachlor	N.D.	0.115
Heptachlor Epoxide	N.D.	0.193
Lindane	N.D.	0.118
Methoxychlor	N.D.	2.738
Mirex	N.D.	0.763
Toxaphen	N.D.	16.430
Diazinon	N.D.	0.341
Guthion	N.D.	9.926
Malthion	N.D.	4.929
Methyl Parathion	N.D.	5.839
Parathion	N.D.	5.819
PCB (AR 1242)	N.D.	5.405
PCB (AR 1260)	N.D.	6.332

Notes: Results are expressed on a dry weight basis.
N.D. = Nondetectable.

February 1982

(Pascagoula Harbor, MS)
US ARMY ENGINEER DISTRICT, MOBILE
IMCO Report on Ocean Dumping - CY81

1. Issuing Authority:

Division: South Atlantic

District: Mobile

2. Date Issued:3. Country of origin of dredged material or other matter:

United States of America.

Port of Loading (activity location): Pascagoula Harbor, Mississippi4. General description of dredged material, dredging, and transportation made:a. Description: Silty-clay with low liquid limits (ML-CL)b. Mode of Dredging: Hopper LANGFITTc. Mode of Transportation: Hopper Dredge5. Form in which dredged material is presented for disposal:

Slurry, Noncohesive Character

6. Material quantity (volume in metric units, cubic meters) of material dumped in the ocean and dates of actual disposal during reporting calendar year:

128,553 cubic meters

19 February thru 4 March 1981

7. Period for which permit is valid or project is scheduled: EPA Interim Agreement.8. Expected frequency of dumping: 14 times daily, 5 days a week

9. Chemical composition of the dredged material as reported in elutriate test concentrations or "bulk" or "total" analyses as appropriate:

a. Elutriate test results:

(1) Nutrients: (Units are in ppm)

Ammonia Nitrogen	5.08
Total Kjeldahl Nitrogen	12.88
Phosphorous	0.500

(2) Metals: (Units are in ppb)

Hg	0.2	Ni	2.6
As	24.0	Cr	0.5
Cu	1.1	Fe++	33.0
Zn	28.9		
Cd	0.2		
Pb	1.4		

b. Other analyses: (Bulk)

(1) Metals: (Units are mg/kg)

Hg	0.26	Ni	12.57
As	0.9	Cr	295.2
Cu	1.8	Fe++	0.3
Zn	51.53		
Cd	0.32		
Pb	14.37		

(2) Other:

Volatile Solids	4.71%	
Total Phosphate	28.25	mg/KgP
TKN	546.9	mg/KgN
Ammonia Nitrogen	54.5	mg/KgN
Oil and Grease	250	mg/Kg
COD	17.40	mg/Kg X 10 ³
TOC	6.51	mg/Kg X 10 ³

10. Bioassay and Bioassessment Evaluations:

- a. Liquid Phase Bioassay: Not required.
- b. Suspend Particulate Phase: Not required.
- c. Solid Phase Bioassay: Not required.

11. Properties of the dredged material:

- a. Solubility (% Water): Not Available.
- b. Density (gm/cc): 1.983
- c. pH: 7.5

12. Method of release: Bottom Dump

Time to release: 13 Minutes

13. Procedure and site for subsequent barge and hopper washing:

Dredge hopper is flushed at authorized disposal site.

14. Approved dumping site:

- a. Geographical position (latitude and longitude): 30°11'N, 88°33'W
- b. Depth of water (meters): 12
- c. Distance (kilometers) from nearest coast: 16.6

15. Additional information - relevant factors listed in Annex III of the Convention, e.g. toxicity, other biological properties:

Eh (m volts) 502

Pesticides analyses for one sample are as follows:

PESTICIDE	CONCENTRATION UG/KG	MINIMUM DETECTABLE
		LEVEL
Aldrin	N.D.	0.170
Chlordane	N.D.	1.526
Dieldrin	0.966	0.233
DDD (TDE)	N.D.	0.627
DDE	N.D.	0.605
DDT	N.D.	0.792
Endrin	N.D.	0.332
Heptachlor	N.D.	0.085
Heptachlor Epoxide	N.D.	0.144
Lindane	N.D.	0.088
Methoxychlor	N.D.	2.034
Mirex	N.D.	0.567
Toxaphen	N.D.	12.201
Diazinon	N.D.	0.253
Guthion	N.D.	7.372
Malathion	N.D.	3.660
Methyl Parathion	N.D.	4.337
Parathion	N.D.	4.321
PCB (AR 1242)	N.D.	2.135
PCB (AR 1242)	12.097	4.762
PCB (AR 1260)	N.D.	7.149

Notes: Results are expressed on a dry weight basis.
N.D.= Nondetectable.

February 1982

(Gulfport Harbor, MS)
US ARMY ENGINEER DISTRICT, MOBILE
IMCO Report on Ocean Dumping - CY81

1. Issuing Authority:

Division: South Atlantic

District: Mobile

2. Date Issued:3. Country of origin of dredged material or other matter:

United States of America.

Port of Loading (activity location): Gulfport Harbor, Mississippi4. General description of dredged material, dredging, and transportation made:a. Description: Silty-clay with low liquid limits (ML-CL)b. Mode of Dredging: Contract Dredge, DODGE ISLANDc. Mode of Transportation: Hopper Dredge5. Form in which dredged material is presented for disposal:

Slurry, Noncohesive Character

6. Material quantity (volume in metric units, cubic meters) of material dumped in the ocean and dates of actual disposal during reporting calendar year:

1,000,838 cubic meters

1 January thru 31 January 1981

7. Period for which permit is valid or project is scheduled: EPA Interim Agreement.8. Expected frequency of dumping: 13 times daily, 5 days a week

9. Chemical composition of the dredged material as reported in elutriate test concentrations or "bulk" or "total" analyses as appropriate:

a. Elutriate test results:

(1) Nutrients: (Units are in ppm))

Ammonia Nitrogen	0.32
Total Kjeldahl Nitrogen	13.10
Phosphorous	0.417

(2) Metals: (Units are in ppb)

Hg	0.2	Ni	1.8
As	21.0	Cr	0.8
Cu	7.0	Fe++	10.0
Zn	0.2		
Cd	0.6		
Pb	1.0		

b. Other analyses: (Bulk)

(1) Metals: (Units are mg/kg)

Hg	0.2	Ni	12.3
As	4.3	Cr	28.7
Cu	10.4	Fe++	0.3
Zn	62.6		
Cd	0.39		
Pb	21.6		

(2) Other:

Volatile Solids	9.89%	
Total Phosphate	51.39	mg/KgP
TKN	1285	mg/KgN
Ammonia Nitrogen	80.4	mg/KgN
Oil and Grease	430	mg/Kg
COD	24.75	mg/Kg X 10 ³
TOC	9.27	mg/Kg X 10 ³

10. Bioassay and Bioassessment Evaluations:

- a. Liquid Phase Bioassay: Not required.
- b. Suspend Particulate Phase: Not required.
- c. Solid Phase Bioassay: Not required.

11. Properties of the dredged material:

- a. Solubility (% Water): Not Available.
- b. Density (gm/cc): 1.983
- c. pH: 7.5

12. Method of release: Bottom Dump

Time to release: 13 Minutes

13. Procedure and site for subsequent barge and hopper washing:

Dredge hopper is flushed at authorized disposal site.

14. Approved dumping site:

- a. Geographical position (latitude and longitude): 30°10'N, 88°57'W
- b. Depth of water (meters): 11
- c. Distance (kilometers) from nearest coast: 16

15. Additional information - relevant factors listed in Annex III of the Convention, e.g. toxicity, other biological properties:

Eh (m volts) 114

Pesticides analyses for one sample are as follows:

<u>PESTICIDE</u>	<u>CONCENTRATION UG/KG</u>	<u>MINIMUM DETECTABLE</u>
		<u>LEVEL</u>
Aldrin	N.D.	0.277
Chlordane	N.D.	2.484
Dieldrin	N.D.	0.381
DDD (TDE)	N.D.	1.020
DDE	N.D.	0.985
DDT	7.098	2.509
Endrin	N.D.	0.540
Heptachlor	N.D.	0.139
Heptachlor Epoxide	N.D.	0.234
Lindane	N.D.	0.143
Methoxychlor	N.D.	3.310
Mirex	N.D.	0.923
Toxaphen	N.D.	19.859
Diazinon	N.D.	0.412
Guthion	N.D.	11.998
Malathion	N.D.	5.958
Methyl Parathion	N.D.	7.058
Parathion	N.D.	7.034
PCB (AR 1242)	N.D.	3.475
PCB (AR 1242)	N.D.	6.533
PCB (AR 1260)	N.D.	11.636

Notes: Results are expressed on a dry weight basis.
N.D.= Nondetectable.

(Mississippi River, Gulf Outlet, LA)
IMCO Report on Ocean Dumping - CY81

1. Issuing authority:

Division Lower Miss. Valley District New Orleans

2. Date issued: 15 July 1981

3. Country of origin of dredged material or other matter:

United States of America, New Orleans, La.

Port of Loading (activity location): Mississippi River-Gulf Outlet

4. General description of dredged material, dredging, and transportation made:

a. Description: Medium to fine green sand, silt, and small amount of clay.

b. Mode of dredging: Hopper dredge LANGFITT

c. Mode of transportation: Hopper dredge

5. Form in which dredged material is presented for disposal:

Noncohesive slurry

6. Material quantity (volume in metric units, cubic meters) of material dumped in the ocean and dates of actual disposal during reporting calendar year:

1,851,068 M³

14 August to 21 October 1981

7. Period for which permit is valid or project is scheduled:

6 Months

8. Expected frequency of dumping:

6 dumps/day, 7 days/week

9. Chemical composition of the dredged material as reported in elutriate test concentrations or "bulk" or "total" analyses as appropriate:

a. Elutriate test results:

- (1) Nutrients: Nitrogen (KJD) 3.8 mg/l
Nitrogen (NH₄) 3.7 mg/l
COD 630 mg/l

- (2) Metals: As 3.0 µg/l
Cd 1.0 µg/l
Mg 0.1 µg/l
Zn 20.0 µg/l
Mn 690 µg/l

(3) Organics: Diazinon 0.17 $\mu\text{g}/\text{L}$
2,4-D 0.02 $\mu\text{g}/\text{L}$

b. Other analyses: (Sediments)

(1) Metals: As 6.0 $\mu\text{g}/\text{g}$
Cr 9.0 $\mu\text{g}/\text{g}$
Cu 14.0 $\mu\text{g}/\text{g}$
Pb 20.0 $\mu\text{g}/\text{g}$
Mn 570 $\mu\text{g}/\text{g}$
Hg 0.03 $\mu\text{g}/\text{g}$
Ni 16.0 $\mu\text{g}/\text{g}$
Zn 40.0 $\mu\text{g}/\text{g}$

(2) Organics: Nitrogen (KJD) 4810 mg/kg
Oil and Grease 0.0
Chlorodane 10.0 mg/kg
PCB 3.0 mg/kg

(3) Other: *None*

10. Properties of the dredged material:

- a. Solubility (% Water): *80%*
- b. Density (gm/cc): *1.42*
- c. pH: *Not measured*

11. Method of packaging: *Not applicable.*

12. Method of release: *Bottom dump*

Time to release: *Instant*

13. Procedure and site for subsequent barge and hopper washing:

Wash with seawater at dump site once each day.

14. Approved dumping site:

a. Geographical position (latitude and longitude):

29°24'55"N, 88°59'30"W

b. Depth of water (meters): 12 M

c. Distance (kilometers) from nearest coast: 27 Km

15. Additional information - relevant factors listed in Annex III of the Convention, e.g., toxicity, other biological properties:

Bioassay and Bioassessment Evaluation:

a. *Liquid Phase - no effect.*

b. *Suspended Particulate Phase - no effect.*

c. *Salin Phase - no effect.*

(Mississippi River, Southwest Pass, LA)
IMCO Report on Ocean Dumping - CY 81

1. Issuing authority:

Division Lower Miss. Valley District New Orleans

2. Date issued: 23 Feb 81

3. Country of origin of dredged material or other matter:

United States of America, New Orleans, La.

Port of Loading (activity location): Mississippi River, Southwest Pass

4. General description of dredged material, dredging, and transportation made:

a. Description: Medium to fine grain sand, silt, and small amounts of clay.

b. Mode of dredging: Hopper dredge LANGFITT

c. Mode of transportation: Hopper dredge

5. Form in which dredged material is presented for disposal:

Noncohesive slurry

PRECEDING PAGE 81

6. Material quantity (volume in metric units, cubic meters) of material dumped in the ocean and dates of actual disposal during reporting calendar year:

1,352,866 M³

12 June to 30 July 1981

7. Period for which permit is valid or project is scheduled:

1 year

8. Expected frequency of dumping:

12 dumps/day, 7 days/week

9. Chemical composition of the dredged material as reported in elutriate test concentrations or "bulk" or "total" analyses as appropriate:

a. Elutriate test results:

- (1) Nutrients: Nitrogen (KJD) 2.5 mg/l
Nitrogen (NH₄ dissolved) 2.2 mg/l

- (2) Metals: As 3.0 ug/l
Cr 12.0 ug/l
Mn 2,200 ug/l
Hg 0.1 ug/l
Ni 3.0 ug/l
Zn 20.0 ug/l

(3) Organics: Phenols 14.0 $\mu\text{g}/\ell$
Diazinon 0.02 $\mu\text{g}/\ell$
2,4-D 0.01 $\mu\text{g}/\ell$

b. Other analyses: (Sediments)

(1) Metals: As 9.0 $\mu\text{g}/\text{g}$
Cr 10.0 $\mu\text{g}/\text{g}$
Cu 14.0 $\mu\text{g}/\text{g}$
Pb 20.0 $\mu\text{g}/\text{g}$
Mn 500.0 $\mu\text{g}/\text{g}$
Hg 0.05 $\mu\text{g}/\text{g}$
Ni 15.0 $\mu\text{g}/\text{g}$
Zn 45.0 $\mu\text{g}/\text{g}$

(2) Organics: Phenols 5.0 $\mu\text{g}/\ell$
Phosphorus 0.28 mg/ℓ
Carbon (Organic) 5.0 mg/ℓ

(3) Other: COD 32,000 mg/kg
Oil and Grease - none

10. Properties of the dredged material:

- a. Solubility (% Water): 80%
- b. Density (gm/cc): 1.25
- c. pH: Not measured

11. Method of packaging: Not applicable.

12. Method of release: Bottom dump

Time to release: Immediate

13. Procedure and site for subsequent barge and hopper washing:

Hopper flushed with seawater twice daily at the disposal site.

14. Approved dumping site:

a. Geographical position (latitude and longitude):

28°53'15"N, 09°26'30"W

b. Depth of water (meters): 12 M

c. Distance (kilometers) from nearest coast: 7.5 km

15. Additional information - relevant factors listed in Annex III of the Convention, e.g., toxicity, other biological properties:

Bioassay and Bioassessment Evaluation:

a. *Liquid Phase - no effect.*

b. *Suspended Particulate Phase - no effect.*

c. *Solid Phase - no effect.*

(Atchafalaya River, LA)
IMCO Report on Ocean Dumping - CY 81

1. Issuing authority:

Division Lower Mississippi Val. District New Orleans

2. Date issued: 6 Feb 81

3. Country of origin of dredged material or other matter:

United States of America. New Orleans, La.

Port of Loading (activity location): Atchafalaya River bar

4. General description of dredged material, dredging, and transportation made:

a. Description: Medium to fine grain sand and silt.

b. Mode of dredging: Hydraulic cutterhead dredge

c. Mode of transportation: floating pipeline

5. Form in which dredged material is presented for disposal:

noncohesive slurry

PRECEDING PAGE BE

6. Material quantity (volume in metric units, cubic meters) of material dumped in the ocean and dates of actual disposal during reporting calendar year:

7,062,250 M³ 4 Jul to 10 Nov 81

7. Period for which permit is valid or project is scheduled:

6 months

8. Expected frequency of dumping:

continuous averaging about 22 Hrs/day, 7 days/week

9. Chemical composition of the dredged material as reported in elutriate test concentrations or "bulk" or "total" analyses as appropriate:

a. Elutriate test results:

(1) Nutrients: Nitrogen (KJD) 2.8 Mg/l
Nitrogen (dissolved-NH₄) 2.3 Mg/l

(2) Metals: As 3.0 ug/l
Cr 4.0 ug/l
Cu 1.0 ug/l
Mn 1,200 ug/l
Ni 13 ug/l
Zn 10 ug/l

(3) Organics: Phenols 3.0 $\mu\text{g}/\ell$
Diazinon 0.02 $\mu\text{g}/\ell$
PCB 0.1 $\mu\text{g}/\ell$
2,4-D 0.01 $\mu\text{g}/\ell$

b. Other analyses: (Sediments)

(1) Metals: As 10 $\mu\text{g}/\text{g}$
Cr 9 $\mu\text{g}/\text{g}$
Cu 13 $\mu\text{g}/\text{g}$
Pb 15 $\mu\text{g}/\text{g}$
Mn 450 $\mu\text{g}/\text{g}$
Hg 0.05 $\mu\text{g}/\text{g}$
Ni 15 $\mu\text{g}/\text{g}$
Zn 50 $\mu\text{g}/\text{g}$

(2) Organics: DDD 0.4 $\mu\text{g}/\text{kg}$
PCE 3.0 $\mu\text{g}/\text{kg}$

(3) Other: Carbon (Tot. organic) 3.0 mg/Kg
COD 47,000 Mg/Kg
oil & grease 0

10. Properties of the dredged material:

- a. Solubility (% Water): 80%
- b. Density (gm/cc): 1.45
- c. pH: not measured

11. Method of packaging: Not applicable.

12. Method of release: *Floating pipeline*

Time to release: *Continuous*

13. Procedure and site for subsequent barge and hopper washing:

N/A

14. Approved dumping site:

- a. Geographical position (latitude and longitude):

29°16'06"N, 91°27'49"W

- b. Depth of water (meters): 5 M

- c. Distance (kilometers) from nearest coast: 10 km

15. Additional information - relevant factors listed in Annex III of the Convention, e.g., toxicity, other biological properties:

Bioassay and Bioassessment Evaluation:

- a. Liquid Phase - no effect
- b. Suspended Particulate Phase - no effect
- c. Solid Phase - no effect.

(Calcasieu River, LA)
IMCO Report on Ocean Dumping - CY 81

1. Issuing authority:

Division Lower Miss. Valley District New Orleans

2. Date issued: 7 Jan 81

3. Country of origin of dredged material or other matter:

United States of America, New Orleans La.

Port of Loading (activity location): Calcasieu River, bar channel

4. General description of dredged material, dredging, and transportation made:

a. Description: Fine grain sand, silt, and organic material.

b. Mode of dredging: Hopper dredges LANGFITT, GOETHALS, & MCFARLAND

c. Mode of transportation: Agitation and dredge and haul

5. Form in which dredged material is presented for disposal:

Noncohesive slurry

PRECEDING PAGE B

6. Material quantity (volume in metric units, cubic meters) of material dumped in the ocean and dates of actual disposal during reporting calendar year:

10,461,933 M³ 7 Jan to 28 May 1981

7. Period for which permit is valid or project is scheduled:

6 months

8. Expected frequency of dumping: Agitation is continuous; dredge and haul averaged 10 dumps/day/dredge

9. Chemical composition of the dredged material as reported in elutriate test concentrations or "bulk" or "total" analyses as appropriate:

a. Elutriate test results:

- (1) Nutrients: Nitrogen (KJD) 1.8 mg/l
Nitrogen (dissolved NH₄) 1.3 mg/l

- (2) Metals: As 5.0 µg/l
Cd 1.0 µg/l
Cr 2.0 µg/l
Mn 540 µg/l
Hg 0.1 µg/l

(3) Organics: Diazinon 0.04 $\mu\text{g/l}$
Silvex 0.01 $\mu\text{g/l}$
2,4-D 0.9 $\mu\text{g/l}$

b. Other analyses: (Sediments)

(1) Metals: Cr 4.0 $\mu\text{g/g}$
Cu 3.0 $\mu\text{g/g}$
Mn 190 $\mu\text{g/g}$
Hg 0.01 $\mu\text{g/g}$
Zn 10 $\mu\text{g/g}$
Cd 0.02 $\mu\text{g/g}$

(2) Organics: Phenol 2.0 $\mu\text{g/l}$
DDD 0.2 $\mu\text{g/l}$
DDE 0.2 $\mu\text{g/l}$
PCB 3.0 $\mu\text{g/l}$

(3) Other: Carbon (Tot. organic) 2.5 mg/l
COD 14,000 mg/kg
Nitrogen (KJN) 2.600 mg/kg
Phosphorus (Tot. PO₄) 0.09 mg/l

10. Properties of the dredged material:

- a. Solubility (% Water): 80%
- b. Density (gm/cc): 1.3
- c. pH: not measured

11. Method of packaging: Not applicable.

12. Method of release: Bottom dump for dredge & haul; continuous overflow of hoppers during agitation.

Time to release: Immediate for bottom dump, continuous for agitation.

13. Procedure and site for subsequent barge and hopper washing:

Hoppers flushed twice daily with seawater at disposal site.

14. Approved dumping site:

a. Geographical position (latitude and longitude):

29°42'06"N, 93°20'39"W

b. Depth of water (meters): 8M

c. Distance (kilometers) from nearest coast: 5km

15. Additional information - relevant factors listed in Annex III of the Convention, e.g., toxicity, other biological properties:

Bioassay and Bioassessment Evaluation: Results of the initial bioassay indicated that material to be dredged from this channel was unacceptable for disposal in the Gulf of Mexico. There was excessive mortality of test organisms as compared to those in the control. The organisms selected for the test were probably too sensitive for the type of sediments that are present in this channel. Further testing in the solid phase using less sensitive organisms showed that mortalities were not significant and that there was no potential for bioaccumulation, particularly of Annex I constituents.

(Sabine - Neches Waterway, TX)
IMCO Report on Ocean Dumping - CY 81

1. Issuing authority:

Division Southwestern District Galveston

2. Date issued: March 1981

3. Country of origin of dredged material or other matter:

USA, State of Texas

Port of Loading (activity location): Sabine-Neches Waterway, Texas

4. General description of dredged material, dredging, and transportation made:

a. Description:

Silt, sand and clay

b. Mode of dredging: Hopper Dredge "Long Island"

c. Mode of transportation: Hopper dredge

5. Form in which dredged material is presented for disposal:

Slurry - silt and clay in suspension

PRECEDING PAGE

6. Material quantity (volume in metric units, cubic meters) of material dumped in the ocean and dates of actual disposal during reporting calendar year:

Mar - May 81 2,744,377m³

7. Period for which permit is valid or project is scheduled:

90 days

8. Expected frequency of dumping:

10 daily 7 days/week

9. Chemical composition of the liquid phase of dredged material as described in the 11 Jan 77 Federal Register which contains the Environmental Protection Agency's final regulations and criteria:

a. Liquid Phase test results: No statistical significance

(1) Nutrients:

(2) Metals:

(3) Organics:

b. Other analyses:

(1) Metals:

(2) Organics:

(3) Other:

10. Bioassay and Bioassessment Evaluations:

- a. Liquid Phase Bioassay: No effect
- b. Suspended Particulate Phase Bioassay: No effect
- c. Solid Phase Bioassay: No effect

11. Properties of the dredged material:

- a. Solubility (% Water): 80
- b. Density (gm/cc): 1.4
- c. pH: N/A

12. Method of release: Bottom release

Time to release: Immediate

13. Procedure and site for subsequent barge and hopper washing:

Hoppers flushed at authorized disposal sites

14. Approved dumping site:

a. Geographical position (latitude and longitude):

Area No. 4 - $29^{\circ}36'$, $93^{\circ}49'$ (center coordinates)

b. Depth of water (meters): 7

c. Distance (kilometers) from nearest coast: 5

15. Additional information:

(Corpus Christi, Ship Channel, TX)
IMCO Report on Ocean Dumping - CY 1981

1. Issuing authority:

Division Southwestern District Galveston

2. Date issued: January 1981

3. Country of origin of dredged material or other matter:

USA, State of Texas

Port of Loading (activity location): Corpus Christi Ship Channel, Texas

4. General description of dredged material, dredging, and transportation made:

a. Description:

Sand, silt

b. Mode of dredging: Hopper Dredge "Goethals"

c. Mode of transportation: Hopper Dredge

5. Form in which dredged material is presented for disposal:

Sand with suspended silt

PRECEDING PAGE B

6. Material quantity (volume in metric units, cubic meters) of material dumped in the ocean and dates of actual disposal during reporting calendar year:

Jan - Mar 81 1,506,546 m³

7. Period for which permit is valid or project is scheduled:

90 days

8. Expected frequency of dumping:

7 daily 7 days/week

9. Chemical composition of the liquid phase of dredged material as described in the 11 Jan 77 Federal Register which contains the Environmental Protection Agency's final regulations and criteria:

- a. Liquid Phase test results: No statistical significance

(1) Nutrients:

(2) Metals:

(3) Organics:

b. Other analyses:

(1) Metals:

(2) Organics:

(3) Other:

10. Bioassay and Bioassessment Evaluations:

- a. Liquid Phase Bioassay: No effect
- b. Suspended Particulate Phase Bioassay: No effect
- c. Solid Phase Bioassay: No effect

11. Properties of the dredged material:

- a. Solubility (% Water): 80
- b. Density (gm/cc): 2.0
- c. pH: N/A

12. Method of release: Bottom release

Time to release: Immediate

13. Procedure and site for subsequent barge and hopper washing:

Hoppers flushed at authorized disposal site.

14. Approved dumping site:

a. Geographical position (latitude and longitude):

27°49' . 97°00' (center coordinates)

b. Depth of water (meters): 12

c. Distance (kilometers) from nearest coast: 1.8

15. Additional information:

(Brazos Island Harbor, TX)
IMCO Report on Ocean Dumping - CY 1981

1. Issuing authority:

Division Southwestern

District Galveston

2. Date issued: October 1981

3. Country of origin of dredged material or other matter:

USA, State of Texas

Port of Loading (activity location): Brazos Island Harbor, Texas

4. General description of dredged material, dredging, and transportation made:

a. Description:

Sandy with silt.

b. Mode of dredging: Hopper Dredge "Langfitt"

c. Mode of transportation: Hopper dredge

5. Form in which dredged material is presented for disposal:

Slurry - sand and silt in suspension

PRECEDING PAGE

6. Material quantity (volume in metric units, cubic meters) of material dumped in the ocean and dates of actual disposal during reporting calendar year:

Oct - Nov 81 524,870 m³

7. Period for which permit is valid or project is scheduled:

60 days

8. Expected frequency of dumping:

8 daily. 7 days/week

9. Chemical composition of the liquid phase of dredged material as described in the 11 Jan 77 Federal Register which contains the Environmental Protection Agency's final regulations and criteria:

a. Liquid Phase test results: No statistical significance

(1) Nutrients:

(2) Metals:

(3) Organics:

b. Other analyses:

(1) Metals:

(2) Organics:

(3) Other:

10. Bioassay and Bioassessment Evaluations:

- a. Liquid Phase Bioassay: No effect
- b. Suspended Particulate Phase Bioassay: No effect
- c. Solid Phase Bioassay: No effect

11. Properties of the dredged material:

- a. Solubility (% Water): 80
- b. Density (gm/cc): 2.1
- c. pH: N/A

12. Method of release: Bottom release

Time to release: Immediate

13. Procedure and site for subsequent barge and hopper washing:

Hoppers flushed at authorized disposal site

14. Approved dumping site:

a. Geographical position (latitude and longitude):

26°04' , 97°07' (Center coordinates)

b. Depth of water (meters): 13

c. Distance (kilometers) from nearest coast: 3.5 KM

15. Additional information:

(Humboldt Harbor, CA)
INCO REPORT ON OCEAN DUMPING

CY 1981

1. Issuing authority:

Division South Pacific District San Francisco

2. Date issued: 3 March 1981

3. Country of origin of dredged material or other matter:

United States of America, California

Port of Loading (activity location): Humboldt Harbor, Bar & Entrance Channel

4. General description of dredged material, dredging, and transportation made:

a. Description:

Fine sand with trace of silt.

98% Sand

2% Silt

b. Mode of dredging: Trailing Hopper Dredge

c. Mode of transportation: Hopper Dredge

5. Form in which dredged material is presented for disposal:

Settled Sand

PRECEDING PAGE

6. Material quantity (volume in metric units, cubic meters) of material dumped in the ocean and dates of actual disposal during reporting calendar year:

418,900 cubic meters

21 March - 14 May 1981

7. Period for which permit is valid or project is scheduled:

90 days

8. Expected frequency of dumping:

11 loads per day

9. Chemical composition of the liquid phase of dredged material as described in the 11 Jan 77 Federal Register which contains the Environmental Protection Agency's final regulations and criteria:

a. Liquid Phase test results

- (1) Nutrients: Not tested. Meets criteria of Section 227.13 (b) (1),
ocean dumping rules and regulations, F.R. Vol 42 No. 7, 11 Jan 1977
(2) Metals: same as above
(3) Organics: same as above

b. Other analysis:

- (1) Metals: same as above
(2) Organics: same as above
(3) Other: same as above

10. Bioassay and Bioassessment Evaluations:

a. Liquid Phase Bioassay: Not tested. Meets criteria of Section 227.13
(b) (1), ocean dumping rules and regulations, F.R. Vol 42 No.7,
11 Jan 1977

b. Suspend Particulate Phase Bioassay: same as above

c. Solid Phase Bioassay: same as above

11. Properties of the dredged material:

- a. Solubility (% Water): 45%
- b. Density (gm/cc): 1.938
- c. ph: not tested

12. Method of Release: bottom dump

Time to release: 9 minutes

13. Procedure and site for subsequent barge and hopper washing:

Hoppers flushed at authorized disposal site.

14. Approved dumping site:

- a. Geographical position (latitude and longitude):
40° 45' 44"N 124° 15' 42"W
- b. Depth of water (meters): 26
- c. Distance (kilometers) from nearest coast: 2.6

15. Additional information: None

(Humboldt Harbor, CA)
IMCO REPORT ON OCEAN DUMPING

CY 1981

1. Issuing authority:

Division South Pacific District San Francisco

2. Date issued: 3 March 1981

3. Country of origin of dredged material or other matter:

United States of America, California

Port of Loading (activity location): Humboldt Harbor, North Bay Channel

4. General description of dredged material, dredging, and transportation made:

a. Description:

Sand and Gravel
90% Sand
8% Gravel
2% Silt

b. Mode of dredging: Trailing Hopper Dredge

c. Mode of transportation: Hopper Dredge

5. Form in which dredged material is presented for disposal:

Settled Sand and Gravel

PRECEDING PAGE B

6. Material quantity (volume in metric units, cubic meters) of material dumped in the ocean and dates of actual disposal during reporting calendar year:

232,900 cubic meters

5 March - 17 May 1981

7. Period for which permit is valid or project is scheduled:

90 days

8. Expected frequency of dumping:

10 loads per day

9. Chemical composition of the liquid phase of dredged material as described in the 11 Jan 77 Federal Register which contains the Environmental Protection Agency's final regulations and criteria:

a. Liquid Phase test results

- (1) Nutrients: Not tested. Meets criteria of Section 227.13 (b)(1) ocean dumping rules and regulations - F.R. Vol 42 No. 7, 11 Jan 1977
- (2) Metals: same as above
- (3) Organics: same as above

b. Other analysis: same as above

- (1) Metals: same as above
- (2) Organics: same as above
- (3) Other: same as above

10. Bioassay and Bioassessment Evaluations:

- a. Liquid Phase Bioassay: Not tested. Meets criteria of Section 227.13 (b)(1) ocean dumping rules and regulations - F.R. Vol 42 No. 7, 11 Jan 1977
- b. Suspend Particulate Phase Bioassay: same as above
- c. Solid Phase Bioassay: same as above

11. Properties of the dredged material:

- a. Solubility (% Water): 45%
b. Density (gm/cc): 1.958
c. pH: not tested

12. Method of Release:

bottom dump

Time to release:

9 minutes

13. Procedure and site for subsequent barge and hopper washing:

Hoppers flushed at authorized disposal site.

14. Approved dumping site:

- a. Geographical position (latitude and longitude):
40° 45' 44"N 124° 15' 42"W
b. Depth of water (meters): 26
c. Distance (kilometers) from nearest coast: 2.6

15. Additional information:

None

(Humboldt Harbor, CA)
IMCO REPORT ON OCEAN DUMPING

CY 1981

1. Issuing authority:

Division South Pacific District San Francisco

2. Date issued: 3 May and 24 Aug 1981

3. Country of origin of dredged material or other matter:

United States of America, California

Port of Loading (activity location): Humboldt Harbor, Fields Landing Channel

4. General description of dredged material, dredging, and transportation made:

a. Description:

Fine sand and gravel
86% Sand
7% Gravel
7% Silt

b. Mode of dredging: Trailing Hopper Dredge

c. Mode of transportation: Hopper Dredge

5. Form in which dredged material is presented for disposal:

Settled Sand

PRECEDING PAGE

6. Material quantity (volume in metric units, cubic meters) of material dumped in the ocean and dates of actual disposal during reporting calendar year:

4,100 cubic meters	17 - 27 Mar 1981
33,200 cubic meters	26 Aug - 9 Sept 1981

7. Period for which permit is valid or project is scheduled:

15 days and 90 days

8. Expected frequency of dumping:

11 loads per day

9. Chemical composition of the liquid phase of dredged material as described in the 11 Jan 77 Federal Register which contains the Environmental Protection Agency's final regulations and criteria:

a. Liquid Phase test results

- (1) Nutrients: Not tested. Meets criteria of Section 227.13 (b) (1) ocean dumping rules and regulations - F.R. Vol 24 No. 7, 11 Jan 1977
- (2) Metals: same as above
- (3) Organics: same as above

b. Other analysis:

- (1) Metals: same as above
- (2) Organics: same as above
- (3) Other: same as above

10. Bioassay and Bioassessment Evaluations:

- a. Liquid Phase Bioassay: Not tested. Meets criteria of Section 227.13 (b) (1) ocean dumping rules and regulations - F.R. Vol 24 No. 7, 11 Jan 1977
- b. Suspend Particulate Phase Bioassay: same as above
- c. Solid Phase Bioassay: same as above

11. Properties of the dredged material:

- a. Solubility (% Water): 64%
b. Density (gm/cc): 1619
c. pll: not tested

12. Method of Release: bottom dump

Time to release: 6 minutes

13. Prodedure and site for subsequent barge and hopper washing:

Hoppers flushed at authorized disposal site

14. Approved dumping site:

- a. Geographical position (latitude and longitude):
40° 45' 44" N 124° 15' 42" W
b. Depth of water (meters): 26
c. Distance (kilometers) from nearest coast: 2.6

15. Additional information: None

(Chetco River, OR)
IMCO Report on Ocean Dumping - CY 81

1. Issuing authority:

Division North Pacific District Portland

2. Date issued: 26 Jan 79

3. Country of origin of dredged material or other matter:

United States of America, Oregon

Port of Loading (activity location): Chetco River, Oregon

4. General description of dredged material, dredging, and transportation made:

a. Description:

Sand & Gravel (GW) - Inside channel
Sand (SP) - Entrance

b. Mode of dredging: Hopper Dredges, PACIFIC YAQUINA

c. Mode of transportation: Hopper Dredge

5. Form in which dredged material is presented for disposal:

Sand & gravel - subangular to subrounded

PRECEDING PAGE

6. Material quantity (volume in metric units, cubic meters) of material dumped in the ocean and dates of actual disposal during reporting calendar year:

58,339 Cubic Meters
15 April - 12 May 1981
9-10 Sept 1981

7. Period for which permit is valid or project is scheduled:

April - Sept - 1981, 1982, 1983

8. Expected frequency of dumping:

8 Loads Daily, 5 Days per Week

9. Chemical composition of the liquid phase of dredged material as described in the 11 Jan 77 Federal Register which contains the Environmental Protection Agency's final regulations and criteria:

a. Liquid phase test results:

(1) Nutrients:

Meets chemical - biological testing exemption criteria

(2) Metals:

Hq - .00001 Mg/L
Pb - .008 Mg/L
Cd - .001 Mg/L
Zn - .14 Mg/L

(3) Organics:

b. Other analyses:

(1) Metals:

Hg - 0.16 Mg/L
Pb - 14.4 Mg/L
Cd - 3.3 Mg/L
Zn - 185 Mg/L

(2) Organics:

(3) Other:

Volitale Solids % - 4.2
COD - 15,446 Mg/L
DO 6.0 Mg/L

10. Bioassay and Bioassessment Evaluations:

- a. Liquid phase bioassay: No effect
- b. Suspend particulate phase bioassay: No effect
- c. Solid phase bioassay: No effect

11. Properties of the dredged material:

- a. Solubility (% Water): 36% H₂O
- b. Density (gm/cc): 2.06 gm/cc
- c. pH: 7.0

12. Method of release:

Bottom release - immediate

13. Procedure and site for subsequent barge and hopper washing:

Hoppers flushed at authorized disposal site.

14. Approved dumping site:

a. Geographical position (latitude and longitude):

42°-02'N(Lat); 124°-16'W(Long)

b. Depth of water (meters): 21.3 Meters

c. Distance (kilometers) from nearest coast: 1.6 Kilometers

15. Additional information -

(Coquille River, OR)
IMCO Report on Ocean Dumping - CY 81

1. Issuing authority:

Division North Pacific District Portland

2. Date issued: 26 Jan 79

3. Country of origin of dredged material or other matter:

United States of America, Oregon

Port of Loading (activity location): Coquille River, Oregon

4. General description of dredged material, dredging, and transportation made:

a. Description:

Sand (SP)

b. Mode of dredging: YAQUINA
Hopper Dredge PACIFIC

c. Mode of transportation: Hopper Dredge

5. Form in which dredged material is presented for disposal:

Sand - subrounded to subangular

PRECEDING PAGE 2

6. Material quantity (volume in metric units, cubic meters) of material dumped in the ocean and dates of actual disposal during reporting calendar year:

43,208 Cubic Meters

10 June; 3-15 July; 1-2, 15-18, 28-29 Sep 81

7. Period for which permit is valid or project is scheduled:

April-Sep 1981, 1982, 1983

8. Expected frequency of dumping:

13 Loads - 5 Days per Week

9. Chemical composition of the liquid phase of dredged material as described in the 11 Jan 77 Federal Register which contains the Environmental Protection Agency's final regulations and criteria:

a. Liquid phase test results:

(1) Nutrients:

Meets chemical - biological testing criteria

(2) Metals:

(3) Organics:

b. Other analyses:

(1) Metals:

(2) Organics:

% Volatile Solids .54 to 1.48

(3) Other:

10. Bioassay and Bioassessment Evaluations:

- a. Liquid phase bioassay: No effect
- b. Suspend particulate phase bioassay: No effect
- c. Solid phase bioassay: No effect

11. Properties of the dredged material:

- a. Solubility (% Water): 37% H₂O
- b. Density (gm/cc): 2.06 gm/cc
- c. pH: Unknown

12. Method of release:

Bottom release - immediate

13. Procedure and site for subsequent barge and hopper washing:

Hoppers flushed at authorized disposal site.

14. Approved dumping site:

a. Geographical position (latitude and longitude):

43°-08'N(Lat); 124°-27'W(Long)

b. Depth of water (meters): 18.3 Meters

c. Distance (kilometers) from nearest coast: 1.3 Kilometers

15. Additional information -

(Coos Bay, OR)
IMCO Report on Ocean Dumping - CY 81

1. Issuing authority:

Division North Pacific District Portland

2. Date issued: 27 July 1981

3. Country of origin of dredged material or other matter:

United States of America, Oregon

Port of Loading (activity location): Coos Bay, Oregon

4. General description of dredged material, dredging, and transportation made:

a. Description:

Silty sand to silty clay noncohesive Hydrogen Sulfide smell.

b. Mode of dredging: Hopper Dredges: BIDDLE
YAQUINA

c. Mode of transportation: Hopper Dredge

5. Form in which dredged material is presented for disposal:

Slurry noncohesive.

PRECEDING PAGE

6. Material quantity (volume in metric units, cubic meters) of material dumped in the ocean and dates of actual disposal during reporting calendar year:

42,510 cubic/meters - 12 August-27 August 1981.

7. Period for which permit is valid or project is scheduled:

27 July 1981 - 27 August 1981

8. Expected frequency of dumping:

4 times daily, 7 Days/Week

9. Chemical composition of the liquid phase of dredged material as described in the 11 Jan 77 Federal Register which contains the Environmental Protection Agency's final regulations and criteria:

a. Liquid phase test results:

(1) Nutrients:

NH ₄ ⁺ -N	5.3 Mg/ml
TOC	5 Mg/ml

(2) Metals:

AS	BD
Cd	8.5 Mg/ml
Cu	.5 Mg/ml
Fe	500 Mg/ml
Mn	980 Mg/ml
Pb	3 Mg/ml
Zn	18 Mg/ml
Hg	BD

(3) Organics:

DDE	.004 Mg/ml
Dieldrin	BD
DDD	.03 Mg/ml
DDT	.01 Mg/ml
PCB	BD

b. Other analyses:

(1) Metals:

AS	10.6 Mg/g
Cd	3.1 Mg/g
Cu	34 Mg/g
Fe	38,700 Mg/g
Mn	247 Mg/g
Pb	45 Mg/g
Zn	129 Mg/g
Hg	39 Mg/g

(2) Organics:

Aldrin	BD
DDE	.3 Mg/g
Dieldrin	.2 Mg/g
DDD	2.7 Mg/g
DDT	3.0 Mg/g
PCB	BD

(3) Other:

VS	200 Mg/g
O ₃ C	2,800 Mg/g
HC	1,200 Mg/g

10. Bioassay and Bioassessment Evaluations:

- a. Liquid phase bioassay: No effect
- b. Suspend particulate phase bioassay: No effect
- c. Solid phase bioassay: No effect

11. Properties of the dredged material:

- a. Solubility (% Water): 63% H₂O
- b. Density (gm/cc): 1.385 gm/cc
- c. pH: 7.3

12. Method of release:

Immediate release from bottom opening doors.

13. Procedure and site for subsequent barge and hopper washing:

Hoppers flushed at authorized disposal site.

14. Approved dumping site:

a. Geographical position (latitude and longitude):

43°24'N(Lat) 124°23'W(Long)

b. Depth of water (meters): 61 M

c. Distance (kilometers) from nearest coast: 5.6 km

15. Additional information -

(Coos Bay, OR)
IMCO Report on Ocean Dumping - CY 81

1. Issuing authority:

Division North Pacific District Portland

2. Date issued: 3 May 79

3. Country of origin of dredged material or other matter:

United States of America, Oregon

Port of Loading (activity location): Coos Bay, Oregon

4. General description of dredged material, dredging, and transportation made:

a. Description:

Sand (SP)

b. Mode of dredging: Hopper Dredge, EAGLE I

c. Mode of transportation: Hopper Dredge

5. Form in which dredged material is presented for disposal:

Sand - subrounded to subangular

PRECEDING PAGE

6. Material quantity (volume in metric units, cubic meters) of material dumped in the ocean and dates of actual disposal during reporting calendar year:

589,267 Cubic Meters
4-31 July 1981

7. Period for which permit is valid or project is scheduled:

Mar - Nov 1981, 1982, 1983

8. Expected frequency of dumping:

11 Loads per Day, 7 Days per Week

9. Chemical composition of the liquid phase of dredged material as described in the 11 Jan 77 Federal Register which contains the Environmental Protection Agency's final regulations and criteria:

a. Liquid phase test results:

(1) Nutrients:

TOC	4.7 Mg/Ml

(2) Metals:

Cd	4.3 Mg/Ml
Zn	97 Mg/Ml
Cu	8.5 Mg/Ml
Fe	7.0 Mg/Ml
Mn	90 Mg/Ml

(3) Organics:

Volatile Solids .4%

b. Other analyses:

(1) Metals:

Pb	7	Mg/g
Cd	1.0	Mg/g
Zn	49	Mg/g
Cu	1.1	Mg/g
Fe	2500	Mg/g
Mn	45	Mg/g

(2) Organics:

NH₄ 1.5 Mg/g

(3) Other:

10. Bioassay and Bioassessment Evaluations:

- a. Liquid phase bioassay: No effect
- b. Suspend particulate phase bioassay: No effect
- c. Solid phase bioassay: No effect

11. Properties of the dredged material:

- a. Solubility (% Water): 37% H₂O
- b. Density (gm/cc): 1.94 gm/cc
- c. pH: 7.1

12. Method of release:

Bottom release - immediate

13. Procedure and site for subsequent barge and hopper washing:

Hoppers flushed at authorized disposal sites.

14. Approved dumping site:

a. Geographical position (latitude and longitude):

43°22'N (Lat) 124°-22'W (Long)

b. Depth of water (meters): 24.4 Meters

c. Distance (kilometers) from nearest coast: 2.8 Kilometers

15. Additional information -

(Umpqua River, OR)
IMCO Report on Ocean Dumping - CY 81

1. Issuing authority:

Division North Pacific District Portland

2. Date issued: 26 Jan 79

3. Country of origin of dredged material or other matter:

United States of America, Oregon

Port of Loading (activity location): Umpqua River, Oregon

4. General description of dredged material, dredging, and transportation made:

a. Description:

Sand (SP)

b. Mode of dredging: Hopper Dredges YAQUINA PACIFIC

c. Mode of transportation: Hopper Dredge

5. Form in which dredged material is presented for disposal:

Sand - Subrounded - Subangular

PRECEDING PAGE

6. Material quantity (volume in metric units, cubic meters) of material dumped in the ocean and dates of actual disposal during reporting calendar year:

174,398 Cubic Meters
14-25, 31 May 1981
1-6 June 1981
7-9, 12-27 August 1981
2-5, 13-19 September 1981
20-22 October 1981

7. Period for which permit is valid or project is scheduled:

Feb-Nov 1981, 1982, 1983

8. Expected frequency of dumping:

11 Loads per Day, 5 Days per Week

9. Chemical composition of the liquid phase of dredged material as described in the 11 Jan 77 Federal Register which contains the Environmental Protection Agency's final regulations and criteria:

a. Liquid phase test results:

(1) Nutrients:

Ortho Phosphates	11-62 Ug/L
Phosphate Phosphorus	65-88 Ug/L

(2) Metals:

Cyanide	1-3 Ug/L

(3) Organics:

b. Other analyses:

(1) Metals:

(2) Organics:

Volatile Solids 8500-41300 Mg/Ug

(3) Other:

10. Bioassay and Bioassessment Evaluations:

- a. Liquid phase bioassay: No effect
- b. Suspend particulate phase bioassay: No effect
- c. Solid phase bioassay: No effect

11. Properties of the dredged material:

- a. Solubility (% Water): 36% H₂O
- b. Density (gm/cc): 2.05 gm/cc
- c. pH: 7.1

12. Method of release:

Bottom release - Immediate

13. Procedure and site for subsequent barge and hopper washing:

Hoppers flushed at authorized disposal site.

14. Approved dumping site:

a. Geographical position (latitude and longitude):

43°-40'N(Lat) 124°-14'W(Long)

b. Depth of water (meters): 27.4 Meters

c. Distance (kilometers) from nearest coast: 1.7 Kilometers

15. Additional information -

(Siuslaw River, OR)
IMCO Report on Ocean Dumping - CY 81

1. Issuing authority:

Division North Pacific District Portland

2. Date issued: 26 Jan 1979

3. Country of origin of dredged material or other matter:

United States of America, Oregon

Port of Loading (activity location): Siuslaw River, Oregon

4. General description of dredged material, dredging, and transportation made:

a. Description:

Sand (SP)

YAQUINA

b. Mode of dredging: Hopper Dredges PACIFIC

c. Mode of transportation: Hopper Dredge

5. Form in which dredged material is presented for disposal:

Sand - Angular - Rounded

PRECEDING PAGE

6. Material quantity (volume in metric units, cubic meters) of material dumped in the ocean and dates of actual disposal during reporting calendar year:

351,303 Cubic Meters
12-19, 25-31 May 1981
1-9 June 1981
16-31 July 1981
1-11 August 1981
5-18 Sept 1981

7. Period for which permit is valid or project is scheduled:

Mar-Sep 1981, 1982, 1983

8. Expected frequency of dumping:

10 Loads per Day, 5 Days per Week

9. Chemical composition of the liquid phase of dredged material as described in the 11 Jan 77 Federal Register which contains the Environmental Protection Agency's final regulations and criteria:

a. Liquid phase test results:

(1) Nutrients:

TKN	1.54 Mg/L
TPO ₄ ⁺	0.35 Mg/L

(2) Metals:

Hg .0010 PPM

(3) Organics:

b. Other analyses:

(1) Metals:

Hg 0.001 PPM

(2) Organics:

Volatile Solids 10,000 Mg/kg

(3) Other:

COD	77.6 Mg/L
Suspended Solids	56 Mg/L
TOC	1.6 Mg/L
S	None Detected

10. Bioassay and Bioassessment Evaluations:

- a. Liquid phase bioassay: No effect
- b. Suspend particulate phase bioassay: No effect
- c. Solid phase bioassay: No effect

11. Properties of the dredged material:

- a. Solubility (% Water): 49% H₂O
- b. Density (gm/cc): 2.01 gm/cc
- c. pH: 7.0

12. Method of release:

Bottom release - immediate.

13. Procedure and site for subsequent barge and hopper washing:

Hoppers flushed at authorized disposal site.

14. Approved dumping site:

a. Geographical position (latitude and longitude):

44°-01N(Lat) 124°-09'W(Long)

b. Depth of water (meters): 21.3 Meters

c. Distance (kilometers) from nearest coast: 1.7 Kilometers

15. Additional information -

(Yaquina Bay, OR)
IMCO Report on Ocean Dumping - CY 81

1. Issuing authority:

Division North Pacific District Portland

2. Date issued: 25 Jan 79

3. Country of origin of dredged material or other matter:

United States of America, Oregon

Port of Loading (activity location): Yaquina Bay, Oregon

4. General description of dredged material, dredging, and transportation made:

a. Description:

Sand (SP)

b. Mode of dredging: Hopper Dredge YAQUINA

c. Mode of transportation: Hopper Dredge

5. Form in which dredged material is presented for disposal:

Sand - Angular to Subrounded.

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6. Material quantity (volume in metric units, cubic meters) of material dumped in the ocean and dates of actual disposal during reporting calendar year:

108,107 Cubic Meters
6-30 June 1981

7. Period for which permit is valid or project is scheduled:

Mar-Oct. 1981, 1982, 1983

8. Expected frequency of dumping:

10 Loads per Day, 5 Days per Week

9. Chemical composition of the liquid phase of dredged material as described in the 11 Jan 77 Federal Register which contains the Environmental Protection Agency's final regulations and criteria:

a. Liquid phase test results:

(1) Nutrients:

TKN	0.42	Mg/L
TPO ₄ ⁺	0.38	Mg/L
Orthophosphate	0.064	Mg/L
T.O.C.	3.7	Mg/L

(2) Metals:

Hg	0.0	Mg/L
Mn	120	Mg/L
Cu	1	Mg/L
Cd	0.88	Mg/L
Pb	0.0	Mg/L
Zn	1.8	Mg/L

(3) Organics:

Phenols 9 Mg/L

b. Other analyses:

(1) Metals:

(2) Organics:

Volatile Solids 23,000 Mg/Kg

(3) Other:

C.O.D. - 172.2 Mg/L
Suspended Solids - 254 Mg/L
S= None Detected

10. Bioassay and Bioassessment Evaluations:

- a. Liquid phase bioassay: No Effect
- b. Suspend particulate phase bioassay: No Effect
- c. Solid phase bioassay: No Effect

11. Properties of the dredged material:

- a. Solubility (% Water): 26% H₂O
- b. Density (gm/cc): 2.04 GM/CC
- c. pH: 8.0

12. Method of release:

Bottom Release - Immediate

13. Procedure and site for subsequent barge and hopper washing:

Hoppers flushed at authorized disposal site.

14. Approved dumping site:

a. Geographical position (latitude and longitude):

44°-36'N(Lat) 124°-06'W(Long)

b. Depth of water (meters): 18.3 Meters

c. Distance (kilometers) from nearest coast: 3.3 Kilometers

15. Additional information -

(Mouth of Columbia River, OR and WA)
IMCO Report on Ocean Dumping - CY 81

1. Issuing authority:

Division North Pacific District Portland

2. Date issued: 25 Jan 79

3. Country of origin of dredged material or other matter:

United States of America, Oregon & Washington

Port of Loading (activity location): Mouth of Columbia River

4. General description of dredged material, dredging, and transportation made:

a. Description:

Sand (SP)

BIDDLE

b. Mode of dredging: Hopper Dredges, EAGLE I

c. Mode of transportation: Hopper Dredge

5. Form in which dredged material is presented for disposal:

Sand - subrounded - subangular

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6. Material quantity (volume in metric units, cubic meters) of material dumped in the ocean and dates of actual disposal during reporting calendar year:

4,064,22 Cubic Meters

4 May - 22 Oct 81

7. Period for which permit is valid or project is scheduled:

Feb-Oct 1981, 1982, 1983

8. Expected frequency of dumping:

13 Loads Daily, 7 Days per Week

9. Chemical composition of the liquid phase of dredged material as described in the 11 Jan 77 Federal Register which contains the Environmental Protection Agency's final regulations and criteria:

a. Liquid phase test results:

(1) Nutrients:

(2) Metals:

Hg - None detected

Pb - None detected

Cd - None detected

Zn 0.19 Mg/L

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(3) Organics:

b. Other analyses:

(1) Metals:

Hg - 0.038 PPM
Pb - 6.950 Mg/Kg
Cd - 0.64 Mg/Kg
Zn - 9.0 Mg/Kg

(2) Organics:

(3) Other:

10. Bioassay and Bioassessment Evaluations:

- a. Liquid phase bioassay: No effect
- b. Suspend particulate phase bioassay: No effect
- c. Solid phase bioassay: No effect

11. Properties of the dredged material:

- a. Solubility (% Water): 40% H₂O
- b. Density (gm/cc): 1.94 gm/cc
- c. pH: 7.0

12. Method of release:

Bottom release - immediate

13. Procedure and site for subsequent barge and hopper washing:

Hoppers flushed at authorized disposal sites.

14. Approved dumping site:

a. Geographical position (latitude and longitude):

This project has 5 authorized disposal sites; 3 used in 1981.

b. Depth of water (meters): see below

c. Distance (kilometers) from nearest coast: see below

15. Additional information -

<u>Disposal Area</u>	<u>Lat-Long</u>	<u>Water Depth</u>	<u>Distance From Coast</u>
Area A	46°-13'N 124°06'W	18.3 Meters	3.3 Kilometers
Area B	46°-14'N 124°-10'W	39.6 Meters	6.1 Kilometers
Area E	46°-15'N 124°-06'W	21.3 Meters	0.6 Kilometers

(Nome Harbor, AK)
IMCO Report on Ocean Dumping - CY 81

1. Issuing authority:

Division North Pacific District Alaska

2. Date issued: No Permit - EA Jan 78

3. Country of origin of dredged material or other matter:

U.S.A., Alaska

Port of Loading (activity location): Nome Harbor

4. General description of dredged material, dredging, and transportation made:

a. Description:

Silt and sand

b. Mode of dredging: Clamshell

c. Mode of transportation: Barge

5. Form in which dredged material is presented for disposal:

Noncohesive sand with trace of silt.

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6. Material quantity (volume in metric units, cubic meters) of material dumped in the ocean and dates of actual disposal during reporting calendar year:

17,100 cubic yards (1 June - 30 September 1981)

13,075 cubic meters

7. Period for which permit is valid or project is scheduled:

1 June - 30 September 1981

8. Expected frequency of dumping:

Three times daily

9. Chemical composition of the dredged material as reported in elutriate test concentrations or "bulk" or "total" analyses as appropriate:

a. Elutriate test results:

(1) Nutrients:

Not available

(2) Metals:

Not available

(3) Organics:

Not available

b. Other analyses:

(1) Metals:

Not available

(2) Organics:

Not available

(3) Other:

Not available

10. Properties of the dredged material:

- a. Solubility (% Water): Not available
- b. Density (gm/cc): 2 glcc (125 lb/ft³)
- c. pH: Not available

11. Method of packaging: Not applicable.

12. Method of release:

Side dump

Time to release:

Immediate

13. Procedure and site for subsequent barge and hopper washing:

Barge washed at authorized disposal site.

14. Approved dumping site:

a. Geographical position (latitude and longitude):

64° 30' Lat; 165° 25' Long

b. Depth of water (meters): 4 Meters

c. Distance (kilometers) from nearest coast: 1 Km

15. Additional information - relevant factors listed in Annex III of the Convention, e.g., toxicity, other biological properties:

(Honolulu Harbor, HI)
IMCO DREDGED MATERIAL OCEAN DISPOSAL REPORT

CY 81

1. Issuing authority:

Division Pacific Ocean District Honolulu

2. Date issued: 28 February 1979

3. Country of origin of dredged material or other matter:

United States of America, Hawaii

Port of Loading (activity location): Honolulu Harbor

4. General description of dredged material, dredging, and transportation made:

a. Description: Corals, sands, silts, and clays

b. Mode of dredging: Clamshell

c. Mode of transportation: Hopper-type dump scow

5. Form in which dredged material is presented for disposal:

Non-cohesive corals, sands, silts, and clays

6. Material quantity (volume in metric units, cubic meters) of material dumped in the ocean and dates of actual disposal during reporting calendar year.

56,600 cubic meters

2 January through 31 March 1981

7. Period for which permit is valid or project is scheduled:

734 days

8. Expected frequency of dumping:

Twice daily, 6 days per week.

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9. Chemical composition of the liquid phase of dredged material as described in the 11 Jan 77 Federal Register which contains the Environmental Protection Agency's final regulations and criteria:

- a. Liquid Phase test results: Not available.
- b. Other analyses: Not available.

10. Bioassay and Bioassessment Evaluations:

- a. Liquid Phase Bioassay: Not available.
- b. Suspend Particulate Phase Bioassay: Not available.
- c. Solid Phase Bioassay: Not available.

11. Properties of the dredged material:

- a. Solubility (% water): Not available.
- b. Density (gm/cc): Not available.
- c. pH: Not available.

12. Method of release: Immediate release from bottom opening doors.

13. Procedure and site for subsequent barge and hopper washing:

Hoppers flushed at authorized disposal site.

14. Approved dumping site:

- a. Geographical position (latitude and longitude):

21°14'30"N (Lat) 157°54'30"W (Long)

- b. Depth of water (meters): 460 meters

- c. Distance from nearest coast: 6.8 km

15. Additional information: None

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