US Army Corps
of Engineers
New York District
26 Federal Plaza
New York, N.Y. 10278
ATTN: Regulatory Branch

Public Notice

In replying refer to:

Public Notice No.91-0116-OD

Published:19 Oct. 1992 Expires:30 Nov. 1992

REQUEST FOR PUBLIC COMMENT

AND

ANNOUNCEMENT OF A PUBLIC HEARING

TO WHOM IT MAY CONCERN:

The New York District Corps of Engineers has received an application for a Department of the Army permit pursuant to Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403), Section 404 of the Clean Water Act (33 U.S.C. 1344) and Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972, as amended (33 U.S.C. 1413).

APPLICANT: **The Port Authority of New York and New Jersey**
One World Trade Center
New York, New York 10048

WORK: **Maintenance dredging with barge overflow and ocean disposal**

WATERWAYS: **Arthur Kill and Ambrose Channel**

LOCATION: **Howland Hook Marine Terminal, Borough of Staten Island, Richmond County, New York and the Federal Navigation Channel in New Jersey State Waters**

The New York District Corps of Engineers will conduct a **PUBLIC HEARING** to gather information to assist in the review of the permit application. The details of the hearing are as follows:

DATE: Thursday, November 19th, 1992

TIME: Afternoon Session - 3:00 PM to 5:00 PM

(dinner break)

Evening Session - 7:00 PM to end of hearing

LOCATION: Williamson Theater in Building C, College of Staten Island, Staten Island, Richmond County, New York

DIRECTIONS: See attached map and written directions

A detailed description and plans of the applicant's activity are enclosed to assist in your review.

The Corps of Engineers neither favors nor opposes the proposed work. The purpose of this public notice and the public hearing is to afford the Corps of Engineers the opportunity to hear from the general public on the application which is before the agency in order to acquire information which will be considered in evaluating the proposal. The Corps of Engineers is soliciting comments from the public; Federal, state, and local agencies and officials; Indian Tribes; and other interested parties in order to consider and evaluate the impacts of this proposed activity.

The decision whether to issue a permit will be based on an evaluation of the probable impact including cumulative impacts of the activity on the public interest. That decision will reflect the national concern for both protection and utilization of important resources. The benefit which reasonably may be expected to accrue from the activity must be balanced against its reasonably foreseeable detriments. All factors which may be relevant to the activity will be considered including the cumulative effects thereof; among those are conservation, economics, aesthetics, general environmental concerns, wetlands, historical properties, cultural values, fish and wildlife values, flood hazards, flood plain values, land use, navigation, shoreline erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food and fiber production, minerals needs, considerations of property ownership, and, in general, the needs and welfare of the people.

The public hearing is open to everyone. All interested individuals, groups, and agencies are invited to be present or be represented at the hearing. Everyone will be given an opportunity to express his or her views and to furnish specific data on aspects of the proposed activity. At the public hearing, any person may appear on his or her own behalf, or may be represented by counsel, or by other representatives.

Should commenters choose to write, all comment letters received in regard to this public notice will be made part of the permit application, and will also be considered in the evaluation of granting a permit.

ALL WRITTEN COMMENTS REGARDING THE PERMIT APPLICATION SHOULD BE MAILED TO REACH THIS OFFICE BEFORE THE EXPIRATION DATE OF THE NOTICE: otherwise, it will be presumed that there are no objections to the activity. IT SHOULD BE NOTED THAT INFORMATION SUBMITTED BY MAIL IS CONSIDERED JUST AS CAREFULLY IN THE PERMIT DECISION PROCESS AND BEARS THE SAME WEIGHT AS THAT FURNISHED AT A PUBLIC HEARING.

Any oral or written comments shall be used by the Corps of of Engineers to determine whether to issue, modify, condition or deny a permit for this proposal. To make this decision, comments are used to assess impacts on endangered species, historic properties, water quality, general environmental effects, and the other public interest factors listed above. Comments are used in the preparation of an Environmental Assessment and/or an Environmental Impact Statement pursuant to the National Environmental Policy Act. Comments are also used to determine the overall public interest of the proposed activity.

The public hearing will be conducted in accordance with the procedures outlined in Title 33 of the Code of Federal Regulations, Part 327. Any person will be permitted to submit oral or written statements concerning the subject matter of the hearing that is new information not already part of the administrative record; to call witnesses who may present oral statements; or to present recommendations as to an appropriate decision. Any person may present written statements or other additional information prior to the time the comment period is closed to public submission and may present proposed findings and recommendations. Opportunity for rebuttal during the public hearing will be afforded, but reasonable limits upon the number of rebuttals will be established.

Speakers will be requested to limit their oral presentations to approximately 10 minutes. Lengthier written presentations may be submitted but the speaker will be requested to summarize the presentation in the allotted 10 minutes. Cross-examination of speakers will not be permitted.

To ensure order during the hearing, the following speaker sequence will be followed:

1. Applicant's description of the proposed work;
2. Federal elected officials or their representatives;
3. Federal agencies' representatives and appointed federal officials;
4. State elected officials or their representatives;
5. State agencies' representatives and appointed state officials;
6. County elected officials;
7. County agencies' representatives and appointed county officials;
8. Local Government officials;
9. Organized environmental groups' representatives;
10. Organized citizen groups' representatives; and
11. Private citizens.

Speakers in the respective groups not having an opportunity to present their statements during the 3:00 to 5:00 PM session will be permitted to present their statements in sequential order during the evening session.

The public hearing will be reported verbatim. Copies of the proceedings (i. e., transcript) may be purchased from the Corps of Engineers by any person or group. Copies will be available for public inspection at the Corps of Engineers New York District office after the close of the comment period. The cost of a copy will correspond directly to the number of pages enclosed within the transcript. All attendees of the public hearing will be contacted by mail after the close of the comment period as to the exact addresses where the transcript can be inspected and/or purchased.

All written statements, charts, tabulations, and similar data offered in evidence at the hearings shall, subject to exclusion for reasons of redundancy, be received in evidence and will constitute a part of the hearing file which will become part of the administrative record for this permit action. For filing purposes it is requested that the material not exceed 8 1/2" x 14", if possible.

The hearing record will remain open until **5 PM on Monday, November 30, 1992** for the receipt of additional written comments. All comments should be sent to the following address in order to be received prior to the close of the record:

New York District Corps of Engineers
Regulatory Branch
26 Federal Plaza, Room 1937
New York, New York 10278-0090

Pursuant to Section 7 of the Endangered Species Act (16 U.S.C. 1531) and based upon a review of the latest published version of the threatened and endangered species listing, a preliminary determination is that the activity under consideration will not affect those species listed or their critical habitat.

Based upon a review of the latest published version of the National Register of Historic Places, there are no known sites eligible for, or included in, the Register within the permit area. Presently unknown archaeological, scientific, prehistorical or historical data may be lost by work accomplished under the required permit.

Reviews of activities pursuant to Section 404 of the Clean Water Act will include application of the guidelines promulgated by the Administrator, U.S. Environmental Protection Agency, under authority of Section 404(b) of the Clean Water Act and the applicant will obtain a water quality certificate or waiver from the appropriate state agency in accordance with Section 401 of the Clean Water Act prior to a permit decision.

Pursuant to section 307(c) of the Coastal Zone Management Act of 1972 as amended (16 U.S.C. 1456(c)), for activities under consideration that are located within the coastal zone of a state which has a federally approved coastal zone management program, the applicant has certified in the permit application that the activity complies with, and will be conducted in a manner that is consistent with, the approved state coastal zone management program. By this public notice, we are requesting the state's concurrence with, objection to, or waiver of the applicant's certification. No permit decision will be made until one of these actions occur.

For activities within the coastal zone of New York State, the applicant's certification and accompanying information is available from the Consistency Coordinator, New York State Department of State, Division of Coastal Resources and Waterfront Revitalization, Coastal Zone Management Program, 162 Washington Avenue, Albany, New York 12231, Telephone (518) 474-3642. For activities within the coastal zone of New Jersey the applicant's certification and accompanying information is available from the New Jersey Department of Environmental Protection, Bureau of Coastal Project Review, Room 702, L & I Building, CN 401, New Jersey 08625, Telephone Number (609) 292-2121.

In addition to water quality certification and coastal zone management program concurrence, the applicant has requested the following governmental authorizations for the activity under consideration:

Permit from New York State Department of Environmental Conservation

and

Waterfront Development Permit from the New Jersey State Department of Environmental Protection

It is requested that you communicate the foregoing information concerning the activity to any persons known by you to be interested and who did not receive a copy of this notice.

If you have any questions concerning the processing of the permit application or require further information regarding the public hearing, you may contact Mark Steven Roth at (212) 264-0184.

FOR THE COMMANDER:

Joseph J. Seebode
Chief, Regulatory Branch

Enclosures

DESCRIPTION OF WORK

The applicant, the Port Authority of New York and New Jersey, proposes to maintenance dredge the Howland Hook Marine Terminal by clamshell bucket with barge overflow. Approximately 50,000 cubic yards of material would be dredged from their facility on the Arthur Kill in the Borough of Staten Island, Richmond County, New York, to maximum depths of 35 and 40 feet below the plane of mean low water, with two feet of allowable overdepth, as shown on the attached drawings. The two contiguous dredge areas have a total length of approximately 2,500 feet and 145 feet in width. The stated purpose of the proposed project is to reestablish prior water depths to allow the revitalization and rehabilitation of an existing general cargo marine terminal. The proposal includes ocean disposal of the dredged material at the Mud Dump Site.

The permit for the use of the Mud Dump Site, if issued, will authorize, on an initial basis only, the dredging as specified in this notice. Any subsequent maintenance dredging during the life of the permit will require that the dredged material comply with the appropriate criteria in effect at that time, and will be dependent upon the availability of an approved disposal site. Consideration is being given to issuance of a three year permit for the dredging with review of compliance with the criteria in effect prior to each disposal.

The dredged material would be transported by dump scows and deposited by bottom dumping process at the Mud Dump Site as designated by the U.S. Environmental Protection Agency (USEPA), as shown on the attached maps. The Mud Dump Site has an area of 2 square miles and an average depth of 72 feet, having its corner points located at:

LATITUDE			LONGITUDE		
40°	23'	48" North	73°	51'	28" West
40°	21'	48" North	73°	50'	00" West
40°	21'	48" North	73°	51'	28" West
40°	23'	48" North	73°	50'	00" West

This site has been used for disposal of dredged material since 1914 and has disposal depths within the site ranging from 50 to 100 feet below mean low water. The U.S. Coast Guard conducts surveillance of ocean dumping at the Mud Dump Site.

It is estimated that since 1976 approximately 6.0 million cubic yards of material have been dumped annually at the present disposal site. The disposal of dredged material has created a mound of sediment at the site which, between 1936 and 1986, has resulted in an accumulation of about 44 feet of material.

Based upon analyses of 20 sediment samples submitted by the applicant, the character of the dredged material is as follows: 4.0% sand, 60.8% silt and 35.2% clay.

EPA Region II under the authority of 40 CFR Section 225.2(b) has requested that liquid phase chemical analysis be performed for mercury, cadmium, PCBs, and petroleum hydrocarbons. The results of this analysis are shown in Table 1.

TABLE 1

Liquid Phase Chemical Analysis Results (ppb)

CONSTITUENTS	D.L.	ELUTRIATE	SITE WATER
Mercury	(0.1)	<0.1	<0.1
Cadmium	(0.1)	<0.1	<0.1
PCB	(1.0)	<1.0	<1.0
DDT	(0.1)	<0.1	<0.1
Petroleum hydrocarbons(ppm)	(2.0)	<2.0	<2.0

D.L. - Detection Limits
ppb - parts per billion

Bioassay Results: In accordance with EPA's Ocean Dumping Regulations, published in the Register on 11 January 1977, suspended particulate phase and solid phase bioassays are required for the proposed dredged material utilizing the test species as discussed below. The results of these tests are presented in Table 2.

The suspended particulate phase is considered to be the supernatant remaining after one hour of undisturbed settling of the mixture resulting from a vigorous 30 minute agitation of one part bottom sediment from the dredging site with four parts water collected from the dredging site or the disposal site, as appropriate for the type of dredging operation. The solid phase is considered to be all material settling to the bottom within one hour. For this permit application, natural seawater was substituted for disposal site water in the solid phase bioassay. This substitution conforms with the procedures in the Implementation Manual for the Ecological Evaluation of Proposed Discharge of Dredged Material Into Ocean Waters.

For the suspended particulate phase bioassay, lethal concentrations (LC50s), those concentrations of suspended particulate phase resulting in 50% mortality, were determined for the animal species Acartia tonsa, Mysidopsis bahia and Menidia beryllina.

Based on these values, the LPC (Limiting Permissible Concentration) values are determined by applying a safety factor of 100 (0.01 times the critical EC50 or LC50). The material can be considered for disposal only if the concentration of the disposal water in both liquid and suspended particulate phases is diluted to below that of the LPC after 4 hours of initial mixing.

For the suspended particulate phase, Menidia beryllina was the most sensitive of the three species examined. The LC50 was determined to be 25% of the 100% suspended particulate phase after 96 hours. The resulting LPC was therefore determined to be 0.25%.

TABLE NUMBER 2: BIOASSAY RESULTS APPLICATION NUMBER: 91-0116-OD

Suspended particulate phase (96 Hour Test)

	LC 50 (critical)	LPC after 4 hours	Dilution after 4 hours
Acartia tonsa	12.0%	0.12%	0.0038
Mysidopsis bahia	>100.0%	>1.00%	0.0038
Menidia beryllina	25.0%	0.25%	0.0038

Solid Phase (10 days)

	% Survival in reference	% Survival in test	Difference (Reference-Test)	Is difference statistically significant? (p=0.05)
Palaemonetes pugio*	96.75	91.25	5.5	NO
Mercenaria mercenaria	99.0	100.0	1.0	NO
Nereis virens	85.0	77.8	7.2	NO
TOTAL COMMUNITY	93.36	89.57	3.79	NO

LC 50-Lethal Concentration resulting in 50% mortality
LPC-Limiting Permissible Concentration (0.01 times the critical LC 50)
* -four data points were used for the statistics due to a clogged tube and an outlier in the fifth replicate of reference and test samples, repectively.

The dilution of the proposed dredged material after disposal at the Mud Dump Site has been evaluated by use of the Tetra Tech computer model. A description of the model has been published as Technical Report D-78-47 of the Corps' Dredged Material Research Program, and is entitled Evaluation and Calibration of the Tetra Tech Dredged Material Disposal Models Based on Field Data. The New York District requested that a study be conducted which would give example dilutions resulting from typical disposal operations and dredged materials found in the New York District. This study has been completed and is entitled Discussion of Dredged Material Disposal Models and Their Application for the New York District.

Using the constraints in this study most closely approximating those of the disposal operation for this proposed dredged material, the dilution after four hours would be 0.0038%. The dilution after four hours of 0.0038% is below the LPC of 0.25% for the suspended particulate phases, respectively.

The solid phase is considered to be all material settling to the bottom within one hour of undisturbed settling of the mixture resulting from the vigorous 30 minute agitation of one part bottom sediment from the dredging site with four parts water collected from the dredging site or the disposal site, as appropriate for the type of dredging operation. For this permit application, natural seawater was substituted for disposal site water in the solid phase bioassay. This substitution conforms with the procedures in the Implementation Manual for the Ecological Evaluation of Proposed Discharge of Dredged Material Into Ocean Waters.

For the solid phase bioassay, the results are evaluated for biological and statistically significant differences in mortality between organisms subjected to both proposed dredged sediment test and a reference sediment. The reference sediment represents existing background conditions in the vicinity of the dumpsite, but away from the influence of any disposal operation. The Implementation Manual for the Ecological Evaluation of Proposed Discharge of Dredged Material into Ocean Waters, published by USEPA and the Corps of Engineers in July 1977, specifies that differences in survival of the test organisms in the reference and test treatments be evaluated either individually by species or on a pooled community basis. In addition, the Manual has defined the LPC for the solid phase to be exceeded when the difference in mortality between animals in the reference and test sediments is statistically significant (p=0.05) and greater than 10 percent.

As indicated in Table 2, differences in mortality between reference and test organisms subjected to the proposed dredged sediment were neither statistically significant at the 95% confidence level nor greater than 10% on an individual species basis for Paleomonetes pugio, Mercenaria mercenaria, and Nereis virens.

Body burden analyses of the solid phase organisms surviving the 10 day test to estimate bioaccumulation potential were made for mercury, cadmium, PCBs, DDT, and petroleum hydrocarbons. Mean levels for each constituent occurring in the test animals exposed to the proposed dredged material and to the reference sediment are shown in Table 3 below (reference values are in parentheses). Detection limits are shown for each of the chemical constituents analyzed.

TABLE 3

Body Burden Levels (ppm) in Test Species

Constituents	(D.L.)	Palaemonetes pugio*	Nereis virens	Mercenaria mercenaria
Mercury	(0.20)	N.D.(N.D.)	N.D.(N.D.)	N.D.(N.D.)
Cadmium	(0.25)	N.D.(N.D.)	N.D.(N.D.)	N.D.(N.D.)
PCB	(0.04)	0.064(0.04)	0.091(0.04)	N.D.(N.D.)
Petroleum hydrocarbons	(0.10)	66.9(3.53)	17.53(7.39)	4.45(4.05)
DDT	(0.20)	N.D.(N.D.)	N.D.(N.D.)	N.D.(N.D.)

ppm - parts per million
D.L. - Detection Limits
N.D. - Not detected
* - Number of replicates, 4 (four) instead of 5 (five), as explained in Table 2 (solid phase).

The data listed for the analysis of petroleum hydrocarbons includes petroleum compounds plus natural body lipids within the organism. As a result, the values indicated for the test are environmentally conservative. Analysts in the testing laboratory estimate the actual concentration of petroleum hydrocarbons to be below the detection limit based on detailed evaluation of the results.

The results of the 10 day bioassay results showed acceptable survival in test vs reference sediment organisms. No statistically significant differences in uptake between test and reference species were found for mercury, cadmium, or DDT. PCB and petroleum hydrocarbon results may be due to lipid interferences. No matrix guidelines exist for petroleum hydrocarbons. The PCB values are below the matrix guideline of 0.1 ppm in the shrimp and the 0.4 ppm matrix guideline for the marine worm.

In summary, the proposed dredged material does not exceed the LPC for the solid phase as defined in the Ocean Dumping Criteria, nor do laboratory tests for bioaccumulation indicate a significant environmental effect at the ocean disposal site.

Dioxin Results
(see Table 4)

Results of dioxin (2,3,7,8-TCDD) testing indicate greater than 90% survival in control, reference, and test 28-day bioassay organisms. Test sediment concentrations range from 8.5 to 39 parts per trillion (pptr), while tissue values range from 3.1 to 3.8 pptr. Bioaccumulation tests showed a statistically significant difference ($p=0.05$) between reference and test tissue levels. The reference organism average dioxin tissue level was 0.32 pptr, while all test tissue results were between 3 and 4 pptr.

As a result, the bioassay/bioaccumulation testing for dioxin indicates that the proposed dredged material does not meet the criteria for unrestricted ocean disposal. However, restricted ocean disposal, i. e., capping in accordance with a joint Corps of Engineers and US Environmental Protection Agency (Region II) interim dioxin disposal management plan, would be appropriate.

TABLE NUMBER 4: APPLICATION NUMBER: 91-0116-OD

28 DAY DIOXIN RESULTS-SOLID PHASE/WHOLE SEDIMENT

BIOASSAY RESULTS

	% Survival		Difference	Is difference statistically
	Reference	Test	(Reference-Test)	significant? (p=0.05)
Nereis virens	100	99	1.0	NO

BIOACCUMULATION RESULTS (pptr)*

			Difference	Is difference statistically
	Reference	Test	(Reference-Test)	significant? (p=0.05)
Nereis virens	0.32	3.42	-3.10	YES

*Concentration in parts per trillion (pptr)

In consideration of the need for clean cap material at a ratio of approximately 2:1 (i. e., a need for approximately 100,000 cubic yards), the Port Authority has requested authorization to utilize, as an option, sands dredged from Ambrose Channel in New Jersey State waters.

Capping is a management tool that serves two purposes; a) to physically isolate contaminated dredged material from contact with the overlying marine environment, and b) to present a surface with enough depth to prevent marine recolonizers from penetrating to the contaminated material. Thus, caps are designed to be a certain final thickness of material that has been point dumped over the contaminated material. Cap material consists of dredged material that has been authorized to be ocean disposed of without restriction, because the results of biological and chemical testing demonstrates it does not cause unacceptable toxicity or bioaccumulation. In addition, as noted in Title 40 of the Code of Federal Regulations Part 227.13(b)(1) dredged material which meets the criteria . . . is environmentally acceptable for ocean dumping without further testing . . . when the dredged material is composed predominantly of sand, gravel, rock, or any other naturally occurring bottom material with particle sizes larger than silt, and the material is found in areas of high current or wave energy such as streams with large bed loads or coastal areas with shifting bars and channels. The first type of capping occurs when dredging projects with authorization for ocean disposal of their dredged material are scheduled subsequent to the disposal operations of a project requiring a cap. An example of the latter would be a highly dynamic natural channel.

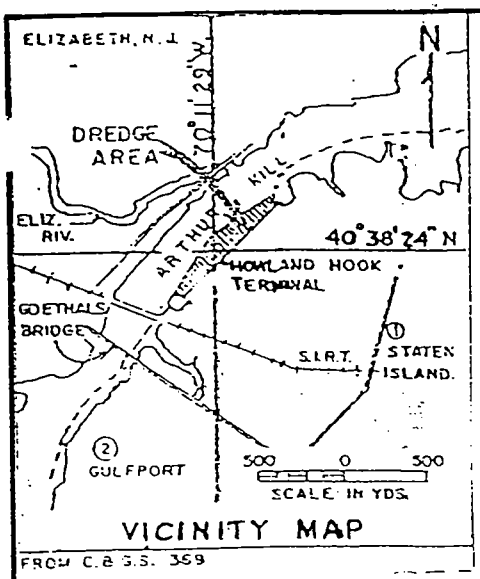
It is noted that on June 19, 1992, the New York District Corps of Engineers issued Department of the Army Permit Number 16461, previously described in Public Notice Number 13653-88-1843-J2 which authorized sand mining, through dredging, to a maximum depth of 67 feet below the plane of mean low water, within the confines of the Ambrose Channel federal navigation project, in New Jersey State waters. The permit allows the dredging of a total of 27 million cubic yards of material over a ten year period. If the secondary source of cap material is determined to be necessary, the Port Authority has stated that they would abide by and comply with all of the terms and conditions incorporated into this permit with respect to the dredging activities.

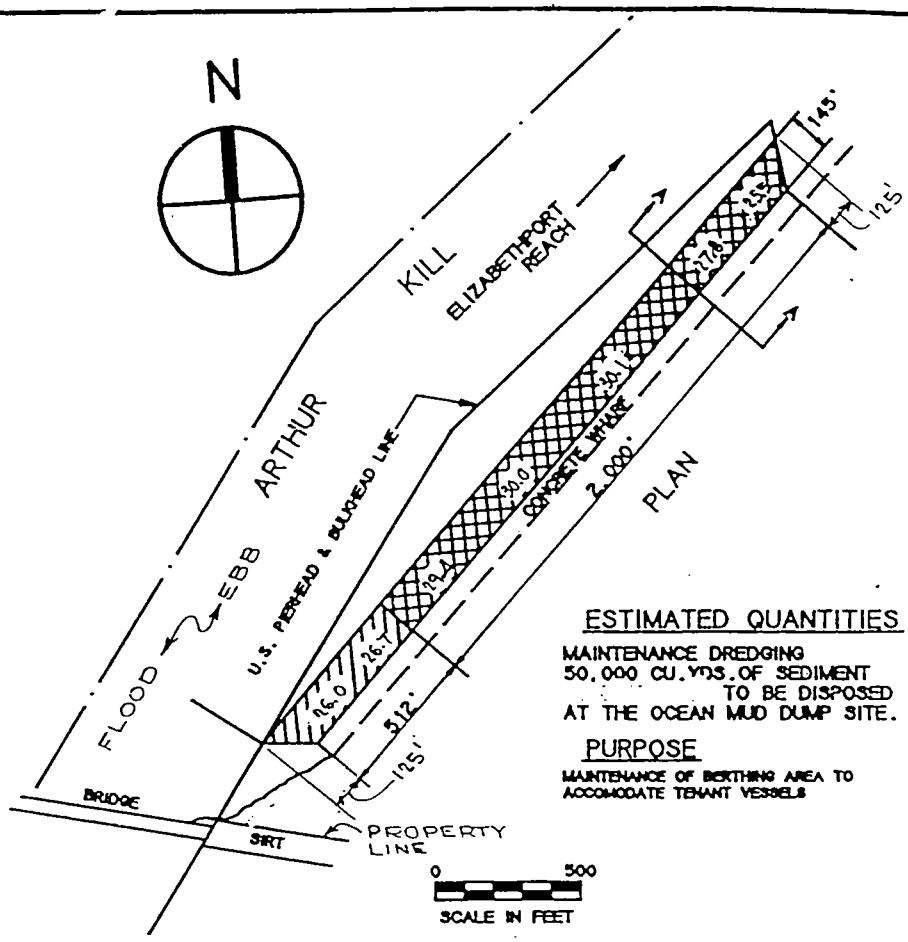
Alternatives Issues

The applicant has demonstrated the need for the proposed ocean dumping based on the availability of practicable alternative methods of disposal. As stated in the Criteria (40 CFR 227.16(b)) "...alternative methods of disposal are practicable when they are available at reasonable incremental cost and energy expenditures which need not be competitive with the costs of ocean dumping, taking into account the environmental impacts associated with the use of alternatives to ocean dumping...." The New York District has evaluated the practicability of potential disposal alternatives in a report entitled "Dredged Material Disposal Within the New York District." The alternatives considered include land disposal, use as sanitary landfill cover, disposal in subaqueous borrow pits (and possible capping with clean material), creation of islands and/or wetlands, disposal on beaches or wetlands,

transport and placement in deep mines, and incineration. Of these, only land disposal is considered a potentially viable alternative at the present time for the particular material proposed for disposal.

The applicant has evaluated methods of upland disposal of the dredged material as an alternative to ocean disposal stating that there is no vacant land in the vicinity of the project area upon which the dredged material could be disposed of or dewatered. Therefore, it would become necessary to transport this material by truck in a semi-fluid state to some available inland disposal site. If such a site could be found, the applicant has determined that the logistics of dealing with their associated constraints (i.e., drying of material, trucking dumping fees, upland disposal approvals, etc.) would increase the projected cost of the project beyond the point that would make the project economically feasible.



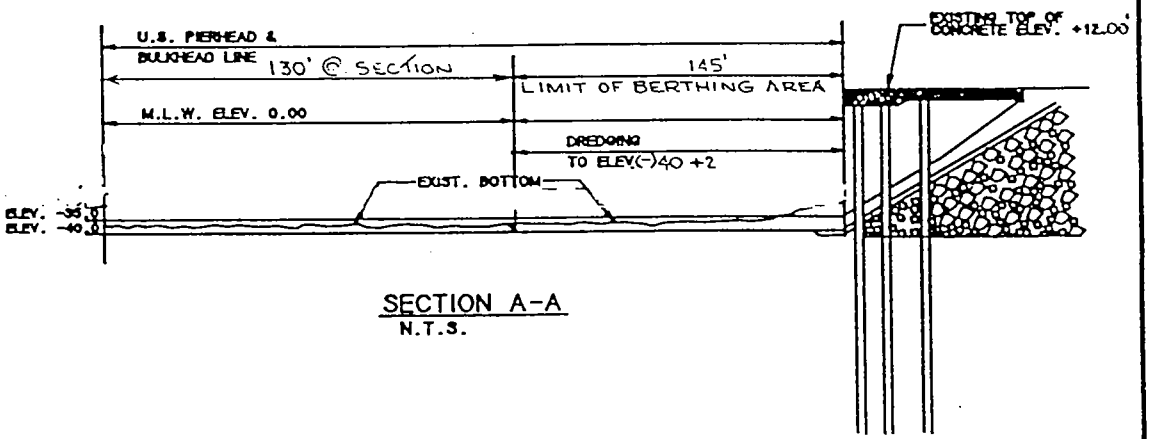


ESTIMATED QUANTITIES

MAINTENANCE DREDGING
50,000 CU.YDS. OF SEDIMENT
TO BE DISPOSED
AT THE OCEAN MUD DUMP SITE.

PURPOSE

MAINTENANCE OF BERTHING AREA TO ACCOMODATE TENANT VESSELS



SECTION A-A
N.T.S.

DATUM: M.L.W.

37.5 TYPICAL SOUNDING

MAINTENANCE DREDGE AREA SHOWN AS (-)40'+2

MAINTENANCE DREDGE TO (-) 35'+ 2 AS SHOWN

ADJ: PROPERTY OWNERS

NORTH: PROCTER & GAMBLE, INC.

SOUTH: STATEN ISLAND RAPID TRANSIT

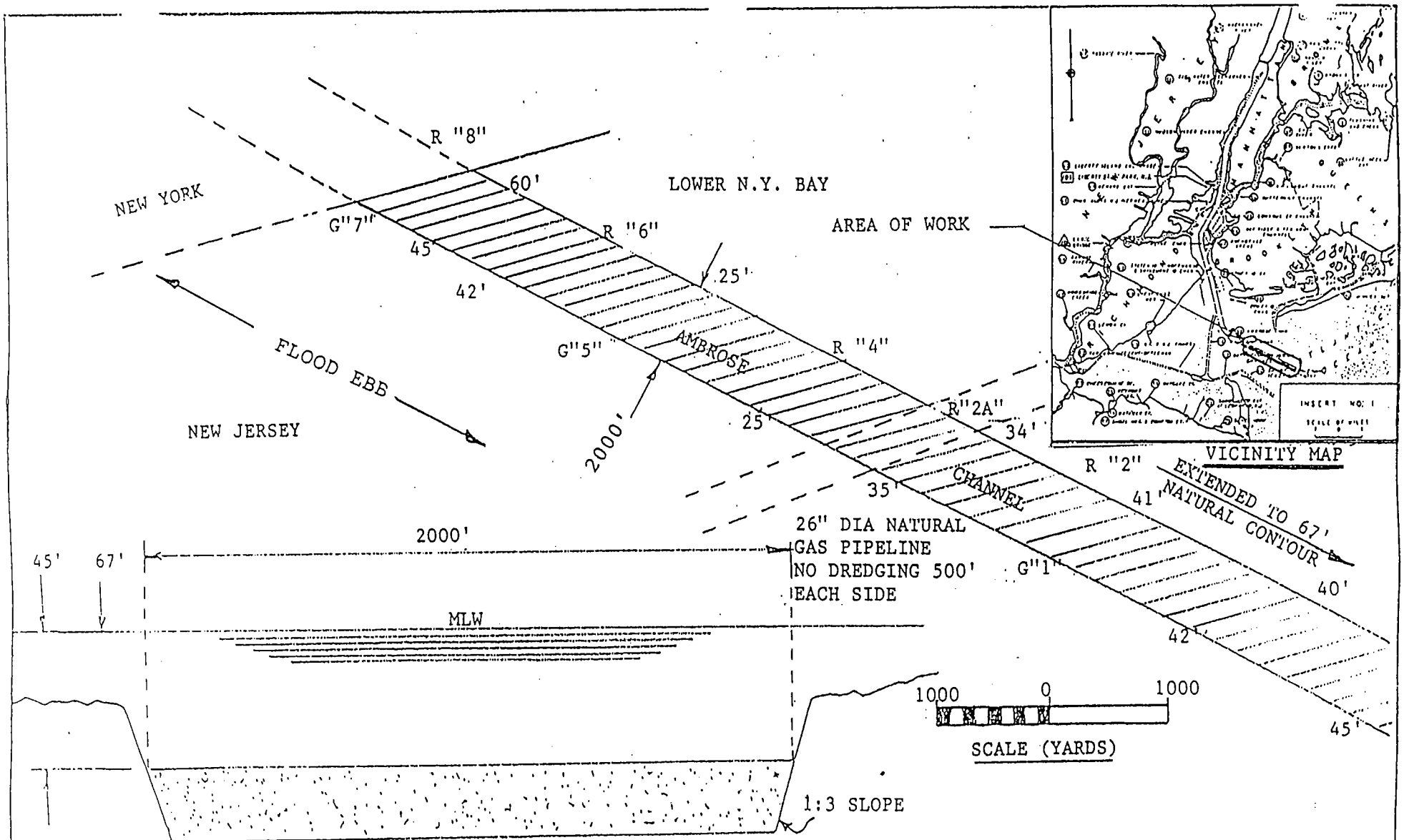
THE PORT AUTHORITY OF NEW YORK & NEW JERSEY

HOWLAND HOOK-MARINE TERMINAL MAINTENANCE DREDGING

IN: ARTHUR KILL
AT: 300 WESTERN AVE. STATEN ISLAND N.Y.
COUNTY: RICHMOND STATE: NEW YORK

SHEET 1 OF 4

DATE: MAY 2, 1991



TYPICAL CROSS SECTION

Scale

Horizontal	1/8"=50'
Vertical	1/16"=3'

LEGEND:

CLEAN SAND

PROPOSED WORK TO 67' MLW - 1:3 SLOPE

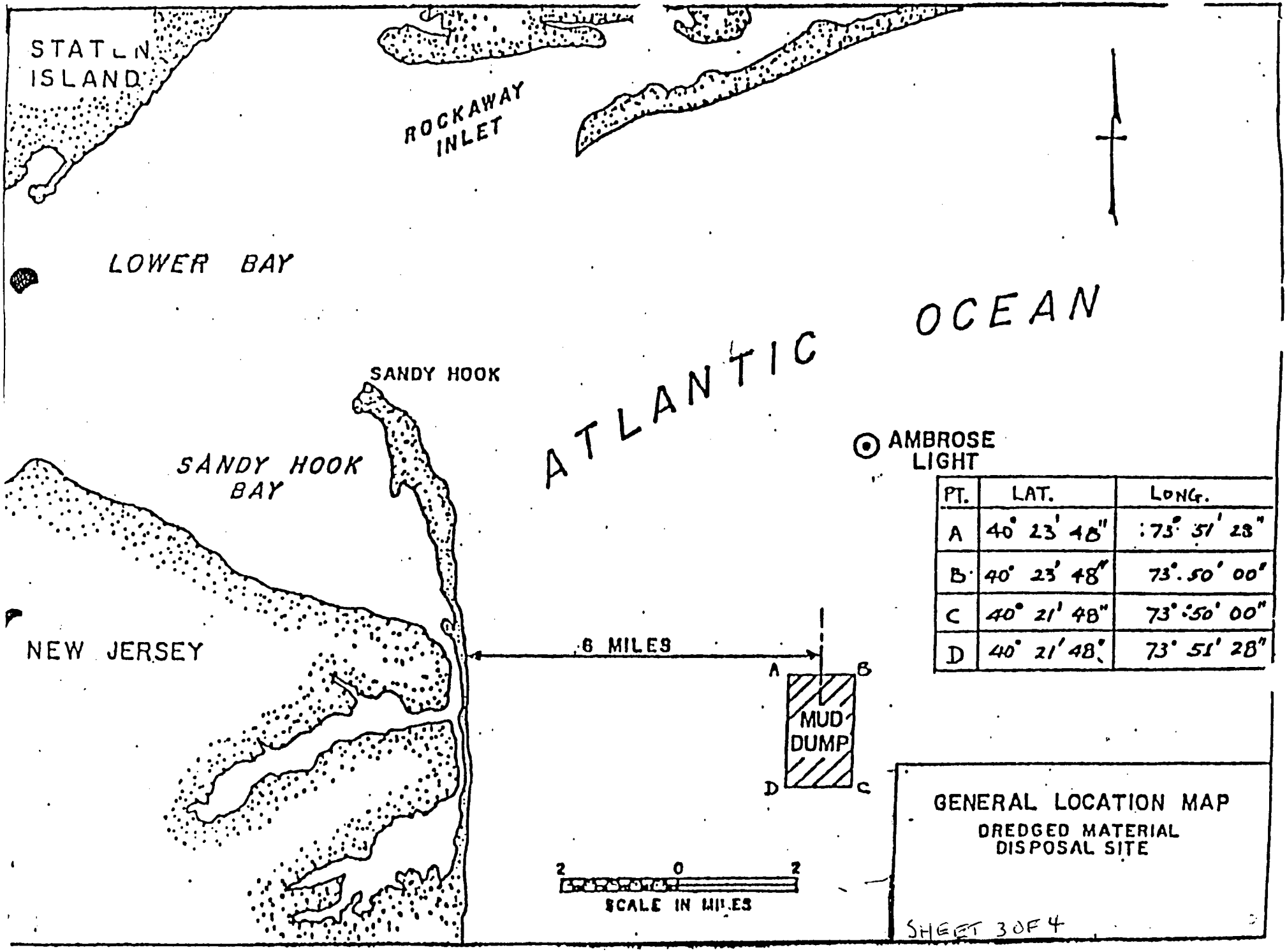
THE PORT AUTHORITY OF N.Y. & N.J.

AMBROSE CHANNEL

PROPOSED SAND MINING FOR CAP MATERIAL

DWG. NO. 2 of 4

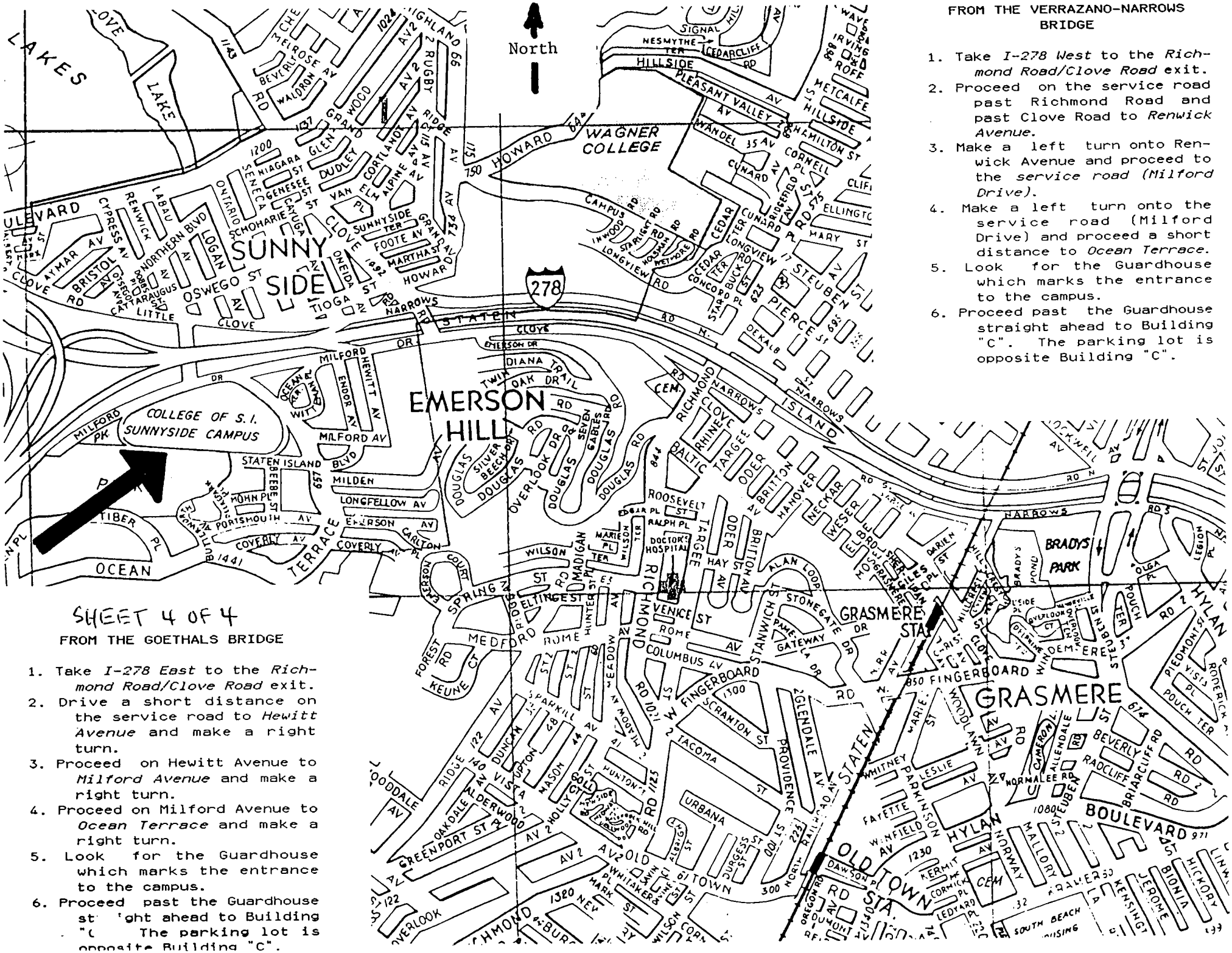
DATE: 10-14-92



PT.	LAT.	LONG.
A	40° 23' 48"	73° 51' 28"
B	40° 23' 48"	73° 50' 00"
C	40° 21' 48"	73° 50' 00"
D	40° 21' 48"	73° 51' 28"

GENERAL LOCATION MAP
DREDGED MATERIAL
DISPOSAL SITE

SHEET 3 OF 4



FROM THE VERRAZANO-NARROWS BRIDGE

1. Take *I-278 West* to the *Richmond Road/Clove Road* exit.
2. Proceed on the service road past Richmond Road and past Clove Road to *Renwick Avenue*.
3. Make a left turn onto Renwick Avenue and proceed to the *service road (Milford Drive)*.
4. Make a left turn onto the service road (Milford Drive) and proceed a short distance to *Ocean Terrace*.
5. Look for the Guardhouse which marks the entrance to the campus.
6. Proceed past the Guardhouse straight ahead to Building "C". The parking lot is opposite Building "C".

SHEET 4 OF 4

FROM THE GOETHALS BRIDGE

1. Take *I-278 East* to the *Richmond Road/Clove Road* exit.
2. Drive a short distance on the service road to *Hewitt Avenue* and make a right turn.
3. Proceed on Hewitt Avenue to *Milford Avenue* and make a right turn.
4. Proceed on Milford Avenue to *Ocean Terrace* and make a right turn.
5. Look for the Guardhouse which marks the entrance to the campus.
6. Proceed past the Guardhouse st 'ght ahead to Building "(The parking lot is opposite Building "C".

CENANOP-RW

5 Oct 92
(Date)

MEMORANDUM FOR THE RECORD

SUBJECT: Preliminary Determination for Public Notice [Appl. No. 91-0116-OD]

1. This District has received an application for a Department of the Army permit pursuant to:
[X] Section 10 of the River and Harbor Act of 1899 (33 USC 403);
[X] Section 404 of the Clean Water Act (33 U.S.C. 1844);
[X] Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972, as amended (33 U.S.C.1413).

APPLICANT: Port Authority of NY & NJ

WORK: DG-OD

WATERWAY: Arthur Kill

LOCATION: Borough of Staten Island, Richmond Co. NY

2. Based upon the District's experience with similar activities performed in the past which were demonstrated to have no significant effect on the human environment (through application of standards and criteria contained in "Guidelines for the Environmental Assessment of Small Structures and Related Activities in Coastal Bodies of Water" Rev, dated August 1975) and the attached review list, the preliminary determination is that the decision on the subject application will not require the preparation of an environmental impact statement.

3. Based upon the review of the properties listed or eligible for listing in the latest published version of the National Register of Historic Places, pages _____, Revised NY pages _____, _____, the preliminary determination is that there are no listed or eligible sites in the permit area.

4. I have reviewed permit record map number R20 and found no previous permit issued for this permit area. I have also reviewed nautical chart number 12331.

5. The preliminary 404(b)(1) Clean Water Act evaluation, if needed, is attached.

6. I have reviewed the latest published version of federally listed endangered species and the preliminary determination is that the proposed activity would not affect these species or their critical habitat.

7. The activity is/~~is not~~ located adjacent to a federal or state navigation channel. The activity ~~is~~/is not located in a federal anchorage, special or otherwise.

8. The applicant's CZMP compliance statement is dated 9 May 91.

9. These preliminary determinations will be reconsidered as additional information is developed.

Area ~~Engineer~~/Manager/~~Technician~~

APPROVED: _____

Western Permits Section

PRELIMINARY PUBLIC INTEREST REVIEW

APPLICATION NO: 91-0116-OD

APPLICANT: PANY NJ

NAME OF PARAMETER OF REVIEW	PROBABLE IMPACT				
	BENEFICIAL		No Appreciable Effect	ADVERSE	
	Substantial	Minor		Minor	Substantial
A. SOCIAL EFFECTS					
1. Historical Values			✓		
2. Archeological Values			✓		
3. Noise Levels			✓		
4. Aesthetic Values			✓		
5. Recreational Opportunities			✓		
6. Transportation		✓			
7. Public Health and Safety		✓			
8. Existing/Potential Land Use		✓			
9. Controversy				✓	
B. ECONOMIC EFFECTS					
1. Tax Revenues		✓			
2. Public Facilities & Services		✓			
3. Energy Needs			✓		
4. Food Production			✓		
5. Commercial Navigation		✓			
6. Adjacent Marine Structures			✓		
7. Flood Damage Prevention			✓		
8. Economic Development		✓			
C. NATURAL RESOURCE EFFECTS					
1. Existing Vegetation			✓		
2. Terrestrial Habitat			✓		
3. Aquatic Habitat				✓	
4. Habitat Diversity and Interspersion			✓		
5. Biological Productivity				✓	
6. Wetland Quality and Quantity			✓		
7. Surface Water Quality				✓	
8. Groundwater Quality			✓		
9. Water Supply			✓		
10. Soil Erosion and Siltation			✓		
11. Air Quality			✓		
12. Conservation			✓		
13. Fish & Wildlife			✓		
14 Beach Erosion and Accretion			✓		
15. Gen.Environ.Concerns			✓		
16. Threatened or Endangered Species			✓		

COMMENTS: _____

PREPARED BY: Mark Roth (name) 5 Oct 92 (date) Area Engineer/Manager

NEW YORK DISTRICT

U.S. ARMY CORPS OF ENGINEERS

REGULATORY BRANCH

CONFERENCE RECORD

Location: NYD

Date: 5 Oct 92

Application #: 91-0116-0D Howland Hook

NAME	ORGANIZATION	PHONE NUMBER
Mark Rith	COE	212 264-0184
Chris Zeppie	Engineering Department P.A. of N.Y. & N.J.	(212) 435-7289
Joe Montco	Port Dept PA of NY & NJ	(212) 435-8013
David Berkovits	"	212 435 [redacted] 6637
Joe Seebode	Corps of Engineers	212-264-3996

DISPOSITION FORM

For use of this form, see AR 340-15; the proponent agency is TAGO.

REFERENCE OR OFFICE SYMBOL	SUBJECT
CENANOP-W	Review of Bioassay Data: Port Authority of NY & NJ Howland Hook 10dy test & 28 day dwarf

MEMO FOR THE RECORD — FROM C, Water Quality Compliance Branch — DATE 4/11/91 CMT 1 — 90 x 5621 — 10/2/92 x 90.

1. Enclosed is an interpretive summary of results of three-phased bioassays performed on dredged material composited from 20 sampling sites (shown on inclosed map) located at Howland Hook Mar. Terminal, Newark Bay, NJ. Bioassays were run in accordance with "Ecological Evaluation of Proposed Discharge of Dredged Material into Ocean Waters", which is the Implementation Manual for Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972. At the time that samples were collected, the 1984, Dec 20 edition of the NYD/EPA Region 2 Guidance Manual was in effect.

2. Bioassays were performed by Enseco Labs, Marblehead MA & Garden Grove, CA. Samples were collected on June 5 - June 7, 1990 and test results were completed ~~on~~ during July 1990. by AquaSurvey *

3. All samples consisted of cores to project depth. According to the testing laboratory's report, stratification was ; observed in sample cores. Grain size analyses indicate the proposed material to average:
   4.0 % sand
   60.8 % silt
   35.2 % clay

4. Analysis of the results for the three phases indicates that the LPC for this material is within acceptable limits as defined in the EPA Ocean Dumping Regulations nd the Corps/EPA Implementation Manual.

5. Results of bioaccumulation analyses performed on organisms surviving the solid phase testing are also inclosed. An evaluation of these data indicates that the proposed dredged material does not exhibit an environmentally significant bioaccumulation potential.

Incl
as

MONTE GREGGS
Chief, Water Quality Compliance Branch

* Dwarf sediment cores were collected in January 1991 & data submitted upon completion of 28-day tests in March 1991.
JD x5621

DA FORM 0100 — PREVIOUS EDITIONS WILL BE USED — U.S. GOVERNMENT PRINTING OFFICE: 1982-37

DXJ621 4/30/14 — 10 DAY

Applicant: PA of NY & NJ (Bi-National Dredging Project)

Table 1. BIOASSAY RESULTS

	LC_{50} or EC_{50} (critical)	LPC after 4 hours	DILUTION after 4 hours
LIQUID PHASE (96-hour test)			
Skeletomena costatum			
Mysidopsis bahia			
Menidia ~~menidia~~ beryllina			
SUSPENDED PHASE (96-hour test)			
Acartia tonsa	12%	0.12%	0.0038%
Mysidopsis bahia	>100%	>1%	
Menidia ~~menidia~~ beryllina	25%	0.25%	

LC_{50} - Lethal Concentration resulting in 50% mortality
EC_{50} - Effective Concentration resulting in 50% inhibition (applies to phytoplankton)
LPC - Limiting Permissible Concentration (0.01 times critical EC_{50} or LC_{50})

	n=3 % SURVIVAL		n=5	COMPARISON OF REFERENCE & TEST SEDIMEN							
	Control $\bar{X}$ S	Reference $\bar{X}_R$ S_R	Test $\bar{X}_T$ S_T	$\bar{d} = \lvert\bar{X}_R - \bar{X}_T\rvert$	$S_{\bar{d}} = \sqrt{\frac{S_R^2+S_T^2}{n}}$	calculated $t = \left(\frac{\bar{d}}{S_{\bar{d}}}\right)^2$	n	k	$\nu = k(n-1)$	Table t	Is d statistically significant?
SOLID PHASE (10-day test)											
Paleomonetes *	99.0 (1.73)	96.75 (3.40)	91.25 (17.5)	5.5	8.91	0.38	4	2	6	5.99	NO
Mercenaria mercenaria	98.3 (2.89)	99.0 (2.24)	100.0 (0)	1.0	1.0	1.0	5	2	8	5.32	NO
Nereis virens	91.7 (2.89)	85.0 (15.4)	77.8 (13.8)	7.2	9.25	0.61	5	2	8	5.32	NO
Total Community	96.33 (4.15)	93.36 (10.95)	89.57 (15.02)	3.79	4.96	0.58	14	2	26	4.23	NO

organisms/species/replicates

replicates

Total # organisms/test

* - significant at 95% confidence level
SD_c - standard deviation of control
SD_t - standard deviation of test sediment
SD_d - standard deviation of difference between means
D.F. - degrees of freedom
SD_r - standard deviation of reference sediment

*for shrimp, 4 rep. reference data points, not 5, are used due to air-clogged tube and outlier in reference + test 5th replicate respectively

Applicant: Howard Hyde [redacted]

Table 1. BIOASSAY RESULTS / TCDD-2,3,7,8 dioxin

28 DAY TESTS

SOLID PHASE (28-day test)	% SURVIVAL			COMPARISON OF REFERENCE & TEST SEDIMENT								
	Control $\bar{X}$ S	Reference $\bar{X}_R$ S_R	Test $\bar{X}_T$ S_T	$\bar{d} = \lvert\bar{X}_R - \bar{X}_T\rvert$	$S_{\bar{d}} = \sqrt{\frac{S_R^2 + S_T^2}{n}}$	calculated $f = \left(\frac{\bar{d}}{S_{\bar{d}}}\right)^2$	n	k	$\nu = k(n-1)$	Table F	Is $\bar{d}$ if Statist. signif.*
NEREIS VIRENS	100 (0)	100 (0)	99 (2.24)	1.0	1.0	1	5	2	8	5.318	NO

	% SURVIVAL			COMPARISON OF REFERENCE & TEST SEDIMENT								
	Control $\bar{X}$ S	Reference $\bar{X}_R$ S_R	Test $\bar{X}_T$ S_T	$\bar{d} = \lvert\bar{X}_R - \bar{X}_T\rvert$	$S_{\bar{d}} = \sqrt{\frac{S_R^2 + S_T^2}{n}}$	calculated $f = \left(\frac{\bar{d}}{S_{\bar{d}}}\right)^2$	n	k	$\nu = k(n-1)$	Table F	Is $\bar{d}$ if Statis. signif.*
NEREIS VIRENS (dioxin, ppt r)	/	0.32 (.06)	3.42 (0.28)	3.10	.13	568	5	2	8	5.318	YES

organisms/species/replicates

replicates 5

Total # organisms/test

* - significant at 95% confidence level

SD_c - standard deviation of control

SD_t - standard deviation of test sediment

SD_d - standard deviation of difference between means

D.F. - degrees of freedom

SD_r - standard deviation of reference sediment

Approved by:

Table 3. SUSPENDED PARTICULATE PHASE BIOASSAY RESULTS (96 hr test)

Applicant: Port Authority of NY+NJ
Howland Hook Marine Terminal

Acartia tonsa (copepod)

% Survival

	Test Concentrations				
	Control	10%	50%	100%	LC_{50}
4 hr	100	100	100	100	>100 %
8 hr	100	100	100	100	>100 %
24 hr	98	98	100	78	>100 %
48 hr	98	95	50	8	40 %
72 hr	98	77	30	0	26 %
96 hr	92	68	0	0	12 %

60 (# organisms/test)

Mysidopsis bahia (mysid shrimp)

% Survival

	Test Concentrations				
	Control	10%	50%	100%	LC50
4 hr	100	100	100	100	>100 %
8 hr	|	|	|	100	>100 %
24 hr	|	|	|	100	>100 %
48 hr	|	|	|	93	>100 %
72 hr	↓	↓	↓	93	>100 %
96 hr	98	95	97	65	>100 %

60 (#organisms/test)

Menidia ~~menidia~~ beryllina (fish)

% Survival

	Test Concentrations				
	Control	10%	50%	100%	LC50
4 hr	100	100	100	100	>100 %
8 hr	|	|	100	100	>100 %
24 hr	|	|	100	80	>100 %
48 hr	|	|	98	60	>100 %
72 hr	↓	↓	93	47	@100 %
96 hr	97	95	67	0	25 %

60 (#organisms/test)

LC_{50} - Lethal Concentration resulting in 50% mortality

NO. 3128. LOGARITHMIC PROBABILITY. DESIGNED BY HAZEN, WINSLOW & WHIPPLE

GRAPH PAPER

Organism: A. tonsa

Phase: Susp Particulate

Applicant: PA of NY & NJ Howland Hook Marine Terminal

% SURVIVAL

99.99 99.9 99.8 99.5 99 98 95 90 80 70 60 50 40 30 20 10 5 2 1 0.5 0.2 0.1 0.05 0.0

% CONCENTRATION

90 80 70 60 50 40 30 20 10 9 8 7 6 5 4 3 2 1

48hr LC50

72-hr LC50

LC50 96 hr

99.99 99.9 99.8 99.5 99 98 95 90 80 70 60 50 40 30 20 10 5 2 1

NO. 3128. LOGARITHMIC PROBABILITY. DESIGNED BY HAZEN, WHIPPLE & FULLER.

GRAPH PAPER

Organism: Menidia beryllina Phase: Suspended Particulate

Applicant: PA of NY+NJ Howland Hook Marine Terminal

% SURVIVAL

99.99 99.9 99.8 99.5 99 98 95 90 80 70 60 50 40 30 20 10 5 2 1 0.5 0.2 0.1 0.05 0.01

% CONCENTRATION

90 80 70 60 50 40 30 20 10 9 8 7 6 5 4 3 2

416 MP

NOEC

LC50

99.99 99.9 99.8 99.5 99 98 95 90 80 70 60 50 40 30 20 10

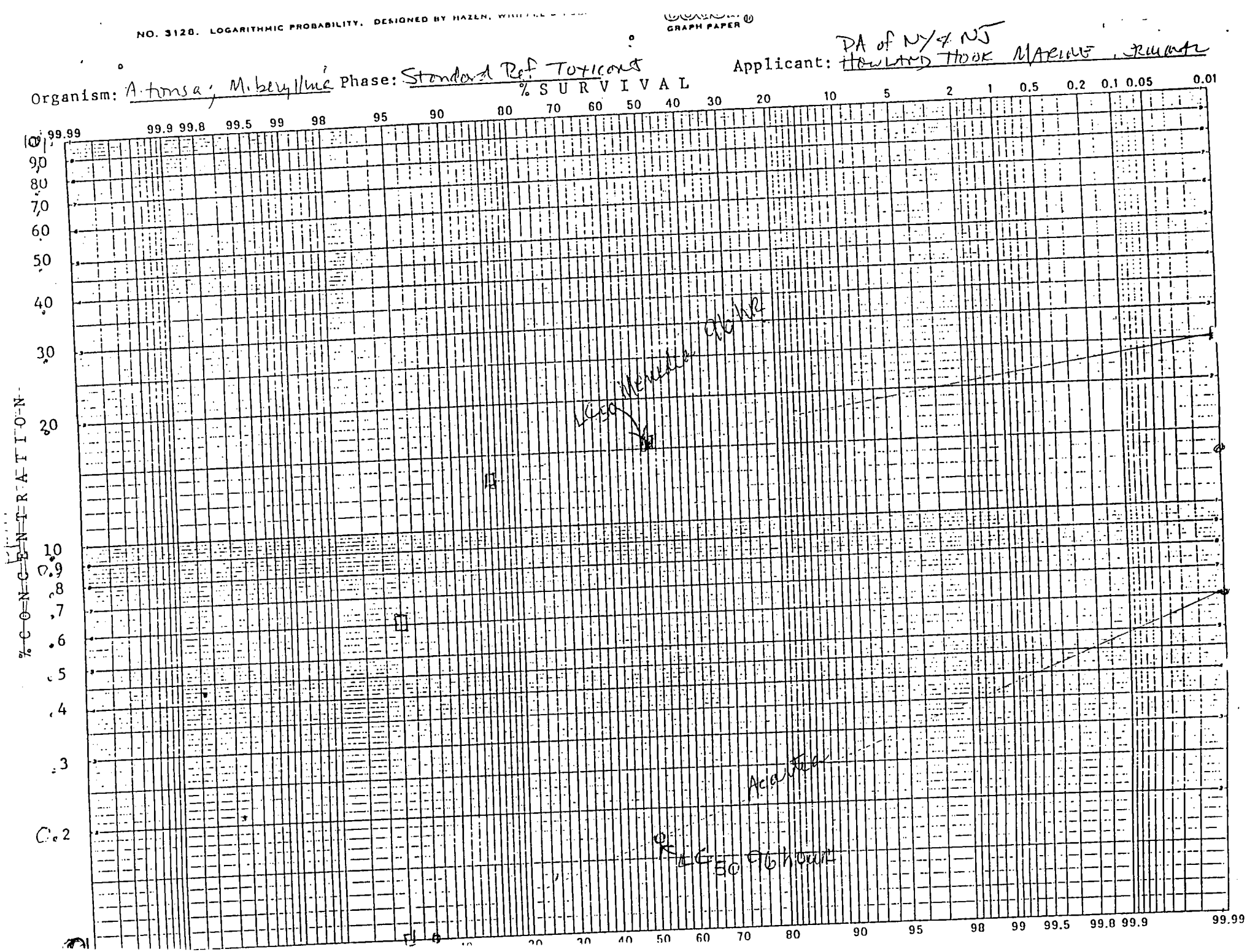
TABLE 8. STANDARD TOXICANT ANALYSIS (96-Hr test)

Applicant: PORT AUTHORITY OF NY & NJ
HOWLAND HOOK MARINE TERMINAL

Toxicant (Brand & grade): Sodium dodecyl sulfate

Artificial Seawater Mix: _____

ORGANISM	TEST START DATE	TEST FINISH DATE	TOXICANT CONC (mg/l) ppm	% SURV ~~or~~ ~~% RESP~~	96-HR EC50/LC50 (mg/l)
~~Skeletonema costatum~~					
Acartia tonsa			0	93	0.17 ppm
			0.6	0	
			1.3	0	
			2.5	0	
			5.0	0	
Mysidopsis bahia 20 orgs / replicate 40 / test			0	100	5.2 ppm
			1.3	100	
			2.5	100	
			5.0	52	
			10.0	17	
			20.0	0	
Menidia beryllina Jo 4/15/91					1.6 ppm
			0	95	
			0.6	95	
			1.3	85	
			2.5	0	
			5.0	0	


NO. 3120. LOGARITHMIC PROBABILITY. DESIGNED BY HAZEN.
GRAPH PAPER
Organism: A. tonsa; M. beryllina Phase: Standard Ref Toxicant
Applicant: DA of NY/NJ HOWLAND HOOK MARINE TERMINAL
% SURVIVAL
99.99 99.9 99.8 99.5 99 98 95 90 80 70 60 50 40 30 20 10 5 2 1 0.5 0.2 0.1 0.05 0.01
% CONCENTRATION
99 90 80 70 60 50 40 30 20 10 9 8 7 6 5 4 3 2
LC50 Mean 96 hour
Acute
LC50 96 hour
99.99 99.9 99.8 99.5 99 98 95 90 80 70 60 50 40 30 20 10 5 2 1 0.5 0.2 0.1 0.05 0.01

NO. 3128. LOGARITHMIC PROBABILITY. DESIGNED BY HAZEN, WHIPPLE & FUERST

GRAPH PAPER

Organism: Mysidopsis bahia Phase: Standard Ref Tox.

Applicant: ~~Howland Hook Marine Terminal~~ PA of NY & NJ

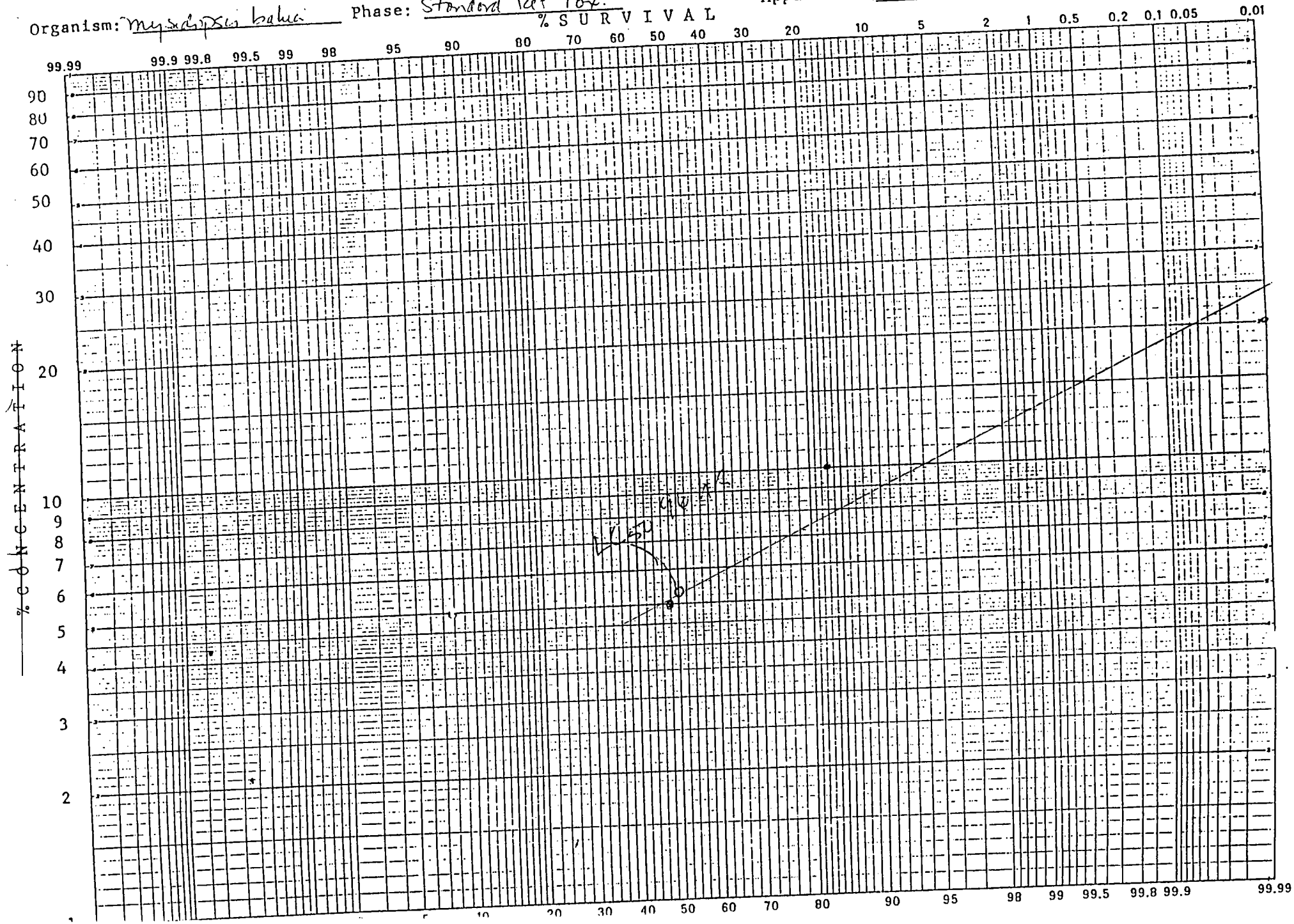


Table 4. Dilution Evaluation Based on the Tetra Tech Model

Applicant: PORT AUTHORITY OF NY & NJ
HOWLAND HOOK MARINE TERMINAL

The dilution of the proposed dredged material has been evaluated by use of the Tetra Tech computer model. A description of the model has been published as Technical Report D-78-47 of the Corps' Dredged Material Research Program, and is entitled Evaluation and Calibration of the Tetra Tech Dredged Material Disposal Models Based on Field Data. The New York District requested that a study be conducted which would give example dilutions resulting from typical disposal operations and dredged materials found in the New York District. This study has been completed and is entitled Discussion of Dredged Material Disposal Models and Their Application for the New York District.

This evaluation is based on model run number 13, which most closely approximates the project disposal operations and dredged material.

Based on this model run, the dilution of the material at four hours is predicted to be 0.0038 %.

The model run selected most closely approximates the project material for the parameter of percent moisture content, because this parameter is the most sensitive.

Moisture content is 62.5 %.

Table 5. BIOACCUMULATION TEST RESULTS. (10 Day Laboratory Test)

JO. 7/22/

Applicant: PORT AUTHORITY OF NY & NJ — HOWLAND HOOK TERMINAL — 10 day test

n = 5 * see below

			$\bar{x}$	S	$\bar{d} = \lvert \bar{x}_{Ref} - \bar{x}_{Test} \rvert$	$S_{\bar{d}} = \sqrt{\frac{S_{Ref}^2 + S_{Test}^2}{n}}$	Calculated "F" $= \left(\frac{\bar{d}}{S_{\bar{d}}}\right)^2$	Table "F"	C.V. $= \frac{S}{\bar{x}}$ Ref. & Test (Srepo.)	C.V. Sub-samples (3 reps)	Is difference statistically with const. coef. % confid. time
t / dro	Palaemonetes pugio **	Ref	3.53	.504	63.37	48.75	1.69	5.318			***
		Test	66.90	109							NO
10ppm	Mercenaria mercenaria	Ref	4.05	1.52	0.40	2.06	.04				***
		Test	4.45	4.34							NO
	Nereis virens	Ref	7.39	1.83	10.14	2.04	24.71				***
		Test	17.53	4.19							YES
CB	Palaemonetes pugio **	Ref	0.04	0	0.024	0.010	5.80				***
		Test	0.064	0.021							YES
.04ppm	Mercenaria mercenaria	Ref	0.04	0	0	0	—				***
		Test	0.04	0							NO
	Nereis virens	Ref	0.04	0	0.051	0.008	44.7				***
		Test	0.091	0.016							YES
g	Palaemonetes pugio **	Ref	<0.20	0	0	0	—				***
		Test	↓	↓							*NO
.20ppm	Mercenaria mercenaria	Ref			0	0	—				***
		Test									*NO
	Nereis virens	Ref			0	0	—				***
		Test	↓	↓							*NO
Cd	Palaemonetes pugio **	Ref	<0.25	0	0	0	—				***
25ppm		Test	↓	↓							*NO
	Mercenaria mercenaria	Ref			0	0	—				***
		Test									*NO
	Nereis virens	Ref			0	0	—	↓			***
		Test	↓	↓							*NO.

* Statistically Significant (95% confidence level)

** Reference + test data are based on 4 replicates due to our dropping of outlier in reference or [illegible] which could therefore not be used in the statistics.

ble 5. BIOACCUMULATION TEST RESULTS. (10 Day Laboratory Test)

Applicant: PORT AUTHORITY OF NY & NJ

Port Authority of NY & NJ

Applicant: Howland Hook.

		n= 5 (see below)	$\bar{x}$	S	$\bar{d} = \lvert \bar{x}_{ref} - \bar{x}_{test} \rvert$	$S_{\bar{d}} = \sqrt{\frac{S_{ref}^2 + S_{test}^2}{n}}$	Calculated "F" $= \left(\frac{\bar{d}}{S_{\bar{d}}}\right)^2$	C.V. $= \frac{S}{\bar{x}}$ Ref. & Test (5 reps.)	C.V. Sub-samples (3 reps)	Is difference statist. sign. at 95% c.l.?
**	Palaemonetes	Ref	20.20	0						***
		Test	↓	↓						No
	Mercenaria	Ref								***
		Test								No
	Nereis	Ref								***
		Test								No
		Ref								***
		Test								
	Mercenaria	Ref								***
		Test								
	Nereis	Ref								***
		Test								
	Palaemonetes	Ref								***
		Test								***
	Mercenaria	Ref								***
		Test								***
	Nereis	Ref								***
		Test								***
	Palaemonetes	Ref								***
		Test								***
	Mercenaria	Ref								***
		Test								***
	Nereis	Ref								***
		Test								***

* Statistically Significant (95% confidence level)

** See 1st page of Table 5.

Table 6. ELUTRIATE TEST RESULTS (10 Day Laboratory Tests)

Applicant: PA of NY & NJ
Howland Hook Marine Term. at Staten Island w/ Arthur Kill

CHEMICAL CONSTITUENT	n=3 SITE WATER (S.D.)	n=3 ELUTRIATE (S.D.)	$\bar{d}$ DIFFERENCE |Site Water S.D. − Elutriate S.D.|	Calculated "F" Statistic $\left(\frac{\bar{d}}{SD\bar{d}}\right)^2$	DF	Table F. Statistic	Is diff. stat signif. at 95% Conf level
Petroleum Hydrocarb. (ppm)	< 2.0	< 2.0	0	—	4	7.71	No
PCB's	< 1.0	< 1.0	0	—	4		No
Hg	< 0.1	< 0.1	0	—	4		No
Cd	< 0.1	< 0.1	0	—	4		No
DDT	< 0.1	< 0.1	0	—	4		No.

Values are in µg/l (ppb) unless otherwise noted.

$$SDd = \sqrt{\frac{SDs^2 + SDe^2}{n}}$$

DF= Degrees of freedom
2(n-1)

TABLE 7. BULK SEDIMENT ANALYSIS

Applicant: Port Authority of NY+NJ
Howland Hook Marine Terminal

n= 20	$\bar{x}$	S.D.	units
Cu	383.4	206.5	ppm
Ni	41.3	13.1	ppm
Zn	444.9	150.0	ppm
% Moisture	62.54	1.34	%
Total organic C (loss on ignition)	54,405	12,828	ppm

{ Site # Cu Ni Zn } JD 4/15/91

see attached.

4/13/77
Clark/x5621

SECTION 404b EVALUATION

APPLICANT Port Authority of NY & [illegible] Hook Marine

A) Elutriate Test Evaluation:

1. Mixing Zone Calculation (based on M.P. D-76-17)

* H.H. is betw. Tremley Pt Reach x Elizabeth port

Current Velocity: 1.05 knots x (.5) x 1.689 fps / Knot = 0.59 fps

Rate of Overflow: 8.1 cfs

If L= front edge of mixing zone
t= time (in seconds)
R= ½ width of source of overflow (84 ft.)
r= radius of source of overflow (54 ft)
λ= turbulent dissapation parameter (0.005)
X= horizontal distance from source
Vw= current velocity
d= depth of channel (42 ft maintenance depth)

$\frac{.1+1.4+.8+.9}{4} = 1.05$

of flood & may ebb at both places ÷ d by 4.

$A = X\left(\frac{d + 2r}{2}\right)$

Then $L = \sqrt{\left(\frac{E(\lambda) + 0.149\ R^{.66}}{0.094}\right)^3}$

Volume of mixing zone (V

$X = Vw \cdot t$

$0.149 R^{.66} = 2.77$

2. Dillution Calculations

% dilution of elutriate (De) = $\frac{\text{Standard conc.} - \text{Ambient conc.}}{\text{Elutriate conc.} - \text{Standard conc.}} \times 1$

% dilution of overflow (D) = $\frac{\text{Volume of overflow (Vo)}}{\text{Volume of mixing zone (Vm)}} \times 100$

In order to meet water quality standards, the % dilution of overflow must not exceed the lowest % dilution of the elutriate necessary to reach ambient concentrations.

Chemical Constituent	De
Cd	
Sole water <0.025* ppb	$\frac{.013 \text{ ppb}}{.0377 \text{ ppb}} = .345 \times 100 = 34.5\%$
elutriate 0.0377 SD (.0249)	

* Since all 3 data for Cd sw are < 0.025 ppb, value to be used $\leq \frac{.025+0}{2} = .01$

Comments: No dilution of overflow does NOT exceed No dilution of elutriate.

B) Bioassay Application:

1. Mixing Zone Calculation (based on M.P. D-76-17)

Current Velocity: 0.84 fps

Rate of Overflow*: 5.1 cfs

*On a "worst case" basis rate and duration of overflow equals the volume of liquid that one clamshell will hold per minute for no more than one-half hour. (This applies to barge overflow only)

If L= front edge of mixing zone
t= time (in seconds)
R= ½ width of source of overflow (84 ft)
r= radius of source of overflow (84 ft)
λ= turbulent dissapation parameter (0.005)
X= horizontal distance from source
Vw= current velocity
d= depth of channel (42 ft (40+2) maintenance depth)

Then $L=\sqrt{\left(\frac{t(Vw) + 0.149\ R^{.66}}{0.094}\right)^3}$

$X = Vw \cdot t$

$A = X\left(\frac{L + 2r}{2}\right)$

Volume of mixing zone (Vm)= A·d

2. Dilution Calculation

Lowest L.P.C. from suspended particulate phase of bioassay: 0.12%

$$\% \text{ dilution (D)} = \frac{\text{Volume of overflow (Vo)}}{\text{Volume of mixing zone (Vm)}} \times 100$$

In order to meet water quality standards, the % dilution must not exceed the lowest L.P.C. for the suspended particulate phase of the bioassay.

Lowest LPC. from susp. partic. phase is 0.12% for Acartonsic. Within 100 m, the % dilution will be 0.116%, which does NOT exceed the lowest LPC.

1C

Howland Hook

map scale (56" x 50'/1") X (2.25" x 50'/1")

Total surface area of channel: 2800' long x 112.5' wide = 315,000 sq

t				% dilution	area affected	% of total area
L	A	V	IN	8.1 / 6139 = 0.13%	146.14 sq ft	22.1%
160.4	146.14	6139				
164.32	1478.8	62,110	10A	81 / 62,110 = 0.13%	1478.8 sq ft	
205.18	16,606	697,469	100A	810 / 697,469 = 0.116%	16,606 sq ft	5.27%

*overflow has ceased

Based on the elutriate/bioassay testing done, this material will dilute to acceptable levels in 100 seconds affecting 16,606 sq ft or (@) 5.27 % of the total area of the channel.

Comments: _____

CENAN-OP-RE

Date: 7 March 1991

MEMORANDUM FOR THE RECORD

SUBJECT: Application No. 91-0116-Y6
by Port Authority

1. As of the date of this MFR, the subject permit application is being considered incomplete for processing, pending receipt of the following:

V Coastal Zone Management program consistency concurrence from the New York State Department of State

____ Water Quality Certificate from the New York State Department of Environmental Conservation

2. The total processing time to date is 20 days.

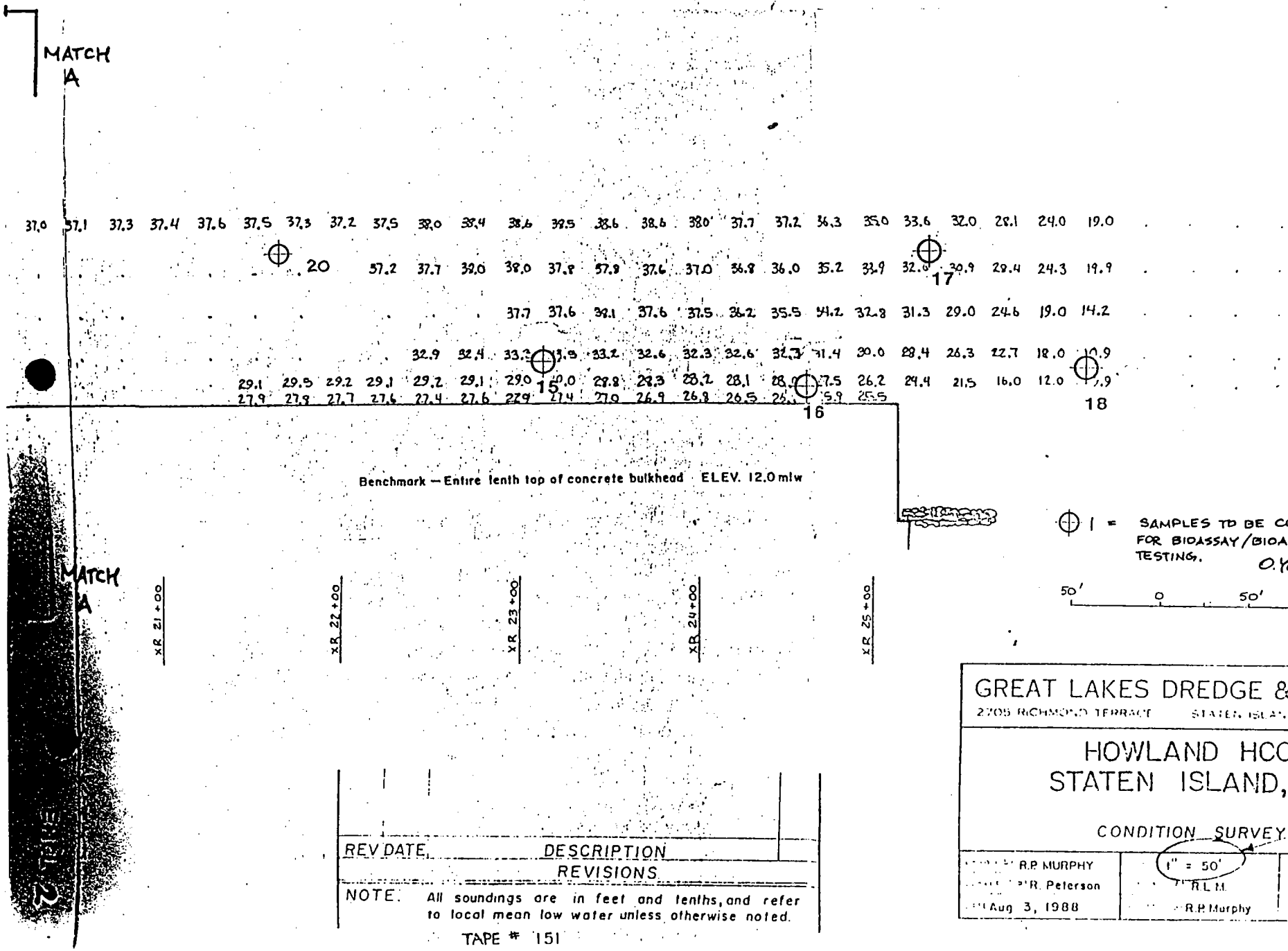
3. Upon receipt of the required certification(s), processing will again be considered complete. The new complete date shall be calculated by using our date of receipt of the required certification(s) and then counting backwards by the number of days specified above in Paragraph No. 2.

James W. Haggerty
for GAIL M. TERZI
Area Manager
Eastern Permits Section

Xerox copy 2/7/91

Pre App: PA NY & N.J. · Howland Hook

Map 1 of 4



REV DATE	DESCRIPTION
REVISIONS	

NOTE: All soundings are in feet and tenths, and refer to local mean low water unless otherwise noted.

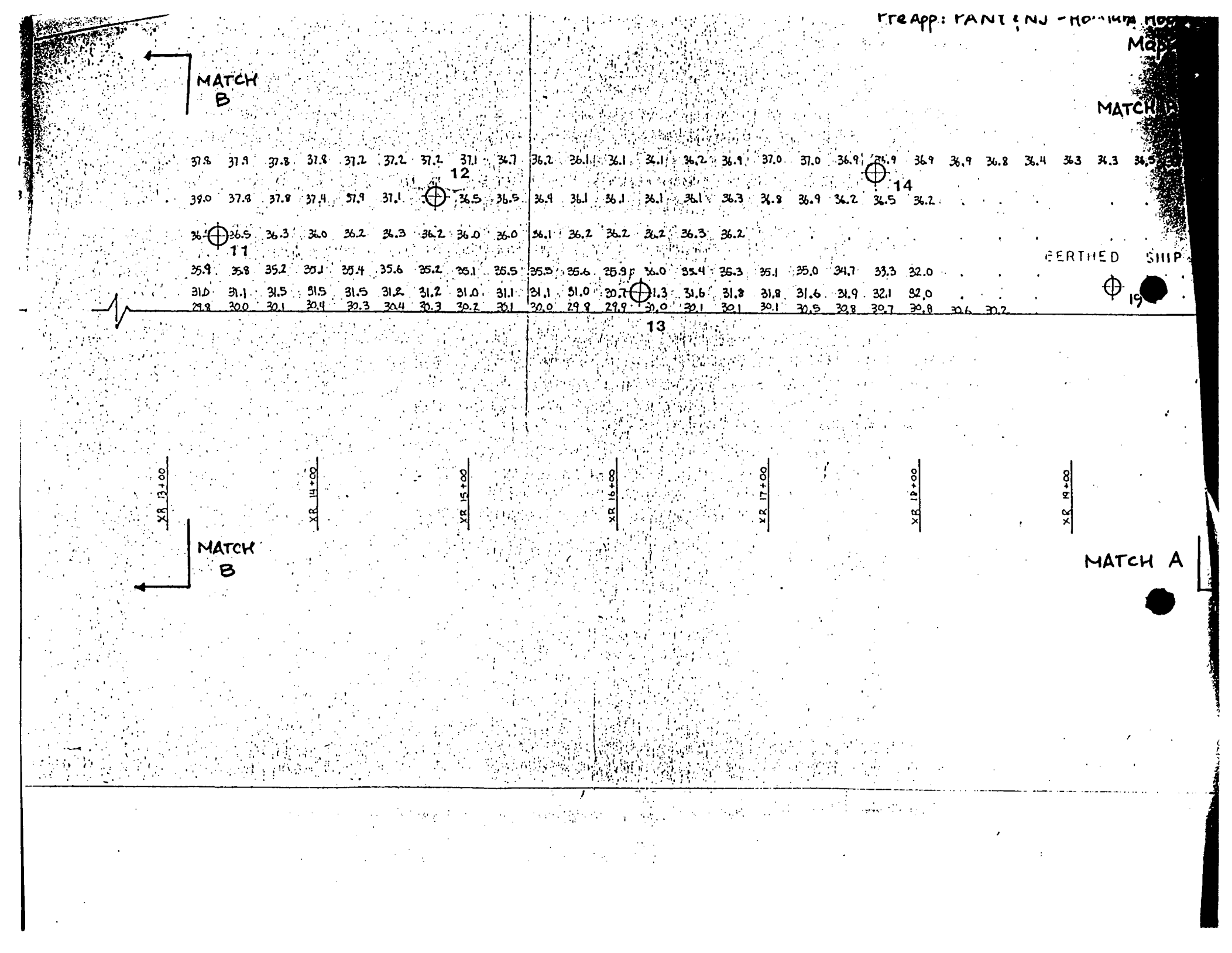
TAPE # 151

GREAT LAKES DREDGE & DOCK CO.
2705 RICHMOND TERRACE STATEN ISLAND, NEW YORK 10303

HOWLAND HOOK
STATEN ISLAND, N.Y.

CONDITION SURVEY

R.P. MURPHY	1" = 50'	S.O'Hara
R. Peterson	R.L.M.	
Aug 3, 1988	R.P. Murphy	4268

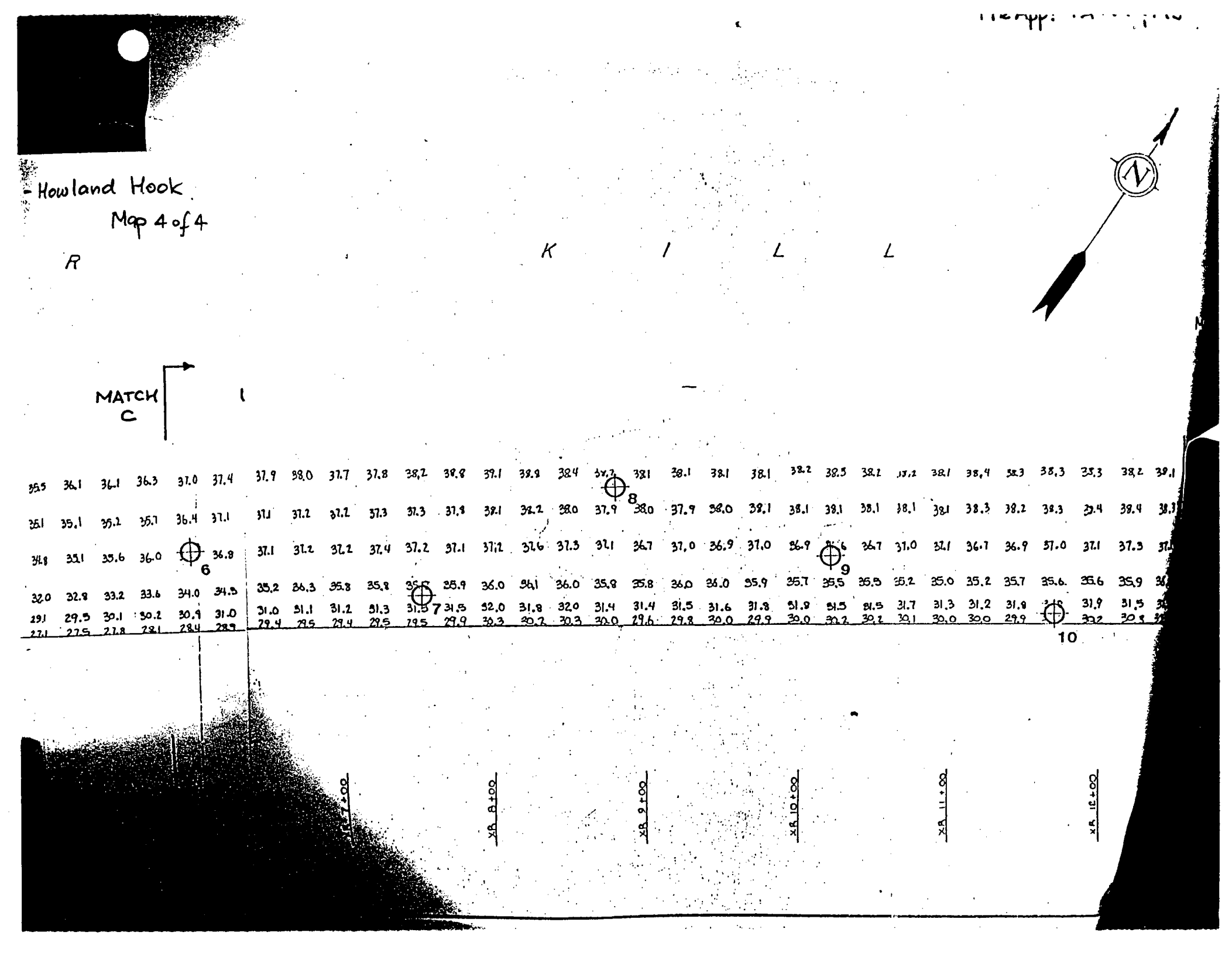

MATCH B
MATCH
12
14
11
13
BERTHED SHIP
19
XR 13+00
XR 14+00
XR 15+00
XR 16+00
XR 17+00
XR 18+00
XR 19+00
MATCH B
MATCH A

Howland Hook

Map 4 of 4

R K I L L

MATCH C



PreApp: PA NT & NJ - Howland Hook

Map 4

A R T H U R

MATCH C

19.8 22.7 24.0 25.6 28.4 30.6 31.6 32.1 32.6 33.2 33.8 34.1 34.2 34.3 34.5 34.4 34.1 34.0 34.0 34.0 33.9 33.6 33.5 33.9 33.9 34.9 35.5 36.1 36.1 36.3

16.9 18.0 19.3 22.0 24.6 27.6 29.5 31.0 31.8 32.3 33.1 33.7 33.7 34.0 34.3 34.3 34.0 33.8 33.9 33.8 33.8 33.6 33.8 33.9 34.1 34.6 35.1 35.1 35.2 35.7

15.1 15.8 18.0 20.0 22.1 25.0 28.0 29.2 29.7 30.2 32.0 32.6 31.8 32.9 32.9 33.3 33.2 33.2 33.4 33.7 34.0 34.3 34.2 34.6 34.2 34.6 34.8 35.1 35.6 36.0

8.9 11.4 14.4 19.2 22.6 26.8 27.7 28.3 28.8 29.3 30.9 31.3 31.4 31.5 31.8 31.7 31.2 31.0 31.7 31.7 31.7 31.5 31.2 31.3 31.4 32.0 32.8 33.2 33.6

4.6 5.0 7.3 9.5 13.9 20.5 24.5 25.5 25.9 26.4 27.4 28.2 28.3 28.3 29.3 28.4 28.5 29.0 27.7 28.2 28.5 28.5 28.7 28.6 28.8 29.1 29.5 30.1 30.2

23.7 23.7 24.3 25.2 26.0 26.4 26.8 27.0 27.1 26.9 26.6 26.3 25.9 26.2 26.5 26.7 26.9 26.7 26.4 26.8 27.1 27.5 27.8 28.1

1 2 3 4 5

SHEET PILING

XR -1+00 XR 0+00 XR 1+00 XR 2+00 XR 3+00 XR 4+00 XR 5+00

MATCH C