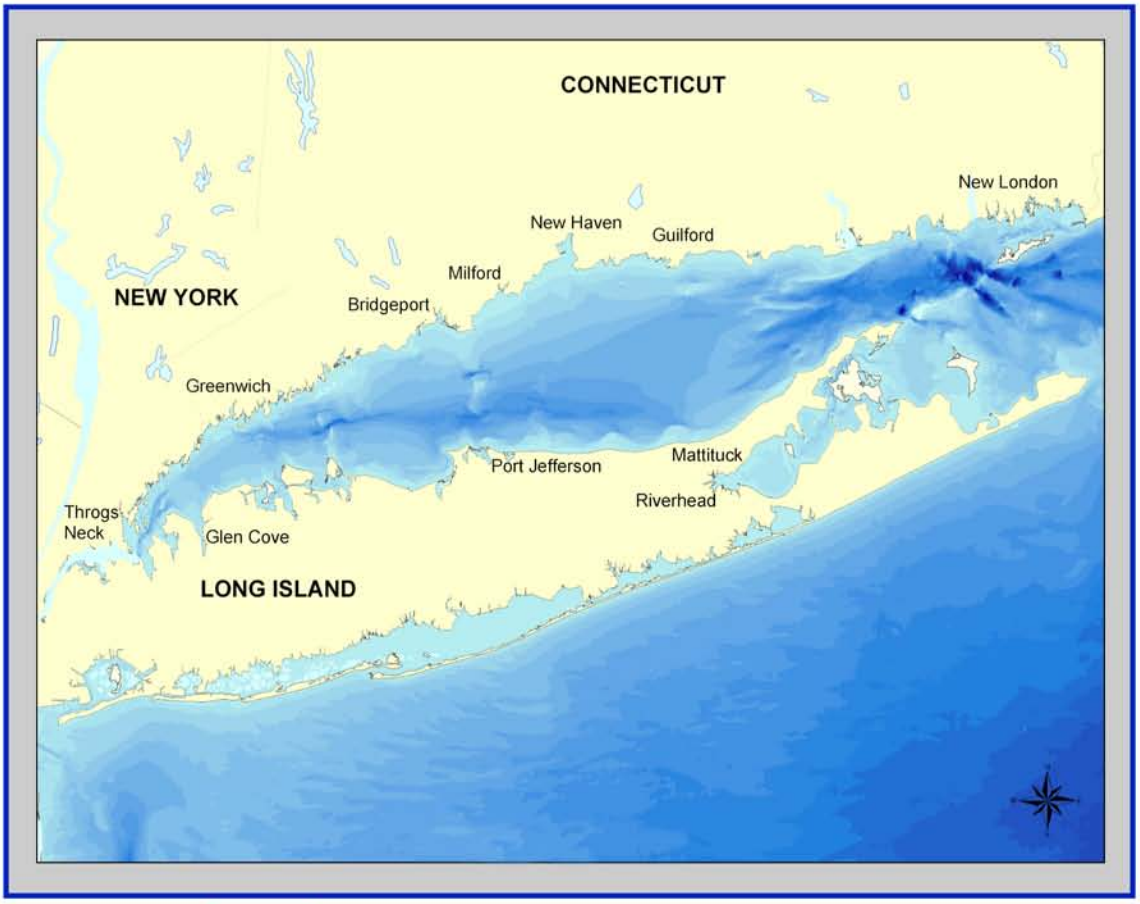
Environmental Impact Statement for the Designation of Dredged Material Disposal Sites in Central and Western Long Island Sound, Connecticut and New York

Draft

Prepared by U.S. Environmental Protection Agency
New England Region

In cooperation with U.S. Army Corps of Engineers
New England District



EPA

US Army Corps of Engineers

September 2003

DRAFT
ENVIRONMENTAL IMPACT STATEMENT
FOR THE
DESIGNATION OF DREDGED MATERIAL DISPOSAL SITES IN CENTRAL AND WESTERN LONG ISLAND SOUND CONNECTICUT AND NEW YORK

Prepared by the:
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In cooperation with:
U.S. Army Corps of Engineers
National Marine Fisheries Service
Connecticut Department of Environmental Protection
New York State Department of Environmental Conservation
Narragansett Tribe
Eastern Pequot Tribe

Abstract: This Draft Environmental Impact Statement (DEIS) describes the environmental effects of designating a dredged material disposal site(s) in western and central Long Island Sound. The DEIS describes the evaluation of open ocean, upland, beneficial use, treatment technologies, and four open-water alternatives for dredged material disposal and a No Action Alternative. Initial screening eliminated the open ocean, upland, beneficial use, and treatment technology alternatives. The remaining alternatives (four open-water and the No Action alternatives) were then assessed throughout the document. The primary potential effects identified include: temporary increase in suspended solids and burial of aquatic resources. The Environmental Protection Agency's Preferred Alternative is to designate the Western Long Island Sound and Central Long Island Sound Dredged Material Disposal sites.

Comments should be sent to Ms. Ann Rodney at the U.S. Environmental Protection Agency New England Region, One Congress Street, Suite 1100, Mailcode CWQ, Boston, MA 02114-2023. For additional information about this Environmental Impact Statement, contact: Ms. Ann Rodney, Telephone (617) 918-1538.

Comments on this Draft Environmental Impact Statement must be received by October 27, 2003.

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EXECUTIVE SUMMARY

Introduction and Background

The U.S. Environmental Protection Agency (EPA) is considering designation of one or more open-water dredged material disposal sites in the western and central regions of Long Island Sound, off the coasts of Connecticut and New York (see Figure ES-1) consistent with the Marine Protection, Research, and Sanctuaries Act (MPRSA, also known as the Ocean Dumping Act), 33 U.S.C. §§ 1401 *et seq*. Disposal of dredged material in the waters of Long Island Sound from projects that are either Federal actions or non-Federal actions involving more than 25,000 cubic yards (19,114 cubic meters) of dredged material must comply with the requirements of MPRSA. *See* 33 U.S.C. § 1416(f).

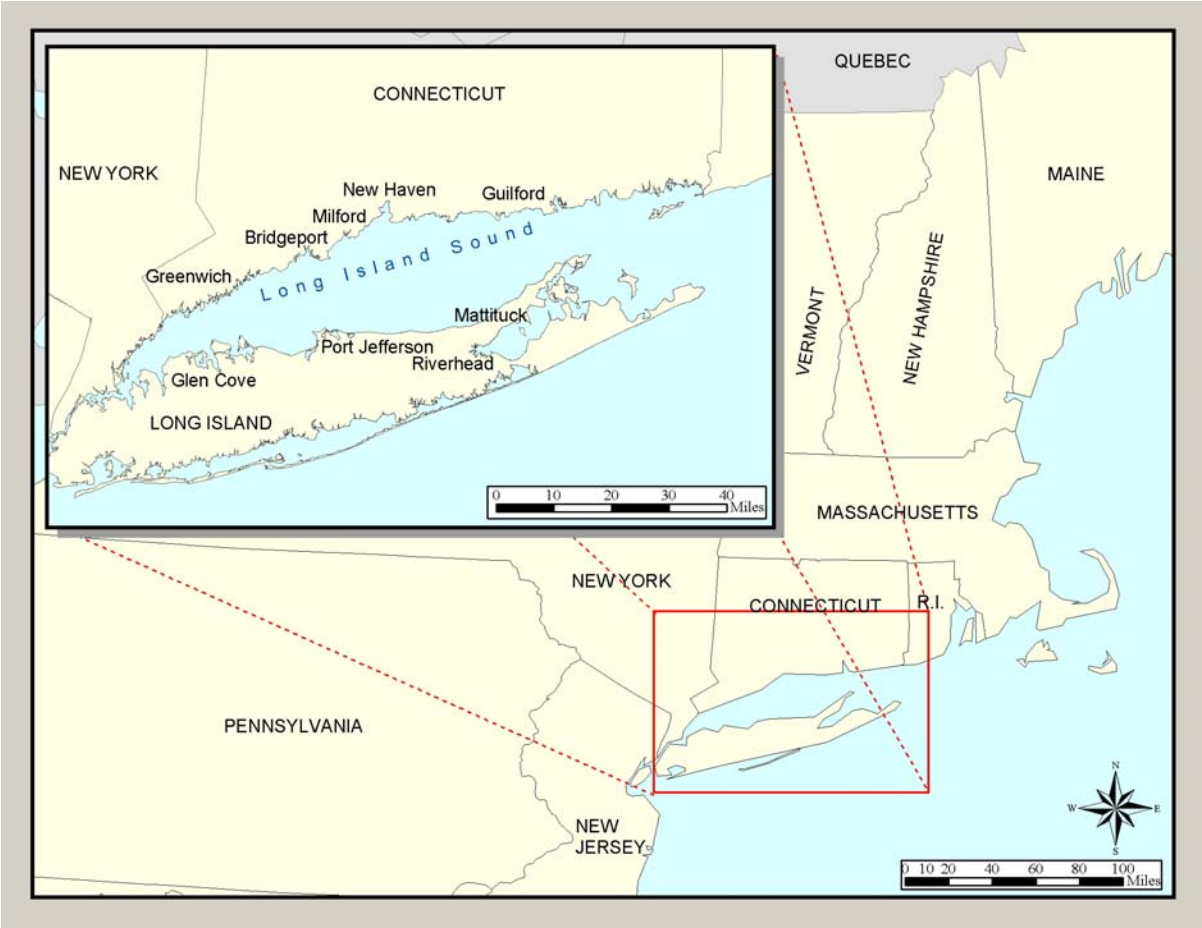


Figure ES-1. Location of Long Island Sound

Through a site screening process that considered the five general and eleven specific criteria in the Ocean Dumping Act regulations as well as evaluation factors specific to Long Island Sound, EPA has identified four potential alternative open-water dredged material disposal sites. Two of the sites are currently active dredged material disposal sites, and two are

presently inactive historic dredged material disposal sites. If designated, one or more of these sites could be used for disposal of material dredged from navigation projects and other sources from Connecticut and New York rivers, harbors, and coastal areas, if the material is found to be suitable for open-water disposal. EPA's designation of an open-water disposal site does not authorize disposal of material from any particular source or project at any designated site. Such material may be dredged and disposed of only in accordance with the U.S. Army Corps of Engineers (Corps) authorities consistent with Section 404 of the Clean Water Act, 33 U.S.C. § 1344, Section 103 of the MPRSA, 33 U.S.C. § 1413, Section 10 of the Rivers and Harbors Act, which applies to the dredging itself (as opposed to the disposal), and other relevant provisions of law.

EPA is not legally required to subject its disposal site designations under the MPRSA to environmental review under the National Environmental Policy Act (NEPA), 42 U.S.C. §§ 4321 *et seq.*, but has nonetheless conducted a NEPA review pursuant to the agency's "Statement of Policy for Voluntary Preparation of National Environmental Policy Act (NEPA) Documents." 63 Fed. Reg. 58045 - 58047. Thus, while not legally required to do so, EPA has prepared this Draft Environmental Impact Statement (DEIS) to be consistent with EPA's NEPA-implementing regulations at 40 CFR Part 6, Subparts A through D, as appropriate, while also using regulations promulgated by the Council on Environmental Quality at 40 CFR Parts 1500-1508 to provide additional guidance. The Corps is participating in the development of this DEIS as a cooperating agency.

This DEIS is being published together with draft Site Management and Monitoring Plans for public review and comment. Such comments may be provided in writing (by mail, facsimile, or electronic mail). In addition, during the public comment period, EPA will hold public hearings in which interested parties may submit comments. Information regarding the locations, dates, and times of the public hearings will be provided in the *Federal Register,* included in public notices and press releases, and mailed to the existing mailing list. This information is also posted on the EPA website (http://www.epa.gov/region01/eco/lisdreg/).

Following consideration of the comments received and public hearings, EPA will issue a Final EIS (FEIS). At least 30 days after the issuance of the FEIS, EPA will issue a Record of Decision that, among other things, states what the agency decision is, identifies all alternatives considered, and states whether all practical means to avoid or minimize environmental harm from the proposed action have been adopted.

Commenting on the Draft EIS

EPA encourages comments on the draft EIS for the Designation of Dredged Material Disposal Sites in Central and Western Long Island Sound. Comments may be submitted:

- By mail to
  Ann Rodney
  U. S. EPA - New England Region
  One Congress Street, Suite 1100
  Mailcode CWQ
  Boston, MA 02114-2023
- By facsimile to [617-918-1505]
- By electronic mail to
  Rodney.Ann@epa.gov

Purpose and Need for Agency Action

The purpose of EPA's action is to determine whether one or more environmentally sound open-water dredged material disposal sites can and should be authorized for future long-term use in Long Island Sound and, if so, to designate the site or sites accordingly and consistent with applicable law. The need for this effort derives from the following facts: (1) there are currently no disposal sites designated for long-term use within Long Island Sound, (2) the currently used sites are authorized under short-term authority that will expire at various times in the relatively near future for each site, (3) periodic dredging and dredged material disposal is unavoidably necessary to maintain safe navigation and marine commerce, (4) the MPRSA's requirements authorize an EPA designation for any long-term dredged material disposal site.

Alternatives

In 1999, EPA developed a Zone of Siting Feasibility (ZSF) for this DEIS in cooperation with the Corps, the U.S. Fish and Wildlife Service and the National Marine Fisheries Service. Within this ZSF, EPA identified and evaluated a range of reasonable specific disposal site alternatives. The original ZSF analyzed (Figure ES-2) in this DEIS includes the region of Long Island Sound between the confluence of the East and Harlem Rivers at Hell's Gate on the western end and Mulberry Point, Connecticut (near Guilford, Connecticut) to Mattituck Point, New York on the eastern end. In March 2002, EPA and the Corps issued a notice to identified stakeholders (all agencies, organizations and individuals that had participated in or expressed an interest in the EIS) that the ZSF for locating potential open-water disposal sites would be modified to encompass the western and central regions of Long Island Sound (*Environmental News*, "Update on the Evaluation of Potential Dredged Material Disposal Sites for Long Island Sound," March 2002) (Figure ES-2). The eastern boundary was chosen because it is marked by a change in sediment texture and depth, representing a transition from the depositional basin of the central region into the more active eastern region of Long Island Sound. This ZSF meets the dredging needs in the western and central regions of Long Island Sound, and its outer limits represent a reasonable haul distance for marinas, boatyards, commercial docks, and federal harbors and anchorages in those regions.

Those reasonable specific disposal site alternatives identified during the initial phases of the DEIS were further analyzed. This DEIS analyzes the no action alternative and the potential environmental impacts associated with four alternative open-water dredged material disposal sites identified as potential candidates following a site screening process. This screening process took into account the specific site designation criteria described in the Ocean Dumping Act regulations (40 CFR 228.5 and 40 CFR 228.6).

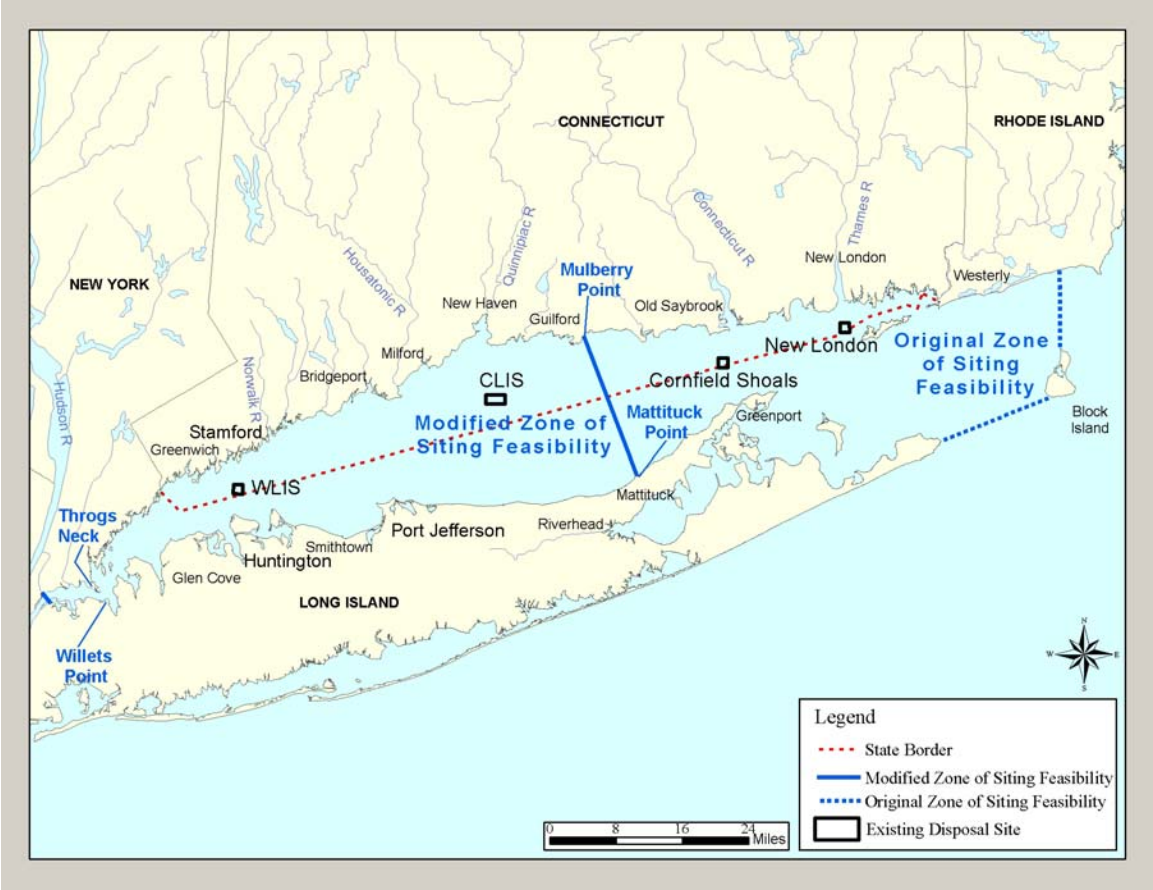


Figure ES-2. Original and Modified ZSF

The four open-water alternative sites analyzed (from west to east) are:

- ***Western Long Island Sound Alternative (WLIS)***. The WLIS Alternative is the existing WLIS disposal site currently in operation. It is a 1.2 by 1.3 nautical mile (2.2 by 2.4 kilometers) rectangular area that has been used for dredged material disposal since 1982. After completion of a draft EIS, the site was selected in 1982 as a regional dredged material disposal site to serve the needs of the western area of Long Island Sound. Between 1982 and 2001, WLIS received 1.7 million cubic yards (1.3 million cubic meters) of dredged material, with an average annual volume of 85,000 cubic yards (65,000 cubic meters). The site is located 2.7 nautical miles (5 kilometers) north of Lloyd Point, New York and 2.5 nautical miles (4.6 kilometers) south of Long Neck Point near Noroton, Connecticut, in water depths of 79 to 118 feet (24 to 36 meters). The sediments at the site are heterogeneous, with clay-silt in the northeast corner and a mixture of sand-silt-clay in the center and southeast corner. These sediments are typical of those found in fine-grained depositional environments of the western basin of Long Island Sound. In addition to the ambient silts from this region, there are deposits of material of mixed grain sizes dredged from harbors and navigation channels throughout the western basin.

- ***Bridgeport Alternative***. The Bridgeport Alternative is an historic disposal site used for local projects from at least 1954 until 1977. Disposal records indicate a total disposal volume of 4.4 million cubic yards (3.4 million cubic meters) of dredged material, with an average yearly volume of 190,000 cubic yards (145,000 cubic meters). The site is rectangular in shape, 2 nautical miles by 1 nautical mile (3.7 by 1.9 kilometers), and is located 3 nautical miles (5.6 kilometers) southeast of Kensie Point, Connecticut, in water depths from 60 to 68 feet (18.5 to 20.7 meters). The sediments at the site are relatively uniform clayey silt. These sediments are typical of those found in fine-grained depositional environments of the western basin of Long Island Sound. In addition to these ambient silts, the site contains small deposits of material of mixed grain sizes dredged from harbors and navigation channels from Norwalk Harbor to the Thames River, Connecticut.

- ***Milford Alternative***. The historic Milford Disposal Site was an area of about 0.9 square nautical mile used for local projects from at least 1954 until 1971. Disposal records indicate an approximate total disposal volume of 400,000 cubic yards (305,000 cubic meters) of dredged material with an approximate average yearly volume of 22,000 cubic yards (17,000 cubic meters). The Milford Alternative site is defined as an area of about 1.7 square nautical miles (3 square kilometers), including 0.9 square nautical miles (1.7 square kilometers) of the historic site, located 2.8 nautical miles (5 kilometers) southeast of Stratford Point, Connecticut, in water depths from 52.5 to 75 feet (16 to 23 meters). The sediments at the site are relatively uniform clayey silt. These sediments are typical of those found in fine-grained depositional environments of the central basin of Long Island Sound. In addition to these sediments, it is likely that the site contains some deposits of material of mixed grain size dredged from harbors and navigation channels near the site.

- ***Central Long Island Sound Alternative (CLIS)***. The CLIS Alternative is the existing CLIS disposal site currently in operation. It has been one of the most active dredged material disposal sites in New England. Overall, CLIS has received close to 14 million cubic yards (11 million cubic meters) of dredged material since 1941. Between 1982 and 2001 CLIS received approximately 7 million cubic yards (5.4 million cubic meters), with an average annual volume of 350,000 cubic yards (268,000 cubic meters). The site is a rectangular shape, approximately 2 nautical miles by 1 nautical mile (3.7 by 1.9 kilometers), located 5.6 nautical miles (10.3 kilometers) south of South End Point near East Haven, Connecticut, in water depths from 59 to 74 feet (18 to 22.5 meters). The sediments at the site are predominately uniform clayey silt with an area of mixed sand, clay and silt. These sediments are typical of those found in fine-grained depositional environments of the western and central basin of Long Island Sound. In addition to the ambient silts, there are deposits of dredged material with mixed grain sizes from harbors and navigation channels throughout the central basin.

Figure ES-3 identifies the Long Island Sound area and the four alternative dredged material disposal sites.

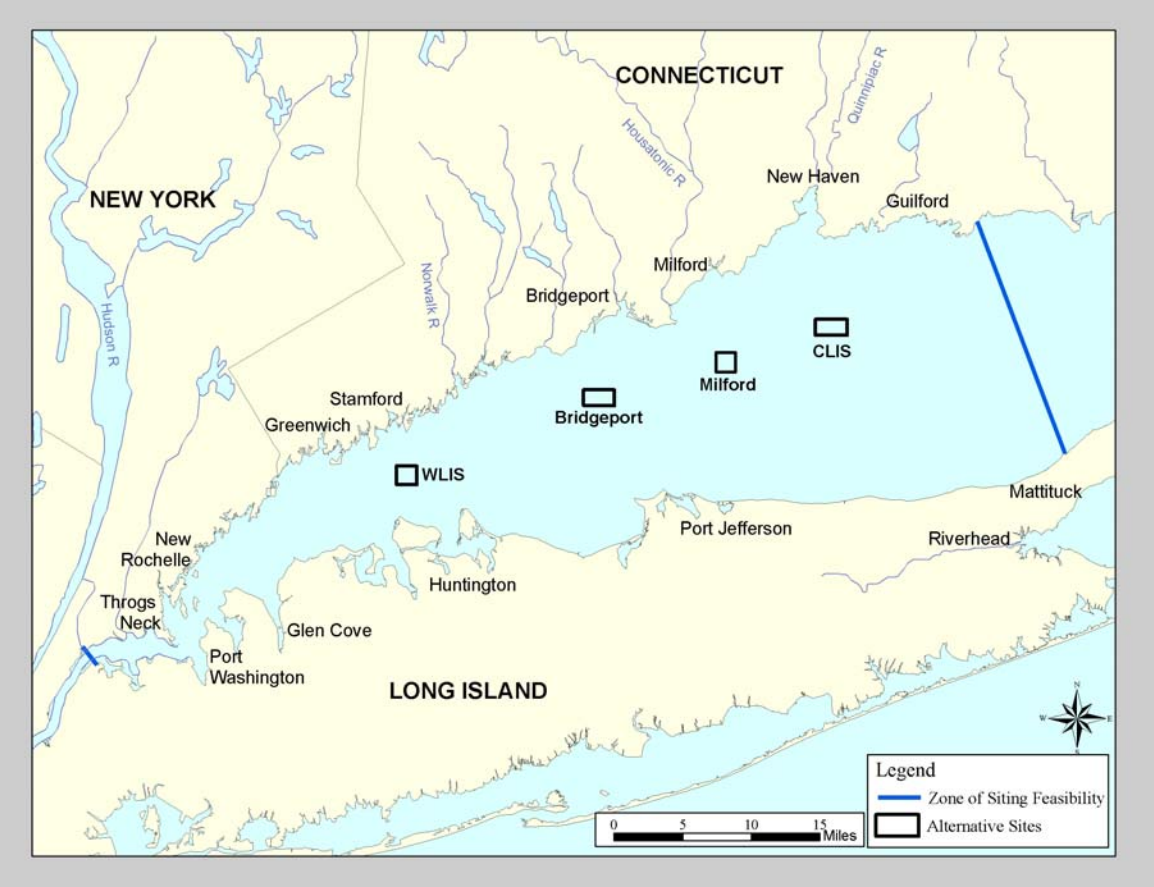


Figure ES-3. Alternative Open-Water Dredged Material Disposal Sites Evaluated in this DEIS

In addition to the four alternative dredged material disposal sites, EPA analyzed the No Action Alternative. In cases involving federal decision on dredged material proposals, "no action" means the proposed activity would not take place. This provides a baseline against which the proposed action and other alternatives can be evaluated. Evaluation of the No Action Alternative involves assessing the environmental and socioeconomic effects that would result if the action did not take place. These effects can then be assessed and compared with the effects of the proposed action and other "action" alternatives. In this case, the No Action Alternative to the proposed action would be to not designate open water site(s) for the long-term disposal of dredged material from navigation projects and other sources from Connecticut and New York rivers, harbors, and coastal area.

While it is impossible to be certain of how dredging needs resulting from sediment build-up in the central and western regions of Long Island Sound would be handled if no disposal sites are designated, several hypothetical scenarios might reasonably be considered. First, disposal site authorization for private projects involving less than 25,000 cubic yards of material would simply continue being evaluated on a project-specific basis under Section 404 of the Clean Water Act. Second, for projects subject to MPRSA (i.e., either federal projects

or private projects involving greater than 25,000 cubic yards of material), project proponents would need to pursue one or more of the following courses of action:

(1) Utilize an alternative open-water site either inside or outside of Long Island Sound that has been "selected" by the Corps and concurred with by EPA under MPRSA;

(2) Use an already designated site outside of the central and western Long Island Sound;

(3) Await EPA designation of a different disposal site outside of the central and western portions of Long Island Sound;

(4) Develop and utilize appropriate land-based disposal/reuse alternatives;

(5) Cancel the proposed dredging projects.

In accordance with NEPA, alternatives to open-water disposal were also considered during the overall EIS process. These included beneficial uses, upland alternatives, and treatment technologies. None of these alternatives were found to be capable of meeting the long-term regional dredged material disposal needs of the western and central regions of the Sound therefore, detailed evaluation focused on dredged material that would be deemed suitable for unconfined open-water disposal when applying Clean Water Act and MPRSA criteria. Disposal of materials deemed unsuitable for unconfined open-water disposal was not considered in this DEIS.

Existing Conditions and Environmental Impacts at the Alternative Sites

The following section describes the various environmental conditions at the sites and the potential environmental impacts that could occur as a result of dredged material disposal at these sites.

Physical Location and Setting

Long Island Sound is a 110-mile (177 kilometer) long, semi-enclosed estuary located between the coastline of Connecticut and the northern coastline of Long Island, New York. The Connecticut-New York maritime state line runs east-west through the middle of Long Island Sound. Unlike most estuaries, Long Island Sound is connected to the ocean at both ends. The eastern end ("The Race") of Long Island Sound presents an open passage to the North Atlantic Ocean, while the ocean passage at the western end is more restricted, traveling through the Narrows, along the East River, and around the western tip of Long Island.

For discussion purposes, Long Island Sound is divided into three major regions defined by submarine features: the western, central, and eastern basins. As shown in Figure ES-4, the western basin is the area from the Narrows (between Throgs Neck and Willets Point, New York) to the Stratford Shoal (between Stratford Point, Connecticut [near Bridgeport, Connecticut] and Port Jefferson, New York). The central basin stretches from the Stratford Shoal to the Mattituck Sill (between Mulberry Point, Connecticut [near Guilford,

Figure ES-4. Long Island Sound

Connecticut] and Mattituck Point, New York). Two of the alternative sites evaluated (WLIS and Bridgeport) are located in the western basin; Milford and CLIS are within the central basin.

Long Island Sound is adjacent to one of the most densely populated and industrialized regions in North America, with approximately 8.4 million people living within its 16,000-square-mile (41,440-square-kilometer) watershed and roughly 20 million people residing within a 50-mile (80-kilometer) radius. Cargo and petroleum products are shipped through Long Island Sound to or from the New York City area and several ferries traffic people and goods between Long Island and Connecticut. Three of the major rivers that empty into Long Island Sound (the Housatonic, Connecticut, and Thames) originate farther north in New England, effectively connecting Massachusetts, New Hampshire, and Vermont to Long Island Sound.

Sedimentation and Erosion

The transport, dispersion, and eventual fate of sediment in the marine environment depend upon the physical characteristics of the sediment and the structure and dynamics of the water

column. The physical parameters that are important in the transport and dispersion of sediment include currents, waves, and the density structure of the water column. Currents directly affect the transport and dispersion of sediment. In shallow water, waves can resuspend sediments previously deposited on the seafloor. These resuspended sediments may then be transported by local currents. The density structure of the receiving water, relative to the density of the sediment, influences how long the sediment remains in the water column.

The disposal of dredged material at open-water sites results in the deposition of non-native sediments in a "footprint" or mound at the disposal site. Over time, as currents move over this mound, hydraulic forces act on the sediment particles in the form of shear and lift. The response of the particles to these forces is related to current speed, particle size, shape, density, and any friction or cohesion exerted by adjacent sediment grains. At some point, the fluid exerts sufficient force to cause the grains to move and the sediment will be eroded from the bottom and suspended (or resuspended) into the water column for transport. The potential for erosion of dredged material deposited at each of the alternative disposal sites was examined using sediment transport models.

Model results predict that the Bridgeport and Milford Alternative sites have the highest potential for resuspension of noncohesive sediments by waves and currents and that the CLIS and WLIS Alternative sites have the least. Model results also predict that the potential for erosion of fine cohesive material from a single mound deposited on the site is greatest at the Milford Alternative and least for the WLIS Alternative. The potential for erosion was similar for the Bridgeport and CLIS Alternatives.

Sediment Quality

Sediment quality can impact the aquatic habitats available to benthic and fish communities. In support of this DEIS sediment quality at the alternative sites was evaluated. These analyses included grain size, total organic carbon, metals, organic contaminants, and sediment toxicity. Chemicals evaluated included but were not limited to those typically evaluated under the dredging program. There are no substantial differences in sediment quality among the four open-water alternative disposal sites evaluated. There is some variation in grain size and total organic carbon, among and within each site, but the sediment properties are within the range observed in Long Island Sound sediments. Similarly, variations in metals concentrations at the sites generally can be attributed to differences in grain size and total organic carbon. Many metals (silver, cadmium, copper, nickel, lead, and zinc) appear to occur in a form that is not biologically available and laboratory toxicity test data indicate that sediments from each site are not acutely toxic to amphipods. These results indicate that the sediment quality within the sites is not significantly degraded and that irreversible or significant adverse impacts from the disposal of dredged material in the sites have not occurred.

Water Quality

Water quality impacts at the disposal sites may be caused by short-term input and changes in particle concentrations following disposal. These changes result in sporadic and temporary (< few hours) increases in suspended solids in the water column due to unconsolidated sediments that are stripped away from the descending sediment mass as it travels through the water column to the seafloor. The term "turbidity" is often used when referring to total suspended solids column; however turbidity is more correctly defined as an optical property of water referring to the blockage of light as it passes through water. Particles do not remain suspended in the water column indefinitely, falling to the bottom at settling rates that depend upon their size and density. Suspended sediments present in the water column during and after disposal operations can potentially affect the feeding activities of fish and benthic organisms and at extremely high concentrations can kill or injure fish and benthic organisms. Contaminants present in the dredged material disposal plume can also potentially be available to marine organisms.

Most of the sediments disposed in Long Island Sound consist of very fine sand to silt and clay. While the bulk of the dredged material will settle to the bottom in the first few minutes after release, low concentrations of fine particles may persist for several hours in the water column, during which time they may be moved by the currents. To better define the potential impact of disposal on the water column and to compare the potential impacts across the alternative sites, a dredged material disposal model was applied at each of the alternative sites to predict disposal plume behavior.

Results of this modeling showed that the potential for water quality impacts was greatest for the Milford Alternative. At Milford, toxicity criteria were exceeded for all current speeds and clump volumes except the zero current condition. Based on the assumptions used in the model, disposal operations must be restricted to periods of low tidal current to ensure that contaminant concentrations remain below toxicity criteria. The potential for water quality perturbations is similar among the other three alternative sites and the likelihood of exceeding the toxicity criteria can be reduced by: 1) limiting operations to times other than during spring tide; 2) positioning the release point according to the ambient currents; and 3) limiting the barge size.

Benthic Invertebrates

The benthic community refers to those invertebrate organisms (*e.g.*, shellfish, worms, *etc*.) that live on or within the bottom substrate. Benthic invertebrates represent an important biological community that interacts closely not only with other communities in the overlying water, but also with the physical environment. Benthic communities are particularly useful for evaluating the effects of physical disturbances because they are relatively immobile, providing a site-specific measure of impacts.

Overall, the benthic communities found at all four alternative sites were similar, although the number of species per sample, species diversity, and infaunal abundance were higher at

WLIS and CLIS. In addition, the predominant species present at WLIS were more similar to CLIS than to those at Bridgeport or Milford.

The disposal of dredged material has a variety of direct and short-term impacts on the benthic community. For example, the descending dredged material plume may dislodge small surface dwelling animals (*e.g.*, some amphipod and polychaete species) and transport them some distance along the bottom as the plume collapses. Increased suspended sediment levels could affect respiration and feeding, although conditions would be relatively short-lived. However, the primary direct impact of dredged material disposal to the benthic community is likely to be associated with burial of some organisms and changes in topography. This burial would likely kill or damage many of the animals directly, but the overall impact to the community depends of the depth of burial, the nature of the material (fine versus coarse), the taxa involved, and their ability to burrow back to the surface.

The immediate impacts of dredged material disposal on the benthos are most likely to be sudden reductions in infaunal abundances and species numbers, and, therefore, a reduction in species diversity. These impacts will be most severe where the plume impacts the bottom. Because values for abundance and diversity were higher at WLIS and CLIS, the immediate impacts will likely be more significant there than at Bridgeport or Milford. Studies of the effects of disturbance (including dredged material disposal) indicate that it is highly probable that the benthic habitats at a site will eventually be recolonized by a functioning infaunal community, although it may not be exactly the same as the one present before disposal. Recolonization will mostly occur via migration from surrounding habitats or by the settling of the planktonic larvae of infaunal animals. The potential for recolonization is similar among all four alternative sites.

Fish and Shellfish

Long Island Sound, a semi-enclosed estuary, is an important economic resource for both commercial and recreational/sport fisherman. The region is occupied by more than 83 fish species; however, only a few of them are considered year-round residents. Most migrate through the area in response to seasonal variations in water temperature and access to spawning and nursery grounds in the shallow estuaries and rivers that lead into Long Island Sound.

Species richness in the trawl samples collected from the vicinity of the four alternative sites were very similar (about 12 to 14 species per trawl) and do not provide much distinction among alternative sites. It is important to note that the evaluation for the WLIS Alternative was based on fewer trawls (15) than the other alternative sites (over 100). However, trawl richness potentially showed an increasing trend from west to east. The average catch-per-unit-effort estimates showed that the Bridgeport Alternative is situated in one of the most productive areas in the Sound while CLIS was the second most productive. The WLIS Alternative showed high spring, but low fall productivity. Milford, which had the lowest spring catch-per-unit-effort and the second lowest fall catch-per-unit-effort, is likely in the least productive area evaluated in the ZSF.

Certain species of shellfish also comprise one of the key commercial and recreational fishery resources in nearshore areas of Long Island Sound. Important bivalve mollusc resources include the bay scallop, eastern oyster, hard clam, softshell clam, and surfclam. The bay scallop is primarily found in the eastern part of Long Island Sound, outside the boundaries of the ZSF. With the exception of lobster and longfin squid, commercially and recreationally important shellfish resources of Long Island Sound occur near shore.

There are potentially both short and long-term impacts to fish and shellfish from the disposal of dredged material in Long Island Sound. While these impacts can range from acute mortality associated with the burial of fish and shellfish to the temporary displacement of fish during periods of high turbidity, direct impacts to these organisms from the disposal of dredged material are generally limited to the footprint of the disposal mound.

Finfish resources, as indicated by long-term trawl data, appear to be highest for the Bridgeport and WLIS Alternatives and lowest for the Milford and CLIS Alternatives. However, impacts to finfish resources are expected to be minimal, consisting of short-term, local disruptions and the potential loss of non-migratory species. These impacts are expected to be similar among the alternative sites. Most of the finfish species that frequent the alternative sites are migratory and would avoid disposal activities. Recovery of the finfish resources to pre-disposal levels is highly likely for all alternative sites.

The American lobster is the primary shellfish resource inhabiting any of the alternatives. Similar to finfish, lobster resources appear to be highest for the Bridgeport and WLIS Alternatives and lowest for the Milford and CLIS Alternatives based on long-term trawl data. Therefore, the short-term impacts associated with disposal, burial, and loss of habitat and food will be the greatest at Bridgeport and WLIS. However, available information indicates that lobster productivity is generally high at dredged material disposal sites; therefore, recovery of the lobster populations at each alternative site is likely.

Marine and Coastal Birds and Marine Mammals and Reptiles

The coast of the Atlantic Ocean supports a large number of resident and migratory marine and coastal birds. Dozens of marine and coastal birds migrate through Long Island Sound annually as noted by the states of Connecticut and New York during winter waterfowl surveys and breeding bird surveys and at other times of the year by local Audubon Societies. In addition, Long Island Sound provides limited habitat for most marine mammals and reptiles. The species that are frequent or occasional visitors to the Sound and that may forage in the vicinity of the alternative sites are harbor porpoises, long-finned pilot whales, seals, and sea turtles.

The use of the alternative sites by birds, mammals, and reptiles is likely to be very limited. A number of these species have been identified as likely to be present at the alternative sites; however, based on available information regarding seasonal distributions and foraging habits, it is likely that most of these species would be only occasional visitors to the sites. As a result, potential impacts to these species are very limited and adverse effects on the populations are unlikely.

Endangered and Threatened Species

Impacts to endangered species as the result of disposal activities at the alternative sites are expected to be very minimal. The only endangered species likely to be present at the alternative sites on more than an occasional basis is the Atlantic sturgeon. The population of this species within Long Island Sound is small and migratory; therefore, it is unlikely that significant numbers will be present in the Sound during the disposal season (*i.e.*, winter). Based on this information, it is unlikely that the disposal events will have a significant effect on this species.

Contaminant Levels in Selected Species (Bioaccumulation Potential)

Chemical contaminants are present in the sediments and surface waters of Long Island Sound and are available to aquatic receptors through a variety of pathways, including direct uptake (*e.g.,* bioconcentration or bioaccumulation) and through ingestion of contaminated prey. Once in the tissues of aquatic organisms, these chemicals can pose a health threat both to the organism directly and to other organisms (*e.g.*, upper trophic level species, humans) that consume them.

Potential risks associated with the bioaccumulation of chemicals from sediments at each of the alternative sites were evaluated. Tissue concentrations were measured Sound-wide to characterize bioaccumulation in Long Island Sound and the alternative sites. Contaminants evaluated included metals, polychlorinated biphenyl congeners, polycyclic aromatic hydrocarbons, chlorinated pesticides, butyltins, dioxin/furans, radionuclides, and lipids in fish, lobster, worm, and clam tissue.

Contaminant concentrations in tissues were low and showed little spatial variability across the areas evaluated. Site-specific tissue data were not available for the Bridgeport and Milford Alternatives. However, because aquatic organisms accumulate contaminants from sediments, tissue concentrations are often directly correlated to sediment concentrations. Sediment concentrations at the Bridgeport and Milford Alternatives are similar to those reported at CLIS and WLIS. Therefore, it is expected that trends in tissue concentrations would be similar to those found at WLIS and CLIS.

Potential risks to human health and the environment associated with the bioaccumulation of chemicals as a result of the disposal of dredged material at any of the four alternative sites appear to be very low. In addition, risks at the sites are comparable to each other, as well as to those throughout the rest of Long Island Sound, as indicated by the relatively consistent nature of chemical levels in tissue throughout the Sound.

Sediments proposed for open-water disposal are subjected to a risk evaluation, and those identified as being associated with possible risks to human health and the environment are managed accordingly. Through the use of these risk-based evaluations to select the appropriate management tools, it is expected that tissue concentrations (and subsequent risks) would not change significantly as the result of placement of dredged material. Therefore, it is expected that potential risks associated with each of the alternative sites would either

remain the same or possibly be reduced through the addition of material with lower chemical concentrations than currently exist in surface sediments.

Socioeconomic Impacts

Long Island Sound is a region of social and economic importance with highly valuable resources. Potential socioeconomic impacts are those that relate to commercial and recreational fishing, shipping and navigation, recreational activities and beaches, parks and natural areas, historic and archaeological resources, and other human uses (military uses and mineral and energy development).

The potential impacts to commercial finfishing are greatest for the CLIS Alternative because it is the only alternative in which commercial trawling is known to occur and is located in the only area of the western and central basins that can be trawled successfully. Primary impacts to shellfishing are reduced lobster populations at the sites and restriction of the area available for setting pots. Impacts to recreational fishing are expected to be minimal and likely will not differ among the alternative sites.

Disposal activities are not expected to adversely impact the navigation-related economic activities, recreational activities, beaches, or parks and natural areas associated with any of the four alternative sites. Milford is the only site with a known exposed shipwreck. There are no potential impacts associated with military activities at any of the alternative sites.

There are pipelines and or cables in the vicinity of three of the alternative sites (Bridgeport, Milford, and CLIS). However, there are no pipelines or cables located within the boundaries of any of the alternative sites. Therefore, there are no anticipated impacts associated with disposal at any of the alternative sites.

Air Quality/Noise

The State of Connecticut is presently considered a non-attainment zone for ozone. Non-attainment zones are areas where the National Ambient Air Quality Standards have not been met. Ozone non-attainment zones are classified, in increasing degrees of severity, as follows: marginal, moderate, serious, severe, and extreme. The western part of Long Island Sound located in a severe non-attainment zone and the eastern part of the sound is located in a serious non-attainment zone.

The designation of one or more disposal sites in the western and central portions of Long Island Sound is expected to have only minor impacts on air quality. Most of these impacts would occur only during construction, and would come from operation of equipment or dust generating. All equipment would be properly outfitted with air pollution controls, as required by the air quality control regulations and proper controls for minimizing the generation of dust would be implemented. Some volatile organic compounds may be released from exposed disposal sediments on barges. Odors from the dredged material should not be noticeable at the open-water disposal sites because the material would be under water. Odors may or may not be noticeable at the shoreline or upland sites.

There are varying levels of background noise in and around Long Island Sound. Noise in the vicinity of the federal navigation channel can include that generated by vessels, such as tugs and motorboats, and by dredges. Noise created in the navigation channel will often be far from shore and not noticeable to people on the land. Such noise may be noticeable, however, in areas where the channel is located close to the shoreline. Tugs used for dredged material disposal will generate some noise while transporting the barges, but this is expected to be minor and should not differ among the alternative sites.

Cumulative Impacts

A cumulative impact on the environment is the impact that results from the incremental impact of an action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency (federal or non-federal) or person undertakes such other actions. This type of an assessment is important because significant cumulative impacts can result from several smaller actions that by themselves do not have significant impacts. With respect to the disposal of dredged material at designated sites in Long Island Sound, cumulative impacts could occur as a result of multiple disposal events at the same designated site and as a result of other, unrelated activities such as shipping, recreation, and fishing that occur on or near Long Island Sound.

Potential cumulative impacts that could occur at these alternative sites as a result of dredged material disposal include topographic change, alteration of local bottom currents, burial of organisms in disposal area, changes in the benthic community, and potential changes to the local food web. There is no evidence that any of these changes has resulted in incremental adverse impacts to the Sound and anecdotal evidence that they may enhance certain living resources by providing new or better habitat.

In Long Island Sound, disposal of dredged material could result in releases of contaminants in the water column, impacts to fish and shellfish, and impacts to navigation. Other activities in the Sound could also result in releases of contaminants (*e.g.*, nonpoint source pollution or spills from vessels), environmental stresses on fish and shellfish, and use of the Sound by ships and recreational watercraft. Thus, the impacts of the disposal of dredged material in the Sound, together with those resulting from other unrelated activities, could result in cumulative impacts. These cumulative impacts are not expected to be significant or to threaten a violation of any federal, state, or local requirements.

Environmental Impacts of the No Action Alternative

Evaluation of the No Action Alternative involves assessing the environmental and socioeconomic effects that would result if the proposed action did not take place. These effects can then be assessed and compared with the effects of the proposed action and the other "action" alternatives.

Each of the No Action Alternative scenarios for projects subject to MPRSA poses a different set of serious problems over the long-term. For the first scenario (utilize an alternative open-water site either inside or outside of Long Island Sound that has been "selected" by the Corps

and concurred with by EPA under MPRSA), use of Corps-selected sites is limited to no more than two five-year periods. Over the long-term, this approach would require the Corps to select multiple sites scattered around the central and western regions of the Sound, or elsewhere, thus spreading any potential adverse environmental effects to additional areas inside and/or outside of the central and western regions of the Sound. This would be contrary to the MPRSA principle favoring the continued use of historically used sites so as to concentrate any adverse environmental effects. In addition, under this approach, CLIS would soon become off-limits, and WLIS would only be available for one additional five-year term. To the extent that the use of these sites would be environmentally preferable to the use of other sites, this No Action Alternative scenario would preclude that preferable result. Moreover, to the extent that sites outside of the central and western portions of the Sound were considered for selection by the Corps, the greater haul distances involved would increase the cost and duration of each project. This could potentially render many projects infeasible. Although of less significance, it is also worth mentioning that such increased haul distances might also increase any risk of mishap in transit, increase project air emissions, and require greater fuel consumption. Finally, over the long-term, this approach would also pose the additional administrative difficulty of requiring repeated site selection studies.

With respect to the second No Action Alternative scenario (use an already designated site outside of the central and western Long Island Sound), the currently existing EPA-designated disposal sites are all too far away from the central and western regions of the Sound to constitute reasonable alternatives. Reliance on such sites would greatly increase the cost and duration of dredged material disposal projects from the central and western regions of the Sound. This would likely render either all or the vast majority of dredging projects prohibitively expensive to conduct. As a result, much needed dredging would not be able to take place. Furthermore, some of these sites have restrictions on their use that would preclude the disposal of material from Long Island Sound.

The third No Action Alternative scenario (await EPA designation of a different disposal site outside of the central and western portions of Long Island Sound) is also not preferable. First, the effort to designate a new disposal site that is currently underway in New England involves a possible disposal site designation for Rhode Island Sound. The site alternatives under consideration there are also too far away to make them reasonable alternatives for the central and western regions of the Sound. It is also not yet known what the results of that site designation evaluation process may be, or when the process will be completed. No other site designation evaluation process is currently foreseeable.

The fourth No Action Alternative scenario (develop and utilize appropriate land-based disposal/reuse alternatives) is also not currently believed to provide a reasonable long-term alternative to a site designation because EPA has not been able to identify sufficient long-term land-based dredged material disposal capacity or beneficial use or treatment options so as to obviate the need for all open water disposal. Complete reliance on land-based disposal would also likely raise the cost and duration of dredging projects, possibly rendering some infeasible. In addition, land-based disposal would likely result in increased air emissions and fuel use.

The fifth No Action Alternative scenario (canceling a great deal of the dredging that would otherwise take place) would have very serious adverse effects on navigational safety and marine-dependent commerce. It could also have adverse environmental ramifications if shoaling in the Sound resulted in more marine accidents and spills as well as greater air emissions from increased truck traffic on the region's highways and roads.

Conclusion

The initial site screening process led to the identification of four open-water alternative disposal sites for further evaluation with respect to MPRSA site selection criteria. It was determined that any potential short-term, long-term, or cumulative impacts to the marine environment associated with the selection of any of the alternative sites would be minimal. It was further determined that any potential impacts associated with dredged material disposal at these sites could be mitigated through proper site management. In addition, it was determined that the No Action Alternative would result in unacceptable environmental and socioeconomic impacts. Disposal site management and monitoring at the two preferred alternatives are described in detail in the companion Site Management and Monitoring Plans.

The two preferred alternatives are the WLIS and CLIS disposal sites reconfigured to slightly new positions. WLIS was shifted northwest (Figure ES-5) to move the site out of an area that shoals rapidly and into an area that is deeper overall. CLIS was expanded to include two historic disposal mounds (Figure ES-6). Potential environmental impacts to those sites were determined to be less than those for Bridgeport and Milford. In addition, both of these sites are currently used for dredged material disposal and have been used as such for approximately 20 years. EPA regulations state that it is generally preferable to designate disposal sites in areas that have been used in the past, rather than to locate sites in new, relatively undisturbed areas. Monitoring of the WLIS and CLIS disposal sites has determined that past and present management practices have been successful in minimizing the short- and long-term, and cumulative adverse impacts to water quality and benthic habitat. The northeast corner of the existing CLIS disposal site is next to a U.S. Coast Guard (USCG) lightering zone, the use of which could result in disruption of disposal mounds by anchors. The Corps will coordinate with the USCG to modify the boundaries of this lightering zone regardless of a site designation to protect these existing mounds.

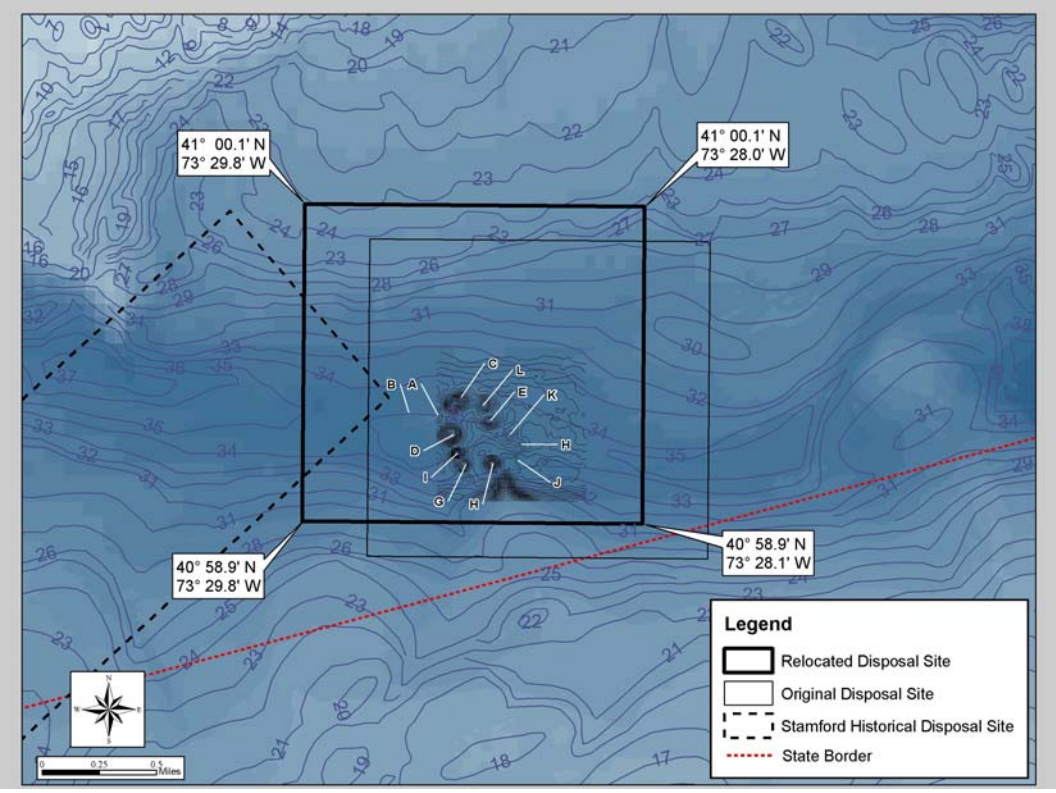
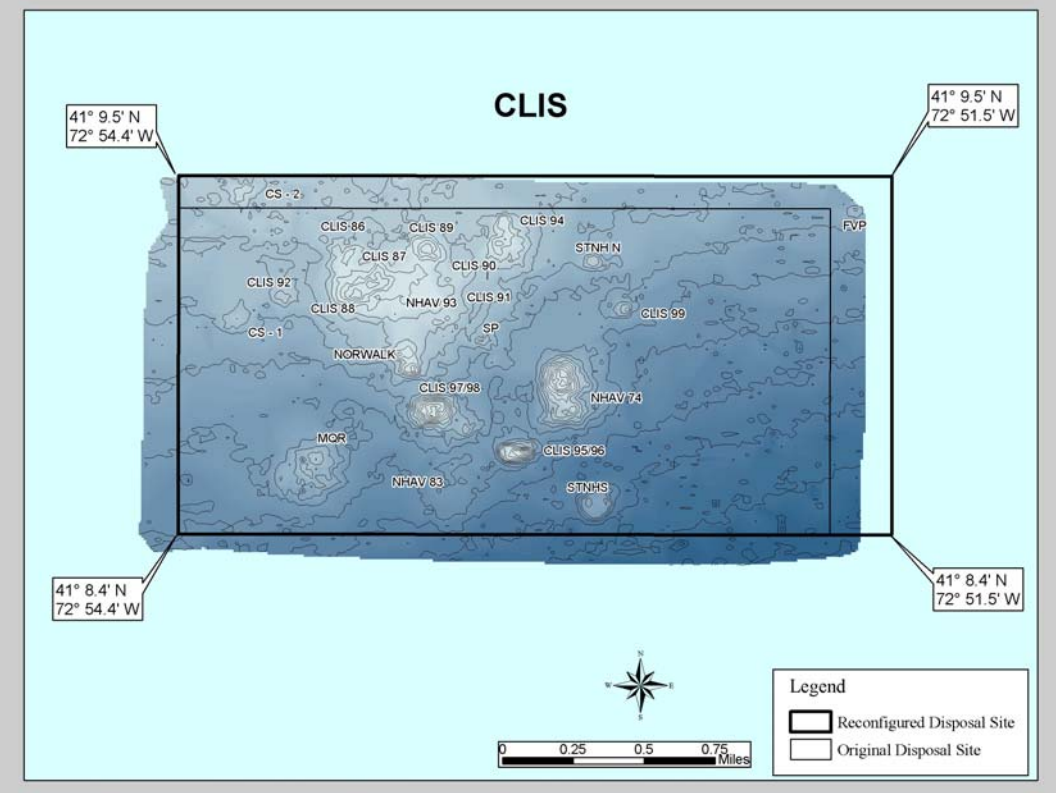


Figure ES-5. Reconfigured Site Boundary for WLIS



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ACRONYMS AND KEYWORDS

ASTM	American Society for Testing and Materials
AVS	Acid Volatile Sulfide
AWOIS	Automated Wrecks and Obstructions Information System
BIOS	Biological database attached to STORET (EPA)
BRAT	Benthic Resource Assessment Technique
˚C	Degrees Celsius
CDF	Confined Disposal Facility
CEQ	Counsel on Environmental Quality
CFR	Code of Federal Regulations
CFDS	Cornfield Shoals Dredged Material Disposal Site
CLIS	Central Long Island Sound Dredge Material Disposal Site
cm	Centimeters
CO	Carbon Monoxide
Corps	U.S. Army Corps of Engineers
CPUE	Catch Per Unit Effort
CS-2	Cap Site 2
CSDS	Cornfield Shoals Disposal Site
CSO	Combined Sewer Overflows
CT	Connecticut
CTDAG	Connecticut Department of Agriculture
CTDEP	Connecticut Department of Environmental Protection
CTDPH	Connecticut Department of Public Health
CTPGP	Connecticut State Programmatic General Permits
CWA	Federal Water Pollution Control Act *a.k.a* the Clean Water Act
cy	cubic yard
CZM	Coastal Zone Management
CZMA	Coastal Zone Management Act
DAMOS	Disposal Area Monitoring System
DDT	1,1,1-trichloro-2,2-bis(*p*-chlorophenyl)ethane
deg	Degree
DEIS	Draft Environmental Impact Statement
DEP	Department of Environmental Protection
DIP	dissolved inorganic phosphorous
DMMP	Dredged Material Management Plan
DMSMART	Dredged Material Spatial Management Record Tool
DO	Dissolved Oxygen
DRI-WEFAM	Data Resources Incorporated-Wharton Economic Forecasting Association
DRP	Dredging Research Program (Corps)

E	East
EIS	Environmental Impact Statement
EFH	Essential Fish Habitat
ENSR	Environmental and Energy Development Solutions
EPA	Environmental Protection Agency
ERDC	Engineering and Research Development Center
ER-L	Effects Range-Low
ER-M	Effects Range-Median
ESA	Endangered Species Act
˚F	Degrees Fahrenheit
FDA	Food and Drug Administration
FEIS	Final Environmental Impact Statement
ft	Feet
FVP	Field Verification Program
GIS	Geographic Information System
GM	Grant Madsen
GSP	Gross State Product
HAB	Harmful Algal Blooms
HARS	Historic Area Remediation Site
HPCDD	Heptachlorinated dibenzodioxin
JODCC	Joint Ocean Dumping Coordinators Committee (EPA and the Corps)
Lbs	pounds
LIS	Long Island Sound
LISS	Long Island Sound Study
LPC	Limiting permissible concentrations
LTFATE	Long-term Fate of Dredge Material Disposal in Open Water
m	Meter
MAs	Marcrohage Aggregates
MMPA	Marine Mammal Protection Act
MMS	Minerals Management Service (Department of the Interior)
MPRSA	Marine Protection, Research, and Sanctuaries Act of 1972
N	North
NAAQS	National Ambient Air Quality Standards
NAD83	North American Datum 1983
NEPA	National Environmental Policy Act
NH_3	Ammonia
NLDS	New London Dredged Material Disposal Site
NMFS	National Marine Fisheries Service

NOAA	National Oceanic and Atmospheric Administration
NO	Nitric Oxide
NO_x	Nitrate + Nitrite
NRC	National Research Council
NST	No Sonar Target
NS & T	National Status and Trends
NY	New York
NYSDEC	New York State Department of Environmental Conservation
NYSDOS	New York State Department of State
O_2	Oxygen
O_3	Ozone
O&M	Operation and Maintenance
OCDD	Octachlorinated dibenzodioxin
ORD	Office of Research and Development
OSI	Organism Sediment Index
PAH	Polycyclic Aromatic Hydrocarbons
PCB	Polychlorinated Biphenyls
PEIS	Preliminary Environmental Impact Statement
PON	Particulate Organic Nitrogen
ppb	parts per billion (*i.e.*, ng/g, µg/kg, ng/L)
ppm	parts per million (*i.e.*, µg/g, mg/kg, µg/L)
psu	Practical Salinity Unit (approximately equivalent to parts per thousand)
RHA	Rivers and Harbors Act
RIDEM	Rhode Island Department of Environmental Management
ROD	Record of Decision
RPD	Redox Potential Discontinuity
RTR	Ratio-To-Reference
SAIC	Science Applications International Corporation
sec	Second
SEM	Simultaneously Extracted Metal
SHPO	State Historical Preservation Officer
SIP	State implementation plan
SLCL	Straight Line Carapace Length
SMMP	Site Management and Monitoring Plan
SOD	Sediment Oxygen Demand
SPI	Sediment Profile Images
SQT	Sediment Quality Triad
SSS	Side Scan Sonar
STFATE	Short-term Fate of Dredge Material Disposal in Open Water for Predicting Deposition and Water Quality Effects
SUNY	State University of New York

TBT	Tributyltins
TCDF	Tetra chlorinated dibenzofuran
TN	Total Nitrogen
TOC	Total Organic Carbon
TP	Total phosphorus
TSS	Total Suspended Solids
USACE	United States Army Corps of Engineers, New England District
U.S.C.	United States Code
USCG	United States Coast Guard
USEPA	United State Environmental Protection Agency
USFWS	United States Fish and Wildlife Service (Department of the Interior)
USGS	United States Geological Survey
WCRM	Warren C. Reiss Marine
WCUS	Waterborne Commerce of the United States
WLIS	Western Long Island Sound Dredged Material Disposal Site
WRDA92	Water Resources Development Act of 1992 (Public Law 102-580)
WWTP	Wastewater Treatment Plant
YOY	Young of the Year
ZSF	Zone of Siting Feasibility

CHAPTER 1 – INTRODUCTION

The U.S. Environmental Protection Agency (EPA) is considering designation of one or more open-water dredged material disposal sites in the western and central regions of Long Island Sound, off the coasts of Connecticut and New York (see Figure 1-1) consistent with the Marine Protection, Research, and Sanctuaries Act (MPRSA, also known as the Ocean Dumping Act), 33 U.S.C. §§ 1401 *et seq*. Disposal of dredged material in the waters of Long Island Sound from projects that are either Federal actions or non-Federal actions involving more than 25,000 cubic yards (cy)(19,114 cubic meters) of dredged material must comply with the requirements of MPRSA. *See* 33 U.S.C. § 1416(f). Although EPA hopes to designate one or more disposal sites to facilitate the environmentally sound disposal of dredged material, EPA recognizes that no sites will be designated if none of the alternative sites under consideration satisfy applicable provisions of law (*e.g.*, the MPRSA, the Endangered Species Act).

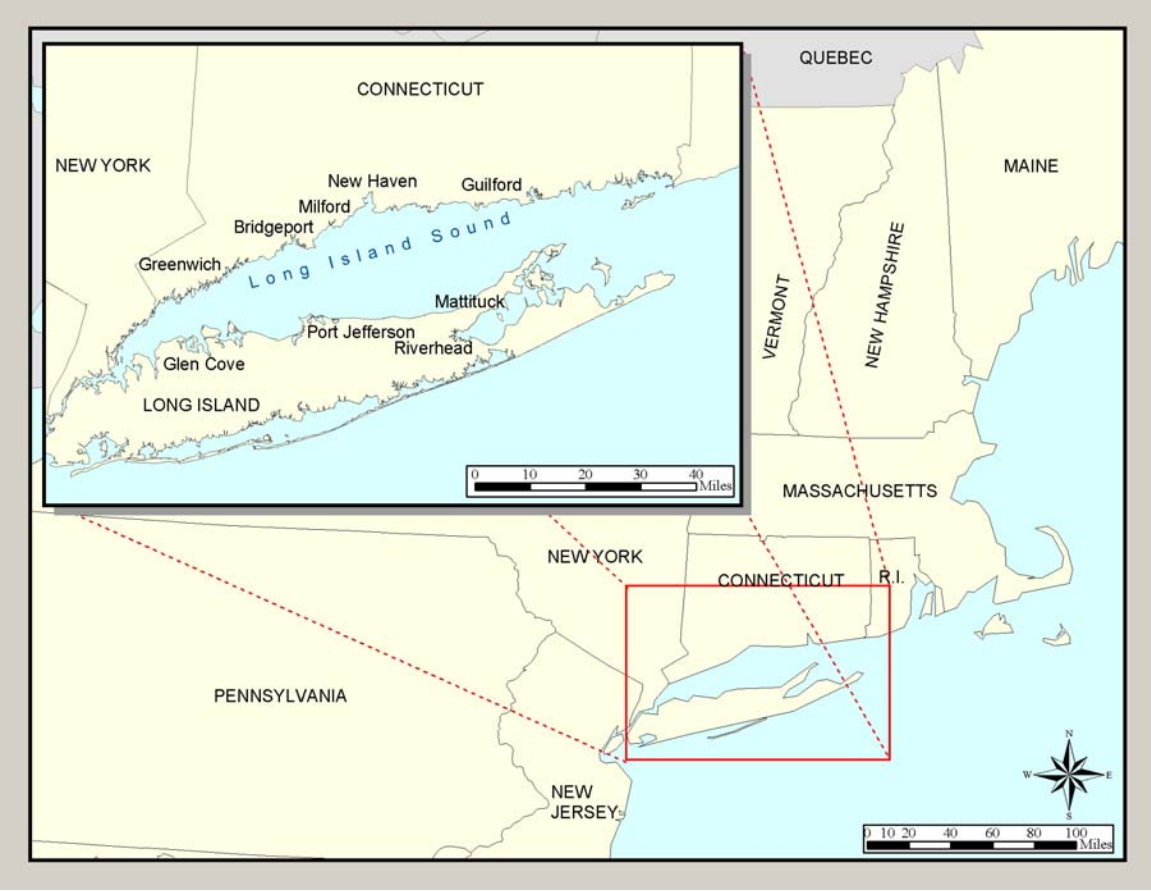

Figure 1-1. Location of Long Island Sound

EPA has identified four potential alternative open-water dredged material disposal sites. Two of the sites are currently active dredged material disposal sites, and two are presently inactive historic dredged material disposal sites. If designated, one or more of these sites could be used for disposal of material dredged from navigation projects and other sources

from Connecticut and New York rivers, harbors, and coastal areas, if the material is found to be suitable for ocean disposal. EPA's designation of an open-water disposal site does not authorize disposal of material from any particular source or project at any designated site. Such material may be dredged and disposed of only in accordance with the U.S. Army Corps of Engineers (Corps) authorities consistent with Section 404 of the Clean Water Act (CWA), 33 U.S.C. § 1344, Section 103 of the MPRSA, 33 U.S.C. § 1413, Section 10 of the Rivers and Harbors Act (RHA), which applies to the dredging itself (as opposed to the disposal), and other relevant provisions of law. In other words, EPA disposal site designation only makes a site available for consideration as an open-water disposal option for proposed dredging projects in the area.

EPA is not legally required to subject its disposal site designations under the MPRSA to environmental review under the National Environmental Policy Act (NEPA), 42 U.S.C. §§ 4321 et seq., but EPA has nonetheless conducted a NEPA review pursuant to the agency's "Statement of Policy for Voluntary Preparation of National Environmental Policy Act (NEPA) Documents." 63 Fed. Reg. 58045 - 58047. EPA has for many years voluntarily prepared NEPA reviews for its dredged material disposal site designations under the MPRSA as a matter of agency policy, and this action continues in that vein. *See Id*. at 58046. EPA has explained that although "voluntary preparation of these [NEPA] documents in no way legally subjects the Agency to NEPA's requirements," EPA will nevertheless "follow, as appropriate, procedures set out at 40 CFR Part 6, Subparts A through D (which can be found on EPA's Web Site at http://www.epa.gov/Compliance/nepa/epacompliance/index.html)." *See Id.* Thus, while not legally required to do so, EPA has prepared this Draft Environmental Impact Statement (DEIS) to be consistent with EPA's NEPA-implementing regulations at 40 CFR Part 6, Subparts A through D, as appropriate, while also using regulations promulgated by the Council on Environmental Quality (CEQ) at 40 CFR Parts 1500-1508 to provide additional guidance.

The Corps is participating in the development of this DEIS as a cooperating agency for a number of important reasons. The Corps is responsible for issuing permits for the aquatic disposal of dredged material under both Section 404 of the CWA, 33 U.S.C. § 1344, and Section 103 of the MPRSA, 33 U.S.C. § 1413. In addition, the Corps is responsible for implementing the federal dredging program for ensuring safe and reliable navigation in those project features (channels, anchorage areas, *etc.*) for which it has been delegated responsibility under its Civil Works Program. As a result of these responsibilities, the Corps has knowledge concerning the needs of the dredging program as well as technical expertise in the area of assessing the environmental effects of dredging and disposal. Finally, pursuant to an April 16, 1998, Letter of Agreement between the New England Regional Office of the EPA and the New England District of the Corps, the Corps is providing technical support, including the funding of contractors, to assist in the preparation of this DEIS. All final decisions regarding any site designations will be made by EPA. To take advantage of expertise held by other agencies, and to ensure compliance with all applicable legal requirements, EPA is also closely coordinating with other Federal agencies (*e.g.*, the National Marine Fisheries Service [NMFS]), state agencies (*e.g.*, environmental agencies of the States of Connecticut and New York), local governments, and Indian Tribal governments. Some of these entities are also participating as cooperating agencies. *See* 40 CFR § 1508.5. In

addition, EPA and the Corps have held many meetings with members of the interested public to explain the process, gather information and learn about concerns held by the public.

This DEIS is now being circulated for review and comment by other federal agencies; state, local, and tribal agencies; and members of the public. Following consideration of the comments received by mail and at public hearings, EPA will issue a Final EIS (FEIS) that includes a preferred alternative. At least 30 days after the issuance of the FEIS, EPA will issue a Record of Decision (ROD) that, among other things, states what the agency decision is, identifies all alternatives considered, and states whether all practical means to avoid or minimize environmental harm from the proposed action have been adopted (see 40 CFR § 1505.2). However, the use of any disposal area(s) designated by EPA would only occur after review and issuance by the Corps of either (1) a permit covering work by parties other than the Corps, or (2) a NEPA document covering activities by the Corps, with concurrence by EPA. Both types of activities would be subject to NEPA analysis and documentation requirements, individual evaluation under the CWA and MPRSA, and public involvement in the evaluation process. The dredged material disposal evaluation process for any Federal or non-Federal project requires consideration of a range of disposal alternatives including open-water and non open-water alternatives, as well as the quality of the material to be disposed. Consideration of such disposal alternatives as beneficial use, upland, material treatment and open-water disposal, would be required on a project-specific basis. Corps disposal determinations are made using EPA guidelines and criteria, *see* 40 CFR Parts 227 and 230, and are also subject to EPA review and potential veto. *See* 33 U.S.C. §§ 1344(c) and 1413(c).

1.1 History of Dredging and Disposal in Long Island Sound

In order to facilitate safe navigation and marine commerce, dredged material from projects in Connecticut and New York rivers, harbors and coastal areas has been disposed of at open-water sites in Long Island Sound since at least the 1870s. While detailed records of dredging activities extend back to this time, disposal methods and sites for projects were not systematically recorded until the 1950s; however, there is evidence of continuous use of some sites since 1941 (Fredette *et al.,* 1992). From the 1950s through the early 1970s about 19 open-water disposal sites were active in Long Island Sound (Dames & Moore, 1981). Since the early 1980s, dredged material has been placed predominantly at four disposal sites: Western Long Island Sound (WLIS), Central Long Island Sound (CLIS), Cornfield Shoals (CSDS), and New London (NLDS). These sites were evaluated and chosen to receive dredged material pursuant to programmatic and site specific EISs prepared by the Corps in 1982 and 1991 (USACE, 1982a, 1982b, and 1991) (see Section 1.4, Other Relevant NEPA Documents). Based on information collected through the Corps' Disposal Area Monitoring System (DAMOS), it is estimated that about 37 million cubic

Estimated Sediment Disposal Volumes in Western and Central Long Island Sound, 1941-2001, from all Dredging Sources (USACE file data, 2003)

Disposal Site	Volume (cy)
Central LIS	14,006,443
Western LIS	1,710,116
Stamford	2,904,884
Eatons Neck	12,972,303
Norwalk	1,313,150
Bridgeport	4,404,428
Milford	398,965
Total	37,710,289

yards (28 million cubic meters) of material may have been disposed of in western and central Long Island Sound since 1941.

Since 1977, the Corps, EPA, and the States have evaluated and regulated disposal of dredged material in Long Island Sound under the provisions of the CWA amendments to the Federal Water Pollution Control Act. Since 1972, Federal activities and activities of others carried out under Federal permit are subject to review by the States under their Coastal Zone Management programs. In the late 1970s, in response to concerns over the quality of dredged sediment and a lack of information on suspected impacts of disposal, the number of actively used disposal sites in the Sound was reduced, leading to the current system of four open-water sites by the mid 1980s. At the same time, the Corps began to address the need for information on the environmental impact of disposal activities through a research and monitoring program which eventually became known as DAMOS. The DAMOS program has actively monitored the four active disposal sites and has done limited examinations of some of the discontinued "historic" disposal sites.

The Corps, under its Civil Works Program is responsible for maintaining some 55 navigation projects along Long Island Sound and adjacent waters (from Hell Gate to Block Island Sound), 31 in Connecticut and 24 in New York. These projects include navigation channels, anchorage areas, turning and maneuvering basins for vessels, breakwaters, jetties and other structures. The majority of these projects require periodic maintenance dredging to assure reliable navigable depth for vessel traffic. Disposal from maintenance of these Federal civil works projects, and improvement of newly authorized Federal civil works projects in this region, requires the same analysis as for projects by parties other than the Corps under permit from the Corps, including state, municipal, and private projects and projects undertaken by other Federal agencies.

Authorized navigation projects in Connecticut and New York in and around Long Island Sound include:

Connecticut

Greenwich Harbor
Mianus River
Stamford Harbor
Westcott Cove
Fivemile River
Wilson Point Harbor
Norwalk Harbor
Norwalk Harbor
Southport Harbor
Black Rock Harbor
Bridgeport Harbor
Housatonic River
Milford Harbor
West River
New Haven Harbor
Branford Harbor
Stony Creek Harbor
Guilford Harbor
Clinton Harbor
Duck Island Harbor
Patchoque River
North Cove
Essex Cove Harbor
Eight Mile River
Connecticut River
Niantic Harbor
New London Harbor
Thames River
Mystic Harbor
Stonington Harbor
Pawcatuck River

New York

Port Chester Harbor	East River	Greenport Harbor
Milton Harbor	Flushing Bay	Peconic River
Mamaroneck Harbor	Little Neck Bay	Sag Harbor
Larchmont Harbor	Hempstead Harbor	Lake Montauk Harbor
Echo Bay Harbor	Glen Cove Harbor	Hay-West Harbor
New Rochelle Harbor	Huntington Harbor	
East Chester Creek	Northport Harbor	
Westchester Creek	Port Jefferson Harbor	
Bronx River	Mattituck Harbor	

1.2 Legal Requirements

The primary authorities that govern the disposal of dredged material in the United States are the CWA and the MPRSA. All dredged material disposal activities in Long Island Sound, whether from Federal or non-Federal projects of any size, are subject to the requirements of the CWA. In addition, all Federal projects of any size and all non-Federal projects disposing of greater than 25,000 cubic years of dredged material must comply with the requirements of the MPRSA. Some key provisions of these statutes are described in the following sections.

1.2.1 Clean Water Act, Section 404

CWA § 404, 33 U.S.C. § 1344, governs the disposal of dredged or fill material into waters landward of the baseline from which the territorial sea is measured (the "Baseline"). The Baseline generally follows the coastline, but may cut from a point of land across the mouth of bays, and other like bodies of water, to another point of land, thus leaving potentially significant areas of coastal waters landward of the Baseline. Indeed, all of the waters of Long Island Sound lie landward of the Baseline. Any lawful disposal of dredged material into waters landward of the Baseline must first be authorized by the Corps and must be conducted in compliance with the conditions of such authorization.

It should be noted that for Federal dredged material disposal projects undertaken by the Corps itself, the Corps does not actually issue itself a permit, but rather applies the same standards and general procedures under the CWA, to determine whether the disposal should be authorized.

In making its permit decisions and recommendations under its civil works program, the Corps applies the standards and criteria set forth in EPA regulations commonly referred to as the "CWA § 404(b)(1) Guidelines," which are promulgated at 40 CFR Part 230. *See* 33 U.S.C. § 1344(b). The Corps also applies its own regulations promulgated at 33 CFR Parts 320 to 338. In addition, other provisions of applicable law must also be satisfied (*e.g.*, applicable State water quality standards, applicable requirements of State coastal zone management plans, the Endangered Species Act). Corps permits and civil works decisions

under CWA § 404 are subject to review, and potential veto, by EPA. Section 1.2.4 describes the CWA Section 404 permit process in more detail.

1.2.2 Marine Protection, Research, and Sanctuaries Act

The MPRSA regulates dredged material disposal only in waters seaward of the Baseline, which are referred to as "ocean waters" under the statute. *See* 33 U.S.C. § 1402(b). These waters include the three-mile band extending seaward of the Baseline, which is referred to as the "territorial sea," and beyond (While not relevant for the present case, it is worth noting that CWA § 404 jurisdiction actually extends to the seaward edge of the territorial sea, thus overlapping with MPRSA jurisdiction within the territorial sea. However, EPA regulations direct that only the MPRSA program will be applied to regulate dredged material disposal in the territorial sea, while the CWA program will be applied to discharges of fill material. *See* 40 CFR § 230.2(b)).

As stated in Section 1.2.1, the waters of Long Island Sound lie landward of the Baseline and, thus, would be expected to be subject to regulation under CWA § 404 and *not* the MPRSA. However, in 1980, the MPRSA was amended to add Section 106(f) to the statute. 33 U.S.C. § 1416(f). This provision is commonly referred to as the "Ambro Amendment," named after Congressman Jerome Ambro who is said to have championed the provision. MPRSA § 106(f), 33 U.S.C. § 1416(f), was itself amended in 1990, and as currently enacted it reads as follows:

> "In addition to other provisions of law and not withstanding the specific exclusion relating to dredged material in the first sentence of this title, the dumping of dredged material in Long Island Sound from any Federal Project (or pursuant to Federal authorization) or from a dredging project by a non-Federal applicant exceeding 25,000 cubic yards shall comply with the requirements of this subchapter."

As a result of this provision, the disposal in Long Island Sound of dredged material from Federal projects (both projects carried out under the Corps civil works program or the actions of other Federal agencies), or from non-Federal projects involving more than 25,000 cubic yards (19,114 cubic meters) of material, must satisfy the requirements of both CWA § 404 and the MPRSA. Disposal from non-Federal projects involving less than 25,000 cubic yards (19,114 cubic meters) of material, however, are subject only to CWA § 404.

Like the CWA, the MPRSA prohibits the disposal of dredged materials into water under its jurisdiction unless conducted in compliance with, a permit issued by the Corps or approval under the Corps civil works program. 33 U.S.C. §§ 1411(a) and 1413(a). Corps dredged material disposal permits and authorizations are issued under MPRSA § 103 and may include conditions deemed necessary by the Corps related to the type of material to be disposed, time of disposal, and other matters. 33 U.S.C. §§ 1413 and 1414(a). (EPA is responsible for review and permitting of any proposals to dump anything other than dredged material into ocean waters. *See* 33 U.S.C. §§ 1412(a) and (b).) The Corps is to issue a permit, or approve a project under its civil works authority, only if it has determined that dredged material

disposal "will not unreasonably degrade or endanger human health, welfare, or amenities, or the marine environment, ecological systems, or economic potentialities." 33 U.S.C. § 1413(a). Similar to the CWA § 404 program, however, the Corps is to make MPRSA § 103 determinations by the standards set forth in EPA regulations. 33 U.S.C. § 1413(b). EPA has promulgated its ocean dumping regulations pursuant to MPRSA § 102(a), 33 U.S.C. § 1412(a), at 40 CFR Parts 220 to 229. Corps permit determinations and civil works approvals are also subject to any applicable requirements of other laws (*e.g.*, the Endangered Species Act, the Coastal Zone Management Act). In addition, Corps authorizations under MPRSA § 103 are also subject to EPA review and concurrence, and the potential for EPA to either veto or add conditions to the permit or civil works approval. 33 U.S.C. §§ 1413(c) and 1414(a). As with the CWA § 404 program, the Corps does not issue permits under MPRSA for Corps dredged material disposal projects under its civil works authority; rather, it authorizes its own disposal projects by applying the same substantive and procedural requirements "in lieu of" the permit procedures. 33 U.S.C. § 1413(e). Such Corps authorizations for Corps projects are subject to the same EPA review and concurrence process as described above.

The Corps and EPA are required to review and evaluate authorizations for disposal using criteria that include the following:

- The need for the proposed disposal;
- The effect of the disposal on human health and welfare; fisheries resources, plankton, fish, shellfish, wildlife, shorelines, and beaches; and marine ecosystems;
- The persistence and permanence of the effects of the disposal;
- The effect of disposing of particular volumes and concentrations of such materials;
- Appropriate locations and methods of disposal or recycling, including land-based alternatives;
- The effect on alternate uses of oceans.

Under CWA § 404, dredged material at a particular site is authorized on a project-specific basis, subject to the terms of the authorization. Under the MPRSA, however, the identification of sites for the potential disposal of dredged material is handled differently. MPRSA § 102(c) authorizes EPA to "designate" sites for long-term use for dredged material disposal. Such long-term site designation by EPA is conducted apart from consideration of any particular project's dredged material. Material from particular projects is instead evaluated under the Corps' authorization program under MPRSA § 103. As stated above, material from non-Federal projects involving less than 25,000 cubic yards (19,114 cubic meters) of dredged material are evaluated under the CWA § 404 requirements. EPA is to designate disposal sites using its site designation criteria regulations promulgated at 40 CFR Part 228. 33 U.S.C. § 1412(c)(1). EPA is to designate sites and time periods for disposal, and can restrict site use, as necessary to "mitigate adverse impact on the environment to the greatest extent practicable." 33 U.S.C. § 1412(c)(1).

For each designated disposal site, EPA and the Corps must develop a site management plan that includes a baseline assessment of conditions of the site, a program for monitoring the site, special management conditions or practices to be implemented at the site to protect the environment, consideration of the quantity of material to be disposed of at the site and the presence of contaminants in the material, consideration of the anticipated use of the site over the long term, and a schedule for review and revision of the plan (33 U.S.C. § 1412(c)(3)). A designated disposal site may not be used until a site management plan has been developed for the site (33 U.S.C. § 1412(c)(4)).

In determining whether to issue an authorization consistent with Section 103 of the MPRSA, the MPRSA directs the Corps to evaluate the "potential effect of a permit [or Corps project authorization] denial on navigation, economic and industrial development, and foreign and domestic commerce of the United States, [in order to] . . . make an independent determination as to the need for the dumping." 33 U.S.C. § 1413(b). Related to this, the statute also directs the Corps to "make an independent determination as to the other possible methods of disposal and as to appropriate locations for the dumping." *Id.* With respect to locations for disposal, the statute requires the Corps to utilize EPA-designated disposal sites to the "maximum extent feasible." *Id.* Where use of an EPA-designated site is infeasible, however, the Corps is authorized to "select an alternative site." *Id.* Thus, Corps selection of an alternative site is conducted in conjunction with a specific project.

In considering "selection" of an alternative site, the Corps must use the same site selection criteria that EPA uses in designating disposal sites (*i.e.*, 40 CFR Part 228). *Id.* Corps selection of an alternative disposal site is subject to EPA review and concurrence. *Id.* While EPA-designated disposal sites are specified for long-term use, and the statute does not specify a specific term of years to which such use must be limited, the statute does place a specific time limit on the use of Corps-selected sites. MPRSA § 103(b) provides that "disposal at or in the vicinity of an alternative site shall be limited to a period of not greater than 5 years unless the site is subsequently designated [by EPA] . . .; except that an alternative site [selected by the Corps] may continue to be used for an additional period of time that shall not exceed 5 years if – (1) no feasible disposal site has been designated by the Administrator [of EPA]; (2) the continued use of the alternative site is necessary to maintain navigation and facilitate interstate or international commerce; and (3) the Administrator [of EPA] determines that the continued use of the site does not pose an unacceptable risk to human health, aquatic resources, or the environment." 33 U.S.C. § 1413(b)(1), (2) and (3). Thus, a Corps-selected site may be used for disposal for a maximum potential period of ten years.

The time limits for use of a Corps-selected disposal site (*i.e.*, the five-year period, with potential for a five-year extension) were added to the MPRSA by an amendment to 33 U.S.C. § 103(b) made by Section 506(b) of the Water Resources Development Act of October 31, 1992 (WRDA92). The time limits did not apply prior to that date. Thus, EPA and the Corps interpret Section 103(b) to mean that these time limits began to apply to Corps-selected sites used for disposal after the October 31, 1992, amendments to the statute. Furthermore, EPA and the Corps interpret any second term of (up to) five years for use of a Corps-selected site to commence upon proper approval to extend the time for use of that site.

Therefore, if there is a gap in time between the end of the first five-year term and the beginning of any second term, that time is not counted against the second term because it is the *use* of the site for disposal that is limited by the statute and the site is not being used during any such gap. The time period for any second term of use begins to run with the approval extending use of the site, thus ensuring that the site will not be used for disposal for any more than ten years. *See* September 27, 2001, Letter from Brian E. Osterndorf, Corps, to Arthur J. Rocque, Jr., CTDEP; October 10, 2001, Letter from Robert W. Varney, EPA, to Arthur J. Rocque, Jr., CTDEP; December 13, 2002, Letter from Robert W. Varney, EPA, and Thomas L. Koning, Corps, to Dennis P. O'Leary, Esq., of the Neufeld & O'Leary law firm (Appendix A-4).

Applying these time limits to the WLIS and CLIS disposal sites, both of which were actively used after October 31, 1992, and are being evaluated for possible EPA designation in this DEIS, results in the following conclusions. The CLIS site was first used under the Corps' site selection authority in 1993 for disposal of material from the federal navigation channel in New Haven, Connecticut. Thus, the first five-year term ended in 1998. The second 5-year term for disposal at the CLIS disposal site as a Corps-selected site began in February 1999 and will, therefore, end in February 2004. The WLIS disposal site was not used as an Corps-selected alternative site until 1995; all projects using the WLIS site before that time were non-Federal projects involving fewer than 25,000 cubic yards (19,114 cubic meters) of material and, therefore, did not trigger MPRSA § 106(f). Therefore, its first five-year term expired in 2000. It has yet to be selected for a second term of use for disposal. *See* September 27, 2001, Letter from Brian E. Osterndorf, Corps, to Arthur J. Rocque, Jr., CTDEP; October 10, 2001, Letter from Robert W. Varney, EPA, to Arthur J. Rocque, Jr., CTDEP (Appendix A-4). Both the CLIS and WLIS disposal sites are among the alternative sites being considered in this DEIS for possible EPA disposal site designation.

Under MPRSA Section 103 (33 U.S.C. § 1413), the Corps may issue authorizations for ocean disposal for specific projects at specific selected sites if the disposal "will not unreasonably degrade or endanger human health, welfare, or amenities, or the marine environment, ecological systems, or economic potentialities." 33 U.S.C. § 1413(a). In making that determination, the Corps must apply the site designation evaluation criteria described in MPRSA Section 102 and must determine whether there are other possible methods of disposal or other appropriate locations for the disposal (33 U.S.C. § 1413(b)). In considering appropriate locations, the Corps must, to the maximum extent feasible, use the sites designated under MPRSA Section 102 and obtain EPA concurrence on the selected site. Disposal at a site is limited to 5 years, unless the site is subsequently designated as a disposal site by EPA or circumstances (set forth in the statute) require an additional 5-year disposal period.

Prior to issuing an authorization for a specific project, the Corps must notify EPA, which must review the proposal and related materials, determine compliance with the site designation criteria, and decide whether to concur with the authorization issuance. If EPA declines to concur, the authorization will not be issued (33 U.S.C. § 1413(c)).

The Corps also prepares dredged material management plans (DMMPs) on a project-specific basis where a continued need for maintenance dredging is demonstrated and available disposal site capacity is determined insufficient to meet the project's needs for at least a 20 year period, for the quantity and quality of materials to be dredged. A DMMP is not required for designating or selecting disposal sites under MPRSA. However, the designation of disposal sites under MPRSA does require the development of Site Management and Monitoring Plans (SMMPs). The SMMPs for sites recommended for designation are included in the supporting documentation for this EIS.

1.2.3 Coastal Zone Management Act

In 1972, the Coastal Zone Management (CZM) Act established a national program to encourage coastal states to develop and implement coastal zone management plans. Both Connecticut and New York have developed Coastal Zone Management plans and programs that were federally approved under CZM. Section 307 of CZM 1972, as amended, requires Federal agencies proposing activities within or outside the coastal zone that affect any land or water use or natural resource of the coastal zone to ensure that those activities are conducted in a manner which is consistent to the maximum extent practicable with the enforceable policies of approved State coastal management programs. As part of this DEIS process, EPA will prepare a Federal determination of consistency with applicable state approved Coastal Zone Management Programs.

1.2.4 Corps Permitting Process

A Corps permit is required for any discharge of dredged material in waters of the United States by a party other than the Corps. The Corps has jurisdiction for this permitting under Section 10 of the Rivers and Harbors Act, 33 U.S.C. § 403, and, depending on where the discharge occurs, under either Section 404 of the Clean Water Act or MPRSA Section 103. Generally, Section 404 of the Clean Water Act applies to discharges landward of the Baseline of the territorial sea and in instances seaward of the Baseline when the intent is to fill or nourish a beach and MPRSA Section 103 applies to discharges seaward of the Baseline of the territorial sea. In Long Island Sound, both CWA and MPRSA are applicable to dredging projects (depending on project size and proponent) due to the Ambro Amendment.

The Corps is the lead federal agency for all permit actions dealing with open-water disposal of dredged material. In order to ensure that this disposal will not unduly degrade or endanger the marine environment and will not adversely affect human health, the marine environment or other ocean uses, the Corps works cooperatively with federal and state regulatory and resource agencies throughout the permitting process. The Corps solicits comments from the NMFS, U.S. Fish and Wildlife Service (USFWS), EPA, the Connecticut Department of Environmental Protection (CTDEP), Office of Long Island Sound Programs, and the state of New York, as appropriate, in preparing the sampling and testing plans and the determinations of suitability for open-water disposal that initiate the permit process. Under Section 404 of CWA, with the exception of EPA, the role of these agencies is advisory, but the Corps rarely, if ever, issues a permit if any of these agencies advise against it. Under Section 103 of MPRSA, however, the Corps cannot issue a permit until the EPA determines that the disposal will comply with the criteria in 40 CFR 227.4. Thus, for projects disposing of more than

25,000 cubic yards (19,114 cubic meters) of dredged material in Long Island Sound and for all dredged-material disposal from federal projects, it is the EPA and not the Corps that has final decision-making authority.

As mentioned above, one of the first steps in the permit application review process for both CWA and MPRSA projects is for the Corps, working with the state and federal resource agencies and the applicant, to develop sampling and testing plans to determine the suitability of the material for open-water disposal. Applicants will perform sampling and analysis based on these plans and the Corps and federal agencies will review the results according to several testing protocols designed for regional and national use. In this way, they determine the suitability of the material for disposal at a given site. National guidance for determining whether dredged material is acceptable for open-water disposal is provided in the Ocean Testing Manual (Green Book; USEPA and USACE, 1991) and in the Inland Testing Manual (USEPA and USACE, 1998). The Regional Implementation Manual, consistent with the Green Book and the Inland Testing Manual, provide specific testing and evaluation methods for dredged material projects at specific sites or groups of sites. The Regional Implementation Manual that covers Long Island Sound is currently under review by EPA and the Corps, and should be finalized in 2003.

If the material is determined appropriate for open-water disposal, the Corps will consider open-water disposal as one option in the analysis of disposal alternatives for its permit review. Other options for disposal include beneficial use, upland disposal, and treatment technologies. Under CWA, material may be permitted for open-water disposal only if there is no practicable alternative location or methods of disposal or reuse available that have less adverse environmental impact on the aquatic environment or a smaller potential risk to other parts of the environment (Section 404 (b)(1) Guidelines).

Candidate open ocean (or, in the case of Long Island Sound, open-water) areas are governed by MPRSA Section 102. Site designation identifies an area that would be suitable to receive dredged material if a permit were issued, and does not constitute approval to use the designated site for the disposal of dredged material. For a specific project involving the disposal of dredged material under MPRSA Section 103, analysis of the Corps project or permit activity must demonstrate that no practical alternative locations or methods, including non-ocean alternatives, are available. For this reason, the Corps' alternatives analysis evaluates available alternative locations and methods (ocean and non-ocean), as well as recycling and treatment. If other low impact or beneficial use alternatives are practicable, a MPRSA Section 103 permit authorization would not be issued. Readers interested in further information on comparing all dredged material alternatives should refer to Evaluating Environmental Effects of Dredged Material Management Alternatives – A Technical Framework (USEPA and USACE 1992).

In addition to the CWA and MPRSA permit process described above, both new improvement and maintenance dredging projects with disposal in open-water may be reviewed under the Connecticut State Programmatic General Permits (CTPGP), provided that the quantity of material to be dredged is less than 25,000 cubic yards (19,114 cubic meters). The CTPGP offers an expedited review process with coordination and agreement of the federal and state

agencies with resources of concern. For projects involving quantities greater than 25,000 cubic yards (19,114 cubic meters) or those projects that do not meet the terms and conditions of the CTPGP, the proposals are reviewed under the standard individual permit process. This process involves a public notice and a more detailed review of the impacts and outcomes of the proposal. The sampling plans and suitability determinations require the same level of detail regardless of the permitting process.

Ultimately, the decision to deny, approve, or place restrictions on a permit must meet the regulatory standard that the action causes no "unacceptable adverse impact." As a result, federal and state agencies cooperatively set permit conditions by considering the range of potential impacts and the environmental, economic, social, and political conditions associated with the proposed activities.

Enforcement of the CWA and MPRSA and their accompanying regulations is a joint responsibility of EPA and the Corps. The Corps may revoke disposal permits or suspend them for a specified period of time if any of the conditions of the permit are violated. Additionally, disposing of dredged material into the ocean without a permit is a violation of MPRSA. EPA is responsible for assessing the civil liability of the violator and known violations of permit conditions may be punished by imposing fines up to $55,000 per event or imprisonment up to one year, or both. Enforcement is an important site management tool because it ensures that the requirements set out in the disposal permit are complied with, and that no unanticipated impacts can occur without consequences.

As stated earlier, while the Corps does not issue itself permits for activities the Corps carries out under its civil works authority, the same evaluations under the CWA and the MPRSA are conducted for those projects prior to the Corps' approval of the NEPA documents and other authorizations for that work.

1.3 Scope of the EIS

In 1999 EPA, in cooperation with the Corps, issued a Notice of Intent to prepare an EIS to consider the potential designation of one or more dredged material disposal sites in the waters of Long Island Sound under MPRSA Section 102 (64 Fed. Reg. 29865 (1999)). The notice stated that the EIS would provide an evaluation of the four existing sites (WLIS, CLIS, CSDS, and NLDS), "as well as additional alternatives including other open-water disposal sites, other types of dredged material disposal and management, and the no action alternative." Public scoping meetings were held in Connecticut and New York in June 1999; additional public working group meetings have been held since that time (reports from working group meetings can be found in Appendix A).

Some Alternatives to Open Water Disposal of Dredged Material

- ***Upland Disposal*** – Disposal of dredged material in any inland habitat type for construction purposes, wildlife habitat, or recreational development;
- ***Containment*** – Disposal of dredged material in a facility (*e.g.*, confined disposal facility (CDF)) to contain the material as an island or on a shoreline for purposes of construction, wildlife, or recreation;
- ***Beach Restoration*** – Disposal of clean, sandy dredged material on existing beaches;
- ***Treatment Technologies*** – Example: The combustion of dredged material to reduce its volume and volatile organic compounds;
- ***Resource Reclamation*** – Use of dredged material as a soil enhancer for landscaping, agricultural purposes, or construction material.

The Zone of Siting Feasibility (ZSF) is an appropriate area of consideration to ensure that a full range of reasonable and practicable alternatives is considered. The EPA site designation guidance manual (USEPA, 1986) describes the factors that should be addressed in identifying the ZSF. Specifically, EPA recommends locating open-water disposal sites within an economically and operationally feasible radius from the point of dredging. Other considerations include navigational restrictions, political or other jurisdictional boundaries, distance to the edge of the continental shelf, the feasibility of surveillance and monitoring, and operational and transportation costs (Pequegnat *et al.,* 1990). Thus, the ZSF represents the area from within which a range of reasonable specific alternatives may be selected for evaluation.

In 1999 EPA developed the ZSF for this DEIS in cooperation with the Corps, USFWS and NMFS. Once the ZSF was delineated, EPA identified and evaluated a range of such reasonable specific disposal site alternatives found within the ZSF (see Chapter 3). The suitability of these alternative sites has been evaluated using the five general and eleven specific criteria for disposal site designation (40 CFR §228.5 and §228.6). This analysis subjected this set of reasonable alternative sites to an objective evaluation.

The ZSF analyzed in this DEIS includes the region of Long Island Sound between the confluence of the East and Harlem Rivers at Hell's Gate on the western end and Mulberry Point, Connecticut (near Guilford, Connecticut) to Mattituck Point, New York on the eastern end. The eastern boundary was chosen because it is marked by a change in sediment texture and depth, representing a transition from the depositional basin of the central region into the more active eastern region of Long Island Sound. This ZSF meets the dredging needs in the western and central regions of Long Island Sound, and its outer limits represent a reasonable haul distance for marinas, boatyards, commercial docks, and federal harbors and anchorages in those regions. The expected dredging needs area for disposal sites evaluated in the EIS would extend about 25 nautical miles beyond the eastern (CLIS) and western-most boundaries of the sites evaluated (WLIS), or from about the upper arm of the East River and its tributaries in New York in the west to the area of Westbrook, Connecticut in the east.

In March 2002, EPA and the Corps issued a notice to identified stakeholders (all agencies, organizations and individuals that had participated in or expressed an interest in the EIS) that the ZSF for locating potential open-water disposal sites would be modified to encompass the western and central regions of Long Island Sound (*Environmental News*, "Update on the Evaluation of Potential Dredged Material Disposal Sites for Long Island Sound," March 2002). The DEIS is evaluating the designation of one or more sites in western and central Long Island Sound to serve communities and projects that may evaluate use of open-water sites in those areas together with other project specific alternatives to open-water disposal. The evaluation of eastern Long Island Sound for potential designation of open-water disposal site(s) would be addressed in a subsequent NEPA document, such as a supplement to this EIS.

The primary reasons for the decision to modify the zone of siting feasibility were:

- The dredging and disposal needs and alternatives of the western and central Long Island Sound regions are geographically and environmentally separate from those of the eastern Long Island Sound region;
- The need to assess, in a timely manner, the appropriateness of maintaining operational continuity and continued use of a central Long Island Sound disposal site;
- The change in scope would not preclude consideration of a comprehensive range of alternative for disposal sites in all three Long Island Sound regions for specific proposed dredging projects.

Identified stakeholders were notified of the change in scope and public working group meetings were continued to be held. Therefore, EPA and the Corps determined that an additional scoping period and additional scoping meetings were not necessary.

Thus, this DEIS examines the potential environmental impacts associated with the use of potential open-water dredged material disposal sites in the western and central area of Long Island Sound and the no action alternative. Figure 1-2 shows the current assessment area (referred to as the Zone of Siting Feasibility), as compared to the area originally proposed for assessment.

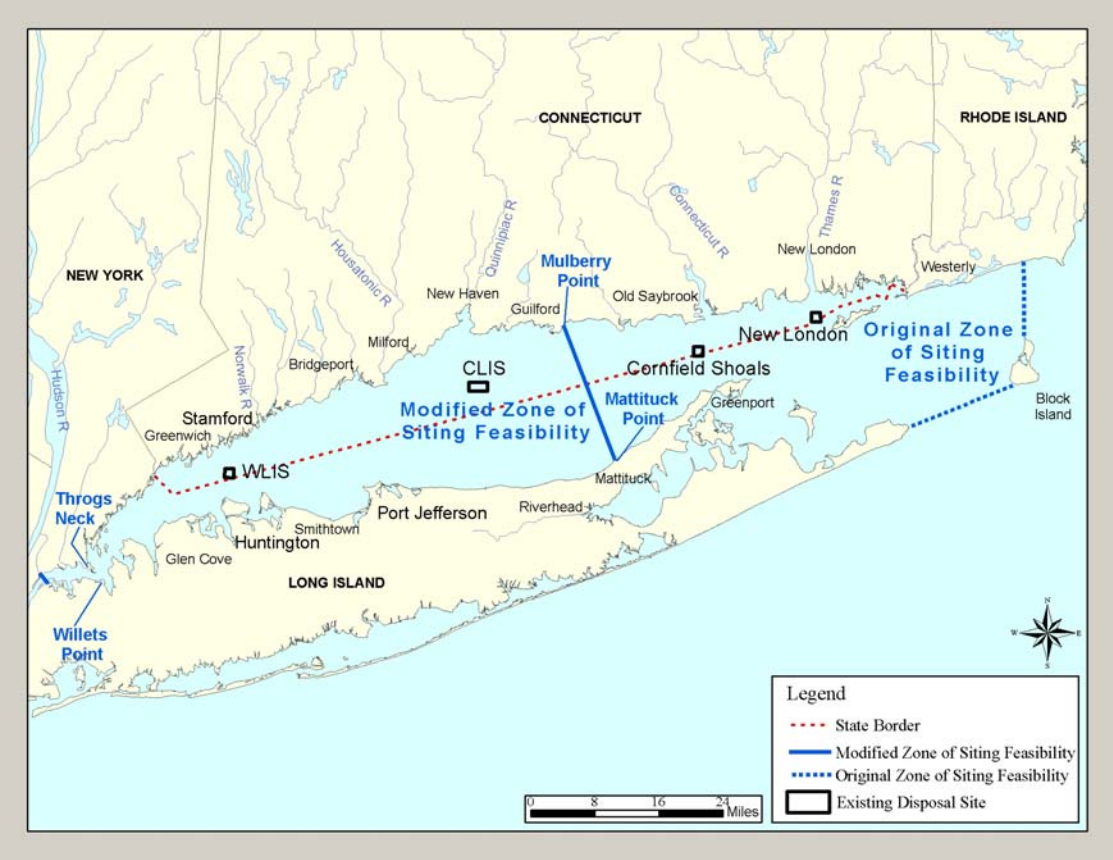

Figure 1-2. Original and Modified ZSF

Of the four currently active dredged material disposal sites in Long Island Sound, only the WLIS and CLIS disposal sites are included in the modified ZSF (see Figure 1-2). These two sites are analyzed in the DEIS and, as described in more detail in Chapter 3, a site screening methodology was used to identify other alternative sites for analysis in the western and central regions.

1.4 Other Relevant NEPA Documents

The NEPA documents described in the following section were prepared by the Corps for the disposal of dredged material in Long Island Sound.

Final Programmatic Environmental Impact Statement for the Disposal of Dredged Material in the Long Island Sound Region (USACE, 1982a). The Corps prepared this document as a result of a 1976 agreement with the Natural Resources Defense Council. It evaluated seven proposed disposal sites in Long Island Sound and identified generic impacts associated with a range of disposal alternatives for dredged materials. This document also sought to provide an informational basis upon which future NEPA documents could be developed for site-specific projects in the Long Island Sound region. The Programmatic EIS concluded that open-water, upland, containment, beach restoration, incineration, and resource reclamation were viable alternatives and that the most appropriate alternative chosen for disposal would be determined on a case-by-case basis depending on the conditions prevalent at the time a project was proposed. The EIS also found that three of the seven sites in Long Island Sound were the least environmentally damaging and practicable alternative open-water disposal sites. These three sites were the CLIS, Cornfield Shoals, and New London disposal sites.

Final Supplemental Environmental Impact Statement for the Designation of a Disposal Site for Dredged Material in Western Long Island Sound – WLIS III (USACE, 1982b). This document addressed open-water disposal of dredged material in the western Long Island Sound region. This EIS concluded that there was an economic and navigational need for a dredged material disposal site in the western region of Long Island Sound. The WLIS disposal site was selected as the least environmentally damaging and practicable alternative for open-water disposal in the western region of Long Island Sound.

Final Supplemental Environmental Impact Statement for a Dredged Material Disposal Site in Western Long Island Sound (USACE, 1991). This supplement was prepared to address deficiencies in the first WLIS EIS, as found by the U.S. Court of Appeals (*Town of Huntington v. Marsh*, 859 F.2d 1134 (2nd Cir. 1988)). In particular, the supplemental EIS applied the criteria described in MPRSA Section 102 in evaluating potential new disposal sites and addressed the types, quantities, and cumulative effects of dredged material disposal at the WLIS disposal site. As a result of this analysis, the Corps reiterated its earlier conclusion that the WLIS disposal site was the least environmentally damaging and practicable alternative for open-water disposal in the western region of Long Island Sound.

Long Island Sound Dredged Material Containment Facilities Feasibility Report (USACE, 1985) This report examined the potential for siting and constructing a dredged material containment facility along the shore of Long Island Sound for disposal of dredged material.

The report identified at least one potential site for a containment project of limited volume, however, after public review, no potential sponsors willing to participate in construction and management of such a facility were identified.

1.5 Public Involvement

This section describes the formal scoping process, other public and agency meetings that have been held regarding this EIS, and future opportunities for public involvement.

1.5.1 Public Scoping

In addition to the Notice of Intent published in the *Federal Register* in June 1999 (64 Fed. Reg. 29865 [1999]), EPA and the Corps published legal notices in several local newspapers and issued a press release informing the public of the intent to prepare an EIS for the designation of disposal sites in Long Island Sound and announcing public scoping meetings. Three formal scoping meetings were conducted over a 2-week period in June 1999 (Stony Brook, New York; Groton, Connecticut; and Stamford, Connecticut) to ensure that interested communities, groups, and individuals had the opportunity to provide input on the scope of the document, including alternatives and impact analyses. These meetings provided a forum for the public to ask questions, to express their concerns regarding dredged material disposal, and to comment on the need for the project.

In general, the public comments involved:

- ***Regulatory issues*** (compliance with MPRSA, the Clean Water Act and other laws and regulations; consistency with the Coastal Zone Management Act);
- ***Concerns for the natural environment*** (contamination of fish and fish habitat, contamination of benthic organisms and habitats; health impacts of consumption of contaminated seafood, dispersion of contaminants in Long Island Sound, water quality, monitoring, need for additional field studies, impacts on endangered species and unique habitats, and air quality and odors);
- ***Socioeconomic issues*** (cost of disposal, economic impacts on coastal communities, recreational impacts, impacts on coastal property values, potential for groundings, aesthetics, and impacts on shipwrecks and diving);
- ***NEPA documentation and analysis issues*** (use of existing data, assessing disposal alternatives, and use of a Geographic Information System for alternatives analysis).

EPA and the Corps carefully considered all comments received and have used these comments in preparing the analysis presented in this DEIS. The comments and issues raised during the scoping period are described in the Summary of Scoping Meetings found in Appendix A, Public Involvement.

1.5.2 Public Workshops and Working Group

In addition to the formal scoping process, EPA and the Corps held public workshops. These workshops were held in October 1999 (Port Jefferson, New York) and April 2000 (Groton, Connecticut) to further refine the scope and initial steps of the EIS, provide project status, and discuss the screening of potential disposal sites.

The informal workshops led to the formation of a Working Group consisting of the marine industry, boaters, environmental groups, fishing interests, local towns and other individuals. Working Group meetings were informal so that members could engage and discuss the issues of concern and the information gathered during the development of the EIS (see Appendix A). Working Group meetings were held in:

- July 2000 (Old Lyme, Connecticut);
- April 2001 (Bridgeport, Connecticut);
- March 2002 (Port Jefferson, New York);
- July 2002 (Bridgeport, Connecticut);
- November 2002 (Stamford, Connecticut).

In addition, EPA and the Corps met with representatives of the fishing industry several times to discuss potential disposal alternatives, sampling plans, and other concerns.

1.5.3 Interagency Group

EPA has also formed an Interagency Group during the development of this DEIS. This group includes representatives from EPA New England and Region 2 offices, the Corps New England and New York Districts, USFWS, NMFS, CTDEP, New York State Department of Environmental Conservation (NYSDEC), and New York State Department of State (NYSDOS) and the Narragansett and Eastern Pequot tribes. The purpose of the Interagency Group is to review and guide the process and findings of the EIS.

1.5.4 Future Opportunities for Public Involvement

This DEIS is being published together with draft site SMMPs for public review and comment. Such comments may be provided in writing (by mail, facsimile, or electronic mail). In addition, during the public comment period, EPA will hold public hearings in which interested parties may submit comments. Information regarding the locations, dates, and times of the public hearings will be provided in the *Federal Register,* included in public notices and press releases, and mailed to the existing mailing list. This information is also posted on the EPA website (http://www.epa.gov/region01/eco/lisdreg/).

EPA and the Corps will carefully consider all timely comments in preparing the FEIS. The FEIS will be issued for public comment. EPA will not make a decision regarding the designation of one or more disposal areas until at least 30 days following the issuance of the FEIS.

Commenting on the Draft EIS

EPA encourages comments on the draft EIS for the Designation of Dredged Material Disposal Sites in Central and Western Long Island Sound. Comments may be submitted:

- By mail to
  Ann Rodney
  U. S. EPA - New England Region
  One Congress Street, Suite 1100
  Mailcode CWQ
  Boston, MA 02114-2023
- By facsimile to [617-918-1505]
- By electronic mail to
  Rodney.Ann@epa.gov

1.5.5 EPA Rulemaking Process

A draft of the proposed rulemaking is published in the *Federal Register* for public comment. Following issuance of the FEIS, EPA will publish a formal rulemaking.

1.6 Structure of the EIS

This DEIS consists of the following chapters, appendixes and associated documents: an Executive Summary, the EIS divided into eleven chapters, a public involvement appendix containing correspondence and documents from the public involvement program, nine technical appendixes, most of which are further divided into subsections, and draft SMMPs for the sites recommended for designation.

The DEIS is structured to lead the reader through the investigation and decision-making process for site designation. Chapter 1 provides an introduction to the issues involved in the EIS, the history of dredging and disposal in Long Island Sound, the statutory, regulatory, and legal framework in which the study was conducted, an overview of the scoping process and public involvement program, and a description of the remaining steps in the process. This introduction provides the necessary background information for an understanding of the purpose and need for the DEIS set forth in Chapter 2. Chapter 2 describes the need for alternative means of disposing of dredged material from the many public and non-Federal projects that occur in the rivers and harbors around Long Island Sound. This chapter also discusses the purpose of investigating open-water disposal options and alternatives to open-water disposal, to provide long-term practical means of meeting the needs of the Long Island Sound region.

Chapter 3 describes the process for identifying long-term open-water disposal options for the Long Island Sound region. This chapter provides a general overview of the alternatives evaluated throughout the EIS process including the potential environmental impacts of not designating any dredged material disposal areas in Long Island Sound (the No Action Alternative). An identification of the preferred alternative(s) at the end of Chapter 3 provides the reader with a focus for understanding the technical evaluations presented in Chapters 4 and 5.

Chapter 4 describes the affected environment of Long Island Sound with a focus on the western and central basins. This establishes the existing condition in which the anticipated impacts of any designation action will be addressed and evaluated. This information and evaluation draws from numerous available sources, Federal, state, academic and private, and the many investigations undertaken specifically in support of the DEIS, to describe the environment and uses of the Sound; the baseline setting in which the remaining analysis will take place.

Chapter 5 presents the identification and evaluation of the environmental consequences, or the anticipated impacts, of site designation in the western and central areas of the Sound and surrounding regions. Impacts to water quality, the benthic community, fish and shellfish, endangered species and other ecological impacts are evaluated. Socioeconomic impacts to fisheries, navigation, recreation, cultural resources, and other human uses of the Sound are also evaluated. These evaluations provide the technical rationale for the alternative sites analysis and recommendation for the preferred alternative presented in Chapter 3.

Chapter 6 contains a listing of statutes, regulations, executive orders, and other policies pertaining to this DEIS. NEPA requires that supporting documents clearly define the proposed action's compliance with applicable laws, regulations and other Federal authorities. The list shows which authorities apply to a dredged material disposal site designation in Long Island Sound.

Chapter 7 describes the public involvement program undertaken by the EPA and the Corps for this DEIS. This program is presented in greater detail in Appendix A – Public Involvement. This effort consisted of a formal scoping process, public workshops, involvement of a public working group, interagency meetings, and a general solicitation of public comment on individual studies and the overall effort throughout the EIS process. The concerns and issues raised by the public, cooperating agencies and other agencies and interested groups during this process assisted in framing the scope of investigations conducted for the EIS as discussed in Chapters 3 and 4. Further, the evaluations presented in Chapter 5 also drew focus from the public and agency input made through the workshops and working group sessions.

Chapter 8 lists the references consulted in preparation of the EIS.

Chapter 9 contains a list of preparers of the DEIS. Chapter 10 will include a list of all agencies, organizations and individuals who received copies of the DEIS. Chapter 11 provides an index to the DEIS.

Several technical appendixes are included which provide detailed documents supporting the discussions, evaluations, and recommendation in the EIS. These include: Appendix A – Public Involvement, Appendix B – Dredging Needs, Appendix C – Upland/Beneficial Use Site Resources, Appendix D – Alternative Analysis, Appendix E – Socioeconomics, Appendix F – Sediment Analyses (including chemistry and toxicity data), Appendix G – Physical Oceanography/Water Quality/Meteorology), Appendix H – Biological Resources of Open Water Sites (including benthic community analyses, finfish surveys, fisheries and

lobster surveys, tissue testing, essential habitat, and risk assessment), Appendix I – Historical and Archaeological Resources, and Appendix J – Site Monitoring/Management Plans for the sites recommended for designation.

CHAPTER 2 – PURPOSE AND NEED FOR AGENCY ACTION

Dredging is periodically needed in the waters of Long Island Sound. Dredged material from these activities must be disposed of in some manner. This DEIS will evaluate alternative means for such disposal, focusing on the potential designation of dredged material disposal sites in Long Island Sound for long-term use. Consistent with EPA's voluntary NEPA review policy, as discussed in Chapter 1, EPA is preparing this DEIS to aid in this consideration.

The purpose of EPA's action is to determine whether one or more environmentally sound open-water dredged material disposal sites can and should be authorized for future long-term use in Long Island Sound and, if so, to designate the site or sites accordingly and consistent with applicable law. The need for this effort derives from the following facts: (1) there are currently no disposal sites designated for long-term use within Long Island Sound, (2) the currently used sites are authorized under short-term authority that will be expire at various times in the relatively near future for each site (as early as February 2004 for the CLIS site), (3) periodic dredging and dredged material disposal is unavoidably necessary to maintain safe navigation and marine commerce, (4) the MPRSA's requirements authorize an EPA designation for any long-term dredged material disposal site. The legal, environmental and navigation/commerce aspects of the purpose and need for EPA's action are discussed below.

2.1 Legal

The legal regime applicable to dredged material disposal in Long Island Sound is described in significant detail in Chapter 1 and will be discussed here only as it relates to the purpose and need for EPA's present effort. MPRSA § 106(f) states the disposal of dredged material from either federal projects or non-Federal projects involving more than 25,000 cubic yards (19,114, cubic meters) of material must comply with the requirements of the MPRSA. While the Corps can "select" disposal sites for short-term use under MPRSA § 103 (*i.e.*, for a term of up to 5 years with the potential for an extension of up to 5 years), only EPA can "designate" a disposal site for longer-term use. In addition, the Federal Government entered a Settlement Agreement with various private parties in settlement of the case of *Fishers Island v. Corps of Engineers* (No. CV-95-4374) (E.D.N.Y.) (June 18, 2002), and agreed that, among other things, after June 18, 2002 (the effective date of the Settlement Agreement), disposal of dredged material from projects subject to MPRSA § 106(f) would only occur at disposal sites that had either been designated by EPA or selected by the Corps consistent with the provisions of MPRSA §§ 102(c) and 103(b), respectively. *See* Settlement Agreement ¶¶ 16 and 35.

There are presently no dredged material disposal sites designated by EPA for long-term use in Long Island Sound. Only EPA is authorized to designate disposal sites for long-term use. Since the 1992 amendments to the MPRSA, use of Corps-selected sites is limited to a maximum of five years with a possible five-year extension. This plainly raises the problem that the time period for using current Corps-selected sites will expire in the relatively near future. For example, as discussed in Chapter 1, the time for use of the CLIS disposal site — the principal site used in the central region of the Sound in recent years — will expire in mid-

February 2004. Use of the remaining selected sites in the Sound, including WLIS, will expire within no more than five years after their next use by any project covered by MPRSA § 106(f) (*see* September 27, 2001, Letter from Brian E. Osterndorf, Corps, to Arthur J. Rocque, Jr., CTDEP; Appendix A-4).

Unless sites for dredged material disposal in the western and central regions of Long Island Sound are designated by EPA, dredged material from projects covered by MPRSA would require alternative disposal options. Even if one of the currently active sites is determined to be environmentally suitable or even environmentally the best site[1], it could not be used after its selection periods have expired. Further, if EPA neither designates these sites nor some alternative sites, then other future disposal sites would need to be selected by the Corps for short-term use, applying the same site selection criteria that EPA applies in a site designation study. In that event, only short-term use would need to be considered for a Corps site selection study.

EPA's site designation evaluation seeks to address these problems. It will enable the agency to determine whether or not the CLIS disposal site ought to remain available for use beyond February 2004, and whether the WLIS site should also remain available for long-term use. It will also consider other dredged material disposal alternatives as well (see Chapter 3). In addition, by determining whether one or more disposal sites may be appropriately designated for long-term use, this effort may help to minimize how often the Corps and EPA need to engage in future site selection studies under the Corps' short-term site selection authority. Finally, the Federal Government is hopeful that this public disposal site designation process might, in the long run, help to prevent, minimize or narrow the scope of any future litigation related to dredged material disposal in Long Island Sound (April 16, 1998, Letter of Agreement between the New England Regional Office of the EPA and the New England Division of the Corps).

2.2 Environmental

EPA designation of a long-term dredged material disposal site(s), if an appropriate site(s) can be located, would offer several possible environmental advantages. First, as mentioned above, where use of a site under the Corps site selection authority is due to expire, designation by EPA is the only way to authorize continued use of that site even if the site is environmentally suitable or even environmentally preferable to all other sites. This possible problem will be faced at the CLIS site in February 2004 and will be faced at the WLIS site in the relatively near future. EPA's site designation studies will determine whether or not these or any other sites should be designated for continued long-term use.

Related to the above issue, EPA has concluded that it is *generally* preferable to designate disposal sites in areas which have been used for disposal in the past, rather than to locate sites in new, more pristine areas (40 CFR § 228.5(e) expressing general preference for historically used sites). The other agencies participating with the Interagency Group have agreed that

[1] MPRSA § 103(b) makes clear that a site used under the Corps site selection authority may later be considered for possible designation by EPA.

this general preference should be applied in this evaluation (Appendix D; USACE, 2002c). Since use of the Corps-selected sites will soon expire, the only way that these sites can continue to be used in the long-term is if they are designated by EPA. This study effort will determine whether or not these sites ought to be so designated.

It should also be noted that Congress has directed that the disposal of dredged material should take place at EPA-designated sites when such sites are available. *See* MPRSA §103(b). Thus, Congress appears to have identified an environmental preference for use of EPA-designated sites. The current study effort will determine whether one or more such sites should be made available in the western and central regions of Long Island Sound.

Another possible environmental benefit that could result from this effort is that if a disposal site were designated, a "site management plan" would be developed for that site consistent with MPRSA § 102(c)(3). Future environmental benefits could result from such enhanced site management. Finally, even if this study effort were not being conducted for the purpose of considering potential site designations, it would have the potential environmental benefit of producing information concerning the past effects of disposal at existing sites that could help guide future management of dredged material disposal.

As mentioned above, in addition to evaluating existing open-water disposal sites, EPA has reviewed alternatives to open water disposal. These alternatives are described in Chapter 3.

2.3 Navigation and Marine Commerce

Periodic dredging and, therefore, dredged material disposal are essential for ensuring safe navigation and facilitating marine commerce. This is because the natural processes of erosion and siltation results in sediment accumulation in federal navigation channels, harbors, port facilities, marinas, and other important areas of our water bodies. This accumulation of sediment can reduce water depths to the point that it threatens or prevents safe navigation and interferes with marine commerce. Moreover, unsafe navigational conditions not only threaten public safety, but can also pose an environmental threat from an increased risk of spills from vessels involved in accidents.

Designation of a long-term disposal site would assist the Federal Government, states, local communities, and private parties in planning to meet dredging needs with the knowledge that a specific, potential disposal site exists. Of course, as explained in Chapter 1, each particular project would still need to satisfy all applicable permitting requirements, including demonstration of suitability for disposal at a particular site, before it could be issued a permit for actual disposal.

The ability to dredge and affordably dispose of dredged material is critical to maintaining the large amount of navigation-dependent businesses and industries in the western and central Long Island Sound region. Through their direct, indirect, and induced impacts, navigation related businesses contribute more than $3 billion in gross state product (GSP) ($1.55 billion in Connecticut and $1.45 billion in New York) and account for more than 27,700 jobs in this two-State area. These industries also produce $441 million in tax revenues in this area (USACE, 2001d; USACE, 2003b; Appendix E).

Important businesses that rely to varying degrees on dredging and disposal, include shipping (especially the movement of petroleum fuels and the shipping of bulk materials), recreational boating, boat sales and repair, marinas, commercial fishing, and waterborne passenger transportation (ferries). These businesses provide important supplies and services to the Long Island Sound region, and employ thousands of people. Continued access to harbors, berths, and mooring areas is vital to ensuring the continued economic health of these industries, and to preserving the ability of the region to import fuels, bulk supplies, and other commodities at competitive prices. The continued ability to dredge and dispose of dredged material will preserve the significant economic benefits that these industries bring to the region in terms of sales, income, employment, and tax revenues. More detailed information regarding the economic importance of these industries is contained in Section 4.14.2 and in Appendix E.

For Long Island Sound, a dredging needs assessment was completed in 2001, and projected future dredged material quantities from the western and central regions were estimated, based on contact with 555 navigation-dependent facilities (146 responded) (USACE 2001b). Data on dredging needs and the importance of navigation to various water-dependent industries was solicited via a questionnaire distributed to port and harbor facilities and coastal municipalities around the Sound. Interviews were also conducted with major port users. The study consolidated the geographical areas of dredging needs into logical groupings referred to as "dredging centers" (Figure 2-1). Table 2-1 shows the total dredging needs estimated for the western and central regions of Long Island Sound over the next 20 years. Maintenance needs include maintenance dredging of Federal river and harbor channels based on surveys and historic shoaling trends, and maintenance of channels and facilities carried out under permit as developed from the questionnaire respondents and from evaluation of past permit activities (to account for facilities that did not participate in the questionnaire). Improvement needs include a select few proposals for Federal project deepening that have been evaluated in recent years and are expected to be re-examined within the 20-year period of the dredging needs analysis (principally the main channel deepening of New Haven Harbor). The dredging needs assessment is contained in Appendix B.

The majority of the total projected volume of dredging needs indicated in Tables 2-1 and 2-2 comes from maintenance dredging of larger federal navigation projects, chiefly the Bridgeport, New Haven, Housatonic River, Milford Harbor, and Norwalk Harbor areas. Maintenance dredging is necessary to maintain channel depths authorized by Congress to permit continued navigation. However, many of the private facilities contacted indicated that their need to perform maintenance work was, in part, dependent on predictable access to their facilities via federal channels that are maintained to their authorized depths (Appendix B). Thus, the projected dredging volumes for the western and central regions of Long Island Sound include a mix of large and small federal navigation projects and many small private dredging projects (marinas, boatyards, and harbors, and a few large private projects). This is consistent with the pattern of dredging in Long Island Sound over the past 20 years (CTDEP, 1998).

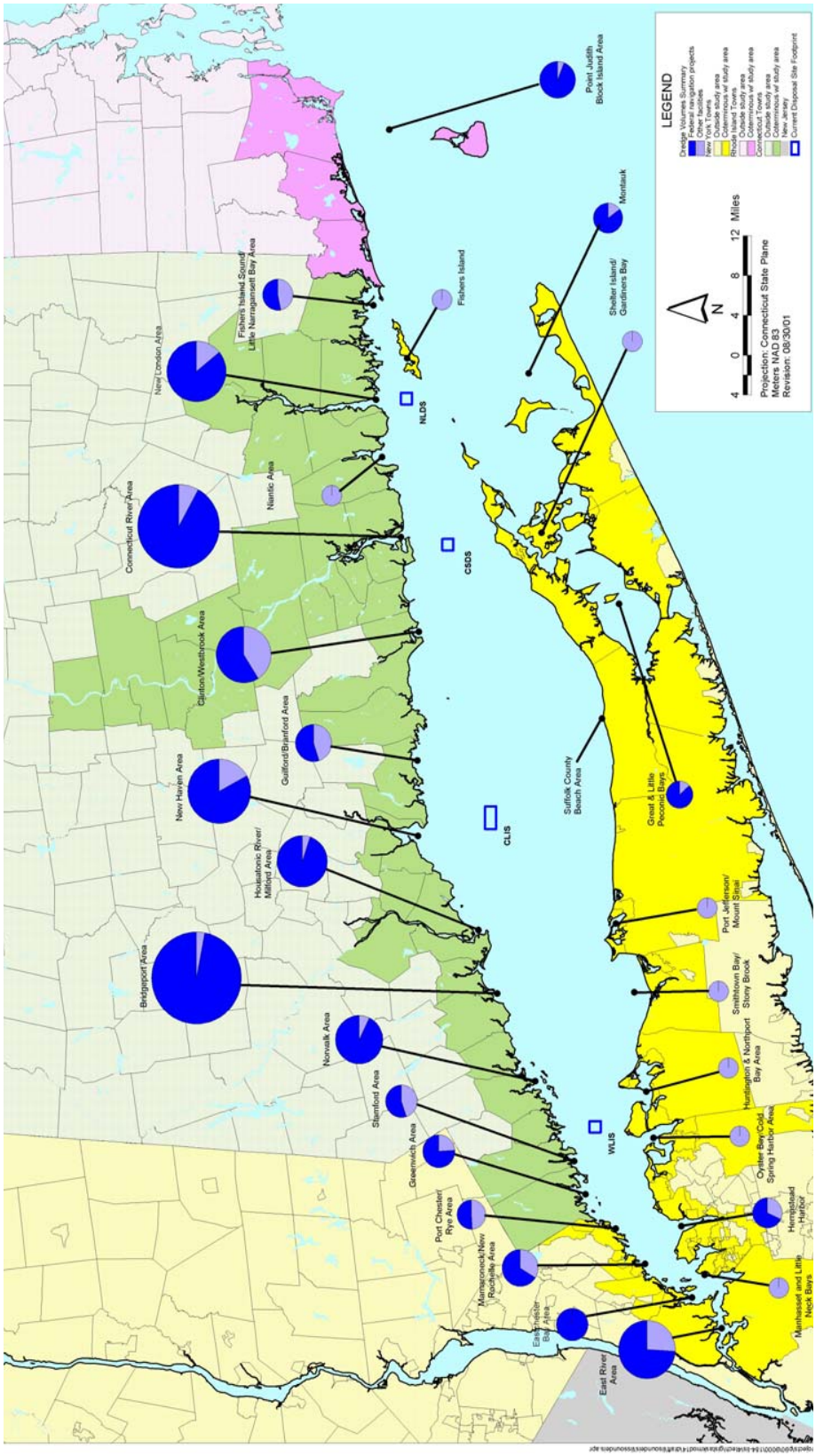

Figure 2-1. Dredging Centers Identified During the Dredging Needs Survey 2001

Source: USACE, 2001b; Appendix B

Table 2-1. 20-Year Estimated Dredging Needs for Western and Central Long Island Sound

Dredging Type	Volume (cubic yards)[1]
Maintenance Needs	
Federal navigation projects (Corps)	13,878,800
Other Federal and private projects	6,045,900
Projections [2]	683,000
Total Maintenance Needs	20,607,700
Improvement Needs	993,650
Total Maintenance and Improvement	21,601,350

[1] For cubic meters, multiply by 0.765.
[2] Based on historic dredging cycles for facilities that did not respond to the survey but that have required dredging in the past.
Source: USACE 2001b; Appendix B

Table 2-2. Projected Corps Federal Navigation Projects in the Western and Central Regions of Long Island Sound, 2001-2020

Dredging Center Project	Volume (cubic yards)[1]
Guilford/Branford	429,000
New Haven	2,348,000
Housatonic/Milford	1,273,600
Bridgeport	5,483,300
Norwalk	1,065,500
Stamford	241,100
Greenwich	259,200
Port Chester/Rye	145,000
Mamaroneck/New Rochelle	423,600
Eastchester Bay	240,000
Hempstead Harbor	171,500

[1] For cubic meters, multiply by 0.765.
Source: USACE 2001b; Appendix B

The volumes listed in Table 2-1 include federal navigation projects undertaken by the Corps, other Federal actions, and private projects. The future dredging project volumes listed in Table 2-2 are specific to federal navigation projects undertaken by the Corps. Some of this volume may prove to be unacceptable for unconfined ocean disposal after project specific testing and evaluation. Other portions of this volume may prove better suited for beneficial use alternatives such as beach nourishment with sandy dredged materials from harbors with adjacent beaches. As stated above, EPA's designation of an open-water disposal site does not authorize the disposal of material from any particular project or harbor. Designation only

makes a site available for consideration as an open-water disposal option for each proposed dredging project in the area.

The above information indicates a substantial need for dredged material disposal capacity in the western and central region of Long Island Sound over the next 20 years. The current Corps-selected sites cannot legally meet that need because of their near-term expiration dates. Therefore, EPA's site designation studies will investigate whether one or more disposal sites should be designated for long-term use to meet some or all of this disposal need.

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