US ARMY CORPS
OF ENGINEERS
NEW YORK DISTRICT

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2

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Non-Testing Related Regulatory Issues: Subparts B,C,D,and E of 40 CFR Section 227 for the Federal Project No. 72, Arthur Kill to Raritan River Cutoff Channel, New York Bay, New York..

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MEMO TO FILE

SUBPART B - ENVIRONMENTAL IMPACT

1. Section 227.5 Prohibited materials.

The material to be placed at the Historic Area Remediation Site (HARS) (see CENAN, 1998) is dredged material that has been evaluated and found to meet the regulatory testing criteria of 40 CFR Sections 227.6 and 227.27 and the requirements of the rule establishing the HARS in Section 228.15(d)(6) (see USEPA/CENAN, 1999). The material proposed for placement as Remediation Material is not:

- high level radioactive waste;
- material used for radiological, chemical, or biological warfare;
- materials whose composition and properties have been insufficiently described to enable application of 40 CFR Part 227 Subpart B;

- inert synthetic or natural materials which may float or remain in suspension so as to materially interfere with fishing, navigation, or other use of the ocean;
- medical waste as prohibited by §102(a) of MPRSA.

2. Section 227.7 Limits established for specific wastes or waste constituents.

§ 227.7(a) and (b): The proposed Remediation Material does not contain liquid waste or radioactive materials.

The proposed Remediation Material meets the requirements of §§ 227.7(c)(1)-(3) as discussed below.

Section 227.7(c) specifically applies to wastes containing living organisms, which in the case of dredged material potentially would consist of organisms dwelling on or in Harbor sediments and pathogenic agents resulting from the presence of Combined Sewer Overflows (CSOs) or contaminated urban runoff. Under §227.7(c)(1)-(3), wastes containing living organisms may not be placed in the ocean if the organisms would endanger human health or that of domestic animals, fish, shellfish, or wildlife by: (1) extending the range of biological pests or other agents capable of infesting, infecting, or extensively and permanently altering the normal population of organisms; (2) degrading uninfected areas; or (3) introducing viable non-indigenous species. As discussed below, placement of the proposed dredged material at the HARS would not endanger human health or that of marine life or result in the effects specifically enumerated in §§227.7(c)(1)-(3).

The US Environmental Protection Agency (USEPA) has de-designated and terminated the use of the New York Bight Dredged Material Disposal Site (commonly known as the Mud Dump Site or MDS). The MDS was designated in 1984 for the disposal of up to 100 million cubic yards of dredged material from navigational and other dredging projects associated with the Port of New York and Jersey and nearby harbors. Simultaneous with the closure of the MDS, the site and surrounding areas that have been used historically as disposal sites for dredged materials were redesignated as the Historic Area Remediation Site (HARS) at 40 CFR 228.15(d)(6) (See 62 Fed. Reg. 46142 (August 29, 1997) and 62 Fed. Reg. 26267 (May 13, 1997). The HARS will be managed to reduce impacts of historical disposal activities at the site to acceptable levels in accordance with 40 CFR Part 228.11(c). The designation identifies an area in and around the MDS, which has exhibited the potential for adverse ecological impacts, to be remediated with uncontaminated dredged material (i.e., dredged material that meets current Category I standards and will not cause significant undesirable effects including through bioaccumulation (the "Material for Remediation" or "Remediation Material").

The HARS, which includes the 2.2 square nautical mile area of the MDS, is an approximately 15.7 square nautical mile area located approximately 3.5 nautical miles east of Highlands, New Jersey and 7.7 nautical miles south of Rockaway, New York. The HARS includes the following three areas:

Priority Remediation Area (PRA): A 9.0 square nautical mile area to be remediated with at least 1 meter of Remediation Material. The PRA encompasses the area of degraded sediments as described in greater detail in the SEIS. At the time remediation has been determined by bathymetry to be complete, USEPA will undertake any necessary rulemaking to de-designate the HARS.

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

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

Although portions of the New York Bight have been periodically or permanently closed to shellfish harvesting for nearly 70 years due to concerns about pathogenic contamination, the now-closed 12-mile sewage sludge dump site was the primary source of this contamination. The other primary source of pathogenic contamination in the New York Bight Apex (as measured by bacterial indicators, i.e., coliform bacteria) has been the Hudson-Raritan Plume (which carries CSO discharges from the Harbor). Because such sources have introduced pathogens into the area of the New York Bight Apex (and in the case of the Hudson-Raritan Plume continue to do so) even if the placement of Remediation Material incidentally contained sewage-related pathogens, it would not extend the range of such organisms or cause degradation of an uninfected area.

Monitoring of the New York Bight Apex further indicates that dredged material disposed at the former Mud Dump Site, which is now part of the HARS, did not endanger human health or that of domestic animals, fish, shellfish, or wildlife due to the presence of living organisms. Bathing water quality standards are met at all ocean beaches along the New York Bight (USEPA, 1995), and contact recreation is not a concern at the HARS or in its vicinity. Monitoring for coliform bacteria in the New York Bight Apex also has documented a rapid improvement in water quality since the cessation of sewage sludge dumping at the 12-mile sewage sludge dump site in 1987 and implementation of year-round chlorination of effluent at all regional sewage treatment plants. A Food and Drug Administration (FDA) report in October 1989 stated that, based on preliminary analysis of sample data, the New York Bight Apex shellfish closure area (which includes the former Mud Dump Site) appears to have better water quality than most estuaries where shellfish are being harvested (Gaines, 1989). In addition, the State of New York removed a seasonal restriction for 16,000 acres of shellfish waters off Rockaway in 1988 (within the FDA federal closure zone) because of improving water quality, and the State of New Jersey also reduced shellfish restrictions for 13,000 acres in Raritan Bay (within the Hudson-Raritan Estuary) in 1989. More recently, the State of New Jersey also reopened more than 600 acres in the Navesink River (within the Hudson-Raritan Estuary) to unrestricted seasonal harvesting of shellfish as of January, 1997. The former Mud Dump Site was being used for dredged material disposal while these significant improvements in pathogenic contamination were taking place and while the State was reducing shellfishing restrictions in the area. This indicates that the placement of

Remediation Material at the HARS will not adversely affect bacterial water quality in the New York Bight Apex area.

Other monitoring studies in the area of the New York Bight Apex and the former Mud Dump Site are consistent with the conclusion that the placement of Remediation Material at the HARS will not adversely affect bacterial water quality in the New York Bight Apex area. Although FDA studies in the 1960's found high coliform levels in the area of the former Mud Dump Site, a NOAA survey in 1980 found elevated levels of fecal coliforms and Clostridium perfringens (a long-lasting, spore-forming bacterium) at stations that appear to be located immediately east of the site, this was during the period when sewage sludge disposal at the 12-mile sewage sludge site was still taking place. Another study of samples collected in 1980 found a high total coliform count at a station just northwest of the former Mud Dump Site, but attributed this to material originating from locations inshore of the former Mud Dump Site. A station located at the former Mud Dump Site itself during this survey, which sampled both disposed dredged material and overlying capping material, did not detect either total or fecal coliforms in either sample. (Atwell and Colwell, 1981). After closure of the 12-mile sewage sludge site, a 1989 FDA survey found no fecal coliforms at the three stations bracketing the former Mud Dump Site. These results indicate that the placement of material dredged from NY/NJ Harbor is not resulting in pathogenic contamination of the New York Bight Apex. Refer to Subpart D for a further discussion of whether pathogens from the proposed dumping can impact living marine resources.

With regard to potential introduction of viable species not indigenous to the area, the monitoring studies summarized immediately above have not indicated the presence of non-indigenous species. In particular, monitoring surveys undertaken over the past several years to assess marine biota in the New York Bight and the environs of the HARS indicate a healthy and sustainable community of indigenous marine life. A 1994 sediment survey of the HARS and surrounding area revealed the presence of two distinct healthy benthic infaunal communities (Groups A and B) in the study area. The general biological features of Group A, including organisms such as Pherusa, are high infauna abundance, moderate numbers of species per sample, and moderate species diversity. Group A is associated with relatively deep muddy sediments of high organic carbon and elevated contaminant content located in a number of stations along the west central boundary of the study area and the eastern parts of the study area within the former Mud Dump Site. Although Group A is located in areas of elevated contaminant content, there is no direct supporting evidence that the community distribution is based on sedimentary organic content or contaminant load. Rather the Group A community may just prefer fine grained sediments. Group B, including organisms such as the sand dollar, is associated with relatively shallow, sandy sediments of low organic carbon and low chemical content, and is generally abundant and relatively species rich. Group B is located in a band extending from the northwest corner of the study area, and ranges through the center of the study area (including the eastern side of the former Mud Dump Site), to the southern boundary of the study area.

In addition, the material to be placed at the HARS is dredged from the NY/NJ Harbor area, which is within the range of tolerance and habitat found within the boundaries of the HARS. Furthermore, the

organisms potentially in the material would have to survive the effects of dredging, transportation to the site by barge, and subsequent placement. These factors make it highly unlikely that Remediation Material placed at the HARS would introduce viable non-indigenous species to the HARS. In addition, studies and characterizations within the Harbor area (which is the source of the material to be disposed of) were undertaken as part of the Harbor Estuary Program (HEP) in order to identify significant issues and problems confronting the Harbor Estuary. These did not identify the presence of non-indigenous species as an issue needing to be addressed by the HEP.

In summary, the Remediation Material proposed to be placed at the HARS originates from the NY/NJ Harbor area and the long-term historical disposal of NY/NJ Harbor dredged material in the former Mud Dump Site has not resulted in evidence of endangerment of human health or that of marine life as a result of the presence of living organisms in dredged material. In particular, as discussed above, the available evidence, including monitoring studies of the New York Bight Apex and the former Mud Dump Site indicates that dredged material is not a significant source of pathogenic contamination in the area, that past dredged material disposal has not extended the range of undesirable living organisms or pathogens or degraded uninfected areas, and that such past disposal has not introduced viable non-indigenous species into the area. Accordingly, it is determined that placement of the dredged material from the proposed project at the HARS would be in compliance with the provisions of 40 CFR 227.7(c)(1)-(3).

§227.7(d) Requirements specific to wastes which are highly acidic or alkaline:

This subsection would be of greater relevance to liquid wastes or sludges. Dredged material is a naturally occurring substance derived as a result of weathering of upland rocks and soils, natural grain size sorting during transport, and deposition in a subaqueous environment. It is by nature composed of mineral grains that are not highly acidic or alkaline, but are at a near neutral pH, especially when derived from a salt water environment such as New York Harbor. Thus, the dredged material from this project is not highly acidic or alkaline.

§227.7(e) Oxygen consuming or biodegradable wastes:

Wastes containing biodegradable constituents or constituents which consume oxygen in any fashion may be placed in the ocean only under conditions in which the dissolved oxygen, after allowing for initial mixing, will not be depressed by more than 25 percent below prevailing conditions at the receiving site at the time of placement. Studies have shown that past dredged material disposal in water causes an initial reduction in dissolved oxygen that returns to ambient level within a few minutes (USEPA, 1982). Previous plume tracking/monitoring studies conducted at the former Mud Dump Site during dredged material disposal events showed: (1) the release of dredged material into the water column resulted in rapid dispersal (turbulent mixing) of the plumes within the first few minutes after release; and (2) plume dilution after two hours, based on total suspended solids, ranged from approximately 64,000:1 to 557,000:1 (Battelle, 1994). Mean bottom currents in the former Mud Dump Site and the HARS are

weak but provide for continuous movement of water, as do the ebb and flood of the tide. These movements exchange or replace the water inside the former Mud Dump Site and the HARS with "new" water. This ensures that any fluctuation in dissolved oxygen (DO) will only be temporary as "new" oxygenated water circulates into the disposal area. These field studies and physical oceanographic characteristics of the former Mud Dump Site show that past dredged material disposal conformed with the regulations in that they did not cause a DO depression greater than 25 percent after allowance for initial mixing, and it is therefore expected that placement of Remediation Material at the HARS will similarly not depress DO.

In summary, the chemical characteristics of high alkalinity and/or acidity, synergistic effects or formation of toxic compounds, and depletion of dissolved oxygen in the overlying water after initial mixing would not be associated with the proposed project material being placed at the HARS.

Section 227.8 Limitations on the Disposal Rates of Toxic Wastes;
Section 227.11 Containerized Wastes; and
Section 227.12 Insoluble Wastes:

The material which is to be placed at the HARS is not containerized waste as defined in Section 227.11 nor does it violate the restriction on insoluble wastes as defined in Section 227.12. With respect to Section 227.8 (limitations on the disposal rates of toxic wastes), the proposed material meets the criteria for acceptability based on the LPC as described in Section 227.27 (See "Review of Compliance with the Testing Requirements of 40 C.F.R. 227.6 and 227.27 and Site designation Provisions of 40 CFR 228.15 for Federal Project No. 72, Arthur Kill to Raritan River Cutoff Channel, New York Bay, New York.). Therefore, the proposed project material meets requirements outlined in Sections 227.8, 227.11, and 227.12.

Section 227.9 Limitation on Quantities of Waste Materials

Section 227.9 provides that substances that may cause damage to the ocean environment due to the quantities in which they are introduced or seriously reduce amenities may be placed only when the quantities to be introduced at a single time and place are controlled to prevent long-term damage to the environment or amenities. The proposed Remediation Material would not result in long-term damage to amenities or the environment due to the qualities in which it would be placed. The material would be placed at the HARS for the purpose of remediation and would benefit the area by covering contaminated sediments there. The HARS was given final designation by EPA in 1997 (40 CFR 228.15(d)(6)) following preparation of an SEIS and determination that it met the environmentally based site selection criteria of 40 CFR Part 228, including those related to amenities (see §§228.6(a)(2), (3), (8), and (11)). The proposed Remediation Material has been tested and found to meet the requirements of 40 CFR 227.6 and 227.27, as well as 228(d)(6), and to be suitable as Remediation Material, as described in a separate memorandum for the record. The proposed material would be in the amount of approximately 114,583 cubic yards. In addition, placement operations will be managed

to assure remediation activities take place within Remediation Area Number 1. Because the material is suitable as Remediation Material, it is concluded that the proposed placement would not cause long-term damage to amenities or the environment due to the quantities proposed for placement, and will in fact improve conditions in the area by covering contaminated sediments. The nine square mile PRA needs to be covered with at least one meter of Remediation Material and this project provides a small fraction of the total volume needed.

Section 227.10 Hazards to Fishing, Navigation, Shorelines, or Beaches

Section 227.10 provides that with regard to the placement of material, the site and conditions must be such that there is no unacceptable interference with fishing or navigation and no unacceptable danger to shorelines or beaches resulting from placement operations. The project material proposed for placement at the HARS for the purpose of remediation would not interfere with fishing, navigation, or pose unacceptable danger to shorelines or beaches. The SEIS for the HARS designation (USEPA, 1997) and information previously outlined in this memo fully support compliance of the project material with this section.

SUBPART C:

40 CFR Section 227, Subpart C, requires an evaluation of the need to place the material in the ocean. The need to use suitable material such as this to remediate the HARS is fully described in the HARS rule and SEIS (USEPA, 1997). Final determination, is not required for non-Federal dredging projects prior to the issuance of the Public Notice which is the subject case. The final determination is made after the close of the comment period in the Army Corps of Engineers Statement of Findings on whether or not to grant the permit. The need to remediate the Historic Area Remediation Site is amply supported by the presence in the HARS of toxic effects, dioxin bioaccumulation exceeding Category I levels in worm tissue, as well as TCDD/PCB contamination in area lobster stocks. The specific test results and technical analysis of the data are described and evaluated in the Public Notice for this project (CENAN, 1999) and Joint USEPA/CENAN Testing Evaluation Memo. Alternatives to HARS placement were evaluated by the applicant. The New York District has recently published a Dredged Material Management Plan (CENAN, 1998), which presents a range of options similar to those evaluated by the applicant.

SUBPART D:

40 CFR Section 227 Subpart D sets forth the factors to be considered when evaluating the impact of proposed ocean placement on aesthetic, recreational, and economic values, including the potential for affecting recreational and commercial uses and values of living marine resources.

The factors specifically considered include recreation and commercial uses, water quality, the nature and extent of ocean placement operations, visible characteristics of the material to be disposed, presence of pathogens, toxic chemicals, bioaccumulative chemicals, or any other constituent which can affect living marine resources of recreational or commercial value. These would be used in an overall assessment of the proposed ocean placement on aesthetic, recreational, or economic values, and possible alternative methods of disposal or recycling. See 40 CFR §227.17, §227.18, and §227.19.

Chapter 4 of the SEIS for the HARS designation (USEPA, 1997) discusses the potential impacts of ocean placement at the HARS on recreational fisheries, commercial fisheries, shore recreation, and cultural resources. The only items above that need be specifically addressed in this document are the visible characteristics of the material and the presence of pathogens. Section 227.7(c) contains a more detailed discussion of pathogens (see discussion above). The material from this project, as is typical of dredged material, is composed of wet sediments which have accumulated on the bottom of water bodies and when placed in the ocean, quickly sink to the bottom, leaving no visible plume a short time after ocean placement. There are no known sources of potential pathogens that could have specifically impacted the project sediments. On the basis of the discussion in the SEIS and the findings of this memorandum and the "Review of Compliance with the Testing Requirements of 40 C.F.R. 227.6 and 227.27, and Site Designation Provisions of 40 CFR 228.15 for Federal Project No. 72, Arthur Kill to Raritan River Cutoff Channel, New York Bay, New York." (USEPA/CENAN, 1999), it is not expected that adverse impacts to the above amenities would occur. In fact, placement of Remediation Material will improve conditions in the area and is needed.

With respect to Section 227.17(b)(2), if the ocean placement were not authorized there would be an adverse economic impact on those major industries relying on appropriately deep shipping channels and/or berthing areas. Failure to dredge this project would not adversely impact recreational boating or aesthetic values. However, failure to place Remediation Material at the HARS would allow continued exposure of contaminated sediments to water and organisms in the area.

SUBPART E:

40 CFR Section 227, Subpart E sets forth the factors to be considered in evaluating the impacts of the proposed ocean placement on other uses of the ocean, including long range impacts on other uses of the ocean. Specifically, the uses considered include, but are not limited to, commercial and recreational fishing in open ocean areas, coastal areas, and estuarine areas; recreation and commercial navigation; actual or anticipated exploitation of living and non-living marine resources; and scientific research and study.

Chapter 4 of the HARS SEIS addresses the effects of disposal on public health and safety (including navigational hazards) and the effects on the ecosystem (biota and water column). It also addresses the environmental effects and mitigative measures that are short-term, long-term, or involve the irreversible or irretrievable commitment of resources. Based upon the discussion in the SEIS, the findings in this

memorandum, and the "Review of Compliance with the Testing Requirements of 40 C.F.R. 227.6 and 227.27, and Site Designation Provisions of 40 CFR 228.15 for "Federal Project No. 72, Arthur Kill to Raritan River Cutoff Channel, New York Bay, New York." (USEPA/CENAN, 1999) it is concluded that there would be no adverse impact on the uses to be considered under 40 CFR Part 227 Subpart E, incorporating considerations of long-term impacts (§227.20(a)) and an evaluation on an individual basis for effects on uses of the ocean for purposes other than ocean placement (§227.20(b)). Placement of this Remediation Material at the HARS will in fact improve conditions there by burying contaminated sediments, and therefore should have positive impacts in the short and long term.

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