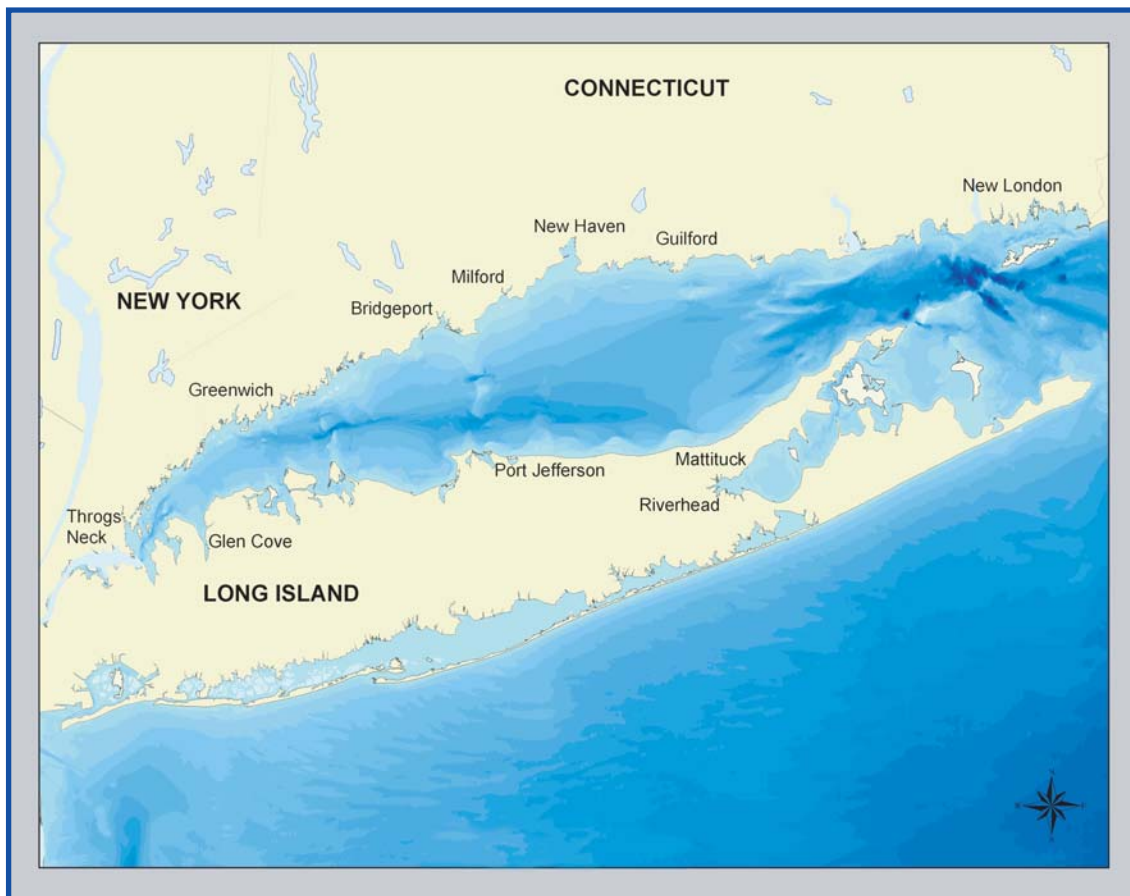


Environmental Impact Statement for the Designation of Dredged Material Disposal Sites in Central and Western Long Island Sound, Connecticut and New York

Final Executive Summary

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

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



US Army Corps
of Engineers®

April 2004

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**FINAL
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:
U.S. Environmental Protection Agency
New England Region
One Congress Street
Suite 1100
Boston, MA 02114-2023

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 Final Environmental Impact Statement (EIS) describes the environmental effects of designating a dredged material disposal site(s) in western and central Long Island Sound. The EIS 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.

The Final EIS is being circulated for 30 days for review and comment. Comments should be sent to Ms. Jean Brochi 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. Jean Brochi, Telephone (617) 918-1070 or e-mail Brochi_Jeanlis@epa.gov.

Comments on this Final Environmental Impact Statement must be received by 5 p.m. on May 17, 2004.

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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).

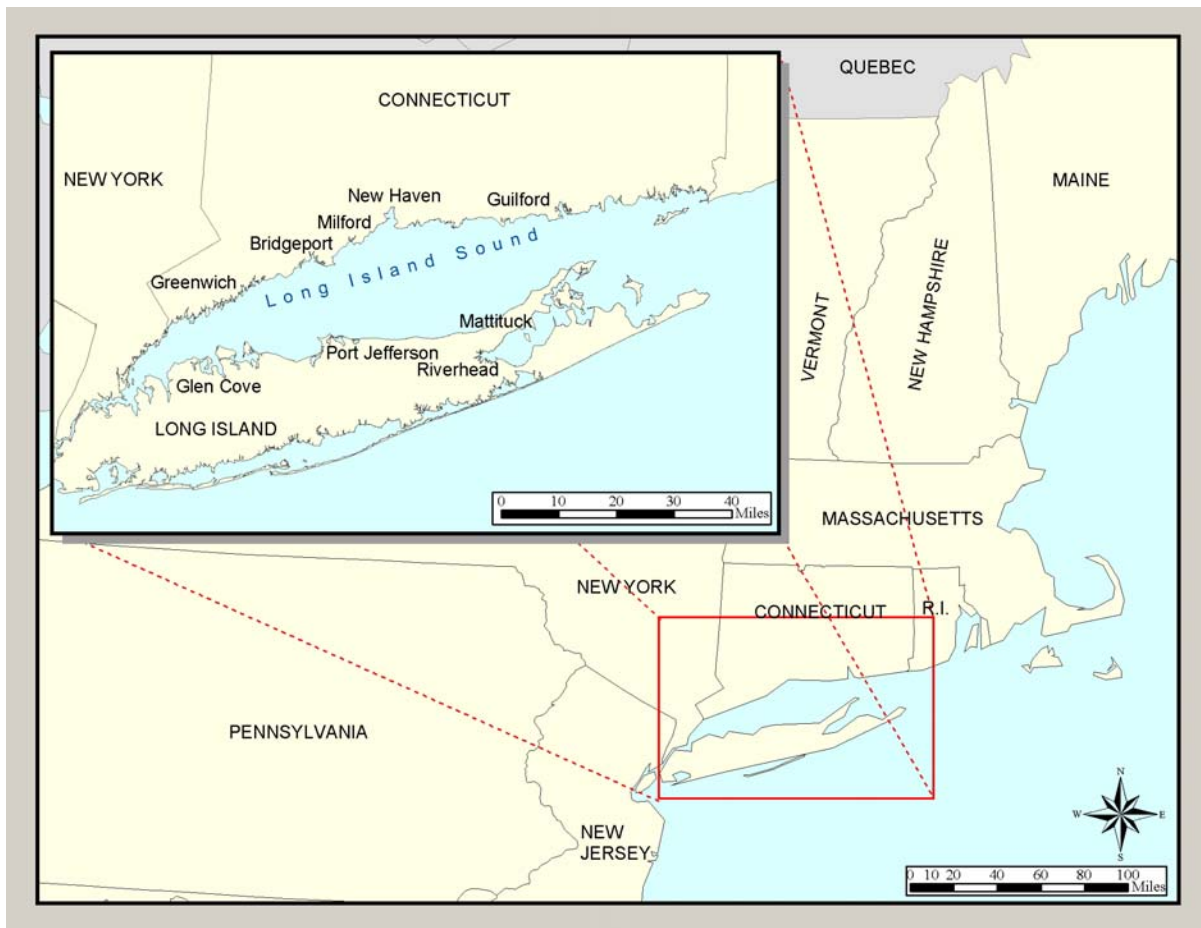


Figure ES-1. Location of Long Island Sound

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 have been used recently as 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 Final Environmental Impact Statement (EIS) 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 EIS as a cooperating agency.

On September 12, 2003, a Notice of Availability of the Draft EIS was published in the *Federal Register*. The Draft EIS was distributed to the public during the beginning of September, 2003. The original 45-day comment period was extended twice, to December 15, 2003. Six public hearings were held during the public comment period. Over 400 letters, facsimiles, and e-mails were received by EPA during the public comment period with comments on the Draft EIS. Responses to these comments have been prepared and are included in Appendix K, "Responses to Comments on the Draft EIS."

This Final EIS and Site Management and Monitoring Plans are being circulated for 30 days of public review and comment. Comments may be provided in writing (by mail, facsimile, or electronic mail) as indicated in the text box. Information regarding the Final EIS is also posted on the EPA website (<http://www.epa.gov/region01/eco/lisdreg/>).

Any comments received during the 30-day review period will be responded to and included with the Record of Decision. EPA will also prepare a Final Rulemaking. The Final Rulemaking will, state what the agency decision is, identify all alternatives considered, and state whether all practical means to avoid or minimize

Commenting on the Final EIS

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

- By mail to
Jean Brochi
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
Brochi_Jeanlis@epa.gov

environmental harm from the proposed action have been adopted. Site designation will become effective 30 days after publication of the Final Rulemaking in the *Federal Register*.

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 recently used sites are authorized under short-term authority that have or 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 open-water sites for this EIS 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 EIS included 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 modified 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 EIS were further analyzed. This EIS 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

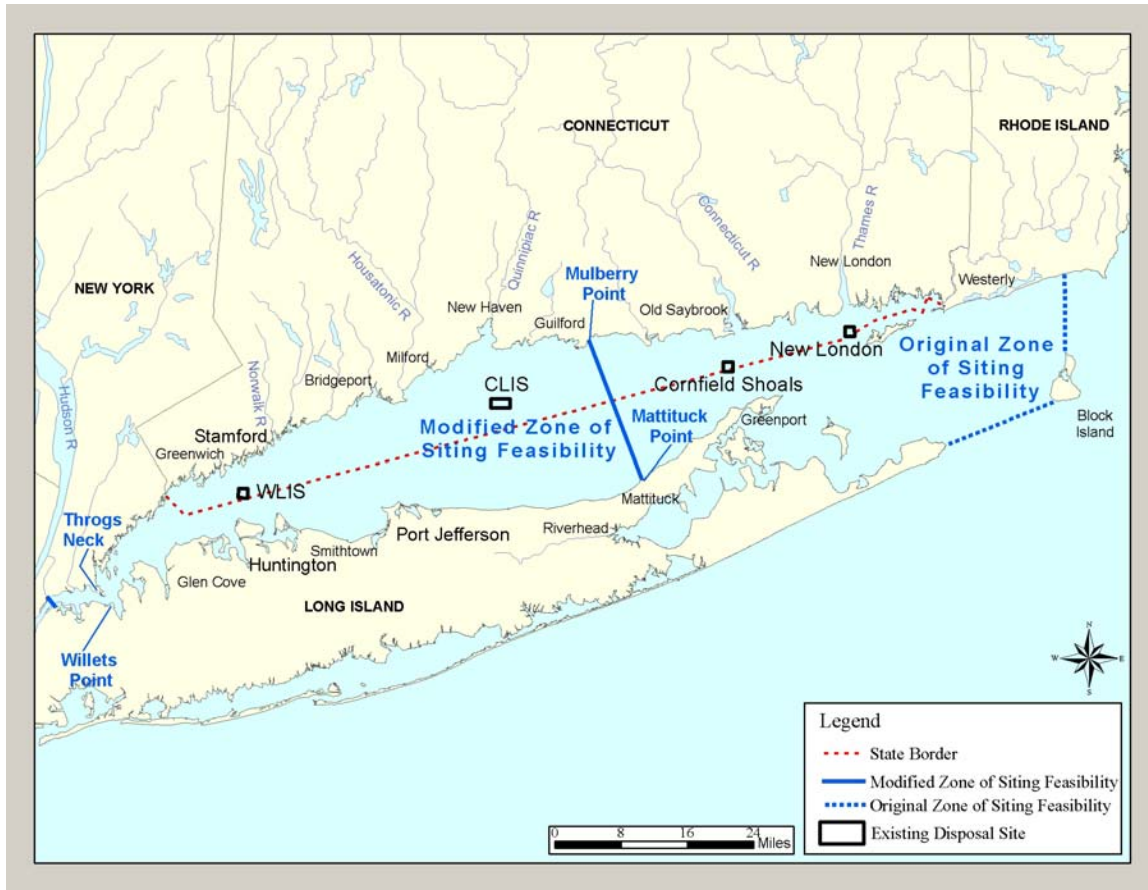


Figure ES-2. Original and Modified ZSF

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).

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 nautical miles (4 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 and approximately 6 nautical miles (11 kilometers) north of Crane Neck Point, New York, 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 and approximately 8 nautical miles (15 kilometers) north of Mount Misery Point, New York, 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 was used as a disposal site under MPRSA until its term as a Corps-selected site expired on February 18, 2004. It continues to be used by Clean Water Act projects. 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 and over 10 nautical miles (18.5 kilometers) north of Shoreham Beach, New York, in water depths from 59 to 74 feet (18 to 22.5 meters). The sediments at the site are predominantly 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.

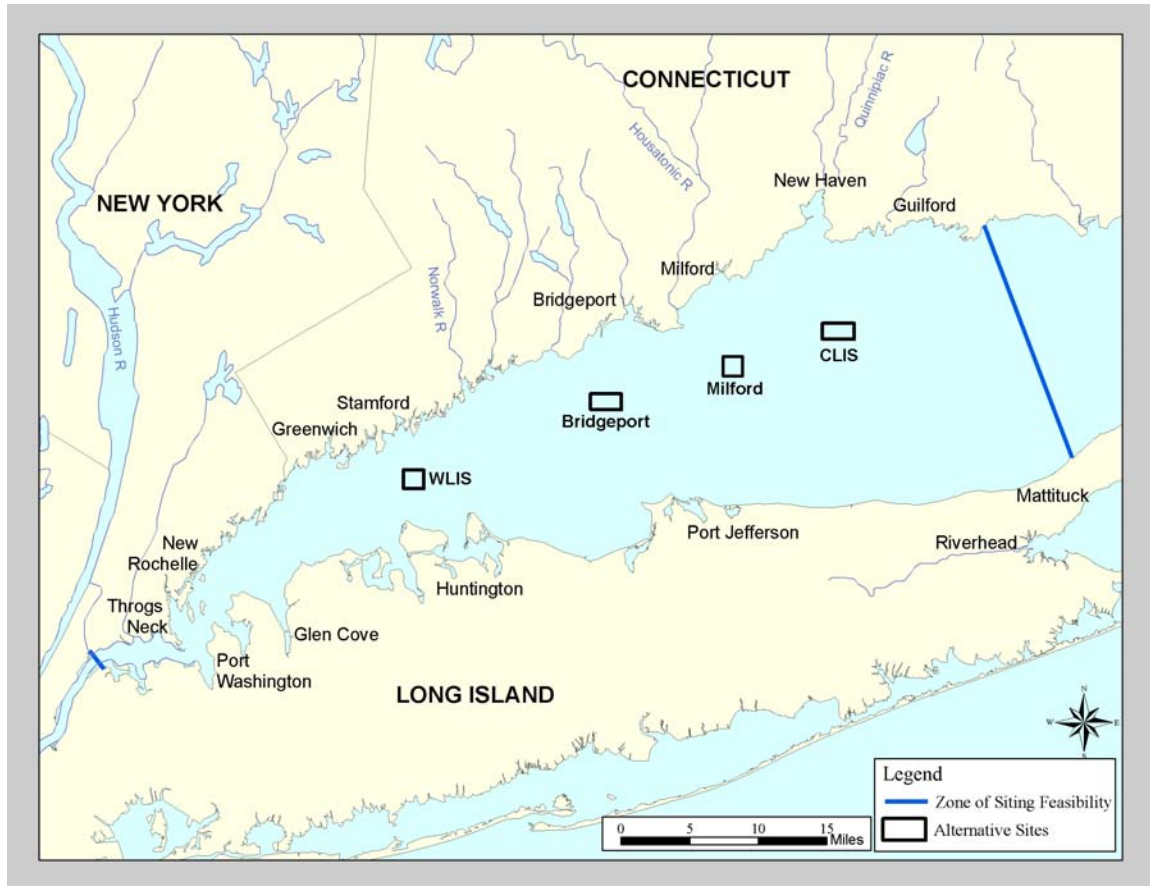


Figure ES-3. Alternative Open-Water Dredged Material Disposal Sites Evaluated in this EIS

In addition to the four alternative dredged material disposal sites, EPA analyzed the No Action Alternative. In cases involving federal decisions 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 of any size 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 ocean disposal outside of Long Island Sound, development of a regional dredged material containment facility, beneficial uses of dredged material, upland sites, dredged material treatment options, and transport of material outside of the Long Island Sound region. 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 EIS.

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, 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.

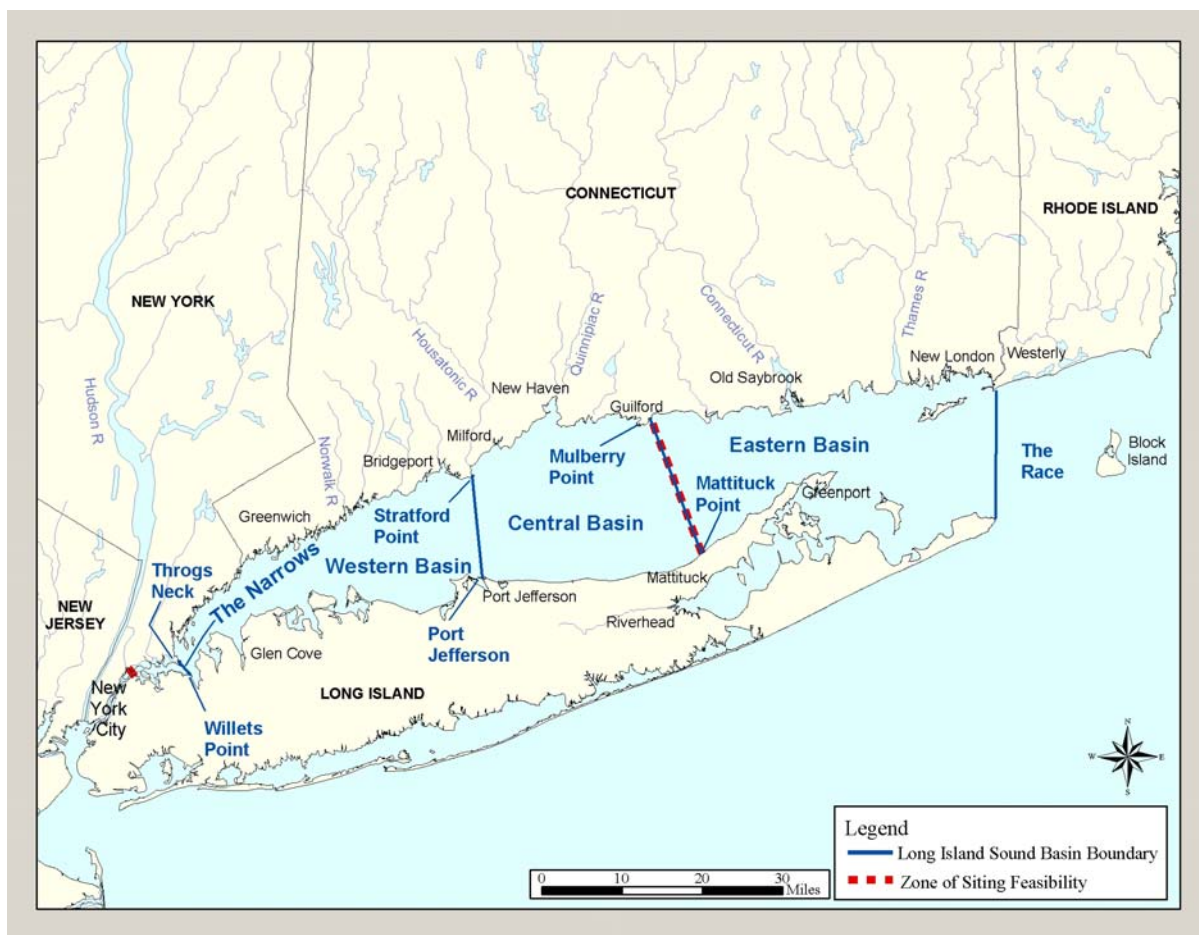


Figure ES-4. Long Island Sound

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 EIS 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). Average catch-per-unit effort is highly variable from year to year and relatively similar among the

alternative sites. However, average fall catch-per-unit-effort has increased at all alternative sites from 1984-2000 and spring catch-per-unit-effort has fluctuated around a mean of 500, with peak years in 1985, 1989, and 1990. 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 to moderate 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. WLIS is a productive area of Long Island Sound; for the three years sampled, WLIS had above average catch-per-unit-effort for a number of species, compared to the average of other analysis areas and all of Long Island Sound for these years. 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.

During the EIS process, EPA consulted with NMFS on the EFH findings. NMFS stated that use of ongoing and mutually agreed upon seasonal constraints on disposal operations (June 1 to October 1) as well as the overview program described in the SMMP (Appendix J) document, and concluded that no conservation recommendations are needed to protect EFH managed under the MSA at the 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.

During EFH consultation NMFS also noted that the WLIS site has been managed in such a way that disposal activities are minimized when the most sensitive American lobster lifestages are most "at risk." Although the American lobster population was decimated in the summer and fall of 1999, the potential for and probability of recovery exists. In light of that potential, NMFS recommended that the management measures invoked at the WLIS disposal site remain in place, should the site be designated.

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

Use of the alternative sites by whales and endangered birds would be on an incidental basis only. Although Atlantic sturgeon (threatened in inland waters) and Shortnose sturgeon (endangered) are listed on the Connecticut and New York (Shortnose sturgeon only) endangered and threatened species lists, the abundance of these species near the sites appears to be relatively low based on available information. In addition, these species are only present seasonally, from April to November. The incidental occurrences of Kemp Ridley, Loggerhead, Leatherback, Green, and Hawksbill sea turtles in the Long Island Sound area indicates that there is a slight chance that they may inhabit or travel through part of the alternative sites during the summer and fall. However, the frequency would be quite low during the colder months of winter and spring when most turtles are cold stunned by water temperatures.

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.

The U.S. Fish and Wildlife Service and the National Marine Fisheries Service have both concurred with the findings of the EIS that designation of the disposal sites (specifically WLIS and CLIS) is not likely to affect the species under their jurisdiction.

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 a shallower area 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 have been 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 CLIS disposal site overlaps with 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.

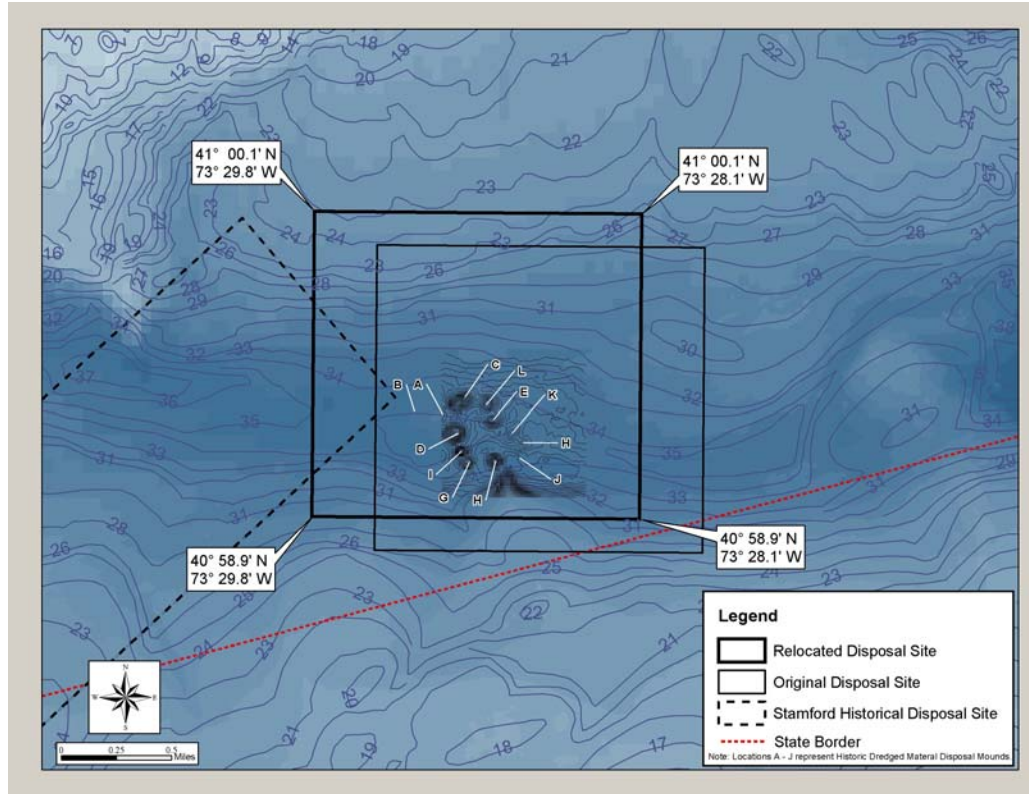


Figure ES-5. Reconfigured Site Boundary for WLIS

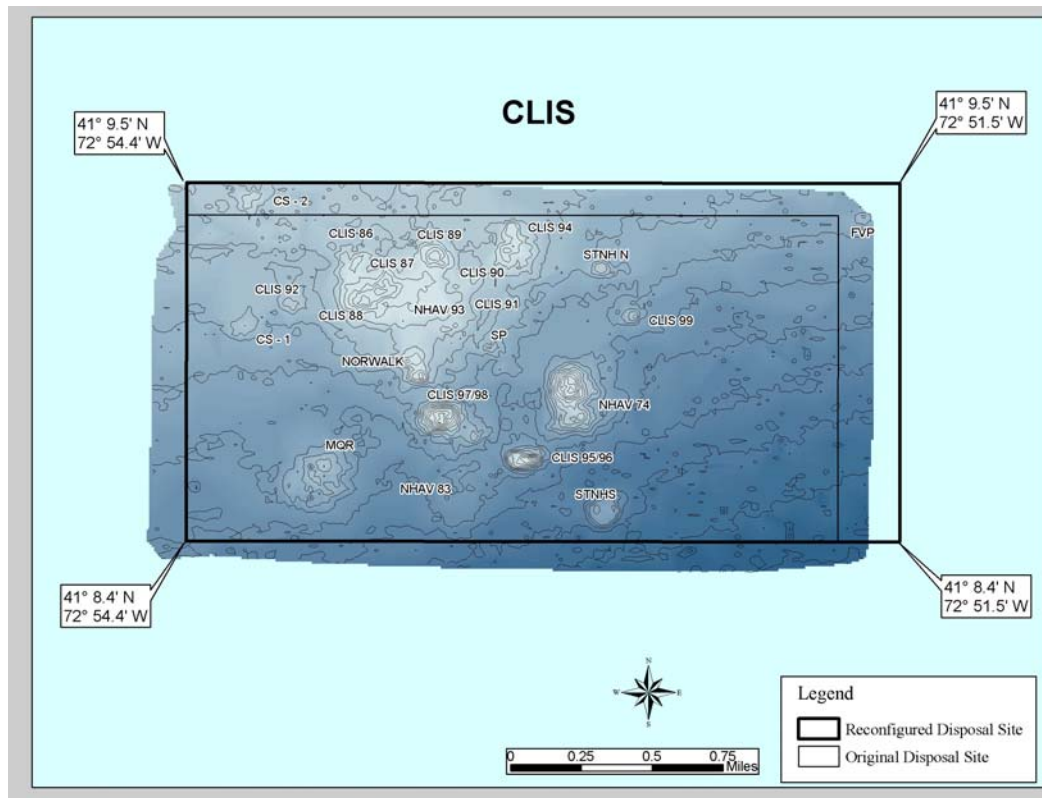


Figure ES-6. Reconfigured Site Boundary for CLIS

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