



## **PUBLIC NOTICE**

US Army Corps of Engineers  
New York District  
Jacob K. Javits Federal Building  
New York, N.Y. 10278-0090  
ATTN: Regulatory Branch

In replying refer to:

Public Notice Number: 2003-00385-OD  
Issue Date: 27 April 2004  
Expiration Date: 27 May 2004

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**To Whom It May Concern:**

The New York District, US Army Corps of Engineers (USACE) has received an application for Department of the Army authorization pursuant to Section 10 of the Rivers and Harbors Act of 1899 (33 USC 403), Section 404 of the Clean Water Act (33 USC 1344), and Section 103 of the Marine Protection, Research, and Sanctuaries Act of 1972, as amended (MPRSA; 33 USC 1413).

**APPLICANT:** IMTT-Bayonne, Inc.  
250 East 22nd Street  
P. O. Box 67  
Bayonne, New Jersey 07002

**ACTIVITY:** Dredge to 50 feet below Mean Low Water at Pier A and maintain this depth; place dredged material at a state-approved upland facility and at the Historic Area Remediation Site (HARS); allow barge overflow and decant excess water; install several dolphins and repair/modify the pier

**WATERWAY:** Kill Van Kull

**LOCATION:** City of Bayonne, Hudson County, New Jersey

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

The US Army Corps of Engineers (USACE) neither favors nor opposes the proposed work. The purpose of this public notice is to solicit comments from the public; federal, state, and local agencies and officials; Indian Tribes; and other interested parties in order for USACE to acquire information which will be considered in our evaluation of the impacts of this proposed activity. Any comments received will be considered by the USACE to determine whether to issue, 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 below.

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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 need for a public hearing and to determine the overall public interest of the proposed activity.

The decision whether to issue a permit will be based on an evaluation of the probable impact, including cumulative impacts, of the proposed activity on the public interest. That decision will reflect the national concern for both protection and utilization of important resources. The benefits which reasonably may be expected to accrue from the proposal must be balanced against its reasonably foreseeable detriments. All factors which may be relevant to the proposal will be considered including the cumulative effects thereof; among those are conservation, economics, aesthetics, general environmental concerns, wetlands, historic properties, fish and wildlife values, floodplain values, land use, navigation, shore erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food and fiber production, mineral needs, consideration of property ownership and, in general the needs and welfare of the people. This activity is also being evaluated to determine that the proposed placement of dredged material will not unreasonably degrade or endanger human health, welfare or amenities, the marine environment, ecological systems or economic potentialities. The decision of whether to issue a Department of the Army Permit for placement of the dredged material at the HARS will also be based on whether the material meets the requirements of applicable implementing regulations.

ALL COMMENTS REGARDING THE PERMIT APPLICATION MUST BE PREPARED IN WRITING AND MAILED TO REACH THIS OFFICE BEFORE THE EXPIRATION DATE OF THIS NOTICE. Otherwise, it will be presumed that there are no objections to the activity.

Any person may request, in writing, before this public notice expires, that a public hearing be held to collect information necessary to consider this application. Requests for public hearings shall state, with particularity, the reasons why a public hearing should be held. 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.

The proposed project was reviewed based upon the "Biological Assessment for the Closure of the Mud Dump Site and Designation of the Historic Area Remediation Site (HARS) in the New York Bight and Apex," (USEPA, 1997). Based upon this review, and a review of the latest public listing of threatened and endangered species, it has been preliminarily determined that the proposed placement activities for which authorization is sought herein, are not likely to affect the following federally threatened or endangered species (humpback whales, finback whales, right whales, loggerhead turtles, leatherback turtles, green turtles, and Kemp's Ridley turtles) or their critical habitat pursuant to Section 7 of the Endangered Species Act (ESA; 16 USC 1531). The USACE New York District is conducting informal consultations with the National Marine Fisheries Service in accordance with Section 7 of the Endangered Species Act.

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The Magnuson-Stevens Fishery Conservation and Management Act, as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-267), requires all federal agencies to consult with the National Marine Fisheries Service (NMFS) on all actions, or proposed actions, permitted, funded, or undertaken by the agency, that may adversely affect Essential Fish Habitat (EFH). Information on conditions at the project site and on the proposed work that would be undertaken is given in the attached Work Description. A preliminary review of the proposal and information submitted by the applicant indicates that EFH-managed species do not heavily utilize the area and that ecological conditions favored by many of the species are not found at the dredge site. The primary effects on EFH (and EFH-managed species) would be a temporary increase in turbidity due to dredging activities and disruption of demersal and pelagic habitat. Secondary effects on EFH (and EFH-managed species) would be a temporary increase in turbidity due to the proposed pile driving of several dolphins. The impacts of the initial dredging would be short-lived episodes which are expected to last a total of approximately 90 days, while the duration of the installation of the dolphins would take an additional 60 days. Upland disposal would not have any effect on EFH and placement of material at the HARS would have an overall beneficial effect. Impacts to EFH species at the HARS would most likely emanate from the settling of the dredged material through the water column to the bottom. These events would also be short-lived and be episodic in nature over the projected 90 days for the proposed placement at the HARS and the approximately two weeks for disposal at the state-approved upland site for the initial dredging. The duration of subsequent maintenance dredging is not known at this time. The overall potential impact for all the work proposed herein on EFH for designated species is small because of the temporary nature of the disturbance, the existing and proposed depths are too deep for EFH managed species, the low abundance of most species for which this region is designated as EFH, and the constant movement of cargo vessels in and out of the berthing areas. Therefore, based on the foregoing, the District Engineer has made the preliminary determination that the site-specific adverse effects are not likely to be substantial. Further consultation with NMFS regarding EFH impacts and conservation recommendations is being conducted and will be concluded prior to the final decision.

Of the wrecks known to occur within the HARS, only two wrecks which are located within Remediation Area Number 1 are eligible for inclusion in the National Register of Historic Places. As noted in the designation of the HARS, Remediation Material would not be allowed to be placed within 0.27 nautical miles of the identified wrecks or other wrecks that might be found. USACE notes the presence of the Port Johnson Sailing Vessels adjacent to, but outside of the proposed dredging area.

Reviews of the activity pursuant to Section 404 of the Clean Water Act will include application of the guidelines announced by the Administrator, US Environmental Protection Agency, under authority of Section 404(b) of the Clean Water Act. 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 any final permit decision.

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Pursuant to Section 307(c) of the Coastal Zone Management Act of 1972 as amended [16 USC 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 burden is on the applicant to certify in the permit application that the proposed 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 Jersey the applicant's certification and accompanying information is available from the New Jersey Department of Environmental Protection, Bureau of Coastal Regulation, CN 401, 501 East State Street, Second Floor, Trenton, New Jersey 08625-0401, Telephone Number (609) 633-2289. Comments regarding the applicant's certification should be so addressed.

In addition to any required water quality certificate and coastal zone management program concurrence, the applicant has obtained or requested the following governmental authorization for the proposed activity under consideration:

New Jersey Department of Environmental Protection

- Waterfront Development Permit
- Acceptable Use Determination

It is requested that you communicate the foregoing information concerning this 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 this application, you may contact this office at (212) 264-0184 and ask for Mr. Mark Roth. Comments or questions may be FAXED to (212) 264-4260 ATTN: Mr. Roth. Questions about the HARS can be addressed to Mr. Douglas Pabst, Team Leader, Dredged Material Management Team, US Environmental Protection Agency, Region 2 at (212) 637-3797.

For more information on the New York District USACE programs, visit our website at <http://www.nan.usace.army.mil>



Richard L. Tomer  
Chief, Regulatory Branch

Enclosures

DESCRIPTION OF THE PROPOSED WORK:

The applicant, IMTT-Bayonne, Inc., has requested Department of the Army authorization to dredge at Pier A of their facility and maintain the authorized depth over the life of the permit, if issued. This area would be dredged to 50 feet below the plane of Mean Low Water with a maximum of two feet of allowable overdepth. The dredged material is proposed to be placed at a state-approved upland facility and at the Historic Area Remediation Site (HARS). Dredging would entail the use of barge overflow to maintain economic loading and the decanting of excess water from the barges. In addition, eight mooring/breasting dolphins would be installed, with pier repairs/modifications. The IMTT-Bayonne facility is located on the Kill Van Kull in the City of Bayonne, Hudson County, New Jersey.

The proposed dredge area, ranges from approximately 900 feet to 1,125 feet long by 225 feet to 300 feet wide and covers approximately 347,100 square feet, and has a currently authorized depth of 38.5 feet below the plane of Mean Low Water. Sediments occurring in the Pier A berthing area have been subdivided into two units; an uppermost silt layer and a lower layer, composed of glacial till. The top of the glacial till varies from approximately 24 feet below the plane of Mean Low Water (north of the proposed dredge area) to approximately 49.5 feet below the plane of Mean Low Water (at the edge of the proposed dredge area adjacent to the Kill Van Kull).

Approximately 13,500 cubic yards of material from the uppermost silt layer, would be placed at a state-approved upland facility available at the time of dredging. After the barges are loaded with the uppermost silt layer, they would be temporarily moored within the dredge site and the dredged material allowed to settle. After settling, excess water would be pumped into a second barge. The first barge with the dredged material in it, would be towed to the state-approved upland site for disposal. The water in the second barge would be allowed to settle for approximately 24 hours, and at that time, the excess water would be discharged (decanted) back into the waterway, while still within the dredge site.

Approximately 118,500 cubic yards of glacial till would be dredged from the project area and placed at the HARS for remediation purposes, which is located in the Atlantic Ocean off of Sandy Hook, New Jersey. Barge overflow is proposed to maximize barge loading of the glacial till. The glacial till would be transported by bottom-opening barges to the placement site.

Also the applicant proposes to modify the existing pier structure by replacing some of the structural framing elements of the pier (in kind, in place), adding eight new dolphins (consisting of steel pilings) and connecting them to existing catwalks extending from the pier. The dolphins would be driven to bottom elevations of approximately 75 feet below the plane of Mean Low Water and extend upwards to an elevation of 15 feet above the plane of Mean Low Water. Mooring structures would be installed on top of the dolphins.

The purpose of the proposed work is to allow the berthing of ships with drafts consistent with the 50 foot depth in the recently deepened adjacent federal channel.

INTRODUCTION TO THE HARS:

In 1972, the Congress of the United States enacted the MPRSA to address and control the dumping of materials into ocean waters. Title I of the Act authorized the US Environmental Protection Agency (USEPA) and the USACE to regulate dumping in ocean waters. USEPA and USACE share responsibility for MPRSA permitting and ocean disposal site management. Regulations implementing MPRSA can be found at 40 CFR Sections 220 through 229. With few exceptions, MPRSA prohibits the transportation of material from the United States for the purpose of ocean dumping except as may be authorized by a permit issued under the MPRSA. The MPRSA divides permitting responsibility between the USEPA and USACE. Under Section 102 of the MPRSA, USEPA has responsibility for issuing permits for all materials other than dredged material. Under Section 103 of MPRSA, the Secretary of the Army has the responsibility for issuing permits for dredged material. Determinations to issue MPRSA permits for dredged material are subject to USEPA concurrence.

In the fall of 1997, the USEPA de-designated and terminated the use of the New York Bight Dredged Material Disposal Site (commonly known as the Mud Dump Site or MDS). The MDS had been designated in 1984 for the disposal of up to 100 million cubic yards of dredged material from navigation channels and other port facilities within the Port of New York and New Jersey. Simultaneous with the closure of the MDS, the site and surrounding areas that had been used historically as disposal sites for dredged materials were redesignated as the HARS under authority of Section 102(c) of MPRSA at 40 CFR Sections 228.15(d)(6) (See 62 Fed. Reg. 46142 (August 29, 1997); 62 Fed. Reg. 26267 (May 13, 1997)). The HARS will be managed to reduce impacts of historic disposal activities at the site to acceptable levels in accordance with 40 CFR Section 228.11(c). The need to remediate the HARS is supported by the presence of toxic effects, dioxin bioaccumulation exceeding Category 1 levels in worm tissue (a definition of which appears in a memorandum reviewing the results of the applicant's testing), as well as TCDD/PCB contamination in area lobster stocks. Individual elements of those data do not establish that sediments within the Study Area are imminent hazards to the New York Bight Apex ecosystem, living resources, or human health. However, the collective evidence presents cause for concern, and justifies the need for remediation. Further information on the conditions in the Study Area and the surveys performed may be found in the Supplemental Environmental Impact Statement (USEPA, 1997).

The designation of the HARS identifies an area in and around the MDS which has exhibited the potential for adverse ecological impacts. The HARS will be remediated with dredged material that meets current Category 1 standards and will not cause significant undesirable effects including through bioaccumulation. This dredged material is referred to as "Material for Remediation" or "Remediation Material."

Sediment from at least 27 different private and federal projects in the Port of New York and New Jersey has been dredged and placed as Remediation Material in the ocean since closure of the Mud Dump Site and designation of the HARS in 1997. This represents a total of approximately 19,600,000 cubic yards of material.

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The HARS, which includes the 2.2 square nautical mile area of the MDS, is an approximately 15.7 square nautical mile area located approximately 3.5 nautical miles east of Highlands, New Jersey and 7.7 nautical miles south of Rockaway, New York (see attached drawings, sheets 5 and 6). The MDS is located approximately 5.3 nautical miles east of Highlands, New Jersey and 9.6 nautical miles south of Rockaway, New York. When determined by bathymetry (a map depicting the relative depths of water in a particular area) that capping is complete, USEPA will take any necessary rulemaking to de-designate the HARS. The HARS includes the following three areas:

**Priority Remediation Area (PRA):** A 9.0 square nautical mile area to be remediated with at least 1 meter of Remediation Material. The PRA encompasses the area of degraded sediments as described in greater detail in the SEIS.

**Buffer Zone:** An approximately 5.7 square nautical mile area (0.27 nautical mile wide band around the PRA) in which no placement of the Material for Remediation will be allowed, but may receive Material for Remediation that incidentally spreads out of the PRA.

**No Discharge Zone:** An approximately 1.0 square nautical mile area in which no placement or incidental spread of Material for Remediation is allowed.

To improve management and monitoring of placement activities at the HARS, electronic monitoring equipment will be on-board any barges carrying Remediation Material to the HARS. This equipment records vessel positions throughout the duration of each trip to the HARS and during remediation operations. To improve communication reliability between tugs and scows, a prescribed formal communication procedure has been put in place (copies of this procedure are available upon request).

Additional information concerning the HARS can be obtained from Mr. Douglas Pabst of the USEPA, Team Leader of the Dredged Material Management Team, at (212) 637-3797.

**HARS SUITABILITY TESTING FOR GLACIAL TILL:**

Several reaches of glacial till were previously tested in the project area to determine its suitability for use as a remediation material at the HARS. This testing of the glacial till was conducted in accordance with test protocols for ocean placement established by the USEPA and USACE. The attached data tables provide the results of the HARS testing for federal dredging to deepen Kill Van Kull II Contract Area 3, Reaches 1 through 3. Notification of these results appeared in a previously issued Public Notice, FP63-345678CC issued by USACE on May 30, 2000. The Joint Memorandum for the Record signed by both agencies on August 26, 2003, indicated that the glacial till found within the Arthur Kill, Kill Van Kull, Newark Bay, and Port Jersey waterways, was suitable for HARS placement as Remediation Material and would not require further testing.

ALTERNATIVES TO HARS PLACEMENT:

Regarding ocean placement of dredged material, the Ocean Dumping Regulations [Title 40 CFR Sections 227.16(b)] states that ". . . 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 . . ." USACE, New York District has evaluated the regional practicability of potential disposal alternatives in the September, 1999 Draft "Implementation Report for the Dredged Material Management Plan for the Port of New York and New Jersey." The Recommended Plan within the report addresses both the long and short term dredged material placement options in two specific timeframes, heretofore referred to as the 2010 Plan and the 2040 Plan, respectively.

The 2010 Plan relies heavily on the creation, remediation, and restoration of a variety of existing degraded or impacted habitats in the region with material that would be considered unsuitable for HARS restoration. The remaining material is treated and stabilized, as needed, and then applied to remediate degraded and potentially polluting areas such as brownfields, landfills, and abandoned strip mines. Nearly all of the options considered in the 2010 Plan have a placement cost of \$29/cubic yard or higher.

Similar to the 2010 Plan, the 2040 Plan relies heavily upon the use of land remediation and decontamination methods for the management of HARS unsuitable material. As in the 2010 Plan, maximum use of all practicable alternatives to the HARS is envisioned.

Many of the dredged material management options presented in the 2010 Plan however, are not presently permitted and/or are presently under construction at this time and therefore considered unavailable for the purposes of this application. Other options are not available at reasonable incremental costs, thus leaving HARS placement as the preferred alternative.

Kill van Kull - Contract Area 3, Reach 1

Results of Chemical Analysis Of Site Water and Elutriate

CONSTITUENTS	Kill van Kull - Contract Area 3, Reach 1			
	SITE WATER		ELUTRIATE	
	DETECTION LIMITS	CONCENTRATION	DETECTION LIMITS	CONCENTRATION
Metals	ppb (ug/L)	ppb (ug/L)	ppb (ug/L)	ppb (ug/L)
Ag		0.0476	0.0077	ND
Cd		NA		0.0178
Cr		1.28		0.723
Cu		1.73		5.78
Hg		0.0059		0.0028
Ni		1.04		1.50
Pb		0.693		0.325
Zn		6.36		3.89
Pesticides	pptr (ng/L)	pptr (ng/L)	pptr (ng/L)	pptr (ng/L)
Aldrin	4.61	ND	0.63	ND
α-Chlordane	2.10	ND	0.29	ND
trans Nonachlor	2.17	ND	0.35	ND
Dieldrin		1.62	0.46	ND
4,4'-DDT	1.97	ND	0.54	ND
2,4'-DDT	1.92	ND	1.95	ND
4,4'-DDD	1.45	ND	0.16	ND
2,4'-DDD	1.77	ND	0.45	ND
4,4'-DDE	1.59	ND	0.58	ND
2,4'-DDE	1.30	ND	1.17	ND
Total DDT		10.00		4.85
Endosulfan I	2.80	ND	0.41	ND
Endosulfan II	1.95	ND	0.91	ND
Endosulfan sulfate	1.69	ND	0.38	ND
Heptachlor		1.20	0.31	ND
Heptachlor epoxide	2.03	ND	0.28	ND
Industrial Chemicals	pptr (ng/L)	pptr (ng/L)	pptr (ng/L)	pptr (ng/L)
PCB 8	3.17	ND	0.79	ND
PCB 18	4.04	ND	2.69	ND
PCB 28		1.82	1.22	ND
PCB 44	3.73	ND	0.12	ND
PCB 49	3.45	ND	0.14	ND
PCB 52	5.94	ND	0.23	ND
PCB 66	4.03	ND	1.00	ND
PCB 77	3.81	ND	2.15	ND
PCB 87		0.82	1.37	ND
PCB 101	4.38	ND	0.66	ND
PCB 105	3.47	ND	3.23	ND
PCB 118	3.00	ND	0.92	ND
PCB 128	2.88	ND	0.88	ND
PCB 138	3.39	ND	0.85	ND
PCB 153		0.28	2.04	ND
PCB 170		0.08	1.26	ND
PCB 180		0.28		1.29
PCB 183		ND	0.75	ND
PCB 184	7.72	ND	0.84	ND
PCB 187		0.38	0.25	ND
PCB 195	3.04	ND	0.85	ND
PCB 206	3.13	ND	1.38	ND
PCB 209	3.22	ND	1.78	ND
Total PCBs		130		49.3

Concentrations shown are the mean of three replicate analyses.  
 ND Not detected.  
 Total PCBs = Σ(x), where x = sum of all PCB congeners detected.  
 Total DDT = sum of 2,4'- and 4,4'-DDD, DDE, and DDT  
 Means, total PCBs, and total DDT where determined using conservative estimates of concentrations of constituents below the detection limit.

Kill van Kull - Contract Area 3, Reach 2

Results of Chemical Analysis Of Site Water and Elutriate

CONSTITUENTS	SITE WATER		ELUTRIATE	
	DETECTION LIMITS	CONCENTRATION	DETECTION LIMITS	CONCENTRATION
Metals	ppb (ug/L)	ppb (ug/L)	ppb (ug/L)	ppb (ug/L)
Ag		0.0515		0.0384
Cd		NA		1.78
Cr		1.34		1.48
Cu		2.34		7.77
Hg		0.0362		0.00949
Ni		1.12		15.9
Pb		0.879		0.548
Zn		5.98		12.6
Pesticides	pptr (ng/L)	pptr (ng/L)	pptr (ng/L)	pptr (ng/L)
Aldrin	4.71	ND	0.74	ND
α-Chlordane	2.14	ND	0.35	ND
trans Nonachlor		0.32	0.41	ND
Dieldrin		1.52	0.54	ND
4,4'-DDT	2.01	ND	0.63	ND
2,4'-DDT	1.96	ND	2.29	ND
4,4'-DDD	1.48	ND	0.18	ND
2,4'-DDD		0.32	0.53	ND
4,4'-DDE		0.31	0.88	ND
2,4'-DDE	1.32	ND	1.37	ND
Total DDT		7.41		5.70
Endosulfan I	2.66	ND	0.48	ND
Endosulfan II	2.66	ND	1.07	ND
Endosulfan sulfate		0.81	0.44	ND
Heptachlor		1.58	0.36	ND
Heptachlor epoxide	2.07	ND	0.33	ND
Industrial Chemicals	pptr (ng/L)	pptr (ng/L)	pptr (ng/L)	pptr (ng/L)
PCB 8	3.24	ND	0.93	ND
PCB 18	4.13	ND	3.15	ND
PCB 28		1.28	1.43	ND
PCB 44		0.23	0.14	ND
PCB 49	3.52	ND	0.17	ND
PCB 52	6.06	ND	0.55	ND
PCB 66	4.12	ND	1.17	ND
PCB 77	3.89	ND	2.53	ND
PCB 87		0.71	1.61	ND
PCB 101		0.30	0.77	ND
PCB 105	3.54	ND	3.66	ND
PCB 118	3.06	ND	1.08	ND
PCB 128	2.94	ND	1.01	ND
PCB 138	3.46	ND	1.12	ND
PCB 153		0.30	2.40	ND
PCB 170		0.08	1.48	ND
PCB 180		0.28	1.40	ND
PCB 183	7.88	ND	0.88	ND
PCB 184		0.45	0.99	ND
PCB 187	3.10	ND	0.58	ND
PCB 195	3.19	ND	1.00	ND
PCB 206		0.04	1.62	ND
PCB 209		0.07	2.09	ND
Total PCBs		104	68.8	ND

Concentrations shown are the mean of three replicate analyses.  
 ND Not detected.  
 Total PCBs = 2(x), where x = sum of all PCB congeners detected.  
 Total DDT = sum of 2,4'- and 4,4'-DDD, DDE, and DDT  
 Means, total PCBs, and total DDT where determined using conservative estimates of concentrations of constituents below the detection limit.

Kill van Kull - Contract Area 3, Reach 3

Results of Chemical Analysis Of Site Water and Elutriate

CONSTITUENTS	SITE WATER		ELUTRIATE	
	DETECTION LIMITS	CONCENTRATION	DETECTION LIMITS	CONCENTRATION
<b>Metals</b>				
Ag	ppb (ug/L)	ppb (ug/L)	ppb (ug/L)	ppb (ug/L)
Cd		0.0449	0.0077	ND
Cr		NA		0.0231
Cu		1.15		0.625
Hg		2.03		37.8
Ni		0.00575		0.00269
Pb		1.12		4.02
Zn		0.799		0.382
		8.05		3.94
<b>Pesticides</b>				
Aldrin	pptr (ng/L)	pptr (ng/L)	pptr (ng/L)	pptr (ng/L)
α-Chlordane	4.60	ND	0.64	ND
trans Nonachlor		0.08	0.30	ND
Dieldrin		0.26	0.35	ND
4,4'-DDT		1.51	0.46	ND
2,4'-DDT	1.97	ND	0.54	ND
4,4'-DDD	1.92	ND	1.96	ND
2,4'-DDD	1.44	ND	0.16	ND
4,4'-DDE		0.25	0.46	ND
2,4'-DDE	1.29	0.31	0.58	ND
Total DDT		7.17	1.17	ND
Endosulfan I		ND		4.87
Endosulfan II	2.79	ND	0.41	ND
Endosulfan sulfate	1.94	ND	0.91	ND
Heptachlor	1.69	ND	0.35	ND
Heptachlor epoxide		1.31	0.31	ND
	2.02	ND	0.28	ND
<b>Industrial Chemicals</b>				
PCB 8	pptr (ng/L)	pptr (ng/L)	pptr (ng/L)	pptr (ng/L)
PCB 18	3.16	ND	0.89	ND
PCB 28	4.03	ND	2.69	ND
PCB 44		1.42	1.22	ND
PCB 49	3.72	ND	0.12	ND
PCB 52	3.44	ND	0.14	ND
PCB 66	5.92	ND	0.23	ND
PCB 77	4.02	ND	1.00	ND
PCB 87	3.80	ND	2.16	ND
PCB 101		0.61	1.37	ND
PCB 105		0.20	0.66	ND
PCB 118	3.46	ND	3.30	ND
PCB 128	2.99	ND	0.92	ND
PCB 138	2.87	ND	0.56	ND
PCB 153	3.38	ND	0.95	ND
PCB 163		0.27	2.05	ND
PCB 170		0.09	1.27	ND
PCB 180		0.27	1.20	ND
PCB 183	7.69	ND	0.75	ND
PCB 184		0.42	0.84	ND
PCB 187		ND	0.33	ND
PCB 195	3.03	ND	0.85	ND
PCB 206	3.12	ND	1.39	ND
PCB 209		0.04	1.79	ND
Total PCBs		109	49.5	ND

Concentrations shown are the mean of three replicate analyses.  
 ND, Not detected.  
 Total PCBs = 2(x), where x = sum of all PCB congeners detected.  
 Total DDT = sum of 2,4'- and 4,4'-DDD, DDE, and DDT  
 Means, total PCBs, and total DDT where determined using conservative estimates of concentrations of constituents below the detection limit.

KILL VAN KULL - Contract Area 3, Reach 1

Toxicity Test Results

Suspended Particulate Phase

Test Species	Test Duration	LC50/EC50	LPC (a)
<i>Menidia beryllina</i>	96 hours	(b) > 100%	1.000
<i>Mysidopsis bahia</i>	96 hours	(b) > 100%	1.000
<i>Mytilus galloprovincialis</i> (larval survival)	70 hours	(b) > 100%	1.000
<i>Mytilus galloprovincialis</i> (larval normal development)	70 hours	(c) > 100%	1.000

(a) Limiting Permissible Concentration (LPC) is the LC50 or EC50 times 0.01.

(b) Median Lethal Concentration (LC50) resulting in 50% mortality at test termination.

(c) Median Effective Concentration (EC50) based on normal development to the D-cell, prodissoconch 1 stage.

Whole Sediment (10 days)

Test Species	% Survival in Reference	% Survival in Test	% Difference Reference - Test	Is difference statistically significant? ( $\alpha=0.05$ )
<i>Ampelisca abdita</i>	94%	94%	0%	NO
<i>Mysidopsis bahia</i>	98%	97%	1%	NO

KILL VAN KULL - Contract Area 3, Reach 2

Toxicity Test Results

Suspended Particulate Phase

Test Species	Test Duration	LC50/EC50	LPC (a)
<i>Menidia beryllina</i>	96 hours	(b) > 100%	1.000
<i>Mysidopsis bahia</i>	96 hours	(b) > 100%	1.000
<i>Mytilus galloprovincialis</i> (larval survival)	70 hours	(b) > 100%	1.000
<i>Mytilus galloprovincialis</i> (larval normal development)	70 hours	(c) > 100%	1.000

- (a) Limiting Permissible Concentration (LPC) is the LC50 or EC50 times 0.01.  
 (b) Median Lethal Concentration (LC50) resulting in 50% mortality at test termination.  
 (c) Median Effective Concentration (EC50) based on normal development to the D-cell, prodissoconch 1 stage.

Whole Sediment (10 days)

Test Species	% Survival in Reference	% Survival in Test	% Difference Reference - Test	Is difference statistically significant? ( $\alpha=0.05$ )
<i>Ampelisca abdita</i>	94%	89%	5%	NO
<i>Mysidopsis bahia</i>	98%	98%	0%	NO

KILL VAN KULL - Contract Area 3, Reach 3

Toxicity Test Results

Suspended Particulate Phase

Test Species	Test Duration	LC50/EC50	LPC (a)
<i>Menidia beryllina</i>	96 hours	(b) > 100%	1.000
<i>Mysidopsis bahia</i>	96 hours	(b) > 100%	1.000
<i>Mytilus galloprovincialis</i> (larval survival)	70 hours	(b) > 100%	1.000
<i>Mytilus galloprovincialis</i> (larval normal development)	70 hours	(c) > 100%	1.000

(a) Limiting Permissible Concentration (LPC) is the LC50 or EC50 times 0.01.

(b) Median Lethal Concentration (LC50) resulting in 50% mortality at test termination.

(c) Median Effective Concentration (EC50) based on normal development to the D-cell, prodissoconch 1 stage.

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Whole Sediment (10 days)

Test Species	% Survival in Reference	% Survival in Test	% Difference Reference - Test	Is difference statistically significant? ( $\alpha=0.05$ )
<i>Ampelisca abdita</i>	94%	93%	1%	NO
<i>Mysidopsis bahia</i>	98%	98%	0%	NO

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PROJECT KVK-3 CONTRACT AREA 3, REACH 1  
 28-DAY BIOACCUMULATION TEST RESULTS: CHEMICAL ANALYSIS OF TISSUE (In wet weight concentrations)

CONSTITUENTS	<i>Macoma nasuta</i>				<i>Nereis virens</i>			
	REFERENCE		TEST		REFERENCE		TEST	
	DETECTION LIMITS	CONCENTRATION	DETECTION LIMITS	CONCENTRATION	DETECTION LIMITS	CONCENTRATION	DETECTION LIMITS	CONCENTRATION
<b>Metals</b>	(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)
Ag		0.04		0.04		0.03		0.03
As		2.73		3.10		2.36		2.53
Cd		0.04		0.03		0.05		0.05
Cr		0.27		* 0.65		0.10		0.14
Cu		2.06		2.53		0.87		1.00
Hg		0.02		0.02		0.02		0.02
Ni		0.40		* 0.63		0.08		* 0.13
Pb		0.20		* 0.64		0.10		0.18
Zn		13.2		13.9		7.03		6.99
<b>Pesticides</b>	(ng/g)	(ng/g)	(ng/g)	(ng/g)	(ng/g)	(ng/g)	(ng/g)	(ng/g)
ALDRIN	0.36	ND	0.10	ND	0.57	ND	0.08	ND
ALPHA CHLORDANE		0.08		* 0.42		0.12		0.18
TRANS-NONACHLOR		0.05		* 0.21		0.49		0.42
DIELDRIN		0.16		* 0.26		0.26		0.30
OP-DDD		0.04		* 0.43		0.27		0.21
OP-DDE	0.09	ND		* 0.37	0.60	ND		0.07
OP-DDT	0.32	ND		0.09		0.26		0.06
PP-DDD		0.09		* 1.07		0.36		0.39
PP-DDE		0.43		* 1.87		0.06		0.08
PP-DDT		0.04		* 0.28		0.03		* 0.06
TOTAL DDT		0.80		* 4.12		0.98		0.87
ENDOSULFAN I	0.10	ND		* 0.04	0.52	ND		0.04
ENDOSULFAN II	0.13	ND	0.10	ND	0.19	ND	0.11	ND
ENDOSULFAN SULFATE	0.09	ND	0.10	ND		0.11		0.10
HEPTACHLOR		0.06	0.18	ND	0.50	ND	0.06	ND
HEPTACHLOR EPOXIDE	0.06	ND	0.15	ND	0.65	ND	0.08	ND
<b>Industrial Chemicals</b>	(ng/g)	(ng/g)	(ng/g)	(ng/g)	(ng/g)	(ng/g)	(ng/g)	(ng/g)
CL2_9		0.06	0.05	ND		0.60		0.11
CL3_18		0.05		* 0.46		0.06		0.12
CL3_28		0.05		* 0.85		0.05		* 0.22
CL4_44		0.02		* 0.32		0.10		* 0.20
CL4_49		0.09		* 1.11		0.30		0.38
CL4_52		0.29		* 1.46		1.11		1.23
CL4_66		0.03		* 0.90		0.08		* 0.23
CL4_77	0.13	ND	0.10	ND	0.74	ND		0.10
CL5_101		0.13		* 1.48		0.95		0.84
CL5_105		0.03		* 0.30		0.44		0.24
CL5_118		0.06		* 0.79		0.54		0.43
CL5_87		0.08		* 0.41		0.13		0.14
CL5_128		0.02		* 0.14		0.20		0.15
CL5_138		0.12		* 0.95		1.33		1.12
CL5_153		0.11		* 0.93		1.73		1.49
CL7_170		0.03		* 0.23		0.34		0.22
CL7_180		0.05		* 0.37		0.82		0.63
CL7_183	0.16	ND		* 0.21		0.24		0.35
CL7_184	0.12	ND	0.08	ND	0.31	ND	0.09	ND
CL7_187		0.09		* 0.31		0.60		0.59
CL8_195	0.08	ND		* 0.05		0.14		0.11
CL9_206	0.06	ND		* 0.05		0.21		0.20
CL10_209	0.09	ND		* 0.04		0.17		0.18
TOTAL PCBs		3.19		* 22.8		20.9		18.5
1,4-DICHLOROBENZENE		0.19		0.24		0.09		* 0.23

PROJECT KVK-3 CONTRACT AREA 3, REACH 1  
 28-DAY BIOACCUMULATION TEST RESULTS: CHEMICAL ANALYSIS OF TISSUE (in wet weight concentrations)

CONSTITUENTS	<i>Macoma nasuta</i>				<i>Nereis virens</i>			
	REFERENCE		TEST		REFERENCE		TEST	
	DETECTION LIMITS	CONCENTRATION	DETECTION LIMITS	CONCENTRATION	DETECTION LIMITS	CONCENTRATION	DETECTION LIMITS	CONCENTRATION
Dioxins and Furans	(pg/g)	(pg/g)	(pg/g)	(pg/g)	(pg/g)	(pg/g)	(pg/g)	(pg/g)
2378-TCDD	0.42	ND	0.31	ND	0.50	ND	0.51	ND
12378-PeCDD	0.46	ND	0.30	ND	0.75	ND	0.45	ND
123478-HxCDD	0.25	ND	0.27	ND	0.36	ND	0.29	ND
123678-HxCDD	0.28	ND	0.30	ND	0.39	ND	0.33	ND
123789-HxCDD	0.21	ND	0.25	ND	0.49	ND	0.33	ND
1234678-HpCDD	0.48	ND		0.55		1.11		0.64
OCDD		1.02		* 5.52		3.85		3.88
2378-TCDF	0.42	ND		0.53		0.88		0.77
12378-PeCDF	0.34	ND	0.23	ND	0.10	ND	0.19	ND
23478-PeCDF	0.17	ND		0.05	0.37	ND	0.25	ND
123478-HxCDF	0.26	ND		0.10		0.14	0.38	ND
123678-HxCDF	0.25	ND	0.12	ND	0.21	ND	0.37	ND
123789-HxCDF	0.44	ND	0.33	ND	0.44	ND	0.44	ND
234678-HxCDF	0.35	ND	0.41	ND	0.44	ND	0.25	ND
1234678-HpCDF	0.35	ND		0.35		0.32		0.33
1234789-HpCDF	0.55	ND		0.11	0.46	ND	0.46	ND
OCDF	0.93	ND		0.42	1.26	ND	0.93	ND
PAHs	(ng/g)	(ng/g)	(ng/g)	(ng/g)	(ng/g)	(ng/g)	(ng/g)	(ng/g)
NAPHTHALENE		2.08		1.38		4.07		4.23
ACENAPHTHYLENE	0.38	ND		* 0.51	4.06	ND		0.85
ACENAPHTHENE		0.17		0.45		1.14		0.25
FLUORENE		0.17		0.27	3.37	ND	1.28	ND
PHENANTHRENE		0.43		* 1.86		0.33		0.83
ANTHRACENE		0.35		* 1.51	2.47	ND		0.57
FLUORANTHENE		1.81		* 9.93		0.47		2.57
PYRENE		1.16		* 21.7		0.74		3.83
BENZO[A]ANTHRACENE		0.18		* 4.19	1.26	ND		1.13
CHRYSENE		0.84		* 6.89		0.81		1.44
BENZO[B]FLUORANTHENE		0.35		* 5.66	2.03	ND		0.68
BENZO[K]FLUORANTHENE		0.27		* 5.54	1.76	ND		0.92
BENZO[A]PYRENE		0.17		* 5.50	0.95	ND		0.96
INDENO[1,2,3-C,D]PYRENE		0.87		* 1.90	1.31	ND		0.96
DIBENZO[A,H]ANTHRACENE	1.07	ND		* 0.58	2.60	ND		* 0.74
BENZO[G,H,I]PERYLENE		0.77		* 2.27	1.91	ND		1.02

Concentrations shown are the mean of 5 replicate analyses.

\* Statistically higher than reference at 95% confidence.

ND = Not detected.

Total PCB = sum of congeners reported \* 2.

Total DDT = sum of OP- and PP-DDD, DDE, and DDT.

Means and statistical comparisons were determined using conservative estimates of concentrations of replicates that were below the detection limits.

PROJECT KVK-3 CONTRACT AREA 3, REACH 2  
 28-DAY BIOACCUMULATION TEST RESULTS: CHEMICAL ANALYSIS OF TISSUE (In wet weight concentrations)

CONSTITUENTS	<i>Macoma nasuta</i>				<i>Nereis virens</i>			
	REFERENCE		TEST		REFERENCE		TEST	
	DETECTION LIMITS	CONCENTRATION	DETECTION LIMITS	CONCENTRATION	DETECTION LIMITS	CONCENTRATION	DETECTION LIMITS	CONCENTRATION
<b>Metals</b>	(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)
Ag		0.04		0.04		0.03		0.02
As		2.73		3.12		2.36		2.50
Cd		0.04		* 0.05		0.05		0.04
Cr		0.27		0.43		0.10		0.12
Cu		2.06		2.02		0.67		* 1.32
Hg		0.02		0.02		0.02		0.02
Ni		0.40		* 0.62		0.08		* 0.17
Pb		0.20		* 0.42		0.10		0.11
Zn		13.2		14.7		7.03		7.62
<b>Pesticides</b>	(ng/g)	(ng/g)	(ng/g)	(ng/g)	(ng/g)	(ng/g)	(ng/g)	(ng/g)
ALDRIN	0.36	ND	0.11	ND	0.57	ND	0.11	ND
ALPHA CHLORDANE		0.08		* 0.41		0.12		* 0.24
TRANS-NONACHLOR		0.05		* 0.21		0.49		* 0.45
DIELDRIN		0.16		* 0.27		0.26		* 0.38
OP-DDD		0.04		* 0.44		0.27		* 0.42
OP-DDE	0.09	ND		0.23	0.90	ND		0.16
OP-DDT	0.32	ND		0.06		0.26		0.08
PP-DDD		0.09		* 1.05		0.36		* 0.72
PP-DDE		0.43		* 1.24		0.06		0.11
PP-DDT		0.04		* 0.14		0.03		* 0.07
TOTAL DDT		0.80		* 3.16		0.98		1.57
ENDOSULFAN I	0.10	ND		0.05	0.52	ND		0.07
ENDOSULFAN II	0.13	ND	0.11	ND	0.19	ND	0.14	ND
ENDOSULFAN SULFATE	0.09	ND	0.11	ND		0.11		0.10
HEPTACHLOR		0.06	0.21	ND	0.50	ND		0.04
HEPTACHLOR EPOXIDE	0.06	ND	0.17	ND	0.65	ND	0.11	ND
<b>Industrial Chemicals</b>	(ng/g)	(ng/g)	(ng/g)	(ng/g)	(ng/g)	(ng/g)	(ng/g)	(ng/g)
CL2_8		0.06	0.06	ND		0.60	0.32	ND
CL3_18		0.05	0.16	ND		0.06		0.07
CL3_28		0.05		* 0.18		0.05		* 0.12
CL4_44		0.02		* 0.10		0.10		* 0.20
CL4_49		0.09		* 0.36		0.30		0.34
CL4_52		0.29		* 0.66		1.11		1.34
CL4_66		0.03		* 0.32		0.08		* 0.17
CL4_77	0.13	ND	0.11	ND	0.74	ND		0.12
CL5_101		0.13		* 0.85		0.95		0.99
CL5_105		0.03		* 0.18		0.44		0.30
CL5_118		0.08		* 0.47		0.54		0.55
CL5_87		0.08		* 0.29		0.13		0.20
CL6_128		0.02		* 0.09		0.20		0.20
CL6_138		0.12		* 0.61		1.33		1.34
CL6_153		0.11		* 0.64		1.73		1.74
CL7_170		0.03		* 0.21		0.34		0.24
CL7_180		0.05		* 0.21		0.82		0.73
CL7_183	0.15	ND		* 0.05		0.24		* 0.47
CL7_184	0.12	ND	0.09	ND	0.31	ND	0.12	ND
CL7_187		0.09		* 0.17		0.80		0.66
CL8_195	0.08	ND		* 0.03		0.14		0.13
CL9_206	0.06	ND		* 0.04		0.21		0.24
CL10_209	0.09	ND		* 0.03		0.17		0.21
TOTAL PCBs		3.19		* 11.3		20.9		21.0
1,4-DICHLOROBENZENE		0.19		0.25		0.09		* 0.28

PROJECT KV-3 CONTRACT AREA 3, REACH 2  
 28-DAY BIOACCUMULATION TEST RESULTS: CHEMICAL ANALYSIS OF TISSUE (In wet weight concentrations)

CONSTITUENTS	<i>Macoma nasuta</i>				<i>Nereis virens</i>			
	REFERENCE		TEST		REFERENCE		TEST	
	DETECTION LIMITS	CONCENTRATION	DETECTION LIMITS	CONCENTRATION	DETECTION LIMITS	CONCENTRATION	DETECTION LIMITS	CONCENTRATION
Dioxins and Furans	(pg/g)	(pg/g)	(pg/g)	(pg/g)	(pg/g)	(pg/g)	(pg/g)	(pg/g)
2378-TCDD	0.42	ND	0.40	ND	0.50	ND	0.46	ND
12378-PeCDD	0.46	ND	0.41	ND	0.75	ND	0.44	ND
123478-HxCDD	0.25	ND	0.28	ND	0.36	ND	0.27	ND
123678-HxCDD	0.28	ND	0.31	ND	0.39	ND	0.30	ND
123789-HxCDD	0.21	ND	0.24	ND	0.49	ND	0.31	ND
1234678-HpCDD	0.48	ND		0.37		1.11		0.77
OCDD	1.02			2.47		3.85		3.42
2378-TCDF	0.42	ND		0.40		0.88		1.01
12378-PeCDF	0.34	ND	0.31	ND	0.10	ND	0.17	ND
23478-PeCDF	0.17	ND	0.13	ND	0.37	ND	0.24	ND
123478-HxCDF	0.26	ND	0.21	ND		0.14		0.20
123678-HxCDF	0.25	ND	0.21	ND	0.21	ND	0.32	ND
123789-HxCDF	0.44	ND	0.43	ND	0.44	ND	0.39	ND
234678-HxCDF	0.35	ND	0.40	ND	0.44	ND	0.25	ND
1234678-HpCDF	0.35	ND		0.24		0.32		0.33
1234789-HpCDF	0.55	ND	0.46	ND	0.46	ND	0.39	ND
OCDF	0.93	ND	0.66	ND	1.26	ND	0.87	ND
PAHs	(ng/g)	(ng/g)	(ng/g)	(ng/g)	(ng/g)	(ng/g)	(ng/g)	(ng/g)
NAPHTHALENE		2.08		1.87		4.07		5.17
ACENAPHTHYLENE	0.38	ND		0.30	4.06	ND		1.41
ACENAPHTHENE		0.17		0.63		1.14		0.68
FLUORENE		0.17		0.33	3.37	ND	1.74	ND
PHENANTHRENE		0.43		1.24		0.33		0.25
ANTHRACENE		0.35		0.78	2.47	ND		0.57
FLUORANTHENE		1.81		8.90		0.47		1.45
PYRENE		1.16		10.8		0.74		2.50
BENZO(A)ANTHRACENE		0.18		4.72	1.26	ND	0.56	ND
CHRYSENE		0.84		10.8		0.81		1.57
BENZO(B)FLUORANTHENE		0.35		6.57	2.03	ND		0.34
BENZO(K)FLUORANTHENE		0.27		4.91	1.76	ND		0.33
BENZO(A)PYRENE		0.17		6.69	0.95	ND		0.36
INDENO(1,2,3-C,D)PYRENE		0.87		1.43	1.31	ND	2.04	ND
DIBENZO(A,H)ANTHRACENE	1.07	ND		0.77	2.60	ND	2.18	ND
BENZO(G,H)PERYLENE		0.77		2.50	1.81	ND		0.59

Concentrations shown are the mean of .5 replicate analyses.  
 \* Statistically higher than reference at 95% confidence.  
 ND = Not detected.  
 Total PCB = sum of congeners reported \* 2.  
 Total DDT = sum of OP- and PP-DDD, DDE, and DDT.  
 Means and statistical comparisons were determined using conservative estimates of concentrations of replicates that were below the detection limits.

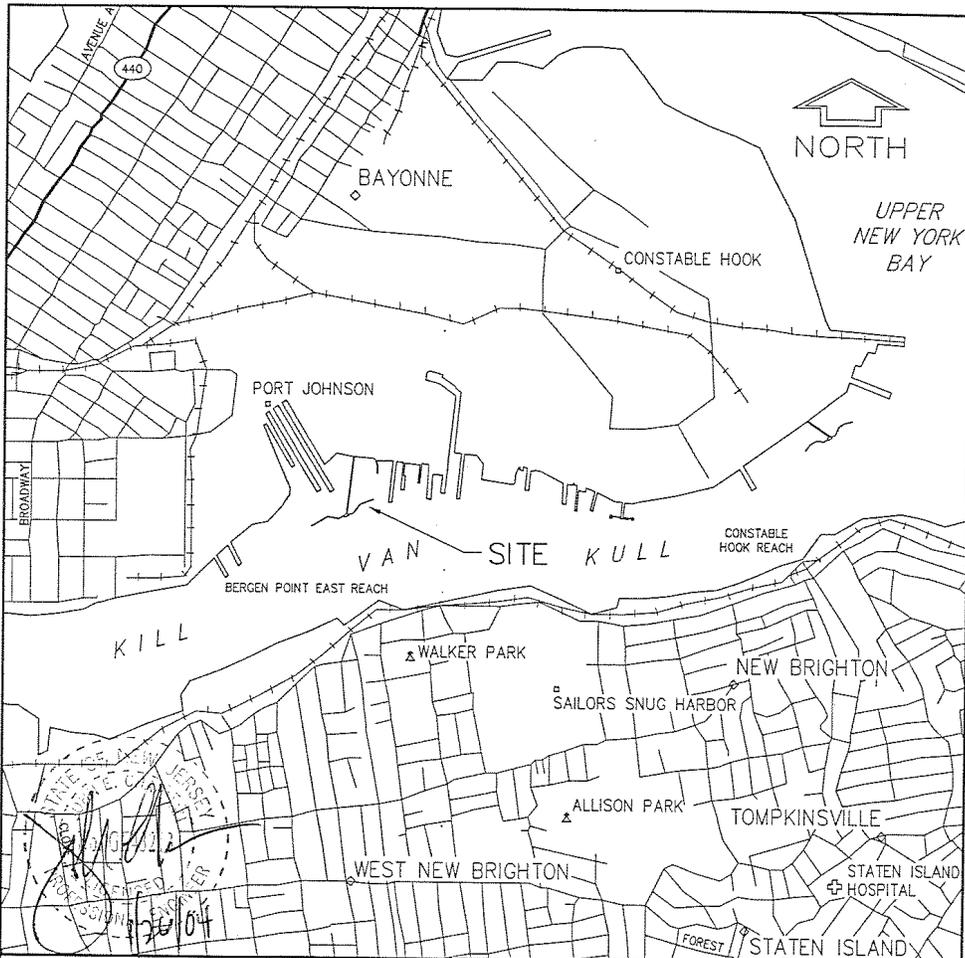
PROJECT KVK-3 CONTRACT AREA 3, REACH 3  
 28-DAY BIOACCUMULATION TEST RESULTS: CHEMICAL ANALYSIS OF TISSUE (In wet weight concentrations)

CONSTITUENTS	<i>Macoma nasuta</i>				<i>Nereis virens</i>			
	REFERENCE		TEST		REFERENCE		TEST	
	DETECTION LIMITS	CONCENTRATION	DETECTION LIMITS	CONCENTRATION	DETECTION LIMITS	CONCENTRATION	DETECTION LIMITS	CONCENTRATION
<b>Metals</b>	(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)
Ag		0.04		0.05		0.03		0.03
As		2.73		2.91		2.36		2.40
Cd		0.04		0.04		0.05		0.05
Cr		0.27		* 0.55		0.10		0.13
Cu		2.06		* 2.91		0.87		* 1.20
Hg		0.02		0.02		0.02		0.02
Ni		0.40		* 0.72		0.08		* 0.15
Pb		0.20		* 0.64		0.10		0.15
Zn		13.2		15.1		7.03		7.28
<b>Pesticides</b>	(ng/g)	(ng/g)	(ng/g)	(ng/g)	(ng/g)	(ng/g)	(ng/g)	(ng/g)
ALDRIN	0.36	ND	0.45	* ND	0.57	ND	0.48	* ND
ALPHA CHLORDANE		0.08		* 0.30		0.12		* 0.24
TRANS-NONACHLOR		0.05		* 0.13		0.49		* 0.43
DIELDRIN		0.16		* 0.34		0.26		* 0.37
OP-DDD		0.04		* 0.52		0.27		* 0.61
OP-DDE	0.09	ND		* 0.30	0.90	ND	0.75	* ND
OP-DDT	0.32	ND		0.20		0.26		0.34
PP-DDD		0.09		* 0.99		0.36		* 1.02
PP-DDE		0.43		* 1.92		0.06		* 0.14
PP-DDT		0.04		* 0.51		0.03		* 0.19
TOTAL DDT		0.80		* 4.43		0.98		* 3.05
ENDOSULFAN I	0.10	ND	0.12	ND	0.52	ND	0.43	* ND
ENDOSULFAN II	0.13	ND	0.17	ND	0.19	ND	0.16	ND
ENDOSULFAN SULFATE	0.09	ND	0.11	ND		0.11		0.15
HEPTACHLOR		0.06	0.09	ND	0.50	ND	0.42	* ND
HEPTACHLOR EPOXIDE	0.06	ND	0.08	ND	0.65	ND	0.54	* ND
<b>Industrial Chemicals</b>	(ng/g)	(ng/g)	(ng/g)	(ng/g)	(ng/g)	(ng/g)	(ng/g)	(ng/g)
CL2_8		0.06		* 0.15		0.60		* 1.30
CL3_18		0.05		* 0.24		0.06		* 0.16
CL3_28		0.05		* 0.85		0.05		* 0.29
CL4_44		0.02		* 0.16		0.10		* 0.23
CL4_49		0.09		* 0.92		0.30		* 0.55
CL4_52		0.29		* 1.25		1.11		* 1.58
CL4_66		0.03		* 0.62		0.08		* 0.25
CL4_77	0.13	ND	0.17	ND	0.74	ND	0.61	* ND
CL5_101		0.13		* 1.25		0.95		* 1.34
CL5_105		0.03		* 0.37		0.44		0.50
CL5_118		0.08		* 1.13		0.54		0.83
CL5_87		0.08		* 0.43		0.13		0.19
CL6_128		0.02		* 0.18		0.20		0.25
CL6_138		0.12		* 1.07		1.33		1.59
CL6_153		0.11		* 0.91		1.73		1.69
CL7_170		0.03		* 0.25		0.34		0.32
CL7_180		0.05		* 0.34		0.82		0.80
CL7_183	0.15	ND		0.07		0.24		0.24
CL7_184	0.12	ND	0.15	ND	0.31	ND		0.45
CL7_187		0.09		* 0.36		0.80		0.78
CL8_195	0.08	ND		* 0.05		0.14		0.14
CL9_206	0.06	ND		* 0.05		0.21		0.22
CL10_209	0.09	ND		* 0.04		0.17		0.19
TOTAL PCBs		3.19		* 20.7		20.9		27.8
1,4-DICHLOROBENZENE		0.19		* 0.32		0.09		* 0.33

PROJECT KVK-3 CONTRACT AREA 3, REACH 3  
 28-DAY BIOACCUMULATION TEST RESULTS: CHEMICAL ANALYSIS OF TISSUE (In wet weight concentrations)

CONSTITUENTS	<i>Macoma nasuta</i>				<i>Nereis virens</i>			
	REFERENCE		TEST		REFERENCE		TEST	
	DETECTION LIMITS	CONCENTRATION	DETECTION LIMITS	CONCENTRATION	DETECTION LIMITS	CONCENTRATION	DETECTION LIMITS	CONCENTRATION
Dioxins and Furans	(pg/g)	(pg/g)	(pg/g)	(pg/g)	(pg/g)	(pg/g)	(pg/g)	(pg/g)
2378-TCDD	0.42	ND	1.60	ND	0.50	ND	0.51	ND
12378-PeCDD	0.46	ND	0.40	ND	0.75	ND	0.44	ND
123478-HxCDD	0.25	ND	0.23	ND	0.36	ND	0.30	ND
123678-HxCDD	0.28	ND	0.25	ND	0.39	ND		0.19
123789-HxCDD	0.21	ND	0.20	ND	0.49	ND	0.32	ND
1234678-HpCDD	0.48	ND		0.51		1.11		0.90
OCDD		1.02		3.32		3.85		3.68
2378-TCDF	0.42	ND		2.63		0.88		1.10
12378-PeCDF	0.34	ND	0.44	ND	0.10	ND	0.20	ND
23478-PeCDF	0.17	ND	0.14	ND	0.37	ND		0.20
123478-HxCDF	0.26	ND	0.18	ND		0.14		0.22
123678-HxCDF	0.25	ND	0.17	ND	0.21	ND	0.39	ND
123789-HxCDF	0.44	ND	0.35	ND	0.44	ND	0.44	ND
234678-HxCDF	0.35	ND	0.34	ND	0.44	ND	0.25	ND
1234678-HpCDF	0.35	ND		0.22		0.32		0.34
1234789-HpCDF	0.55	ND	0.35	ND	0.46	ND	0.41	ND
OCDF	0.93	ND	0.67	ND	1.26	ND	0.93	ND
PAHs	(ng/g)	(ng/g)	(ng/g)	(ng/g)	(ng/g)	(ng/g)	(ng/g)	(ng/g)
NAPHTHALENE		2.08		2.54		4.07		3.03
ACENAPHTHYLENE	0.38	ND		0.33	4.06	ND	3.38	ND
ACENAPHTHENE		0.17		0.21		1.14		0.51
FLUORENE		0.17		0.36	3.37	ND	2.80	ND
PHENANTHRENE		0.43		1.99		0.33		0.30
ANTHRACENE		0.35		4.31	2.47	ND	2.06	ND
FLUORANTHENE		1.81		10.7		0.47		1.50
PYRENE		1.16		22.9		0.74		2.81
BENZO[A]ANTHRACENE		0.18		3.95	1.26	ND	1.04	ND
CHRYSENE		0.84		8.72		0.81		0.83
BENZO[B]FLUORANTHENE		0.35		4.96	2.03	ND	1.69	ND
BENZO[K]FLUORANTHENE		0.27		4.02	1.76	ND	1.46	ND
BENZO[A]PYRENE		0.17		4.34	0.95	ND	0.79	ND
INDENO[1,2,3-C,D]PYRENE		0.87		1.06	1.31	ND	1.09	ND
DIBENZO[A,H]ANTHRACENE	1.07	ND		0.48	2.80	ND	2.16	ND
BENZO[G,H,I]PERYLENE		0.77		1.72	1.91	ND	1.59	ND

Concentrations shown are the mean of 5 replicate analyses.  
 \* Statistically higher than reference at 95% confidence.  
 ND = Not detected.  
 Total PCB = sum of congeners reported \* 2.  
 Total DDT = sum of OP- and PP- DDD, DDE; and DDT.  
 Means and statistical comparisons were determined using conservative estimates of concentrations of replicates that were below the detection limits.



TAKEN FROM  
DeLORME MAP EXPERT  
WINDOWS V2.0

**VICINITY MAP**

0                      2000                      4000 FT.  
SCALE

FOR PERMIT USE ONLY  
NOT FOR CONSTRUCTION

PURPOSE: PIER "A" MODIFICATIONS

DATUM: M.L.W.

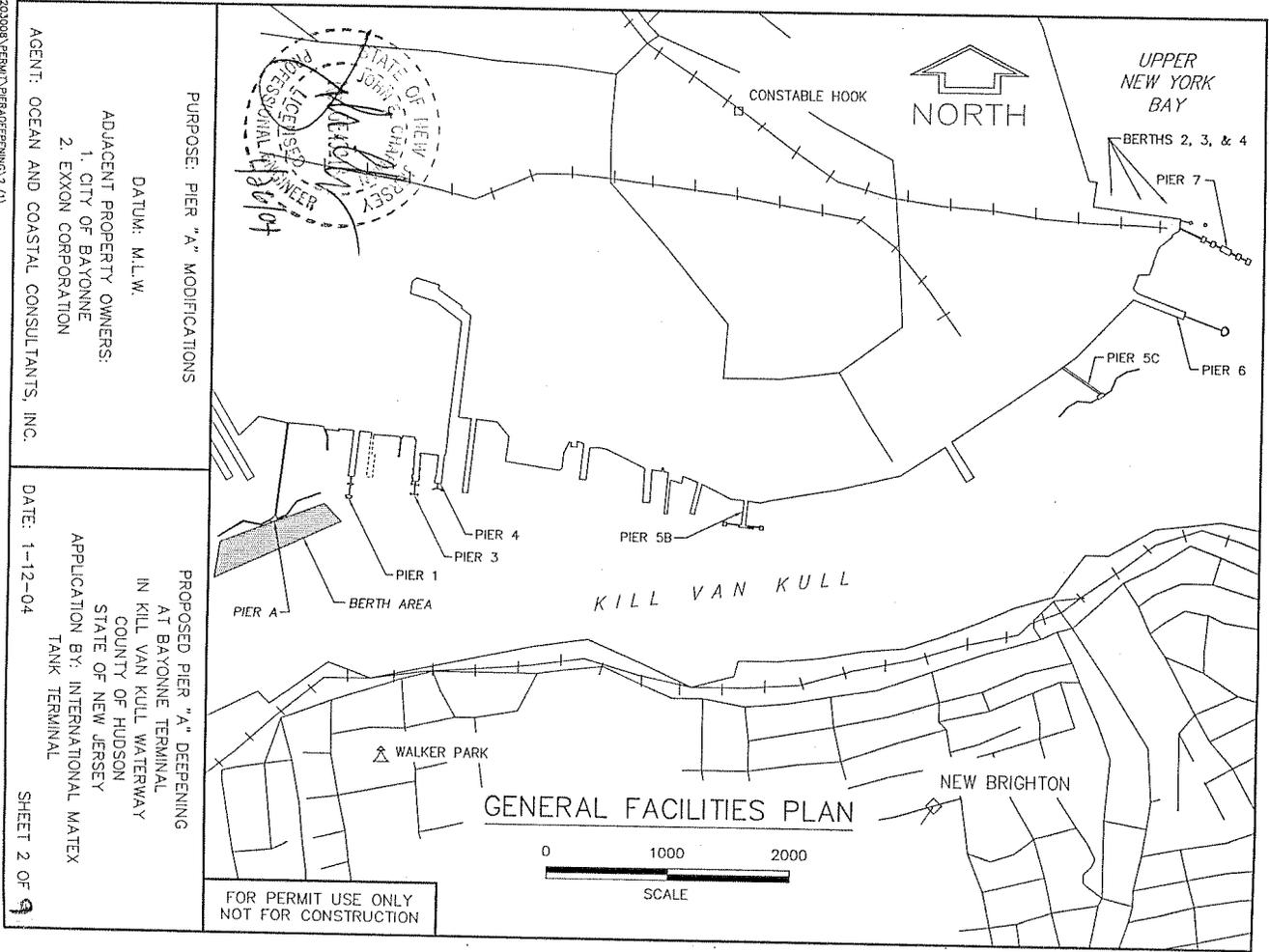
ADJACENT PROPERTY OWNERS:  
1. CITY OF BAYONNE  
2. EXXON CORPORATION

AGENT: OCEAN AND COASTAL CONSULTANTS, INC.

PROPOSED PIER "A" DEEPENING  
AT BAYONNE TERMINAL  
IN KILL VAN KULL WATERWAY  
COUNTY OF HUDSON  
STATE OF NEW JERSEY  
APPLICATION BY: INTERNATIONAL MATEX  
TANK TERMINAL

DATE: 1-12-04

SHEET 1 OF 9



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PURPOSE: PIER "A" MODIFICATIONS

DATUM: M.L.W.

ADJACENT PROPERTY OWNERS:  
1. CITY OF BAYONNE  
2. EXXON CORPORATION

AGENT: OCEAN AND COASTAL CONSULTANTS, INC.

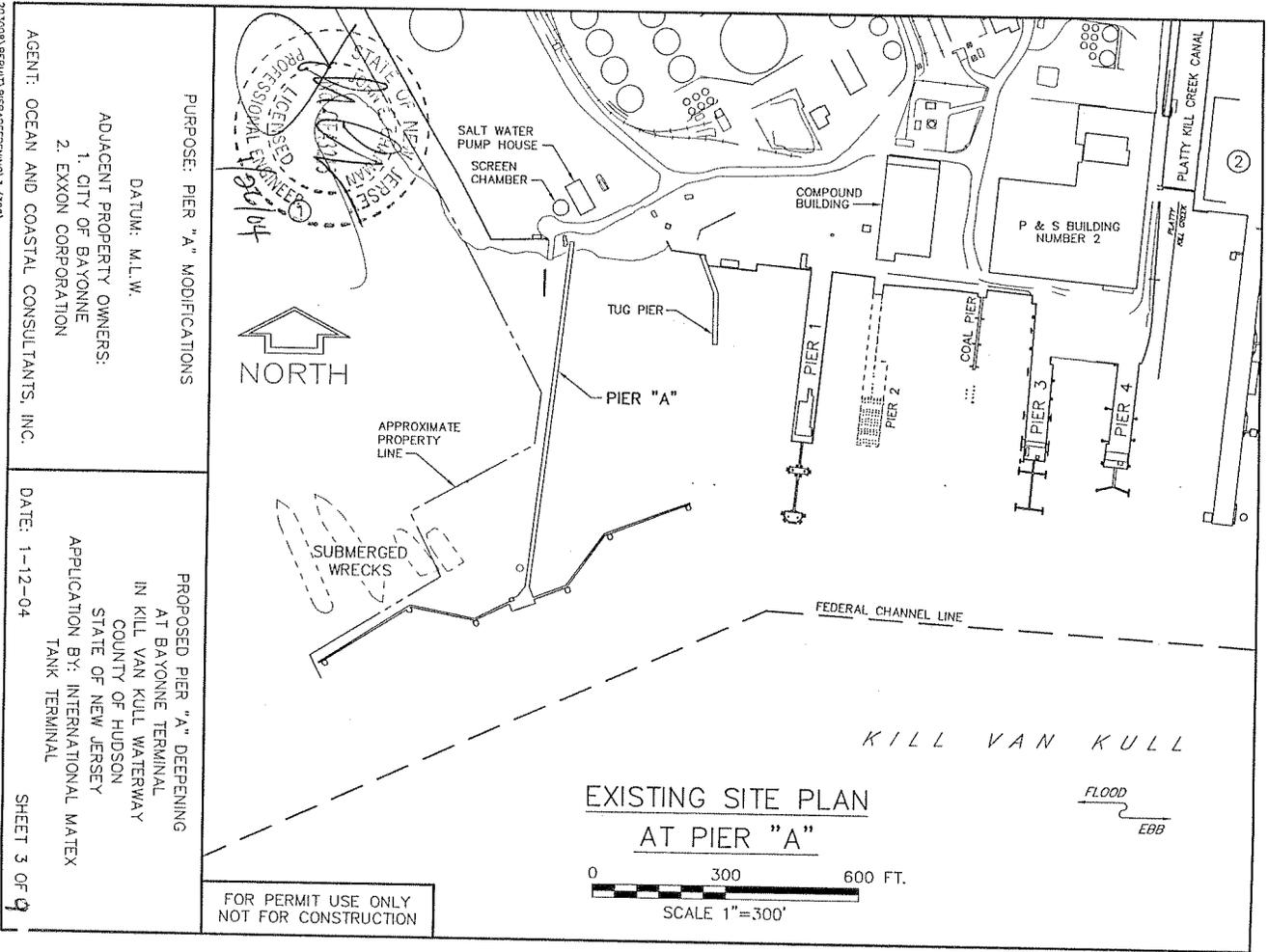
PROPOSED PIER "A" DEEPENING  
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COUNTY OF HUDSON  
STATE OF NEW JERSEY

APPLICATION BY: INTERNATIONAL MATEX  
TANK TERMINAL

DATE: 1-12-04

201008\VERMINT\PIERDEEPENING\3 (1)

SHEET 2 OF 4



PURPOSE: PIER "A" MODIFICATIONS

DATUM: M.L.W.

ADJACENT PROPERTY OWNERS:

1. CITY OF BAYONNE
2. EXXON CORPORATION

AGENT: OCEAN AND COASTAL CONSULTANTS, INC.

PROPOSED PIER "A" DEEPENING  
 AT BAYONNE TERMINAL  
 IN KILL VAN KULL WATERWAY  
 COUNTY OF HUDSON  
 STATE OF NEW JERSEY

APPLICATION BY: INTERNATIONAL MATEX  
 TANK TERMINAL

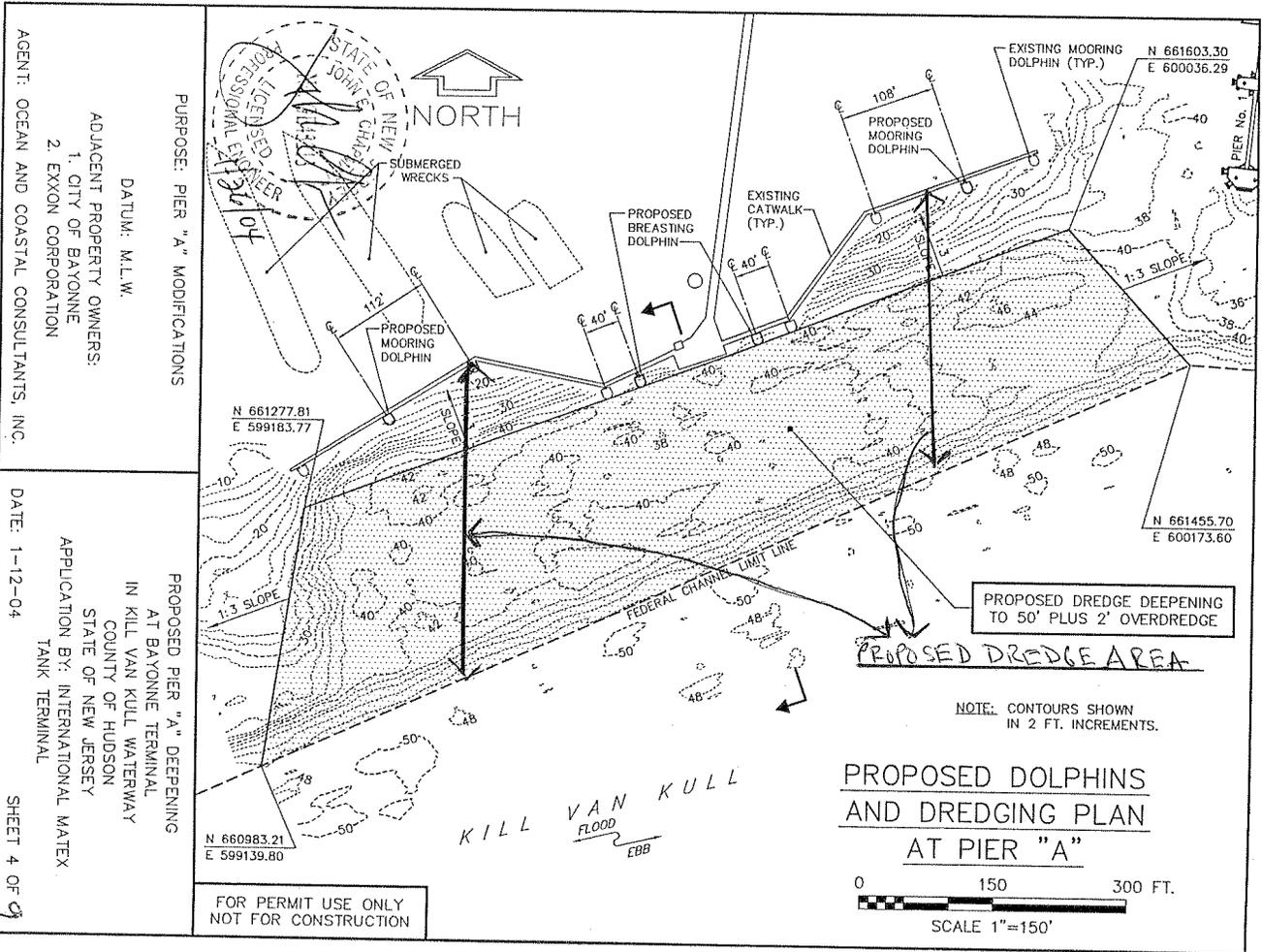
DATE: 1-12-04

SHEET 3 OF 4

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202008 PERMIT VERIFICATION 3 (200)

2020063 VERMINT VTRMAGEPERMITS (1/30)



PURPOSE: PIER "A" MODIFICATIONS

DATUM: M.L.W.

ADJACENT PROPERTY OWNERS:

1. CITY OF BAYONNE
2. EXXON CORPORATION

AGENT: OCEAN AND COASTAL CONSULTANTS, INC.

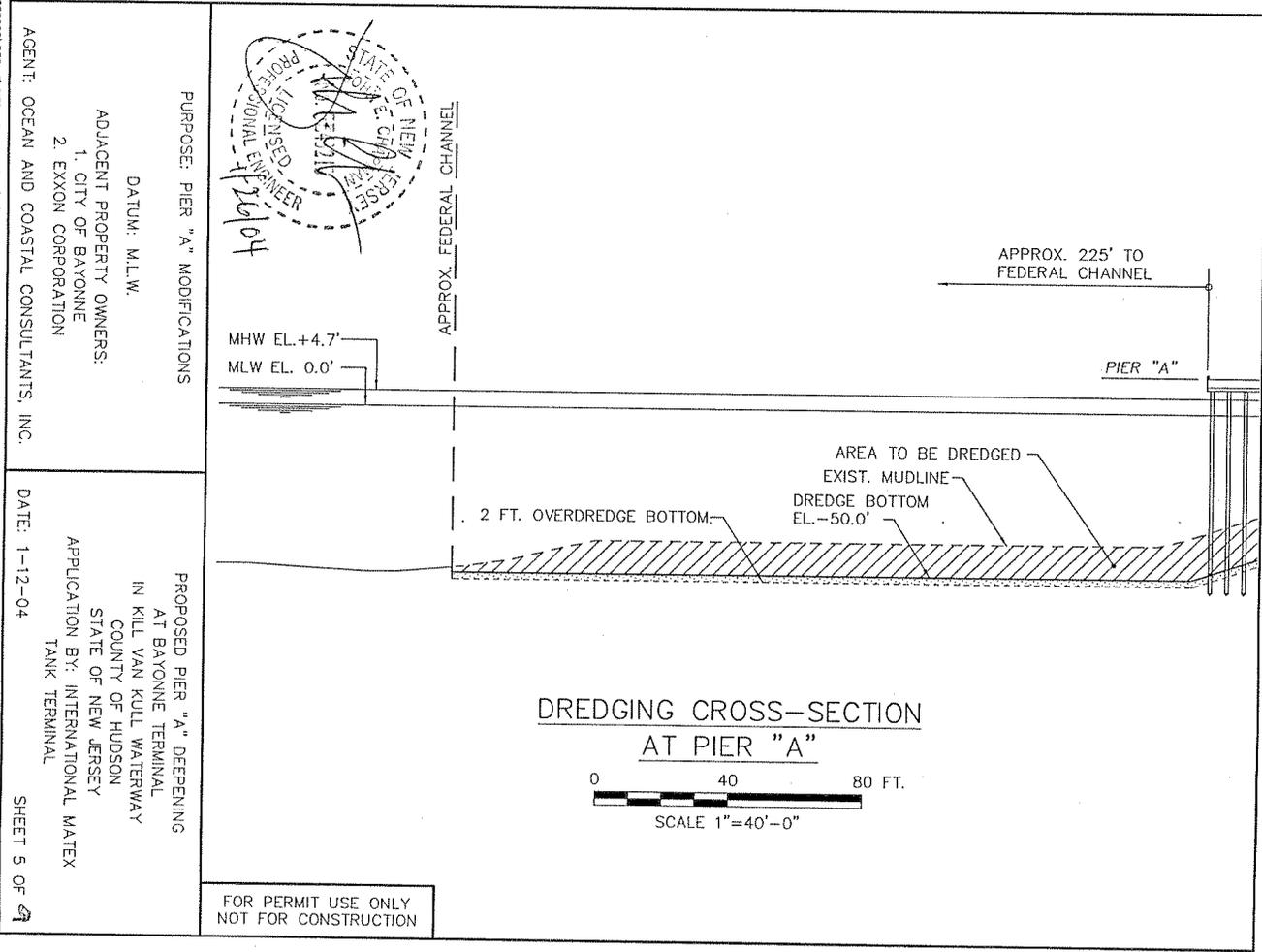
PROPOSED PIER "A" DEEPENING  
AT BAYONNE TERMINAL  
IN KILL VAN KULL WATERWAY  
COUNTY OF HUDSON  
STATE OF NEW JERSEY

APPLICATION BY: INTERNATIONAL MATEX  
TANK TERMINAL

DATE: 1-12-04

SHEET 4 OF 9

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STATE OF NEW JERSEY  
OFFICE OF PERMITS AND CONSTRUCTION  
PROFESSIONAL ENGINEER  
12/6/04

PURPOSE: PIER "A" MODIFICATIONS

DATUM: M.L.W.

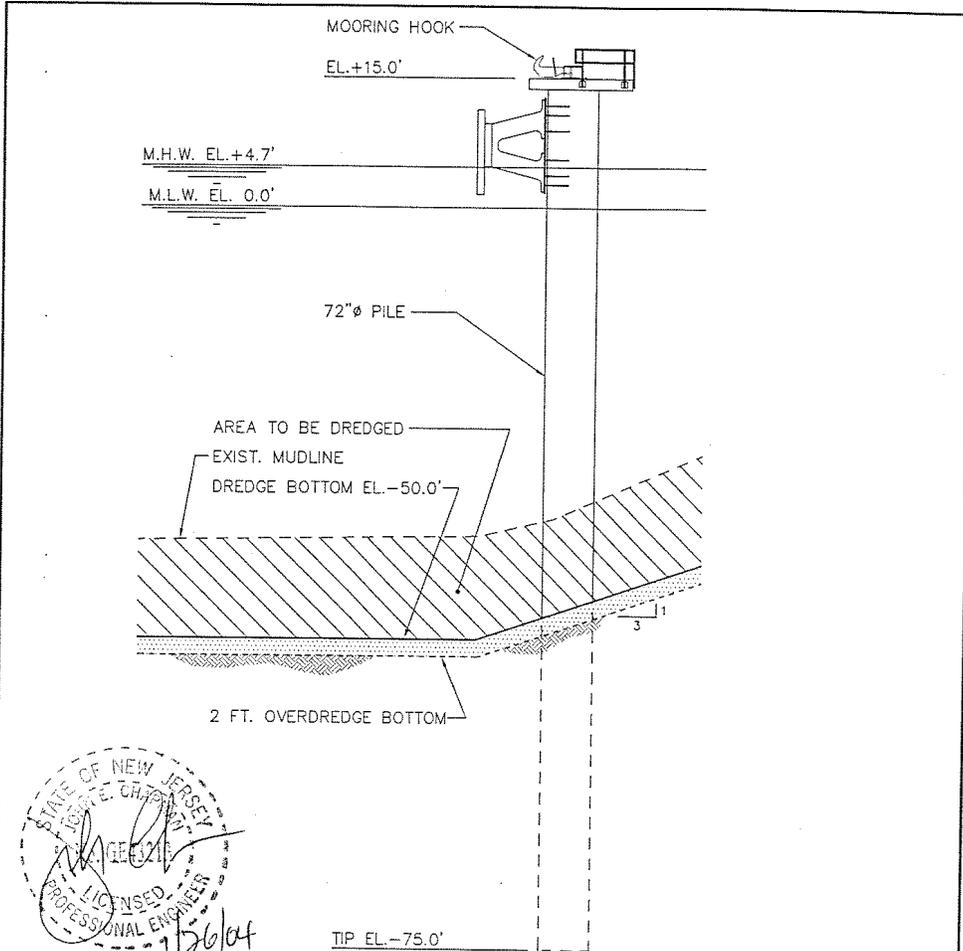
ADJACENT PROPERTY OWNERS:  
1. CITY OF BAYONNE  
2. EXXON CORPORATION

AGENTS: OCEAN AND COASTAL CONSULTANTS, INC.

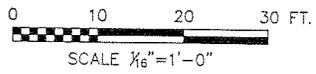
PROPOSED PIER "A" DEEPENING  
AT BAYONNE TERMINAL  
IN KILL VAN KULL WATERWAY  
COUNTY OF HUDSON  
STATE OF NEW JERSEY  
APPLICATION BY: INTERNATIONAL MATEX  
TANK TERMINAL

DATE: 1-12-04

202008\PERMIT\PERMDEEPENING'S (40)  
SHEET 5 OF 4



**PROPOSED BREASTING DOLPHIN — ELEVATION**



FOR PERMIT USE ONLY  
NOT FOR CONSTRUCTION

PURPOSE: PIER "A" MODIFICATIONS

DATUM: M.L.W.

ADJACENT PROPERTY OWNERS:

1. CITY OF BAYONNE
2. EXXON CORPORATION

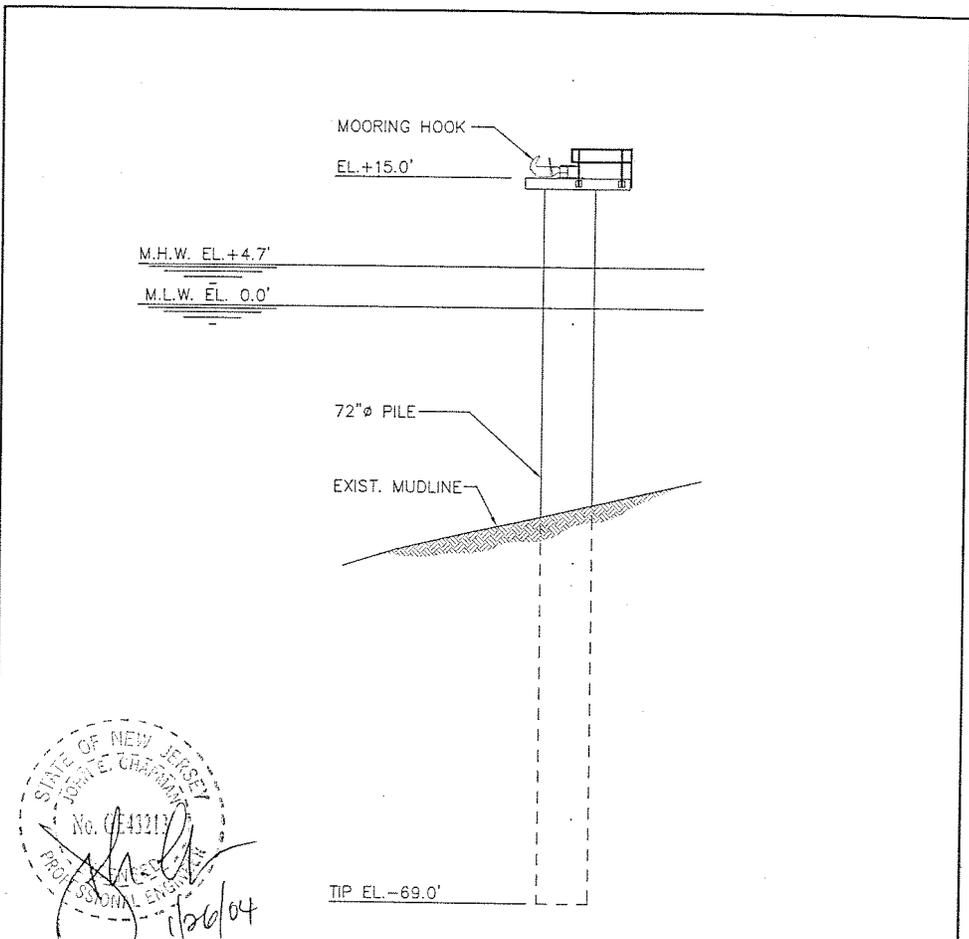
AGENT: OCEAN AND COASTAL CONSULTANTS, INC.

PROPOSED PIER "A" DEEPENING  
AT BAYONNE TERMINAL  
IN KILL VAN KULL WATERWAY  
COUNTY OF HUDSON  
STATE OF NEW JERSEY

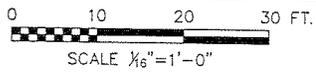
APPLICATION BY: INTERNATIONAL MATEX  
TANK TERMINAL

DATE: 1-12-04

203008\PERMIT\PIERADEEPENING\6 (192)



**PROPOSED MOORING DOLPHIN — ELEVATION**



FOR PERMIT USE ONLY  
NOT FOR CONSTRUCTION

PURPOSE: PIER "A" MODIFICATIONS

DATUM: M.L.W.

ADJACENT PROPERTY OWNERS:

1. CITY OF BAYONNE
2. EXXON CORPORATION

AGENT: OCEAN AND COASTAL CONSULTANTS, INC.

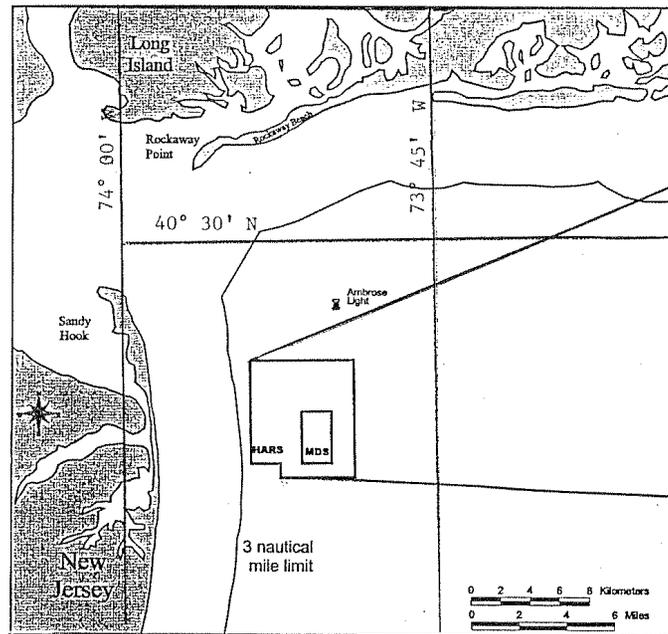
PROPOSED PIER "A" DEEPENING  
AT BAYONNE TERMINAL  
IN KILL VAN KULL WATERWAY  
COUNTY OF HUDSON  
STATE OF NEW JERSEY

APPLICATION BY: INTERNATIONAL MATEX  
TANK TERMINAL

DATE: 1-12-04

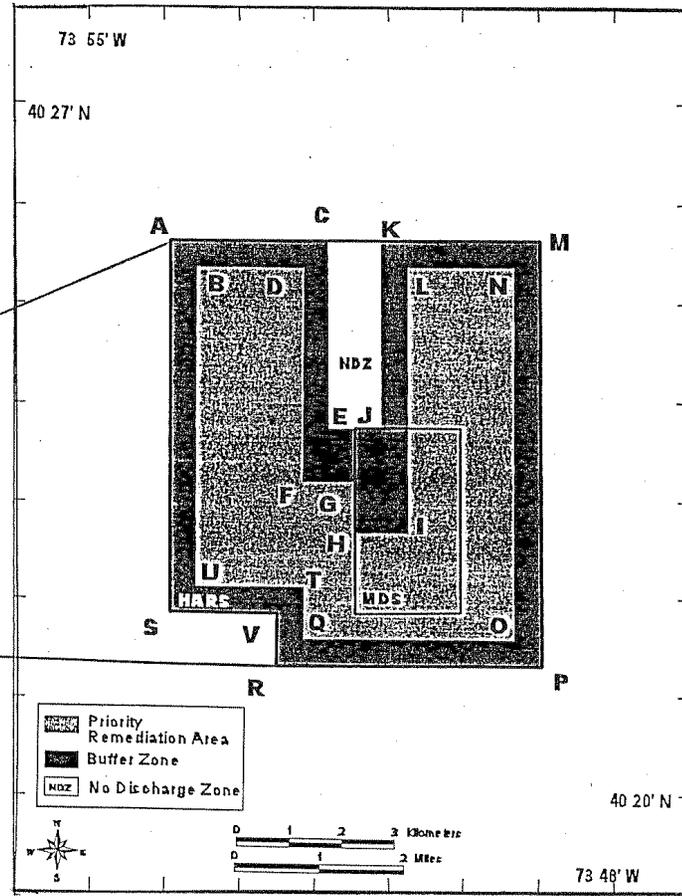
SHEET 7 OF 9

HISTORIC AREA REMEDIATION SITE LOCATION MAP

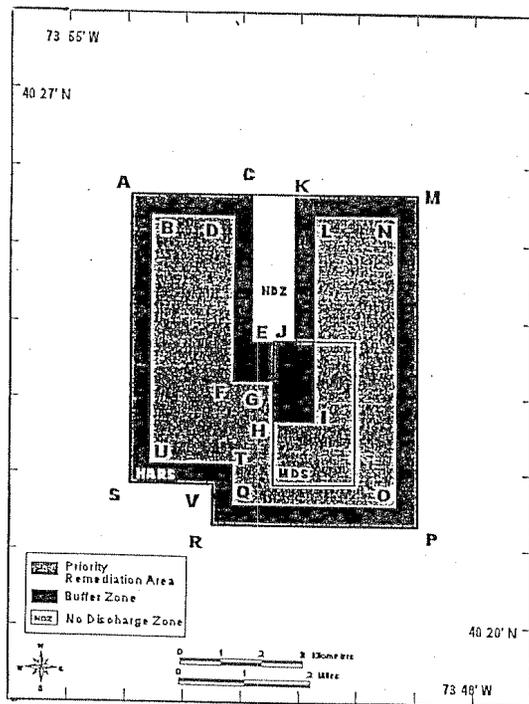


A

LOCATION OF PRIMARY REMEDIATION AREA WITHIN THE HISTORIC AREA REMEDIATION SITE



B



Priority Remediation Area (PRA): 9.0 square nautical mile area to be remediated with at least one meter of Remediation Material, bounded by the following coordinates:

Point	Latitude DMS *	Longitude DMS	Latitude DDM **	Longitude DDM
B	40° 25' 23" N	73° 53' 34" W	40° 25.38' N	73° 53.57' W
D	40° 25' 22" N	73° 52' 08" W	40° 25.37' N	73° 52.13' W
F	40° 23' 13" N	73° 52' 09" W	40° 23.22' N	73° 52.15' W
G	40° 23' 13" N	73° 51' 28" W	40° 23.22' N	73° 51.47' W
H	40° 22' 41" N	73° 51' 28" W	40° 22.68' N	73° 51.47' W
I	40° 22' 41" N	73° 50' 43" W	40° 22.68' N	73° 50.72' W
L	40° 25' 22" N	73° 50' 44" W	40° 25.37' N	73° 50.73' W
N	40° 25' 22" N	73° 49' 19" W	40° 25.37' N	73° 49.32' W

\* -- DMS = Degrees, Minutes, Seconds

\*\* -- DDS = Degrees, Decimal Minutes