OCEAN DUMPING

JOINT HEARINGS

BEFORE THE

SUBCOMMITTEE ON FISHERIES AND WILDLIFE CONSERVATION AND THE ENVIRONMENT

AND THE

SUBCOMMITTEE ON OCEANOGRAPHY

OF THE

COMMITTEE ON MERCHANT MARINE AND FISHERIES HOUSE OF REPRESENTATIVES

NINETY-FOURTH CONGRESS

FIRST SESSION

ON

H.R. 5710

A BILL TO AUTHORIZE APPROPRIATIONS FOR FISCAL YEAR 1976 FOR THE PURPOSE OF CARRYING OUT TITLES I AND III OF THE MARINE PROTECTION, RESEARCH, AND SANCTUARIES ACT OF 1972, AS AMENDED

H.R. 6282

A BILL TO EXTEND THE MARINE PROTECTION, RESEARCH, AND SANCTUARIES ACT FOR TWO YEARS

APRIL 24 AND 25, 1975

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OCEAN DUMPING AUTHORIZATION

THURSDAY, APRIL 24, 1975

HOUSE OF REPRESENTATIVES,
JOINT SUBCOMMITTEES ON FISHERIES AND
WILDLIFE CONSERVATION AND THE ENVIRONMENT,
AND THE SUBCOMMITTEE ON OCEANOGRAPHY OF THE
COMMITTEE ON MERCHANT MARINE AND FISHERIES,
Washington, D.C.

The subcommittees met at 10:11 a.m., in room 1334, Longworth House Office Building, Hon. Ron de Lugo residing.

Mr. DE LUGO. The subcommittees will please come to order.

This is the beginning of joint hearings of two subcommittees, the Subcommittee on Fisheries and Wildlife Conservation and the Environment and the Subcommittee on Oceanography, and will be chaired jointly by Mr. Leggett, and a representative of Mr. Murphy, chairman of the Subcommittee on Oceanography, who happens to be away on official business at this time.

The reason for the subcommittees' hearings today is to consider legislation that would extend certain appropriation authorizations in the Marine Protection, Research and Sanctuaries Act of 1972, which incidentally is the product of joint action by these two subcommittees during the 92d Congress.

Briefly explained, the Marine Protection, Research and Sanctuaries Act is composed of three titles. Title I places an outright ban on the dumping of high-level radioactive wastes and all biological, chemical and radiological warfare agents into our waters. Also, it prohibits the dumping into these waters of all other waste material, except as may be authorized by permit issued by the Administrator of the Environmental Protection Agency or the Secretary of the Army, as the case may be.

Title II of the act requires the Secretary of Commerce to carry out comprehensive and continuing programs of research on both the short range and long range effects of the dumping of waste material into our oceans, brackish waters, and the waters of the Great Lakes.

Title III of the act authorizes the Secretary of Commerce to designate certain areas in these waters as marine sanctuaries which are deemed necessary for the preservation or restoration of such areas for their conservation, recreational, ecological or esthetic values.

The bills to be considered today and tomorrow are H.R. 5710 and H.R. 6282, both of which were introduced by the distinguished chairman of our full committee, Mrs. Sullivan, and cosponsored by Mr. Murphy, Mr. Forsythe, and the present occupant of the Chair. The first of these bills, H.R. 5710, would extend the appropriation authorizations under two titles of the act that expire June 30, 1975.

In this regard, the bill authorizes to be appropriated for fiscal year 1976 only the sum of $1.5 million to carry out the purposes of title I and the sum of $10 million to carry out the purposes of title III.

On the other hand, H.R. 6282, which was introduced as a result of an executive communication from the Environmental Protection Agency, would extend the life of title I of the act only and in doing so would authorize to be appropriated for the 2-year period of fiscal years 1976 and 1977 the sums of $1,260,000 and $1,400,000, respectively.

Before proceeding to hear the witnesses, I would like to insert in the record at this point copies of letters written by Mr. Murphy, on behalf of both of the subcommittees, to the Corps of Engineers, the Coast Guard, and the Environmental Protection Agency requesting those agencies to provide the subcommittees with the amounts requested by each of them from OMB and the amounts approved by OMB for carrying out their responsibilities under this act. I hope each of the witnesses from these agencies will be able to provide the subcommittees with this information when they present their testimony and make appropriate comments thereon.

Let the bills, departmental reports, and a report to the Congress from the Department of Commerce on the Implementation of the Marine Protection, Research, and Sanctuaries Act for fiscal year 1974, appear in the record at this point.

[The documents referred to follow:]

[H.R. 5710, 94th Cong., 1st sess.]

A BILL To authorize appropriations for fiscal year 1976 for the purpose of carrying out titles I and III of the Marine Protection Research, and Sanctuaries Act of 1972, as amended

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That section III of the Marine Protection, Research, and Sanctuaries Act of 1972, as amended (33 U.S.C. 1420), is amended by striking out "and not to exceed $5,500,000 for fiscal years 1974 and 1975," and inserting in lieu thereof the following: "not to exceed $5,500,000 for each of the fiscal years 1974 and 1975, and not to exceed $1,500,000 for fiscal year 1976,".

SEC. 2. Section 304 of the Marine Protection, Research, and Sanctuaries Act of 1972 (16 U.S.C. 1434), is amended by striking out "two fiscal years" and inserting in lieu thereof "three fiscal years".

GENERAL COUNSEL OF THE DEPARTMENT OF COMMERCE,
Washington, D.C., April 23, 1975.

Hon. LEONOR K. SULLIVAN,
Chairman, Committee on Merchant Marine and Fisheries,
House of Representatives, Washington, D.C.

DEAR MADAM CHAIRMAN:

This is in response to your request for the views of this Department with respect to H.R. 5710, a bill "To authorize appropriations for fiscal year 1976 for the purpose of carrying out titles I and III of the Marine Protection, Research, and Sanctuaries Act of 1972, as amended."

The first section of the bill would amend Section 111 of the Act to extend the authorization of funds through fiscal year 1976 in an amount not to exceed $1,500,000.

Section 2 of the bill would amend Section 304 of the Act to extend Title III for one year through fiscal year 1976 at the existing level of $10 million per fiscal year.

Title I outlines the regulatory provisions of the Act through a system of permits, criteria, and dumpsite designations. While these regulatory functions have been assigned to the Environmental Protection Agency (EPA), the Corps of Engineers, and the Coast Guard, the Department of Commerce through the National Oceanic and Atmospheric Administration (NOAA) actively works with these agencies by

providing advice and comments in the formulation of regulations; by commenting on ocean dumping permit requests within the context of the Fish and Wildlife Coordination Act, as amended; and by providing environmental assessments of existing or proposed dumpsites through the use of our scientific and technical expertise. Although NOAA plays only a supportive role with respect to Title I, we do feel that the Marine Protection, Research, and Sanctuaries Act of 1972 is a vital law for enhancing the quality of the marine environment off our shores. Accordingly, NOAA supports an extension of Title I of the Act. However, we defer to the recommendations of the regulatory agencies administering Title I as to the period for extension and the funding requirements.

NOAA also endorses an authorization extension for Title III. Working under Title III, NOAA has produced a comprehensive study to develop broad conceptual approaches to implement the marine sanctuary program. Guidelines for the program were published in the Federal Register of June 27, 1974, setting forth the overall policies, concepts, and procedures under which the marine sanctuaries provisions are to be administered. Sanctuaries may be established according to these guidelines for five different general purposes: habitat protection; species conservation; research; recreational and esthetic value; and unique features. The nomination of the U.S.S. MONITOR wreckage site off North Carolina resulted in the designation of the Nation's first marine sanctuary on January 30, 1975. Several other requests are now under consideration. These nominations are being processed by existing capabilities and resources within NOAA, other Federal agencies, and States. However, we believe that appropriated resources are going to be required for Title III beyond the one year extension contemplated under H.R. 5710. Accordingly, it is recommended that Title III appropriation authority be extended through fiscal year 1977 at $1,250,000 for the transition period and $10,000,000 for fiscal year 1977.

In addition, although H.R. 5710 does not address Title II of the Act relating to "Comprehensive Research on Ocean Dumping", NOAA believes that this title should be extended through fiscal year 1977. An interagency agreement has recently been concluded between NOAA and EPA concerning baseline surveys and evaluations of ocean disposal sites. In order that these baseline surveys and evaluations may be carried out, NOAA recommends the extension of authorization for Section 204 of the Act through fiscal year 1977. The level is still under review in the Executive branch in connection with preparation of the fiscal 1977 budget.

We have been advised by the Office of Management and Budget that there is no objection to the submission of this report to the Congress from the standpoint of the Administration's program.

Sincerely,

BERNARD V. PARRETTE,
Deputy General Counsel.

DEPARTMENT OF THE ARMY,
Washington, D.C., May 6, 1975.

Hon. LEONOR K. SULLIVAN,
Chairwoman, Committee on Merchant Marine and Fisheries,
House of Representatives.

DEAR MADAM CHAIRWOMAN: This is in reply to your request to the Secretary of Defense for the views of the Department of Defense on H.R. 5710, 94th Congress, a bill "To authorize appropriations for fiscal year 1976 for the purpose of carrying out titles I and III of the Marine Protection Research, and Sancuaries Act of 1972, as amended." The Department of the Army has been assigned responsibility for reporting the views of the Secretary of Defense on this bill.

Title I of the Marine Protection, Research, and Sanctuaries Act of 1972 (Public Law 92-532) provides for the Federal regulation of the transportation of material from the United States for dumping into ocean waters, and the dumping of material transported from outside the United States if the dumping occurs in ocean waters over which the United States had jurisdiction or exercises control in order to protect its territory or territorial sea. Section 111 of this Act authorizes appropriations for fiscal years 1973 and 1974 for the purposes of administering the ocean dumping programs established under this title. The Act of October 26, 1974 (Public Law 93-472) amended section 111 to extend its authorization for appropriations through fiscal year 1975.

The purpose of H.R. 5710 is to further amend section 111 of the Act to authorize for appropriations an additional $1,500,000 for fiscal year 1976. In addition, section 2 of the bill would amend section 304 of title III of the Act, to extend the authorization for appropriations for acquisition, development, and operation of the marine sanctuaries designated under the provisions of this title, for one additional year.

If enacted, the bill would enable the Environmental Protection Agency to continue the ocean dumping programs established under title I of the Act, and it would also enable the Department of Commerce to carry out its program for the establishment of marine sanctuaries under title III of the Act. Accordingly, the Department of the Army, on behalf of the Department of Defense, defers to the views of these two agencies charged with the responsibility for administering the provisions of the Act.

This report has been coordinated within the Department of Defense in accordance with procedures prescribed by the Secretary of Defense.

The Office of Management and Budget advises that, from the standpoint of the Administration's program, there is no objection to the presentation of this report for the consideration of the Committee.

Sincerely,

HOWARD H. CALLAWAY,
Secretary of the Army.

[H.R. 6282, 94th Cong., 1st sess.]

A BILL To extend the Marine Protection, Research, and Sanctuaries Act for two years

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That section 111 of the Marine Protection, Research, and Sanctuaries Act (33 U.S.C. 1420) is amended by striking "and not to exceed $5,500,000 for fiscal years 1974 and 1975," and inserting in lieu thereof "not to exceed $5,500,000 for fiscal years 1974 and 1975, not to exceed $1,260,000 for fiscal year 1976, and not to exceed $1,400,000 for fiscal year 1977,".

[Executive Communication No. 839]

U.S. ENVIRONMENTAL PROTECTION AGENCY,
Washington, D.C., April 17, 1975.

Hon. CARL ALBERT,
Speaker of the House of Representatives,
Washington, D.C.

DEAR MR. SPEAKER: Enclosed is our proposed bill "To extend the Marine Protection, Research, and Sanctuaries Act for two years."

The bill would extend our authorities under section 111 of the Act. These authorities expire on June 30, 1975.

This extension is suggested in order to enable us to continue the programs envisioned by the Act. We recommend that this bill be referred to the appropriate Committee for consideration, and that it be enacted.

The Office of Management and Budget has advised that this legislative proposal is consistent with the program of the President.

Sincerely yours,

RUSSELL E. TRAIN.

Enclosure.

[The draft bill became H.R. 6282.]

U.S. DEPARTMENT OF COMMERCE,
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION,
Rockville, Md.

REPORT TO THE CONGRESS ON IMPLEMENTATION OF THE MARINE PROTECTION, RESEARCH AND SANCTUARIES ACT OF 1972

(July 1973 through June 1974 Public Law 92-532, Title III, Section 302(d))

In formulating the marine sanctuaries title of the Marine Protection Research and Sanctuaries Act of 1972, the Congress provided a powerful tool for conservation and protection of some of the Nation's more valuable marine areas. The first report described activities to develop a program to carry out wisely and

carefully the intent of the legislation and to assure balanced protection and utilization of marine resources in the face of burgeoning national needs. Development and implementation have progressed with a continued awareness of the need for a balanced and measured approach.

Development of guidelines

Proposed guidelines setting forth the overall policies, concepts, and procedures under which the marine sanctuaries provision will be administered, were published in the Federal Register, March 19, 1974. A total of 22 states, agencies, organizations, and individuals submitted responses, As a result of many constructive comments, changes were made and the final rules, together with a summary of the comments, were published in the Federal Register on June 27, 1974 (Appendix 1).

The guidelines authorize the Administrator of the National Oceanic and Atmospheric Administration (NOAA) to exercise the authority granted under the title, for the purpose of setting forth the procedure by which areas may be nominated as marine sanctuaries and the concepts, policies and procedures for the processing of nominations and the selection, designation, and operations of a marine sanctuary.

The programmatic objectives section indicates that marine sanctuaries may be designated to preserve, restore, or enhance areas for their conservational, recreational, ecological, research, or esthetic values in coastal waters.

Anticipate examples include:

(a) Areas necessary to protect valuable, unique or endangered marine life, geological features and oceanographic features.

(b) Areas to complement and enhance public areas such as parks, national seashores and national or State monuments and other preserved areas.

(c) Areas important to the survival and preservation of the Nation's fisheries and other ocean resources.

(d) Areas to advance and promote research which will lead to a more thorough understanding of the marine ecosystem and the impact of man's activities.

The classification of marine sanctuaries described are:

(a) Habitat areas. Areas established under this concept are for the preservation, protection and management of essential or specialized habitats representative of important marine systems. Management emphasis will be toward preservation. The quantity and type of public use will be limited and controlled to protect the values for which the area was created.

(b) Species areas. Areas established under this concept are for conservation of genetic resources. Management emphasis may be to maintain species, populations and communities for restocking other areas and for reestablishment purposes in the future. The result will be a contribution to the goal stated by the Council on Environmental Quality, that is, "the widest possible diversity of and within species should be maintained for ecological stability of the biosphere and for use as natural resources." The orientation envisaged will be toward species preservation by protection of such areas as migratory pathways, spawning grounds, nursery grounds, and the constraints on these areas will be those necessary to achieve these purposes.

(c) Research areas. (1) Areas established under this concept will exist for scientific research and education in support of management programs carried out for the purpose of the title. (2) The purpose of the research areas is to establish ecological baselines against which to compare and predict the effect on man's activities and to develop an understanding of natural processes.

Research areas will be chosen according to the biota they support, to include representative samples of the significant ecosystems in the area, and its proximity or availability to potential uses. Marine sanctuary designation will insure that the areas will be relatively unaffected for a long period of time, thus adding a measure of stability to a research program and the value of the data in management decisions.

(d) Recreational and esthetic areas. Areas established under this concept will be based on esthetic or recreational value.

(e) Unique areas. Areas established under this concept will be to protect unique or nearly one of a kind geogical, oceanographic, or living resource feature.

Concern was expressed by some reviewers of the proposed guidelines that overly large areas of the coastal waters would be made marine sanctuaries. It is not anticipated, however, that large areas of the oceans and coastal waters will be designated as marine sanctuaries, and all activity prohibited or drastically

reduced. We expected that sanctuaries will be only large enough to permit accomplishment of the purposes specified in the Act. In each area designated, some activities will be totally compatible, others will need to be modified, and others will not be permitted. The size of the area will depend upon the proposal, an analysis of the factual information, the outcome of the environmental impact statement process, and public hearings.

We believe the environmental impact statement process and public hearings will assure that the legislative authority is not abused.

Continued development of program concepts

During an earlier comprehensive study to develop broad conceptual approaches to program implementation, several parties proposed establishing marine sanctuaries adjacent to federally-owned coastal preserves such as national parks, national monuments, national seashores and others.

The comprehensive study contract with the Virginia Institute of Marine Science was extended to review this concept within a case study context using the Assateague National Seashore and Chincoteague Wildlife Refuge in Virginia and Maryland as specific examples. Both the National Park Service and the U.S. Fish and Wildlife Service are cooperating in this case study. At the writing of this report a series of public meetings have begun to solicit local reaction to both the possibility of an adjacent marine sanctuary and the study method involved.

Nominations

Since publication of final guidelines, four nominations for designation of marine sanctuaries have been received, as follows:

FLORIDA KEYS

The first marine sanctuary nomination proposes a coral reef habitat preserve in the vicinity of Key Largo and Elliot Key, Florida. The nomination by Professor O'Conner of the University of Miami School of Law and Dr. Darnell, Chairman of the American Institute of Biological Science Conservation of Ecosystem Program states:

"The living coral reef system which occupies the continental shelf of southeast Florida from Biscayne Bay to Key West is a unique and valuable feature of the State of Florida as well as of the Nation. The essential integrity of this system must be maintained in order to preserve the esthetic, recreational, ecological, and economic values which this system engenders. However, direct and indirect influences of human activities are already seriously eroding the values of the coral reefs, and the system cannot be expected to survive without deliberate, effective and immediate governmental intervention. Under the power of Title III of the Marine Protection Research and Sanctuaries Act of 1972, vested in the Office of Coastal Zone Management, the coral reef system can now receive Federal protection through designation as a marine sanctuary.

"This coral reef system is the most massive, interesting and ecologically diverse reef within the continental U.S. * * * The full reef complex includes a large array of West Indian corals, algae, sponges, shrimp, crabs, lobsters, mollusks, and a host of brightly-colored tropical fish species. The warm tropical waters of the mighty Gulf Stream flow northward along the outer edge of the reefs. This major current system generates powerful counter-current eddies which spin southward over the reefs and impinge upon the shoreline itself. The living reef system reduces the speed and erosional power of these eddies and performs a major role in protection of the land. If the living coral were to die the reef itself would undergo erosional deterioriation. Then the water currents would impinge more directly upon the land, eroding shorefront property, greatly increasing the costs of shoreline stabilization, and reducing land values of the mainland and island property.

"In addition to the activities of local residents, many thousands of people from the rest of the United States annually visit southern Florida to view the undersea coral gardens through glass-bottomed boats, to snorkel or scuba dive among the reefs, or to enjoy boating, fishing, and other recreational opportunities afforded by the reefs."

The proposed sanctuary would include the existing John Pennekamp Coral Reef State Park, an adjacent Federal area (the Key Largo Coral Reef Preserve), the Biscayne National Monument, portions of the State of Florida Biscayne Bay Aquatic Preserve and associated areas that will tie all the areas into an integral management unit.

U.S.S. MONITOR SITE

The announcement in March 1974, that the wreck of the Civil War ironclad *U.S.S. Monitor* has been discovered led the Minority Counsel of the House Merchant Marine and Fisheries Committee to inquire if the marine sanctuary provision was suitable to protect the vessel from recovery attempts that would neglect the public interest. Following an interagency briefing and discussion on the legal means of protection it was generally agreed that the marine sanctuary authority was the only one available.

The purpose is to preserve the wreckage of the *U.S.S. Monitor* for historic and cultural values and archaeological research. The vessel lies in 220 feet of water about 16-miles south-southeast of the present Cape Hatteras Light.

Designating the *U.S.S. Monitor* and an adjacent area as a marine sanctuary would assure protection of the historic and cultural values of the vessel. Access to the vessel for study and observation would be obtained through issuance of a permit by NOAA. All proposals for study and requests for permits will be subjected to a thorough review by interested Federal agencies and scientific experts. A permit will be granted when NOAA is assured that the probability of damage to the values associated with the vessel is low or non-existent.

CRYSTAL RIVER, FLORIDA

King's Bay, the headwaters of the Crystal River on the northern Gulf coast of Florida has been nominated by Dr. Furlow, President of the Crystal River Protective Association, Inc., as a marine sanctuary for the endangered Florida Manatee. The principal threat to the manatee as identified in the nomination is high boat speeds. The U.S. Fish and Wildlife Service in commenting on the proposal indicated that:

"Crystal River, particularly the King's Bay headwaters section, constitutes a critical environmental resource for a major portion of the west coast Florida Manatee population. Its chief function is as a critical winter warm-water refuge for one of the largest cold weather congregations of manatees in the U.S. Such refuges appear to be mandatory for the maintenance of this species over most or all of its U.S. range and rapidly being rendered inhospitable to the manatee through increasing development, pollution, and human recreational activity during the critical winter months. This area clearly falls under the category of "critical habitat" for the species as defined by the Office of Endangered Species, U.S. Fish and Wildlife Service.

"During the colder months in Florida as many as 60 or more manatees a day may be found congregated in the King's Bay headwater of Crystal River. This may constitute as much as 10 percent of the total U.S. population (Hartman, in MS). Inasmuch as all evidence argues that there is a frequent interchange between the Crystal River refugia and other smaller refugia along the west coast of Florida between cold spells, Crystal River is used by and is believed to constitute a critical resource for most of the individuals of this population. Other potential refugia are smaller and shallower, and thus unable to support the numbers of manatees that can be supported by Crystal River and are, in addition, under development, pollution and recreational pressures of their own. The designation of Crystal River as a manatee sanctuary would constitute the major action to secure this population."

PUGET SOUND

Senator Magnuson has nominated Puget Sound, Washington, as a marine sanctuary to prohibit the capture of killer whales and to provide an area reserved for scientific study of the killer whale.

In submitting the nomination Senator Magnuson said:

"I believe the killer whale is of such special status and such a unique resource that Puget Sound should immediately be designated a 'killer whale' sanctuary and be reserved pure for scientific research, observation and study of the killer whale population."

The nomination is currently being evaluated by the State of Washington. Simultaneously, scientific information is being gathered on the killer whale.

Potential nomination.

A number of candidates for future nomination exist. In some cases we anticipate a nomination furing Fiscal Year 1975.

EAST AND WEST FLOWER GARDEN REEFS

In the first report to Congress we indicated a pilot effort was being explored to establish a marine sanctuary encompassing the Flower Garden Reefs in the Gulf of Mexico. A joint Department of the Interior/Department of Commerce effort was undertaken to assure that an oil and gas lease sale encompassing the reefs contained sufficient protective provisions for the possible establishment of a marine sanctuary.

The joint plan for protecting the reef was successfully carried out during the sale, thus the reefs are currently being protected. The option to establish a marine sanctuary remains.

In summary, the Department of Commerce, through its National Oceanic and Atmospheric Administration, is continuing to lay a sound basis for implementation of the marine sanctuaries provisions of the Marine Protection, Research and Sanctuiries Act. A number of nominations or potential nominations are being processed according to requirements of the title and guidelines promulgated to manage the program. It is anticipated that the first designation will be made before the end of Fiscal year 1975.

Mr. DE LUGO. For our first witness we are going to change the order around, if there is no objection. Since Mr. James L. Agee, has to go out of the country and has a problem with time, we will move him to the top of the witness list.

Mr. Agee is Assistant Administrator for Water and Hazardous Materials, Environmental Protection Agency.

Mr. Agee, if you will take the witness chair. And will you identify the other people accompanying you to the witness stand?

STATEMENT OF JAMES L. AGEE, ASSISTANT ADMINISTRATOR FOR WATER AND HAZARDOUS MATERIALS, ENVIRONMENTAL PROTECTION AGENCY, ACCOMPANIED BY KENNETH BIGLANE, DIRECTOR OF THE OIL AND SPECIAL MATERIALS CONTROL DIVISION; AND T. A. WASTLER, CHIEF, MARINE PROTECTION BRANCH, OIL AND SPECIAL MATERIALS CONTROL DIVISION

Mr. AGEE. Thank you, Mr. Chairman.

Mr. DE LUGO. Your prepared statement will be made a part of the record. You may either read it or summarize it.

Mr. AGEE. Mr. Chairman, this is my first appearance before your committee. It has now been precisely 2 years since the Marine Protection, Research, and Sanctuaries Act of 1972 became effective, and I welcome this opportunity to discuss with you our progress in implementing title I of the act.

I am accompanied by Mr. Kenneth Biglane, Director of the Oil and Special Materials Control Division; and Mr. T. A. Wastler, Chief of the Marine Protection Branch within that Division.

The Marine Protection, Research, and Sanctuaries Act, commonly called the "Ocean Dumping Act," is a significant move toward providing protection for the marine environment.

It reflects public awareness of a need to assess and control the cumulative effects of a man's activities on coastal and ocean resources, and the undesirable and possibly irretrievable changes to ocean ecosystems that these activities may have.

In its first 2 years of regulatory authority over ocean dumping, EPA has taken a strict, highly restrictive approach toward applying the criteria embodied in the act by requiring all dumpers to actively seek alternatives to ocean dumping even when their wastes have met the published EPA criteria for issuing permits.

During these 2 years, we have brought all ocean dumping in the United States under full regulatory control and have required many dumpers to either stop dumping immediately or to phase out their dumping activities within the next few years.

I would like to briefly summarize for you our accomplishments over the past 2 years, point out some of the short- and long-range problems we see, and then describe what direction the ocean dumping permit program should take in the years to come.

Prior to the passage of the Ocean Dumping Act, regulatory activities and authorities were scattered among different agencies and were not adequate to handle the problems of ocean dumping. States did not exercise control over ocean dumping, and generally their authority extended only within the 3-mile territorial sea.

The Army Corps of Engineers' authority to regulate ocean dumping was also largely confined to the territorial sea, but the corps' dredging activities in response to its responsibility to facilitate navigation involved it with ocean disposal beyond the 3-mile limit.

The Coast Guard enforced several Federal laws regarding pollution, but did not have direct authority to regulate ocean dumping. The Atomic Energy Commission licensed the disposal of radioactive materials.

In enacting the Ocean Dumping Act, the Congress vested the responsiblity for regulating the dumping of all materials, except dredged materials, in the Environmental Protection Agency; regulating the ocean dumping of dredged material was assigned to the Corps of Engineers using criteria promulgated by EPA in consultation with the corps.

Because protection of the marine environment was of immediate concern, the act required that criteria be developed and the regulatory program implemented based on the then known impact of waste materials in the oceans.

At that time, however, there was a great dearth of knowledge on the impact of wastes on the marine environment. This is being rectified as rapidly as possible at the same time the permit program is in operation, but EPA's efforts to meet its responsiblities under the act were undertaken with the realization that modifications of various aspects of our programs would be required in the future.

Title I of the act establishes a system of permits to be administered by the Environmental Protection Agency and the Corps of Engineers to control dumping in ocean waters. Both the transportation of material to be dumped and the dumping itself are controlled.

The act prohibits the transportation from the United States for dumping in ocean waters, and the dumping into the territorial sea or contiguous zone, of any radiological, chemical, or biological warfare agent, or high-level radioactive wastes.

The same activities with regard to other materials, except dredged material, are to be regulated by permits issued by the Administrator. He may issue permits where he has determined that the dumping will not "unreasonably degrade or endanger" human health, amenities, or the marine environment.

In establishing criteria for assessing permit applications, he must consider: The need for the dumping; its effects on health and welfare, shorelines and beaches, and the marine ecosystem and its resources;

the persistence and permanence of the effects; appropriate locations and methods of disposal; and effects on alternate uses of the oceans.

With this guidance, the authority to issue or deny special and interim permits, set permit conditions, and modify or revoke them, has been delegated to the 10 EPA regional administrators.

Authority to issue or deny emergency permits, and the general permits and research permits, and the authority to designate dumping sites, have been retained by the Administrator.

Our initial approach under this permit program was to establish interim regulations and criteria for the issuance or denial of permits on a general basis, and then promulgate final regulations and criteria as rapidly as circumstances permitted. These were promulgated on October 15, 1973, about 6 months after the law was effective. They were based on initial operating experience with the program and on public comment on the interim regulations.

The criteria established the basis upon which permits are issued or denied. These include quantitative criteria concerning allowable concentrations on certain material and analytical tests from which the probable impact of the waste materials on the environment may be determined.

As part of the publication of initial regulations and criteria, the dumping sites then in use for ocean dumping were approved on an interim basis. These designations will continue until each site has been adequately surveyed and a determination made as to whether its use should be allowed or terminated. Environmentally acceptable sites for disposal will be announced in the Federal Register, and will be supported by environmental impact statements.

I would like to submit, as part of my statement, a table summarizing ocean dumping activity during 1973 and 1974. This table shows a net increase in ocean dumping of about 2.1 million tons from 1973 to 1974. This net increase is the result of increases in dumping of sewage sludge and construction and demolition debris of about 1.1 million tons each combined with a slight overall decrease in dumping of industrial wastes over the same period.

Mr. DE LUGO. Without objection, the table will be made a part of the record at this time.

[The table referred to follows:]

OCEAN DISPOSAL; TYPES AND AMOUNTS, 1974[1] AND 1973[2]

[In tons, approximate]

Waste type	Atlantic		Gulf		Pacific		Total	
	1974	1973	1974	1973	1974	1973	1974	1973
Industrial waste	4,344,000	3,997,100	950,000	1,408,000	0	0	5,294,000	5,405,100
Sewage sludge	6,542,000	5,429,400	0	0	0	0	6,542,000	5,429,400
Construction and demolition debris	2,290,000	1,161,000	0	0	0	0	2,290,000	1,161,000
Solid waste	0	0	0	0	200	240	200	240
Explosives	0	0	0	0	0	0	0	0
Total	13,176,000	10,587,500	950,000	1,408,000	200	240	14,126,200	11,995,740

[1] 1974 source—EPA Regional Offices. Unpublished reports, 1974 (12 mo of dumping activity).
[2] 1973 source—EPA Regional Offices. Unpublished reports, 1973 (8 mo of dumping activity—May to December 1973 under permits issued by ocean disposal program extrapolated for 12 mo to provide an annual rate).

Mr. AGEE. Thank you.

During the coming year, we expect to phase out many industrial dumpers as alternate methods of disposal are developed and implemented. Based on existing permits and permit applications, there should be no dumping in the Pacific Ocean, and dumping in the Gulf of Mexico should be about 10 percent of the 1973 level.

All dumping of municipal waste, sewage sludge, originates in the New York and Philadelphia metropolitan areas. The total volume of these municipal sewage sludges is almost equal to the volume of all other materials dumped, and the volume dumped increased between 1973 and 1974.

Eleven ocean dumping sites in the Atlantic Ocean and the Gulf of Mexico are now in active use for municipal and industrial wastes. There is no dumping of these wastes in the Pacific, although municipal sewage sludge is discharged into the ocean through long outfalls. These are regulated under the NPDES permit system.

Ocean dumping site surveys are being conducted on three sites, and additional surveys are due to begin this year. These surveys are designated to provide the scientific data for environmental impact statements to be prepared for each dumping site designated on other than an interim basis and to determine as the basis for dumpsite management the effects of disposal in the oceans of a variety of wastes.

Regulations for the designation and management of ocean dumping sites are being developed and will include the requirements for baseline and trend assessment surveys, and an interagency agreement concerning cooperative efforts in such surveys has been developed with NOAA.

A detailed baseline survey is currently being conducted in the New York Bight for an alternate site for sewage sludge disposal. EPA is also studying and evaluating two dump sites, one industrial and one municipal, off Delaware Bay, and is cooperating with NOAA in studies of one site off the Continental Shelf.

The Corps of Engineers has underway a five-year dredged material research program which will provide EPA with the baseline data necessary to evaluate dredged material disposal sites.

These studies are being supplemented by EPA research activities including conducting investigations into ecological processes and effects of ocean dumping.

One principal activity, in the New York Bight region, is designed to study the movement of sludge particles dumped from barges. Two mathematical models have been developed for this last purpose; one is a barge discharge dispersion model that predicts the movement of particulates through the water column, and the other is a circulation model for the New York Bight that can be used to predict pollutant concentration over time.

Other efforts are experiments designed to assess and measure contaminants (heavy metals, PCB's and hard pesticides) leaching from spoils and sludges under simulated field conditions, using appropriate analytical and bioassay techniques. Along with simulation and mathematical model studies, a field study is being performed with the object of coordinating and integrating laboratory studies with field measurements.

An interim analytical methods' manual for the analysis of wastes and marine environmental samples has been completed. This manual is being used by EPA coastal regions in the operation of the ocean disposal permit program while further research is being carried out to develop and certify analytical methods specific to ocean dumping problems.

Surveillance of dumping activities is assigned by the Act to the Coast Guard. The Coast Guard's enforcement program is keyed to close surveillance of the disposal of toxic materials with spot-checks of non-toxic material dumps.

All violations of permit conditions and illegal dumping reported to EPA are subject to enforcement action through the assessment of civil penalties, and, where necessary, criminal proceedings.

From April 1973 to December 1974, there were 983 ocean disposal surveillance missions undertaken by the Coast Guard; 36 apparent violations were referred to EPA. These were all investigated. Letters of warning were issued, and formal enforcement actions were taken.

Enforcement actions were initiated in the EPA Regions I, II, and IX for the assessment of civil penalties as provided for by Section 105(a) of the Act. The violations ranged from a failure to submit a a plan for the segregation of industrial and municipal wastes and the dumping of material without a permit to short dumping—failure to dispose of material in the designated dump site, and failure to properly containerize waste. Fines totaling $65,000 were assessed. One is currently being appealed.

Continuing interagency coordination is being achieved by an interagency committee composed of EPA, NOAA, the Coast Guard, and the Corps of Engineers. This committee's purpose is to provide overall program coordination. Formal meetings are held only infrequently, but considerable interchange of information is conducted on an ongoing basis.

After 2 years of regulating ocean dumping under the Marine Protection, Research, and Sanctuaries Act, we in EPA feel that we can point to some real accomplishments in reducing the amounts of industrial waste being dumped into the ocean, in forcing all dumpers to seek other alternatives to ocean dumping, and in developing new information on the impact of wastes on the ocean.

At the same time, however, we have seen a major problem emerge which may have far-reaching effects, not only on the ocean dumping permit program, but also in our entire environmental protection effort.

This problem is, quite simply, how to dispose of sewage sludge. As more and more municipalities upgrade their sewage treatment facilities from no treatment to primary, secondary, or advanced waste treatment processes, more and more sewage sludge is generated. The greater degrees of treatment produce greater quantities of sludge, and the sludge from more advanced sewage treatment processes tends to contain larger quantities of trace metals and persistent organic compounds, which may have adverse environmental consequences whether they are incinerated, put on the land, or dumped in the ocean.

EPA regards its responsibilities as covering the entire environment. Within the limits of existing statutory authority, we feel that we must seek out and require the use of the most acceptable environmental

alternative for the disposal of waste residues for which additional treatment is not feasible or will not yield significant environmental benefits.

We feel that the ocean disposal of sewage sludge, whether by dumping or by outfall, can be permitted only on an interim basis until it is conclusively demonstrated that ocean disposal of sewage sludge is the most acceptable environmental alternative for ultimate disposal within the limitations of available technology.

Also during the past 2 years significant new information has been developed on techniques for conducting bioassays and on acute and chronic toxicity levels of some trace contaminants in marine waters.

In addition, we have had the benefit of penetrating comments on our program from the National Wildlife Federation, as well as from many interested citizens.

The National Academy of Sciences convened a workshop of marine scientists to make recommendations for improvement of the program, and we expect their report within a few months.

As a result of all of these inputs we are preparing revisions to our regulations and criteria to reflect recent advances in knowledge. These revisions will set the direction the program will take for the future, and we intend to have thorough technical and public review before they are promulgated as final regulations.

In the future we will continue to rely heavily on three ongoing program components:

(1) the knowledge of present environmental conditions and continuing trends gained from baseline surveys;

(2) the research program on the identification of specific effects of certain pollutants in the marine environment, and

(3) the continuing development of methods of sampling and laboratory analysis specific to the marine environment.

The baseline surveys will identify the normal biota and food chain mechanisms in prospective dumping site areas and allow investigations of the effects of wastes to be dumped on species normal to the area. The surveys will also allow better determination of movement and ultimate fate of wastes dumped.

A program of continuing baseline surveys has already begun, and will ultimately result in a continuing monitoring program of all sites in use.

Further development of sampling and laboratory analysis techniques is probably the most immediate need in determination of the effects of ocean dumping. Many pollutant-related methodologies are borrowed from freshwater techniques which may or may not be directly applicable to wastes mixed with waters naturally containing high concentrations—some 35 parts per thousand—of dissolved salts, metals, and other materials. Although a number of techniques presently in use allow for analytical interference by such substances, many others must be adapted or completely changed to be useful.

We believe that continued strengthening of the scientific and technical capabilities of the program is essential at this time. Clearly, as the program progesses, the accumulated data and analyses must be assimilated and reflected in the program.

The past year has seen the first use in the United States of a technique in ocean disposal commonly used in Europe for the past

few years. This is ocean incineration, and it is useful for the disposal of toxic wastes with a high heat energy content.

Last October, a specially designed incinerator ship, capable of burning 4,200 tons of chemical wastes per mission, incinerated organic chloride wastes with greater than 99.9 percent efficiency at a site 135 miles south of Galveston, Tex. These wastes are highly toxic and could not be dumped directly into the marine environment. Incineration converted these wastes to hydrogen chloride and carbon dioxide in quantities innocurous to the oceans and the atmosphere.

This first ocean incineration in the United States was authorized initially under research permits for two shiploads of waste. EPA and the Shell Chemical Co. cooperated in conducting thorough tests of burning efficiency, plume dispersal in the atmosphere, and effects on the marine environment. EPA provided scientific personnel for marine and aerial monitoring, and to make tests to determine the effects on the environment.

The marine monitoring utilized a NOAA research vessel with an EPA scientific party. The Coast Guard and NASA Goddard personnel also provided valuable aid in this monitoring effort.

After two research burns EPA felt that enough information had been accumulated on the conditions of the incineration to allow disposal of the remainder of this particular waste under an interim permit. A full technical report of this operation is being prepared and will help us in evaluating the viability of ocean incineration of chemical wastes as an alternative to dumping.

While we were extremely pleased with this first effort at ocean incineration in the United States, we do not yet feel we know enough about the process and its impact under different environmental conditions to permit its general use at the present time.

Our intent, therefore, is to issue permits for ocean incineration as research permits until enough information has been developed to promulgate standard criteria for ocean incineration.

At the present time the U.S. Air Force has applied for an ocean incineration permit for the disposal of 2.3 million gallons of Herbicide Orange in the Pacific Ocean. Public hearings will be held on this permit application in Honolulu on April 25, and in San Francisco on April 28.

The Marine Protection, Research, and Sanctuaries Act provides that in designating dump sites the Environmental Protection Agency utilize where feasible locations beyond the edge of the Outer Continental Shelf. Scientific doubt has been expressed as to the advisability of deep water dumping as a feasible alternative either environmentally or economically.

A cooperative survey with NOAA has been conducted on one off-the-shelf site, and other sites will be studied as rapidly as resources permit to determine whether or not additional environmental benefits are derived by using off-the-shelf sites as opposed to sites nearer shore.

Ironically, the major problem in the future is anticipated to be increased pressure to dispose of wastes in the ocean which result from more and better waste treatment facilities removing increased amounts of wastes from both municipal and industrial waste streams.

As I mentioned earlier, our basic approach has been to find and use the least environmentally damaging site and method of each waste whether it involves land, air, or water.

In summary, Mr. Chairman, since enactment of the Marine Protection, Research, and Sanctuaries Act the option of uncontrolled dumping is no longer available. Materials which were once discarded to the detriment of the oceans are now being reclaimed for new beneficial uses.

As resources are being conserved and reclaimed so, too, are the oceans protected. Much more is needed to be done to increase our understanding of the marine environment in terms of long and short range research, measurements, observations and experiments.

We must, therefore, continue to weigh carefully the impact man's activities will have on the oceans against the limits of our own information.

Our organization, technical assistance, research, and monitoring, and interagency cooperation will, I believe, go a long way toward shaping the program which, I am sure, we all want.

I will now be happy to respond to any questions the committee may have.

Thank you.

Mr. DE LUGO. Thank you very much, Mr. Agree, for a most complete and detailed statement.

I have just one question.

On page 6, you say that during the coming year you expect to to phase out many industrial dumpers, as alternate methods of disposal are developed and implemented.

Perhaps you could expand on that for the committee.

What type of alternate methods are you suggesting?

Mr. AGEE. Yes, Mr. Chairman.

Perhaps I could ask Mr. Biglane to give us some specifics on that area.

Mr. BIGLANE. Mr. Chairman, at each one of these opportunities to review applications from industry to dump into the ocean, we actively seek alternative methods for that procedure.

It is becoming apparent to us that such things as metals and energy components are being reclaimed by American industry more and more. We are using more scrap metals, for instance, applying these materials back into basic processes.

I think the whole tenor of the country in its insistence that we do conserve the natural resources of this country has caused those who would dump materials into the ocean just to hide them, to look for more feasible means, more economical means for disposing of materials as opposed to discharging these materials into the ocean.

The ocean incineration technique that Mr. Agee referred to tells us now that we can take wastes that are combustible and subject them to high temperatures, in this case 1,400 degrees centigrade and above, and actually use this material as a fuel.

Now, certainly, for some of these wastes we are reluctant to put into use this process on land, because of the emission of acid salts. But I see using this technology and combustible waste that can be oxidized as an additional source of fuel for the country.

Mr. DE LUGO. That is very interesting.

Would the distinguished ranking minority member, Mr. Forsythe of New Jersey, have any questions of the witness?

Mr. FORSYTHE. Yes, Mr. Chairman. Thank you.

You talk about baseline studies. How many of these do you have underway now?

Mr. AGEE. I think we have three sites under survey now.

Is that correct, Mr. Wastler?

Mr. WASTLER. Yes.

Mr. FORSYTHE. Do you visualize that these are essential to really find out where you are going in this ocean dumping?

Mr. AGEE. Mr. Forsythe, yes, we certainly do.

I think there are some 110 dump sites that have been designated on an interim basis. That is what we started with.

We are currently using only 11 of these at the present time for disposal of industrial and municipal wastes. Our first priority is to do the surveys of these 11, to make the determination on whether they should continue to be used as ocean dumping sites, under what conditions. In some cases we may well find they should not be used in the future and possibly additional sites should be explored.

Mr. FORSYTHE. That is a site survey.

What about the baseline study?

What is going on in that field?

Mr. AGEE. Let me refer to Mr. Wastler, if I might.

Mr. WASTLER. A baseline sudy would consist of several surveys, generally seasonal, ocean surveys carried out by research vessels of the site itself which would include water column, sediments, biota, physical oceanographic features, such as currents. We then collect and interpret all other available pertinent information that might deal with the ecosystem at the site.

Mr. FORSYTHE. The question really is, are you conducting baseline studies, how many, and how many do you think you need?

Mr. WASTLER. At the present time, we are actively conducting, with our own resources, three baseline surveys. We have conducted over the past year a total of seven site surveys.

Mr. FORSYTHE. That is what I am trying to differentiate between, site survey and baseline studies.

Mr. WASTLER. A site survey is a field operation involving oceanographic teams on site.

Mr. FORSYTHE. It is different from baseline study?

Mr. WASTLER. A baseline study is a more inclusive term.

At present time, we have not completed any baseline studies. We have baseline studies of three sites underway, and we have completed site surveys of seven sites.

Mr. FORSYTHE. What do you foresee in the immediate future in the baseline study program?

Have you tried to project in this field of your responsibilities what you need to undertake?

Mr. WASTLER. Yes.

We feel the 11 sites now in use require a baseline survey on each site. Each baseline study will probably require from two to four site surveys.

We are conducting the one in the New York area at the present time; we anticipate its completion by this coming winter.

Mr. FORSYTHE. Let me comment that that one is of particular interest to me. Coming from New Jersey, of course the whole problem of the Long Island-New Jersey area is of particular importance.

Go ahead.

Mr. WASTLER. The other two are on Du Pont and Philadelphia dump sites off the Delaware Bay, and we have completed—I believe it is five or six site surveys on each, but they are all very low scale surveys. We anticipate probably another two or three before we will have enough information for baseline surveys.

Mr. FORSYTHE. What will be the time frame for completing those baseline studies that you now have underway?

Mr. WASTLER. We anticipate their completion by the end of this calendar year.

Mr. FORSYTHE. Do you believe you are going to be able to carry on an adequate program of baseline studies that will keep pace with all the demands of this problem?

Mr. WASTLER. We certainly feel the program is small scale as far as the whole ocean pollution problem is concerned. But we are putting most of the resources granted to us in the baseline survey part of the program.

Mr. FORSYTHE. Let us move to another area on page 12.

With regard to ocean incineration, what research do you have going on for alternate disposal of municipal sludge?

Mr. AGEE. Mr. Chairman, we have some research underway, looking for better methods of disposal of municipal sludges. We just put out this week, for review and comment, the Technical Bulletin on Sludge Disposal for municipalities which leads specifically to the examination of land disposal of sites.

We do have some cooperative studies underway now to look at plowing sludge into land. We are looking at the crops that are being grown by this procedure.

One of the specific concerns we have today is the uptake of toxic materials, particularly heavy metals into the plants into alfalfa, for example, and we are trying to trace these through the food chain.

The disposal of municipal sludge and industrial sludges is a very pesky problem for our agency at this point in time. We are generating, as my testimony indicated, more and more sludge, and it will be mounting in the years to come. We are trying to find a set of tools in our tool box to give us some alternatives to handle this problem.

Land disposal has been the traditional method of handling it, and it still seems to be the best alternative we have, particularly in the less densely populated areas of the country.

In the west, for example, we are having good success with the disposal of municipal sludges. In the more densely populated east, particularly Metropolitan New York and Metropolitan Philadelphia, we have not found good solid alternatives to ocean dumping at this point in time. We do have research going underway. Through a construction grant program we do require applicants to make a thorough examination of alternatives, and only after we are satisfied there is no acceptable method for disposal on land do we even consider ocean disposal.

Mr. FORSYTHE. Do you have any research going on in the accelerated bacteriological use of sludge toward energy production?

I am referring to the production of methanol and so on.

Mr. AGEE. I cannot directly say that we do.

We have incinerated sludge from sewage treatment plants and regained heat value from it.

This is applicable in many areas.

Mr. FORSYTHE. There you get an air pollution problem which has its own problems?

Mr. AGEE. Yes, sir, we do.

We used this practice in the past. However, it is going to be stickier in the future as we start getting more industrial waste, and some contaminants which can not be handled by incineration. And we would be discharging air pollution materials.

Mr. FORSYTHE. It seems to me that looking at this potential of accelerated bacteriological production may have some merit.

I would hope that further attention could be given to that.

Mr. AGEE. Yes, let me look into that. I would be pleased to verify whether or not we are doing it.

Mr. FORSYTHE. If you do, I would appreciate it if you could forward that information to the committee so we have fuller knowledge of your action in that area.

Mr. Chairman, if I still have a little bit of time, I would like to get into another area in a sense more specifically toward our legislative mission today.

You, the EPA, apparently have your own budget, and it is separated into three titles under the Ocean Dumping Act. You apparently are using resources from other agencies in order to be able to carry out your mission.

Can you tell us, or can you provide for us how much in resources you do use in total from all sources in this mission on ocean dumping from, say, the Corps of Engineers, Coast Guard, and so on?

Mr. AGEE. I do not have those data with me today. We would be pleased to get that data so that you can look at it in its total context.

I believe our budget request for fiscal 1976 for the Environmental Protection Agency was $1.26 million for fiscal 1976 and $1.4 million for fiscal 1977. But I must add that without direct assistance of other Federal agencies in this program, we would not be where we are today, and I do not think we could manage the program in the future without that assistance.

Mr. FORSYTHE. Am I correct—Is it the Corps of Engineers that is supplying services free—services for which they could seek reinbursement for.

Mr. AGEE. They are not billing us for their services. We do glean an awful lot of good from their service.

Mr. FORSYTHE. Do they always carry out responsibilities that, in effect, would be your responsibility, lacking their cooperation where they are saving you considerable money——

Mr. AGEE. To my knowledge, no.

Mr. BIGLANE. I believe that is a correct answer.

Mr. FORSYTHE. The work they are providing is really under their mission?

Mr. BIGLANE. Yes, sir.

Mr. FORSYTHE. I guess that about takes my time, Mr. Chairman.

If we have some additional time, I will come back.

Mr. DE LUGO. Thank you, Mr. Forsythe.

Without objection, the more detailed responses to the questions that were raised by Mr. Forsythe will be included in the record as part of this hearing when they are received.

[The information to be supplied follows:]

QUESTIONS OF MR. FORSYTHE AND RESPONSE

Question. Do you have any research going on in the accelerated bacteriological use of sludge toward energy production?

Answer. EPA is expending approximately $2.7 million in research on sludge processing, utilization, and disposal. Included in these efforts are projects to improve methane production and utilization.

Question. Has the EPA reimbursed the U.S. Coast Guard for any of its programs related to ocean dumping?

Answer. EPA has not reimbursed the Coast Guard for any surveillances they have conducted. The Coast Guard has been most cooperative in providing surveillance to EPA, particularly in those instances where the dump sites are considerable distance from shore, i.e., at the 106 mi. site off New York and also at the site 130 miles south of Galveston.

The Coast Guard, in addition, has made their vessels the Alert, and the Point Franklin, available to EPA's Region III for site surveys. A total of 24 days ship-time was made available.

EPA reimbursed the following other Federal agencies for ocean dumping program assistance in FY 1975:

NOAA—$186,000:
$36,000 R/V Oregon II—ocean incineration.
$150,000 New York Bight Studies.
Navy—$40,000: CURV III—Farallon Islands investigation.
NASA—$5,000: ATP determinations—ocean incineration.

Mr. DE LUGO. Are there any questions from the gentleman from Ohio, Mr. Mosher?

Mr. MOSHER. Thank you, Mr. Chairman.

Mr. Agee, on page 10, I am interested in your comment that within the limits of existing statutory authority, we feel that we must seek out and require the use of the most acceptable environmental alternatives, et cetera.

When you say within limits of existing statutory authority, is there any implication there that you would welcome an expanded authority, a larger mandate here?

In other words, you are implying that we might give you more tools to work with or more opportunity?

Mr. AGEE. No, sir.

We were not implying we need more legislative authority at this point in time. We do have some legislative tools from other environmental legislation that assist us in disposing of materials that are frequently considered for dumping in the ocean.

For example, the new drinking water legislation does provide a section for EPA and/or the State to permit deep well injection of toxic materials. It is a regulatory tool we have and it provides an opportunity for us to consider that as an alternative disposal method.

In our water pollution control program, we have sufficient legislation, I think, to deal with the disposal of materials in navigable waters.

Our air pollution program, while we have very few finite criteria or limits, we do have new source performance standards which would include new incineration, for example.

Mr. MOSHER. You say specifically "within the limits of existing statutory authority," it sounds as though the authority was inhibiting you somehow.

You do not mean to imply that?

Mr. AGEE. No, sir; I do not mean to imply that.

Mr. MOSHER. How inhibiting is your budget authority?

How inhibiting is OMB?

I have not studied the figures as carefully as I should, but I get the impression from comments that you are asking for less than you could really use.

For instance, what does a good site survey cost?

There is some feeling among our staff, and it will vary, of course, depending upon the site, but it could be $200,000, $300,000, is that correct?

Mr. AGEE. Mr. Mosher, yes, that is our best estimate of what one single survey costs is about $200,000. For a full baseline survey, which we were speaking to a few moments ago, we may be talking about a $½ million.

Mr. MOSHER. In order to do seven, that would require a lot more money than you are asking for?

Mr. AGEE. Yes. That is an adequate observation.

In preparing our budget request for OMB for fiscal 1976, we asked for $1.26 million. In coming to that particular figure, we were trying to get the best balance within EPA of our resources.

I do not think there is any question in my mind that this program could use more money, and we could put it to adequate use to get these baseline surveys behind us.

Mr. MOSHER. In the budgetary process within the executive branch, in the first request to OMB, did you ask for considerably more and then get cut back by OMB?

Mr. AGEE. No, sir, we did not. We were given a target by the Office of Management and Budget for development of total EPA budget, and we did submit a request for $1.26 million.

Mr. MOSHER. You were given a figure by OMB, and you had to work out your own priorities?

Mr. AGEE. Yes, sir; that is the process. I would like to make an additional comment in that area. While we only requested the amount that I cited, we do have a number of other activities within EPA to complement this program.

For example, in our total research budget, dollars and staff resources complement this program and assist not only in the research activity, but also in the operation of the program on a day-to-day basis. We get a good amount of technical assistance from our research laboratories as well as our national field investigation centers in Cincinnati and in Denver, Colo.

Mr. MOSHER. Getting back to this question of any inhibitions that you have, anything that is keeping you from doing more and a better job, this would be more money inhibitions than statutory authority?

Mr. AGEE. Yes, sir.

Mr. MOSHER. You feel you have all the mandates you need. if you had the money?

Mr. AGEE. From our experience with this 2-year old act, yes. I do not think we have seen any areas where we would suggest a legislative change at this point in time.

Mr. MOSHER. Now, page 6, turning to another subject, you refer to a slight overall decrease in dumping of industrial waste. But the chart on the back page very clearly shows that that decrease was in the gulf area, and that actually in the Atlantic area, the dumping of everything has increased, is that right?

Mr. AGEE. Yes, sir, that is correct.

Mr. MOSHER. And immediately following that comment, you say that we expect to phase out many industrial developers as alternate methods of disposal are developed and implemented.

In other words, you are accepting the fact that dumping has substantially increased in the Atlantic, but I judge you are promising or indicating that you are on the verge of really cutting back, when you expect a phaseout, you are going to cut back in the next year.

Mr. AGEE. We anticipate we will see a reduction in ocean dumping for industrial waste, yes, sir, next year.

Mr. MOSHER. Is that only because the economy is slowing down, or is it because there actually will be greater use of alternate methods?

Mr. AGEE. I could not answer the first portion of your question dealing with the economy. I do not think we have looked into that. Most of the reduction of industrial discharges, as I understand it, will occur in the Gulf area, and we anticipate in calendar year 1975 a reduction of roughly 1 million tons a year to about 10 percent of that.

Mr. WASTLER. Sir, when the act started, the first thing we had to do was encourage a number of industrial dumpers to seek other alternatives. The 2 years from 1973 to 1975 represent, in most cases, the time that it has taken industrial dumpers to seek out other alternatives and build treatment plants or find other methods of waste disposal.

Mr. MOSHER. Mr. Chairman, I assume the crucial question for us is really the adequacy of the proposed authorization, the amount of the authorization. For my part, I am sort of reserving judgment. I have the feeling that we do not have as yet adequate information as to what really pinpoints the axact moneys expended. I do not feel I should use more time in questioning, but I hope that we can press harder for that type of information to satisfy ourselves that the funding is sufficient.

Mr. DE LUGO. Well, Mr. Agee, you have heard the comment of the gentleman from Ohio. I would suggest perhaps you might want to submit additional information for this committee, which will be made a part of this record, to more accurately reflect your needs.

Mr. AGEE. Mr. Chairman, we would be pleased to do that. The line of questioning has, I think, zeroed in on baseline surveys and site surveys, and 11 sites we have to investigate. We would be pleased to supply that information for the committee.

Mr. DE LUGO. Are you under the usual restraints from our friends down at OMB today?

In reply to specific questions from the committee, we would look forward to hearing from you in more detail——

Mr. AGEE. No, we are under no constraints, Mr. Chairman.

Mr. FORSYTHE. Mr. Chairman, if you would yield.

Mr. DE LUGO. Yes.

Mr. FORSYTHE. The staff should have authority to submit questions in this field.

Mr. DE LUGO. I think that would be most helpful. So ordered.

[The material to be supplied follows:]

BREAKDOWN OF EXPENDITURES WITHIN THE VARIOUS DISCIPLINES OF OCEAN DUMPING

The breakdown of these funds was as follows:

	Personnel costs	Contracts	Interagency agreements
Fiscal year:			
1973	$81,000	$139,000	$70,000
1974	501,000	675,000	100,000
1975	520,000	587,000	231,000
1976 requested	560,000	700,000	
		[1] 700,000	

[1] Baseline surveys through interagency agreement with NOAA and by contract 700K. Priorities for the conduct of these surveys are: (1) New York Bight, (2) Galveston, (3) Mouth of Savannah River, (4) Philadelphia and DuPont sites, and (5) the 106 site.

RESPONSE TO QUESTIONS BY COMMITTEE ON MERCHANT MARINE AND FISHERIES

(EPA program element 2BV145)

(1) Appropriations:

Fiscal year:	*Thousands*
1973	$290
1974	1,276
1975	1,329

All funds were expended by EPA to implement the ocean dumping permit program. None of the funds were reprogrammed for any other purposes.

The breakdown of these funds was as follows:

Personnel costs:	
Fiscal year:	
1973	$81,000
1974	501,000
1975	520,000
Contracts:	
Fiscal year:	
1973	139,000
1974	675,000
1975	578,000
Interagency agreement:	
Fiscal year:	
1973	70,000
1974	100,000
1975	231,000

(2) A general statement covering the cost of a disposal site survey may be misleading because of a number of variables such as: 1) geographical location, 2) size, 3) number of replicate samples, 4) number of sampling cruises, etc. A base of the order of $200,000 per cruise and four (4) cruises per year would place an average site survey at $800,000 annually. For some of the larger disposal site areas this could increase by as much as 25%.

Surveys conducted to date have been by contract and by interagency agreement. EPA personnel, in one Region (Region III) participate in the survey. EPA personnel are also involved in the sample analyses and interpretation.

The current contracted survey cost is approximately $875,000. These costs include such items as vessel and crew, scientists, laboratory technicians, sample analysis, computer time for processing data, interpretation of the data, and providing a report representing the environmental assessment from which an Environmental Impact Statement is prepared.

(3) Under the interim ocean dumping regulations the Agency had assessed a non-refundable $500 application fee to cover the costs of processing a permit. After six months experience with the permit program, the regional offices determined that $500 per application did not cover the hourly cost of technical evaluation, staff consultation with the applicant, and secretarial support. As a consequence in the Final Regulations for ocean dumping, permit application fees of $1,000 per application are assessed when the applicant desires to dump in one of the designated disposal sites. If he proposes to dump in an area not so designated, the fee is $3,000, and he is required to provide a detailed study and analysis of the area selected. This latter situation is strongly discouraged by the Agency. These costs are estimated to be the permit processing costs.

In one particular case, EPA contracted for a team of highly qualified consultants in the Marine Sciences field to provide an unbiased review of the applicant's data in terms of the waste being hazardous to marine life.

(4) Answered as part of (3).

(5) Under the Marine Protection, Research, and Sanctuaries Act, as amended, NOAA is charged with the Research and Monitoring under Title II. However, as a part of EPA's overall pollution abatement program, significant efforts have been directed towards ocean dumping. The following information is provided on EPA's ocean research programs specifically related to ocean dumping.

	Fiscal year—					
	1973		1974		1975	
	Amount	Time	Amount	Time	Amount	Time
NMWQL (Narragansett)[1]	$0		$374,000	3.0 MY	$427,000	7.0 MY.
GBERL (Gulf Breeze)[2]	0		3,000	400 MH	22,000	3,200 MH.
PNERL (Corvallis)[3]	476	4.6 MY	434,000	5.5 MY	728,000	3 MY.
Headquarters (Washington, D.C.)[4]	0		0		8,000	30 MD.

[1] Fate and effects of pollutants in the marine environment.
[2] Technical assistance in specialized permit applications.
[3] Mathematical modeling of current distribution and water mass movement in the New York Bight.
[4] Technical assistance in specialized permit application situations.

(6) EPA presently employs approximately 9,000 people, and has programmed 26 positions for ocean dumping. This may appear to be a small number in terms of the overall personnel, but the ocean dumping permits are not treated routinely. When applications are received they are given very extensive evaluation and review before the decision to issue or deny is made.

Numerous personnel from other facets of the Agency are made available for assisting in the evaluation. For example, in the case of the Shell Chemical Co.'s application for ocean incineration, the agency used personnel from Headquarters, the Region, Office of Research and Development, Office of Air and Waste Management, and representatives from the Gulf Breeze Laboratory.

(7) EPA reimbursed the following other Federal agencies for ocean dumping program assistance in FY 75:

NOOA—$186,000:
$36,000 R/V Oregon II—ocean incineration.
$150,000 New York Bight Studies.
Navy—$40,000: CURV III—Farallon Islands investigation.
NASA—$5,000: ATP determinations—ocean incineration.

(8) EPA has not reimbursed the Coast Guard for any surveillances they have conducted. The Coast Guard has been most cooperative in providing surveillance to EPA, particularly in those instances where the dump sites are considerable distance from shore, i.e., at the 106 mi. site off New York and also at the site 130 miles south of Galveston.

The Coast Guard, in addition, has made their vessels the Alert, and the Point Franklin available to EPA's Region III for site surveys. A total of 24 days ship-time was made available.

(9) In keeping with the Administration's policy for Federal spending, EPA's appropriation requests for ocean dumping were submitted according to the agency's overall pollution abatement efforts.

(10) The Marine Protection, Research, and Sanctuaries Act of 1972, as amended, states that it is the intent of Congress to regulate all ocean dumping and "to prevent or strictly limit the dumping into ocean waters of any material which would adversely effect human health . . . or the marine environment". In implementing the permit system to provide this regulation, the Administrator is authorized to establish criteria for evaluating permit applications considering the need for the proposed dumping, the effects of dumping on human health and the marine environment, alternative methods of disposal, and alternate uses of of the ocean.

The ocean dumping of wastes which are rapidly rendered harmless in marine waters may be the best method of disposal for those wastes. In determining whether dumping of other wastes will unreasonably degrade the marine environment, the Administrator must consider the need for the disposal based on the availability of alternatives, as well as the effects of the dumping. Thus, by utilizing the statutory authority provided by Congress, the Environmental Protection Agency can and does seek to find and use the most environmentally, acceptable alternative available for ultimate disposal within the limitations of available technology. We firmly believe this policy is consistent with the intent of the Congress.

COMMENTS ON NATIONAL WILDLIFE FEDERATION TESTIMONY BEFORE THE SUBCOMMITTEE ON OCEANOGRAPHY OF THE COMMITTEE ON MERCHANT MARINE AND FISHERIES

Mr. Kamlet's major concern has to deal with the limited funds EPA has available for baseline surveys of the ocean disposal sites. He failed to mention that we are devoting nearly every dollar we have available to the conduct of baseline surveys, but since they are so costly we are conducting them on a priority basis. We are presently conducting a series of surveys of the alternate sludge disposal site in New York. On-going surveys are being conducted at the two sites off the Maryland-Delaware coast, and we are planning to initiate a survey of the Galveston, Texas, site early next fiscal year. This survey will be conducted through an interagency agreement with NOAA.

We estimate that it would cost approximately $7.26 million spread over two years to expedite conduct of these surveys. These additional funds would enable expansion of the current surveys of the alternate sludge site and the two sites off the Maryland-Delaware coast, and would allow us to initiate new surveys in the Gulf of Mexico, off the mouth of the Savannah River, of the acid site in the New York Bight, and of the industrial waste site off Puerto Rico. Such funding would also enable, in cooperation with the Corps of Engineers, the development of the necessary techniques to commence surveys of selected dredged material sites. Mr. Kamlet cites figures of a comparable level.

Mr. Kamlet's comments concerning EPA personnel involved with ocean dumping has been responded to in the questions from the committee.

In general, a good relationship exists between the Ocean Dumping Program office and Mr. Kamlet. We communicate frequently, and many of his comments are well received and utilized.

Mr. MOSHER. Could I inject one further question here?

Do I understand correctly that in terms of staffing, that each of your regions has exactly the same amount of staffing, even though—is it region 2, New York area, has a tremendous large volume of work?

Is our understanding of that correct?

Mr. AGEE. Your understanding when we first initiated the program, I think, is essentially correct. We did distribute, fairly evenly the resources, both people resources and dollars to the regions.

I think the people on the Pacific Coast have done an outstanding job in working with ocean dumpers, to find alternate methods. I think we are fairly satisfied that the need for people resources in that area is not nearly as significant, as you point out, for New York.

We do give the region a lump sum resource number, for example so many hundreds of people for the New York region. They have the responsibility to come back to our headquarters and tell us how they are going to spend their resources, and it is reviewed at headquarters.

We will be giving specific attention to people in New York, in Philadelphia, and our gulf area where we have a major amount going on as against lessening needs in other coastal areas.

Mr. MOSHER. Is there any significant dumping problem in the Great Lakes area?

Mr. AGEE. To my knowledge, no.

Mr. Biglane, can you confirm that?

Mr. BIGLANE. That is right.

Mr. AGEE. There is one point I might bring up.

With regard to resources, we did send up the proposed bill for the extension of our authority, and we did ask for extension for a 2-year period of time.

I did note that H.R. 5710 has provided for a 1-year extension. I think my plea would be that the committee seriously consider a 2-year extension. It is important to us to be able to have at least a 2-year planning cycle.

To carry out our baseline surveys we need to contract for vessels. And these vessels are generally tied up well in the future. I think it would give us better program operation if we would have a 2-year extension rather than a single year.

Mr. DE LUGO. Your point is well taken, and the committee will take that under consideration.

I would also like to restate or at least make it very clear that the subcommittee expects the responses to the questions that have been asked this morning to be provided without OMB clearance, particularly the questions that will be submitted by staff.

Mr. AGEE. We will certainly give them to you.

I will not at this time say they will not have to be shared with OMB. I honestly do not anticipate we will have a problem with OMB.

Mr. DE LUGO. The Chair recognizes the presence of the distinguished member from Maryland, Mr. Bauman.

Mr. BAUMAN. I believe the gentleman from Maine was here before me.

Mr. EMERY. No questions.

Mr. BAUMAN. I would like to ask one question.

On page 10 of your statement, you say in the next to last paragraph, "Within the limits of existing statutory authority, we feel that we must seek out and require the use of the most acceptable environmental alternative for the disposal of waste residues for which additional treatment is not feasible," and so on.

Does not the basic act involved here, the Marine Protection, Research, and Sanctuaries Act, require you to prevent ocean dumping if it is adverse to marine or environmental aspects or human health?

Mr. AGEE. Yes.

Mr. BAUMAN. Does not this statement, the way you have made it here, perhaps indicate you feel ocean dumping may be acceptable?

Mr. AGEE. As we have been administering the program, we have denied ocean dumping permits if there is a viable alternative, such as land incineration, land disposal, or some other disposal method.

As we look at the future, I think we are going to find some very troublesome municipal and industrial sewage sludge problems. We have the land, the air and the oceans as possible alternatives.

I think, as we look to the future, ocean disposal should be one of the alternatives that we should examine. We should seek the best environmental disposal practice.

I do not mean to say that it is our intent to increase the amount of ocean dumping at all. I think, as we find out more about the oceans, it is our hope that we can find places in the ocean, under certain conditions where we could dispose of some of these materials.

We are really in a box on sludge disposal around the country. Many times, land disposal is an acceptable method. We still have some opportunities for incineration. We have very, very high hopes for ocean incineration, particularly for the very toxic materials, generally industrial waste.

It looks very, very good to us as a tool that we can use to dispose of some of these materials.

Mr. BAUMAN. My question stems from my concern about the Maryland-Delaware coastal areas and the disposal of waste by the city of Philadelphia.

Most of us were under the impression that Philadelphia was under time structures which would end this kind of activity. While I can applaud your decision to issue an order that Philadelphia will have to terminate eventually, the effect, however, is to continue a dumping program we thought would end by now or at least very quickly.

There is a real question in my mind about what impact this will have on the environment and on the health of the coastal areas involved.

Mr. AGEE. Yes.

There will be a hearing in Philadelphia next week; at that hearing we will be obtaining data and information on the kind of alternatives, not only ocean disposal, but land disposal alternatives that are available or potentially available to the city of Philadelphia.

Mr. BAUMAN. Mr. Chairman, I would just comment that in January I requested from Mr. Train, the 1974 annual report on the ocean dumping program. I think the committee eventually received it 7 months late.

I do not know whether EPA has the proper funds or staff, or whether there is reluctance to give this information to Congress, but the annual report seems very sketchy in its outlines. This raises the question of whether we ought to be authorizing further funds until we have a better understanding of what your agency is doing in this entire area.

Mr. AGEE. We were late with that report by about 7 months. We always feel very bad when we miss these deadlines. Our agency has missed many deadlines in the past. We are becoming better equipped to meet some of these time frames.

In talking with Mr. Biglane and his staff, we are going to make every effort to provide the third annual report on time. I am sure that we can meet the due date.

I am really very, very sorry for any inconvenience that this delay has caused this committee or members of the committee.

Mr. BAUMAN. Thank you, Mr. Chairman.

Mr. DE LUGO. Thank you, Mr. Bauman.

Before we hear a series of questions that will be asked by the representative of Mr. Murphy, the Chair has been informed that there is a group of students in our hearing room today. They are visiting the United States for 1 year. They have been assigned to the U.S. Naval Oceanographic Office for training in hydrography and oceanography.

I would like to have them stand as I mention each of the countries from which they come. I hope you will forgive me if I mispronounce any names.

From Greece we have Lieutenant Commander Papadopoulus; from India, Lieutenant Saptharishi; from Nigeria, Lt. E. Ogunfiade; from Nigeria, Lt. J. Abulu; from Mexico, Lt. A. Cano; from Chile, Lt. H. Gorziglia; from Indonesia, Lieutenant Rahyono.

Welcome. It is a pleasure for the committee to welcome all of you here, both to the country and to this joint hearing this morning.

At this point, I would like to recognize the representative of Mr. Murphy, Mr. Perian for a series of questions. Mr. Murphy, unfortunately, is unable to be here because of other commitments.

Mr. PERIAN. Thank you. Mr. Chairman.

Mr. MURPHY, like Congressman Forsythe, is concerned about EPA's New York activities. He asked me to ask a series of questions based on at least five ocean dumping hearings that have been held in New York City during the past year concerning mainly the New York Bight.

We understand that EPA is studying two projected new dumping sites on the northern and southern edges of the Hudson canyons, is that correct?

Mr. AGEE. Let me refer this question to Mr. Wastler.

Mr. WASTLER. No, sir, it is not.

We are studying one on the north side of the Hudson canyon.

Mr. PERIAN. We have been told by certain people in New York that there are two projected sites, one the northern side which is off Rock Island, N.Y., and the second one off the southern side of New Jersey. There was some discussion apparently of the southern site.

Is only the northern site being studied now?

We were concerned about why this is occurring.

Mr. WASTLER. We had asked NOAA some time ago for recommendations on areas which had possibly some potential based on general oceanographic features, as alternative sludge dumping areas to the area presently in use.

They recommended two areas, one north of the Hudson canyon and one south of it. With those recommendations, we determined to go to the one on the north side rather than the one on the southern side.

I do not remember why we picked that one, rather than the other one. It was not done on the basis of any specific knowledge of the site, but of the general area.

Mr. PERIAN. That prompts two further questions.

One, perhaps the southern site would create a conflict between OCS in sound development and ocean dumping activities?

Mr. WASTLER. I do not remember that as being a consideration.

Mr. PERIAN. And the second question is, do you have enough money to conduct a second study of this site?

Mr. WASTLER. The amount of resources is certainly a consideration in the amount of work we do.

Mr. PERIAN. It is a factor?

Mr. WASTLER. Yes.

Mr. PERIAN. We further understand you have charts and documents relative to these two sites.

Will you submit them for the record of the committee?

Mr. WASTLER. We have navigation charts with the sites marked on them.

Mr. PERIAN. Our people in New York indicated that EPA does have colored charts identifying the areas and what has been done on them thus far.

Mr. WASTLER. We can certainly provide the charts of the area; yes, sir.

(The chart to be submitted follows:)

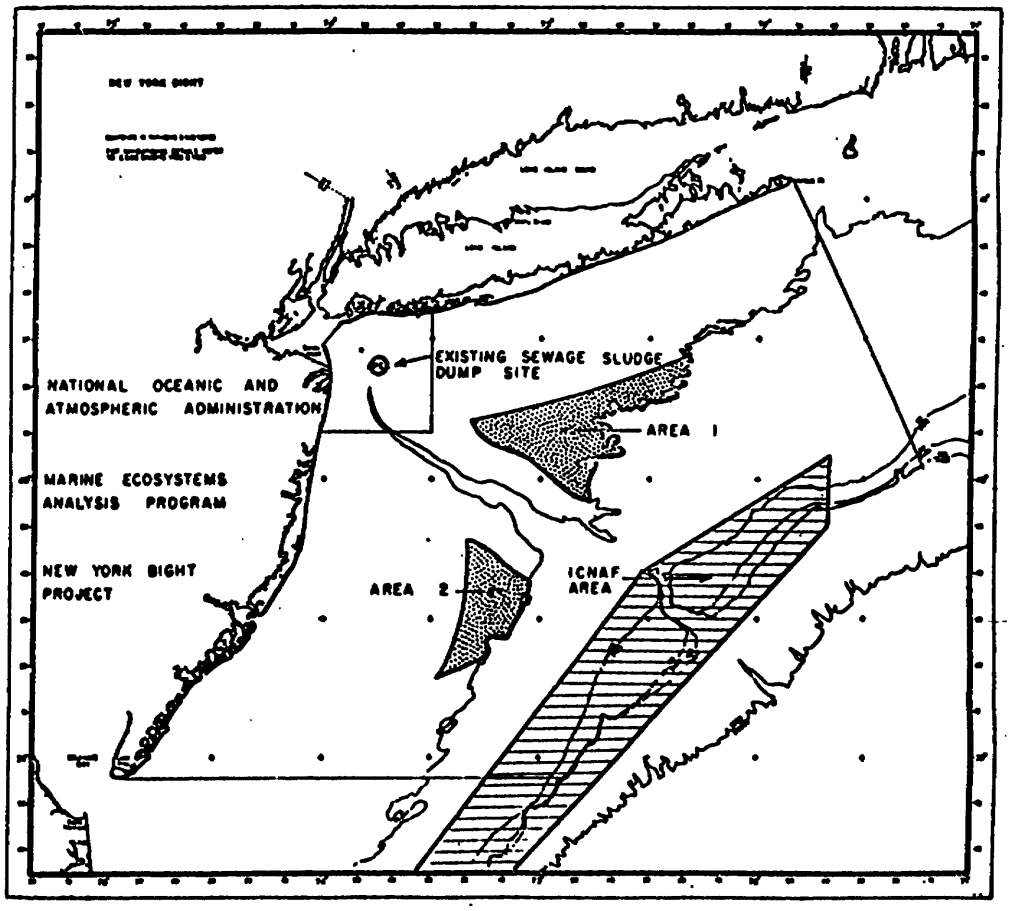

FIGURE 1.—Areas recommended for possible use as alternative sewage sludge dump sites (area 1 and area 2).

Mr. PERIAN. How long has this study been going on?

Mr. WASTLER. The first cruise on alternative dump sites was done during September and October of last year. The second cruise was, I believe, completed early in April or mid-April. And the third cruise is scheduled for July or August of this year.

Mr. PERIAN. Now, the evidence in New York suggested that raw sewage coming out of the Hudson River is having a more detrimental

effect on the New York Bight than actual ocean dumping activities. Is that a correct assessment?

Mr. WASTLER. I could not verify that one way or the other, sir.

Mr. AGEE. I do not know the answer to that. I can certainly visualize how it could be true at certain times of the year.

We would be pleased to provide you with additional information on the relative impact of the raw sewage in the Hudson River.

Mr. PERIAN. Could you do that, please?

Mr. AGEE. Yes.

[The information to be supplied follows:]

RELATIVE IMPACT OF RAW SEWAGE BEING DISCHARGED INTO THE HUDSON RIVER

Using data on estimated sewage overflows in the Hudson River area and data on typical urban runoff, from low density areas, the sewage overflow from the approximate 1,200 square miles sewered portion of the entire New York Urban region discharges into the Bight at a rate of approximately 9 billion gallons per day.[1] What part of this volume actually gets to the New York Bight is not readily determined.

Preliminary information from a study currently being funded by NOAA under the MESA Project indicates that the percent concentration of contaminants in the New York Bight as the result of barging of sludge represents only about 6 to 8 percent of the total. The remainder is made up of wastes being discharged, fallout from the atmosphere, industrial wastes, and runoff from land.

Mr. PERIAN. Your request was for $1.26 million for fiscal year 1976. Do you recall what your request was for fiscal 1975 and 1974?

[Mr. Downing assumed the Chair.]

Mr. AGEE. It was approximately the same. I believe it was just slightly higher, but I do not think I have that data with me at the moment.

Mr. PERIAN. Could you provide the figure, the amount requested in fiscal years 1973, 1974, and 1975?

Mr. AGEE. Yes, we certainly can.

[The information to be supplied follows:]

BUDGET FOR FISCAL YEARS 1973, 1974, AND 1975

Appropriations:	
Fiscal year:	*Thousands*
1973	$290
1974	1,276
1975	1,329

All funds were expended by EPA to implement the ocean dumping permit program. None of the funds were reprogrammed for any other purposes.

The breakdown of these funds was as follows:

Personnel costs:	
Fiscal year:	
1973	$81,000
1974	501,000
1975	520,000
Contracts:	
Fiscal year:	
1973	139,000
1974	675,000
1975	578,000
Interagency agreement:	
Fiscal year:	
1973	70,000
1974	100,000
1975	231,000

[1] This exceeds the dry weather flow of the region's sewage of 2.5 billion gallons per day.

Mr. PERIAN. And finally Mr. Murphy asked the Coast Guard, the Corps of Engineers, and EPA for a response to certain budgetary matters. We received written replies from the Coast Guard, and a very limited response from the Corps of Engineers. We did receive a phone call from EPA on this matter.

Do you think it would be possible to get a written response to our request?

[The response follows:]

U.S. ENVIRONMENTAL PROTECTION AGENCY,
Washington, D.C., April 24, 1975.

Hon. JOHN M. MURPHY,
Chairman, Subcommittee on Oceanography, Committee on Merchant Marine and Fisheries, U.S. House of Representatives, Washington, D.C.

DEAR MR. CHAIRMAN: This is in response to your letter dated April 22, 1975, which requested our budget for fiscal year 1976 to carry out our responsibilities under the Marine Protection, Research, and Sanctuaries Act.

As you know, our Agency has only responsibility for implementing the provisions of Title I-Ocean Dumping. For fiscal year 1976, we requested $1,260,000 from OMB and the amount requested was approved.

We thank you for your interest and if we may be of further assistance to you, please let us know.

Sincerely,

RUSSELL E. TRAIN.

Mr. AGEE. I think it is probable that you will, yes, sir. I had a note on my desk this morning that it is in preparation.

Mr. PERIAN. Thank you.

Mr. DOWNING. Any further questions of the witness?

Mr. EVERETT. I have a question.

Mr. Agee, with respect to the appropriations issue, I note the act authorized the carrying out of title I at a level of $3.6 million for fiscal 1973, and $5.5 million for fiscal years 1974 and 1975.

How much was appropriated for your Agency for each of those fiscal years?

Mr. AGEE. I do not have that data, but I will certainly provide it to you.

Mr. EVERETT. I note, too, that the act itself implies the program will get off to kind of a slow start—increasing the authorization from $3.6 million to $5.5 million, and now your Agency has requested that it be reduced back to $1.26 million.

As pointed out by Mr. Mosher, it concerns the committee that maybe you are not asking for enough funds.

Do I understand that this amount would be entirely used by the Environmental Protection Agency, and that none of that money would be used by the Coast Guard or Corps of Engineers?

Mr. AGEE. It would be entirely utilized by EPA. However, we do contract with NOAA, for example, for research activities, particularly to assist us in the conduct of site surveys and baseline surveys.

In that sense some of the money we have in our budget is transferred to NOAA.

Mr. EVERETT. Section 107 of the act authorizes you, as well as the Secretary of the Army to, where appropriate, utilize by agreement personnel and services of other agencies, and also authorizes the Administrator to delegate responsibility for authority in carrying out the act, or evaluating permit applications, including decision on whether permits will be issued, and so on.

To what extent is your Agency taking advantage of section 107 in regard to utilizing these services?

How much in funds will be involved in that regard?

[Mr. de Lugo resumed the Chair.]

Mr. AGEE. Let me refer to Mr. Wastler.

Mr. WASTLER. We have used the facilities of NOAA to some extent in surveys off the New York Bight. The MESA program of NOAA is providing us with a great deal of information. We have used the NOAA research vessel on the ocean incineration research cruises.

If you mean have we gotten people on detail for that type of thing, we have not done any of that.

Mr. EVERETT. Is this on a reimbursable, or a nonreimbursable basis?

Mr. WASTLER. Part is, and part is not.

Mr. EVERETT. Can you supply for the record the amount that is on a reimbursable basis at a later time?

Mr. WASTLER. Certainly.

[The information referred to may be found on page 125.]

Mr. DE LUGO. Mr. Forsythe.

Mr. FORSYTHE. Mr. Chairman, just one more question.

Going back to this question of trying to find out what you actually have expended for ocean dumping in this last 3 fiscal years, I understand it is not only a letter from Mr. Murphy that did not get answered, but there has been a number of phone calls.

I certainly hope that we can have that available to the committee.

Mr. AGEE. We certainly will have it available.

Mr. EVERETT. We intend to schedule an executive session for Monday on this legislation, so we would appreciate really prompt responses to these questions.

Mr. DE LUGO. It has been suggested by Mr. Forsythe, and I think it is an excellent suggestion, that you should have one of your associates in your Agency monitor the hearings which we will be having tomorrow so that you will be aware of any questions that may arise.

Mr. AGEE. Thank you, Mr. Chairman. We will be pleased to do so.

Mr. FORSYTHE. We understand your associates will have to be out of town, and maybe you or someone else should be here.

Mr. DE LUGO. Any additional questions?

All right.

I want to thank you, Mr. Agee, and your associates, for an excellent presentation.

You have been in the chair for more than an hour, in the hot seat if you will, and I hope you will get these responses to us in a timely fashion, particularly the additional data that will be needed by the end of the week.

Mr. AGEE. Thank you very much.

Mr. DE LUGO. Once again we are going to change the order of appearance with the consent of Dr. Martineau, who was scheduled to be next.

He is yielding, without objection, to the Coast Guard, who must be on their business at noon.

From the Department of Transportation, the next witness will be Rear Adm. Robert I. Price, Chief, Office of Marine Environment and Systems, Coast Guard.

Will you identify the other members of the Coast Guard who are with you this morning?

STATEMENT OF REAR ADM. ROBERT I. PRICE, CHIEF, OFFICE OF MARINE ENVIRONMENT AND SYSTEMS, U.S. COAST GUARD, DEPARTMENT OF TRANSPORTATION, ACCOMPANIED BY REAR ADM. SELECTEE SIDNEY WALLACE, CHIEF, MARINE ENVIRONMENTAL PROTECTION DIVISION

Admiral PRICE. Thank you, sir.

Mr. DE LUGO. Your entire statement will be made a part of the record, and you may proceed to present it in its entirety, or to summarize it, whichever you prefer.

I would appreciate it if you would recognize the gentleman who is with you this morning.

Admiral PRICE. I am accompanied by Captain, that is, Rear Adm. Selectee Sidney Wallace, Chief of Marine Environmental Protection Division.

Since my statement is relatively short, I will read it, if I may.

Gentlemen, I am Rear Adm. Robert I. Price, Chief, Office of Marine Environment and Systems, U.S. Coast Guard. It is a pleasure for me to appear before you today on behalf of the Coast Guard to discuss the Coast Guard's activities pursuant to the Marine Protection, Research, and Sanctuaries Act of 1972.

You have under consideration H.R. 5710, a bill to authorize appropriations for fiscal year 1976 to carry out titles I and III of that act. The Coast Guard has not received authorization for appropriations under the act being amended and defers to the views of the Department of Commerce and the Environmental Protection Agency regarding the funding of these programs. By this I mean, Mr. Chairman, that funding for Coast Guard activities would be appropriated as part of our overall budget in any particular year.

Since April 23, 1972, the effective date of Title I of that Act, over 180 permits for ocean disposal have been issued by the Environmental Protection Agency and the Corps of Engineers. During the period from April 1973 to December 1974, approximately 500 loads of "toxic" material, such as certain inorganic salt and acid wastes, and 12,200 non-toxic loads, involving material such as dredge spoils, cellar dirt, and sewage sludge, have been dumped under those permits.

We use the term "toxic" to indicate those wastes which demand the most attention, for example, those which are dumped at EPA's "toxic waste" sites. EPA's discharge and dispersion requirements are designed to render the material non-toxic at the site.

The Coast Guard's enforcement program is keyed to close surveillance of the disposal of toxic materials and spot checks of non-toxic material dumps. Surveillance methods include escorting or interception of dumping vessels at the dump site by vessels or aircraft, the spot checking of ships' logs, the use of shipriders to ascertain position and dumping rate, and in the San Francisco area, the use of harbor radar installations.

From April 1973 to December 1974, there were 983 ocean disposal surveillance missions; 36 violation notifications have been referred to EPA encompassing 154 apparent violations. I have for the record summaries of dumping activities and of enforcement cases referred to EPA.

Mr. DE LUGO. Without objection these will be made part of the record at this point.

[The information referred to follows:]

CG DISTRICT OCEAN DUMPING ACTIVITIES, APRIL 1973 TO DECEMBER 1974

District	Permits issued		Loads dumped		Enforcement referrals to EPA
	EPA	COE	Toxic	Nontoxic	
1	5	10	1	34	4
3	107	81	155	11,985	[1] 22
5					
7	4	6	19	68	4
8	11	0	309	3	0
11	16	0	0	9	4
12	0	6	0	111	1
13					
14	1	0			
17					
Headquarters					1
Total					36

[1] 15 of the 22 referrals contained a total of 133 apparent violations.

	Number
Loads dumped:	
Toxic	484
Nontoxic	12,210
Dumping operations for which surveillance was considered necessary by CG or EPA	531
Surveillance missions (both specific and general)	983
Dumping operations for which monitoring was requested	3
Monitoring surveillance missions performed	5
Enforcement referrals to EPA	36
Apparent violations referred to EPA	154

OCEAN DUMPING VIOLATIONS REFERRED TO EPA, APRIL 1973 TO DECEMBER 1974

Violation	CG district	Violations
Dumping short	3	3
	7	2
	12	1
Dumping long	7	1
Dumping without permit	HQ	1
	1	1
Attempting dumping without permit	1	1
Violating permit conditions [1]	1	2
	7	1
	11	4
Failure to notify COTP	3	133
Liquid wastes spilled en route	3	2
No permit on board	3	1
Total		154

[1] Dumping at night, trash/garbage blowing over en route, not sinking on site, etc.

Admiral PRICE. The ocean dumping surveillance and enforcement program has prompted development of advanced hardware and techniques. Coast Guard Research and Development is working on a sealed recording navigation system to be carried aboard dumping vessels which should help to provide more efficient enforcement with existing resources.

To date, the Coast Guard has seen no need to promulgate regulations on ocean disposal under the Marine Protection, Research, and Sanctuaries Act. However, we may do so in the future, if unforeseen problems arise, or to implement adoption of the positive navigation and surveillance system.

Pursuant to title II of the Act, the Coast Guard has the responsibility to cooperate with other agencies in their research on the effects on man-induced changes to the marine ecosystems.

Coast Guard surface and air units have had years of experience in ocean monitoring efforts. Interagency agreements provide for support by Coast Guard units in these joint activities.

Under title III, providing for designation of marine sanctuaries, the Coast Guard is likewise prepared to provide operational support to the associated agencies.

Thank you, Mr. Chairman for this opportunity to briefly address you regarding Coast Guard involvement under the Marine Protection, Research, and Sanctuaries Act.

If there are any specific questions, I will be pleased to answer them now, or provide you with answers for the record.

Mr. DE LUGO. Thank you, Admiral Price.

On page 2 of your statement, you indicate that Coast Guard Research and Development is working on a sealed recording navigation system to be carried aboard dumping vessels.

I wonder if you could explain to the Committee how this system would work?

Admiral PRICE. Yes, sir.

We would like, if possible, to develop a device to reduce the Federal investment in attempting to assure that the dumping actually takes place at the designated location.

At the present time that is a fairly labor intensive process. The device we are working on will possibly be triggered, making a mark or a trace, at the time that the dumping valves are opened, for example.

It would, I believe, be possible to utilize the Loran-C navigation system, the charting would be progressive, using Loran-C coordinates, to assure from the trace that the vessel had actually proceeded to the location, and had actuated the valves in the site.

Mr. DE LUGO. That sounds very interesting. It sounds like it should save a great deal of the taxpayers' money.

The Chair has no more questions.

Any questions from the gentleman from Virginia?

Mr. DOWNING. Thank you, Mr. Chairman.

I was going to ask the same question. What is the approximate cost of that device?

Admiral PRICE. Sir, I think we are a little ahead of ourselves in that, since we are in the research stage. This could be provided by the Government to the limited number of vessels that take part in dumping. I do not think it is necessarily a case of requiring the operator to go out and get it.

In other words, we could provide the box, and take the box back completely sealed, after each operation. I really cannot answer the question as to cost, but I think we have to look at the cost in light of what we feel we are going to save over the long term in personnel time dedicated to assuring compliance.

Mr. DOWNING. Thank you, Mr. Chairman.

Mr. DE LUGO. The gentleman from New Jersey.

Mr. FORSYTHE. Thank you, Mr. Chairman.

Admiral, it is good to have you here.

With respect to how we can find less labor intensive surveillance in this, are you working, in any way, with our satellite overflights, as another technique of being able to spot these operations?

We discussed this in another context with the Coast Guard.

Admiral PRICE. I think there is certainly a possibility of using Earth satellite system. We have looked at it for application to a number of other situations, such as oil pollution, which is a related concern in the surveillance area.

Apparently, if there is sufficient cloud cover, you cannot get what you need from that system. It would have to be one of the tools in our arsenal, I suppose; and if it turns out, the system we are hoping to get the payoff from does not materialize in the way we expect it to, we may be obliged to use this method. But I think it has some limitations.

Mr. FORSYTHE. Your funding for the responsibilities that you carry for this ocean dumping program, are they reimbursable? Is this reimbursable by EPA, or is it a line item that you have under your own appropriation?

Admiral PRICE. This is not being done, sir, under a reimbursable program.

Mr. FORSYTHE. Part of the mission of the Coast Guard?

Admiral PRICE. Yes, sir. Funded in our own package, among the several, or many duties we have, which pertain to antipollution enforcement.

Mr. FORSYTHE. I think you have responded to the letter from Mr. Murphy; so we have that for the record.

Admiral PRICE. The letter from Mr. Murphy was responded to, and, referring to Mr. Murphy's letter of April 22, 1975, requesting information regarding funds requested by Coast Guard in fiscal year 1976 to carry out functions related to Marine Protection Research, and Sanctuaries Act, our response reads as follows:

Our fiscal year 1976 operating expenses appropriation request includes $293,000 for ocean dumping surveillance activity, which is a subelement of our marine environmental protection program. This same amount was included in our request to the Secretary, and his request to the Office of Manag.ment and Budget.

Sincerely,

Mr. FORSYTHE. Can that letter be made a part of the record at this point?

Mr. DE LUGO. Without objection, so ordered.

[The letter referred to follows:]

APRIL 23, 1975.

Hon. JOHN M. MURPHY,
Chairman, Subcommittee on Oceanography, Committee on Merchant Marine and Fisheries, House of Representatives, Washington, D.C.

DEAR MR. CHAIRMAN: Your letter of April 22, 1975 requests information regarding the funds requested by the Coast Guard in fiscal year 1976 to carry out functions related to the Marine Protection Research and Sanctuaries Act.

Our fiscal year 1976 "Operating Expenses" appropriation request includes $293,000 for ocean dumping surveillance activity which is a subelement of our Marine Environmental Protection program. This same amount was included in our request to the Secretary and in his request to the Office of Management and Budget.

Sincerely,

E. D. SCHEIDER,
Acting Commandant.

Mr. FORSYTHE. That is all I have.

Mr. DE LUGO. Thank you, Mr. Forsythe.

At this time the Chair will recognize the representative of Mr. Murphy for a series of questions.

Mr. PERIAN. These 154 violations, or apparent violations referred to, what individuals or groups were committing these violations?

Admiral PRICE. These violations are all among individuals or operators who have been granted permits to carry out the dumping function by the EPA. Therefore, I presume in the commercial sector.

Mr. PERIAN. Could you submit for the record a list of the names and the districts of the persons who have committed the violations, and any dispositions thereof?

[The information follows:]

ALLEGED VIOLATIONS OF OCEAN DUMPING ACT

(April 1973 through December 1974)

	Violations
First Coast Guard District:	
Safety Projects & Engineering, Inc	2
Private fishing vessels	2
Third Coast Guard District:	
Bowery Bay Plant	1
Great Lakes Dredge & Dock Co	2
Spentonbush Fuel Transport Service	2
Moran Towing & Transportation Co	26
McAllister Bros., Inc	3
Hughes Bros. Towing & Barge Co	1
Weeks Dredging & Contracting, Inc	43
Modern Transportation Co	63
Seventh Coast Guard District: Pollution Control Industries, Inc	4
11th Coast Guard District: H-10 Water Taxi Co., Ltd	4
12th Coast Guard District: Bethlehem Steel Corp	1
Total	154

Admiral PRICE. Yes, sir. May I go a moment longer?

I understand that the disposition is out of our hands. It is in EPA's hands. We can give you what we have to the point to which it passes from us to the EPA.

Mr. PERIAN. Excellent. Now, with respect to the $293,000 you referred to on ocean dumping surveillance, I understand your research comes out of different funds.

Admiral PRICE. Yes, sir, we are speaking of operating expenses.

Mr. PERIAN. Can you give us any indication of the amount of money involved in that?

Admiral PRICE. In the R. & D. effort?

Mr. PERIAN. Yes.

Admiral PRICE. Captain Wallace advises me that that is at the $100,000 level, approximately.

Mr. PERIAN. And the Government and divisions installing these, perhaps Loran-C, are modified to record distance, say, to the dump site?

Admiral PRICE. I do not want to get too far out in front of myself. The question put to me earlier is what was the cost of these devices. If it turns out the costs are really low, then we may take the notion that it is the price of doing business to own one of these devices. If it turns out that the device is extremely expensive, we may be obliged to put it onboard the vessel, and transfer it off after each operation.

Mr. PERIAN. With Loran-C technology development, is it feasible now, or is it in the foreseeable future that the cost of the receiver or black box would be relatively minimal?

Admiral PRICE. The receiver under Loran–C is certainly coming down drastically over times past. But we were speaking of a recording device that would use the Loran–C signal. That is something we do not have yet.

Mr. PERIAN. Thank you very much. I have nothing further.

Mr. DE LUGO. Are there any questions from the gentleman from Maryland?

Mr. BAUMAN. No.

Mr. DE LUGO. The Chair will recognize counsel for a series of brief questions.

Mr. EVERETT. I have two brief questions.

The functions that you are carrying out now with respect to this act, do you deem them to be responsibilities that are required by you under the act rather than responsibilities that have been delegated to you from EPA or the corps?

Admiral PRICE. Sir, we take them to be functions assigned to us under the act directly.

Mr. EVERETT. Does the Coast Guard carry out any activity now that would constitute reimbursable type of expenses that you get reimbursed from other Federal agencies for?

Admiral PRICE. I am sure we have some reimbursable programs, but I am not sure they are in the environmental protection area.

If you need them as a model for those areas where we have such programs we can furnish that for the record.

[The following was submitted:]

REIMBURSEMENT OF EXPENSES

The Coast Guard does not receive reimbursement on a continuing basis from any other agency for activities conducted under the Marine Protection, Research, and Sanctuaries Act. We have received a one time reimbursement from EPA for activities conducted under the act. This was in the amount of $2,500, and involved payment of expenses for monitoring of a chemical burn by the incinerator ship *Vulcanus* in the Gulf of Mexico.

The Coast Guard does receive reimbursement by other agencies for actitities performed in several areas including: Operation for Development of Defense of temporary Loran–C stations and for OMEGA during development.

Mr. EVERETT. That would be fine.

You stated that from April 1973 through December 1974, about 13,000 ocean dumping operations were conducted. You actually only surveyed about 983.

Is this the goal that you were trying to achieve with respect to your surveillance activity under this act?

Admiral PRICE. I think you have to recognize that we are trying to set up a deterrent system. In our view, the surveillance effortwould obviously have to be increased if you desire to set up a 100-percent system.

But, as you know, law enforcement function is never carried out on that scale. You do not attempt to catch every speeder; you deter by overweighting the State highway patrol, for example. We provide a deterrent system which keeps most people in compliance. It is similar in the case of ocean dumping.

In implementing surveillance and enforcement program, we have established for ourselves as a minimum goal surveillance of 100 percent of the toxic dumps which we feel is the item to be emphasized, and 10 percent of all the others.

At this stage, we have reached a point where we are achieving an average of 60 percent of this goal.

We have no resources specifically provided for the mission, and in competition with other preexisting missions are precluded from going at the present time beyond this point.

Our personnel vessels and aircraft in this program are multimission in nature. We obviously have to give priority to activities where safety of lives is the principal factor.

Mr. DE LUGO. Other questions?

Minority counsel?

Mr. SMITH. Admiral, under section 111, EPA, Corps of Engineers, and the Coast Guard were authorized $5.5 million to carry out provisions under title I, why would you put a line item in or take any money out of your budget in the Coast Guard to monitor activities when, in fact, moneys are already authorized to be appropriated under the Ocean Dumping Act?

Admiral PRICE. You have me in an area in which I really do not feel equipped to provide an answer.

I will be glad to answer that question for the record, if I may.

Mr. SMITH. Fine.

Mr. DE LUGO. Without objection, so ordered.

[The information submitted follows:]

AUTHORIZATION OF APPROPRIATIONS

Authorization of appropriations for particular purposes does not provide the appropriations. All Coast Guard appropriations must be obtained through the normal budgetary process. The Congress must provide budget authority in the form of appropriations before the Coast Guard can indur obligations that commit the Government to make expenditures. Consequently, the Coast Guard budget estimate, as part of the President's budget, must contain requests for all authorized activities, including ocean dumping functions (31 U.S.C. 11).

Mr. SMITH. That is all, Mr. Chairman.

Mr. DE LUGO. I thank you very much, Admiral Price, for appearing before us this morning. You have been most helpful.

Admiral PRICE. Thank you very much.

Mr. DE LUGO. At this time, our next and final witness for the morning is the very patient Dr. Donald P. Martineau, Deputy Associate Administrator for Marine Resources, NOAA.

Dr. Martineau, it is a pleasure to welcome you before the committee.

The Chair will note that the bells have rung, indicating that the House will be meeting in a few minutes. If you would proceed please.

STATEMENT OF DR. DONALD P. MARTINEAU, DEPUTY ASSOCIATE ADMINISTRATOR FOR MARINE RESOURCES, NOAA

Mr. MARTINEAU. I appreciate the opportunity to appear before your subcommittees to discuss the Marine Protection, Research, and Sanctuaries Act of 1972—Public Law 92-425—and H.R. 5710, "To authorize appropriations for fiscal year 1976 for the purpose of carrying out titles I and III of the Marine Protection, Research, and Sanctuaries Act of 1972, as amended."

Title I—Ocean dumping:

While the regulatory functions under title I of Public Law 92-532 have been assigned to the Environmental Protection Agency, the Corps of Engineers, and the Coast Guard, NOAA actively works with these agencies by providing advice and comments in the formulation of regulations; by commenting on ocean dumping permit requests within the context of the Fish and Wildlife Coordination Act, as amended; and by providing environmental assessments of existing or proposed dumpsites through the use of our scientific and technical expertise.

A major effort has been in response to an EPA request to identify and conduct studies on potential alternative sewage sludge dumpsites for the New York Bight area. This task is being carried out as part of the NOAA Marine Ecosystems Analysis (MESA) program which is to provide environmental/ecosystem data for these potential dumpsite areas by August 1975 to meet EPA requirements.

NOAA considers the regulatory program of title I and the supporting role it plays to be an essential tool for the environmental protection of our coastal waters, and we strongly support its continuation.

However, we defer to the recommendations of the regulatory agencies administering title I as to the period for extension and the funding requirements.

Title II—Comprehensive Research on Ocean Dumping:

Title II assigns to the Department of Commerce responsibility for initiating programs of research and monitoring of the effects of ocean dumping as well as research with respect to the long-range effects of pollution, overfishing, and other man-induced changes to ocean ecosystems.

NOAA has in preparation an annual report to the Congress on ocean dumping research for 1974, and recently submitted its second annual report to the Congress on ocean pollution, overfishing and offshore development.

With respect to ocean dumping research, NOAA activities are presently focused on the New York Bight MESA project; on selected dumpsite investigations; and on studies by sea grant institutions covering the environmental effects and economic aspects of ocean waste disposal.

NOAA selected the New York Bight area for the initiation of its MESA program because of the severe environmental stresses being placed upon that area, including those from the practice of ocean dumping.

The bight is where the major ocean dumping in this country takes place. Therefore, it was felt that understanding the effects of dumping upon the bight ecosystem could make a significant contribution to the resolution of our nation's ocean dumping problems.

Efforts to date in the New York bight have focused on (1) delineating stressed areas; (2) identifying and quantifying the major pollutants; (3) characterizing existing dumpsites; and (4) investigating proposed alternative dumpsite areas, including the potential for dumping at the edge of the Continental Shelf.

This year, in 1975, the MESA project will complete a summary of pollutant loads entering the New York bight region from sources other than ocean dumping; a conceptual model of the bight; and the study of

alternative dumpsites. Although not all results of the project are transferable, it is expected that the experience and findings from this project will materially assist future investigative efforts in other coastal areas.

While our ocean dumping research is concentrated in the New York bight area, NOAA also is examing the use of dumpsites beyond the edge of the Continental Shelf.

In 1974, NOAA conducted an environmental assessment of the deepwater dumpsite 106 miles southeast of New York harbor and provided operational support to EPA for the use of a submersible in the investigation of sites for dumping sewage sludge from Phlladelphia and for the disposal of toxic industrial wastes by DuPont.

In addition to these cooperative site surveys, we have recently completed an interagency agreement with EPA concerning baseline surveys and evaluations of ocean disposal sites. Under the NOAA/EPA agreement, EPA will identify its requirements and priorities for surveys and evaluations, and NOAA will provide detailed study plans to EPA and conduct the necessary studies consistent with available resources.

The scope of the surveys required are to be based upon discussions with EPA, including a joint review of that agency's draft regulations—section 228, EPA Guidelines for Management of Disposal Sites.

The survey operations will also reflect experience gained in designing dumpsite surveys in the New York Bight, and the 1974 survey of the deepwater site.

The surveys will include:

Chemical analyses, including nutrient, heavy metal, and petroleum hydrocarbon concentrations in sediment, water column, and biota.

Bottom trawling for fish and macroinvertebrates.

Bottom grab samples for infauna and other benthic organisms.

Plankton and neuston sampling.

Geological characteristics of the ocean floor.

Physical oceanographic characteristics.

To permit the continuation of this effort, NOAA would recommend the extension of authorization for section 204 to provide the provisions of title II of the act through fiscal year 1977. However, the level is still under review in the executive branch in connection with preparation of the fiscal 1977 budget.

The remaining NOAA activities contributing to title II are being, and are expected to continue to be, supported through the NOAA operations, research and facilities appropriations as elements of other NOAA programs.

NOAA research activities with respect to the long-range effects of pollution, overfishing, and other man-induced changes to ocean ecosystems were recently summarized in the second annual report to the Congress on ocean pollution, overfishing, and offshore development.

The research emphasis has been on the effects of petroleum and heavy metals on the marine environment, the assessment of living marine resources and the impact of fishing efforts on these resources, and the impact of OCS oil and gas development and deep-ocean mining.

Our oil pollution research is investigating the acute and chronic effects of petroleum compounds on fish and shellfish.

In addition, NOAA and the Maritime Administration, with the assistance of the National Bureau of Standards, are jointly sponsoring oil pollution baseline surveys in the Pacific Ocean to determine the existing distribution of hydrocarbons along selected tanker routes.

NOAA has other studies underway to determine the acute and chronic effects of various heavy metals on marine organisms, including a major program for determining baseline levels of metals in seafood.

Concentrations of trace metals and other chemicals elements are being determined in some 200 species of marine fish and shellfish from the Atlantic, Pacific and Gulf coasts, and from the Gulf of Alaska.

Besides assessing man's impact by pollution upon the oceans living resources, efforts have been made toward reducing the impact of overfishing. This is being achieved through bilateral arrangements and participation in international commissions concerned with the status and management of stocks.

For example, in negotiations with the Japanese last year, agreement was reached to reduce the fishing effort on halibut, herring, and other species in the northern Pacific Ocean. Also, through the International Commission for the Northwest Atlantic Fisheries (ICNAF), conservation measures for flounder, haddock, herring, and other species recently have been agreed to by ICNAF members.

While these positive steps have been taken, it is still too early to to evaluate the results of these conservation efforts. It will be several years before we can determine the degree to which these stocks are being restored.

As man turns to the development of other ocean resources, we must also be concerned with the resulting impact upon the marine environment. In the development of OCS oil and gas, NOAA has been cooperating with the department of the Interior in related environmental assessment studies for the areas of the Alaskan Continental Shelf from the Gulf of Alaska to the Beaufort Sea. In addition, NOAA scientists also are carrying out selected studies in areas of the Gulf ofMexico and are developing others for the east and west coasts.

For the deeper ocean, the capability for mining hard minerals, that is, manganese nodules, is being developed. In this connection, NOAA initiated a deep ocean mining environmental study (DOMES) in 1974 with a survey cruise to the south eastern central Pacific. A request is now before the Congress to undertake a major study in fiscal year 1976.

Title III—Marine sanctuaries:

In the first report to Congress, the Department of Commerce indicated the marine sanctuary title of the act is a powerful tool for conservation and protection of some of the Nation's more valuable marine areas.

This belief was underscored at the occasion of the designation of the Nation's first marine sanctuary, the site of the wreckage of the former U.S.S. *Monitor*.

I have a copy here [indicating].

In his remarks at the designation ceremony, former Secretary of Commerce Frederick Dent stated:

> There is no heritage upon which marine sanctuaries can rest, no record on which to measure their contribution. But the potential is tremendous, viewed in terms of the interrelationship between marine sanctuary programs and those other conservation activities conducted by NOAA under the Coastal Zone Management Act, the Fish and Wildlife Act and other legislation. In this montage, we have what amounts to a substantial body of law spelling out a major national environmental obligation; a commitment to the proposition that as demands for the world's marine resources increase and intensify the obligation and the opportunity to provide for balanced, well managed, environmentally sound use of these resources go hand in hand.

Now that the preliminary work of establishing the basis for implementing and managing the program is over and the Nation's first marine sanctuary has been established, we expect the program pace to increase. Public awareness and understanding of the program potential is evidenced by the number of nominations being processed and the inquiries as to use and applicability of the program to deal with resource problems.

We currently are processing a nomination to establish a coral reef habitat preserve seaward of Florida's John Pennekamp Coral Reef State Park. The nomination is now under review by Federal agencies, industry, and conservation groups.

Senator Magnuson requested consideration of a proposal for a killer whale sanctuary in Puget Sound. We are awaiting the outcome of two study efforts on the whale population and behavior before proceeding further with this nomination.

Another nomination being held in abeyance is for the establishment of a Florida manatee sanctuary in the Crystal River of Florida. As a result of the nomination, the Department of the Interior has initiated action to develop additional protective measures for the Florida manatee under authority of both the Marine Mammal Act and the Endangered Species Act.

The highly desirable feature of Interior's program is that protection will be afforded the manatee not only in Crystal River but also in other parts of the animal's range.

Congressman Talcott has nominated a large area of the waters off the California counties of Santa Cruz, Monterey, and San Luis Obispo. The details of this nomination are being further developed to provide necessary information for evaluation.

We have been able only to begin implementation of the program by use of existing capabilities and resources. There clearly is a need to continue funding of this program.

We therefore recommend that the funding authority of title III be extended through fiscal year 1977.

We also recommend that authorization be $1,250,000 for both fiscal year 1976 and the transition period, and $10 million for fiscal year 1977.

Since we have not yet arrived at our estimate of the specific needs, we believe these authorization levels will be adequate for our total requirements.

Mr. Chairman, that concludes my statement.

I will be pleased to answer any questions you or the other members may have.

Mr. DE LUGO. This document on the designation of the *Monitor* Marine Sanctuary is very interesting, and if you will make it available to the committee, it will be made a part of the record.

At this time, I would like to recognize the distinguished gentleman from New Jersey for any questions.

Mr. FORSYTHE. Thank you, Mr. Chairman.

I do not have any questions, but I would like to submit questions.

Mr. DE LUGO. Fine.

These questions will be submitted to the witness, and if he will reply to them, they will be made a part of the record.

[The material to be submitted follows:]

INFORMATION RECEIVED IN REPLY TO CONGRESSMAN FORSYTHE'S QUESTIONS REGARDING TITLE III AUTHORIZATIONS

Question 1. You were authorized to spend up to 10 million dollars for each fiscal year (73, 74, 75) under title III . . . How much have you actually spent for marine sanctuary designations?

Answer. Although $10 million is authorized for each fiscal year under Title III, no funds have been appropriated pursuant to this authority. We have expended, however, about $200,000 from other sources since passage of the Act. This involves the salary and overhead for the Marine Sanctuary Coordinator, legal services, public affairs support, administrative overview, travel, printing and contractual services.

Question 2. What were the costs involved in establishing the "U.S.S. *Monitor*" marine sanctuary?

Answer. Establishment of the Monitor Marine Sanctuary cost about $60,000. This includes salaries involved in the review of the nomination, preparation of the Draft and Final Environmental Impact Statements, public hearings, actual designation and promulgation of regulations. Overhead, travel and printing made up about $10,000 of the total.

Question 3. How many employees at NOAA or with the Department of Commerce are specifically assigned to duties which directly relate to Title III responsibilities?

Answer. The program is managed by a coordinator supported by secretarial, legal, administrative services, public affairs support, and overview management on a need basis. A total of about 2 man years per fiscal year has been involved.

Question 4. Have you expended any funds via a cost reimbursable basis to any other departments or agencies in connection with the designation of marine sanctuaries?

Answer. No funds have been expended via a cost reimbursable basis to any other department or agency. However, we anticipate that this will be one of the principal methods by which specific sanctuary proposals may be developed to the point of designation, and initially operated.

Question 5. Has your agency contracted any work to outside groups in connection with your responsibilities under Title III? How much was spent?

Answer. Yes. We have contracted with the Virginia Institute of Marine Sciences for an in-depth analysis of how the marine sanctuary program could be implemented in harmony with other state and federal programs, and including a case study of a potential marine sanctuary, directly adjacent to an existing National seashore. Expenditures were about $70,000.

Question 6. How do you plan to spend the proposed authorization levels of $1,250,000 for both FY 76 and the transition period and $10,000,000 for FY 77?

Answer. Neither the FY 1976 nor transition quarter President's budget contains a request for funds under Title III. NOAA's 1976 budget request for Title III was not transmitted to OMB by the Department of Commerce. The present support for funding authorization for FY 76, the transition quarter and FY 77 does not necessarily imply actual appropriation of the total amounts. The nature of the legislative authority is such that NOAA must be prepared to process nominations from any citizen or group. How many and the nature of the nominations for a given year is unknown at this time. More specific plans are now being formulated by NOAA and will be submitted to the Department in connection with the FY 1977 budget.

Mr. DE LUGO. Any additional questions, counsel?

Mr. EVERETT. One short question.

The act authorizes $6 million a year to be appropriated for the last 3 years.

Can you provide for the record, or do you know at this time, how much has been appropriated for each of these fiscal years?

Mr. MARTINEAU. I would like to provide that for the record.

Mr. EVERETT. Can you also give us a breakdown on what the $1,250,000 for fiscal 1976 would be used for as well as the $10 million that you are recommending for 1977?

Mr. MARTINEAU. We will provide that for the record.

[The material to be supplied follows:]

FUNDING REQUESTS FOR TITLE II AND III SUPPLIED BY NOAA

The National Oceanic and Atmospheric Administration (NOAA) requested in December 1972 from the Department of Commerce $4,000,000 for implementation of Titles II and III of P.L. 92-532, the Marine Protection, Research, and Sanctuaries Act of 1972. The request for implementation was intended as either a supplement for FY 1973 or as an amendment to the FY 1974 Congressional submission: The request was not approved by the Secretary of Commerce.

NOAA subsequently requested for FY 1976 $5,700,000 of the Secretary to augment $300,000 of reprogrammed money in order to reach full authorization of Title II. The latter was reprogrammed in FY 1975 for use by the program. The Department approved $2,000,000 of the FY 1976 request for submission to the Office of Management and Budget. The OMB did not approve this increase item.

In addition for FY 1976 $400,000 was requested of the Secretary for implementation of Title III. The request was not approved by the Department.

Mr. EVERETT. Thank you, Mr. Chairman.

Mr. MARTINEAU. Mr. Chairman, if I may, we also have for the committee's use a document which I think Mr. Murphy and Mr. Forsythe would want on the MESA program, a summary of results in your area on the dumping sites and investigations.

Mr. DE LUGO. Fine.

The committee will receive that document.

[The document referred to follows:]

MESA

MARINE ECOSYSTEMS ANALYSIS PROGRAM

MARCH 1975

U.S. DEPARTMENT OF COMMERCE
Frederick B. Dent, Secretary

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
Robert M. White, Administrator

ENVIRONMENTAL RESEARCH LABORATORIES
Wilmot N. Hess, Director

NOAA TECHNICAL REPORT ERL 321-MESA 2

Ocean Dumping in the New York Bight

BOULDER, COLO.
March 1975

For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 20402

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OCEAN DUMPING IN THE NEW YORK BIGHT

CHAPTER 1. SUMMARY

The New York Bight extends seaward over 15,000 square miles (39,000 km^2) from Long Island and New Jersey to the edge of the continental shelf, some 80-100 nautical miles (150-180 km) offshore. Wastes from 20 million people are discharged to the Bight. These wastes arrive by a variety of routes: ocean dumping, outfall sewers, air pollution, river discharge, land runoff, thermal discharges, vessel wastes, and occasional spills. Although impacts of these wastes on the marine environment are not clearly understood, there is evidence that the waters, bottom sediments, and living resources are under stress.

In 1973 the amount of raw and digested sewage sludge was 150 million ft^3 (4.3×10^6 m^3). An average of 260 million ft^3 (7.4×10^6 m^3) per year of dredge spoils were dumped each year between 1965 and 1970. During the same period an average of 72 million ft^3 (2.0×10^6 m^3) per year of waste acid and an average of 16 million ft^3 (0.5×10^6 m^3) per year of construction and demolition debris were dumped into the New York Bight. The hazards of this dumping are not known, however above normal incidence of fin-rot disease in fish in the area and the closing of the area to shellfishing are indications that something is wrong. The amount of sludge that moves northward to the vicinity of Long Island Beaches is unknown; there is no evidence of massive shoreward movement of the sludge, or of imminent bacteriological hazard to the beaches. Meanwhile it is recommended that interim use of alternative dump sites be avoided and that land-based disposal alternatives be developed.

Before final decisions can be made to solve the problems identified, further studies of various alternative solutions are required.

CHAPTER 2. INTRODUCTION

The New York Bight extends seaward over 15,000 mi^2 (39,000 km^2) from Long Island and New Jersey to the edge of the continental shelf, some 80 to 100 n mi (150-180 km) offshore. Wastes from 20 million people are discharged to the Bight. These wastes arrive by a variety of routes: ocean dumping, outfall sewers, air pollution, river discharges, land runoff, thermal discharges, vessel wastes, and occasional spills. Although impacts of these wastes on the marine environment are not clearly understood, there is evidence that the waters, bottom sediments, and living resources are under stress.

The Marine EcoSystems Analysis (MESA) New York Bight Project has been assigned the task of conducting "research regarding the effects of dumping" into the coastal waters of the Bight as part of the responsibilities of the National Oceanic and Atmospheric Administration (NOAA) under Title II of Public Law 92-532 (The Marine Protection, Research, and Sanctuaries Act of 1972). The Project has developed a multiphased program to determine the fate and effects of pollutants, particularly those from ocean dumping, in the New York Bight ecosystem:

Phase 1. - Describing the marine environment in the vicinity of present and proposed dumping activities in the New York Bight Apex and two offshore alternative dump site areas (see Fig. 1);

Phase 2. - Assessing the impacts of ocean dumping in the New York Bight to date and predicting consequences of continued or modified disposal practices; and

Phase 3. - Designing an environmental surveillance and prediction program to identify future changes in the marine environment resulting from sludge dumping and other waste disposal practices.

Initial efforts have been primarily directed toward completing Phase 1.

Acknowledgments

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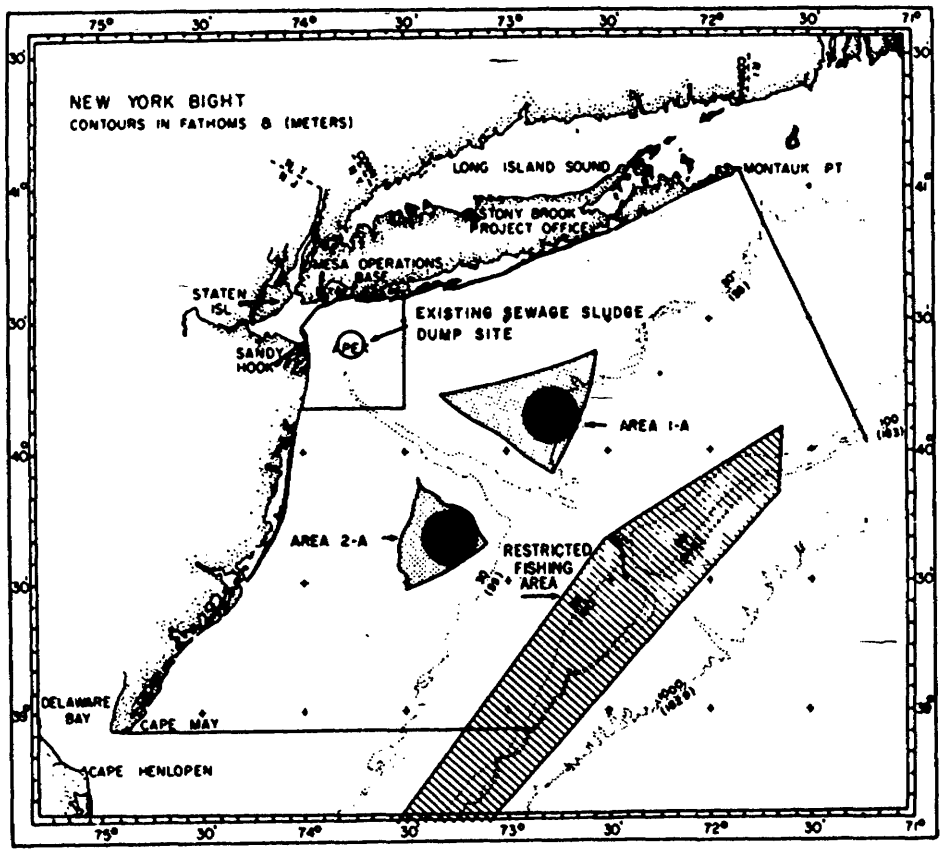

Figure 1. Existing and proposed alternative sewage dump sites. The shaded area along the continental shelf is important to fisheries.

CHAPTER 3. PRESENT OCEAN DUMPING PRACTICES IN THE NEW YORK BIGHT.

Ocean dumping is the disposal of waste materials transported from coastal ports aboard barges or ships. The quantity of dumped materials is enormous, exceeding that of natural materials introduced by rivers. In fact, waste solids dumped from the New York area alone exceed the combined sediment discharge of all rivers emptying into the Atlantic between the U.S.-Canadian border and Chesapeake Bay.

Waste materials dumped in the Bight include dredge spoil, sewage sludge, cellar dirt, construction debris, acid wastes, and toxic chemicals. Locations of five separate dumping grounds are shown in Figure 2. Operations at four of these sites affect the quality of the Inner New York Bight.

Sewage Sludge

Sewage sludge is a major by-product of wastewater treatment facilities; its disposal represents one of the most serious environmental problems confronting the New York metropolitan area and the Bight. Most sewage sludge produced in this country is disposed of on land or is incinerated. In 1974, the Bight was one of two offshore areas of the United States used for sewage sludge dumping. The other is off Cape May, New Jersey, where Philadelphia sludge is dumped.

The sewage sludge dump site was selected in 1924. Its center is Lat 40°25'N, Long 73°45'W in 90 ft (27 m) of water. Criteria for site selection were apparently based on the need to avoid endangering navigation and to avoid sewage sludge contamination on Long Island and New Jersey beach areas (Achrem, 1973). In 1973, a total of approximately 150 million ft^3 (4.3×10^6 m^3) of raw and digested sewage sludge were discharged at or near this site (EPA, 1974). The present problem of disposing of this sludge will intensify in the coming years as populations, industrialization, and more complete sewage treatment increase.

The dumped sewage sludge is roughly 5% solids which consists of two major fractions. One, composed of heavier solids, sinks to the bottom near and downstream from the dump site. The second remains in the water column for varying periods of time after dumping, depending on its composition and on conditions affecting water circulation in the general area. This second fraction is composed of dissolved and suspended solids in the water column. Both fractions contain toxic heavy metals and pathogenic materials.

The sewage sludge dump site is not the only source of sewage material entering the Bight; others include river outflows, sewage treatment plants, raw sewage outfalls, industrial outfalls, and storm water runoff and overflows (Klein, et al., 1974).

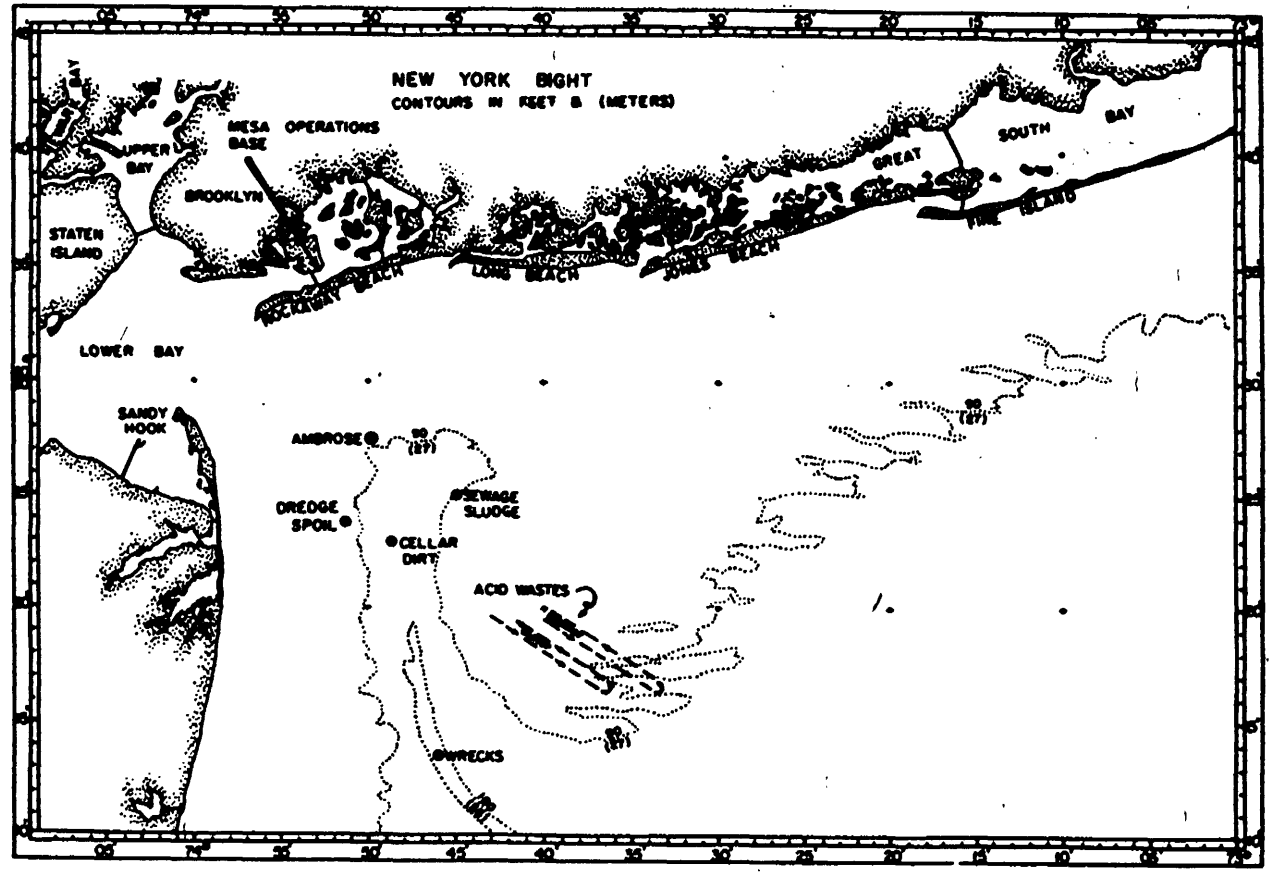

Figure 2. Major ocean dump sites in the New York Bight.

Dredge Spoil

The center of the dredge spoil (mud) dumping ground is located at Lat 40°24'N, Long 73°52'W. The present site has been used for more than 33 years. Materials discharged there consist of dredge spoil from vessel berths, anchorage grounds and channels. Clean earth and fly-ash from conventional electric power generating stations are also disposed at this site (Achrem, 1973). Between 1965 and 1970 an average 260 million ft^3 (7.4×10^6 m^3) of dredge spoil were dumped each year. This volume is expected to increase as harbor facilities continue to expand. Enough has been dumped to cause shoaling of some 30 ft (10 m). Some dredge spoil is highly contaminated with organic materials and heavy metals.

Waste Acid

There are two sites designated for the disposal of waste acid. One is used during winter, and the other during summer. During winter, a dumping vessel initiates disposal of half its load on a southeasterly course from Lat 40°20'N, Long 73°43'W. After making a U-turn, the remainder is dumped on a northwesterly course. A similar procedure is followed in summer, with the point of initiation being at Lat 40°20'N, Long 73°40'W.

Waste acid has been dumped at this site since 1948. The average yearly amount dumped between 1965 and 1970 was 72 million ft^3 (2.04×10^6 m^3) containing an estimated 5% dissolved solids (Pararas-Carayannis, 1973) with a large amount of iron compounds (Achrem, 1973).

Cellar Dirt

The cellar dirt dump site is used to dispose of earth from excavations, and stone, tile, brick, concrete, masonry material, pipe, wood and other debris associated with the construction industry. The present site is centered at Lat 40°23'N, Long 73°49'W, and has also been utilized for more than 33 years. The average yearly volume dumped during 1965-1970 was 16 million ft^3 (4.53×10^5 m^3) (Pararas-Carayannis, 1973).

CHAPTER 4. PREVIOUS STUDIES ON OCEAN DUMPING IN THE NEW YORK BIGHT

Ocean dumping has seriously stressed the marine environment. Shellfish beds have been closed to fishing and fin rot disease in benthic fishes has increased.

In March 1968, invited scientists, representatives of the Army Corps of Engineers and Smithsonian Institution, convened "to design studies which might provide results of value in determing the effects of current waste disposal practices in the New York Bight". This action eventually led to the publication generally referred to as the Sandy Hook Report, entitled *The Effects of Waste Disposal in the New York Bight* (National Marine Fisheries Service, 1972). The study and report led to increased public awareness and articles in the New York Times. The first recommendation of the report that a "five year study" be established to "assemble all information necessary for an adequate evaluation of dumping practices off New York Harbor" led to NOAA's MESA New York Bight Project beginning in May 1973.

The problems of ocean waste disposal, with particular regard to sewage sludge, have continued. Scientific and public concern has intensified recently (see New York Times, December 11, 1973; Newsday, December 12, 1973, and March 5, 1974). The major concern now is the potential hazard to beaches adjacent to the New York Bight.

In March 1974, the EPA Region II office requested that NOAA/MESA recommend areas, based on historical information and on-going studies, as alternative sewage sludge dump sites, should the present designated site prove to be adversely affecting the quality of the beaches. Because of the anticipated increase in the quantities of sewage sludge to result from the upgrading of sewage treatment plants, EPA announced that the present site will cease to be used in 1976. Two potential alternate locations within the Bight, based partially on NOAA's advice, were indicated in the announcement. EPA is now preparing an environmental impact statement on relocating the site. The advance announcement was made to provide sufficient lead time to allow for the proper planning necessary to increase facilities for moving the sewage sludge farther out to sea. EPA simultaneously announced their intention to phase out ocean dumping in the New York Bight by 1981 (EPA, 1974). To this end, EPA has withdrawn eight industrial permits, 47 industrial dumpers have been phased out, and 12 have been required to phase out by June 1975 (EPA, 1974).

Numerous debates and hearings have been held over the past year about potential impacts of sewage sludge dumping in the Bight. The most recent public hearing was held by the Senate Public Works Committee's Subcommittee on Environmental Pollution on August 2, 1974. There is

little doubt from the testimony of the scientists at the hearing that ocean disposal of sewage sludge and dredge spoil, combined with other waste materials in runoff, effluent discharges, etc., have stressed the environment both offshore and near the beaches.

CHAPTER 5. OCEANOGRAPHY OF THE NEW YORK BIGHT

Geological Oceanography

The major sea floor features of the New York Bight have formed in response to glacial eustatic changes in sea level that have taken place over the past four million years. The last significant event, which occurred at the end of the Pleistocene glacial epoch, began approximately 75,000 years ago when the Laurentide Ice Sheet advanced from its Canadian center to a line passing lengthwise through what is now Long Island, and continuing westward across northern New Jersey. During the time of maximum glacial advance, sea level worldwide was at least 410 ft (125 m) below its present level. The New York Bight then was subjected to subaerial erosional processes. Stream erosion, amplified by runoff of glacial melt water, dissected the uppermost, semi-consolidated sedimentary strata, forming ancestral Northern New Jersey, Long Island, and the Hudson Shelf Valley (see Fig. 3).

At the conclusion of the last ice advance approximately 15,000 years ago, glacial melting produced a rapid rise in sea level which quickly covered the gradually sloping surface of the shelf. Clean sand from the retreating shoreface and the shelf surface blanketed the New York Bight. This sand blanket is undergoing continuing transport in response to storm-generated currents. Seismic reflection profiles show drowned river valleys (the Hudson in particular) only partially buried and filled with Holocene (Recent) sediments. River mouths were drowned, thereby creating present estuarine environments which act as sediment traps for sediments from both the river and the ocean.

These events provide an explanation for the present general nature of the sea floor of the New York Bight. Geological investigations in and around Bight areas currently used for ocean dumping are being made to better understand the nature of the subtrate and how it may be affected by dumped materials, or how it may affect the fate of dumped materials. Additionally, other areas in the Bight are being studied to determine their suitability as possible future dump sites. The following types of information are being acquired by the Project to aid in this effort:

- Detailed bathymetry by conventional sonic techniques;
- Micro-topography by side scan sonar;
- Sediment composition and grain size by analysis of grab samples and core samples;
- Delineation of subsurface structure and stratigraphy by seismic reflection profiling and vibracoring;

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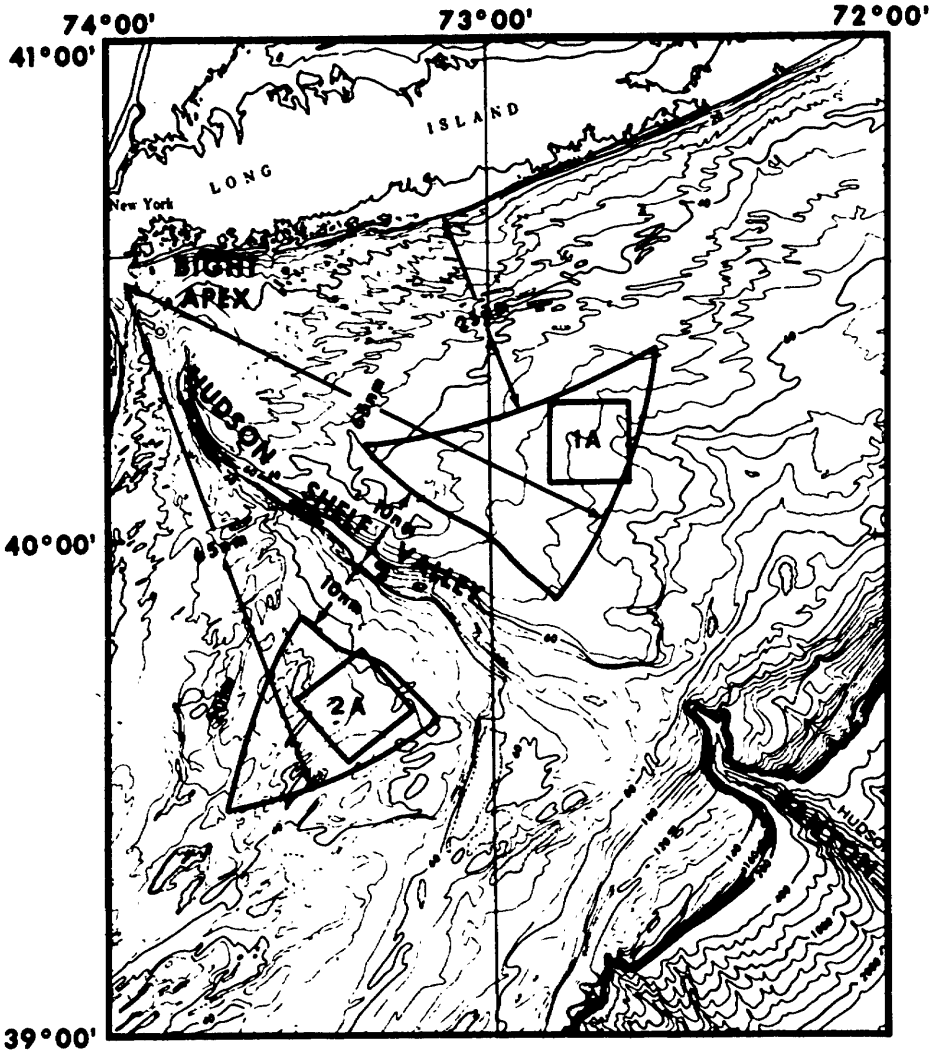

Figure 3. Index map, New York Bight. Contour interval is 4 meters. Portions of proposed dump site areas examined are blocked out.

- Observation of substrate by photography;
- Sand transport by radioisotope tracing techniques supported by current measurements; and
- Direct observation, by submersible diving.

Ocean dumping is the main source of modern sediments introduced to the Bight. The 30 ft (10 m) accumulation of dredge spoil in approximately 33 years has resulted in the bull's eye pattern shown on Figure 4. This pattern indicates that the dumping activity has taken place at the properly designated site, and that transport of coarse sediments away from the site by natural processes does not keep up with the rate of dumping. The supply exceeeds the demand.

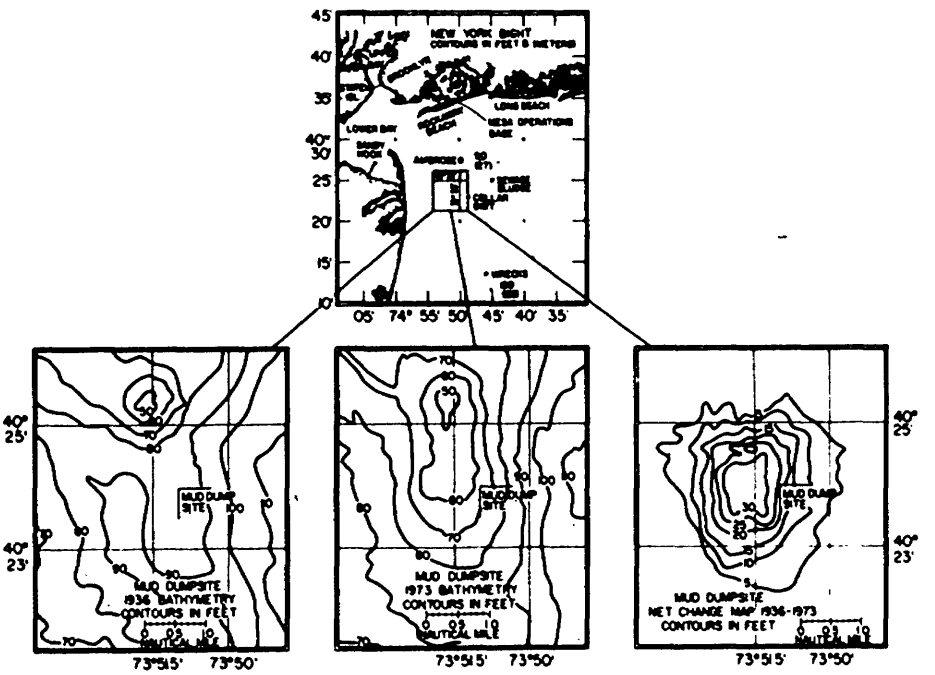

Figure 4. Bathymetric change at the dredge spoil (mud) dump site.

Two field projects have been initiated to assess the mobility of the coarser noncohesive portion (sand) of substrate materials. The first of the two studies is a Radioisotope Sand Tracing (RIST) experiment which has been completed in two areas in the Bight Apex (see Fig. 5). The dispersal of sand tagged with gold-98, an isotope having a half life of 2.7 days, is shown in Figure 6. During a 10-day survey period, there were no major storms capable of setting the whole water column in motion and moving large amounts of bedload material. Limited sediment movement to the north-northwest is consistent with low velocities of currents observed about 3 ft (100 cm) above the bottom during the same period.

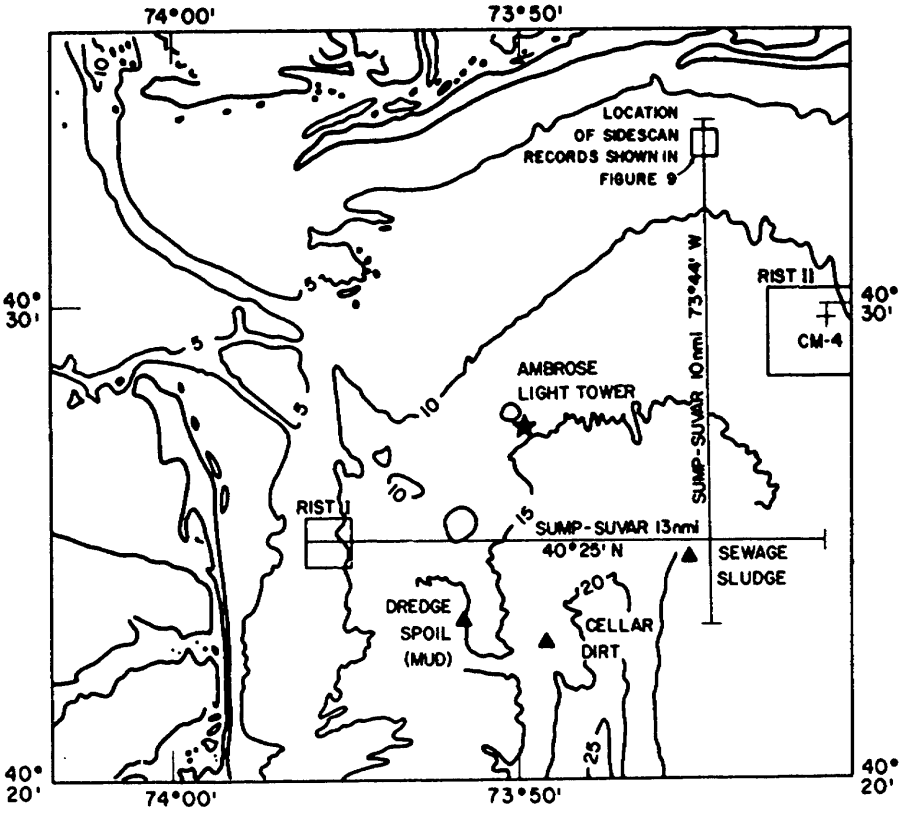

Figure 5. Index map of the Bight Apex showing RIST (radioisotope sand tracer), SUMP (substrate monitoring program), and SUVAR (substrate variability) experiment locations. Contours are in fm.

A second RIST experiment, near the Long Island shore (see Fig. 5) made use of an isotope of ruthenium-103, which has a half-life of 39.4 days. Monitoring surveys were conducted during a three-month period. Figure 7 shows the limited dispersal of material after 20 days of exposure to currents of up to 0.8 kt (40 cm/sec). By contrast, a RIST study in November 1974 showed sediment movement of 3600 feet (1200 m) during a single storm.

Additional data on substrate characteristics are being obtained from a quarterly sampling program (SUbstrate Monitoring Program—SUMP), which measures variability in grain size of the surface sediments. Two transects in the Bight Apex are monitored on a quarterly basis (see Fig. 5). Sample analyses have shown that grain size distribution along the two transects remains relatively stable with time (see Fig. 8).

Evidence for small scale changes in topography is found in side scan sonar records taken in the New York Bight (see Fig. 9) Records taken in January 1974 show features interpreted as sand waves or large-scale, current-induced ripples. By May 1974, the records indicate

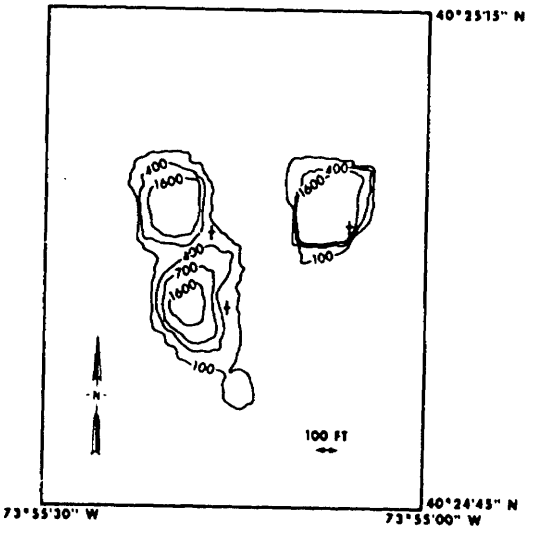

Figure 6. Dispersal pattern of gold-labeled tracer sand at end of Nov. 1973 experiment. Crosses show ship position at time of drop. See figure 5 for supplementary location information.

degraded and nearly obliterated sand waves. It follows that current-induced bedforms develop during winter months in response to frequently occurring high energy storm events. During summer months, the longer duration between high energy events allows time for sand waves or other current-induced bedforms to become degraded.

Smaller bedforms such as sand waves, sand ribbons, and ripple marks undergo frequent change. In contrast, accumulation of material at the dredge spoil dump site over the past 33 years is good evidence for stability of larger scale bathymetric features. The bathymetry of the New York Bight Apex is shown in Figure 10.

Concentrations of suspended solids including organic remains and mineral particles are naturally high and quite variable within 5.5 n mi (10 km) of both the Long Island and New Jersey shores (see Fig. 11). These are supplied by the Hudson River estuary, by shelf currents moving along Long Island, by tidal exchange with shallow lagoons behind Long Island's barrier islands, and by *in situ* plankton production. Microscopic analysis shows that suspended solids at all water depths within 8 n mi (15 km) of Long Island during the fall of 1973 contained the trace amounts of processed cellulose (assumed to be disintegrated toilet

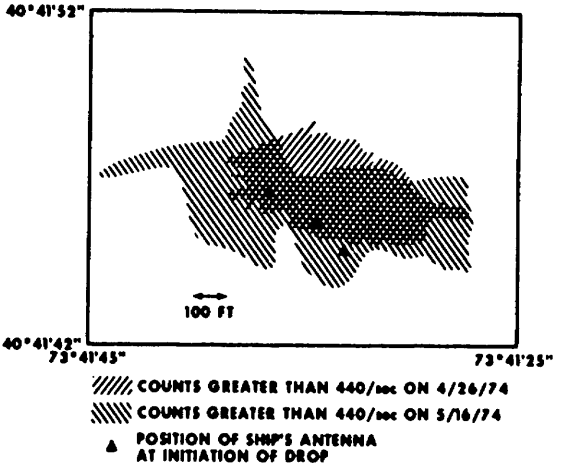

Figure 7. Tracer dispersal patterns for two RIST surveys. Ruthenium labeled sand was used for this Spring 1974 experiment. See figure 5 for supplementary location information.

paper) and black soot particles which are characteristic of suspended solids collected from near-bottom waters at the sewage sludge dump site. It is clear that any sewage study sludge particles which move in suspension during transport northward toward Long Island are diluted by natural particles.

Concentrations of suspended solids in the lower third of the water column surrounding the dredge spoil and sewage sludge dump sites are 30 to 50% higher than background. To date, however, geological efforts have been unable to separate quantitatively the dredge spoil, sewage sludge, and natural suspended material. Geochemical methods are being tested in an effort to distinguish these components of the total suspended solids one from another. Similar difficulites exist in identification of component sources in the isolated, thin, small patches of mud which occur in the nearshore zone between Long Island beaches and present dump sites. Geochemical studies based on heavy metal ratios, organic compound ratios, or other chemical labels, are being made to determine if the mud patches near the Long Island shore are natural.

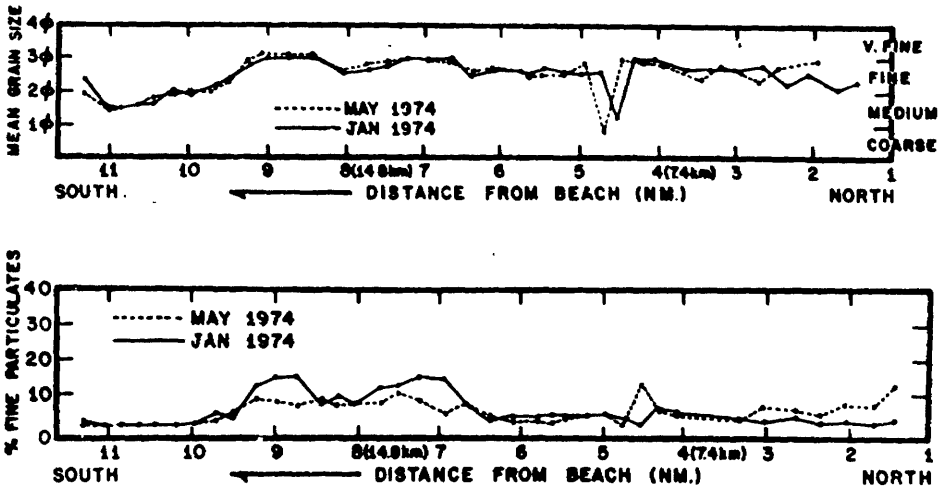

Figure 8. Mean grain size of surficial sediments from two different surveys of a north-south transect from the sewage sludge dump site to the Long Island Shore. Below: Percent fine particulate matter for same surveys. See fig. 5 for supplementary location information.

Meanwhile, a simple but relatively effective technique is being employed to aid in determining what portion of bottom muds are composed of sludge particles. Bottom samples from Christiaensen Basin and from mud patches at various distances from the Long Island and New Jersey shores north and west of the dump site are separated into coarse and fine fractions, filter onto membrane filters and microscopically examined for

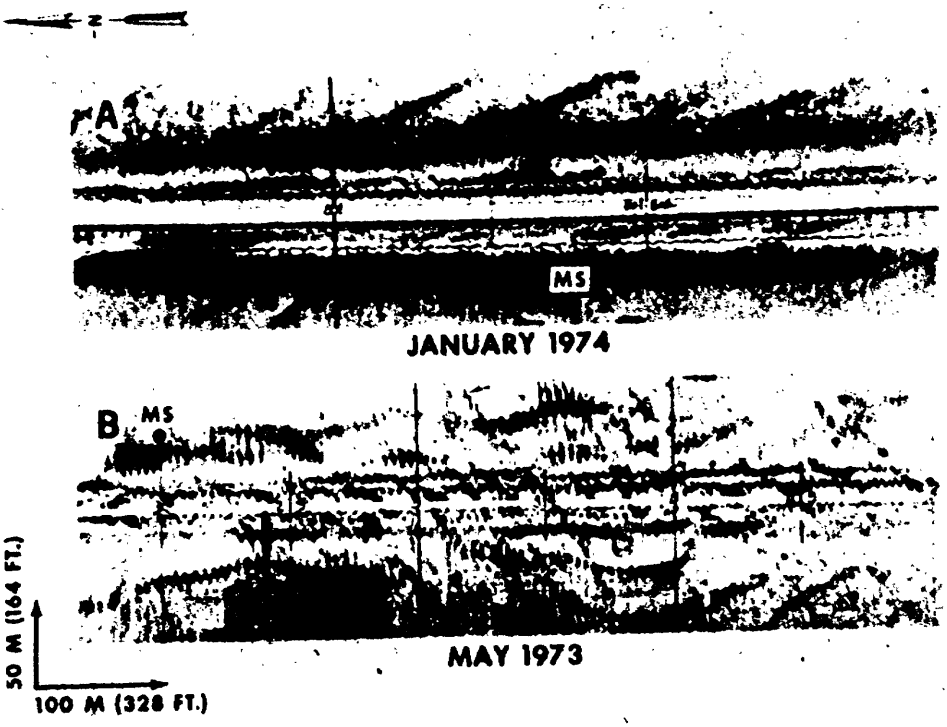

Figure 9. Photo of two sidescan records taken from the same small area (see fig. 5 for location of area) off the Long Island south shore. Apparent degraded sand waves, visibile in January as light (medium sand) streaks between dark (coarse gravelly sand) streaks, have been obliterated by a poorly defined sinuous pattern by May 1974. Positioning error on the sample is ± 15 m.

artificial contaminants. The results of these analyses are shown in Table 1. The data indicate that, with the exception of sediments in the Christiaensen Basin, bottom muds sampled are predominantly natural in origin, and contain at most 3% artificial particles (processed cellulose and soot). The slightly higher values (3.3%) on the New Jersey platform are attributed to Hudson River outflow.

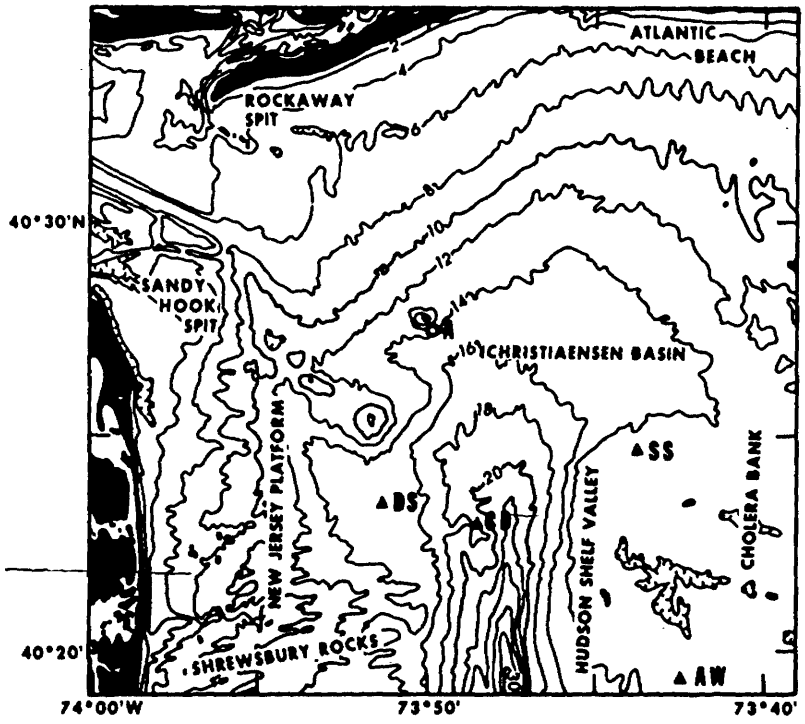

Figure 10. Bathymetry of the New York Bight Apex (from ESSA bathymetric map 0808N55) and names used in the text. "A" is Ambrose Light; "SS" is sewage sludge dump site; "DS" is dredge spoil dump sites; "CD" is cellar dirt dump site; and "AW" is acid waste dump site.

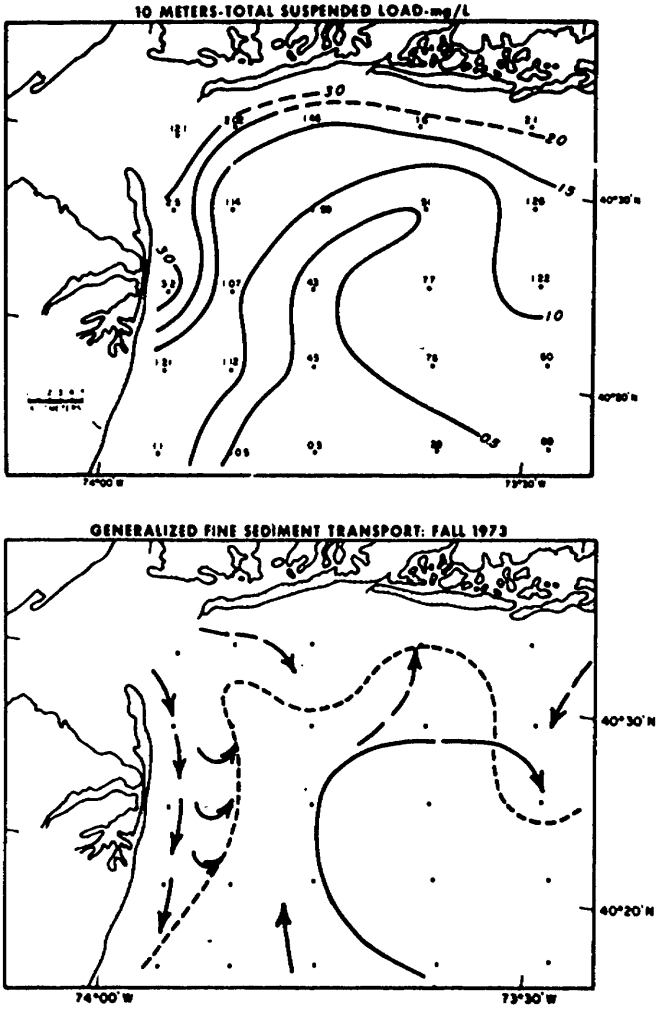

Figure 11. Above: total suspended solids at 10 m, late November 1973. Below: fine sediment transport system as inferred from the distribution of suspended sediments during Fall 1973. The dashed line is the mean position of the boundary between more turbid coastal water and less turbid off-shore water. Turbid, brackish, surface effluent from the harbor flows down the New Jersey shore. The clockwise gyre is driven by southwesterly drift of off-shore shelf water, and, on bottom, by the influx of saline water into the harbor. Regional currents which appear to be persistent are indicated by solid arrows.

The Christiaensen Basin is a potential sink for settleable portions of sewage sludge dumped anywhere in the Inner Bight. If ocean dumping is to continue, movement of dump sites to a location outside the Inner Bight will probably prevent deposition of fine waste materials in the Christiaensen Basin or close to Long Island shores.

Project studies of the suitability of two alternative areas for ocean dumping sites (see Fig. 1) have shown sand on the bottom of both areas. Approximately one-third of the samples taken in each area contain a small percentage of gravel. Three samples contained more than five percent mud. Bedforms (ripples, sand ribbons, and sand waves) indicate that storms periodically affect the micro-relief of the substrate there and move sediments to the southwest. This information indicates that sewage sludge dumped at either of the alternative sites would be flushed to the southwest from the area during the winter and at other times of the year when storms occur. Any portions of the sludge reaching the sea floor would be actively reworked with the sediments, also with a net transport to the southwest. Temporary accumulation of sludge might take place during calmer sea conditions in the summer in small basins but permanent accumulation would result if the supply of dumped materials exceeded the demand of the currents which could remove them.

Table 1. Particle Count Analysis of Contamination of Bight Apex Muds.

	Natural Mineral and Biogenic Grains (% by grain counts per 250 grains)	Artificial* Grains
Near Dump site (3 samples)		
Coarse fraction	89%	11%
Fine fraction	84%	16%
Long Island Nearshore (4 samples)		
Coarse fraction	98%	2.4%
Fine fraction	>99%	<1.0%
New Jersey Platform (4 samples)		
Coarse fraction	97%	3.2%
Fine fraction	97%	3.3%
Jones Inlet (2 samples)		
Coarse fraction	98%	2.2%
Fine fraction	99%	1.4%

*Processed cellulose fibers (mainly toilet paper) and soot-like particles. The latter are a significant component of sediments on the northwest side of the sewage sludge dump site, but may be derived from other waste released into the New York Bight.

If the northern alternative area (Area 1-A) were used as a dump site, some fraction of the wastes probably would reach the Hudson Shelf Valley, be incorporated into the muds, and perhaps be transported with the mud up and/or down the valley. The southern alternative area (Area 2-A) is down-current of the Hudson Shelf Valley, so that sewage sludge dumped there would have a greater probability of dispersal.

Physical Oceanography

Solid waste dumped into New York Bight separates into floating, suspended, and bottom materials which are affected by surface, mid-depth, and bottom currents, respectively. Some of the solid materials go into solution while some of the suspended solids aggregate and settle to the bottom. Emphasis has been directed to the Bight Apex (Fig. 1). Here outflow from the Hudson and Raritan estuaries moves along the shore to the south. Seaward is a clockwise gyral circulation modified locally by tidal and wind-driven currents and regionally by large scale circulation over the shelf. The sewage sludge dump site is located within the western, northerly moving portion of the gyre. Physical oceanographic questions to be answered are:

- Do wastes once introduced into the Inner Bight tend to accumulate in the Inner Bight?
- What is the probability of waste material reaching the beaches or waters used directly or indirectly by man?; and
- If the dump site were moved further offshore, would the material remain seaward of the gyre?

General Shelf Circulation in the New York Bight

Topography of the 80 to 100 n mi (150 to 180 km)-wide continental shelf of the New York Bight is simple with gently curving isobaths roughly paralleling the coastlines of Long Island and New Jersey. The most notable topographic feature is the Hudson Shelf Valley which begins near New York Harbor, deepens as it crosses the shelf, and becomes the Hudson River Canyon down the continental slope.

Water temperatures over the shelf vary seasonally and are similar to, but lag by a few weeks, temperatures in nearshore waters. Salinities are variable over the shelf, particularly in nearshore areas affected by the runoff. In fall, cooling of surface waters and wind mixing create a vertically homogeneous water structure over both the

Inner Bight and the shelf. These conditions continue through winter. During spring and summer, solar heating creates a warm upper layer separated from the lower water layer by a strong thermocline over the shelf. Subsurface evidence of slope waters can be seen near the shelf/slope boundary near 300 ft (100 m) depth throughout the year.

Figure 12 shows the changes in thermal structure during spring 1974. Surface warming in March was limited to the nearshore 35 n mi (60 km). By May, this warming and accompanying thermocline extended offshore to the edge of the shelf.

Currents over the shelf move southwesterly generally parallel to the shore. Bumpus (1974) reported a weak net flow of the order of 0.1 kt (5 cm/sec). This net circulation pattern is strongly affected by tides and winds. Quantitative effects of stratification upon wind-driven surface current are being studied by the Project. During stratified summer 1974 conditions, southwesterly net water flow was observed

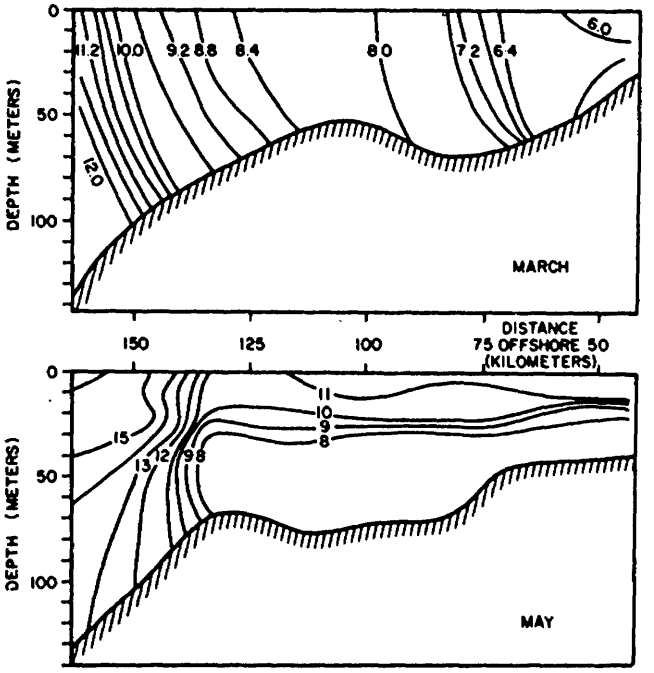

Figure 12. Water temperatures (in °C) along axis of the Hydson Shelf Valley, obtained during spring 1974. Tracklines were parallel, but not identical.

throughout the water column at the northern alternative dump site (see Fig. 13). Variability in this flow was present at all levels of currents (see Fig. 14), presumably caused by the coupling of circulation with regional wind patterns.

Recent studies by Beardsley and Butman (1974) show that large net transport can occur when wind stress acts along the shelf to the southwest. This condition occurs periodically thoughout winter as intense storms known as "Nor'easters" which last a few days and cause short-lived current pulses with speeds of the order of 1 knot (50 cm/sec), some ten times the normal drift. These pulses may account for as much as two-thirds of the net shelf transport during winter. Wind stress from the southwest was found, during their study, to produce little change in longshore flow.

Wind-driven upwelling and downwelling have been inferred from current meter records from within 10 n mi (18.5 km) of the south shore

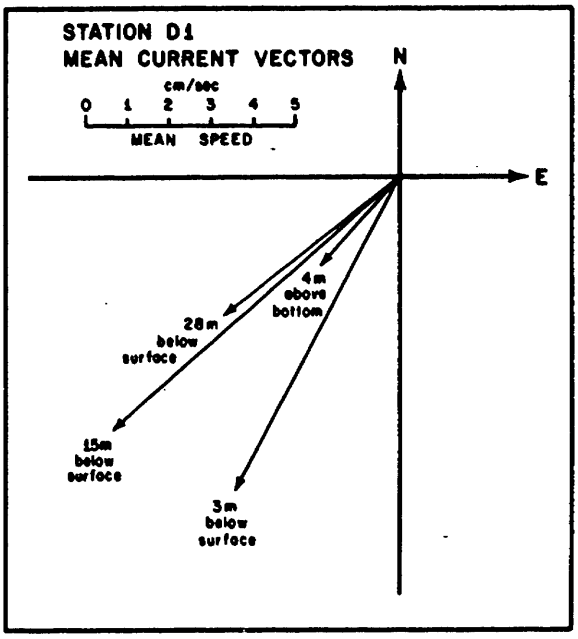

Figure 13. Vertical structure of currents at Station D1, located within alternative dump site area 1-A. Depth to bottom is 55 m.

of Long Island (Hardy and Wilson, personal communication); their importance in bottom transport remains to be determined.

Water Characteristics in the Inner Bight

As previously noted, waters of the Inner Bight exhibit two distinct oceanographic regimes—nonstratified conditions during winter, and two-layer, stratified conditions for the other three-fourths of the year, with transition periods between.

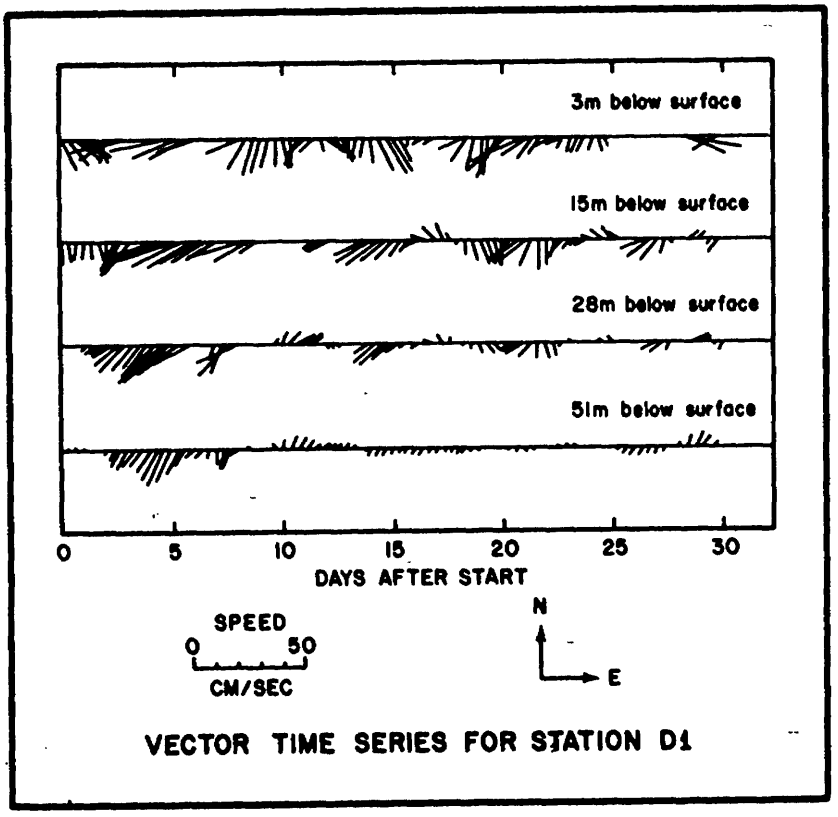

Figure 14. Variations of currents at Station D1 located within alternative dump site area 1-A. The bottom current meter, at a depth of 51 m, was 4 m above the sea floor.

During winter, the Apex water mass is well mixed and uniform in character. Surface cooling and vigorous wind mixing act throughout winter. The Hudson River plume is shown in Figure 15 where it appears as a salinity-stratified water mass along the New Jersey coastline.

With the onset of spring freshets, Apex waters begin to stratify as surface salinity decreases. The Hudson River plume enlarges and typically extends over the Apex west of the Hudson Shelf Valley. Temperature-salinity diagrams (Figs. 15 and 16) show that waters to the east of the Shelf Valley are typically more oceanic. Comparing Figure 16 with Figure 15 illustrates the change from winter to initial spring conditions. A shift from haline stratification to thermal stratification took place in May (middle panel of Fig. 16) because of lower river runoff and increased solar heating. This transition was completed by June (upper panel, Fig. 16), with fully established thermally stratified summer conditions, except for the plume effects near New Jersey. The two-layered system was strengthened through summer until August, when surface-layer temperatures reached their maximum. Wind mixing maintained a well defined, two-layered structure as surface cooling continued until near the end of October. By this time, the temperature difference between the two layers was only a few degrees. As thermal stratification increased during summer, the plume receded toward the mouth of New York Harbor; as thermal stratification decreased after August, the plume advanced along the coast of New Jersey. This occurred with no appreciable variation in Hudson River flow. Finally, increased storm energy caused a rapid breakdown of thermal stratification and winter conditions were reestablished. The plume remained near the New Jersey coast.

In summary the western Apex (roughly bounded by the Hudson Shelf Valley) is strongly influenced by Hudson River outflow through the year. Estuarine flows of saline, heavier waters of oceanic origin flow upstream along the bottom in the middle and eastern side of the harbor mouth, while lighter surface waters flow out mostly along the center and western side, moving out and down the New Jersey coastline.

Circulation in the Inner Bight

Available data on currents in the Inner Bight permit preliminary assessment of circulation patterns. The energy spectrum of water motion in the Inner Bight exhibits considerable high frequency variability. Nearshore, this variability is tidal. Though this high frequency energy does not contribute significantly to net transport, it causes suspension and transport of bottom materials and mixing in the water column. Wind readily moves surface waters about with a fairly rapid response to changing wind direction; during nonstratified conditions, even bottom waters respond (though to a lesser degree) because of downward transfer of momentum. However, during stratified conditions, momentum transfers to the bottom layer are inhibited by the degree of water column stability.

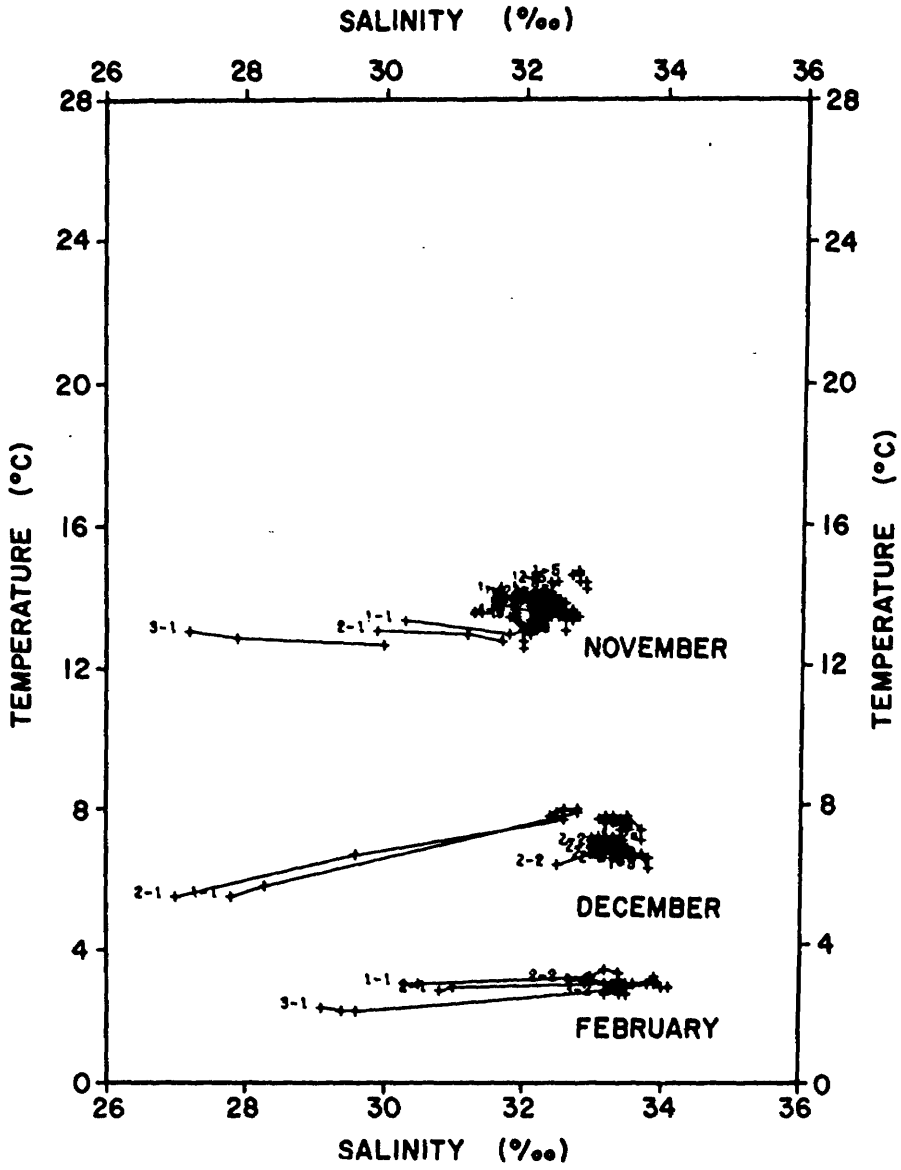

Figure 15. Composite temperature-salinity diagram in winter 1969 in the Apex. The clustered values represent most Apex meters, and those outside and to the left of the clusters show Lower Bay plume water.

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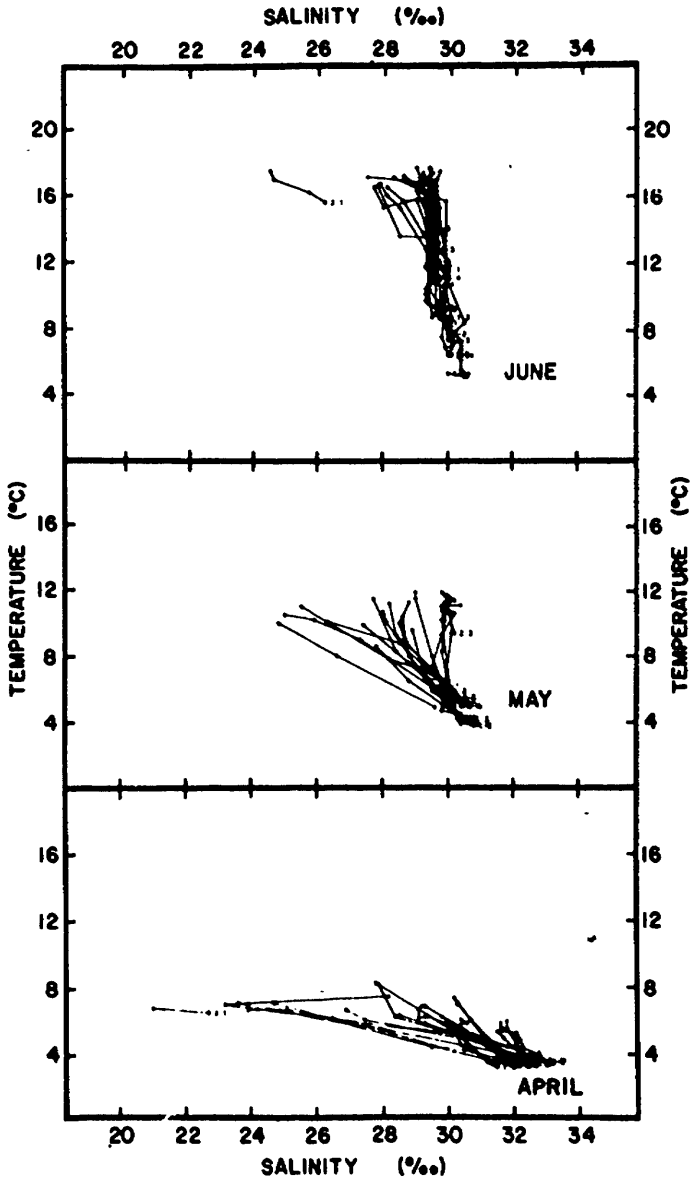


Figure 16. Composite temperature-salinity diagram for three surveys during 1969 in the Apex.

A secondary effect of winds, which occurs during both stratified and nonstratified conditions, is a gradient flow, longer lasting than the local wind response of surface waters. There are occasional onshore movements and downwelling of surface waters or offshore movements of surface waters and upwelling of bottom waters.

Drifter studies conducted in 1969 by the Sandy Hook Laboratory, and more recently by the Project indicate first, that waters in bottom return flow appear to come mostly from the head of the Hudson Shelf Valley (Fig. 17) and second, that bottom transport does not extend under the Hudson River plume to reach the coast of New Jersey.

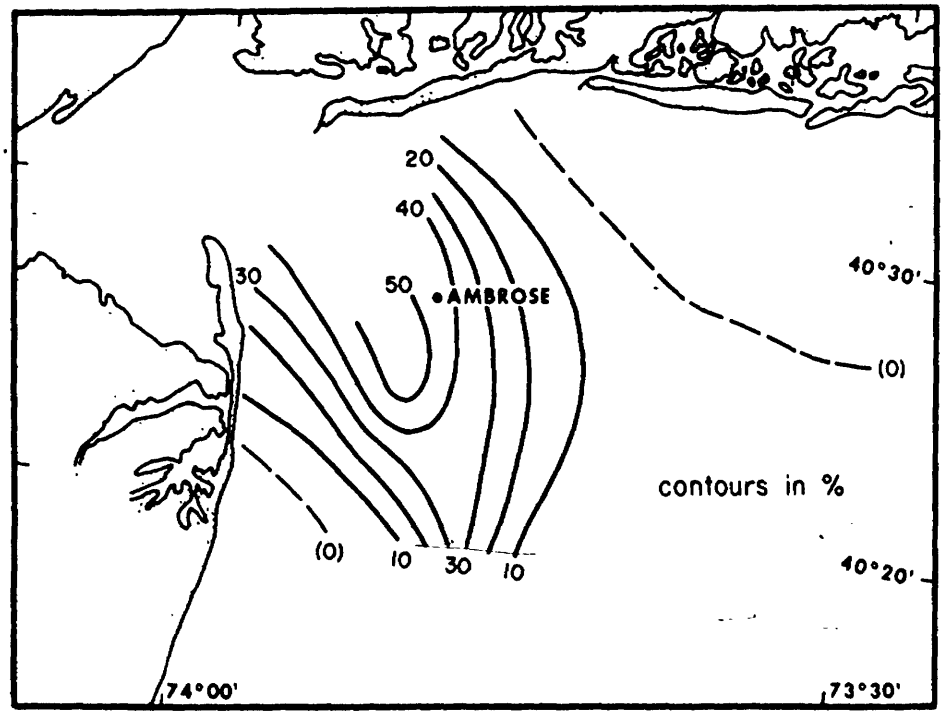


Figure 17. Percentage of seabed drifters recovered from the Hudson River estuary as a function of their initial location.

The possible existence of a clockwise gyral circulation of bottom waters came out of the work of Bumpus (1965) and from the Sandy Hook Laboratory's 1969 drifter study. Further measurements during fall 1973 were made. Figure 18 shows mean current vectors representing net movement in the lower portion of the water column over the 50 days of earlier operations. A current meter at Station ST-4, located near the present sewage sludge dump site, was operating for only 14 days and its mean vector, though consistent with the gyral circulation hypothesis, is based on less data than vectors for the other stations. Figure 19 presents a frequency histogram of current directions during nonstratified conditions in fall 1973 when fairly uniform current speeds and directions existed through the water column. Data for Station ST-4, at the sewage sludge dump site are included for comparison. Both figures indicate a northerly flow along the Hudson Shelf Valley toward the Christiaensen Basin. This flow appears to split, a portion feeding the Hudson estuary bottom return flow (which can be seen at Station D), and the remainder participating in the easterly flow at the northern extremity of the gyre.

Analysis of spring and summer current monitoring and other data will define the details and permanence of these two characteristic circulation features of the Inner Bight.

Chemical Oceanography

The chemical characteristics of water, sediments, and living forms in the New York Bight are determined by a complex of natural variables and by the effect of man-related processes. Man's impact on the Bight itself takes diverse forms. Dredge spoil, sewage sludge, and acid wastes are dumped directly into the waters of the Bight at designated sites within a few miles of each other and less than 15 miles offshore. Dredge spoil varies from coarse sands to fine muds. The fine muds contain appreciable concentrations of natural organic matter and are often contaminated with trace metals and organics from industrial wastes and sewage. Sewage sludge and acid wastes contain high concentrations of trace metals, while sewage sludge is also contaminated with many toxic organic compounds such as pesticides, hydrocarbons, and optical whiteners.

Many point sources of contamination of the New York Bight occur along the coastlines. The principal source is the outflow from the Hudson and Raritan River basins. Outfalls, ditches, streams, and tidal exchanges with embayments may also be significant. Other sources include vessel wastes, spills, precipitation and dustfall.

Contaminants from these sources are concentrated or dispersed, interact with organisms, dissolve, solidify, are buried, become exposed, or are transported from the Bight. The same processes act upon natural

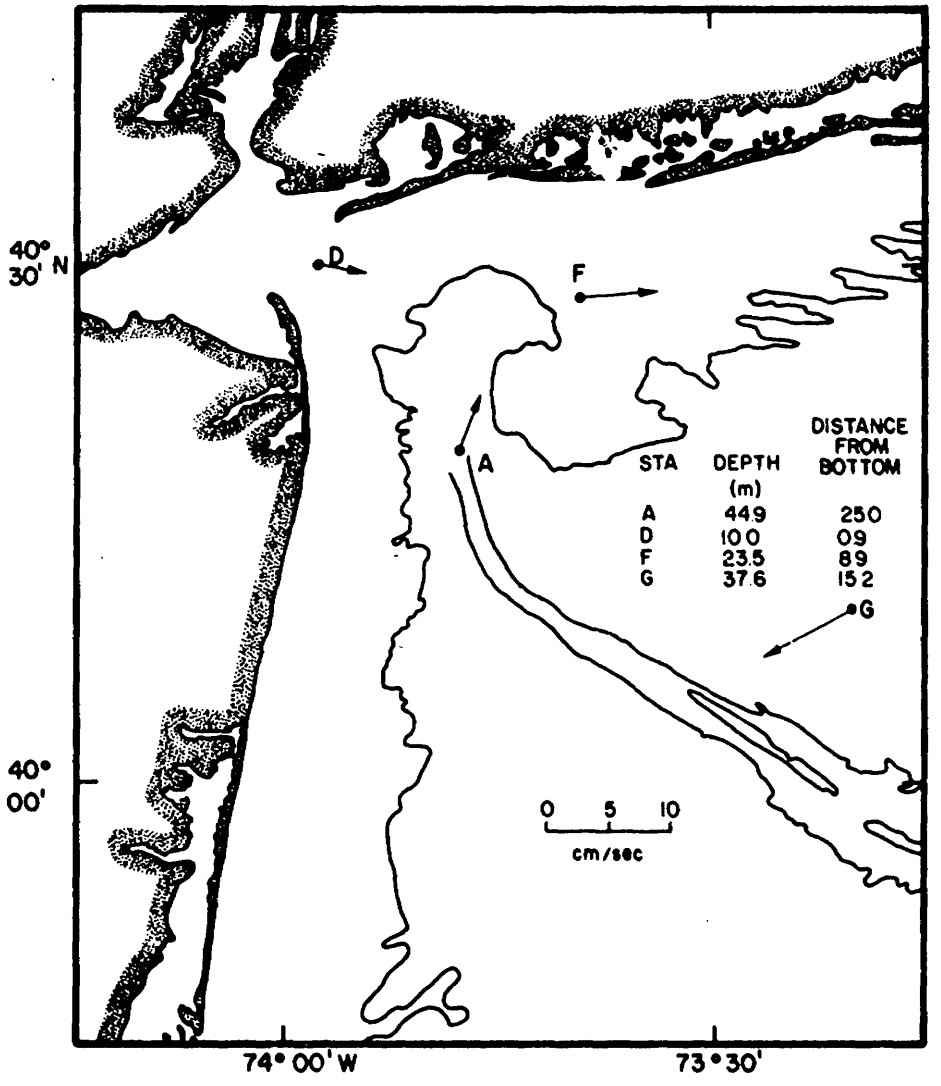


Figure 18. Mean near-bottom current vectors for observations during the period Aug-Sept 1973.

materials which enter or which occur in the Bight. The fate and effect of man-related materials reaching the Bight can be understood only in the context of the processes acting upon natural materials.

As has been mentioned earlier, MESA New York Bight Project activities during 1974 were focused on the ocean dumping issue, primarily for sewage sludge. The situation holds special significance for the New York-New Jersey metropolitan area where a sharp increase in the amount of sewage sludge to be dumped in the New York Bight is forecast (U.S.E.P.A., 1973). Even now, there is concern that sewage sludge dumped at the present site may be migrating to the beaches of southern Long Island (Harris, 1974 a, b, c,).

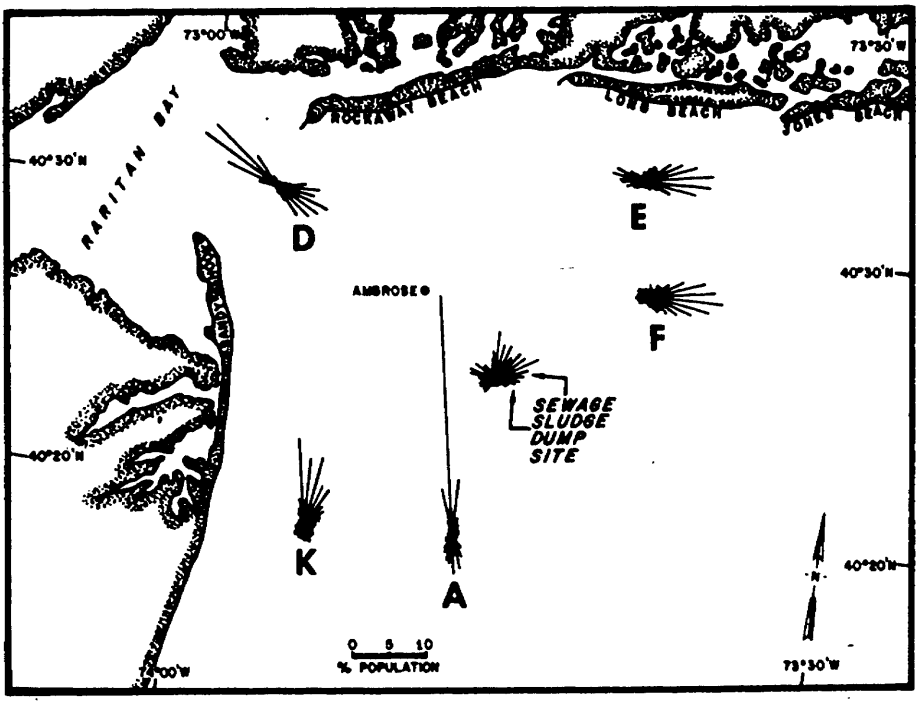


Figure 19. Polar histograms of frequency of current direction during the period Oct-Nov 1973.

Sewage Sludge Chemistry

Sewage sludge is one of the products resulting from the treatment of wastewater, a mixture of human, animal, and industrial wastes, and storm runoff. The material, although it varies with source and treatment plant (Klein et al., 1974; Duedall et al., in preparation), is about five percent solids and 95 percent liquid. In 1973, some 150 million ft^3 (5.3×10^6 m^3) of this material, along with 72 million ft^3 (2.04×10^6 m^3) of industrial wastes, were dumped in Bight waters from 7 to 110 n mi (10-160 km) offshore (EPA, 1974). Organic matter in sludge includes mostly amorphous organic aggregates with some identifiable material such as tomato and melon seeds, human hair, and fragments of rubber and plastic, and cellulose. Some major consitutents of sewage sludge have been identified (Hunter and Heukelekian, 1965; Gross, 1973; Watler, 1961). Raw sludge contains about 80% volatile matter; digested sludge has about 50%, the difference accounted for by methane and carbon dioxide produced during digestion. Total organic carbon usually accounts for 20% to about 50% of the dry weight of raw solids. Polymers and cellulose fibers survive digestion. Proteins and carbohydrates compose around 20% and 10% respectively of dry solids by weight. Other minor organic components include amino sugars, soluble acids, fats, anionic detergents, hydrocarbons, and amides, all together composing less than 10% of the dry weight of solids. Bacteria and fungi, trace metals and refractory hydrocarbons are also present.

Sludge in equilibrium with waste water is no longer in chemical equilibrium when it is discharged into the ocean. Here, the sludge undergoes chemical and biochemical changes and physical fractionation. Microbial species composition changes. Physical fractionation is caused by the wide range of densities, sizes, and shape of particles introduced to the water column so that, for example, eggshell fragments and tomato seeds are deposited at different places. Small particles aggregate to form large ones which sink.

Sediment Chemistry

Sewage sludge in the New York Bight has been called "black mayonnaise". Similar appearing materials are found in coastal locations where they have formed naturally from organic matter which originates at or near the coastline and which accumulates in small basins or other areas of deposition.

Several investigators have examined distributions of trace metal concentrations in New York Bight sediments (Gross, 1969, 1970_a, b, 1972; Carmody et al. 1973). Higher trace metal concentrations in sediments have been observed at and near the sewage sludge and dredge spoil dump sites, decreasing with increasing distance from the sites. Klein et al. (1974) and Duedall et al. (in preparation) have documented high and variable trace metal concentrations of sewage sludge from various

treatment plants in the New York area. The Project has extended previous sediment trace metal studies. Of the 3000 sediment samples collected in 1973 and 1974 about 500 have been analyzed for heavy metals.

Sediment samples have been taken on a quarterly basis at 103 stations in the Apex (see Fig. 20) and analyzed for copper, chromium, lead, zinc and nickel. High concentrations and similar concentration patterns for these five metals occur at and near the sewage sludge and dredge dump sites. Sampling on a denser grid pattern shows variation of trace metal concentration with time. High concentrations of these five metals are found north and west of the sewage sludge and dredge spoil dump sites, and south in the Hudson Shelf Valley. Figure 21 illustrates these occurrences for lead. Because dumped dredge spoil remains in the local area of the dredge spoil dump site, it is probable that the rather widespread distribution of high lead concentrations illustrated in Figure 21 are caused primarily by dispersal of sewage sludge material and of Hudson River outflows. Distribution of elevated lead concentrations is evidence for southerly movement of some portion of sewage sludge, and, perhaps some dredge spoil seaward via the Hudson Shelf Valley. Segar and Pellenbarg (1973) have observed anomalously high trace metal concentrations where contaminant inputs do not include sewage.

Figure 22 shows a dense station grid pattern north of the sewage sludge dump site. Sediment samples from these stations were analyzed for chemical, geological, and biological composition. These analyses were made in collaboration with other government agencies to determine whether or not sewage sludge from the dump site was reaching the beach and near-beach areas. Analyses of these sediments from near the Long Island beaches north of the sewage sludge dump site (samples were taken during cruises conducted 10-15 June and 22 July 1974) were made for several chemical parameters, including heavy metals. Bottom samples from these stations were analyzed for eight trace metals: zinc, manganese, chromium, copper, nickel, silver and lead. The legend on Figure 22 shows stations with significant portions of black mud.

A major factor in using trace metal concentration data for characterizing sewage sludge from the dump site is the variability in its trace metal composition. Recent data of Duedall et al. (in preparation) on the concentrations of five heavy metals in settleable portions of sewage sludge from two New York sewage treatment plants, Newtown Creek and Wards Island, are presented in Tables 2 and 3. For the period January 1972 to September 1973, the combined sludge output from these two plants comprised 47.4 percent of the total sludge output of New York City (28.4 percent by Newtown Creek, and 19.0 percent by Wards Island) (Klein et al. 1974).

These data show the variability which can be expected. Further emphasis is given to this point by the large variation in *average* heavy

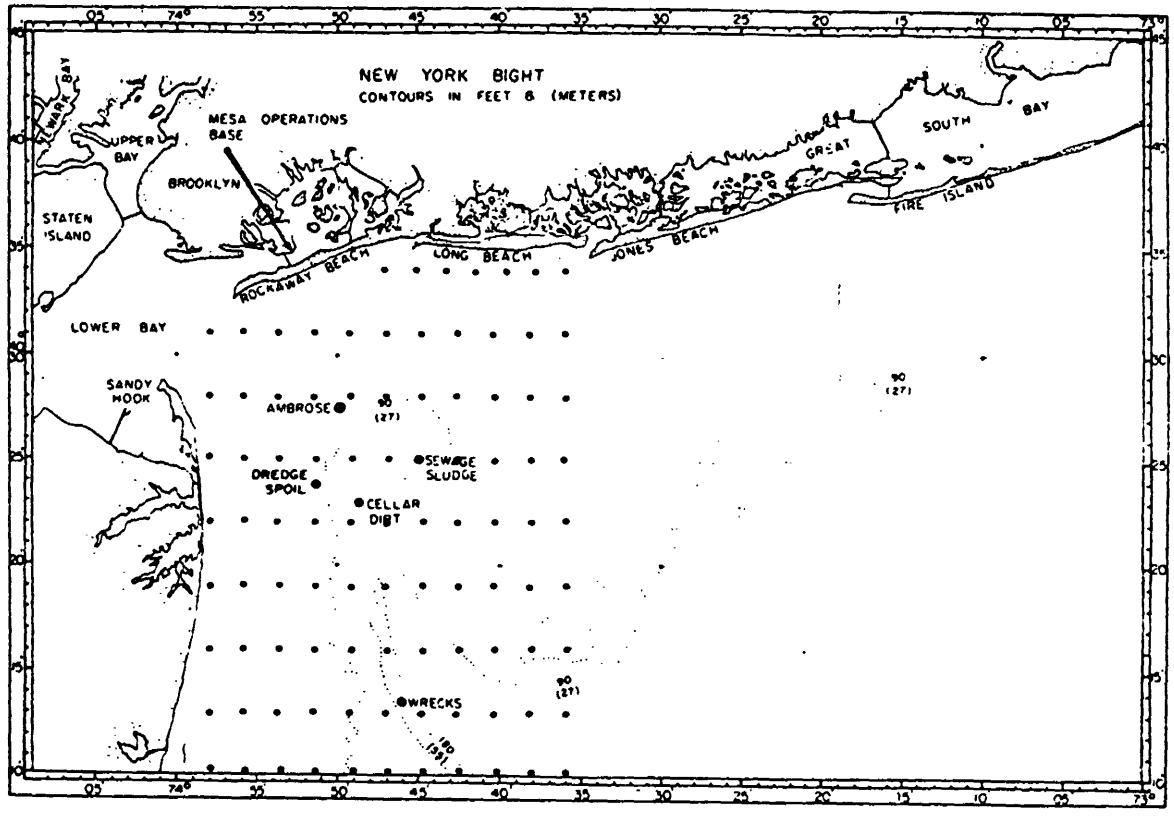


Figure 20. Stations sampled quarterly for benthic invertebrates and sediment attributes, including trace metals.

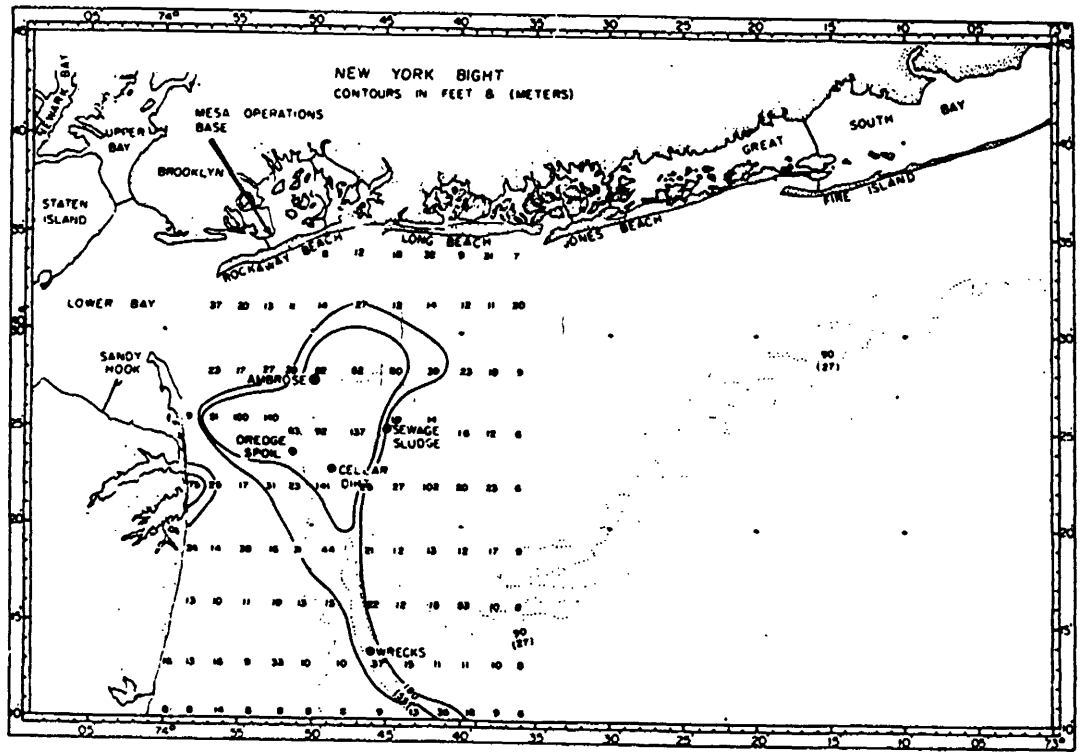


Figure 21. Average concentrations of lead in sediments (as ppm of dry sediment) of the New York Bight Apex. Values are average concentrations measured over four seasons (August and October 1973, and January-February and March-April 1974). The other contour is 25 ppm; the inner contour is 50 ppm. The numbers shown are values of lead concentration in sediment samples taken at those points. Outside the contours, the greatest concentrations observed are in the high 30's (with two isolated exceptions).

metal concentrations in total sewage sludge from ten New York City treatment plants for the period January 1972 to September 1973 found by Klein et al. (1974). Their data show variations between plants by a factor as great as 24 for cadmium. In addition, variations in these concentrations as a function of time may exist. Superimposed upon all of these complexities are the problems of analytical quality control and interlaboratory comparison.

The organic carbon content of sediments could give an indication of the presence of sewage sludge, if the contribution of organic matter from other sources to the sediments were negligible. This is not the case.

Total organic carbon and carbohydrate concentrations have been examined as gross indicators of sewage-sludge. Work to date indicates that the carbohydrate:total organic carbon ratio may be used to estimate the distribution of sewage-derived materials. Problems of other sources of sewage materials besides dumped sewage sludge remain. Raw sewage comes from numerous points throughout the Metropolitan New York City area. Klein, et al. (1974) discuss the significant volumes of untreated

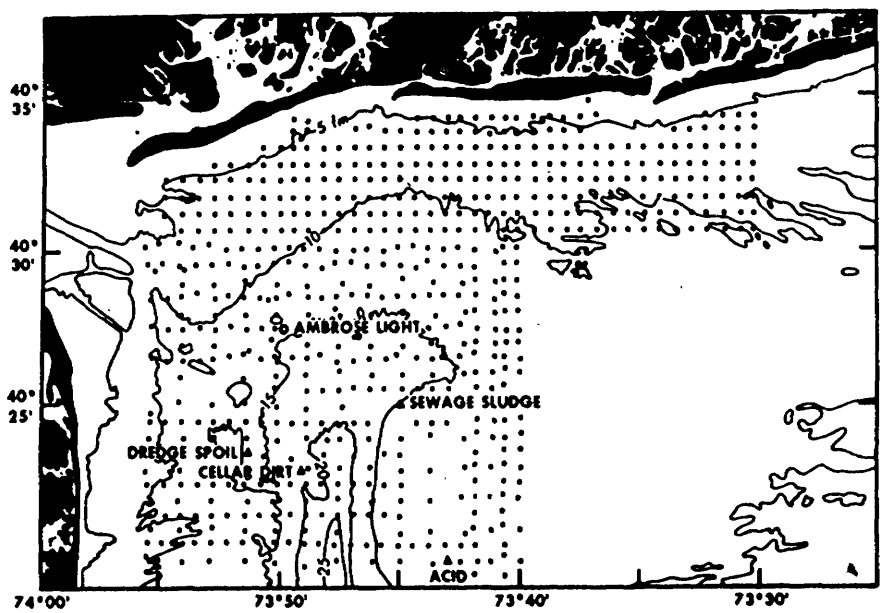


Figure 22. Substrate inventory sampling stations in the New York Bight Apex.

Table 2. Heavy Metal Concentrations (ppm, dry material) in the Settleable Portion of Sewage Sludge from Two New York City Waste Treatment Plants.

Plant	Zn	Pb	Cu	Cd
Newtown Creek	3,070	11,500	2,650	17.1
Wards Island	1,080	686	1,300	not detectable

Data from Duedall et al. (in preparation)

Table 3. Ratios of Concentrations of Heavy Metals in the Settleable Position of Sewage Sludge from Two New York City Waste Treatment Plants.

Plant	Pb/Zn	Cu/Zn	Cu/Pb
Newtown Creek	3.8	.86	.23
Wards Island	.64	1.2	1.9

sewage discharged from areas of New York City not yet served by treatment plants, as well as runoff in areas served by plants. Much of this untreated sewage, as well as that from areas outside the City, may reach the Bight. Outfalls also deliver sewage materials directly to the Bight. In addition, sanitary tanks of ships and boats are commonly emptied into the Bight just prior to their entering New York Harbor.

Total organic carbon (TOC) distribution shown in Figure 23 indicates high concentrations of organic carbon in small basins. This agrees with the observation that coastal marine fine sediments are generally high in TOC and settle in topographic lows (Foerlich et al. 1971). The highest concentrations of TOC in New York Bight sediments are found in the Christiaensen Basin, the center of which is located about 8 km to the west of the designated sewage sludge dump site. The highest values encountered were approximately 5% dry weight TOC. Distribution of total carbohydrates is shown in Figure 24. The pattern is similar to those obtained for TOC concentrations. Figure 25 shows the carbohydrate/TOC ratio, R, in New York Bight sediments. The entire Apex area is enriched in carbohydrates, relative to TOC, with values of R ranging from 20-70. The R value for normal coastal sediment is about

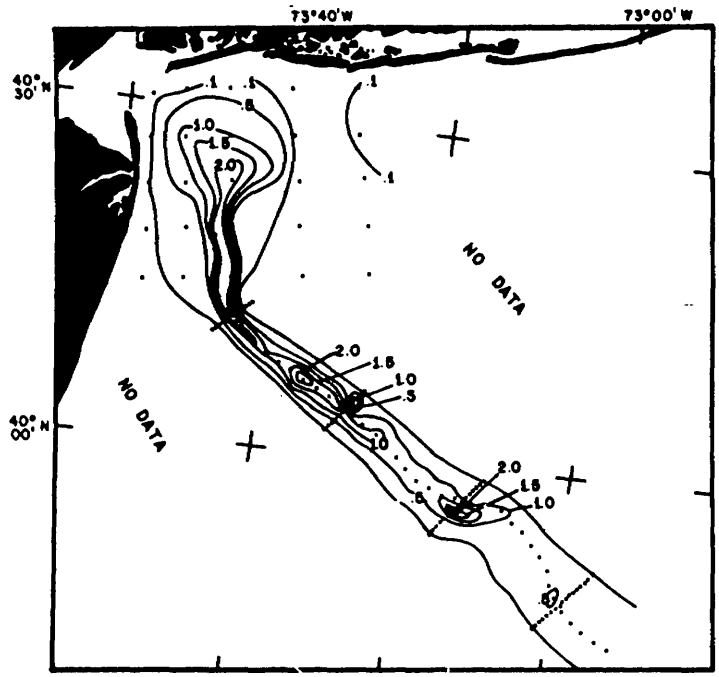


Figure 23. Total organic carbon (% dry weight) in the sediments of New York Bight, August-September 1973.

10. Higher values of 50 and above are found in the axis of the Hudson Shelf Valley and toward the Long Island shore.

Sewage sludge contains a substantial amount of carbohydrate material (Walter, 1961), mostly in the form of cellulose and hemicellulose (Hunter and Heukelekian, 1965), both of which are resistant to biological degradation. Cellulolytic carbohydrates decompose less than other organic constituents of sewage. Therefore, R values are expected to increase as microbiological degradation proceeds from the value of about 30 found for sewage sludge sampled at treatment plants.

Distribution patterns for R indicate that sewage sludge is being transported to and accumulating in the Hudson Canyon, many miles offshore (see Fig. 25). It is not known how this material is transported to the Hudson Canyon for deposition. Regardless of the mechanism involved, a significant portion of ocean dumped sewage sludge is being transported away from the coastline into deeper water.

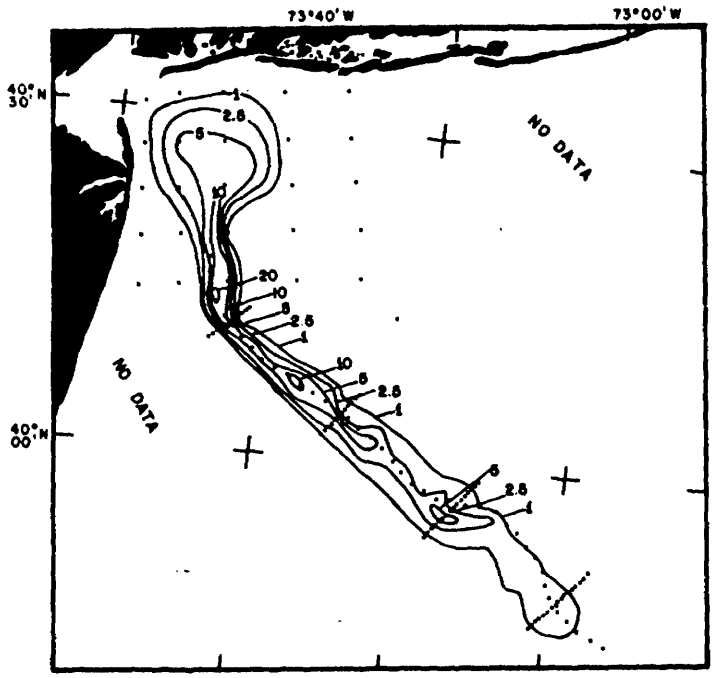


Figure 24. Total carboydrates (% dry weight × 1000) in sediments of the New York Bight (the dots represent sampling stations).

Thin-layered black muds, rich in TOC (~5%), exist within 1½ n mi (2.8 km) of Long Island beaches. This TOC concentration is similar to that found close to the actual dump site. Within ½ n mi (0.9 km) of this beach, other pockets of mud were found to have a TOC concentration of approximately 2%. Sandy sediments in the vicinity had TOC contents of 0.04% to 0.3%.

The value of $\underline{R}$ is high for all of these samples; values range from 40 to 60. The same range was observed for samples from the Christiaensen Basin. Thus, sediments close to the south shore of Long Island contain organic matter enriched in carbohydrates, indicating a probable sewage source. Whether the source is a nearby outfall or channel or the more distant sludge dumping site cannot be determined from existing data.

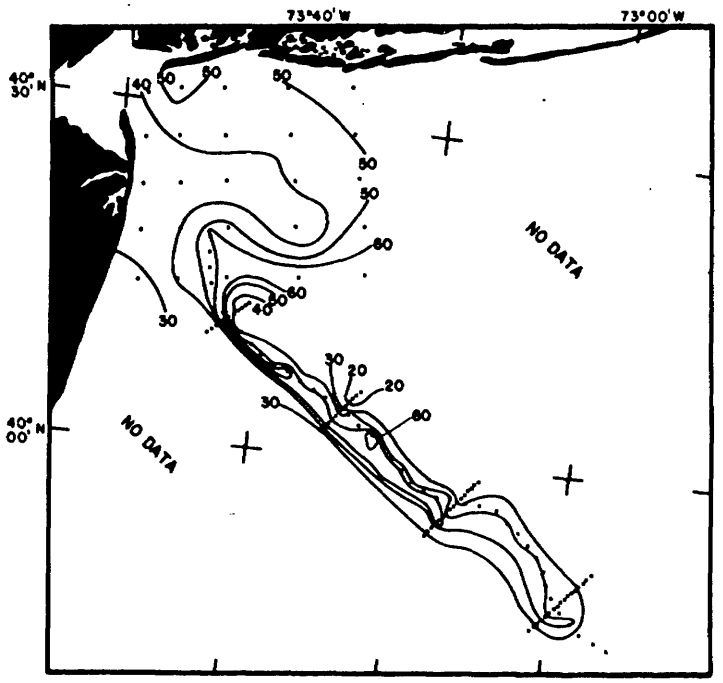


Figure 25. Parameter R (carboydrate/TOC × 100) for sediments of the New York Bight (the dots represent sampling stations).

Water Chemistry

Dumped dredge spoil and sewage sludge materials place an increased oxygen demand on the near-bottom waters in areas around the dump sites and other sites of material deposition. Mixing with water having higher values of oxygen content, augmented seasonally by reaeration of surface waters when the water column is not stratified, restores these oxygen-deficient waters to near-saturation values. Low oxygen content of water near the beaches is no indication that the water has been in contact at one time or another with sewage-derived or any other organic materials. Water near the beach in summer contains less than 5 ml/L oxygen of sea water (Green, 1965) when temperatures of 25°C and salinities of 30°/oo are common; this is at saturation or at equilibrium with the atmosphere.

Between the end of August 1973, and the end of September 1974, a total of 11 cruises were conducted in the Apex to characterize seasonal

changes in water column chemistry (see Fig. 26). Measurements were made of the nutrients nitrate, nitrite, silicate, and phosphate. Silicate and nitrate distributions for two of these cruises, conducted 16-20 September 1973 and 25-29 November 1973, during periods of highly stratified and well-mixed conditions, respectively, show general features of nutrient distribution in the New York Bight waters.

In September when the water column was stratified, bottom silicate values were generally high, but were highest at the station closest to the sewage sludge dump site (see Fig. 27A). In November, when the water was well mixed, lower silicate concentrations were observed. Bottom concentrations near the sewage sludge dump site were somewhat high (see Fig. 27B). Other nutrient distributions were similar.

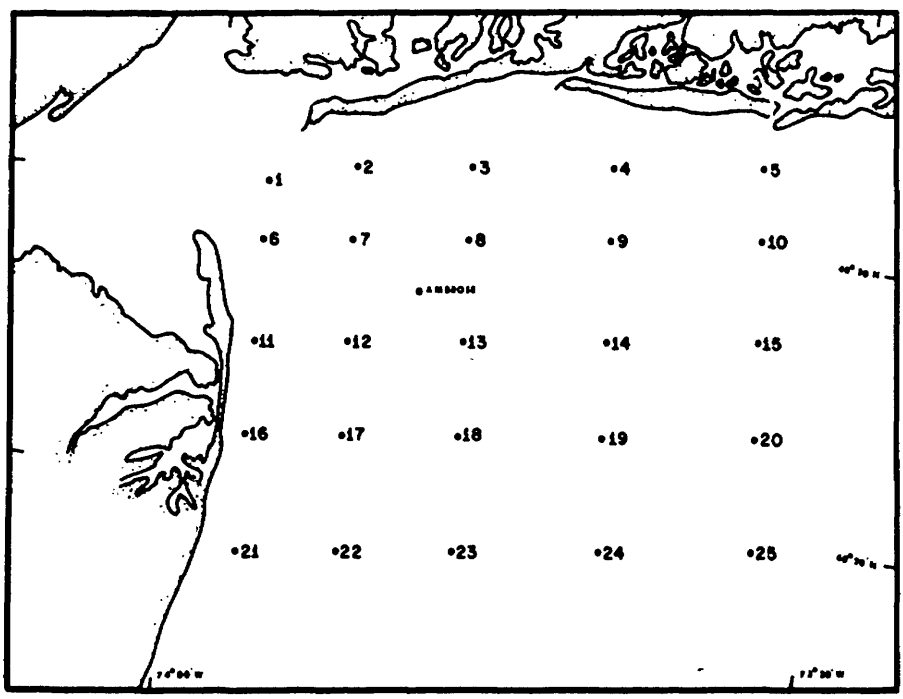
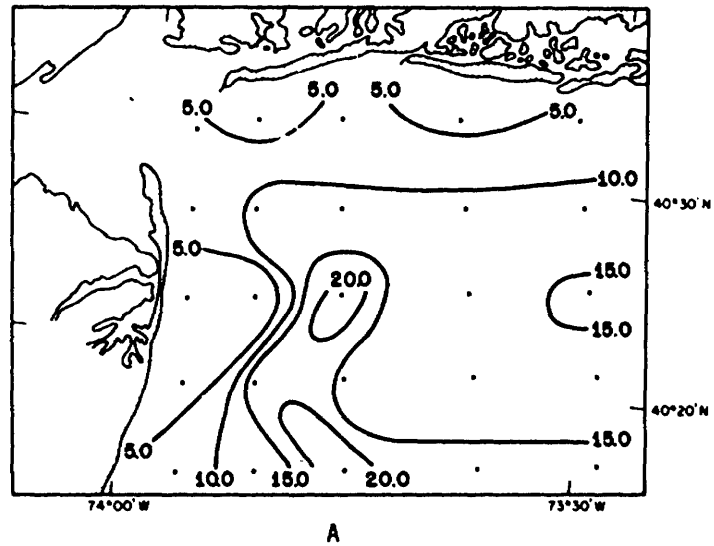
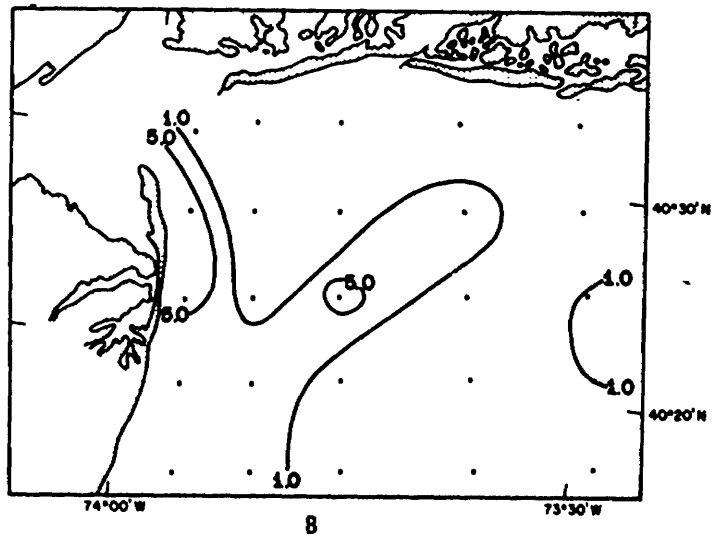


Figure 26. Water column chemistry cruise station grid.



A



B

Figure 27. A - bottom silicate, 16-20 September 1973. B - bottom silicate, 25-29 November 1973 (µg - atoms per liter).

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Figures 28 and 29 show that surface silicate values were little affected by sewage sludge dumping. There was only a slight increase of surface silicate near the dredge spoil dump site during well-mixed conditions (Fig. 28). Surface nitrate values shown in Figure 29 show similar variations, although there was a minor increase in surface nitrate near the sewage sludge dump site. Therefore, the dominant nutrient input to the system is from Lower Bay.

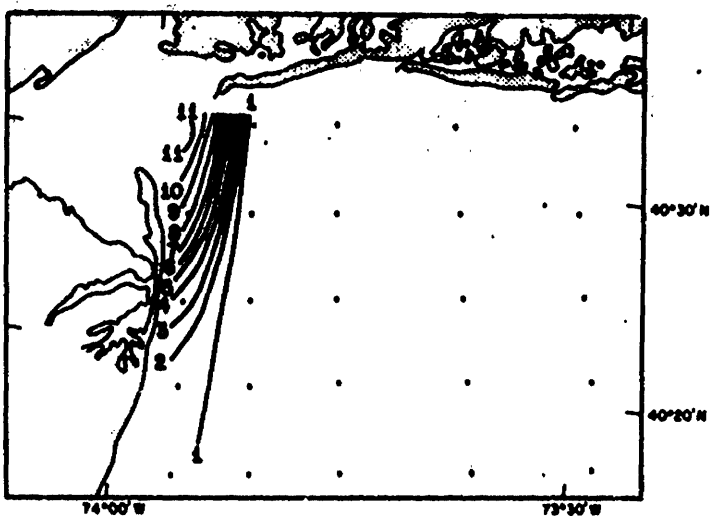
During MESA's April 1974 cruise, unfiltered water samples were analyzed by flameless atomic absorption spectrophotometry which determines total dissolved and particulate iron. Values were compared with iron concentrations reported by the NAS for 1948. Atomic absorption data include minor fractions of iron not included in the NAS analyses. Figure 30 shows that the ranges of iron concentrations in surface waters in April 1948 and in April 1974 were essentially the same. These data indicate that the increased dumping of wastes into the Bight and into the rivers and estuaries emptying into the Bight has not changed the iron concentration. Both series of observations indicate that most of the iron in the Bight waters comes from the Hudson and Raritan Rivers and estuaries. Preliminary evaluation of data for other metals such as manganese and copper indicate the same primary source.

Comparisons of Secchi disc data (water depths in feet at which a 1-ft (30 cm) disc disappears from sight) show trends in suspended solids as seen in Figures 31 and 32. During February 1948 and April 1974, when the water was well-mixed, Secchi disc readings ranged from 2.5 to 10, and 2 to 7 ft, respectively. August depths ranged from 5 to 15 ft in 1949, and 1.5 to 16.5 ft in 1974. Lowest values in all cases were found where the Hudson River enters the Bight. Higher values were in deeper waters.

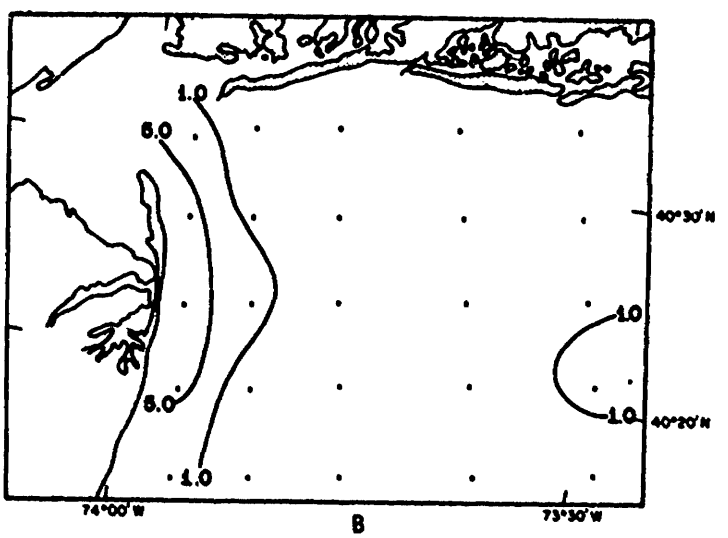
It is concluded that most nutrients in the Bight come from the Hudson River outflow and that the effect of dredge spoil and sewage sludge dumping is small and localized. There is no chemical evidence for a significant movement of sewage sludge from the dump site to Long Island beaches. What evidence there is indicates that the main movement of sludge and dredge spoil from the dumping sites is seaward via the Hudson Shelf Valley. Pockets of mud near beaches, a common natural occurrence, are mainly of natural materials, with small admixtures of material derived from sewage from local outfalls, the study dumping site, or other sources.

Biological Oceanography

Identification of man's influences on the ocean is difficult because large-scale natural changes are typical of most marine populations (Longhurst et al., 1972). Most studies of the plankton, benthos, and fish in the New York Bight have been directed to the efforts of massive



A



B

Figure 28. A - surface silicate, 16-20 September 1973. B - surface silicate, 26-29 November 1973 (µg - atoms per liter).

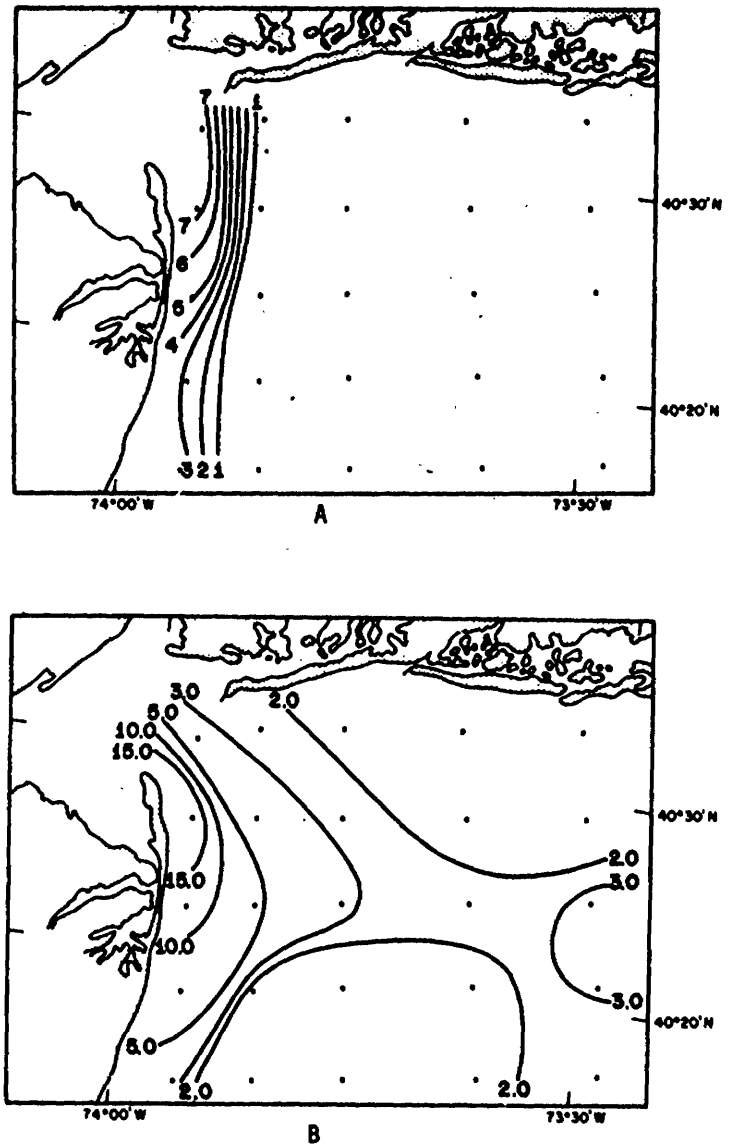


Figure 29. A - surface nitrate, 16-20 September 1973. B - surface nitrate 25-29 November 1973 (µg - atoms per liter).

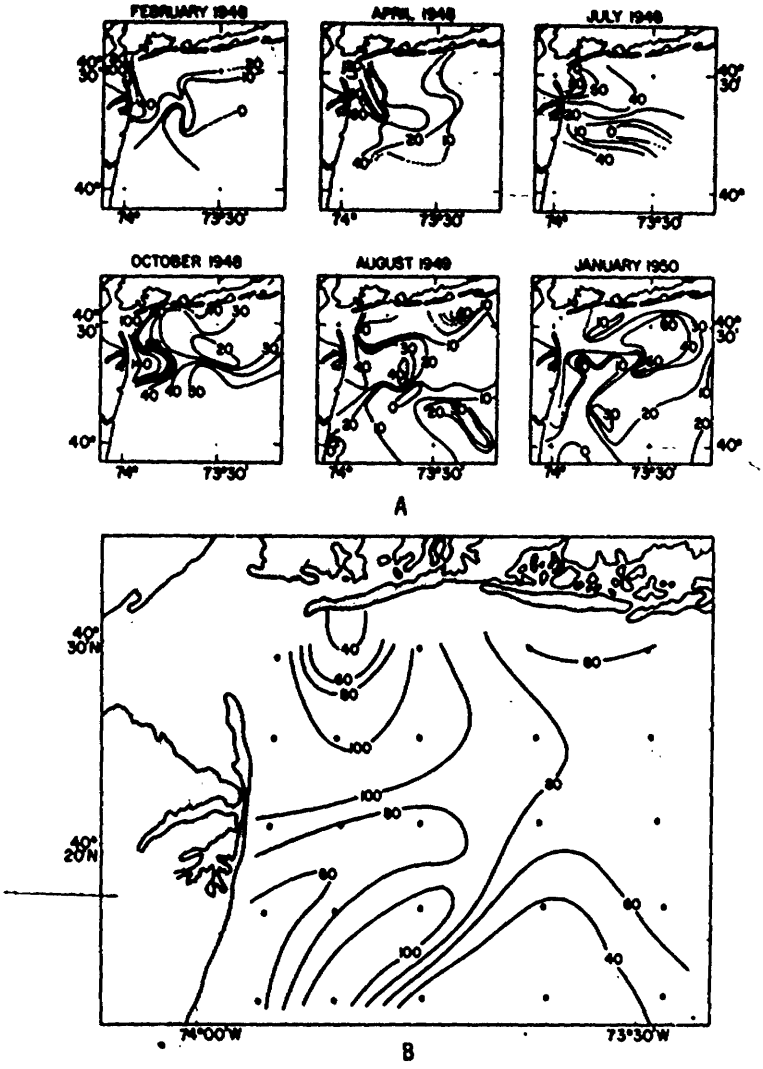


Figure 30. A - Distribution of iron in the surface waters of the New York Bight. Contours show iron concentrations in parts per billion (micrograms per liter)(NAS, 1955). B - Distribution of total dissolved iron concentrations in surface water of the New York Bight Apex obtained during MESA cruise WCC-6, April 1974. Contours show iron concentrations in parts per billion (micrograms per liter).

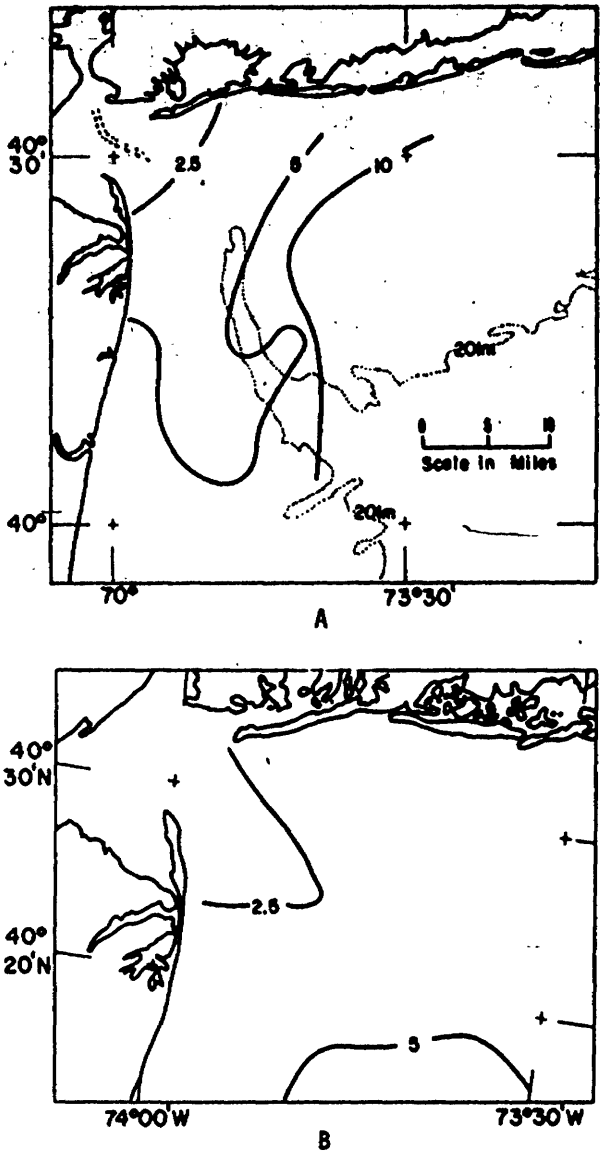


Figure 31. Transparency in feet of the waters of the New York Bight.
A - February 1948 prior to disposal of titanium wastes offshore.
B - April 1974 Secchi disc depths in the New York Bight Apex observed during MESA cruise.

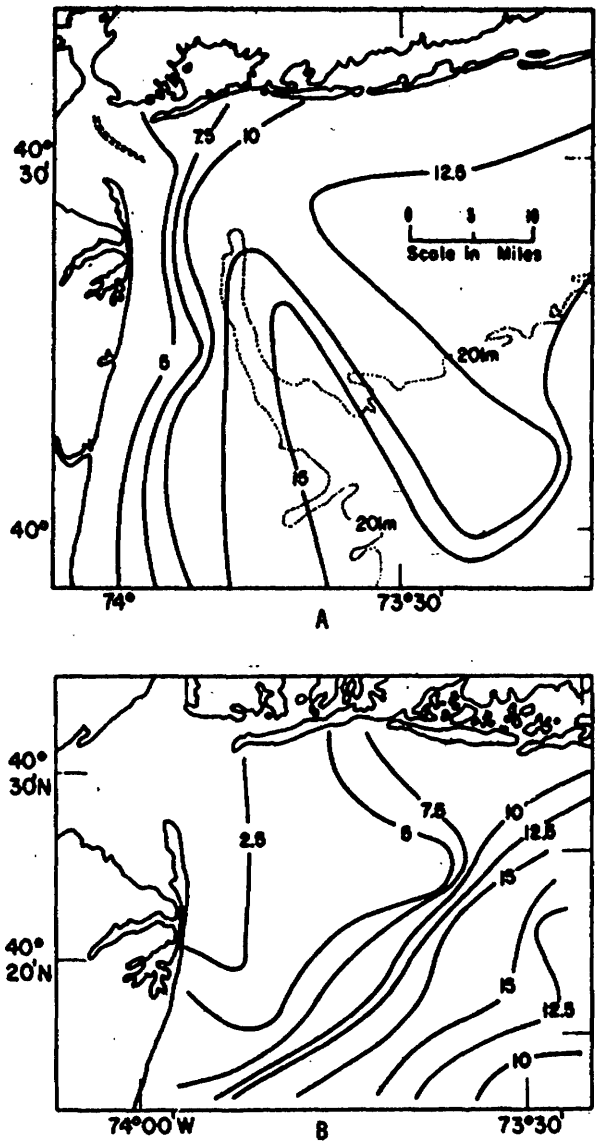


Figure 32. Transparency of waters of the New York Bight. A - August 1949 (MAS, 1955). B - Secchi disc depths in the New York Bight Apex obtained during MESA cruise WCC-10, August 1974. Contours show depths in feet.

ocean dumping. Even here, separation of effects of natural and man-made events is difficult.

Phytoplankton cell densities in the Inner Bight range from about 10^4 to 10^7 per liter. This is about 1/100th of those in the Hudson and Raritan estuaries, and about 10 to 100 times those in the Outer Bight (Malone, personal communication). The maximum cell densities of summer are almost always dominated by very small (2- to 4-μ diameter) cells of Nannochloris atomus which reach densities of 4×10^7 per liter at the Bight's boundary with Lower Bay. Diatom cell densities are highest (from 2 to 9×10^6 per liter) in fall, winter, and spring, due primarily to periodic blooms of Skeletonema costatum. Twenty-five phytoplankton species have been reported from the Inner Bight in concentrations exceeding 10^3 per liter: 13 diatoms, 9 dinoflagellates, and 3 other taxa (Malone, personal communication).

A 1-year study of phytoplankton productivity (measured using carbon-14 uptake in deck incubators) in the Inner Bight showed a minimum December value of 0.3 g C/m^2/day and a maximum June value of 1.7 g C/m^2/day (Malone, personal communication). Productivity was generally high (>1 g C/m^2/day) from June through September. The annual production of 370 g C/m^2 is comparable to that of very productive upwelling systems (Ryther, 1969), and is caused by the substantial influx of nutrient-rich surface water from the Hudson and Raritan estuaries.

Measurements of primary productivity were partitioned into netplankton (>20μ) and nannoplankton (<20μ) fractions. Nannoplankton productivity increased rapidly during late spring and summer as the water column became stratified, temperature increased and nutrient concentration decreased. This increased nannoplankton productivity coincided with an increase in population of Nannochloris atomus. Netplankton and nannoplankton primary production accounted for 41% and 59% of annual production, respectively.

The abundance of zooplankton organisms decreased with distance from the Hudson and Raritan River estuary, but not as dramatically as the decrease in phytoplankton (Malone, personal communication). Estimates of zooplankton density are less reliable than those for phytoplankton density because investigators use different net mesh sizes and have made relatively few observations of zooplankton. The best available estimates indicate the that total zooplankton densities range from 1 to 400 $\times 10^3$/m^3 in the Hudson and Raritan estuaries, and decline to 0.4 to 3.3 $\times 10^3$/m^3 in the Outer Bight. Zooplankton densities were generally higher in mid-depth and near-bottom samples especially during periods of water column stratification.

Seasonal changes in zooplankton composition are dominated by variations in abundance of copepods which reach peak concentrations during summer and fall months. There are maximum values in abundance of meroplankton (forms which are planktonic during part of their lives) during

January to March and in August to November. Larvae of bivalve molluscs and polychaetes dominate the meroplankton.

Eggs and larvae of several species of fishes also comprise important components of the zooplankton. Figure 33 illustrates peak spawning times in the New York Bight of major commercial and recreational species which have planktonic eggs and larvae. Most of this reproductive activity takes place from May through September.

The predominant groups of protozoa in the Bight are tintinnids (planktonic forms which eat algae and, possibly, bacteria) and scutico ciliates (planktonic and benthic forms which eat bacteria) (Small, personal communication; and Sawyer, personal communication). Scutico ciliates are abundant in the water column during summer, absent from the water in winter, and present in sediments.

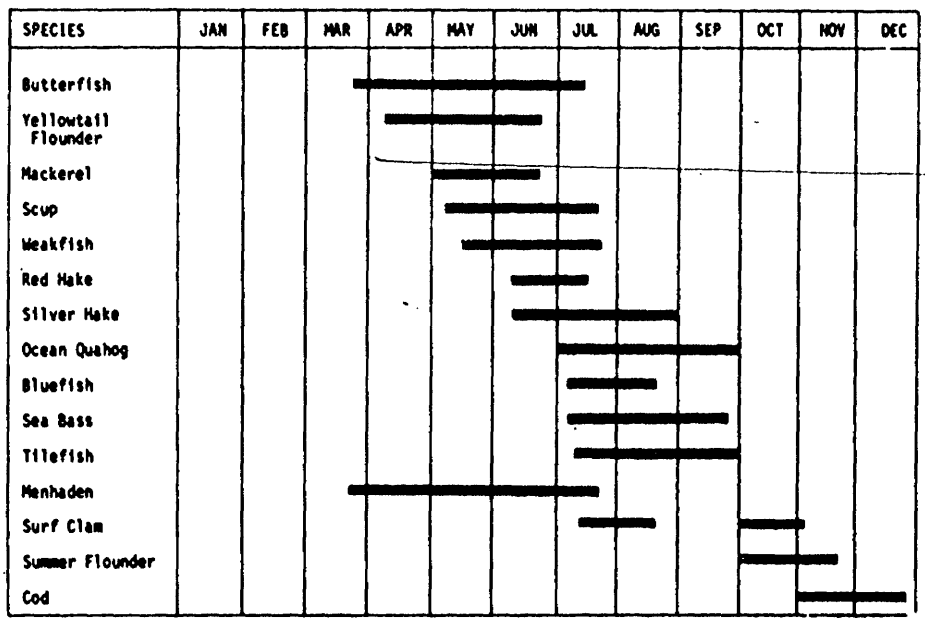


Figure 33. Peak spawning times of major commerical and recreational species with plankton egg and larval stages in the New York Bight. (Livingston, personal communication).

Several species of scutico ciliates have been found in close association with the sewage sludge dump site, in the water column and/or as cysts in the sediment: Uronema nigrocans, Cyclidium dimacronucleatum, and Cyclidium polyschizonucleatum. In contrast, Uronema marina has been found only at clean sites. There appears to be a predominance of ciliates which feed upon bacteria in waters above the sewage sludge and dredge spoil dump sites during higher summer and fall temperatures.

Two studies of phytoplankton nutrients and productivity (Malone, personal communication; and Duedall, personal communication), three studies of net zooplankton (NMFS, 1972; Vaccaro et al., 1972; and Wiebe et al., 1973), and two studies of planktonic protozoa (Small, personal communication; and Sawyer, personal communication) were designed to detect effects of ocean dumping on plankton of the Bight. Impacts of dumping on plankton were localized and had imperceptible influences on the planktonic composition and productivity of the Inner Bight as a whole.

Benthic Invertebrates

Benthic invertebrates (also called "benthos") are in direct contact for long periods with sediments which typically have much higher contaminant concentrations of metals than overlying waters. Benthic organisms are better indicators of chronic pollution than plankton or nekton and are an essential food source for many of the sport and food fishes in the New York Bight. They also accumulate high concentrations of contaminants, such as heavy metals, and certain petrochemicals and other organic contaminants.

At present, there is no evidence of widespread decline or change in species composition of benthic invertebrates in the Bight. A previous study has documented some changes in species composition at the sewage sludge and dredge spoil dump sites (NMFS, 1972; and Steimle and Stone, 1973). NMFS fisheries data from 4 or 5 min tows of hydraulic dredges from all cruises back to 1965 indicates very low concentrations of surf clams (Spisula solidissima) larger than 3 in (7.6 cm) in length throughout most of the Apex (see fig. 34). Commercial-size surf clams are unusually rare in an area of about 600 mi^2 (1.554 km^2) surrounding the Apex dump sites. Adult surf clams are found in the shallow margins of the Apex (Merrill and Ropes, 1969; NMFS, 1974; Haskin and Merrill, 1973).

Amoebae and ciliated protozoa, important as components of the plankton, are also significant as benthic organisms. Over 150 samples of these small organisms in sediments are being analyzed to learn how their distribution is influenced by the dumping. Active amoebae and

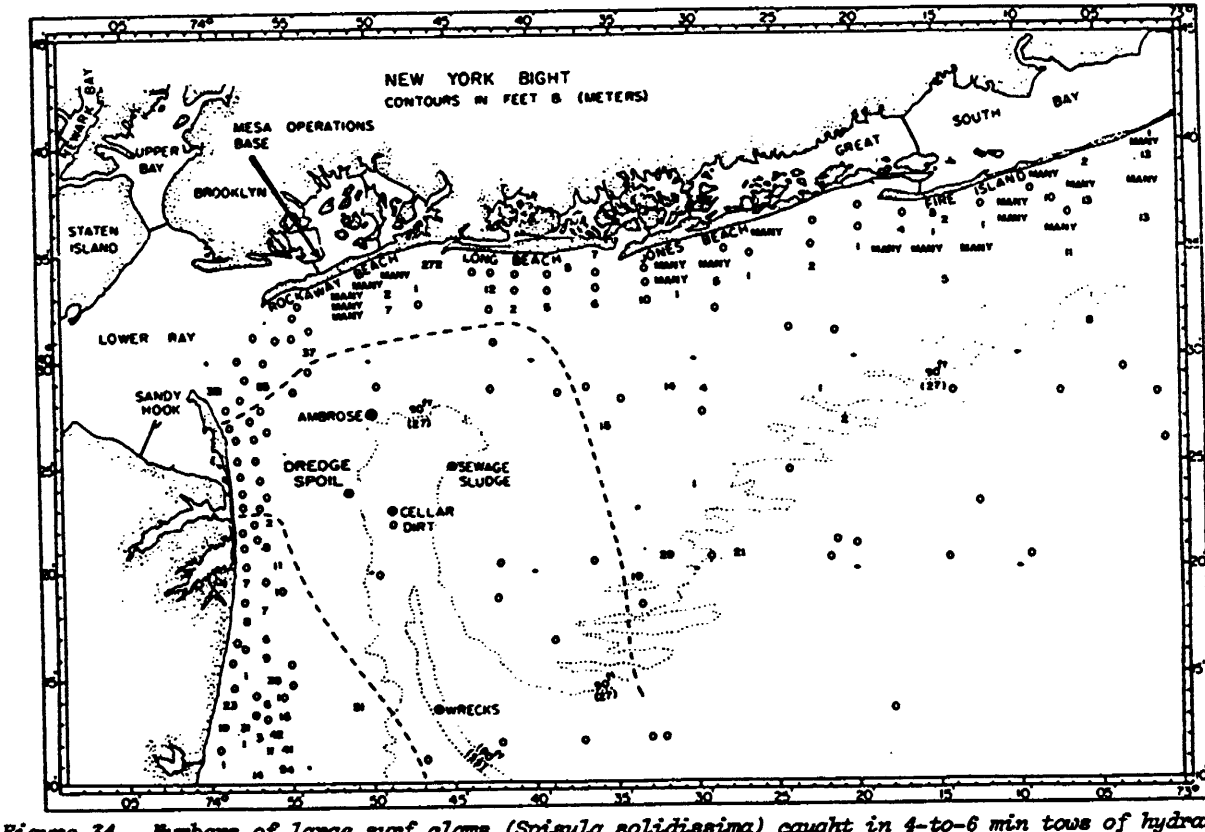


Figure 34. Numbers of large surf clams (Spisula solidissima) caught in 4-to-6 min tows of hydraulic clam dredges. Data from cruises of 1965 to the present (NMFS, 1974); Ropes and Merrill, 1971; Haskin and Merrill, 1973; and Franz, personal communication. "Many" indicates more than 0.5 bushels per haul. The dashed line delineates the area inside the 90-ft depth contour having absence of large surface clams.

ciliates of any kind are rare in sediments near the dredge spoil and sewage sludge dump sites. Essentially all protozoa at these sites are present only extremes, and become transformed into active forms only when environmental conditions become acceptable. There is no apparent influence on the composition of benthic protozoa at the acid waste site.

Fish

Several species of fish are of importance to commercial fishing and/or recreational fishing in the Bight. Brief descriptions of preferred habitats for these species are given in the "Angler's Guide to the United States East Coast, Section III, Block Island to Cape May, New Jersey", (Freeman and Walford, 1974). It is clear from this Guide and from regular sampling of bottom fishes that bottom fishes inhabit the entire area of the New York Bight, and that none of the continental shelf is devoid of fish life.

Figure 35 illustrates typical spring and fall distributions of the most important commercial ground fish (bottomliving fishes) of the northeast. Locations trawled during spring are shown in Figure 36.

Two fishes of commercial importance in the Bight are silver hake (Merluccius bilinearis) and yellowtail flounder (Limanda ferruginea). The average catches of these species in spring and fall ground fish surveys are illustrated in Figures 37 and 38. There were important concentrations of yellowtail in the Inner Bight during spring, and substantial seasonal movements of silver hake.

Fin rot disease in several species of fishes in the Bight is a manifestation of environmental stress. Fin rot disease is characterized by a progressive erosion of the fin rays and overlying epidermis, with erosion originating at the outer edges of fins and progressing to the base. Figures 39 and 40 illustrate a fish with substantial erosion of dorsal and anal fins. The presence of this disease in the Bight has been known for some time (Mahoney et al., 1973).

Of the 22 species of fishes in the Bight with fin rot, the winter flounder (Pseudopleuronectes americanus) is clearly much more susceptible than any other species. However, other species have, in the past, had higher incidences of fin rot than winter flounder (Mahoney, 1973).

A total of 4,489 winter flounder from 435 offshore trawl hauls have been examined for fin rot. Of these flounder, 14% from the Apex had fin rot, whereas only 1.9% of them from other areas had the disease. As

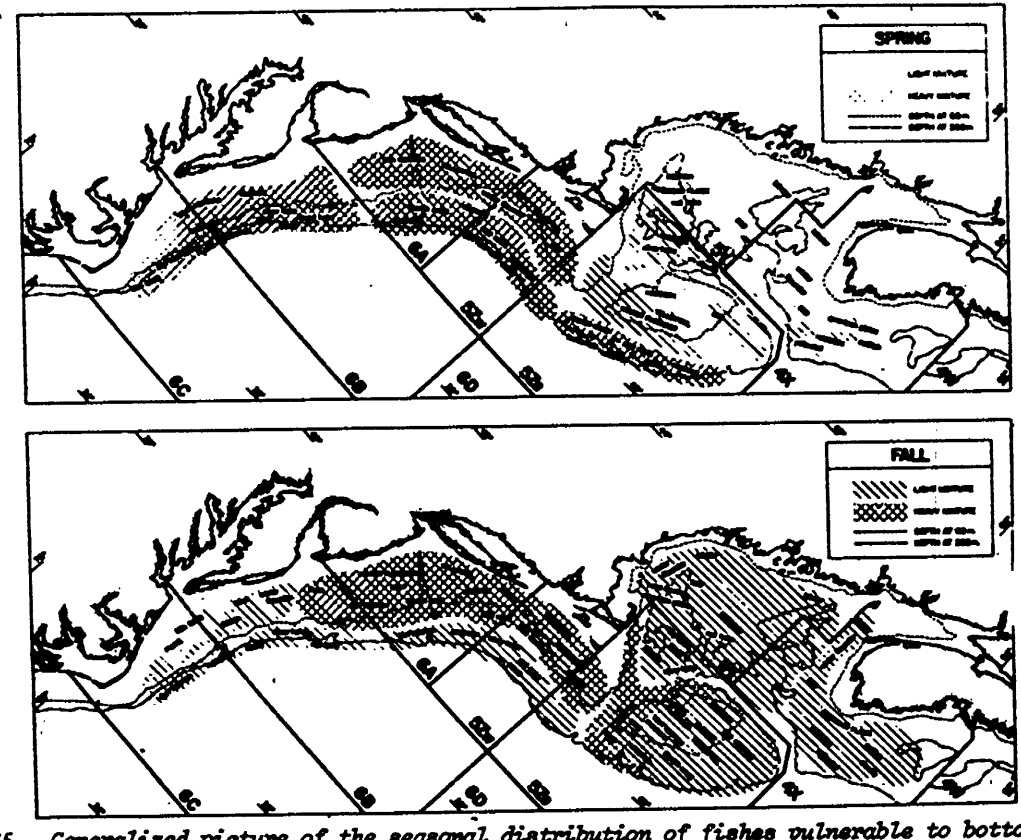


Figure 35. Generalized picture of the seasonal distribution of fishes vulnerable to bottom trawling -- based on plots of individual catches of ground fish surveys. The areas outlined as statistical areas of the International Commission for the Northeast Atlantic Fisheries (ICNAF) (from Grosslein and Bowman, 1973).

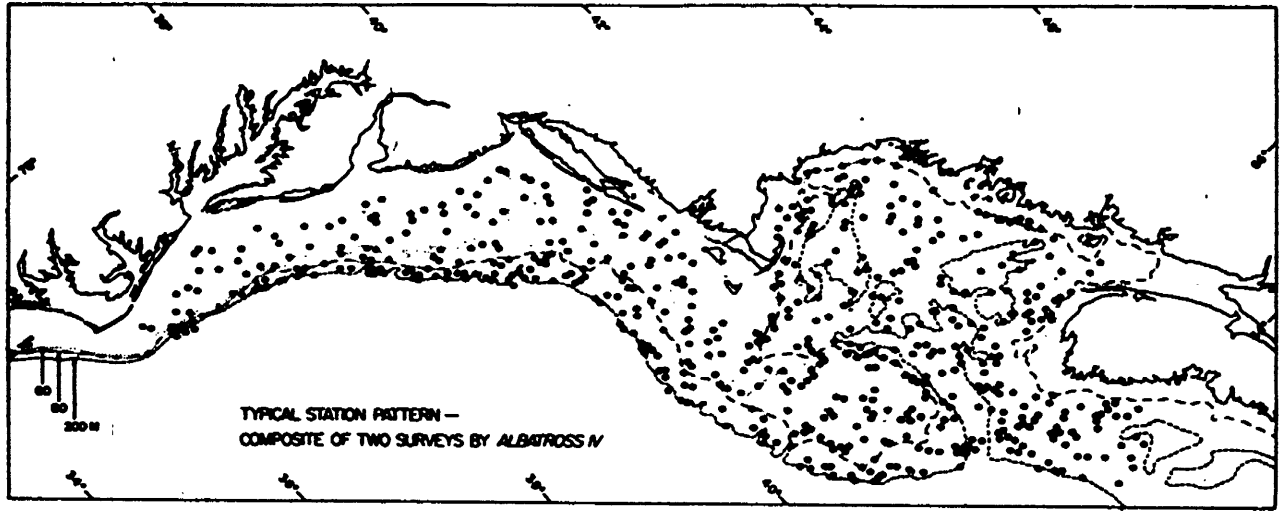


Figure 36. Location of stations where groundfish were sampled during two surveys (from Grosslein and Bowman, 1973).

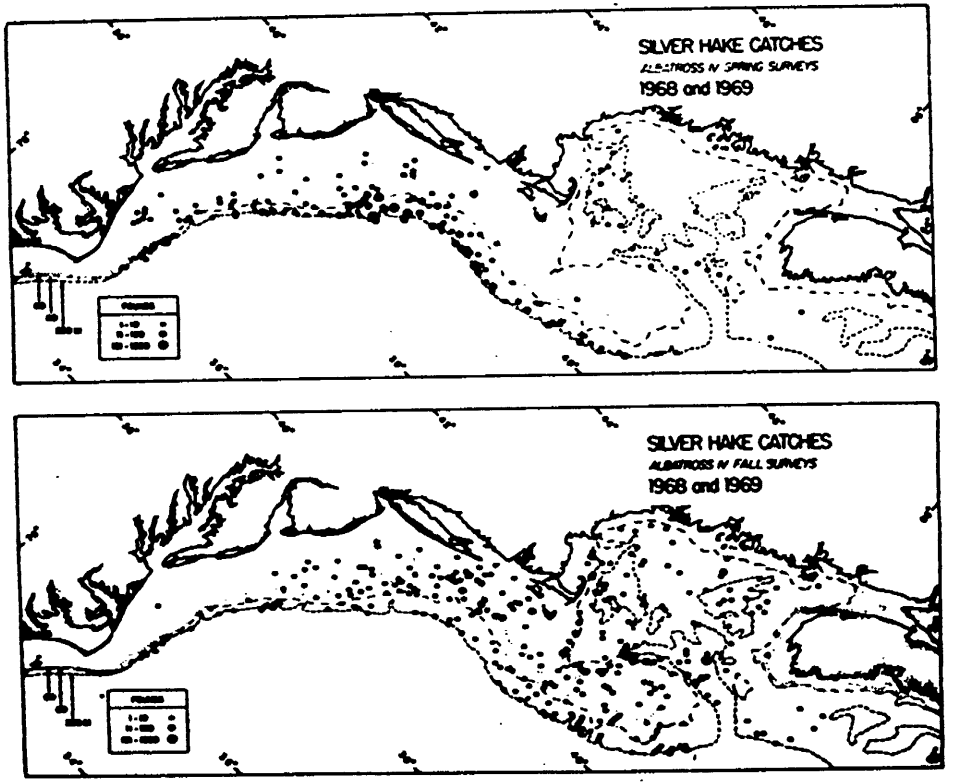


Figure 37. Catches of silver hake (Merluccius bilinearis) in spring and fall, 1968 and 1969 groundfish surveys (from Grosslein and Bowman, 1973).

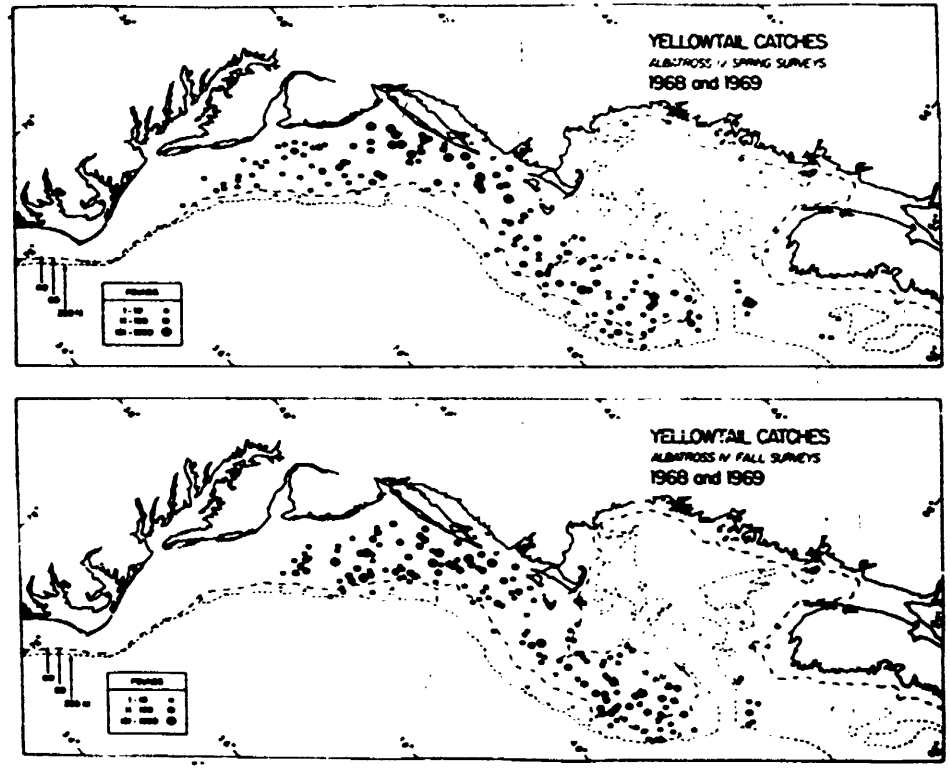


Figure 38. Catches of yellowtail flounder (Limanda ferruginea) in spring and fall, 1968 and 1969 ground fish surveys (from Grosslein and Bowman. 1973).

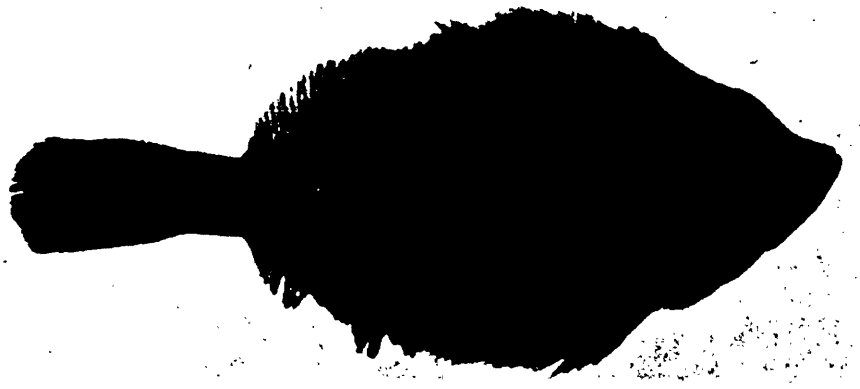


Figure 39. Winter flounder (Pseudopleuronectes americanus) exhibiting fin erosion of the dorsal and anal fins. Darkened areas are photographic artifact resulting from variations in reflected lights.

shown in Table 4, the proportion of diseased winter flounder was significantly greater ($P<.01$)* in the Apex during two consecutive spring seasons, and over all sampling times combined (Ziskowski and Murchelano, 1975).

Monthly trawl samples have been taken inshore from Sandy Hook and Raritan Bays, and Great Bay, New Jersey. A significantly higher incidence ($P<.01$) of fin rot in winter flounder is found in samples from the more polluted Sandy Hook-Raritan Bay (7.6%) than from Great Bay (1.9%). Table 5 illustrates the significantly greater incidence of fin rot in Sandy Hook and Raritan Bays during all seasons except summer (Ziskowski and Murchelano, 1975). Tables 4 and 5 portray a strong seasonal cycle in prevalence of fin rot. The disease is most prevalent in spring, before even inshore waters are subject to appreciable warming.

* The probability is less than one in 100 that the difference could be due to chance.

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Figure 40. Enlargement of dorsal fin of fish in Figure 39 showing a distal erosion of fin tissue and disorganized arrangement of fin rays. Darkened area are photographic artifact resulting from variations in reflected light.

While the prevalence of fin rot in winter flounder is clearly greater in the inner areas of the New York Bight, its precise causes are still unknown. Recent work concluded that fin rot of winter flounder from Narragansett Bay, Rhode Island was caused by the bacterium Vibrio anguillarum (Levin, Wolke and Cabelli, 1972). Studies of several Pacific coast fishes having fin rot disease indicate that some species have evidence of microbial infection whereas others do not (Sherwood and Bendele, 1974). Extensive histological examinations of winter flounder from the Bight with fin rot failed to show any *in situ* bacteria.

Bacteria

It is well known that shellfish near the sewage sludge and dredge spoil dump sites contain unacceptably high concentrations of coliform bacteria (Buelow et al., 1968).

Table 4. Fin Rot in New York Bight Waters.

	1973 Spring (May)	Summer (August)	Fall (October)	Winter (February)	1974 Spring (April)	All
			NEW YORK BIGHT APEX			
Number of Trawl Stations	43	23	44	26	26	163
Total Number of fish	1944	200	177	103	103	2632
Number of Diseased Fish	317(16.3%)*	14(7.0%)	15(8.4%)	4(3.9%)	2(10.1%)	371(14.1%)
			OUTSIDE APEX			
Number of trawl stations	112	24	56	23	57	272
Total Number of Fish	1209	49	5	112	482	1857
Number of Diseased Fish	28(2.3%)	1(2.0%)	0	1(0.9%)	6(1.2%)	36(1.9%)

*Indicates that the percentage of diseased fish in the Apex is significantly greater ($P<0.01$) than that outside the Apex, as determined by the test for equality of percentages described by Sokal and Rohlf (1969, pp. 607-610).

A study of possible movements of bacteria from the sewage sludge dump site to Long Island beaches shows that all the beaches monitored had acceptable bacteriological water quality (U.S. EPA, 1974, a,b,c; and Graikoski et al., 1974). Analyses of beach waters from Long Island for pathogenic bacteria did not reveal contamination (Cabelli, personal communication).

A circular area with a 6 n mi (11 km) radius around the sewage sludge dump site was closed to shellfishing in 1970 by the Food and Drug Administration (FDA). In May 1974, FDA expanded this closure area west of a line from the circle to East Rockaway Inlet, New York, and north of a line from the circle to Belmar, New Jersey, because of bacterial contamination from ocean sewage outfalls and seaward flow from Lower Bay and other bays (Meyer, personal communication).

Table 5. Fin Rot in Coastal Waters

	1973 M,A,M	1973 J,J,A	1973 S,O,N	1973 D,J,F	1974 M,A,M	All
	SANDY HOOK and RARITAN BAYS					
Total Number of Fish	451	918	325	40	493	2227
Number of Diseased Fish	68(15.0%)*	24(2.6%)	19(5.8%)	4(10.0%)	55(11.1%)	370(7.6%)
	GREAT BAY					
Total Number of Fish	480	14	65	210	195	964
Number of Diseased Fish	11(2.2%)	0	0	2(0.9%)	6(3.0%)	19(1.9%)

*Indicates that the percentage of diseased fish in Sandy Hook-Raritan Bay is significantly greater ($P<0.01$) than that in Great Bay, as determined by the test for equality of percentages described by Sokel and Rohlf (1969, pp. 607-610).

Increasing use of antibiotics has contributed to improvement of human health throughout the world during the past 30 years. Some of the pathogenic bacteria have developed strains which are becoming increasingly resistant to the antibiotics so that larger doses have to be used for treatment of disease. Resistance to toxic heavy metals also has developed in some bacteria. It has been found that this resistance, called the "R" factor, can be transmitted to different genera and species of bacteria. Coliform bacteria, ordinarily a harmless indicator of pollution (people are full of them), have been found not only to transmit the R factor, but to serve as a reservoir through which other bacteria, for example, *Salmonella*, will be resistant to antibiotics (Anderson, 1968; and Grabow et al., (1974). Coliform bacteria having resistance to heavy metals and a broad spectrum of antibiotics have been found in the New York Bight (Koditschek and Guyre, 1974). Their health hazard is unknown.

CHAPTER 6. ALTERNATIVE DUMP SITES

The Environmental Protection Agency, Region II, requested advice, comments and information on an alternative continental shelf sewage sludge dump site. The response, on 8 March 1974, proposed two areas for consideration. Amplification of comments and information relative to these two areas was provided at a public hearing on sewage sludge disposal called by New York State Assemblyman Peter A. Berle on 22 March 1974 (see Fig. 1).

Area 1-A lies northeast of the Hudson Shelf Valley. Its northern boundary is a line roughly parallel to and 25 n mi from the Long Island coast (this boundary is seaward of the 20-fm curve). Its southern boundary is a line roughly parallel to and 10 n mi north of the axis of the Hudson Shelf Valley; and its eastern boundary is described as an arc of a circle with a radius of 65 n mi, centered at the midpoint of the Sandy Hook, New Jersey-Rockaway Point, New York transect.

Area 2-A lies southwest of the Hudson Shelf Valley. Its northern boundary is a line roughly parallel to and 10 n mi south of the axis of the Hudson Shelf Valley. It western boundary is an approximation of the 20-fm curve; and its southern boundary is an arc of a circle with a radius of 65 n mi, centered at the midpoint of the Sandy Hook-Rockaway Point transect.

Selection of the two areas proposed was based upon three general criteria:

- The location should minimize the chance of contamination reaching shorelines and beaches,
- The location should minimize, to the extent possible, adverse effects upon living marine resources, and
- The location should be within 65 n mi of the harbor entrance.

Water circulation patterns, and interaction of the waters with bottom topography, along with biological considerations, were examined for these two areas.

The location of the Hudson Shelf Valley itself imposes some restrictions on locating an alternative dump site. The clockwise circulation gyre in the Inner Bight appears to have its western edge aligned with the Hudson Shelf Valley. There are indications of deposition and erosion, and transport both up and down the Shelf Valley. Additionally, the Shelf Valley area:

- Serves as a migration route for certain fishes and shellfish,
- Supports active fisheries, and
- Serves as a winter aggregation zone for some fishes.

No consideration was given to the area's winter no-fishing zone, and the over-wintering zone for several fishes defined by international bilateral agreements.* The areas most intensively fished for surf clams were also avoided in proposing the two areas. These areas are generally shoreward of the 20-fm contour along New Jersey and Long Island, with the greatest concentrations between the 10- and 20-fm contours.

Available evidence does not indicate any environmental advantages which might result from moving the sludge site. Temporary utilization of a new site is likely to result in more harm than good.

However, the increased quantity of sewage sludge to be dumped in the Bight over the next few years, requires that studies be made now to evaluate the potential environmental impact of a change in the dump site location should future conditions warrant.

The problem of what to do with the dredge spoil dump site remains. There is a potential hazard to navigation at the dredge spoil site because of the build-up of dredge spoils. In moving the dredge spoil dump site, consideration should be given to combining the sewage sludge and dredge spoil dump sites. Due to the toxic nature of many dredge spoils, there may be little benefit from moving only one of these two substantial sources of contamination in the Bight Apex. One or more new dredge spoil sites might be chosen from the already contaminated areas of the Bight.

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* This area (see Fig. 1) is bounded by 37°50'N, 74°25'W at the SW corner, NE to 38°24'N, 73°44'W, thence NE to 39°40'N, 72°32'W, thence ENE to 40°05'N, 71°40'W, thence S to 39°50'N, 71°40'W, thence SW to the SE corner 37°50'N, 74°00'W.

CHAPTER 7. FINDINGS AND RECOMMENDATIONS

Findings

Some marine scientists (Bascom, 1974) suggest that the waste assimilation and oxidation capacities of the ocean should be used for waste disposal. Anaerobic basins provide a reducing environment into which many wastes may be satisfactorily discharged. Meanwhile, interim results from the present study include:

(1) Geological, chemical, and physical oceanographic studies indicate that water and sediments discharged to the existing sewage sludge dump site move northerly in a clockwise gyre. Much of the sludge is mixed with natural sediments in Christiaensen Basin and in the Hudson Shelf Valley. The amount of sludge that moves farther north to the vicinity of Long Island beaches is unknown; there is no evidence of massive shoreward movement.

(2) Available data show no net advantage to moving the sewage sludge dumping site to one of the two presently identified alternative sites 65 miles offshore for an interim period of uncertain duration. Further study is needed to determine whether one of these sites or a more distant one on or beyond the continental slope would be more acceptable for longer-term use.

(3) A 30-ft (10-m) mound of dredge spoil has accumulated over the 33-year period of operation at that disposal site. If this site is to be moved in order to avoid further shoaling, the Christiaensen Basin offers topographic advantages.

(4) The hazards of dumping sewage sludge and dredge spoils containing trace metals and other toxic wastes into the New York Bight are not known, although the higher than normal incidence of fin-rot disease of fish in the area indicates that something is wrong.

(5) Bacteriological effects of ocean dumping have resulted in closing the area around the sludge dumping site to shellfishing. There is concern that Long Island beaches are threatened by bacteriological contamination from sludge dumping. Additional study is needed to determine the probable level of contamination from dumping the larger future quantities of sludge at either present or alternative sites. These studies are underway, including assessment of resistance factors in coliform and pathogenic bacteria from the sludge. Meanwhile, there is no evidence of an imminent hazard to the beaches.

Recommendations

It is recommended that:

(1) Interim use of alternative dump sites be avoided,

(2) Expanded studies be made of alternatives to existing ocean dumping practices. Alternatives include:

(a) land disposal of materials presently dumped at sea,

(b) source control of toxic wastes necessary for safe ocean disposal at different locations or distances from shore, and

(c) processing necessary for pathogenically-safe sewage sludge disposal at different locations or distances from shore.

(3) Research on environmental impacts of ocean dumping and other activities of man in the New York Bight be continued with emphasis on the fates and effects of toxic materials, including trace metals, hydrocarbons, and pathogenic contaminants.

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Mr. DE LUGO. At this time we would like to recognize the representative of Congressman Murphy for one question.

Mr. PERIAN. You brought up the New York situation.

The EPA witness in effect, said this morning that they selected the northern site of the Hudson canyon for a study as opposed to the southern site for no particular reason.

Could you give the committee any particular reason why one site should be selected or studied over the other?

Mr. MARTINEAU. In the interim, I asked our staff to check for sure if we are at one site or two, since we are doing site surveys for them, and we are working on two sites. We are working on both the northern and southern sites.

Mr. PERIAN. Would you submit for the committee's record any documents or papers that you have or studies as of today?

Mr. MARTINEAU. I believe there is a memorandum of understanding being developed between the region and our research laboratories, and we can make that a part of the record.

Mr. PERIAN. You can make that available for the record?

Mr. MARTINEAU. Yes, when completed.

[The information follows:]

MARINE ECOSYSTEMS ANALYSIS PROGRAM, NEW YORK BIGHT PROJECT

LETTER OF UNDERSTANDING CONCERNING BASELINE SURVEYS AND EVALUATIONS OF THE PROPOSED INTERIM SEWAGE SLUDGE DISPOSAL SITE(S) IN THE NEW YORK BIGHT

The Environmental Protection Agency, Region II (EPA-RII) has stated that the existing sewage sludge disposal site in the New York Bight will not be used after 1 July 1976, and has proposed the use of a new sewage sludge disposal site (s), farther seaward than the existing site, on an interim basis, effective 1 July 1976. In accordance with the Marine Protection, Research and Sanctuaries Act of 1972 (PL 92-532), EPA-RII is responsible for preparing an Environmental Impact Statement (EIS) associated with the designation of a new interim New York Bight site(s) for the ocean disposal of sewage sludge. Data, comprehensive enough to fulfill requirements for the EIS preparation, must be collected at the proposed new interim disposal site(s). Although an interim sewage sludge disposal site(s) has not yet been designated, two areas proposed by the National Oceanic and Atmospheric Administration's (NOAA) Marine EcoSystems Analysis (MESA) New York Bight Project (NYBP) are being considered.

Two environmental/ecological studies in and around the two proposed areas are currently underway: one by NOAA as part of their MESA-NYBP (initiated May 1973), and one by Raytheon, Inc. (initiated June 1974), the latter under contract to EPA as part of their EIS preparation effort. Coordination of these studies will avoid duplication of effort, and will insure adequate data collection for preparation of the EIS.

The purpose of this letter is to establish an understanding between EPA-RII and MESA-NYBP as to:

1. The amount of data acquisition and data analysis effort MESA-NYBP will be undertaking in order to assist EPA-RII in their preparation of the EIS;
2. The samples to be taken by MESA-NYBP in conjunction with efforts in 1. above for analysis of biological and chemical parameters by EPA-RII; and
3. The management of marine data and information generated by MESA-NYBP, and by EPA-RII and their contractors in conjunction with New York Bight studies.

The first point agreed to is summarized in Attachment 1, prepared by MESA-NYBP; a statement of the data and evaluations that will be undertaken relevant to the environment/ecosystem in and around the two proposed areas. A draft report of these data and evalautions will be provided to EPA-RII by MESA-NYBP by 31 August 1975. This report will include data evaluation of biological, chemical, geological and physical oceanographic studies along with appropriate

conclusions and recommendations. Portions of this report, and information to be included therein will be provided in draft format to EPA–RII prior to 31 August 1975, as they become available.

The second point agreed to is summarized in Attachment 2, prepared by MESA–NYBP, a statement of sampling assistance, in and around the two areas of interest, to be provided by MESA–NYBP to EPA–RII.

The third point agreed to is summarized in Attachment 3, a summary of requirements and procedures to be followed with regard to marine data and information produced in conjunction with New York Bight studies.

GERALD M. HANSLER,
Regional Administrator.
DR. WILMOT N. HESS,
Director.

Mr. PERIAN. Thank you, Mr. Chairman.

Mr. DE LUGO. Thank you very much.

Any questions from the minority counsel, Mr. Smith?

Mr. SMITH. No, sir.

Mr. DE LUGO. Well, I want to thank you very much, Doctor, for your patience and your excellent statement.

I think the hearing has been fruitful, and I would like to commend all the witnesses we have heard this morning.

At this time we will adjourn until 10 o'clock tomorrow morning.

[The following material was submitted for inclusion in the record:]

COMMENTS ON STATEMENT BY CHRISTOPHER L. OSTROM, STATE OF MARYLAND, WATER RESOURCES ADMINISTRATION

Mr. Christopher Ostrom in his statement noted that it is incumbent upon NOAA and EPA to conduct the necessary studies and monitoring to provide an early answer to the question when is the ocean dumping of sludge or waste material considered to constitute a hazard to the environment.

Though the NOAA New York Bight MESA project has focused on the study of the impact of ocean dumping in that area, we believe that many of the results will be applicable to other existing or proposed dump sites. The project has as one of its objectives the answering of such questions.

As for the dumping of sewage sludge from Philadelphia and the industrial wastes from DuPont and others, the NOAA efforts at these dump sites have been in the form of technical support to EPA. Our Manned Underseas Science and Technology program has provided operational support in the use of submersibles to study this dumping area and the NOAA buoy program is providing a buoy for deployment and collection of environmental data. We intend to include these dump sites in our discussions with EPA concerning the implementation of the recently concluded NOAA/EPA interagency agreement for the conduct of cooperative baseline studies and monitoring of ocean dump sites.

COMMENTS ON STATEMENT OF KENNETH S. KAMLET, ON BEHALF OF THE NATIONAL WILDLIFE FEDERATION

The statement of Kenneth S. Kamlet on behalf of the National Wildlife Federation on page 10 addresses the roles of NOAA under Title II and noted that "NOAA's discharge of these research responsibilities during the past two years has been less than vigorous and far from 'comprehensive'."

It is true that NOAA has done little monitoring or research on ocean dumping effects outside of the New York Bight. However, it has been our opinion that by concentrating our efforts in this area, where most of the ocean dumping in this country takes place, greater contributions could be made to understanding the effects of ocean dumping upon the marine ecosystem. We hope that the advanced copy of the report of the Marine Ecosystems Analysis Program, *Ocean Dumping in the New York Bight*, has provided the subcommittees with information concerning the scope and complexity of the problems of ocean dumping research being carried out by NOAA. Other efforts have been carried out off Southern California, the Philadelphia sewage sludge dump sites and the deep water site off New York.

A study in cooperation with EPA is now being developed for the dump site off Galveston. We recognize that research and monitoring must be carried out at other locations. The recently concluded interagency agreement between NOAA and EPA is intended to provide a coordinated effort for this purpose.

With respect to carrying out a comprehensive and continuing program of research on long term effects of ocean pollution, overfishing and man-induced changes of ocean ecosystems we would refer to the recent *Report to the Congress on Ocean Pollution, Overfishing, and Offshore Development* cited in our testimony. As noted in the report, there is a broad range of active programs addressing the concerns expressed by the enactment of Section 202. They are carried out for the most part within broader programs of agencies, such as the NOAA marine contaminants program referred to in our testimony. Consequently, appropriation under P.L. 92-532, the Marine Protection, Research, and Sanctuaries Act of 1972, has not been requested. This does not, however, detract from the significant contributions being made by these programs in furthering our understanding of long-range effects of pollution, overfishing, and man-induced changes of ocean ecosystems. We do recognize the need to better integrate these many efforts and intend to take the necessary steps during the coming year to accomplish this.

In summary, while we concur with the need for further efforts under Title II, we believe that responsive programs are being carried out by the Federal agencies. These programs do need to be extended particularly in geographic range and in the development of the FY 1977 budget. We are examining these needs.

CORPS OF ENGINEERS RESPONSE TO PREPARED TESTIMONY OF KENNETH S. KAMLET, COUNSEL TO THE NATIONAL WILDLIFE FEDERATION BEFORE THE SUBCOMMITTEE ON FISHERIES AND WILDLIFE CONSERVATION AND THE ENVIRONMENT AND THE SUBCOMMITTEE ON OCEANOGRAPHY, HOUSE COMMITTEE ON MERCHANT MARINE AND FISHERIES ON APRIL 25, 1975

Item No. 1

Last paragraph of page 3 of Mr. Kamlet's testimony containing the allegation that the Corps lacks "will and determination" in pursuing its dredged material disposal program and the implication that "all dumping not clearly demonstrated to be safe" must be terminated.

Response

The history of the Corps efforts and its ongoing efforts and achievements under the Marine Protection, Research, and Sanctuaries Act (Public Law 93-532) and other related natural resource and environmental legislation prove that Mr. Kamlet's allegation and implication are incorrect.

Public Law 92-532 vests responsibility for regulating the discharge of material, other than dredged material, with the Environmental Protection Agency. Section 103 of Public Law 92-532 vests responsibility in the Corps of Engineers, in cooperation with EPA, for authorizing the transportation of dredged material for the purpose of dumping it in the ocean waters. Public Law 92-532 has thus singled out disposal activities associated with dredged material for regulation by the Corps.

Following approval of Public Law 92-532, the Corps published a proposed regulation in the Federal Register on May 10, 1973. This regulation prescribed the policies and procedures to be followed in processing permit applications for proposed activities in navigable or ocean waters, including transportation of dredged material to be disposed in ocean waters. This regulation also served as interim guidance for our field offices during the 11-month period required to receive and evaluate comments concerning the regulation.

The Corps published its final regulation for this permit program on April 3, 1974. Dredged material disposal activity of any Federal agency other than the Corps is governed by this regulation to the same extent as a non-Federal activity. Such agencies thus require a Corps permit in the same manner as any disposal activity by a non-Federal interest.

Section 103(e) of Public Law 92-532 allows the Secretary of the Army to issue regulations for the ocean disposal of dredged material associated with Federal projects undertaken by the Corps. Accordingly, the Corps published final regulations in the Federal Register on July 22, 1974 to cover Corps projects involving ocean disposal. These regulations require consideration of the same criteria and

factors which the Corps applies in processing permits for projects of other agencies and interests. This Corps action was commensurate with the legislative intent of Section 103(c) and the recent holding of *Save our Sound Fisheries v. Callaway*, in Civil Action No. 5297 (D.C.R.I., March 5, 1974).

Both of the above mentioned regulations require that a determination be made that any proposed dumping of dredged material will not adversely affect to an unreasonable degree human health, welfare, or amenities, or the marine environment, ecological system, or economic activities. Moreover, both regulations provide for notice and opportunity for public hearings. The regulations support the selection of ocean disposal sites in accordance with criteria promulgated by EPA on October 15, 1973, and published in Title 40 of the Code of Federal Regulations, Part 227. To the extent feasible, they require the use of recommended sites and the avoidance of EPA designated critical areas.

The regulations further provide, pursuant to the requirement of Public Law 92-532 for an independent determination by the Corps of the need for the dumping. This determination is to be based on an evaluation of the potential effect which a denial of a permit would have on navigation, economic and industrial development, foreign and domestic commerce, and of other possible methods and locations for disposal.

Procedures have also been prescribed in the regulations for Corps field offices to follow if there is disagreement with EPA in an individual permit case regarding its compliance with their criteria or restrictions.

Title III of Public Law 92-532 authorizes the Secretary of Commerce to designate as marine sanctuaries those areas of the ocean coastal waters which he determines necessary for the purpose of preserving or, on the other hand, restoring for conservation, recreational, ecological, or aesthetic values. The Secretary of Commerce may designate such sanctuaries after consulting with other interested Federal agencies, and with the approval of the President.

The Corps regulations require any permit applicant, whose proposed activity will be located within a marine sanctuary, to provide a certification from the Secretary of Commerce. The certification will state that the applicant's proposed activity is consistent with Title III and that the activity can be carried out within the regulations which have been promulgated by the Secretary of Commerce for that sanctuary. Failure to obtain such a certification will result in a denial of the permit.

All Corps dredging projects, including those involving ocean disposal, are processed in accordance with Corps regulations published on July 22, 1974. These regulations require extensive coordination procedures with other Federal and local agencies as well as the general public before disposal can proceed. Under a self-imposed constraint, all scheduled maintenance dredging projects will be the subject of an environmental assessment and, if required, an environmental impact statement prepared by January 1, 1976. These documents will, of necessity, assess the environmental impact on any ocean dumping site serving such projects. In a few cases, however, a separate environmental impact statement will be prepared for ocean disposal sites which serve additional purposes. An example of this latter case is the New York Bight area, which involves the disposal of a variety of materials in a multiple disposal site.

In the area of research, the major thrust is found in the 5-Year Dredged Material Research Program (DMRP) being conducted by the Corps' Waterways Experiment Station in Vicksburg, Mississippi. The DMRP is a $30 million, congressionally authorized program which is specifically designed to answer the major questions as to the effects of dredged material disposal. The manpower, funding, and technical research findings resulting from this program make the Corps the world leader in determining environmental effects of dredging and dredged material disposal. One important part of this program involves reviewing, developing and testing bioassasy techniques as a means of determining the actual effects resulting from open-water disposal of dredged material. In the DMRP, two of the nineteen research tasks are determining the effects of dredged material disposal on water quality and aquatic organisms in both inland and ocean waters. In general, these projects are determining: (1) the short and long-term fate of dredged material subsequent to disposal; (2) the effects of dredged material disposal on water quality; (3) the effects of dredged material disposal on aquatic organisms, and; (4) what constitutes the pollution status of dredged material. Included in these projects are studies specifically to determine the nature and extent of mobilization and biological uptake of pollutants from contaminated dredged material and to determine the fate and consequences of these contaminants as related to food

chain transfers and bioaccumulation. The DMRP is being supplemented and supported by Corps field operating elements through field studies and specific local research projects. EPA and twelve other concerned Federal agencies are being kept fully informed of our research progress through semi-annual inter-agency briefings, a monthly newsletter, an annual report, formal and informal briefings, and other information exchange programs.

A Standard Elutriate Test was developed by the Corps, in conjunction with EPA, to improve identification of any potential effect of dredged material disposal on water quality. It was published in the Federal Register on October 15, 1973 and has been codified in Title 40 of the Code of Federal Regulations, Part 227, as part of the ocean dumping criteria mandated by the Act. The Standard Elutriate Test is a laboratory procedure in which sediment and water are mixed together and agitated to simulate the dredging process and thereby provides the present best prediction of impact on water quality resulting from disposal operations. The Test has the added advantage of being readily incorporative into a bioassay procedure to determine the effects on aquatic organisms. Research will continue on the Standard Elutriate Test. Various improving modifications will be incorporated as additional laboratory techniques are developed and confirmed through field evaluations.

From the standpoint of permits, the Corps is continuing to process Section 103 actions under the procedures specified in our permit regulation published in final form on April 3, 1974. During Fiscal Year 1974 the Corps received 97 applications for Section 103 permits requesting disposal of dredged material beyond the territorial seas and 10 applications for disposal within the territorial seas. During this same period, 49 permits were issued for disposal beyond the territorial seas and 9 permits were issued for disposal within the territorial seas.

To date, the majority of applicants for Section 103 permits are the port users who need to perform either new dredging or maintenance dredging of berthing areas adjacent to Congressionally authorized channel and harbor projects. Historically, ports were created in estuaries and rivers which served as harbors of refuge and did not have to have natural deep waters. As ports and cities grew, the lands surrounding the harbors were rapidly populated with commercial, industrial and transportation complexes, leaving little or no room available for placing dredged material. As larger vessels were designed, with more economical ton/mile cost ratios, the main channels in the harbors were deepened by the Corps in accordance with Congressional authorization. The local port users provided for the dredging or excavation to gain access to their individual berths or docking areas.

With the technical resources available, and the requirement for a local sponsor to furnish a disposal area, the Corps has generally been able to perform the harbor deepening or maintenance with little difficulty. However, individual port users and the local port authorities are now beginning to find that adequate upland disposal areas are no longer available. Such areas have become increasingly difficult to obtain.

Typically, upland areas are no longer available due to the growth of the city surrounding the port; open water disposal in inland areas is resisted by environmental interests; and the creation of dredged material islands requires an exceptionally long time period for intergovernmental coordination and satisfaction of the economic, environmental and social issues involved. Thus, ocean dumping often appears the only feasible, although expensive, alternative available to the local port users. Difficulties, however, may still be confronted while trying to obtain the concurrence of all interested agencies, citizen groups, and individuals. The bottom sediment of an inner port is sometimes contaminated by actions beyond the applicant's control such as urban storm water runoff, inadequately treated sewage discharges, industrial discharges, or upstream agriculture and farm runoff.

The requirements of Public Law 92-532 are such that only a few are able to afford the expense of the ocean dumping alternative. For example, the only ocean dumping conducted in the Corps Southwestern Division is that done by the Corps, and in the New England area many marinas are operating with restricted slip depths due to the lack of disposal sites.

As previously mentioned, the Corps civil works projects affected by Public Law 92-532 primarily involve construction of new ship channels and periodic maintenance dredging of existing channels to insure their continued navigability essential for interstate and foreign commerce and national defense. It has been our practice to use the open ocean for disposal of the resulting dredged material.

The primary problems we are currently encountering, in carrying out our mission to maintain the Nation's waterways, involve concerns about damage to the marine environment and adverse effects on marine water quality and organisms that might be caused by the disposal of dredged material which contains certain quantities of materials labeled as pollutants. These concerns are almost always based on a fear of unknown consequences rather than a scientific knowledge of effects. Under EPA regulations, dredged material, which cannot be proved to be unpolluted, must be classified as polluted, To date, it has been virtually impossible to establish acceptable proof to EPA that any dredged material other than clean sand or gravel, is unpolluted. In addition, EPA criteria require that material not be disposed of in ocean waters unless it can be demonstrated, to their satisfaction, that the proposed disposal action will not have an "unacceptable adverse impact" on the environment.

The Corps is thus devoting considerable effort and funds to discover if our proposed dredging activities, and associated ocean disposal operations have such unacceptable adverse impacts. We are making detailed physical, chemical and biological studies of disposal areas and have developed major research programs for monitoring the environmental effects of these operations. Completion of these studies will require a number of years. However, our preliminary findings while not yet fully conclusive, strongly indicate that the disposal of dredged materials in ocean waters frequently has no significant adverse effect on the marine environment, and, in some cases, may be beneficial. An interesting example is along the east coast where lobsters have shown a preference for disposal areas as a habitat. Research results indicate that in many instances ocean disposal is environmentally preferable to land disposal despite past common assumptions to the contrary.

Public Law 92-532 essentially implies that an adverse impact is to be expected rom all ocean dumping opertations. This is simply not being demonstrated by ongoing research programs. For example, the dredged material from the Freeport Harbor, Texas, navigation project is classified by EPA as a pollutant since conclusive data are not available to prove otherwise. Accordingly, EPA has refused to concur with the open Gulf disposal of dredged material from most of the projects' channels notwithstanding that initial biological studies have indicated greater marine biotic productivity in the disposal area than in the surrounding undisttrbed Gulf.

In other areas of the country the Corps has observed actual water quality improvement resulting from the ocean disposal of dredged material. As the dredged material settles to the bottom many of the pollutants in the ocean adhere to the temporarily suspended silt and clay particles. As a result, some pollutants, including heavy metals, are taken out of the water column during the dredging operation by becoming attached to deposited sediment.

Corps research efforts are continuing and we estimate that approximately three years of additional concentrated effort will be required to develop answers to certain major questions to the complete satisfaction of scientists and engineers in the many related fields. Firm answers to many of the questions are and will be published as they become available. In the interim, while additional Corps and other research is being conducted, the Corps does not feel that our disposal procedures should be substantially changed to the point of imposing excessively high costs to dredging and disposal operations.

The nation's waterways must continue to be open to navigation. Disposal costs of dredged material have significantly increased. Moreover, the future is uncertain. The Corps is increasingly susceptible to litigation which could impair the navigability of our waterways notwithstanding that we are making every effort to bring our dredging program into full compliance with Public Law 92-532, the National Environmental Policy Act of 1969 and other pertinent requirements of law.

The Corps has experienced conflicts resulting from the management of our traditional mission of maintaining the nation's waterways while discharging our obligation under Public Law 92-532. There have been hardships and economic losses due to the Act's implementation. We expected this, because we realized that the national goal of restoring a clean environment and insuring man's activities are compatible with the environment would be expensive. Moreover, we continue to recognize that it is a wise management practice to periodically evaluate past decisions and their effects. We are vigorously pursuing the question of the effects of ocean dredged material disposal on the environment. However, we do not believe that it would be in the national interest to substantially limit disposal of dredged material at ocean sites just as research results are beginning to show that this activity often has minimal impact on the environment.

Item No. 2

Page 4 of Mr. Kamlet's testimony containing statements that authorization for funding of the Corps missions under the Marine Protection, Research, and Sanctuaries Act (Public Law 92–532) is included in the legislation currently under review by the Subcommittees (H.R. 5710, 94th Congress and related bills) and that "the Corps of Engineers has never seen fit to ask the Congress for so much as a penny to discharge its obligations under the MPRSA (Public Law 92–532), [as an indication] of the Corps' unwillingness to effectively implement the law."

Response

Mr. Kamlet's statements on Corps funding requests and authorizations to enable the Corps to perform its missions under Public Law 92–532 and related authorities evidence a serious misunderstanding of the Corps budgetary program from which he arrives at his completely unsupported allegation of Corps unwillingness to implement the law.

The testimony of Colonel Robert B. Hughes, Assistant Chief of the Construction-Operations Division, Directorate of Civil Works, Office of the Chief of Engineers, before the Subcommittees on April 25, 1975 (the same day Mr. Kamlet delivered his testimony) should serve to remove any confusions on this issue. Engineers, before the Subcommittees on April 25, 1975 (the same day Mr. Kamlet delivered his testimony) should serve to remove any confusions on this issue. Colonel Hughes informed the Committee on how the Corps generally budgets in three categories for the funds necessary to fulfill the Corps' missions under Public Law 92–532. In the first category, the Corps currently estimates that about three percent of our General Regulatory Funds are used for this purpose. This would amount to about $500 thousand in Fiscal Year 1976. The second category of Corps funding, related to our responsibility under Public Law 92–532, is under our Dredged Material Research Program consisting of the $30 million, five-year study which we noted in response to Item No. 1 above and for which we requested $9.4 million in Fiscal Year 1976. The third category of Corps funding related to our responsibilities under Public Law 92–532, is from our Operation and Maintenance appropriations for specific channel and harbor projects. Project funds are being used, as required, for sampling and laboratory testing and monitoring the fate of the dredged material disposed and its environmental effect at individual project locations. While the Corps does not have specific costs for this third category, we estimate that they total less than $500 thousand for any given fiscal year.

As Colonel Hughes stated in his testimony, the Corps has been fully supported in its requests for funding of the three categories involved. These categories are not the subject matter of H.R. 5710, 94th Congress and related bills which would provide further authorizations for appropriations to the Environmental Protection Agency and the Department of Commerce to fulfill their respective missions under Public Law 92–532. Since these authorization bills under review by the Subcommittees will not serve as a source of funding authorization for the Corps, we have, of course, deferred to the views of the two agencies which would be affected by the authorizations as to the merits of the proposals.

Item No. 3

Second paragraph of page 5 of Mr. Kamlet's testimony containing the allegation that it will "take more than money to induce the Corps of Engineers to properly regulate the ocean dumping of dredged material," and the parenthetical observation that the Corps' concerns for funding to support our missions under Section 404 of the Water Pollution Control Act are not similarly reflected when funding for Corps ocean dumping regulations is involved.

Response

Refutation of Mr. Kamlet's allegation and parenthetical observation is found in the Corps responses to Mr. Kamlet's previous allegations and observations of a similar vein under Items Nos. 1 and 2 above. However, it should be noted that the substantially increased manpower and funding requirements confronting the Corps in light of the recent determination by the District Court of the District of Columbia in the case of *NRDC v. Callaway* et al Civil Action No. 74–1242 (March 27, 1975) mandating the Corps to increase the scope of its regulatory jurisdiction over the disposal of dredged or fill material in inland waters and the disposal of fill material in the territorial sea under the Water Pollution Control Act obviously represent separate issues which should not be confused with funding levels for our ocean dumping program for dredged material under Public Law 92–532. This latter program remains the same in scope and is being adequately funded at the present time for the reasons stated in our aforementioned responses.

The Corps also believes that the statement in the last paragraph of page 5 of Mr. Kamlet's testimony is misleading to the extent that it indicates that ". . . a number of blatant legal and technical deficiencies [have existed] in its [EPA's] ocean dumping regulations and criteria." We feel that EPA developed the best possible criteria under the then existing state-of-the-art including the requirements for realism and implementability and recognized that such criteria must be subject to continuing changes to insure that they remain as realistic and implementable as the rapidly advancing state-of-the-art allows.

Item No. 4

Various statements in the document entitled APPENDIX IV to Statement of Kenneth S. Kamlet—Major Substantive Ocean Dumping Problem Areas.

A. Comment

"One of the most serious unresolved problems in the EPA regulatory scheme is the total *absence of environmental screening criteria for dredged material.*"

Response

The ocean dumping regulations do contain a screening criteria, e.g., the Standard Elutriate Test and its evaluation criteria, which represented the technically most applicable state of the art that was implementable on a broad scale for assessing the environmental effects of ocean dumping of dredged material at the time the regulations were formulated by EPA in conjunction with the Corps. This was noted in our response to Item No. 1.

B. Comment

"EPA has recently agreed to apply its black list criteria for mercury and cadmium to dredged material (although strenuous COE opposition is anticipated)."

Response

The Corps does not and will not oppose the evaluation of mercury and cadmium as potential contaminants of dredged material as long as the criteria governing this evaluation are based on technically sound scientific principles substantiated by research results applicable to dredging and dredged material disposal. The Corps only objects to application of criteria which technically and environmentally are unsound or which technically are not applicable to dredged material and its actual fate and effects in the environment.

C. Comment

"We believe there is a need, in addition to bioassay procedures for quantitative tests for determining biological uptake and bioaccumulation potential of toxic waste constituents."

Response

As noted in our response to *Item No. 1* such studies are being conducted by the Corps' Dredged Material Research Program.

D. Comment

The paragraphs on the last two pages commencing "Furthermore, unlike EPA, which candidly concedes an impermissible absence of parity between its ocean dumping criteria for dredged material and those for all other wastes, the COE is not bothered at all by this blatant lack of parallelism. . . ."

Response

The Corps recognizes that in making required dumping determinations that those criteria established pursuant to Section 102(a) shall be applied. The Corps also recognizes that a significant portion of dredged sediment is contaminated by manmade wastes. In developing the guidelines to comply with requirements of Section 102(a), the Corps and EPA also recognized that the specific technical approach required to implement these criteria in a scientifically wound and implementable manner for dredged material was different from the technical approach required for other types of wastes even though the dredged sediment might be contaminated with these wastes. Factors wuch as availability of contaminants; time of exposure to organisms; volume, frequency, and duration of disposal; and specific environmental conditions at the disposal site among other considerations must be taken into account in developing guidelines for implementing criteria specified in Section 102(a). The ocean dumping criteria incorporated state of the art procedures that were available and implementable at the time guidelines were being formulated. As noted in our response to *Item No. 1* the Corps is conducting a significant research program to advance this state of the art.

[The document entitled, "Dredged Material Research Program," was placed in the files of the subcommittees.]

STATE OF MARYLAND,
DEPARTMENT OF NATURAL RESOURCES,
WATER RESOURCES ADMINISTRATION,
Annapolis, Md., April 30, 1975.

Hon. JOHN MURPHY,
Chairman, Subcommittee on Oceanography, House Merchant Marine and Fisheries Committee, Longworth House Office Building, Washington, D.C.

DEAR CONGRESSMAN MURPHY: I regret that short notice and schedule conflicts did not allow me to attend the Joint Hearings on H.R. 5710 and H.R. 6282 held on April 24th and 25th, 1975 by the Subcommittee on Fisheries and Wildlife Conservation and the Environment and the Subcommittee on Oceanography. I thank you for giving the State of Maryland, Water Resources Administration the opportunity to present at the joint hearings a statement of its concern over the ocean dumping issue.

Enclosed is a copy of the statement given before the Subcommittees by Christopher L. Ostrom, on behalf of the Water Resources Administration on Friday, April 25, 1975.

Mr. Ostrom was asked by the members of the Joint Subcommittees to provide a written description of the State of Maryland's regulations and standards to protect its ocean environment. Maryland's regulations to protect all waters of the State are identified as water pollution control regulations 08.05.04.01—08.05.04.12 which were adopted by the Secretary of the Department of Natural Resources and made effective on September 1, 1974. A copy of these regulations is enclosed.

Special attention should be given to regulation 08.05.04.02, pp. 10-14, which provides general criteria, water use protection requirements, and provisions for mixing zones and related matters. Regulation 08.05.04.02 (Definitions) defines "waters of the state" p. 9, and includes as part of these waters "that portion of the Atlantic Ocean within the boundaries of the State." Regulation 08.05.04.03 establishes receiving water quality standards, including specific criteria for Class I (Water Contact Recreation and Aquatic Life—pp. 15-16) and Class II (Shellfish Harvesting—pg. 16) waters. These water quality standards are also applicable to the Atlantic Ocean and contiguous bays.

Discharges (that is, effluents from point sources) to the ocean within the boundaries of the State would require Discharge Permits from the Maryland Water Resources Administration. Disposal of dredged spoil in Maryland's portion of the marine environment requires both project-specific and site-specific approvals.

Please let me know if you or members of the subcommittees wish any additional information.

Sincerely,

HERBERT M. SACHS,
Director, Water Resources Administration.

Enclosure.

STATEMENT BY CHRISTOPHER L. OSTROM, STATE OF MARYLAND, WATER RESOURCES ADMINISTRATION

Mr. Chairman and members of the subcommittees, the State of Maryland has been concerned about the environmental effects of ocean dumping for a number of years. More recently, this concern has taken the form of public statements on specific dumping projects and on the general nature of ocean dumping as a means of disposal of waste materials, including hazardous substances.

On June 20, 1974 we filed written objection to the continued dumping of wastes into the Atlantic Ocean offshore from Maryland as proposed by the City of Camden, Sun Oil Company, and New Jersey Zinc Company. We pointed out at that time that municipalities and industries in Maryland with operations equal to the cities of Philadelphia and Camden, and industries like DuPont and Sun Oil are not permitted to dump sludge into our streams, the Chesapeake Bay or the Atlantic Ocean. Difficult as the choice of alternatives may be, the Maryland facilities have found and used alternative disposal procedures. We had been informed by the Regional Office of EPA that "a land disposal alternative or equivalent project to totally eliminate ocean dumping shall be implemented," but our request had not been satisfied that ocean dumping of these wastes be severely restricted by a tight schedule of developing alternative disposal practices.

On October 15, 1974 we objected to the continued dumping of acid wastes from the DuPont titanium dioxide plant into the ocean off the Maryland coastline. At that time we noted a pronounced south-westward drift (that is, toward the Maryland shore) which existed at least during part of the year, and a higher density of

recently killed surf clams within the dispersal pattern of the dumpsite. We again requested that a definitive schedule of compliance for alternative disposal be established and made part of any permit issued.

On January 14, 1975 we made comment on the application for an interim permit to dump sewage sludge from the City of Philadelphia into the Atlantic Ocean offshore from Maryland. A copy of that statement, as well as other statements we have previously referred to, is appended to this testimony for the information of the Subcommittee on Fisheries and Wildlife Conservation and the Environment, and the Subcommittee on Oceanography. We requested, in this instance, the application of strict enforcement and monitoring measures and commented that "almost no progress with regard to alternative sites has been reported and the results of monitoring have not been widely published." We asked again that there be specific findings with regard to the effect of this sludge disposal upon fish, shellfish, wildlife and shorelines, and that the impact upon recreational and economic values be determined. We concluded our statement on the proposed continued ocean dumping of sewage sludge from the City of Philadelphia by requesting that "a definitive schedule of compliance for alternate disposal *of these wastes* be required as an absolute condition" of a permit, and that dumping at the so-called Philadelphia sludge dumpsite be discontinued at an early time.

We have taken a consistent position against unrestricted ocean dumping of waste materials which are hazardous, or are likely to be hazardous, to the environment. We note that Admiral Price in his comments yesterday distinguished between the dumping of "toxic" materials (that is, those which are dumped at EPA's "toxic waste" dumpsites, which—in the Mid-Atlantic region—is located approximately 100 miles offshore) and the dumping of so-called "non-toxic" wastes. We object to any implication that this distinction may give regarding the environmental hazard posed by the dumping approximately 30 or 40 miles offshore of sewage sludge from Philadelphia and the industrial wastes from DuPont and others. Although the Coast Guard, and possibly EPA, does not define *these* sludges as "toxic", they may still be hazardous to the environment and should be studied critically and monitored effectively.

The question to which we must have an answer is: When is a sludge dumped into the ocean a hazard to the environment? Must we wait until there is, in the opinion of the experts, a consensus that there is incontrovertible evidence that the environment is being degraded? Must we wait until a biological dessert has been created and confirmed? The monitoring data included in EPA's report on *Effects of Ocean Disposal Activities on Mid-Continental Shelf Environment off Delaware and Maryland* causes us to reach the following conclusions:

1. The net bottom current direction in the area of the Philadelphia and DuPont dumpsites is S-SW, ie. towards the Maryland coastline;
2. The distribution of the dumped materials is significantly extended by density layers in the water column caused by both the intrusion over the shelf of high density slope water, and the combined effects of fresh water runoff and the warming of the surface layer during the warmer months.
3. The outermost extent of the distribution of the heavy metal regime associated with the Philadelphia sludge has not yet been delineated, and has presently been detected throughout an area of 1000 square nautical miles; and
4. The available evidence suggests that heavy metals are accumulating in both the sediment and biota, and that bioaccumulation is occurring.

We ask the question, again: when is the ocean dumping of a sludge or waste material considered to constitute a hazard to the environment? We believe that it is incumbent upon NOAA and EPA to conduct the necessary studies and monitoring to provide an early answer to this question.

The federal agencies involved, including the Coast Guard, are the appropriate agencies to carry out this vital work. Obviously, sufficient funding is essential to perform the work in the depth and within the short time frame required. We, therefore, support continued funding, at least of Title I and Title II of the Marine Protection, Research, and Sanctuaries Act of 1972. We share the concern of some Committee members that the appropriations as proposed may *not* be sufficient to carry out effectively and efficiently the requisite studies and surveillance efforts, and strongly recommend fully adequate financing.

Finally, we would want it understood that we are *not* calling for a 100% prohibition against ocean dumping of all materials at this time. We are calling for a studied, urgent effort to stop ocean dumping of sludges and wastes which are environmentally hazardous when and where deposited in these waters.

[The attachment was placed in the files of the subcommittee.]

[Whereupon, at 12:03 p.m., the subcommittees recessed, to reconvene at 10 a.m., Friday, April 25, 1975.]

OCEAN DUMPING AUTHORIZATION

FRIDAY, APRIL 25, 1975

HOUSE OF REPRESENTATIVES, JOINT
SUBCOMMITTEE ON FISHERIES AND WILDLIFE
CONSERVATION AND THE ENVIRONMENT, AND THE
SUBCOMMITTEE ON OCEANOGRAPHY OF THE COMMITTEE
ON MERCHANT MARINE AND FISHERIES,
Washington, D.C.

The subcommittees reconvened, pursuant to recess at 10:15 a.m., in room 1334, Longworth House Office Building, the Honorable Robert L. Leggett presiding.

Mr. LEGGETT. The meeting of the subcommittees will please come to order.

This morning the Subcommittee on Fisheries and Wildlife Conservation and the Environment, with the Subcommittee on Oceanography will resume its joint hearings on legislation to extend the appropriation authorization for titles I and III of the Marine Protection, Research, and Sanctuaries Act.

Yesterday the committee took testimony from the Environmental Protection Agency, the Coast Guard, and the Commerce Department, and today we have scheduled four witnesses from the Department of Defense, National Wildlife Federation, the Maryland Department of Natural Resources, and the town of Ocean City, Md.

It would be the intention of the Chair to try to consummate these hearings on a busy Friday just as soon as we reasonably possibly can.

So with that in mind I will call the first witness, Col. Robert B. Hughes, Assistant Chief of the Construction Operations Division of the Office of the Chief of Engineers, Department of the Army.

Mr. Hughes, we are very pleased to have you here.

We have before us a letter which you have addressed to the Honorable Jack Murphy, my colleague, who chairs the companion subcommittee that is hearing this legislation.

Subcommittee counsel, Mr. Carl Perian, on my right, is representing Mr. Murphy, and your letter dated April 23 of this year to Mr. Murphy will be incorporated in our record as well as your two pages of testimony, and you can proceed in any way you like.

[The letter referred to follows:]

DEPARTMENT OF THE ARMY,
OFFICE OF THE CHIEF OF ENGINEERS,
Washington, D.C., April 23, 1975.

Hon. JOHN M. MURPHY,
Chairman, Subcommittee on Oceanography, Committee on Merchant Marine and Fisheries, House of Representatives, Washington, D.C.

DEAR MR. CHAIRMAN: This is in reply to your recent letter requesting information on the Corps of Engineers funding to carry out its responsibilities under the Marine Protection Research and Sanctuaries Act.

The Corps of Engineers work in carrying out its responsibilities under the Marine Protection Research and Sanctuaries Act (PL 92-532) is primarily related to Sections 103 and 302. Funds to carry out these sections are budgeted under our Operation and Maintenance, General Appropriation, generally in one of three areas. The first is our General Regulatory Functions under which no specific breakdown is developed for costs associated with Public Law 92-532. However, based on estimated current year costs, about three percent of our General Regulatory funds are used for this work. In Fiscal Year 1976, this would amount to about one-half million dollars.

A second source of funding is under our Dredged Material Research Program. This $30 million, five-year study, is being undertaken largely due to enactment of recent environmental legislation, including Public Law 92-532. In Fiscal Year 1976, we requested $9.4 million to continue the study.

The third source of funding is from Operations and Maintenance appropriations for specific channel and harbor projects. Project funds are being used, as required, for sampling and laboratory testing and monitoring the fate of the dredged material disposed and its environmental effect at the specific project location. We do not have specific costs for these activities. However, we believe the total for any given fiscal year to be less than one-half million dollars.

The Corps has been fully supported in its requests for funding of the activities described above.

To provide you additional information on Corps activities under Public Law 92-532, and to explain how these activities fit in our over-all regulatory responsibility, I am inclosing the following:

(a) Brief summary of the Department of the Army Permits for Activities in Waterways;

(b) Dredged Material Research Program Status Summary, 31 January 1975; and

(c) Latest Quarterly Report on Dredged Material Research Program.

Sincerely,

Col. MARVIN W. REES, C.E.,
(For J. W. Morris, Major General, USA,
Acting Deputy Chief of Engineers).

STATEMENT OF COL. ROBERT B. HUGHES, ASSISTANT CHIEF OF THE CONSTRUCTION/OPERATIONS DIVISION, OFFICE OF THE CHIEF OF ENGINEERS, DEPARTMENT OF THE ARMY, ACCOMPANIED BY MILTON MILLARD, CHIEF, OPERATIONAL IMPROVEMENT SECTION, OPERATIONS BRANCH, DIRECTORATE OF CIVIL WORKS; AND WILLIAM N. HEDEMAN, JR., ASSISTANT GENERAL COUNSEL FOR REGULATORY FUNCTIONS

Colonel HUGHES. Thank you, Mr. Chairman.

Mr. Chairman and members of the committee, I am Col. Robert B. Hughes, Assistant Chief of the Construction/Operations Division, Office of the Chief of Engineers, Department of the Army.

On my right I have Mr. Milton Millard, who is Chief of the Operational Improvement Section of our Operations Branch, Directorate of Civil Works; and on my left I have Mr. Bill Hedeman, Assistant General Counsel for Regulatory Functions.

It is a pleasure to appear before the committee in its consideration of H.R. 5710, 94th Congress, a bill which authorizes appropriations for fiscal year 1976 for the purpose of carrying out titles I and III of the Marine Protection Research and Sanctuaries Act of 1972 (Public Law 92-532).

Title I of Public Law 92-532 provides for the Federal regulation of the transportation of material from the United States for dumping into ocean waters and the dumping of material transported from out-

side the United States if the dumping occurs in ocean waters over which the United States has jurisdiction or exercises control in order to protect its territory or territorial sea.

Corps of Engineers responsibility in this scheme of regulation primarily relates to section 103 of Public Law 92–532 which vests the responsibility in the corps in cooperation with the Environmental Protection Agency, to authorize the transportation of dredged material for the purpose of dumping it in ocean waters.

The corps generally budgets in three categories for the funds necessary to carry out the work associated with this responsibility under Public Law 92–532.

First, we currently estimate that about 3 percent of our general regulatory funds are used for this work. This would amount to about $500,000 in fiscal year 1976.

A second category of corps' funding, related to our responsibilities under Public Law 92–532, is under our dredged material research program consisting of a $30 million, 5-year study for which we requested $9.4 million in fiscal year 1976.

Mr. LEGGETT. Is that your program down in Vicksburg, Miss.?

Colonel HUGHES. That is correct, sir.

The third category of Corps' funding, related to our responsibilities under Public Law 92–532, is from our operation and maintenance appropriations for specific channel and harbor projects. Project funds are being used, as required, for sampling and laboratory testing and monitoring the fate of the dredged material disposed and its environmental effect at individual project locations.

While we do not have specific costs for this third category, we estimate that they total less than $500,000 for any given fiscal year.

The Corps has been fully supported in its requests for funding of the three categories I have outlined. They are not the subject matter of H.R. 5710 which would provide further authorizations for appropriations to the Environmental Protection Agency and the Department of Commerce to discharge their responsibilities under Public Law 92–532.

Accordingly, the Department of the Army defers to the views of these two agencies on the merits of H.R. 5710.

Mr. Chairman, that concludes my statement. I will be very pleased to answer any questions you may have on our program.

Thank you.

Mr. LEGGETT. Very good.

Thank you very much, Colonel.

I am well aware of the work that the Corps of Engineers does in the dredging area, which is of primary concern to this committee with respect to our ocean dumping jurisdiction.

We are aware of your activities in Vicksburg, and your effort to rationalize a reasonable solution of discharging your responsibilities, and assisting also in satisfying the reasonable environmental concerns involved.

Perhaps the committee will quantify what those are after we get your report, but I know you are doing work in that general subject area and that EPA is working with you closely. It has been my hope, and I have expressed this to the Corps, EPA, and the Council on Environmental Quality, that whatever result we come up with, we

will have a common ground of understanding of the facts, and from there we can make the conclusions we need to make with respect to the limitations on the total program.

Now, you support H.R. 6282 and/or 5710. H.R. 6282 is a bill providing for funding in fiscal year 1976 at $1.260 million and $1.4 million in 1977 and, of course, those funds are earmarked for the Environmental Protection Agency. The other legislation, 5710, provides funding at $1.5 million but only for fiscal year 1976.

Do you support both of these pieces of legislation, or do you support one over the other?

Colonel HUGHES. We are deferring to the views of the Department of Commerce and EPA.

Mr. LEGGETT. All right.

Perhaps this is somewhat out of your bailiwick. You are generally supportive of additional funding for EPA on a 1- or 2-year period depending on what their requirements are, and you are cooperating with them to achieve the purposes of the legislation you refer to.

Colonel HUGHES. Yes, sir. As far as the moneys that they can expend and use, we defer to their opinion and request.

Mr. LEGGETT. All right.

Ed, do you have questions?

Mr. FORSYTHE. Thank you, Mr. Chairman.

I think since really the legislation is before us, apparently you are in a position where you do not believe it involves you.

But I would like to ask if you are doing reimbursable services for the EPA, which is, of course, the agency which we are concerned with under the mandate of the legislation.

Mr. MILLARD. We are working very closely with EPA, and we have just entered into an agreement with EPA for some reimbursable services at our waterways experiment station.

Under the entire program we work very closely with EPA, with the Fish and Wildlife Service, and all the others, and we have had contracts with each other for reimbursable services. They have been doing work for us. We have been doing work for them.

Mr. FORSYTHE. But you have not done, I gather, prior work for them which was reimbursable, and which you have not asked for reimbursement?

Mr. MILLARD. Well, it——

Mr. FORYSTYE. Let me perhaps try to make that a little clearer.

If you were doing services for EPA under this Act, and were not demanding actual reimbursement, you would not have an impact on your budget. If you were, you would. That is why I am concerned with whether that exists.

Mr. MILLARD. No. Where we have done work with EPA it has been on a reimbursable basis. That is, all our work at the waterways experiment station, WES has to be accounted for as far as funding. We have limited funds for the work being accomplished by WES, and any additional work requested by EP Aand other agencies is on a reimbursable basis.

Mr. FORSYTHE. Well, I guess that answers my question.

I would just comment, Mr. Chairman, I think that perhaps this is not the place where we can or should get into some of the work that the Comptroller is doing, insofar as the Ocean Dumping Act is con-

cerned, but I would hope that we could look forward to, again, as you commented on the record, your working on perhaps other hearings that perhaps we could get into this further.

Mr. LEGGETT. The Corps is providing the periodic status reports of that activity and, they also have provided about 6 or 8 inches of documentary study material which I have not yet had a chance to peruse.

But we will, at the proper time, when we can do it, get into this. Mr. Mosher.

Mr. MOSHER. Thank you, Mr. Chairman.

When you refer to the Waterways Experimental Station, are you talking about Vicksburg?

Colonel HUGHES. Yes, sir. The Corps of Engineers Installation at Vicksburg Mississippi.

Mr. MOSHER. What type of work are you planning to do down there for EPA?

Colonel HUGHES. For EPA?

Mr. MOSHER. The gentleman just said that.

Mr. MILLARD. We are doing some work in water quality analysis and in developing bioassay techniques. We are compiling some data for EPA at some test sites, where they wanted specific parameters investigated and identified for water quality purposes.

It is of a rather general nature and I could supply details, should you desire.

Mr. LEGGETT. Essentially what we are interested in is the effect of dredging and use of the spoil. Of course, there are some benefits, as you know, where they have built some berm, and did something with that spoil. We do not know the effect of dredging activity on wildlife and other kinds of organic growth. Hopefully, the material that they produce will be analyzed by the Corps and EPA and associated agencies so we can come up with an overall national policy that will rationalize the restrictions which currently are in effect on many areas where dredging activities are carried out.

Mr. MOSHER. Mr. Chairman, would it be proper for me at this point to ask the Corps of Engineers to give us a status report on the Great Lakes situation, the development there of alternate ways to handle the dredging and spoil, and so forth, for the various harbors?

Mr. LEGGETT. It certainly would, and I would appreciate you providing an analysis, Colonel, and bringing the Committee right up to speed with respect to the Great Lakes area.

[The information follows:]

CORPS OF ENGINEERS DREDGING AND RESEARCH ACTIVITY RELATED TO THE GREAT LAKES

In the Great Lakes the Corps dredges and maintains 64 harbors and 157 miles of improved channels. We also operate the quadruple locks at St. Marys Falls Canal, the largest in the world. A total of 115 federal navigation projects in the Great Lakes must be dredged and maintained. Our normal annual dredging workload in the Great Lakes is about 12 million cubic yards to keep the harbors and waterways open. We have not, however, dredged some harbors for four years due to a ban on open-lake disposal of material classified polluted by EPA. We now have a dredging backlog of 14 million cubic yards. This is a source of concern to Great Lakes States, shippers, and industry.

Congress authorized a diked disposal program in 1970. This program provides confined diked areas in the Great Lakes to contain the dredged material which is classified as polluted by the EPA. To date, 65 of the 115 Great Lakes harbors have been so classified. Dredged material from these harbors will require 47 separate diked disposal sites.

The Corps' North Central Division has been giving these vital projects priority attention and is making good progress. Construction work is progressing rapidly at nine of the most critical sites; four will be completed in FY 75. We received beneficial occupancy of a site in Cleveland Harbor in November 1974. Already, 250,000 cubic yards have been placed into that site. The area at Grand Haven will be ready this spring. The diked area at Milwaukee will be completed in June 1975. At Toledo the contractor expects to complete work by this fall. A diked area is already available to receive this year's dredgings. At Dickinson Island the dike should be ready to use by July 1975. At Buffalo, one site is complete and in use, and another will be ready by September 1976. Two other projects will be completed by December 1975; Huron and Kenosha-Racine.

One of the basic objectives of the Corp's Dredged Material Research Program (DMRP) is to determine the nature and magnitude of the efforts of open water disposal of dredged material on water quality and aquatic organisms. Nearly all of these studies will yield results directly applicable to the Great Lakes area and many have been accomplished using samples of dredged material taken from Great Lakes harbors and channels. The results of these studies will be field tested at four regionally representative, carefully selected disposal sites under controlled, experimental conditions of disposal. At each site, other research results also will be tested and verified, such as mathematical models to predict the dispersion of the disposed material.

One of the four field test sites selected for these efforts is located in Lake Erie off Astabula Harbor, Ohio. Contracts are now being negotiated for physical, chemical, and biological baseline studies of both the water column and the bottom sediments at this site and the controlled disposal operations are scheduled for next fiscal year. Intense field monitoring and sampling will continue during the disposal operation and afterwards until the end of FY 77. The field studies at this site will be accomplished by contractors from and familiar with the Great Lakes area and are expected to cost about $800,000.

The Disposal Operations Research Project of the DMRP is the focal point of investigations pertaining to the confined disposal of dredged material on land or along shorelines. Emphasis is being placed on defining better concepts for disposal area construction, operation, and management, both to increase area efficiency and to reduce the environmental impact of this type of disposal. Examples of individual research efforts include studies of retaining dike design and construction, area sizing in terms of regulation of efficient quality, possibilities for previous dikes and weirs, and control of objectionable conditions such as odor and mosquitos. A significant amount of this research is directly applicable to the Great Lakes because of the importance of this disposal alternative in that area, and some studies are being performed by contractors in the Great Lakes area. As a means of reducing the land requirements for dredged material disposal and reducing appreciably the cost of land disposal, this project is also investigating concepts and methodology for consolidating the dredged material (through removal of trapped water) in the areas and/or removing the material for productive use elsewhere (e.g., construction material fill material for land reclamation). Research is being conducted to assess the feasibility of physical, chemical and biological processes to dewater dredged material in-place in disposal areas. A field demonstration of a promising technique for dewatering dredged material by mechanical agitation was held last fiscal year at a disposal site in Monroe, Michigan, and a test is now in progress at a site on Grassy Island in the Detroit River to determine the effectiveness of a particular type of vegetation in removing water by transpiration. Surveys are now in progress to locate sites suitable for tests and demonstrations of other techniques and several Great Lakes locations are being considered.

The Productive Uses Research Project of the DMRP includes several areas of endeavor related to considering dredged material as a natural resource. These include using the material for improving agricultural land, as cover material in sanitary landfills, for filling abandoned mines or quarries, and for the restoration of strip mined areas. Initial studies relate to such aspects as transportation systems; economic, social, political and other issues and constraints; and possibilities of surface or ground water contamination. Cooperative pilot scale tests of the value

of dredged material in strip mined areas are being planned with the U.S. Bureau of Mines and this disposal alternative, should it prove viable, would have greatest potential for application in the Great Lakes area and the Middle Atlantic area. As a further step in developing and implementing productive use concepts, harbors and channels throughout the Nation are being sampled and the material classified extensively.

The feasibility of using dredged material productively for developing wildlife habitat and creating marshes is being investigated extensively under the Habitat Development Research Project of the DMRP. Attntion is being devoted to operational, engineering, and agronomic aspects by way of more than a dozen specific research and field tests being planned or conducted at 12 locations in the United States. While repeated efforts to locate either a marsh creation or an upland habitat development or imgrovement site in the Great Lakes failed for various reasons, certainly the results of the research will be widely applicable to the region.

Mr. LEGGETT. Likewise, I think it might be appropriate for you to provide an additional compilation of your documents to the subcommittee which can be used then by both subcommittees on exactly what you are doing down in Vicksburg.

[The material was provided to both subcommittees and placed in the files.]

Colonel HUGHES. We certainly would be pleased do so.

I would like to make one statement.

The disposal operation in the Great Lakes, of course, does not come under this act, but we will furnish that information.

Mr. MOSHER. I am aware of that, but it is closely related.

Colonel HUGHES. You are correct, sir.

Mr. LEGGETT. Mr. Bauman.

Mr. BAUMAN. No questions.

Mr. LEGGETT. Mr. Emery.

Mr. EMERY. No questions.

Mr. LEGGETT. Very good.

Counsel, any questions?

Mr. SMITH. I have one, Mr. Chairman.

Colonel, in your statement you accept responsibility, certain responsibilities, given specifically to the Corps, and yet you do not feel it is proper for the Corps to comment on the funds that are required under title I.

I am wondering why there is this inconsistency.

Colonel HUGHES. Well, No. 1, sir, we feel that we are adequately supported in our request for funds. We can carry out our functions.

Mr. LEGGETT. Well, Colonel, I think what he is concerned with is your cooperating with EPA. You have a job to do. Apparently EPA has been funded at the $5.5 million level, and all of a sudden they are cut down to $1.26 million, and that is a different agency.

You are cooperating with them, and what counsel would like to know is what are your views on their ability to cooperate with you to produce the results you previously had in mind.

Was this programed? Did this extend your timetable? Does it limit the cooperation? Does it affect the overall relation that you are trying to develop, or do you have an opinion?

Colonel HUGHES. In regard to further funding of EPA, any additional funds would not detract or hurt our program. If they desired to use some of those funds for reimbursable work we would certainly honor such requests within our capability to perform that work.

Mr. LEGGETT. Well, I understand that.

Does the fact that we have funded this program for $5.5 million in 1974 and 1975, and $1.5 million in 1976, and/or $1.26 million in 1976, have anything to do with your continuity of research and as to what you were going to do?

Will you still be able to work as productively as you have in the past, with this reduced amount of funding, and if the answer is yes, somebody has to give the committee some kind of explanation, and if you cannot give it to us today, I would appreciate your providing that for the record, because, as I understand it, yesterday EPA itself was not really able to provide to the committee an adequate explanation for the reduced funding.

Colonel HUGHES. Under our present funding we can continue our program as scheduled.

Now, as far as additional funding to EPA, it would not affect our program as it is now established.

However, I will look into this in greater detail.

Mr. LEGGETT. Very good. I appreciate that very much.

Colonel, thank you, and your associate very much for your testimony this morning. It has been very helpful to the committee.

[The following information was supplied by the Army Corps of Engineers:]

REIMBURSABLE RESEARCH WORK BEING DONE BY THE CORPS FOR EPA RELATED TO OCEAN DISPOSAL

Fiscal year 1974

$10K—Preparation work for a study regarding the chemical fixation of solid and hazardous wastes. The objective of this study is to produce data to be used by the EPA in the development of criteria for solid waste disposal.

Fiscal year 1975

$50K—WES is writing an EPA design manual for the handling and disposal of paper mill waste.

$340K—Continuation of the chemical fixation study initiated in FY 74.

Fiscal year 1976

$130K—This is the EPA's share of a joint Corps/EPA study regarding the disposal of waste water on the land. The objective is to develop a better understanding of the physical, chemical, and biological phenomenon associated with land treatment.

$900K—Continuation of the chemical fixation study initiated in FY 74.

Mr. LEGGETT. Our next witness is Mr. Ken Kamlet, counsel, National Wildlife Federation.

Mr. Kamlet, I think I have a statement of yours somewhere in our files.

Your statement of 12 pages with the appendix will be included in our record at this point as though personally delivered, and I want to tell you right now that, unfortunately, the committee does not have time for you to deliver your entire statement.

So the statement is in the record, and I am going to challenge you to stimulate the committee by bringing out the most important points that you think are incorporated in that statement.

[The statement referred to follows:]

STATEMENT OF KENNETH S. KAMLET ON BEHALF OF THE NATIONAL WILDLIFE FEDERATION

I am Kenneth S. Kamlet, Counsel to the National Wildlife Federation (NWF) and also a biologist with 4 years of postgraduate training. The Federation appreciates this opportunity, as the nation's largest private conservation organiza-

tion and as one which has taken an active interest in assuring the proper administration of the ocean dumping law, to express its views on the proposed ocean dumping authorization extension under consideration by this Committee. (For the record, some of NWF's efforts in monitoring the federal ocean dumping program are outlined in Appendix I.)

There are two aspects to our position on this authorization extension. First, the continuation of funding for the ocean dumping program is absolutely necessary; to deny it would be an environmental disaster. Second, the funding level apparently requested by the Administration for fiscal 1976 is woefully inadequate; to limit your authorization to this level would make a mockery of those on and off this Committee who labored so long, hard and successfully to put this fine piece of legislation in the statute books.

The importance of this authorization extension is obvious. The Marine Protection, Research, and Sanctuaries Act (MPRSA) was passed in response to a universally acknowledged need. The President of the United States, in at least 3 messages to the Congress, emphasized the critical importance of legislation "to assure that our oceans do not suffer the fate of so many of our inland waters, and to provide the authority to protect our coastal waters, beaches, and estuaries." February 8, 1971 message on the environment. See also, April 15, 1970 message transmitting the Council on Environmental Quality's report on "Ocean Dumping: A National Policy." The Council on Environmental Quality, following a comprehensive study of ocean dumping practices, reached the following general conclusion: "There is reason for significant concern. Dealing with ocean pollution requires that all sources be greatly reduced. If no action is taken and ocean dumping continues to increase, the long-term damage to the marine environment will be great." Ocean Dumping: A National Policy, October 1970, at 18. Russell E. Train, present Environmental Protection Agency (EPA) Administrator, and at that time Chairman of CEQ, testifying before this Committee in support of the Administration's ocean dumping bill, stated that: "Our premise is that action is necessary now to avoid a serious national problem from ocean dumping." *Hearings on Ocean Dumping of Waste Materials Before the Subcomm. on Fisheries and Wildlife Conservation, and the Subcomm. on Oceanography of the House Comm. on Merchant Marine and Fisheries*, 92d Cong., 1st Sess., Ser. 2, at 168 (1971) [hereinafter, "1971 House Hearings"]. Finally, to complete this brief catalogue of Administration spokesmen, William D. Ruckelshaus, past Administrator of EPA and Deputy Attorney General of the United States, testified (again, before this Committee) that: "Our purpose here is to recommend to the committee and to the Congress the creation of the farthest reaching and strongest authority that law and technology will allow." 1971 House Hearings, at 392.

The Congress, and this Committee, rose to the challenge and passed the very fine piece of legislation that is the Marine Protection, Research, and Sanctuaries Act. Congressman Mosher was correct in describing it on the floor of the House as "a turning point [away] from man's destructive use of the seas as a garbage dump" and as "a well-developed approach to ocean dumping regulation." (118 Cong. Rec. H9905-06 (October 13, 1972)).

But a law, no matter how strong, important, and well-designed, can only be as effective as the federal agencies charged with implementing it have the will, the determination, and the resources to make it work.

In the past, will and determination have been the missing ingredients. (No infusion of funding could have remedied this lack.) And although some notable problems in this regard remain (for example, in the Corps of Engineers' dredged material disposal program), we are pleased to note that, with continuing public pressure and encouragement, the Environmental Protection Agency is beginning (2 years after the MPRSA's effective date) to take seriously its former Administrator's pledge to this Committee that EPA "would adopt a precautionary, preventive approach, aimed at terminating all dumping not clearly demonstrated to be safe." 1971 House Hearings, at 395.

But without adequate resources even the best of intentions will not go very far. The $1.5 million proposed to fund the combined Title responsibilities of EPA, the Corps of Engineers (COE), and the Coast Guard (USCG) is decidedly not adequate. As Congressman Dingell of this Committee pointedly observed last spring (in a related context), it is a "piddling" amount (referring to the $400,000 that EPA was able to "reprogram" for ocean dumping research). *Hearings on Ocean Dumping Oversight Before the Subcomm. on Fisheries and Wildlife Conservation and the Environment, and the Subcomm. on Oceanography of the House Comm. on Merchant Marine and Fisheries*, (93d Cong., 2d Sess., Ser. 38, at 27 (1974) ["1974 House

Oversight Hearings"]). As Senator Proxmire can undoubtedly certify, far greater sums than this are regularly frittered away by the federal government for research grants in areas far less critical to the needs of this country and the world.

An authorization of a million and a half dollars, even if the full amount is appropriated (and OMB allows it to be spent), can hardly meet the needs of the three federal agencies which are charged by law with closely controlling the half-ton's worth and more of waste materials that are being ocean-dumped each year for every man, woman and child in the United States. (The fact that the Corps of Engineers has never seen fit to ask the Congress for so much as a penny to discharge its obligations under the MPRSA is less an indication that effective implementation of the law comes cheaply than it is of the Corps' unwillingness to effectively implement the law.)

It will take, in our judgment, a minimum of $3.5 million, and preferably $4.0 million, for EPA to begin to put into effect in fiscal 1976 some of its recently acquired good intentions.

It will take at least $1 million to give the Coast Guard any creditable surveillance capability.

It will, no doubt, take more than money to induce the Corps of Engineers to properly regulate the ocean dumping of dredged material. (We find it curious that, at the same time the Corps claims it lacks the resources to regulate inland dredge disposal under the Water Act's expanded definition of the waters which are subject to this regulation, it feels it can do without additional funding when it comes to ocean dumping regulation.)

Previous Congressional and agency funding estimates clearly also reflect the need for a Title I funding level of substantially more than $1.5 million. H.R. Rep. No. 361 (on H.R. 9727) 92d Cong., 1st Sess., at 29 (1971); S. Rep. No. 451, 1972 U.S. Code Cong. & Adm. News 4252; H.R. Rep. No. 1269 (on H.R. 15540) 93d Cong., 2d Sess. 3 (1974); S. Rep. No. 1270 (on H.R. 15540) 93d Cong., 2d Sess. 3 (1974); 1971 House Hearings, at 399–403; 1971 Senate Hearings, at 273–278.

Among the costly but important duties of the Environmental Protection Agency is the establishment, revision, and application of regulatory criteria which must, by law, consider at least 9 specified and generally complex ecological and technological evaluation factors. Just over a year ago, in response to NWF's formal legal petition of April 18, 1974 (set forth in its entirety at pages 108–135 of the 1974 House Oversight Hearings, *supra*), EPA began an effort to remedy a number of blatant legal and technical deficiencies in its ocean dumping regulations and criteria. In part because of insufficient manpower and technical resources, the process of amendment has proceeded slowly. It will likely take additional months before the first remedial amendments are published, even in "proposed" form.

The need for evaluation criteria, in turn, demands an ability to predict the long and short term effects on marine ecosystems and on human health of the ocean dumping at particular locations of various volumes, concentrations, and types of waste materials. It also requires a capability for assessing the need for ocean dumping in any given instance and the presence or absence of feasible, environmentally sound, alternatives to ocean dumping. Again, this takes research and operations manpower—or the funds to hire outside contractors to do the job in the absence of adequate manpower within the Agency.

Laboratory and field procedures and techniques must be developed, tested, and applied for screening out toxic wastes which are too dangerous to ocean-dump. And follow-up monitoring of authorized dumping activities must be carried out to ensure that sustained dumping by a multiplicity of diverse dumpers does not overload the system and cause serious degradation. Again, this takes manpower, equipment, and money—or it doesn't happen.

Likewise, since it is not possible to measure changes, whether for the better or worse, without knowing how things were before, "baseline surveys" of pre-dumping, unpolluted, areas must be carried out. Such surveys are an essential pre-requisite to the evaluation and selection of new ocean disposal sites which process, if it is to occur rationally, must consider current patterns, depth, proximity to coastal fisheries, resort beaches, and a great many other factors. Although EPA Deputy Administrator John Quarles told this Committee last spring that the Agency planned to complete "20 site designations" in fiscal years 1975 and 1976, "along with annual updates on all other previously surveyed site designations" (1974 House Oversight Hearings, at 4), this process has barely begun. At a cost of $200 to $250 thousand apiece, it is obvious, that EPA will be unable to carry out many site surveys, unless Congress authorizes and appropriates a good deal more money than is presently contemplated. Without adequate funding, ocean dumping will continue in haphazard fashion at untested disposal sites.

Even the most polished set of EPA site selection regulations (now in draft form) cannot take the place of trained scientists and suitable equipment.

The list of needs goes on and the price tag grows.

EPA must assess civil and criminal penalties for violations of regulatory requirements (which the Coast Guard must have adequate resources to detect in the first place). It must respond to citizen suits. It must issue, deny, and condition new ocean dumping permits. It must revoke, suspend, modify, or maintain existing permits. It must establish approved dumping areas as well as dis-establish and disapprove other areas. It must issue, amend, and reassess regulations and criteria. And it must, in addition to gathering the data base necessary to do these things, receive public and interagency input along the way, hold permit, adjudicatory, and fact-finding hearings, procure expert witnesses inside and outside the Agency to testify at administrative and judicial hearings, and so on and on. These activities demand a certain minimum of in-house research and operations manpower and expertise. In the absence of in-house capability, outside contractors must be retained (or else the job doesn't get done at all). Not only do outside contractors cost far more than it would cost EPA to do the job itself (if it had the necessary manpower), but many of the contractors who must be resorted to also hold lucrative contracts from many of the ocean-dumping municipalities and companies that stand to be directly affected by the outcome of the contract work. This is bad from at least two standpoints: it makes it difficult for the contractor to be, or to appear to be, objective; and it makes it difficult for EPA to be assured of a reliable source of expert witnesses who can be called upon when and as needed to describe their methodologies, results, and conclusions in a court of law.

Some of the most important EPA research needs are also among the most elusive and costly. While measuring the toxicity of a waste or waste constituent (at least the acute, short-term effects) to a marine organism is a relatively straightforward matter, assessing the longer-term, more subtle—but certainly no less significant—health hazard to human beings is far more difficult. Screening tests to establish human carcinogenic, mutagenic, and teratogenic potential as well as the more direct poisoning effects must be developed and applied to ocean-dumped wastes. In the words of one team of marine scientists: "All of us who eat anything from the ocean or who go swimming in the surf are having something chopped off our life expectancy, as a consequence of ocean dumping." Unless we start finding some of these answers, our ocean dumping activities may be cutting away at the lives of future generations as well.

Finally, and this by no means exhausts the list, the $1.5 million requested by the Administration, in addition to paying for these and other EPA and Corps of Engineer responsibilities, must also pay for the conduct by the Coast Guard of "surveillance and other appropriate enforcement activity to prevent unlawful transportation of material for dumping, [and] unlawful dumping" (MPRSA § 107(c)), and for the design and issuance (as required by §§ 107(c) and 108) of regulations "relating to safe transportation, handling, carriage, storage, and stowage" of ocean-dumped material.

It would be foolhardy, dangerous, and incorrect to assume that the country, in these times of economic difficulty, cannot afford the few millions of dollars it will take to safeguard the ocean waters that surround us: the country cannot afford *not* to spend this money. The alternative is a serious misallocation of resources and a disruption of the natural environment which will become far more costly, if not totally impossible, to repair as time goes on.

As the President noted 4 years ago in stressing the need for ocean dumping and other pollution control legislation: "[Although these programs] will require some adjustments [at all levels of the economy] . . ., we must also keep in mind the greater cost of *not* pressing ahead." February 8, 1971 message on the environment.

On the not implausible theory that the highest authority I can quote to this Committee is this Committee, I refer to the House Report on the bill which became the ocean dumping law. This Report correctly characterized the ocean dumping bill as legislation which "will enable this country to restore a proper balance between its economic and environmental values, as these relate to ocean dumping. . . . In this bill we give the agencies of Government tools with which they can balance these values." 1971 House Report, *supra*, at 14. Lest this Committee be called an "Indian-giver" and this carefully constructed balance fall apart, we respectfully urge you to give the federal agencies you have charged with carrying out this legislation the funding authorization they need to do the job that is required of them—whether or not they are willing or able to ask for it and whether or not they want to do their job.

We would like to comment on one further aspect of the proposed authorization extension: its failure to provide any money for NOAA's important Title II research responsibilities.

As the Committee knows, Title II gives NOAA three major research roles under the ocean dumping law. (1) It must initiate and carry out a "comprehensive and continuing program of monitoring and research" on the effects of dumping into ocean waters and the Great Lakes (MPRSA § 201). (2) It must initiate and carry out a "comprehensive and continuing program of research with respect to the possible long-range effects of pollution, overfishing, and man-induced changes of ocean ecosystems" (MPRSA § 202(a)). And (3) it must conduct, encourage, and finance "research, investigations experiments, training, demonstrations, surveys, and studies" aimed at finding ways of "minimizing or ending all dumping of materials within five years" (MPRSA § 203).

As we have previously testified before this Committee (1974 House Oversight Hearings, at 90, 166), NOAA's discharge of these research responsibilities during the past two years has been less than vigorous and far from "comprehensive." For example, it has done little monitoring or research on ocean dumping effects outside of the New York Bight. It has done even less research on long-range effects of man-induced changes of ocean ecosystems. And it has done nothing at all toward finding the means to minimize or end ocean dumping—except use up 2 of the 5 years allotted for this purpose.

Clearly, NOAA needs both more prodding and more funding.

Apparently the $6 million in funding authorized for these purposes for fiscal years 1973 through 1975 (MPRSA § 204) was not adequate. I do not know how much, if any, of these funds were ever actually made available to NOAA. (We understand that none were.)

I do know, however, that an authorization level of zero for fiscal 1976 will not improve the situation and will probably make it a good deal worse. (Note that it is arguable that section 204 can be construed to cover FY 1976. If that is this Committee's understanding, this should be made clear.)

Congressman Dingell, a distinguished member of this Committee, has well stated the need for a strong ocean dumping research program: "[I]n the course of our hearings on ocean dumping, we began to realize that in so many areas our knowledge of the ocean environment was fragmentary and incomplete. Ignorance, St. Thomas Aquinas said in the Summa, is essentially a failure to know something we ought to know. Our ignorance of the lifegiving oceans and marine ecosystems in this context is to my mind inexcusable." 118 Cong. Rec. H9906 (October 13, 1972).

Title II was designed to begin the process of curing that ignorance. Failure to fund this research program would be a giant step backwards.

We hope the absence in House Bill 5710 of an extension of the Title II authorization was an oversight that will be promptly remedied.

To conclude this statement, Mr. Chairman, I would like to mention a letter we received some months ago from a young boy in the fifth grade. This youngster wrote to tell us that he didn't "think that [ocean dumping was] fair for the fish and all the rest of the sea animals" and that if we keep on rejecting "our left-overs" into the ocean, there might not be anything of "God's Creation" left. He expressed the hope that "[m]aybe . . . someone will understand and do something about it." *Conservation News* 39(5): 7 (March 1, 1974).

In passing the Marine Protection, Research, and Sanctuaries Act, Congress has made a "national commitment . . . to protect [the] ocean waters which are so vital to the continued existence of mankind." H.R. Rep. No. 1269, at 2. Congressman Downing took justifiable pride in the "great care and thoroughness" with which this Committee drafted that legislation. 118 Cong. Rec. 9908 (October 13, 1972).

For the sake of little boys and girls everywhere, we urge you to provide the funding necessary to carry out the commitment expressed in the fine ocean dumping law you have written.

APPENDIX I

National Wildlife Federation's Efforts Relating to Federal Ocean Dumping Program

EPA program—Comments submitted 6/21/73 on proposed EPA ocean dumping criteria and regulations. Final regulations and criteria issued 10/15/73. Comments submitted 1/8/74 and 4/5/74 on pre-publication drafts of EPA ocean disposal site selection and management regulations. Additional letters criticizing EPA

site designation procedures 7/17/74 and 8/8/74. Presented detailed critique of EPA ocean dumping regulations and criteria to EPA Administrator on 4/21/74 Received interim response on 6/17/74. Submitted preliminary comments on the response on 7/29/74, and detailed comments on 9/23/74. Submitted further detailed comments on final draft site selection regulations, 1/6/75, and on final draft revised ocean dumping regulations and criteria, 1/23/75. Major improvements are anticipated.

Hearing testimony—Testified at EPA ocean dumping permit hearings in Delaware (Region III) on 1/28/74, in New York (Region II) on 4/2/74, and in Maryland (Region III) on 10/15/74, resulting in reduced permit terms and strengthened permit conditions. Also testified 7/23/74 in Pensacola at EPA hearings affecting the Gulf Coast of Florida. This testimony contributed to the EPA Administrator's 10/3/74 decision to bar further ocean dumping by a major chemical company. NWF testimony, 1/14/75, at Region III permit hearing was instrumental in EPA decision of 2/13/75 to require City of Philadelphia to find alternatives to ocean dumping of sewage sludge by 1/81. Gave testimony on ocean dumping before Congressional oversight committees on 5/31/74 and 8/7/74. Interviewed by General Accounting Office staff, 1/7/75 and 1/14/75 as part of GAO study of ocean dumping program.

Research and coordination—68 responses received to date to 12/3/73 detailed ocean dumping questionnaire. Additional expert comments solicited and received on EPA marine bioassay methods. Participated in EPA bioassay workshop in Atlanta on 7/9–10/74. Submitted detailed comments on proposed revisions to bioassay methods on 8/29/74. Attended, as an invited participant, National Academy of Sciences "Ocean Dumping Workshop," Woods Hole, Mass., 9/9–13/74. Assisted in preparation of biological oceanography committee report. Participated in 11/13/74 EPA meeting in New York City on ocean dumping research proposal for the New York Bight.

Ocean incineration—Intervened in ocean incineration proposal with result that EPA reversed its previous stance and assumed jurisdiction over this activity. Testified at public hearing and technical meeting in Houston on 10/4/74 and 11/14/-74 on incineration plans and monitoring results. The incineration and monitoring operations were safely and successfully carried out. Consulted by EPA and the U.S. Air Force in connection with subsequent plan to dispose of Agent Orange herbicide by ocean incineration. NWF testimony 2/19/75 at public meeting on disposal plan.

Corps and NOAA programs—6/6/74 letter to the Corps resulted in the issuance of instructions on 6/26/74 to Corps field offices to correct deficiencies in ocean dumping public notices. 6/19/74 letter criticized NOAA's implementation of the ocean dumping law. NOAA reply of 7/9/74 promised expanded efforts.

STATEMENT OF KENNETH S. KAMLET, COUNSEL, NATIONAL WILDLIFE FEDERATION

Mr. KAMLET. I will attempt to do so, Mr. Chairman.

I am Kenneth S. Kamlet, counsel to the National Wildlife Federation, and also a biologist with 4 years of postgraduate training.

We appreciate this opportunity to express these views, and for the record, I have indicated in Appendix I of my prepared statement some of the Federation's efforts in monitoring the Federal ocean dumping program.

There are two aspects to our position on this authorization extension. First, the continuation of funding for the dumping program is absolutely necessary, to deny it would be an environmental disaster.

Second, the funding level requested by the Administration for fiscal 1976 is woefully inadequate; to limit your authorization to this level would make a mockery of those on and off this committee who labored so long, hard and successfully to put this fine piece of legislation in the statute books.

We think the importance of this authorization extension is obvious. The Marine Protection, Research, and Sanctuaries Act was passed in response to a universally acknowledged need.

Many spokesmen for the legislation have expressed a need for this legislation, including the President of the United States, in at least three messages to the Congress.

He emphasized the critical importance of legislation,

> To assure that our oceans do not suffer the fate of so many of our inland waters, and to provide the authority to protect our coastal waters, beaches, and estuaries.

The Congress and this committee rose to the challenge and passed the very fine pieces of legislation that is the Marine Protection, Research, and Sanctuaries Act.

Congressman Mosher was correct in describing it on the floor of the House as "a turning point [away] from man's destructive use of the seas as a garbage dump" and as "a well-developed approach to ocean dumping regulation."

But a law, no matter how strong, important, and well designed, can only be as effective as the Federal agencies charged with implementing it have the will, the determination, and the resources, especially the resources, to make it work.

In the past, will and determination have been the missing ingredients. And although some notable problems in this regard remain, we are pleased to note that, with continuing public pressure and encouragement, the Environmental Protection Agency is beginning to take seriously its former Administrator's pledge to this Committee that EPA "would adopt a precautionary, preventive approach, aimed at terminating all dumping not clearly demonstrated to be safe."

But without adequate resources even the best of intentions will not go very far. The $1.5 million of one bill, and the $1.26 million of the other bill before you, proposed to fund the combined Title I responsibilities of EPA, the Corps of Engineers, and the Coast Guard are decidedly not adequate, and would remain inadequate even if they were added together.

As Congressman Dingell of this Committee pointedly observed last spring [in a related context], it is a "piddling" amount for so important a program.

A million and a half dollars can hardly meet the needs of the three Federal agencies which are charged by law with closely controlling the half-ton's worth of waste materials that is being ocean dumped each year for every man, woman and child in the United States.

In our view the fact that the Corps of Engineers has never seen fit to ask the Congress for so much as a penny to discharge its obligations under the MPRSA is less an indication that effective implementation of the law comes cheaply than it is of the Corps' unwillingness to effectively implement the law.

It will take, in our judgment, a minimum of $3.5 million, and preferably $4 million, for EPA to begin to put into effect in fiscal 1976 some of its recently acquired good intentions.

It will take——

Mr. LEGGETT. Of course, you know, as has been explained, the Corps is spending money on a research program with the standards promulgated by EPA.

Mr. KAMLET. Well, if you would like to me expand on it. There are some ertical aspects that were not covered by that program, in our opinion. I would be glad to elaborate on that.

Mr. LEGGETT. I would rather you present me a paper with that, and I will be glad to take it up with the Corps, and we will get a report on that.

I note on the bottom of page 4 you recommend that $3½ to $4 million is essential to discharge EPA's responsibilities under the Act and, of course, you point out that Congressman Mosher has indicated that this is a turning point in the legislation from the garbage dump to a clean water, et cetera.

We are well aware of the report that has come out recently by the Environmental Protection Agency indicating that a large number of drinking water resources in the country, and particularly cities near my Congressional District, have been noted to exceed the tolerance tests as they have been prescribed, which leads to complications and early demise of citizens, et cetera, and you recommend $3½ to $4 million.

Let me ask you this. Why do you not recommend $5.5 million like we had last year? Is the mission receding so far as you see?

Mr. KAMLET. No. I do not believe so. If anything, it is increasing.

The reason for the $3½ to $4 million recommendation for EPA is a recognition of the fact that the Coast Guard and the Corps of Engineers, in addition to EPA have research and program responsibilities under title I, and that the $5.5 million of the original authorization took into account those responsibilities of the other agencies in addition to EPA.

Mr. LEGGETT. You think the $3½ to $4 million would be adequate?

Mr. KAMLET. For EPA.

Mr. LEGGETT. For EPA. Well, it would be the intention of the Chair to refer your statement, together with other statements that we have received for increased funding, to the agencies, and then get their commentary on them.

We apparently have not been able satisfactorily today to achieve an administration admission or acknowledgement of the funding required.

So that would be helpful to us.

Now, I have interrupted you. Let us see. You were talking about NOAA, and you say we should prod NOAA.

How do they interrelate with the program?

Mr. KAMLET. NOAA has only a tangential role under title I of the Act. They, of course, have major obligations under titles II and III. Title II is not before the committee at the present time. They do have a bearing on the title I authorization to the extent that EPA places some reliance on NOAA for the conduct of monitoring surveys of various kinds in connection with the discharge of EPA responsibilities.

The prodding that I believe I referred to in here has more to do with specific title II responsibilities imposed on NOAA than it does on title I or III.

Mr. LEGGETT. Very good.

Well, listen, we have your testimony. Your appendix refers to the activities of your organization around the country interrelating with the requests by various private and public agencies around the country.

Mr. KAMLET. Yes. In addition to that Appendix I, there are three other appendices that I have submitted to the committee staff.

Appendix II deals with the related position that the Corps of Engineers has taken with respect to funding needs for inland dredge disposal jurisdiction. We find it somewhat curious that although they seek no additional funding to carry out the ocean dumping responsibilities under title I of the Ocean Dumping law, they claim they cannot carry out the responsibilities imposed on them by the Congress under the Water Act with the existing resources they have. That is documented somewhat in that appendix.

Mr. LEGGETT. That appendix II, which is a letter from Howard Callaway to Roy Ash, will be included in our record at this point.

[The documents referred to follow:]

APPENDIX II-A TO STATEMENT OF KENNETH S. KAMLET DATED FEBRUARY 5, 1975

Hon. ROY L. ASH,
Director, Office of Management and Budget,
Executive Office Building, Washington, D.C.

DEAR MR. ASH: The Department of the Army, acting through the Chief of Engineers, recently has become involved in a controversy with the Environmental Protection Agency (EPA) and the Department of Justice that involved issues of major importance to the Administration land planning program.

The basic issues are whether Section 404 of the Federal Water Pollution Control Act Amendments of 1972 (33 U.S.C. § 1344) extends the Department of the Army's jurisdiction to those upper wetland areas beyond the limits of the federal navigational servitadus that are only occasionally or never inundated by tidal waters, and whether the Department of the Army can or should extend its jurisdiction as a practical matter. The EPA and the Department of Justice have both opined that the Department of the Army regulatory jurisdiction under Section 404 does and should attend to these areas, while the Corps of Engineers has taken the opposite position. Copies of correspondence between EPA and the Corps involving this disagreement are enclosed.

It is the opinion of the Department of the Army that this issue requires resolution by your office. An argument can be made that the legislative history of the Act indicates that the EPA's expansive definition of "navigable waters" is correct. The problem, however, must be reviewed in totality. The Corps' historical role and present policy considerations may cast doubt on any expansive interpretation and, more importantly, those considerations cast doubt on the viability and, indeed, the possibility of implementation of an expanded permit system. A position paper is enclosed that discusses these issues in detail.

A change in regulatory jurisdiction, even if mandated by the Act, would result in a significant change in the Administration's present land use planning program as envisioned by proposed land use planning legislation and the Coastal Zone Management Act, with its ongoing grant-in-aid program administered by the Department of Commerce. These programs encourage and rely upon state regulation. In addition, this assertion of regulatory authority over these areas would also bring the activities of other federal agencies, such as the Department of the Agriculture Soil Conservation Service, under the review authority of the Department of the Army. Thus, the Department of the Army involvement in these intertidal areas beyond the boundaries of the federal navigational servitude might result in a duplication of federal effort and expenditure.

The major problem, however, is one of available resources. The Chief of Engineers has made a preliminary field inquiry as to the costs that would be necessary if Department of the Army authority under Section 404 is expanded. This inquiry has revealed the need for an estimated 1,750 additional personnel and $53 million (annual allocation) to administer an expanded program. Thus, the crux of the issue is the implementation of what would be, in effect, a new program of enormous scale.

The problem is in need of immediate resolution. The Natural Resources Defense Council has brought suit in the District Court for the District of Columbia against the Secretary of the Army, the Chief of Engineers, and the Administrator of the EPA. The NRDC asks the court to order the Corps to revoke and rescind its present regulations on navigability and publish amended regulations that accord with EPA's definition of "navigable waters."

This matter has already been the subject of intensive discussions between the Corps of Engineers, the Environmental Protection Agency, and the Department of Justice. The Department of Justice, recognizing its responsibility to assist EPA in its administration and enforcement of the Act and the difficulties that it is experiencing in this effort because of the split in federal agency positions, has recently expressed its desire to have the President resolve this matter. The Department of the Army joins in this recommendation and is prepared to assist in the resolution.

Sincerely,

HOWARD H. CALLAWAY.

Enclosures as stated.

APPENDIX IIB—AN ANALYSIS OF CORPS ESTIMATES OF RESOURCE REQUIREMENTS

The Corps has provided us with resource data on its three major regulatory programs: Section 10 of the River and Harbor Act of 1899, Section 404 of the Federal Water Pollution Control Act as amended, and Section 103 of the Marine Protection Research Sanctuaries Act (Table 3). These programs are currently operating with about 630 MY and a budget of about $12.7 million. It is recognized that resources from other programs are sometimes used in this program, and vice versa, but that on balance the regulatory program is probably experiencing a net gain in resources. It is further recognized that some of these resources are devoted to other activities such as the 995 navigability studies presently underway (primarily under contract) and to the navigability review of EPA NPDES permits. These activities are involved in the regulatory program, but not with Corps permit issuance per se.

With about 444 MY and $9.6 million in FY 1974, the Corps processed approximately 13,700 permit applications, issued 9,500 permits, further processed about 3,000 applications which were subsequently withdrawn, and issued about 1,900 letters of authorization. About 2,000 permit violations, including unauthorized activities, were outstanding as of June 1, 1974.

As the Department of the Army's letter to OMB on this issue points out, its estimates of the 1,750 additional personnel and $53 million for an expanded program are based on a preliminary field study. We have contacted the Corps to inquire about the nature of the study. We understand that the data gathering effort consisted of messages in August and September of 1974 to Corps' District regulatory personnel, requesting estimates of the number of personnel and amount of funds each would require to implement an expanded 404 permit program.

For several reasons, we believe that a critical examination of these estimates is in order. First, the Corps District personnel were apparently not given any further assumptions or estimation techniques to employ in computing resource needs. This omission opens up the estimates to wide variation due to interpretation of the actual degree of geographic coverage which was to form the basis of the estimates. In this regard, the U.S. Fish and Wildlife Service's *Wetlands of the United States* and the State wetlands laws could have been of assistance in providing a basis of the estimates.

Second, the preliminary study, at least as embodied in the results transmitted to the Corps Headquarters, did not explicitly address itself to the number and types of permits which would be issued under an expanded definition of navigable waters. This is a significant shortcoming since it can be expected that a great number of potentially permitted actions will be minor and could possibly be handled through a letter of authorization type of arrangement, through a mechanism such as a blanket permit for a number of smalla ctions in an area, or through another approach such as administrative exclusions for classes of insignificant activities. At the other extreme, the Corps could notify potential applicants of blanket prohibitions of certain unsatisfactory practices (i.e. a regulation saying "*no* permit will be issued for . . . .)," particularly for practices likely to result in a determination under Section 404(c) by the Administrator of EPA that the proposed activity will have an "unacceptable adverse effect . . . ."

Third, in comparing the data in Table 3 and the estimates in the Department of the Army's letter, some further questions arise. EPA made estimates of the number of permits plus letters of authorization issued per MY in the program and the average expenditures per permit and letter of authorization issued. The EPA estimates of the number of permits and letters of authorization issued in

FY 75 and 76 and those issued per total MY are based on an assumption of 75% of the applications reviewed being issued permits and 14% of the applications reviewed being issued letters of authorization (the recent experience), and it was assumed that 650 man years will be employed in the program in FY 76.

The additional resource estimates for the expanded 404 jurisdiction in the Department of the Army's letter are, as noted, $53,000,000 (annual appropriation) and 1,750 MY. It should be noted that this estimates the price of a MY of effort at about $30,000 rather than the $20,000 per MY estimated for FY 1975 by EPA. Estimates of the number of permits implied by these resources can be obtained from using the EPA estimates. Assuming that a MY of effort can issue 22 permits or letters of authorization a year, 38,500 Section 404 permits or letters of authorization would be issued per year, nearly triple the present level (assuming that a letter of authorization program could be devised for Section 404 and no further restrictions on the scope of the program). This implies a cost per permit or letter of authorization of about $1380 based on a $53,000,000 expenditure estimate.

This cost seems excessively high given the data in Table 3. It should be pointed out that the estimated cost ($1,957) per permit or letter of authorization to be issued in 1976 is most probably excessive for at least two reasons: first, in FY 76, there is a $7.3 million increase in expenditures with a minor increase in MY's; second, the Corps should be able to eliminate some of the backlog of permits (about 9,000 as of June 30, 1974) if only 17,000 permit applications are received and thus the estimate of the number of permits and letters of authorization expected to be issued is low. We believe that a cost estimate in the area of $1,100 per permit and letter of authorization issued is reasonable, looking at the cost increase from 1973 to 1975. With the $1,100 estimate, the additional cost of immediately implementing a full scale program would be on the order of $42,000,000, considerably less than $53,000,000.

We believe that this cost could be further lowered through the development of mechanisms such as administrative exclusions which would rule out the need for extensive coordination on environmentally insignificant projects. Most significantly, the full implementation of a broad based 404 program would not occur immediately so that full expenditures would not be necessary immediately. This is supported by the fact that the Corps' own definition of navigable waters was considerably broadened in 1972 and a Section 103 permit program for the disposal of dredged material in ocean waters has been subsequently added to the Corps regulatory program. These two expansions of Corps jurisdiction have resulted in an increase of about 4,100 permit applications from FY 72 to FY 74. A similar increase in work load in the first year of an expanded Section 404 program would imply expenditures on the order of $4.5 million based on an expenditure of about $1,100 per permit or letter of authorization, or about 190 MY assuming 22 permits or letters of authorization per MY. Experience gained in the implementation of the program would provide more accurate cost estimates.

Data' rom DPA's NPDES permit program raise more questions with the Department of Army's estimates. Since 1972, 28,933 of these permits have been issued: 23,124 minor permits and 5,809 major permits. The average cost per minor permit was $700 and for major permits, the average cost was $6,000. Cost estimates exclude the costs of holding public hearings and of issuing notice of and holding adjudicatory hearings. We believe that the great bulk of the permits issued under an expanded 404 program would be minor and that the average cost of such permits would most probably be between the range of $700 for the minor discharge NPDES permit and the $1,100 estimate from above, probably closer to the $700 figure and perhaps below it. This is supported by the fact that the administrative and coordination aspects of both programs are similar.

Mr. KAMLET. There is an appendix III as well, in which I have attached a number of exhibits responsive to the kind of request you made a moment ago for some specifics in writing.

I have asterisked the exhibits on there which I think may be of special interest to the committee, Nos. 2, 6, 8, 9, 11, 14, 16, 17, 18, and 19. They are the briefer of the exhibits that I have attached.

Mr. LEGGETT. Such of those exhibits that counsel deems to be representative of the problem will be incorporated in our record.

Obviously, we have a very large exhibit. We get complaints all the time that we are spending too much money on printing. So in order to conserve on production costs, we will take a representative sampling and include that in our record.

Mr. LEGGETT. Then you have appendix IV regarding the major substance of ocean dumping problem areas, and we will submit that in this total analysis to EPA for their reply with respect to the suggestion that you made for the additional funding.

[The information referred to follows:]

NATIONAL WILDLIFE FEDERATION,
Washington, D.C.

APPENDIX IV—MAJOR SUBSTANTIVE OCEAN DUMPING PROBLEM AREAS

One major continuing problem is the approach toward *black list materials*. The International "Ocean Dumping Convention" made binding on the United States by Public Law 93-254, expressly probihits the ocean dumping of these materials as other than "trace contaminants." EPA's present regulations fall far short of meeting this requirement in at least the following three respects: (a) the definition established for "trace contaminants" is impermissibly broad, encompassing almost all waste types regardless of contaminant levels; (b) the numerical limits (at least for the liquid portion of wastes) established for mercury- and cadmium-containing wastes sought to be dumped under special permit are far too high (in one respect, 150,000 times too high) based both on natural seawater levels and on observed toxicity levels; and (c) even these inflated numerical limits may be ignored by EPA in granting "interim" ocean dumping permits (i.e., the EPA criteria would allow a million tons of mercury and cadmium to be ocean-dumped under an interim permit despite the Ocean Dumping Convention's bar to the dumping of these materials as "other than trace contaminants").

EPA has tentatively agreed to two significant improvements in its black list regulations: (a) more stringent numerical limits for mercury- and cadmium-containing wastes; and (b) greatly lessened availability of interim permits for the dumping of mercury- and cadmium-containing wastes. If these improvements survive further EPA internal review, they will bring EPA much closer to legal compliance.

Another problem area is the *ready availability of interim permits* without necessary regard to considerations of environmental impact. Here EPA has agreed to set a cut-off date of April 23, 1978 on the continued availability of such permits. This cut-off date, however, would not apply to sewage treatment works.

One of the most serious unresolved problems in the EPA regulatory acheme is the total *absence of environmental screening criteria for dredged material*. Thus, despite the express requirement of MPRSA § 103(b) that the Corps of Engineers must, in evaluating proposals for the ocean dumping of dredged material, apply the same criteria applicable to the dumping of other waste categories, the ocean dumping regulations contain no counterparts to the numerical limits established to screen the dumping of black and gray list materials present in other types of wastes.

The seriousness of this deficiency is highlighted by the fact that dredged material makes up 80–90% of all wastes presently ocean-dumped in U.S. coastal waters, and at least a third of this material is seriously polluted. EPA, in explanation of this regulatory void, asserts a lack of state-of-the-art capability, but confesses to have not made an especially diligent inquiry into the matter. State-of-the art shortcomings, however, cannot begin to explain the lack of even simple discharge limitations of the sort presently applicable to other wastes containin blacklist materials. EPA has recently agreed to apply its black list criteria for mercury and cadmium, to dredged materiel (although strenuous COE opposition is anticipated). In short, the regulation of dredged material disposal leaves much to be desired.

8. Another significant issue is the question of *Laboratory toxicity* ("*bioassay*") *screening procedures*. The present EPA regulations as part of the LPC definition, call for bioassay testing carried out on "appropriate sensitive marine organisms" and "in accordance with approved EPA procedures." Until very recently, how-

ever, EPA had failed to so much as identify "appropriate sensitive marine organisms", let alone insist on their use. Even now, firm, formal procedures have yet to be approved.

The latest draft of Part 227 proposes to efine "appropriate sensitive marine organisms" so as to require testing of a minimum of 3 species representative of diverse taxonomic groupings and to require the test species to be "chosen from among the most sensitive species documented in the scientific literature." If promptly and effectively implemented, this new approach can greatly strengthen the EPA regulatory program.

9. But, animal bioassays, however carefully designed, are not and cannot be the whole answer. While they can be helpful in minimizing direct toxicity to marin organisms in the dumpsite environment, such tests cannot measure the hazard to human health from contaminated seafood. We believe there is a need, in addition to bioassay procedures, for quantitative tests for determining biological uptake and bioaccumulation potential of toxic waste constituents. We would hope that EPA could devote some attention to this important question.

10. A final problem area involves *regulation of ocean dumping by public treatment works*. The MPRSA permits no "most-favored pollutant" status for municipal sewage sludges or effluents. These wates are subject to the same 9 evaluation factors of section 102(a) of the Act as are other waste categories. Likewise, permit denial, strict dumping regulation, and forced dumping termination or phase-out are sanctions equally available under the MPRSA for sewage materials as for other wastes.

These facts of life were acknowledged by former EPA Administrator William D. Ruckelshaus in testimony before this very Committee, as well as in testimony before the House Merchant Marine and Fisheries Committee, on the bill which was to become the MPRSA. Among other things, Mr. Ruckelshaus pledged his Agency to immediately prohibit any increase in sewage sludge ocean dumping levels and to phase out as rapidly as possible, if not immediately terminate, all ocean dumping of sewage sludge. EPA's failure to carry out these pledges is obvious from even the most cursory review of ocean dumping trends. As present Deputy EPA Administrator John R. Quarles testified at House Oversight Hearings (p. 8) held last Spring: "We do believe there has been a definite increase in the ocean dumping of sewage sludge." And, the Region II office of EPA has even made plans to move the present sludge disposal site off the N.Y.-N.J. coast further offshore to an area large enough to accommodate anticipated dumping increases.

As far as NWF is able to discern, Region II has yet to take any concrete steps to stabilize or reduce sludge-dumping levels. (In marked contrast, EPA Region III, based in Philadelphia, took the commendable step on February 13 of conditioning its award to the City of Philadelphia of a sludge-dumping permit on the requirement that the City embark upon a 6-year phased termination of its ocean dumping activities in favor of suitable, environmentally sound land-based alternatives. Philadelphia has appealed this permit action to the EPA Administrator and will have the opportunity to challenge it at a "limited adjudicatory hearing" to be held in Washington, D.C. beginning on May 19. NWF has formally intervened in that proceeding in support of the Region III decision.) A copy of a January 14 NWF statement on sludge-dumping alternatives has been furnished to the Committee staff for possible inclusion in the hearing record.

So much for the EPA program.

ARMY CORPS OF ENGINEERS

Turning briefly to the Corps of Engineers, the National Wildlife Federation maintains its view, expressed in prior testimony and comments, that COE ocean dumping regulations seem more directed at perpetuating, rather than controlling, the ocean dumping of vast quantities of dredged material. District office efforts to implement what few environmental protective requirements exist in the applicable regulations, moreover, have, for the most part, been much less than vigorous. And procedures for public and interagency coordination and input, where followed at all, have been carried out only grudgingly and half-heartedly.

Furthermore, unlike EPA, which candidly concedes an impermissible absence of parity between its ocean dumping criteria for dredged material and those for all other wastes, the COE is not bothered at all by this blatant lack of parallelism—despite the MPRSA's specific injunction that the Corps, in making required dumping determinations "shall apply those criteria, established pursuant to section 102(a)" which govern the dumping of all other wastes. Thus, COE testi-

mony before the House oversight committee last spring reveals that the Corps does not regard the dredged material criteria as, or even intended them to be, "a 'substitute' for, or the 'functional equivalent of', general ocean disposal criteria."

According to the Corps, "[s]ince the dredged material criteria were designed to evaluate and govern the disposal of dredged sediment and not for the disposal of the man-made wastes they are not comparable to EPA's criteria developed for Section 102(a)." This astounding attitude is extremely disturbing. Whatever differences there may be between "dredged sediment" and "man-made wastes" (and indications are that at least a third of all dredged sediment is contaminated by "man-made wastes"), the fact remains that the Corps' approach is squarely in conflict with the law of the land.

Finally, evidence available to N~F suggests that Corps district offices, in approving ocean dumping proposals, often fail to carry out even the minimal environmental protective responsibilities imposed by EPA's dredged material criteria. Thus, the basic EPA regulatory scheme is that, if dredged material is determined to be "unpolluted", it may be freely dumped virtually without restriction; if, on the other hand, it is determined to be "polluted", it may be freely dumped anyway, subject to the sole proviso that the dumping location and conditions should be designed to minimize adverse environmental impacts. In many, if not most, circumstances involving the ocean dumping of polluted dredged material, there is no evidence of any effort by the COE to minimize resulting adverse impacts.

Mr. KAMLET. Thank you.

Mr. LEGGETT. I have no questions.

Ed?

Mr. FORSYTHE. Thank you, Mr. Chairman.

I would like to go back to your statement.

On page 4 of your statement, you say $3½ to $4 million for EPA. I assume, then, the 1 million, then, for the Coast Guard you think should be added in addition to that under the authorization coming from this committee?

Mr. KAMLET. Correct.

Mr. FORSYTHE. And then you would go beyond that without number so far as the corps is concerned.

Is it your opinion that the corps should have direct funding through the authorization from this committee for their responsibilities under this act?

Mr. KAMLET. That is correct Mr. Forsythe.

Mr. FORSYTHE. Do you quantify that recommendation in any way? I do not see it in the statement.

Mr. KAMLET. Which recommendation?

Mr. FORSYTHE. Page 5, second paragraph.

Mr. KAMLET. Yes.

Mr. FORSYTHE. You will, no doubt, take more money, but you do do not quantify it.

Mr. KAMLET. No. I do not have the figures of that kind for the Corps of Engineers.

Our channels of communication with them are not as fully developed as they are with some of the other agencies.

The specific area that I had in mind in which additional funding seems to us to be the most necessary has to do with the development of screening criteria for dredge material disposal to determine limits for the dumping of dredge material that is polluted where the pollutional characteristics of the material are such that the toxicity would be so great as to not warrant dumping of the material.

There are no criteria of that kind whatsoever now in existence or in practice.

Mr. FORSYTHE. Do then come back and make it specific, your recommendation is that funding for these responsibilities should come through authorization from this committee. So, therefore, there would be the direct connection for that responsibility.

Mr. KAMLET. That is correct.

Mr. FORSYTHE. Thank you for the very helpful statement.

Mr. LEGGETT. Thank you very much.

Mr. Bauman.

Mr. BAUMAN. No questions.

Mr. LEGGETT. Mr. Emery.

Mr. EMERY. No questions.

Mr. LEGGETT. Counsel.

Mr. MANINNA. Mr. Kamlet, Mr. Mosher asked the environmental protection representative how much staff it had devoted to the program.

The answer was less than complete.

Do you know how many people EPA has assigned to ocean dumping?

Mr. KAMLET. Yes.

I believe the figure is 23 staff people for the entire operations aspect of the program. That is in the headquarters office and in the 10 regional offices, only 8 of which, I believe, are coastal regions, and only 5 or so of those 8 are regions with active ocean dumping responsibilities.

Mr. MANINNA. Do I understand you to say that EPA has ocean dumping people placed in regions that have no ocean dumping problems?

Mr. KAMLET. That is my understanding.

I understand, for example, in region IX, located in San Francisco, that it has little or no ocean dumping activity and it is in the process of phasing out whatever activity it has had. And they have three ocean dumping staff people, whereas region II of EPA, the New York City office, has only one full-time professional engaged in ocean dumping overview despite the fact that region II handles 80 percent of the ocean dumping applications for EPA.

Mr. MANINNA. Thank you.

Mr. LEGGETT. Mr. de la Garza.

I am sorry.

Mr. DE LA GARZA. No.

Mr. LEGGETT. Mr. Anderson, you are too late to ask questions.

Counsel.

Mr. EVERETT. No questions.

Mr. LEGGETT. Very good.

Mr. Kamlet, your testimony and your analysis is particularly helpful to the committee.

I want to commend the National Wildlife Federation for its continuing prodding of executive agencies in the implementation of this act. And counsel on my right, Mr. Perian, advises that the Coast Guard mission in overall ocean dumping is rather extensive.

They are out now with an RFP request for procurement for additional oversight aircraft, which will involve a multimillion-dollar multiyear expenditure to develop the capability of the Coast Guard not only in ocean dumping, but perhaps in fishing oversight. And there are numerous other responsibilities of rescue, et cetera.

So, it perhaps might be appropriate that we try to keep our lines of funding somewhat clean and recognize that were we to attempt to fund Coast Guard or the Corps of Engineers in these areas from this committee that it might be counterproductive in that we might underestimate what they are doing in various areas, and it would not be totally productive.

Your material will be referred to the appropriate agencies and we are going to get a response from them. Of course, I believe that is the general consensus of the committee.

I want to thank you very much for coming here at this point.

Mr. KAMLET. Thank you.

Mr. LEGGETT. The next witness is Mr. Henry Silbermann, deputy director of the Water Resources Administration, State of Maryland.

Mr. Silberman, it is very nice to have you here.

We have your statement of five pages.

In addition, we have a statement by the State of Maryland on proposed permit applications for the city of Camden, Sun Oil Co., and New Jersey Zinc Co. to dump waste into the Atlantic Ocean offshore from Maryland, and that exhibit is some four pages.

I also have a statement from the State of Maryland on proposed permit application for the E. I. du Pont de Nemours & Co., Inc., Edgemoor, Delaware, to dump waste into the Atlantic Ocean offshore from Maryland.

That will be included in our record.

We also have a statement relating to dumping sewage sludge from the city of Philadelphia into the Atlantic Ocean offshore from Maryland prepared by the State of Maryland, directed to EPA, and that is three pages, and that will be included in our record. Naturally, your statement will be included in our record, and you may proceed in whatever way you care to.

Mr. OSTROM. Let me begin by saying that Mr. Silbermann could not be here.

Mr. LEGGETT. Your name?

Mr. OSTROM. My name is Chris Ostrom.

Mr. LEGGETT. Very good, Mr. Ostrom.

STATEMENT OF CHRISTOPHER L. OSTROM, STATE OF MARYLAND, WATER RESOURCES ADMINISTRATION

Mr. OSTROM. The State of Maryland has been concerned about the environmental effects of ocean dumping for a number of years. More recently, this concern has taken the form of public statements on specific dumping projects and on the general nature of ocean dumping as a means of disposal of waste materials, including hazardous substances.

On June 20, 1974, we filed written objection to the continued dumping of wastes into the Atlantic Ocean offshore from Maryland, as proposed by the city of Camden, Sun Oil Co., and New Jersey Zinc Co.

We pointed out at that time that municipalities and industries in Maryland with operations equal to the cities of Philadelphia and Camden, and industries like Du Pont and Sun Oil are not permitted to dump sludge into our streams, the Chesapeake Bay or the Atlantic Ocean.

Difficult as the choice of alternatives may be, the Maryland facilities have found and used alternative disposal procedures. We had been informed by the regional office of EPA that "a land disposal alternative or equivalent project to totally eliminate ocean dumping shall be implemented," but our request had not been satisfied that ocean dump- of these wastes be severely restricted by a tight schedule of developing alternative disposal practices.

Then, on October 15, 1974, we objected to the continued dumping of acid wastes from the Du Pont titanium dioxide plant into the ocean off the Maryland coastline. At that time, we noted a pronounced southwestward drift—that is, toward the Maryland shore—which existed at least during part of the year, and we also noted a higher density of recently killed surf clams within the dispersal pattern of the dumpsite.

We again requested that a definitive schedule of compliance for alternative disposal be established and made part of any permit issued.

Most recently, on January 14, 1975, we made comment on the application for an interim permit to dump sewage sludge from the city of Philadelphia into the Atlantic Ocean offshore from Maryland. A copy of that statement and the others I previously referred to are attached.

We requested, in this instance, the application of strict enforcement and monitoring measures, and commented that "almost no progress with regard to alternative sites has been reported and the results of monitoring have not been widely published."

We asked again that there be specific findings with regard to the effect of this sludge disposal upon fish, shellfish, wildlife and shorelines, and that the impact upon recreational and economic values be determined.

Then we concluded our statement on the proposed continued ocean dumping of sewage sludge from the city of Philadelphia by requesting that "a definitive schedule of compliance for alternate disposal of these wastes be required as an absolute condition" of a permit, and also that dumping at the so-called Philadelphia sludge dumpsite be discontinued at an early time.

We have taken a consistent position against unrestricted ocean dumping of waste materials which are hazardous, or are likely to be hazardous, to the environment. We noted that Admiral Price, in his comments yesterday, distinguished between the dumping of "toxic" materials—that is, those which are dumped at EPA's "toxic waste" dumpsites, which—in the Mid-Atlantic region—is located approximately 100 miles offshore—and the dumping of so-called "nontoxic" wastes.

We object to any implication that this distinction may give regarding the environmental hazard posed by the dumping approximately 30 or 40 miles offshore of sewage sludge from Philadelphia, and the industrial wastes from Du Pont and others.

Although the Coast Guard, and possibly EPA, does not define these sludges as "toxic," they may still be hazardous to the environment and should be studied critically and monitored effectively.

The question to which we, the State of Maryland, must have an answer is, "When is a sludge dumped into the ocean a hazard to the environment?"

Must we wait until there is, in the opinion of the experts, a consensus that there is incontrovertible evidence that the environment is being degraded?

Must we wait until a biological dessert has been created and confirmed?

The monitoring data included in EPA's report on "Effects of Ocean Disposal Activities on Mid-Continental Shelf Environment Off Delaware and Maryland" causes us to reach the following conclusions:

1. The net bottom current direction in the area of the Philadelphia and Du Pont dumpsites is S–SW, that is, toward the Maryland coastline.

2. The distribution of the dumped materials is significantly extended by density layers in the water column that are caused both by the intrusion over the shelf of high density slope water, and the combined effects of fresh water runoff and the warming of the surface layer during the warmer months.

3. The outermost extent of the distribution of the heavy metal regime associated with the Philadelphia sludge has not yet been delineated, and has presently been detected throughout an area of 1,000 square nautical miles; and

4. The available evidence suggests that heavy metals are accumulating in both the sediment and biota, and that bioaccumulation is occurring.

We ask the question again, when is the ocean dumping of a sludge or waste material considered to constitute a hazard to the environment?

We believe that it is incumbent upon NOAA and EPA to conduct the necessary studies and monitoring to provide an early answer to this question.

The Federal agencies involved, including the Coast Guard, are the appropriate agencies to carry out this vital work.

Obviously, sufficient funding is essential to perform this work in the depth and within the short time frame required.

We, the State of Maryland, therefore support continued funding, at least of title I, and I believe it should read title III of the Marine Protection, Research, and Sanctuaries Act of 1972.

We share the concern of some committee members that the appropriations, as proposed, may not be sufficient to carry out effectively and sufficiently the requisite studies and surveillance efforts, and strongly recommend fully adequate financing.

Finally, we would want it understood that we are not calling for an irrational 100 percent prohibition against ocean dumping of all materials at this time.

We are calling for a studied urgent effort to stop ocean dumping of sludges and wastes which are environmentally hazardous when and where deposited in these waters.

Thank you.

Mr. LEGGETT. Very good.

Your last statement states the problem but does not state the solution. We want to stop pumping, but we do not want to stop that which is not hazardous, and therein lies the problem.

I suspect that all of this is involved with money and who pays it and such as that.

Now, I presume from what you have said that the State of Maryland, and Delaware perhaps has not adopted any State laws that incorporate any of these Federal standards at this time.

Is that right.

Mr. OSTROM. Well, I guess we do not have jurisdiction outside the 3-mile limit, and I am not familiar with the State laws for waters within the 3-mile limit. But I can provide you with that if you would like.

Mr. LEGGETT. Well, that might be helpful to us.

I know in San Francisco Bay we have adopted rather stringent requirements and we have made requirements that dumping occur beyond a 3-mile limit in many cases, which indicates we have some jurisdiction with our own citizens for an indefinite area at sea when they take things from our shores.

I think the State can act in this area though, obviously, it is the responsibility primarily of the Federal Government.

We are going to refer your statement to both the Corps of Engineers and to EPA, and we are not going to wait a month for a reply. I think they have obviously prepared replies to your complaints, and we are going to find out what those replies are.

I am going to ask counsel to evaluate those and make an analysis.

Mr. de la Garza.

Mr. DE LA GARZA. No questions.

Mr. LEGGETT. Ed.

Mr. FORSYTHE. Thank you, Mr. Chairman.

I have two questions.

On page 5, just to clear this up, in the third paragraph, your statement reads that you support continued funding.

I thought you said title II and then you corrected it to title III.

Do you mean title I and title III?

Title II is not before us at this time.

Mr. OSTROM. I guess I am not familiar with the specifics of the bill. We are generally in favor of increased funding, and I would include titles I, II and III, even though II is not being considered.

Mr. FORSYTHE. I just wanted to be sure you were including title III which is before us at this time.

Mr. OSTROM. Yes.

Mr. FORSYTHE. Second, do you have any recommendation of the level of funds which you believe would be adequate?

Mr. OSTROM. Well, I do not feel personally qualified to evaluate what level of funding is needed.

However, I can make an observation based upon the following facts that were presented yesterday during EPA's testimony:

(1) EPA has identified 11 ocean dumpsites and would like to perform a baseline study for each one;

(2) Each baseline study should include 2 to 4 site studies—however, I would suggest that a minimum of 4 site studies would be needed to estimate seasonal variations;

(3) The cost of a site study was estimated to be $200,000—this was the low side of the estimate;

(4) Four site studies costing $200,000 each, and conducted for 11 dumpsites, results in a required funding level of approximately $8 million.

It is realized that other Federal agencies may contribute a portion of this total cost. Nevertheless, this observation suggests that EPA requires a substantially higher level of funding than has been requested.

Mr. FORSYTHE. Just one more question.

Your statement refers to the city of Philadelphia and Camden and industries which are all located in other States other than Maryland, is that correct?

Mr. OSTROM. Yes.

Mr. FORSYTHE. You do not have any municipals or industries dumping involved in your offshore waters?

Mr. OSTROM. No industries or municipalities within the State of Maryland presently dump in the State of Maryland's waters or offshore from Maryland.

Mr. FORSYTHE. Therefore, any statutes of the State of Maryland would not be involved in the problems which you are delineating in your statement because you could not control the cities outside of Maryland or industries not situated in Maryland.

Mr. OSTROM. I see your point. That is a good point.

No; I guess we would not be able to.

Mr. FORSYTHE. Thank you, Mr. Chairman.

Mr. LEGGETT. Thank you, Ed.

Mr. Bauman.

Mr. BAUMAN. I want to thank Mr. Ostrom for his statement. With all due respect to him, I would just observe that that Secretary of the Department of Natural Resources was invited to come here today to give us some insight into the EPA position from the viewpoint of a State which has suffered at their hands. I regret that he was not able to be here or to send his assistant Mr. Silbermann so we could receive some more definitive answers to our questions.

Again, it is no disrespect for the witness, because he has delivered a statement which adequately presents the problem we have in Maryland.

I would only note for the record that our State standards are considerably higher than the ones EPA is applying in permitting these interim permits for dumping to be used by the city of Philadelphia.

Again I do thank him for his statement.

Mr. LEGGETT. Very good.

We are going to further pursue that particular problem, Mr. Bauman. We are going to get a response, and we are going to find out when these standards are actually going to be promulgated further by the Corps in conjunction with EPA.

Mr. Anderson.

Mr. ANDERSON. No questions.

Mr. LEGGETT. Counsel.

Mr. EVERETT. No questions.

Mr. LEGGETT. Very good.

Your statement has been measurably helpful to the committee and we will be in further communication with you. And if you can provide for our record an analysis of the quality standards that the State of Maryland operates under, that might be helpful.

Mr. OSTROM. OK.

Thank you.

Mr. LEGGETT. Thank you very much.

[The attachments to Mr. Ostrom's prepared statement follow:]

STATEMENT BY STATE OF MARYLAND ON PROPOSED PERMIT APPLICATIONS FOR THE CITY OF CAMDEN, SUN OIL CO. AND NEW JERSEY ZINC CO., TO DUMP WASTES INTO THE ATLANTIC OCEAN OFFSHORE FROM MARYLAND

First Philadelphia and Dupont, now Camden, Sun Oil Company, and the New Jersey Zinc Company all want to dump wastes off the shores of Maryland. We also hear rumors of applications from other industrial operations for disposal of wastes such as arsenic into these same waters.

How many others are dumping without our knowledge into these waters and how many others have applications in the process of being prepared? As stated in the January 25, 1974 hearing, the State of Maryland objected to the re-issuance of the Philadelphia and Dupont permits and we must certainly raise strong objections today to the issuance of permits to Camden, Sun Oil Company and the New Jersey Zinc Company.

We have no intention to give even tacit consent to operations which seem to be calculated to establish Maryland's offshore waters as a permanent dumping ground for the accumulated waste of any municipality or industry. The State of Maryland has major municipalities and industries with operations equal to that of Philadelphia, Camden, Dupont and Sun Oil but no sludge from these operations is dumped into our streams, into the Chesapeake Bay or into the Ocean.

Although Maryland is the most affected state by these dumping operations, EPA-III has not shown concern other than providing us with a mailed notice of the proposed dumping. On March 20, 1974, we wrote to Mr. Daniel J. Snyder III, Regional Administrator, as follows:

"On January 25, 1974 in accordance with Public Notice 0007, dated December 21, 1973, we sent a letter to Ms. Ann Joseph, Attorney—Enforcement Division, EPA-III, registering the State of Maryland's objection to the re-issuance of permits for ocean dumping by the City of Philadelphia and the E. I. Dupont titanium dioxide plant in Delaware. Although the letter was entered into the record at the hearing on February 13, 1974, the State of Maryland has not received a formal response to the issues raised.

"The State of Maryland would like to take a rational view of all the alternatives for waste disposal including ocean dumping but the re-issuance of permits by your agency in this case without any prior or subsequent discussion with the State of Maryland on our stated concern . . . is arbitrary and certainly detrimental to effective State-Federal relations."

In response to this letter we were advised by Mr. Snyder on April 30, 1974 that the decision to issue a permit to the City of Philadelphia was made for the following reasons:

"1. There was no short-termed alternative to ocean disposal;

"2. The site chosen by EPA presently shows no conclusive environmentally degrading effects incurred due to ocean dumping;

"3. The site chosen should present no effects upon any shore areas due to the drift time required to reach shore from the disposal site. Our present knowledge of ocean currents and bottom drift indicates a net transport of material to the southwest. The bottom drift is at an average rate of 0.014 knots with an average travel time of 200 days for any material to reach shore from the site. The surface and mid-water transport systems are very complex. The direction is seasonably variable with circular patterns predominant. Under worst conditions, the shortest travel time should be greater than 25 days from the site to nearest shore. Therefore, due to the resonance time and dilution factor over this distance, the sludge should not be detectable."

Mr. Snyder further stated that strict requirements were placed on dumping activities, and that these requirements include:

"1. A land disposal alternative or equivalent project to totally eliminate ocean dumping shall be implemented.

"2. A program shall be initiated to first, identify all sources of heavy metals entering the sewage treatment plants; and second, to initiate controls consistent with EPA treatment guidelines for all controllable sources.

"3. The City of Philadelphia shall initiate a program to monitor and determine the effects of their wastes. This effort will be incorporated into the EPA's environmental assessment program which has been underway over a year.

"4. The City may dump only at the site specified by EPA and at a rate of discharge such that only trace concentration are [sic] detectable outside the mixing zone and inside within four hours."

We would like to know at this time what has actually been done on each of these requirements.

Although several cruises of the dump sites have been made under EPA auspices, we did not receive copies of the reports on these monitoring efforts until June 17, 1974 and as a result have not had an opportunity to evaluate this information. We do wish to give full and complete study prior to making any detailed statement to this hearing. We would, however, like to know today what, if anything, has been found as a result of the monitoring efforts with respect to environmental degradation caused by the specific dumping of the Dupont waste, the Philadelphia waste, the Camden waste, and the Sun Oil Company waste.

So that the State of Maryland can provide an adequate public statement of its position in this matter, we ask that the Hearing be held open and a second session of the public hearing be held in Ocean City, Maryland at an early date. This would also provide full opportunity for affected local interests to hear the proposals and to express their views.

STATEMENT BY STATE OF MARYLAND ON PROPOSED PERMIT APPLICATION FOR THE E. I. DUPONT DENEMOURS & COMPANY, INC., EDGE MOOR, DELAWARE TO DUMP WASTES INTO THE ATLANTIC OCEAN OFFSHORE FROM MARYLAND

The State of Maryland appreciates the opportunity to participate in this hearing to present its views on the proposed extension of the ocean dumping permit for the E. I. DuPont deNemours & Company, Inc. of Edge Moor, Delaware. The State also appreciates your selection of the hearing site here in Ocean City, Maryland so that all interested individuals and groups from Maryland may have an opportunity to express their views on this issue.

Essentially, the State has not changed its previously stated position on the dumping of acid wastes from the DuPont titanium dioxide plant into the ocean off the Maryland shoreline. We are opposed to the continued dumping of these wastes in waters off our coast. The State of Maryland takes a rational view of all the alternatives for waste disposal, including ocean dumping. However, the evidence seems to be mounting to confirm our concern with respect to the current program of dumping. The State of Maryland would like to thank the Environmental Protection Agency for inviting us on the last dumpsite monitoring cruise. It was a valuable, enlightening experience and we look forward to continuing such cooperation in the future.

Specifically, the extensive dumpsite monitoring cruises carried out by EPA–III have apparently documented a pronounced south-westward drift, at least during part of the year, of wastes from the acid dumpsite using vanadium in the waste as a unique tracer. There was also an indication of a higher density of recently dead surf clams coincident with the dispersal pattern of the dumpsite. We are concerned that increased mortality is a possible harbinger of some as yet undefined long term impact. Further, the results of the EPA current study using bottom drifters indicate that the bulk of the drifters released that were found and recorded had in fact impacted on the Maryland and Virginia shoreline. We believe that this provides at least presumptive evidence that the dumping of these acid wastes may at this time impact the marine ecosystem of the coastal zone off Maryland's shore. We appreciate that DuPont is reducing the liquid volume of its wastes by conversion to the chloride process, but in so doing will almost double the concentration of the constituents. We believe this could result in approximately the same load impact to the marine system.

On these bases the State of Maryland strongly recommends that a definitive schedule of compliance for alternate disposal of these wastes be required as a condition of the permit leading to an early discontinuation of dumping at this site. The State of Maryland fully supports the intent and inclusion of Condition 10 as applied to this permit application.

STATEMENT BY THE STATE OF MARYLAND TO THE U.S. ENVIRONMENTAL PROTECTION AGENCY ON THE MATTER OF THE APPLICATION FOR AN INTERIM PERMIT TO DUMP SEWAGE SLUDGE FROM THE CITY OF PHILADELPHIA INTO THE ATLANTIC OCEAN OFFSHORE FROM MARYLAND

Maryland appreciates this opportunity to present its views on this subject which is so vital to our concerns. We appreciate the selection of this forum in Ocean City, Maryland to provide interested individuals, groups, and governmental bodies from this state with the opportunity to come here today and have their thoughts made known.

Maryland does not favor disposal of digested sludge from the wastes of the City of Philadelphia into the ocean off our shoreline. At the last Hearing on this permit we sought a firm schedule of compliance indicating alternative disposal sites and other measures that the City of Philadelphia could take to dispose of the sludge. We have asked for strict enforcement and monitoring measures, but to date, almost no progress with regard to alternative sites has been reported and the results of monitoring have not been widely published.

It has come to our attention that certain legislative action taken by the Commonwealth of Pennsylvania may have the effect of limiting the full range of options that the City of Philadelphia has for disposal of the sludge within Pennsylvania. This type of action only serves to limit Philadelphia's consideration of alternative disposal methods and implies that such disposal with whatever environmental consequences are involved, must occur outside of Pennsylvania.

The problems of sludge disposal are not unique to any one city. Most large cities handle disposal of sludge without resorting to ocean disposal, and their experience should provide a natural basis for selection of alternatives.

We are concerned about the heavy metal content of the sludge and any potential impact on fishery resources and the Maryland territorial waters. The State also cannot ignore the potential public health impact of bacteria from the sludge upon commercially harvested shellfish taken in the areas adjacent to the dump site and landed in Maryland.

Maryland again insists that the provisions of Section 403 of the 1972 Water Pollution Act Amendments be carried out. We ask that there be specific findings with regard to the effect of this sludge disposal upon fish, shellfish, wildlife, shore lines and beaches. We ask that the effects of sludge disposal upon recreational and economic values be determined. And, most importantly, we insist that there be a thorough discussion and findings regarding other possible locations and methods of disposal or methods of recycling the sludge. We do not believe that EPA has carried out the requirements found within the aforesaid Section.

As noted above, we must believe that there are better ways to dispose of sewage sludge than to transport this waste down the Delaware River, through the Delaware Bay, and out 60 miles into the Atlantic Ocean. Philadelphia has avoided the problem of alternate disposal for some time now and we believe that any indeterminable extension of permission is in violation of the Federal law and would be an abuse of decision-making authority at the Federal level.

Mr. LEGGETT. Our final witness this morning is from Ocean City, Md., the mayor, Harry W. Kelley.

Mayor Kelley, we are very privileged to have you here.

Would you identify the man on your right?

STATEMENT OF HON. HARRY W. KELLEY, MAYOR, TOWN OF OCEAN CITY, MD.; ACCOMPANIED BY DALE CATHELL, CITY SOLICITOR

Mr. KELLEY. Chairman Leggett, I appreciate greatly this opportunity to appear before this honorable body. It is great to have this consideration of the respected members of the committee.

I thank you for your invitation to introduce one of the greatest men that I have ever known. He is our city solicitor, Mr. Dale Cathell. He gets all kinds of pronunciations for that. I call him Dale Catall.

I have no prepared statement, sir.

Mr. LEGGETT. OK.

Mayor, go ahead.

Mr. KELLEY. I came here today to tell you that I represent the entire city council which, in turn, represents the entire populace of Ocean City in opposing ocean dumping of any nature whatsoever 100 percent.

I will give you the background.

Last summer, for instance, there were fish killed that came ashore. There was crude oil that came ashore. There was algae that came ashore.

These reports were all made to the Department of Natural Resources, the State of Maryland. They were made to the Coast Guard. As yet, the mayor's office has received no answers as to why the fish are killed or why the algae.

I might add that, last summer, some of your land at Aztec Island had crude oil ankle deep which the city of Ocean City had the equipment and, very happily, went down there and, free of charge, cleaned those beaches.

It is my opinion that even though EPA has only been commissioned a little over 4 years, they have been extremely lax in their responsibilities.

About the hearings with Du Pont, the city of Philadelphia, I have attended and pleaded very strongly to stop this practice. It is apparent that they were continually going to give these interim permits for a year basis.

Gentlemen, just this morning, I walked that beach, and algae, a brown algae, was washing ashore this morning, which my city solicitor said I should have got a sample and brought up here to you all, but I am sure you will take my word for it.

But if there is any greater place in the world for serenity and peace of mind, that is it, for fishing, bathing, or swimming.

We have absolutely no responsibility to these corporations or these cities to dump their waste in the God-given greatest asset.

I will give you a couple of prime examples of just what recently happened about 45 days ago.

This involved a gentleman that is a personal friend of mine, a Capt. Clinton Redding, better known as "State," possibly one of the best fishermen there is up and down the coast.

He dropped his net over first thing in the morning. He catches the fish. But, 45 days ago, he ran into sludge dragging the bottom which he had to cut his nets loose. He had to put buoys on them. He had to put anchors on them. This extended for miles, sludge on the bottom of that ocean.

As recently as last Friday, he was in the ocean again, and from Gulf Shoal to out a way, a distance of about 15 miles in length, it was 7 miles at sea, there was nothing but raw garbage as far as the eye could see east and west for 15 miles long.

Now, with the wind and the tides in the right direction, that can come ashore.

After the last hearing with EPA with respect to this city of Philadelphia, we have done some research, and I think it is documented, but southern New York, northern New Jersey have found where they have been dumping for about 7 years that it killed the fish in the area, it chased the others, so that there could be no spawning.

Right now, Ocean City is in the process of building fishing reefs in that ocean. We have one of the greatest beaches, gentlemen, that there is in the world. That is crystal white sand and, to me, she is the prettiest there is.

I have traveled everywhere. I have vacationed in Florida in the winter and have to leave the ocean because of the raw garbage.

To show you how serious we are, the mayor acted, possibly and prematurely, at a public meeting one evening when I said let us file a lawsuit against EPA and the city of Philadelphia. I am sick of it.

The Council voted unanimously. And then I went to the county commissioner of Worcester County, and they joined us. The Department of Natural Resources, the State of Maryland, joined us, and the attorney general joined us in that we would file lawsuits.

When I did it, I fully knew that the lawsuit would possibly cost the city of Ocean City $50,000, but I was willing to spend that money because I believed in it.

Further, this gentleman on my right, Mr. Cathell, suggested to the mayor that we annex a 30-mile square area in that ocean, which we have done. We were there first.

Gentlemen, all of our efforts will be directed towards stopping any and all ocean dumpings. EPA cannot, without question, suggest alternate methods to dispose of this garbage or this sludge. You can burn it, you can landfill it.

I implore you, gentlemen, because I respect each and every member up there. You have the smarts, which I do not have. But you have the ability to stop this practice because this ocean is for the people, and that is what you represent.

I greatly appreciate, again, the opportunity, and I would love to see any and all of you come to the greatest resort there is.

Mr. LEGGETT. Thank you very much, Mr. Mayor.

I want to tell you something. We are all going to come.

Mr. KELLEY. You will be welcome.

Mr. LEGGETT. We are well aware of the great natural resources that we have on the Eastern Shore of Maryland, particularly Ocean City.

I presume that your statement is representative of what we might find from the representative from Rehobeth and all up and down the coast.

Let me ask you: How does the city of Ocean City discharge its refuse material?

Mr. KELLEY. Sir, it is under a sanitary commission, which is a 97-percent treated plant. It dumps its effluent into the ocean which, at the time it happened, I was president of the city council.

I opposed it vehemently then, but the Federal Government, the engineers in the State of Maryland made the sanitary districting in that ocean.

I am still consistent. I want them out. I want a lagoon system all around the country. I studied it. I got material from you all up here.

At that time, it happened there was not too much information on lagoon systems. They thought maybe that the sunlight was the activating factor with the bacteria, but that proved to be false because they were working in Alaska. I am still a firm believer of the lagoon systems.

I oppose any effluent or anything polluting that ocean, but Ocean City is under a sanitary commission which is not under our jurisdiction.

Mr. LEGGETT. I see.

What is the status of your lawsuit, counsel?

Mr. CATHELL. We are in the process, Mr. Chairman, of a hearing before EPA in reference to the city of Philadelphia which is a necessary step prior to filling lawsuits. Maybe it will not be necessary. We anticipate it will be.

I have before me a letter written on behalf of the State of Maryland and the town of Ocean City to the Marine Protection Branch in the State of Maryland on behlaf of the State of Maryland and Ocean City.

In essence, it is saying, in their opinion, our opinion, EPA is not doing their job as far as determining the hazards of such dumping.

Mr. LEGGETT. Let me ask you this.

Are things any better today than they were prior to 1972 when we enacted this act?

Mr. CATHELL. They are worse.

Mr. LEGGETT. Is it worse?

Mr. CATHELL. There is more being dumped in the oceans, as far as we are concerned. We are getting more Pennsylvania stuff in the oceans in Maryland today than we were in 1972.

Mr. LEGGETT. Are you satisfied that the bulk of the stuff you are getting is from out of State and is not residual from your area?

Mr. CATHELL. Yes, sir. We are absolutely satisfied of that.

Our total bluefish do not like what Philadelphia is dumping off on Maryland.

Mr. LEGGETT. Very good.

We are going to see if we can help implement the law this committee enacted in good faith.

Counsel just pointed out to me a provision in the law where we usurped the authority of the States in this general area. Section 106(d) states that after the effective date of this title, no State shall adopt or enforce any rule or regulation relating to any activity related by this title. Any State may, however, propose and those can be adopted by EPA.

So, the responsibility has been assumed by the Federal Government. We have delegated that responsibility to EPA. We are now sending EPA out to discharge its responsibilities in this general area to prevent discharge in your general area, and $1½ million does not seem like a rather big amount to discharge that responsibility.

Mr. CATHELL. Mr. Chairman, we would certainly submit that a major additional funding beyond that million or million and a half is certainly necessary if EPA is going to fulfill its function of conducting the necessary scientific studies to determine the hazards of the dumping.

Mr. LEGGETT. I share your views.

Ed.

Mr. FORSYTHE. Thank you, Mr. Chairman.

Thank you very much, Mr. Mayor.

I do not think I will entertain a debate with you about New Jersey beaches versus Ocean City, but just to indicate that I certainly am well aware of the concern for our beaches all along the coast and how important this is.

This tragedy, as you say, it is worse now than it was before. Unfortunately, this is also true in New Jersey because of the Water Control Act which, as a matter of fact, has increased very substantially the amount of sludge going into our ocean.

So we do have a serious problem.

Thank you very much.

Mr. LEGGETT. But if anything is coming from New Jersey to Maryland, you certainly——

Mr. FORSYTHE. It is coming from Philadelphia apparently.

Mr. LEGGETT. That is Pennsylvania.

All right.

Mr. KELLEY. Mr. Chairman, to further answer your question which you asked the city solicitor, I think after we told EPA and the city of Philadelphia that we were going to file this suit, EPA did come with a recommendation, I think, from 1975 to 1978, with 150 million gallons going in the ocean a year, and from 1978 to 1981, 75 million.

But there, again, there has been no check on them. They can put 2 million gallons in there, if they want to.

So there does need to be some regulation. There needs to be some check, but, of course, most of all, let us knock it all out.

Mr. LEGGETT. Very good.

Well, this committee has continuing oversight into this area. We intend to look at it formally at least once a year, but we are in session most every day of the year, and we hope that you would keep us advised of the status of your lawsuit and the problems that you might have with EPA, as we are all kind of on the same side.

We just need to adequately fund, adequately authorize, and adequately oversee those responsibilities and changing long-term habits of conduct of industry and public entities is not an easy job. And we intend to see that that does occur though.

Counsel.

Mr. CATHELL. Mr. Chairman, if I could make one final statement.

We have found since the EPA permit system was enacted that the only major difference in the dumping, No. 1, is quantity.

But now the people dumping say instead of just dumping, they now say we have a permit to do it to you. That is the major difference.

Mr. LEGGETT. All right.

We will get to the bottom of that.

Mr. BAUMAN.

Mr. BAUMAN. I would just like to observe that we have had a great occasion here today with one of the guint essential eastern shoremen of all time, Mayor Kelley. He is of the chairman's political faith and a great leader in our area.

Mr. LEGGETT. It is not a faith. It is an essential philosophy.

Mr. BAUMAN. I have a faith, Mr. Chairman.

But I would just observe that this testimony does raise the issue that we have had before us the last 2 days, whether it is a matter of lacking necessary funding or whether or not EPA is acting properly to see that the policy dictates in their basic statute are being considered.

I would ask consent to insert a brief legal analysis which I have had prepared on whether or not EPA is carrying out their proper function in allowing ocean dumping.

Mr. LEGGETT. Very well.

The analysis will be included in the record at this point.

[The analysis referred to follows:]

THE LIBRARY OF CONGRESS,
CONGRESSIONAL RESEARCH SERVICE,
Washington, D.C., April 23, 1975.

To: Hon. Robert E. Bauman.
(Attention: Gus Fritschie.)
From: American Law Division.

Subject: Power of Environmental Protection Agency to Phase Out Ocean Dumping Pursuant to the Marine Protection, Research, and Sanctuaries Act of 1972.

This responds to your request for an analysis of whether the Environmental Protection Agency (EPA) has power, pursuant to the Marine Protection, Research, and Sanctuaries Act of 1972, Pub.L. 92-532, 86 Stat. 1052, 33 U.S.C. §§ 1401

et seq. (Supp. III 1973), to require the gradual phase-out of ocean dumping of sewage sludge. We understand that the question arises in the context of the interim ocean dumping permit number PA 010 issued to the City of Philadelphia, and requiring the initiation of a plan to reduce ocean dumping by 50% by 1979 and by 100% by 1981. However, our analysis is necessarily limited to our interpretation of the law, and is not intended to apply the law to the facts of the instant controversy, concerning which we have only limited knowledge.

Several sections of the Act relate to the Administrator's authority in some instances to refuse to permit ocean dumping. Section 2(b), 33 U.S.C. 1401(b), declares a congressional policy "to prevent or strictly limit the dumping into ocean waters of any material which would adversely affect human health, welfare, or amenities, or the marine environment, ecological systems, or economic potentialities." Section 104(d), 33 U.S.C. § 1414(d), provides express authority for denying a permit: "The Administrator . . . may limit or deny the issuance of permits . . . where he finds that such materials cannot be dumped consistently with the criteria and other factors required to be applied in evaluating the permit application." The "criteria" referred to are set pursuant to the terms of section 102, 33 U.S.C. § 1412:

(T)he Administrator may issue permits . . . where the Administrator determines that such dumping will not unreasonably degrade or endanger human health or welfare, or the marine environment, ecological systems or economic potentialities. The Administrator shall establish and apply criteria for reviewing and evaluating such permit applications, and, in establishing or revising such criteria, shall consider, but not be limited in his consideration to, the following:

(A) The need for the proposed dumping.

(B) The effect of such dumping on human health and welfare, including economic, esthetic, and recreational values.

(C) The effect of such dumping on fisheries resources, plankton, fish, shellfish, wildlife, shore lines and beaches.

(D) The effect of such dumping on marine eco systems, particularly with respect to—

(i) the transfer, concentration, and dispersion of such material and its byproducts through biological, physical, and chemical processes.

(ii) potential changes in marine ecosystem diversity, productivity and stability, and

(iii) species and community population dynamics.

(E) The persistence and permanence of the effects of the dumping.

(F) The effect of dumping particular volumes and concentrations of such materials.

(G) Appropriate locations and methods of disposal or recycling, including land-based alternatives and the probable impact of requiring use of such alternate locations or methods upon considerations affecting the public interest.

(H) The effect on alternate uses of oceans, such as scientific study, fishing, and other living resource exploitation, and non-living resource exploitation.

(I) In designating recommended sites, the Administrator shall utilize wherever feasible locations beyond the edge of the Continental Shelf.

Criteria established by the Administrator appear in Title 40, Code of Federal Regulations, Part 227. The criteria group various materials into categories, including "materials for which no permit will be issued," "other prohibited materials," which may be dumped only at "trace contaminant" levels, and "materials requiring special care," which may be dumped at established concentrations. 40 C.F.R. §§227.21, 227.22, and 227.31. There are also different types of permits for dumping. Principal among these are "special permits," which can be issued for a period of three years for dumping materials in accordance with the established criteria, and "interim permits," which can be issued for no more than a year for dumping of materials in excess of the trace contaminant levels or in excess the concentrations set for "special care" materials. 40 C.F.R. §2203. The permit issued the City of Philadelphia is an interim permit; reproduced below is 40 C.F.R. 220.3(d), governing issuance of such permits.

(d) Interim permits. It is the intent of this program to prevent or strictly regulate the disposal to the marine environment of any materials damaging to that environment. The quantitative basis for determining limiting concentrations and quantities of known toxic or otherwise damaging materials which can be dumped without measurable damage, based on existing knowledge, is given in §§227.22 and 227.31 of this subchapter. When an applicant wishes to dump any of the materials listed in § 227.31 of this subchapter in excess of the limiting permissible concentrations, or when the constituents identified in § 227.22 of this subchapter

are present as trace contaminants as defined in § 227.22(c) of this subchapter but are in excess of the levels at which they may be dumped under special permit, he may, under certain conditions, be granted an interim permit at the discretion of the Administrator or his designee. These conditions are:

(1) An environmental assessment of the potential environmental impact of the dumping will be required as part of each application and, in addition, a thorough review of the actual need for the dumping and possible alternatives will be made in evaluating the permit application. The decision on whether or not to grant an interim permit will be based, in part, on consideration of the following factors relative to the need for and alternatives to dumping:

(i) Degree of treatment feasible for the waste to be dumped, and whether or not the waste material has been or will be treated to this degree before dumping.

(ii) Manufacturing or other processes resulting in the waste, and whether or not these processes are essential, or if other less polluting processes could be used.

(iii) The relative environmental impact and cost for ocean dumping as opposed to other possible alternatives, for example land disposal or deep well injection, after the best practical waste treatment has been carried out.

(iv) Temporary and/or permanent effect of the dumping on alternative uses of the oceans, such as navigation, living resources exploitation, nonliving resource exploitation, scientific study, and other legitimate uses of the oceans, as opposed to the impact on other parts of the environment of alternate means of disposal.

(2) An interim permit will require the development and active implementation of a plan to either eliminate the discharge entirely from the ocean or to bring it within the limitations of § 227.3 of this subchapter. Such plans must meet the requirements of § 227.4 of this subchapter. The expiration date of an interim permit will be determined by completion of sequential phases of the development and implementation of the required plan, and will not exceed one year from the date of issue. An interim permit may not be renewed, but a new interim permit may be issued upon application according to Part 221 of this subchapter upon satisfactory completion of each phase of the development and implementation of the plan.

(3) No interim permit will be granted for the dumping of waste from a new facility or from the expansion of a facility after the effective date of these regulations without the completion of Phase A of an implementation plan.

Examination of the City's permit reveals that several materials are permitted in the sludge in excess of the "trace contaminant" levels listed in 40 C.F.R. § 227.22: mercury and cadmium. Materials requiring "special care" are also listed. Thus, by its own regulation, it would appear that EPA must "require the development and active implementation of a plan to either eliminate the discharge entirely from the ocean or to bring it within the limitations of § 227.3. . . ." The requirements for implementation plans are set forth in § 227.4, a copy of which is enclosed.

Both the City of Philadelphia and the State of Maryland object to various of the permit conditions and factual findings of the EPA hearing officer. The Act and regulations summarized above should serve as the framework for analysis of these contentions in the context of the permit application and the full hearing record.

GEORGE COSTELLO, *Legislative Attorney.*

Mr. LEGGETT. We will also get a response from that.

Mr. Anderson.

Mr. ANDERSON. First, Mr. Mayor, I want to congratulate you on your presentation and your position. You have a beautiful city, a beautiful beach. Mrs. Anderson and I have been there many times, and we plan to keep visiting your city. It's very nice.

On your comment about "the smarts," I want you to know that I, for one, appreciate your kind of "smarts." It's an approach that gets to us.

The only part of your presentation that I disagreed with was the extent of your search to find a better beach. I mean, you did not get to California. I am sure if you had come to my area of Long Beach or

Santa Catalina, you would have admitted we have a much better beach. But you apparently did not make it quite that far.

Mr. KELLEY. Sir, I would say this. I will come.

Mr. ANDERSON. We would like to have you on your next tour, when you are looking for a better place. Come out to the great 32d District in southern California.

The question I would like to just ask is; what percentage of the pollution in your area comes from other States? Just round figures.

Mr. KELLEY. Well, of course, you know, du Pont is dumping their metallic wastes out there, and the city of Philadelphia is going to start now, so it is hard to tell how many millions of gallons and how many barge loads are going to go out there.

But it is tremendous, and I understand that a scientific approach to it says that these things cannot move off the bottom, but let me tell you, when you get a northeast wind that whole bottom rolls. Believe me.

Mr. ANDERSON. Would you say it is 70, 80, 90 percent, that comes from outside of your State?

Mr. KELLEY. Oh, yes. Yes, sir.

Mr. ANDERSON. In other words, no matter how good of a system u people in your State, the State of Maryland, have, if you took yo your effluent, and kept it in the State, there would still be 70, 80, allrcent of the pollution out there in the ocean?

peMr. KELLEY. Yes, sir.

Mr. ANDERSON. So it is obviously the responsibility of this Congress d the EPA to make sure there is something done on pollution beaneen States, is it not?

twMr. KELLEY. Yes, sir.

I feel that there are definite alternative methods. Others do it.

The attorney general's office in the State of Maryland gave a city within Maryland 30 days, and they did it. This is what disturbed me about EPA. They want to phase out from 75 to 81. It does not take that long.

Mr. ANDERSON. Thank you, Mr. Chairman.

Mr. LEGGETT. Very good.

Thank you very much, Mr. Anderson.

Counsel, any questions?

Mr. EVERETT. No.

Mr. LEGGETT. Very good.

Mayor, you have the privilege of being the last witness on this important subject matter. You got the last word.

We are going to consider the legal analysis that has been made, and your statement and we are going to get some answers. We will mark the bill up shortly, in such a way that we can appropriate funds in an adequate amount.

It has been a real pleasure to have you here.

Again, thank you very much.

Mr. KELLEY. Thank you, sir. I am very gratified with the reception we got.

Mr. CATHELL. Thank you, gentlemen.

[Whereupon, at 11:35, a.m., the subcommittees were adjourned.]

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