

## MOUTH OF COLUMBIA RIVER SEDIMENT EVALUATION

Introduction

1. On 27 June, 1990 three samples were collected by box corer at the mouth of the Columbia River in support of annual maintenance dredging in the area (see attachment 1 for sample locations). Samples were taken from this same general area in 1982 and 1986. The purpose of sampling was to determine if the sediments in the shoal area being dredged had changed in any significant way and to provide OP-NW the results of a Dredge Test Analysis of the material.

Results

2. The physical nature of the sediments <sup>has</sup> have not changed over the years. These sediments were deposited in a very high energy area, where river flow and tidal currents are extreme, causing finer material to be washed away. They are 98.6 percent sand and 1.4 percent fines (attachment 2). The mean grain size was 0.26 millimeters which is in the range of medium to fine sand. The resuspended density, void ratio, percent volatile solids and specific gravity are shown in Table 1. The volatile solids content of 0.6 percent indicates a low organic content for the sediment. The physical parameters are similar to those of the sediments at the offshore disposal sites. Chemical results from the 1982 and 1986 studies, when compared to CENPP concern levels, indicated that the sediment was uncontaminated (attachment 1). Because of the unchanged physical nature of the sediments deposited in the area there is no reason to believe conditions have changed.

3. Based on CENPP Tiered Testing Guidelines and regulations of The Ocean Dumping Act (MPRSA) this material is acceptable for unconfined in-water disposal. The sediment contains less than 20 percent fines, less than 5 percent volatile solids and matches disposal area sediments in physical and chemical characteristics.

4. If there are any questions regarding this sediment evaluation report please contact Jim Britton at extension 6465.



DEPARTMENT OF THE ARMY  
NORTH PACIFIC DIVISION MATERIALS LABORATORY  
CORPS OF ENGINEERS  
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TROUTDALE, OREGON 97060-9503

CENPD-EN-G-L (1110-1-8100c)

25 Jul 90

MEMORANDUM FOR Commander, Portland District, ATTN: CENPP-PL-CH

SUBJECT: W.O.#90-SH-173, Report of Sediment Test Results

Project: MOUTH OF THE COLUMBIA RIVER  
Intended Use: ---  
Source of Material: Columbia River mouth  
Submitted by: CENPP-PL-CH (Jim Britton)  
Date Sampled: --- Date Received: 28 Jun 90  
Method of Test or Specification: ASTM, EM 1110-2-1906  
Reference: a) DA Form 2544, Order No. E86-90-0108, dated 9 Mar 90.  
b) NPD Form 300, Sample Transmittal, dated 28 Jun 90.

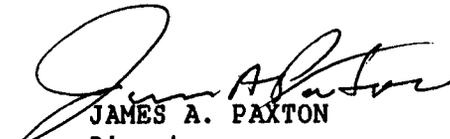
1. Enclosed are:

a. Enclosure 1, one summary sheet, "Results of Dredge Test Analysis," with results for three sediment samples.

b. Enclosure 2, a-c, three gradation analysis summary sheets.

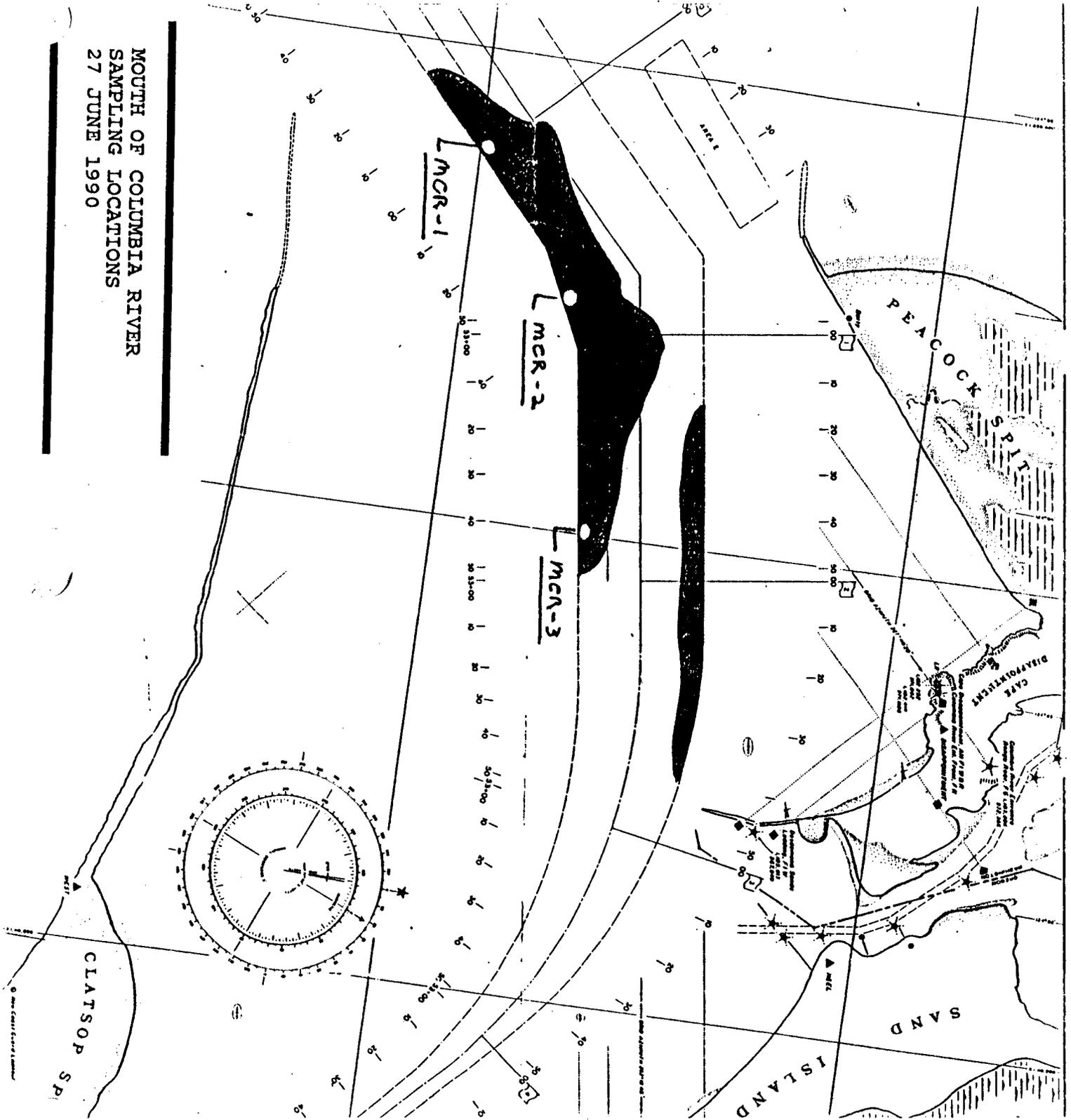
2. This completes all work requested to date.

Enclosures

  
JAMES A. PAXTON  
Director

Copies Furnished: CENPD-EN-G

MOUTH OF COLUMBIA RIVER  
SAMPLING LOCATIONS  
27 JUNE 1990



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MOUTH OF THE COLUMBIA RIVER

Results of Dredge Test Analysis

<u>CENPP Sample No.</u>	<u>Resuspended Density,gms/L</u>	<u>Void Ratio</u>	<u>Volatile Solids,%</u>	<u>Specific Gravity</u>	<u>Particle Roundness Grading</u>
MCR-1	1852	1.054	0.6	2.75	angular to subangular
MCR-2	1863	0.986	0.5	2.71	angular to subangular
MCR-3	1791	1.153	0.6	2.70	angular to subangular

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Received : 28 Jun 90

\* \* \* Corps of Engineers - North Pacific Division Materials Laboratory \* \* \*  
MOUTH OF THE COLUMBIA RIVER (90-SH-173)

Boring: --- Sample: MCR-1 Depth: --- Lab No.: 17301

Sieve Analysis -----  
Cumulative

No hydrometer analysis.

Sieve	Cumulative Grams Retained	Percent Passing
5 In.	0.00	100.0
2.5 In.	0.00	100.0
1.25 In.	0.00	100.0
5/8 In.	0.00	100.0
5/16 In.	0.00	100.0
No. 5	0.00	100.0
No. 10	0.00	100.0
Pan	118.10	0.0
No. 18	0.00	100.0
No. 35	0.20	99.8
No. 60	17.60	85.1
No. 120	106.90	9.5
No. 230	117.50	0.5
Pan	118.10	0.0

$\bar{x} = 0.19$

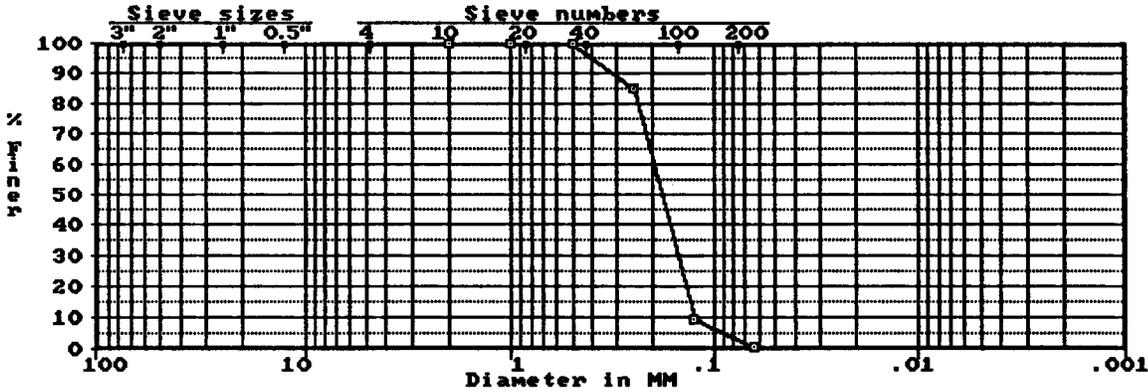
D85: 0.25 D60: 0.20 D50: 0.18 D30: 0.15 D15: 0.13 D10: 0.13 mm  
Cu: 1.59 Cc: 0.91  
Gravel: 0.0% Sand: 97.2% Fines: 2.8%

----- ASTM D 2487 Classification -----

SP Poorly graded SAND

----- Comments -----

SAMPLED ON 26 JUNE 90 BY JIM BRITTON (CENPP-PL-CH)



\*\*\* Corps of Engineers - North Pacific Division Materials Laboratory \*\*\*

MOUTH OF THE COLUMBIA RIVER (90-SH-173)

Boring: --- Sample: MCR-2 Depth: --- Lab No.: 17302

Sieve Analysis -----

Sieve	Cumulative Grams Retained	Percent Passing
5 In.	0.00	100.0
2.5 In.	0.00	100.0
1.25 In.	0.00	100.0
5/8 In.	0.00	100.0
5/16 In.	0.00	100.0
No. 5	0.00	100.0
No. 10	0.00	100.0
Pan	136.90	0.0
No. 18	0.00	100.0
No. 35	0.20	99.9
No. 60	50.30	63.3
No. 120	135.40	1.1
No. 230	136.60	0.2
Pan	136.90	0.0

No hydrometer analysis.

*X = 0.24*

D85: 0.35 D60: 0.24 D50: 0.22 D30: 0.18 D15: 0.15 D10: 0.14 mm

Cu: 1.73 Cc: 0.92

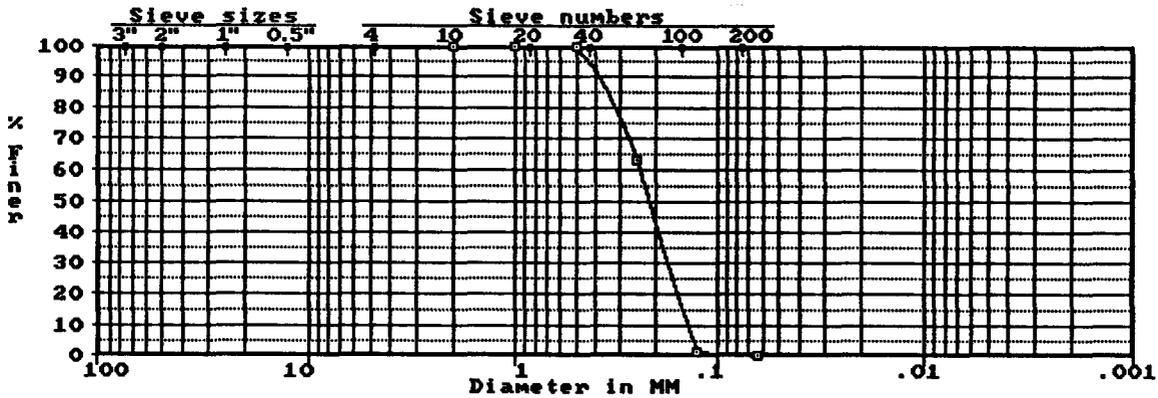
Gravel: 0.0% Sand: 99.6% Fines: 0.4%

----- ASTM D 2487 Classification -----

SP Poorly graded SAND

----- Comments -----

SAMPLED ON 26 JUNE 90 BY JIM BRITTON (CENPP-PL-CH)



\*\*\* Corps of Engineers - North Pacific Division Materials Laboratory \*\*\*

MOUTH OF THE COLUMBIA RIVER (90-SH-173)

Boring: --- Sample: MCR-3 Depth: --- Lab No.: 17303

Sieve Analysis -----

Sieve	Cumulative Grams Retained	Percent Passing
5 In.	0.00	100.0
2.5 In.	0.00	100.0
1.25 In.	0.00	100.0
5/8 In.	0.00	100.0
5/16 In.	0.00	100.0
No. 5	0.00	100.0
No. 10	0.00	100.0
Pan	140.90	0.0
No. 18	1.20	99.1
No. 35	11.40	91.9
No. 60	110.90	21.3
No. 120	137.70	2.3
No. 230	140.10	0.6
Pan	140.90	0.0

No hydrometer analysis.

$\bar{x} = 0.34$

D85: 0.47 D60: 0.36 D50: 0.33 D30: 0.27 D15: 0.22 D10: 0.19 mm

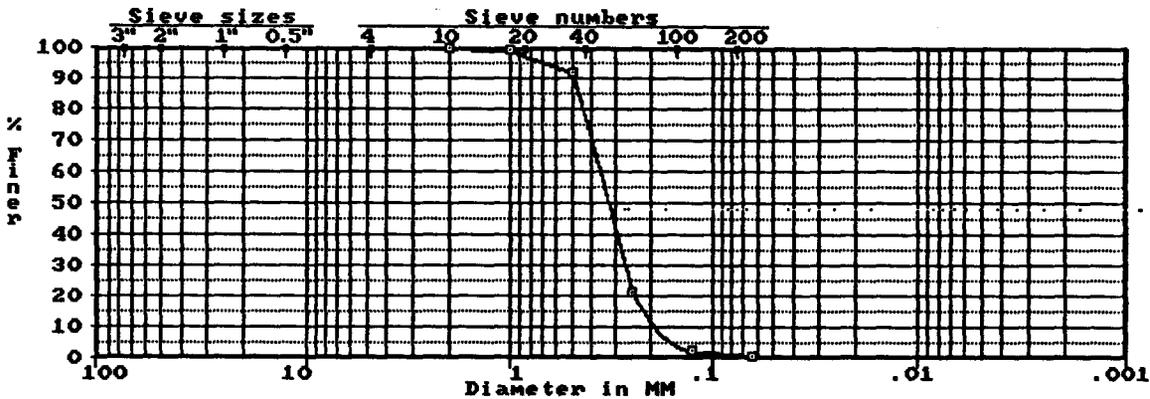
Gravel: 0.0% Sand: 99.0% Fines: 1.0%  
Cu: 1.89 Cc: 1.06

----- ASTM D 2487 Classification -----

SP Poorly graded SAND

----- Comments -----

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