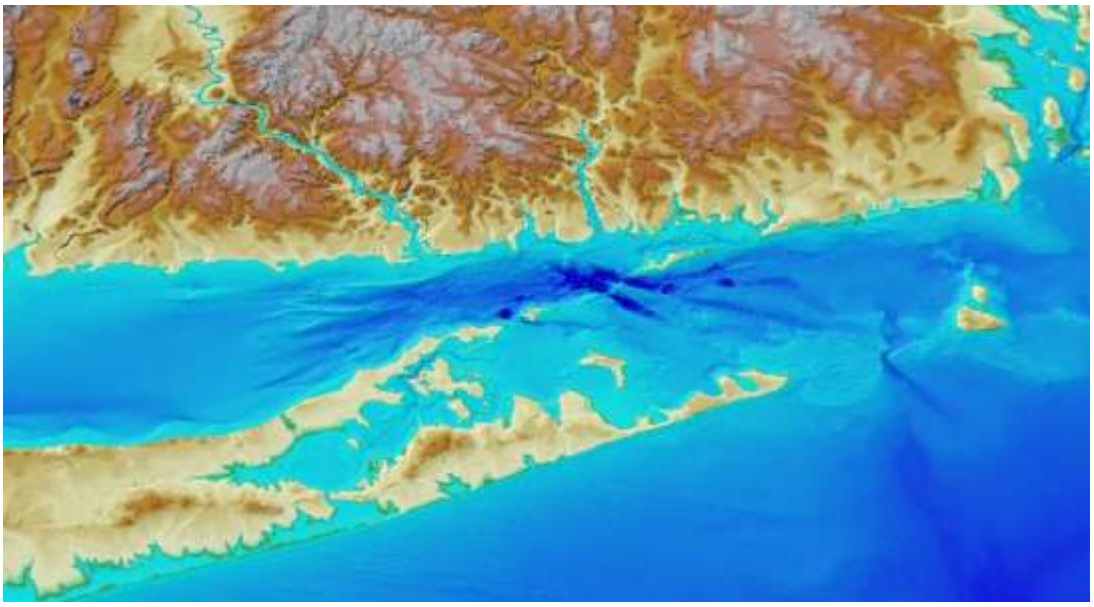
Supplemental Environmental Impact Statement for the Designation of Dredged Material Disposal Site(s) in Eastern Long Island Sound, Connecticut and New York

APPENDIX I

Draft Site Management and Monitoring Plan for Eastern Long Island Sound Disposal Site



The following document is a draft Site Management and Monitoring Plan (SMMP) for the Eastern Long Island Sound Dredged material disposal site (ELDS).

This document has been developed and agreed to pursuant to the Water Resources Development Act Amendments of 1992 (WRDA 92) to the Marine Protection, Research, and Sanctuaries Act of 1972 for the management and monitoring of ocean disposal activities, as resources allow, by the U.S. Environmental Protection Agency New England Office and the U.S. Army Corps of Engineers New England District.

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ACRONYMS AND KEYWORDS

aRPD	Apparent Redox Potential Discontinuity
CFR	Code of Federal Regulations
CPUE	Catch per Unit Effort
CSDS	Cornfield Shoals Dredged Material Disposal Site
CT	Connecticut
CTDEEP	Connecticut Department of Energy and Environmental Protection (formerly CT DEP)
CWA	Clean Water Act
CZM	Coastal Zone Management
DAMOS	Disposal Area Monitoring System
DEIS	Draft Environmental Impact Statement
DMMP	Dredged Material Management Plan
EIS	Environmental Impact Statement
EFH	Essential Fish Habitat
ELDS	Eastern Long Island Sound Dredge Material Disposal Site
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
ITM	Inland Testing Manual
LIS	Long Island Sound
LISS	Long Island Sound Study
MPRSA	Marine Protection, Research, and Sanctuaries Act of 1972
NAD83	North American Datum 1983
NBDS	Niantic Bay Dredged Material Disposal Site
NEPA	National Environmental Policy Act
NLDS	New London Dredged Material Disposal Site (formerly NLDN)
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NY	New York
NYDOS	New York State Department of State
NYSDEC	New York State Department of Environmental Conservation
OSI	Organism Sediment Index
QA	Quality Assurance
RHA	Rivers and Harbors Act
RIM	Regional Implementation Manual
SMMP	Site Management and Monitoring Plan
TOC	Total Organic Carbon
USACE-NAE	U.S. Army Corps of Engineers, New England District
USCG	U.S. Coast Guard
USFWS	U.S. Fish and Wildlife Service
WLIS	Western Long Island Sound Dredged Material Disposal Site
WRDA	Water Resources Development Act of 1992 (Public Law 102-580)
QA	Quality Assurance
QAPP	Quality Assurance Project Plan

1.0 INTRODUCTION

Long Island stretches eastward from New York City to Montauk over a distance of 110 miles and has a maximum width of 23 miles. It has a population of approximately 8 million (2014 census). The Long Island Sound region is adjacent to one of the most densely populated and industrialized regions in North America. Connecticut has a population of approximately 3.6 million (2014 census) with the highest population density being found in communities along western and central Long Island Sound, and in the greater Hartford area.

Cargo and petroleum products are shipped through Long Island Sound to and from the New York City area and several ferries traffic people and goods between Long Island and Connecticut. Maintenance of adequate navigation depth in marine terminals, port facilities, and private marinas is vital to the economics of the Long Island Sound (LIS) region. Both commercial and recreational industries rely on the utility of such areas. To ensure continued use, economic viability and safety of the region's navigational channels and navigation-dependent facilities, periodic dredging must be performed to remove accumulated sediment. The US Army Corps of Engineers New England District (USACE-NAE) estimates that 52.9 million cubic yards (mcy) of material will be needed to be dredged over the next 30 years in Long Island Sound (2015-2045). The eastern region needs are 22.6 mcy. Dredging needs exceed the capacity of 40,000 mcy available for open water disposal sites and alternatives in Long Island Sound.

Pursuant with the Marine Protection, Research, and Sanctuaries Act (MPRSA), 33 U.S.C. §§ 1401 et seq.), the EPA has selected the Eastern Long Island Sound dredged material disposal site (ELDS) as the preferred alternative to provide for the long-term needs of dredged material disposal for the states of Connecticut and New York. ELDS includes a portion of the previously used New London site (NLDS).

Prior to use of the site, each project must receive a permit issued by USACE under Section 103 of the MPRSA, 33 U.S.C. §§ 1413 (hereafter cited as "MPRSA §103") with concurrence by the EPA. As discussed further in this document, the USACE-NAE will coordinate with resource agencies on an individual project basis, as needed, for ESA, EFH, and other consultations.

Management plans for designated ocean dredged material disposal sites are required pursuant to §102(c) of the MPRSA, as amended by §506(a) of the Water Resources Development Act (WRDA) of 1992. In accordance with MPRSA (section 103(a)) disposal activities at the site "will not unreasonably degrade or endanger human health, welfare, or amenities, or the marine environment, ecological systems, or economic potentialities." The purpose of this Site Management and Monitoring Plan (SMMP) is to synthesize prior site monitoring results and outline a management plan and monitoring program for the proposed site that complies with the requirements of MPRSA.

The SMMP serves as a framework to guide the development of future project-specific sampling and survey plans created under the monitoring program. The data gathered from the

monitoring program will be routinely evaluated by EPA, USACE-NAE, and other agencies such as the National Marine Fisheries Service (NMFS), U.S. Fish and Wildlife Service (USFWS), and state regulatory agencies (see Section 9.0), to determine whether modifications in site usage, management, testing protocols, or additional monitoring are warranted. The SMMP will be reviewed on an annual basis by EPA and USACE-NAE and will be revised as necessary.

To ensure that ocean dredged material disposal sites are managed to minimize adverse effects of disposal on the marine environment, the Marine Protection, Research, and Sanctuaries Act (MPRSA) §102(c) as amended by §506(a) of the Water Resources Development Act (WRDA) of 1992, requires the completion of a Site Management and Monitoring Plan (SMMP) upon designation of a site [MPRSA Section 102(c) (3)].

MPRSA further requires that an SMMP established for sites like the ELDS include a schedule for review and revision of the plan to occur not less than 10 years after adoption of the plan, and every 10 years thereafter. Prior to the revision for the ELDS SMMP, EPA and USACE – NAE will review the plan annually and to ensure that the intent of the original procedures and protocols continue to meet the management objectives of the ELDS, and will continue to be used. EPA and USACE-NAE are requesting comment on this document.

The ELDS site encompasses 50% of the western portion of the existing New London Disposal Site (NLDS), along with an adjacent area immediately west of the NLDS (*i.e.*, Sites NL-Wa and NL-Wb). The ELDS (western portion) is located to the south of the mouth of Thames River estuary. It has a total area of 2.0 nmi^2 (8.6 km^2). The closest upland points to the alternative site are Goshen Point, Connecticut, approximately 1.2 nautical miles (nmi), or 2.2 kilometers (km), to the north, and Fishers Island, New York, 1.4 nmi (2.6 km) to the southeast.

The NLDS portion of the ELDS has been an active open-water dredged material disposal site with an area of 1.0 nmi^2 (3.4 km^2). Water depths range from approximately 46 to 79 feet (14 to 24 m). Most of the site is located within Connecticut waters, with the remainder of the site located in New York State waters. The dredged material mounds can rise up to 14 to 20 feet (5 to 6 m) above the surrounding seafloor. The sediments at the site are heterogeneous, but consist predominantly of fine sand and silt/clay. The NLDS is bisected by a 1,000-foot (300-m) wide submarine transit corridor that was established to minimize conflicts between disposal buoy positions and submarine traffic to and from the Submarine Base in Groton, Connecticut; disposal operations are monitored by the USACE to maintain a minimum water depth of 46 feet (14 m) within the corridor.

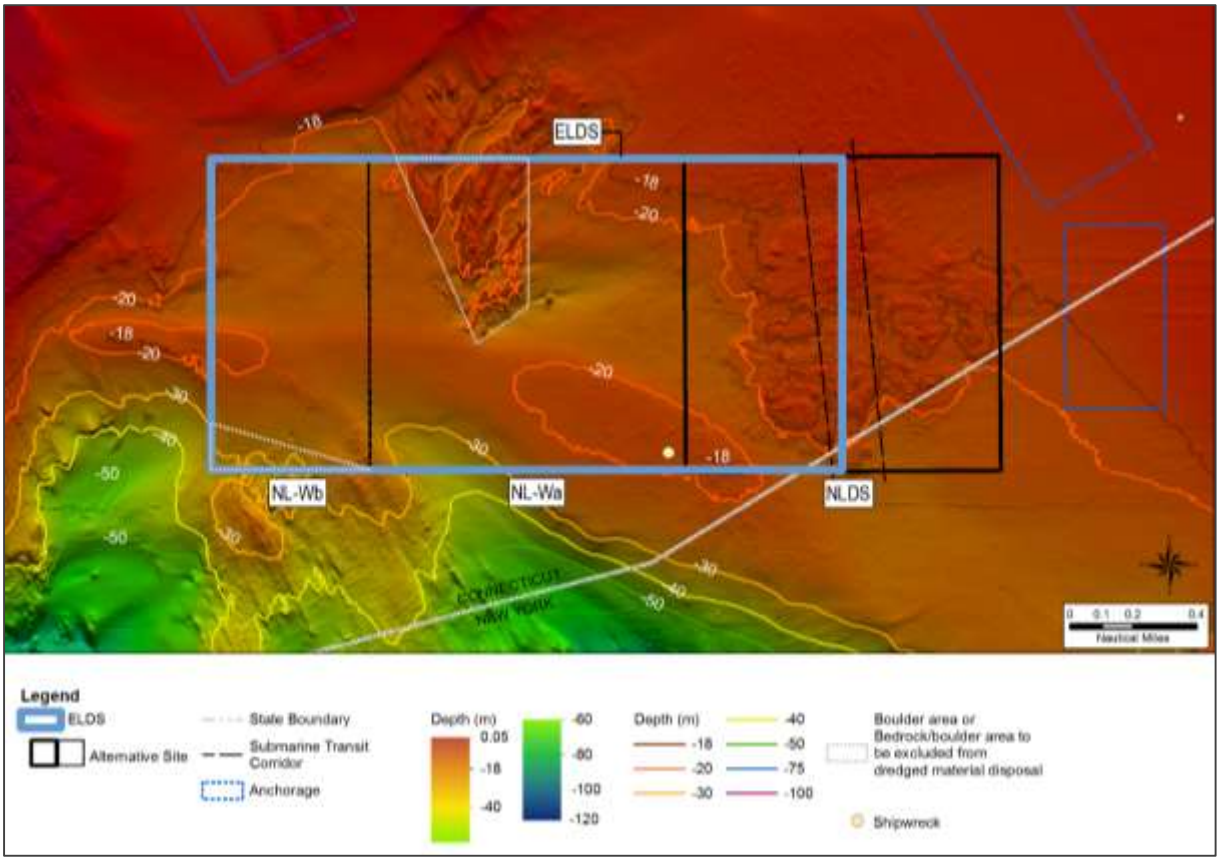

Figure 1. Location of the Eastern Long Island Sound Dredged Material Disposal Site (EPA, 2016).

The 1.5 nmi^2 western portion of the ELDS site was referred to as (site NL-Wa) and (Site NL-Wb) in the site designation. Site NL-Wa has an area of 1 nmi^2 (3.4 km^2). Water depths range from approximately 45 feet (14 m) in the north to 100 feet (30 m) in the south. Site NL-Wa consists of mostly sandy areas, but also contains an area of boulders and rocks in the northern part of the site. The water depth of parts of the boulder area is shallower than 59 feet (18 m). Site NL-Wb has an area of 0.5 nmi^2 (1.7 km^2). It consists of an extension of the sandy areas of Site NL-Wa. The southwestern corner of the site contains an area of bedrock and boulders. Water depths at Site NL-Wb range from approximately 59 feet (18 m) in the north to 95 feet (28 m) in the south (EPA, 2016).

2.0 REGULATORY FRAMEWORK AND AUTHORITIES

The intent of this SMMP is to provide a management framework and monitoring program that strives to minimize the potential for adverse impacts to the marine environment from dredged material disposal at ELDS. To this end, the SMMP identifies actions, provisions, and practices necessary to manage the operational aspects of dredged material disposal at ELDS. Section 40 CFR § 228.10(a) of the Ocean Dumping Regulations requires that the impact of

disposal at a designated site be evaluated periodically.

2.1 Management

Management of the disposal site involves: regulating the times, quantity, and physical/ chemical characteristics of dredged material that disposed at the site; establishing disposal controls, conditions, and requirements; and monitoring the site environment to verify that potential unacceptable conditions which may result in significant adverse impacts are not occurring from past or continued use of the disposal site and that permit terms are met.

In addition, the plan also incorporates the six requirements for ocean disposal site management plans discussed in MPRSA § 102(c)(3), as amended. These are:

1. Consideration of the quantity of the material to be disposed of at the site, and the presence, nature and bioavailability of the contaminants in the material [§102(c)(3) Section II C];
2. A baseline assessment of conditions at the site [§102(c)(3) Section III];
3. A program for monitoring the site [§102(c)(3) Section IV];
4. Special management conditions or practices to be implemented at each site that are necessary for protection of the environment [§102(c)(3) Section V.A);
5. Consideration of the anticipated use of the site over the long term, including the anticipated closure date for the site, if applicable, and any need for management of the site after closure [§102(c)(3) Section VI);
6. A schedule for review and revision of the plan (which shall not be reviewed and revised less frequently than 10 years after adoption of the plan, and every 10 years thereafter) [§102(c)(3) Section VII).

40 CFR Section 228.10(c) requires that a disposal site be periodically assessed based on the available body of pertinent data. Recognizing and correcting any potential unacceptable condition before it causes an adverse impact to the marine environment or presents a navigational hazard to commercial and recreational water-borne vessel traffic is central to this SMMP.

The practices that will be applied to address these management goals at ELDS include coordination among Federal and state agencies, testing of material for acceptability for disposal at the site, review of general and specific permit conditions, review of allowable disposal technologies and methods, implementation of inspection, surveillance and enforcement procedures, periodic environmental monitoring at the site and at relevant reference sites for comparative evaluation, and information management and record keeping.

2.2 Monitoring

Section 40 CFR § 228.10(b) specifically requires consideration of the following types of potential effects when evaluating impact at a disposal site:

- Movement of materials into sanctuaries or onto beaches or shorelines [228.10(b)(1)];
- Movement of materials towards productive fishery or shellfishery areas [228.10(b)(2)];
- Absence from the disposal site of pollutant-sensitive biota characteristic of the general area [228.10(b)(3)];
- Progressive, non-seasonal, changes in water quality or sediment composition at the disposal site when these changes are attributable to materials disposed of at the site [228.10(b)(4)];
- Progressive, non-seasonal, changes in composition or numbers of pelagic, demersal, or benthic biota at or near the disposal site when these changes can be attributed to the effects of materials disposed at the site [228.10(b)(5)];
- Accumulation of material constituents (including without limitation, human pathogens) in marine biota at or near the site (i.e., bioaccumulation [228.10(b)(6)]).
- Evaluating compliance with CWA or MPRSA permit conditions and conduct enforcement actions where warranted and as appropriate;

The monitoring approach defined in this SMMP focuses on those factors that provide an early indication of potential unacceptable effects. The plan also incorporates ongoing regional monitoring programs in Long Island Sound that can provide additional information. The identification of unacceptable impacts from dredged material disposal at ELDS will be accomplished in part through comparisons of the monitoring results to historical (i.e., baseline) conditions, and in part through comparison to nearby reference locations.

If site monitoring demonstrates that the disposal activities are causing unacceptable impacts to the marine environment as defined under 40 CFR § Section 228.10(b), the site managers may place appropriate limitations on site usage to reduce the impacts to acceptable levels. Such responses may range from withdrawal of the site's designation to limitations on the amounts and types of dredged material permitted to be disposed or limitations on the specific disposal methods, locations, or schedule.

Any proposal for the open-water placement of dredged material from a particular project must begin with an examination of the nature of the material. Federal and non-Federal projects evaluated under MPRSA are subjected to the same qualitative analysis. In order to be approved for open-water placement, or most other placement options, dredged material must be found suitable by applying the tiered testing protocols and evaluating the results.

Material that includes silts, material with high organic content, and other shoal material from harbors and areas with a history of contamination and industrial use are subjected to additional

chemical testing to determine the relative likelihood of suitability. For materials exhibiting higher concentrations of contaminants in comparison to reference site values, project proponents may elect not to incur the cost of further testing and investigate non-open-water alternatives such as containment and treatment. For materials with chemical test results that do not exhibit high concentrations of contaminants, or where the project proponents wish to maintain the option of open-water placement and other uses, the sediment is subjected to further tests aimed at predicting the biological response to exposure to the material during different phases of the placement process. These tests are generally described as bioassay (toxicity) testing and bioaccumulation (tissue uptake of contaminants) testing.

The next tier of testing, the toxicity test, consists of exposing test organisms to the dredged material and comparing survivability rates to those of organisms exposed to reference and control materials. Where the dredged material exhibits greater toxicity to benthic test species than the reference sediments (using statistical tests and nationally developed interpretation guidance), project proponents may elect to forgo any further cost of testing for suitability for open-water placement and seek alternate disposal options. Otherwise, material that exhibits toxicity comparable to the reference sediments shall undergo bioaccumulation testing before any determination on suitability for open-water placement can be made. In general terms, bioaccumulation involves a long exposure of test organisms to the sediment followed by analysis of their tissues to determine the potential for uptake of contaminants form the dredged material. The test results are evaluated to determine the risk of exposure to ecological and human health.

Dredged material that is determined through these testing protocols to pose no unacceptable risk to the human or ecological health is deemed suitable for open-water disposal. These findings may be accompanied by specific management requirements, such as limitation on disposal rates to minimize water column concentrations.

2.3 Dredged Material Disposal Authorities

The primary authorities that apply to the disposal of dredged material in the U.S. are the Rivers and Harbors Act of 1899 (RHA), WRDA, CWA and MPRSA. The RHA regulates dredging and discharge of material in navigable waters and WRDA addresses research and funding in support of specific water resource projects for various needs (i.e., transportation, recreation). It also modifies other Acts, as necessary (e.g., MPRSA).

All dredging, dredged material transport, and disposal must be conducted in compliance with permits issued for these activities. Surveillance and enforcement responsibilities at the disposal site are shared between the USACE-NAE and EPA with assistance from the U.S. Coast Guard [33 USC Sec 1417(c)]. The permittee is responsible for ensuring compliance with all project conditions including placement of material at the correct location and within

applicable site use restrictions. EPA has enforcement responsibility under MPRSA. The EPA and the USACE-NAE will cooperate to ensure effective enforcement of permit violations.

Section 404 of the Clean Water Act (33 U.S.C. §1344) authorizes the USACE to issue permits for the disposal of dredged materials in the territorial sea, the contiguous zone, and ocean as long as the material meets guidelines developed by EPA pursuant to CWA §404(b)(1). EPA's guidelines are promulgated at 40 CFR Part 230. These guidelines set forth environmental standards and analytical requirements for use in determining when the USACE should authorize disposal of particular dredged material at a particular location. The USACE regulations governing the issuance of §404 permits are codified at 33 CFR Parts 320-338.

Because Long Island Sound is an estuary, it falls within the geographical jurisdiction of Section 404 of the Clean Water Act as described above. However, in 1980, Congress enacted the "Ambro Amendment," an amendment to the MPRSA requiring that the disposal of dredged material in Long Island Sound from all Federal projects and non-federal projects that exceed 25,000 cubic yards (19,114 cubic meters) of dredged material comply with the MPRSA provisions, also known as the Ocean Dumping Act.

Under Section 103 of MPRSA, the USACE-NAE is assigned permitting responsibility for dredged material, subject to EPA review and concurrence that the material meets applicable ocean disposal criteria. The USACE-NAE is required to use EPA-designated open-water disposal sites for dredged material disposal to the maximum extent feasible. If EPA designated sites are not available, the USACE-NAE may select ocean disposal sites. The USACE-NAE may select a site if a designated site is unavailable and the selected site may be used for two, 5-year periods.

All projects authorized for dredged material disposal at ELDS are required to obtain a cut State Water Quality Certificate from the CTDEEP pursuant to Section 401 of the CWA [33 U.S.C., § 1341]. A state water quality certificate is also required for Federal disposal projects that receive authorization from the USACE-NAE. To receive certification, the dredged material discharge must be consistent with the provisions of the CWA and the Connecticut Water Quality Standards (Sections 22a-426 through 22a-363f of the Connecticut General Statues - Structures, Dredging, and Fill) and water quality certification is made in conjunction with issuance of a state permit under this statute. In some cases applicants may qualify for authorization under a state Programmatic General Permit, which is a more expedited process (CTDEP, 2001).

3.0 MANAGEMENT PLAN

All dredged material projects using ELDS are subject to CWA Section 404, although private projects larger than 25,000 cubic yards and all Federal projects will also be authorized under

MPRSA Section 103. The site will be managed in a manner that ensures the following site management goals are met:

- Ensure and enforce compliance with permit conditions;
- Minimize loss of sediment from the disposal site;
- Minimize conflicts with other uses of the area;
- Maximize site capacity;
- Minimize environmental impact from sediments placed at the site; and
- Recognize and correct conditions that could lead to unacceptable impacts.

EPA and the USACE-NAE will jointly manage ELDS and will also coordinate with the states of Connecticut and New York. The effectiveness of the management approach depends on having efficient planning processes, consistent compliance and enforcement, a robust yet flexible monitoring plan, and an effective communication structure that includes timely receipt and review of information relevant to the site management goals. To this end, the New England Regional Dredge Team meets quarterly and includes participation by the relevant Federal and state agencies and standard agenda items of monitoring and compliance at open water sites including ELDS. In addition, EPA and USACE-NAE have an annual meeting dedicated to the review of monitoring data, setting of monitoring objectives, and scoping of investigations for each open water site.

Management of ELDS has historically included and will continue to include the following practices for the disposal site:

- Evaluation of the suitability of material for disposal in accordance with the applicable requirements for the specific type of project (i.e., MPRSA and CWA);
- Specification of disposal conditions, location, and timing in permits as appropriate (e.g., disposal will not occur between June 1 and September 30 to ensure that dredging windows for fisheries are met or disposal may be restricted during spring tides to ensure that water quality criteria are not exceeded outside the boundaries of the site);
- Enforcement of all permit conditions;
- Disposal specified to occur at the specified target coordinates (to be determined on an annual basis);
- To ensure compliance, all scows placing material at ELDS are required to utilize tracking instrumentation in accordance with the USACE-NAE Dredging Quality Management (DQM) system to allow determination of actual placement locations;
- Positioning of disposal coordinates are set each year with the intent of minimizing environmental impacts and maximizing long-term site capacity;
- Limiting the buildup of material in height above the bottom such that it is not a hazard to navigation or more likely to be mobilized by storm events;
- Conducting disposal site monitoring in a consistent, systematic manner; and

- Specification of de-designation (i.e., closure) conditions and dates as appropriate [§102(c)(3) Section VII).

3.1 Specific Management Practices

In addition, special management practices may exist at ELDS for individual projects based on site monitoring data and long-term management goals:

- Specification of the dredged material volume that can be placed at specific locations within the site or the total dredged material volume placed at the site;
- Modifications to the site designation or to disposal methods, locations, or time of placement; and
- Requirement for additional monitoring focused on a specific aspect of a project.

40 CFR Section 228.10(c) requires that a disposal site be periodically assessed based on the available body of pertinent data. Recognizing and correcting any potential unacceptable condition before it causes an adverse impact to the marine environment or presents a navigational hazard to commercial and recreational water-borne vessel traffic is central to this SMMP. Both agencies will cooperate to ensure effective enforcement of all disposal requirements. The MPRSA gives authority to EPA to enforce permit conditions.

The USACE-NAE will provide EPA with summary information on each project at two stages of the dredging and disposal process. A Summary Information Sheet will be provided when dredging operations begin, and a Summary Report will be submitted when dredging operations have been completed.

The following list represents special conditions that are to be applied to projects using ELDS. These conditions may be modified on a project-by-project basis, based on factual changes (e.g., administrative changes in phone numbers, points of contact) or when deemed necessary as part of the individual permit review process:

- At least ten working days in advance of the start date, the First Coast Guard District, Aids to Navigation Office shall be notified of the location and estimated duration of the dredging and placement operations.
- At least ten working days in advance of the start date, the Coast Guard Captain of the Port Long Island Sound shall be notified of the location and estimated duration of the dredging and placement operations.
- The Captain of the Port, Long Island Sound shall be notified at least two hours prior to each departure from the dredging site.
- The DQM system must be operational on each disposal scow and record each placement event. This information is automatically uploaded to a USACE-NAE database.

- For the initiation of placement activity and any time placement operations resume after having ceased for one month or more, the permittee or the permittee's representative must notify the USACE-NAE.
- The permittee must notify the USACE-NAE upon completion of dredging for the season by completing and submitting the form that the USACE-NAE will supply for this purpose.
- Except when directed otherwise by the USACE-NAE, all placement of dredged material shall adhere to the following: The permittee shall release the dredged material at a specified set of coordinates within the site. All placement is to occur at the specified coordinates with the scow at a complete halt. The USACE-NAE will provide the coordinates. This requirement must be followed except when doing so will create unsafe conditions because of weather or sea state, in which case placement within a specified distance (generally less than 350 ft.) of the specified coordinates with the scow moving only fast enough to maintain safe control (generally less than two knots) is permitted. Placement is not permitted if these requirements cannot be met due to weather or sea conditions. In that regard, special attention needs to be given to predicted conditions prior to departing for the placement site.
- EPA and the USACE-NAE (and/or their designated representatives) reserve all rights under applicable law to free and unlimited access to and/or inspection of (through permit conditions): 1) the dredging project site including the dredge plant, the towing vessel and scow at any time during the course of the project; 2) any and all records, including logs, reports, memoranda, notes, etc., pertaining to a specific dredging project (Federal or non-Federal); 3) towing, survey monitoring, and navigation equipment.
- If dredged material regulated by a specific permit issued by the USACE or Federal authorization is released (due to an emergency situation to safeguard life or property at sea) in locations or in a manner not in accordance with the terms or conditions of the permit or authorization, the master/operator of the towing vessel and/or the Disposal Inspector shall immediately notify the USACE-NAE of the incident, as required by permit. The USACE-NAE shall copy EPA on such notification no later than the next business day. In addition, both the towing contractor and the USACE-certified disposal inspector shall make a full report of the incident to the USACE-NAE and EPA within ten (10) days.

3.2 Modifications to the Management Plan

Based on the findings of the monitoring program, modifications to the site use may be required. Corrective measures such as those listed below, but not limited to, will be developed by EPA and the USACE-NAE.

- Stricter definition and enforcement of disposal permit conditions;

- Implementation of more conservative evaluation procedures on whether sediments proposed for dredging are suitable for open-water disposal;
- Implementation of special management practices to prevent any additional loss of contaminants to the surrounding area;
- Excavation and removal of any unacceptable sediments from the placement site (an unlikely, worst case scenario given that the permitting program should exclude such material from the site to begin with, and since excavation could make matters worse by releasing contaminants during the process);
- Closure of the site as an available dredged material placement area (i.e., to prevent any additional placement at the site).
- Use of marine mammal observers during disposal operations;
- Establishment of dredging windows;
- Compliance with Essential Fish Habitat (EFH) under the Magnuson Stevens Act and Endangered Species Act (ESA) concerns

In addition to management practices for the placement site and for individual projects, each SMMP must also include a monitoring plan as described in Section 6.0. Coordination and outreach should occur on both a regular and as needed basis and include state and Federal agencies, scientific experts, and the public. To ensure communications are appropriate and timely, site management activities and monitoring findings will be communicated through a combination of scientific reports and peer-reviewed publications, participation in symposia, and public meetings and fact sheets.

4.0 BASELINE ASSESSMENT

MPRSA 102(c) (3)(A) as amended by WRDA 92 requires that the SMMP include a summary of baseline conditions at the site. Baseline conditions are reported in the Environmental Impact Statement for the site designation (EPA, 2016). This section provides a brief site description and overview of disposal at ELDS, more detailed information is found in the SEIS, DAMOS reports, and monitoring data from EPA, CTDEEP, and the Long Island Sound Study.

4.1 Site Characteristics

Much of the seafloor in eastern Long Island Sound consists of an east-west trending depression with depths ranging from 100 to 200 feet (30 to 60 meters). The bottom topography is irregular due to submerged reefs and shoals, exposed bedrock, and scoured areas. Depressions in Long Island Sound formed as a result of erosion of sediment by tidal currents. Shoals are either areas of sediment deposition (such as the Mattituck Sill), or glacial deposits of rocks and boulders.

The ELDS site is a 2 x 1 nm area that encompasses the previously used NLDS site and previously studied areas (NL-Wa and NL-Wb). The following are the corner coordinates (NAD83): 41°16.81' N, 72° 04.57' W; 41°15.81' N, 72° 04.57' W; 41°16.81' N, 72° 04.57' W; 41°15.81' N, 72° 07.22' W. This location is approximately 10.4 km south of South End Point, East Haven, Connecticut. The boundary excludes a bedrock area to the north from disposal.

The NLDS site is a 1 x 1 nm area that has been used for disposal. The seafloor at the active NLDS slopes down toward the south; depths range from 46 feet (14 m) in the center of the site to 79 feet (24 m) at its southern boundary. The site has well-defined dredged material mounds, shown in regular bathymetric surveys by the DAMOS program (*e.g.,* AECOM 2009; 2012). In areas without mounds (*i.e.*, near the westernmost and southeastern parts of the site), the seafloor is comparatively flat. The seafloor of most of Site NL-Wa is also flat, with water depths predominantly between 60 and 80 feet (18 and 30 m) except the southern boundary which has a depth of 137 feet (42m). NL-Wb is similar with depths increasing to 95 feet (30M) at its southern end. However, the seafloor is shallower and more irregular in the boulder area in the north-central part of the site (also excluded from the boundaries of the ELDS, where water depths range from approximately 45 to 66 feet (14 to 20 m).

4.2 Physical Characteristics

The physical parameters that are important in the transport and dispersion of sediment include currents, waves, and the density structure of the water column and were studied in the SEIS. Currents directly affect the transport and dispersion of sediment by imparting shear stress to the surface sediments and transporting suspended sediments.

Long Island Sound has outlets at both ends: at The Race in the east and through the East River at the west. The mean range of the tide in the study increases from east to west, from 1.9 feet at Lake Montauk Harbor on the eastern tip of Long Island, to 7.4 feet at Greenwich Harbor and the New York Harbors in western LIS. Spring tides are generally less than a foot higher and lower than the mean. Extreme tides can be up to 2 feet lower, or 7 feet higher than the mean (EPA,2016).

The magnitude of the tides also varies vertically throughout the water column with stronger currents occurring near the surface. Peak near-surface tidal currents through The Race are typically 3.9 ft/s (1.2 m/s) and can exceed 5.3 ft/s (1.6 m/s) during spring tides (EPA, 2016). Westward from The Race, tidal current velocities decrease rapidly as Long Island Sound widens. Tidal currents in the western and central basins are typically 0.7 to 1.0 ft/s (0.2 to 0.3 m/s).

Near-bottom currents are strongest in eastern Long Island Sound, with peak near-bottom velocities of 2.0 to 2.3 ft/s (0.6 to 0.7 m/s) during spring tides. Near-bottom currents weaken toward western Long Island Sound to only 0.7 ft/s (0.2 m/s).

As part of the physical oceanography study for the SEIS, significant wave heights were recorded at seven mooring stations during three seasons. Four mooring stations (see Figure 2) were located in eastern Long Island Sound (Stations 1, 2, 3, and 7) together with wave measurements at the CLIS buoy. Wave height in the deeper waters of eastern Long Island Sound were homogenous compared to Block Island sound waves which were larger and for longer periods. Mean significant wave heights in eastern Long Island Sound are largest in the winter and maximum wave heights reached 8 feet (2.5 m).

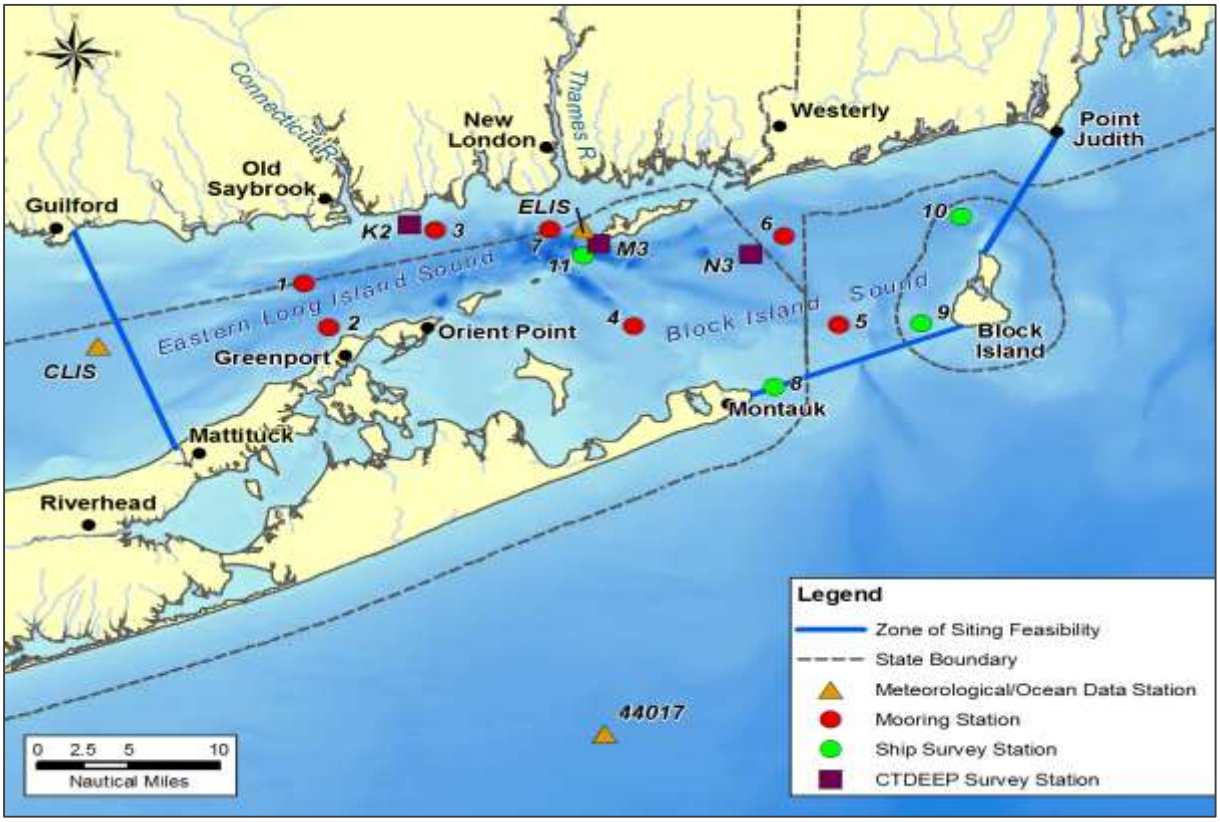

Figure 2: Station locations of meteorological/ocean buoys, as well as mooring and ship survey stations (EPA, 2016)

In recent years, the largest wave heights in Long Island Sound occurred on August 28-30, 2011 (Tropical Storm Irene) and October 28-31, 2012 (Superstorm Sandy). The significant wave heights during these storms peaked at 13 feet (4 m) at the CLIS buoy. The wave periods during these unusual storms are important to sediment transport because the depth to which wave motions extend increases with the wave period. During winter storms the dominant wave periods reach up to 5 or 6 seconds (s) in Long Island Sound; during Tropical Storm Irene and Superstorm Sandy, longer wave periods were observed with values reaching 8 s at the CLIS buoy.

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 determined by current speed, particle size, shape, density, and any friction or cohesion exerted by adjacent sediment grains.

As part of the PO study, the bottom stress was simulated for conditions during Superstorm Sandy (October 28-31, 2012). This storm produced the largest significant wave height ever observed in Long Island Sound (13 feet [4 m]). The extreme value analysis for significant wave heights for summer-fall conditions suggests that this wave height would occur once every 30 years. The maximum sustained (15-minute average) wind speed of 46 knots (23.6 m/s) occurred on October 29, 2012 during the Superstorm Sandy.

Stability of dredged material at the sites was assessed using the models to assess the shear stress on bottom of ELDS. The maximum bottom stress values during 2013 were below .75 Pa for ELDS with the exception of the southwestern corner of the site, located in an area of bedrock and boulders, where the maximum bottom stress is 0.76 Pa. The relatively low maximum bottom stresses at the ELDS are consistent with the observations made by the DAMOS program at the NLDS site which compared pre-storm and post-storm bathymetric surveys and concluded that there was little movement of the dredged sediments due to a major storm (SAIC, 2003). Low bottom stress is also consistent with the topography of the NLDS, which indicates that surface sediments are not reworked by storms and tidal currents (*e.g.*, SAIC, 2004; AECOM, 2009).

Climate change may result in changes to physical conditions of Long Island sound due to an increase in storm frequency and intensity. Increase in storms may result in unexpected shoaling of sediments and coastal erosion. These storms will result in additional dredging needs but may also present additional opportunities for beneficial use of dredged material.

4.3 Sediment and Water Quality

Total Organic Concentration (TOC) in eastern Long Island Sound sediments in the area between Bartlett Reef and Mattituck Sill is less than 0.5% in most areas. The mean TOC concentration measured at the ELDS (NLDS portion) was 2.4% representing disposal of material.

The predominant grain size within the ELDS was sand, although sediments were on average finer-grained within the NLDS portion (due to the disposed dredged material) than at areas outside of the NLDS. Specifically, at the NLDS, the mean sand content was 53%, while the mean sand content at areas outside the NLDS ranged from 72% to 85% (Table 1). The mean silt and clay content at the NLDS was 39%, which was approximately 2.5 times higher than the mean silt and clay content at all other areas outside the NLDS (mean of 18%). The highest silt and clay content was 78%, which was located in the area of the NLDS that received most of the dredged material in the previous decade (AECOM, 2009).

The predominant sediment grain size observed during the 2014 SPI/PV survey throughout most of the ELDS was a fine sand layer overlying silt and clay. These grain sizes were consistent with findings by a more extensive SPI/PV survey conducted in 2007 at the NLDS and at off-site reference stations (AECOM, 2009); they were also consistent with the findings of the 2015 sediment chemistry survey.

Table 1. Mean Grain Size and TOC Content in Sediments at ELDS

Site	2015 Sediment Chemistry Survey				2013 Benthic Survey				2014 SPI/PV Survey
	Gravel	Sand	Silt and Clay	Total Organic Carbon	Gravel	Sand	Silt and Clay	Total Organic Carbon	Predominant Grain Size
	Percent				Percent				
New London Alternative									
NLDS	9.4	54.7	35.9	1.7	7.3	50.6	42.1	3.0	Fine sand, overlying silt+clay
NL-Wa	2.2	85.2	12.6	0.5	6.3	79.7	14.0	1.3	
NL-Wb	2.2	82.9	15.0	1.0	n/a				Fine sand
Off-site – east of NLDS	0.4	71.8	27.8	0.4	n/a				Very fine sand

Source: EPA, 2016

Metal, PAH, Pesticides, and PCBs concentrations were tested in 2015 (EPA, 2016). Most were below the National Oceanic and Atmospheric Administration [NOAA] Effects Range-Low [ER-L] and Effects Range-Median [ER-M] values. The 2010 assessment of PAHs at the Seawolf Mound at the NLDS was conducted by the DAMOS program through the collection of 16 vibracores in 2010 (AECOM, 2012). The 2010 survey results indicated that PAH concentrations in the surface sediment (upper 1.7 feet [0.5 m]) were similar across the Seawolf Mound stations and were consistent with pre-dredge characterization of the capping material. Only one sample had a HMW PAH concentration slightly above the ERL value, but the total PAH concentrations of all individual stations was below the ERL value.

In order to be determined as suitable for placement at ELDS, sediment must meet chemical and biological criterion that are defined as protective of water quality. In addition, screening level modeling is performed to further evaluate the potential for water column effects as part of the suitability determination. Given this level of testing, the SMMP does not require specific water column monitoring at ELDS. Rather, it relies on the National Estuary Program's Long Island Sound Study's (LISS) routine measurements; if issues are identified by this monitoring that indicate a potential relationship to ELDS, then a monitoring plan will be developed consistent with LISS methodologies.

ELDS is expected to exhibit similar water quality conditions to the central basin of Long Island Sound. The average annual salinity (30 psu) is expected to be higher than those sites farther to the west and water temperatures in the summer and fall are expected to be slightly lower.

Minor spatial variations of bottom temperatures in the eastern region of LIS were observed as part of the site designation. Water entering from Block Island Sound was slightly cooler than in Long Island Sound throughout the summer (June-August). The southern side of the Long Island Sound had the warmest bottom temperatures in the summer.

During the PO study, the highest near-bottom salinity in Long Island Sound occurred consistently at near The Race, where the inflow from Block Island Sound is most influential. The lowest salinity values were measured consistently on the southern side of Long Island Sound furthest from the mouth of the Connecticut River.

The water column in the Sound is well-mixed from fall through late spring, but increased freshwater runoff and increasing water temperatures cause buoyant, warmer water to become layered over more dense, colder water during the summer and early fall. Hypoxic events, prevalent in the summer in the western and central Long Island Sound, do not extend to eastern Long Island Sound. Water column concentrations of contaminants measured at the Cornfield Shoals and at the Central Long Island Sound were low or not detected.

The bottom sediments in the area of Long Island Sound where ELDS is located are composed primarily of fine silts and clays, characteristic of a low-energy environment. Although some of the sediment placed at the site has contained a higher fraction of coarse material than the ambient sediment, the consistent, rapid return of areas within NLDS that have been the target of dredged material placement to a healthy benthic community similar to set reference areas confirms the success of the suitability testing procedures.

The vigorous circulation in the eastern basin of Long Island Sound ensures that the water properties are rapidly mixed in both the horizontal and vertical dimensions. Consequently, measurements of water quality parameters (salinity, temperature, turbidity, dissolved oxygen etc.) show only subtle variations. The temporal variability associated with seasonal cycles in runoff and biological productivity are a much more substantial factor that affect the water quality in eastern Long Island Sound.

4. 4 Bioaccumulation

Previous studies reviewed clam, worm, and lobster tissue at the NLDS site (EPA, 2004). Most recently, four dredging projects with bioaccumulation data were examined as part of the site designation. Data included worm *(Nereis virens)* and clam *(Macoma nasuta)* bioaccumulation testing and comparisons to risk-based tissue concentrations. The projects evaluated included the Americas Styrenics project (2014), US Coast Guard Academy (2013), Patchogue River Federal Navigation Project (2011), and the North Cove Federal Navigation

Project (2003). For all projects no bioaccumulation tissue exceeded FDA Action/Tolerance Levels for protection of human health. In addition, risk model results did not exceed risk values for carcinogenic and non-carcinogenic risks from exposure through the food chain (EPA, 2016).

4.5 Living Resources

Zooplankton include metazooplankton (organisms larger than 200 µm) and microzooplankton (organisms between 35 and 200 µm in size). Overall, the seasonal patterns in metazooplankton abundances and species composition over the last 60 years seem to be relatively unchanged in Long Island. Specifically, peak abundances during the periods 1952-1953, 2002-2004, and 2008-2009 occurred between April and June of each year; minimum abundances occurred between December and February.

Routinely reported taxa have included the following: Arthropoda (copepods, mysids, crab larvae, amphipods, barnacle nauplii, and cladocerans); Annelida (polychaete larvae); Mollusca (gastropod and bivalve larvae); Echinodermata (sea star larvae); Chordata (*Oikopleura* sp.); Bryozoa; and Chaetognatha (*e.g.*, the arrow worm, *Sagitta elegans*). Copepods accounted for 80 to 90% of the abundances. The seasonal metazooplankton cycles are dominated by the copepods *Acartia hudsonica, Temora longicornis,* and *Pseudocalanus* sp. in winter and spring, and by the copepods *Acartia tonsa, Paracalanus crassirostris,* and *Oithona similis* in the summer and fall.

As for phytoplankton, there is a distinct decreasing gradient in mesozooplankton biomass and abundances from west to east in Long Island Sound. Based on 2002 to 2009 data from the CTDEEP zooplankton monitoring program, the mean annual total mesozooplankton abundance is 4 and 3 times higher in western and central Long Island Sound, respectively, compared to eastern Long Island Sound.

The benthic community within the ELDS (NLDS, Site NL-Wa, and Site NL-Wb) is primarily made up of the three major taxonomic groups: Annelida, Arthropoda, and Mollusca (EPA, 2016).

All of the stations assessed during the 2014 SPI survey (EPA, 2016) at the ELDS were classified as Stage III succession except for the two westernmost stations at Site NL-Wa. Sediments at the NLDS were heavily bioturbated with numerous burrows and evidence of subsurface feeding. The stations were classified as either Stage I on III, Stage II on III, or Stage III. Stations at NL-Wb exhibited Stage II sucession with a fairly dense shell layer. The shell lag and pebbles on the substrate had encrusting and attached epifauna on them suggesting a fairly stable substrate. The aRPDs at the NLDS ranged from 1.9 to 4.7 cm with a mean of 3.1 cm, indicating good habitat quality. At Site NL-Wa, the aRPDs was at least 2.8 cm at the various stations, also indicating good habitat quality. Conditions were similar at Site WL-Wb; sediments from all four stations were bioturbated with some evidence of

subsurface feeding, and the shell lag and pebbles also had encrusting and attached epifauna, suggesting a fairly stable substrate. Reference stations located 1.5 nmi (2.8 km) to the east from the NLDS (*i.e.*, Stations NLON-REF) had evidence of two polychaetes typical of Stage III succession. These organisms were *Saccoglossus kowaleswski* as evidenced by its distinctive fecal coil on the surface, and *Chaetopterus variopedatus* as evidenced by its thick parchment tube in the sediment through which it pumps water. The aRPD at Stations NE-REF ranged from 2.5 to 6.8 cm with a mean of 4.6 cm. At Stations NLON-REF, the aRPD ranged from 2.2 to 4.6 cm with a mean of 3.6 cm. These depths are indications of good habitat quality (EPA, 2016).

Additional surveys of mounds at the NLDS have shown that the benthic community readily recolonizes, with Stage I/II communities well established as soon as eight months after a disposal event and with historic mounds showing Stage III communities. In addition, surveys show that all benthic communities are similar to those found at off-site reference stations (EPA, 2016).

Table 2. Ecological Parameters of Benthic Infauna for the ELDS (2013 Benthic Survey)

Site	No. of Samples	Statistics	Total Individuals	Species Richness (R)	Diversity Index (H')	Pielou's Evenness (J')
New London Alternative						
NLDS	8 [1]	Minimum	259	60	2.84	0.68
		Maximum	875	100	3.80	0.83
		Mean	**615**		**3.30**	**0.75**
		Total Species Richness		**208**		
NL-Wa	11	Minimum	187	33	1.32	0.38
		Maximum	703	91	3.46	0.85
		Mean	**399**		**2.76**	**0.69**
		Total Species Richness		**172**		
Off-site	6	Minimum	59	21	2.33	0.53
		Maximum	1,874	78	3.23	0.88
		Mean	**762**		**2.83**	**0.71**
		Total Species Richness		154		

Source: EPA, 2016

Commercial/Recreational Fish and Shellfish Resources

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 105 fish species; however, only a few of them are considered year-round residents (Gottschall et al., 2000). Most finfish species such as scup, bluefish, and striped bass migrate through the area in response to seasonal variations in water temperature, salinity, and access to spawning and

nursery grounds in Long Island Sound.

Finfish abundance and distribution show several patterns. The overall abundance of finfishes and the species diversity has remained fairly stable since 1984 (EPA, 2016). However, western and central Long Island Sound have shown significantly higher abundances compared to eastern Long Island Sound, based on CTDEEP data from 1984 to 2012 (Figure 3). This is likely a result of more extensive mud habitat in western and central Long Island Sound that supports greater fish densities (USEPA and USACE, 2004). Particularly, the shallow mud and transitional substrates adjacent to the western and central basins in Long Island Sound have the highest average catch per unit effort (CPUE).

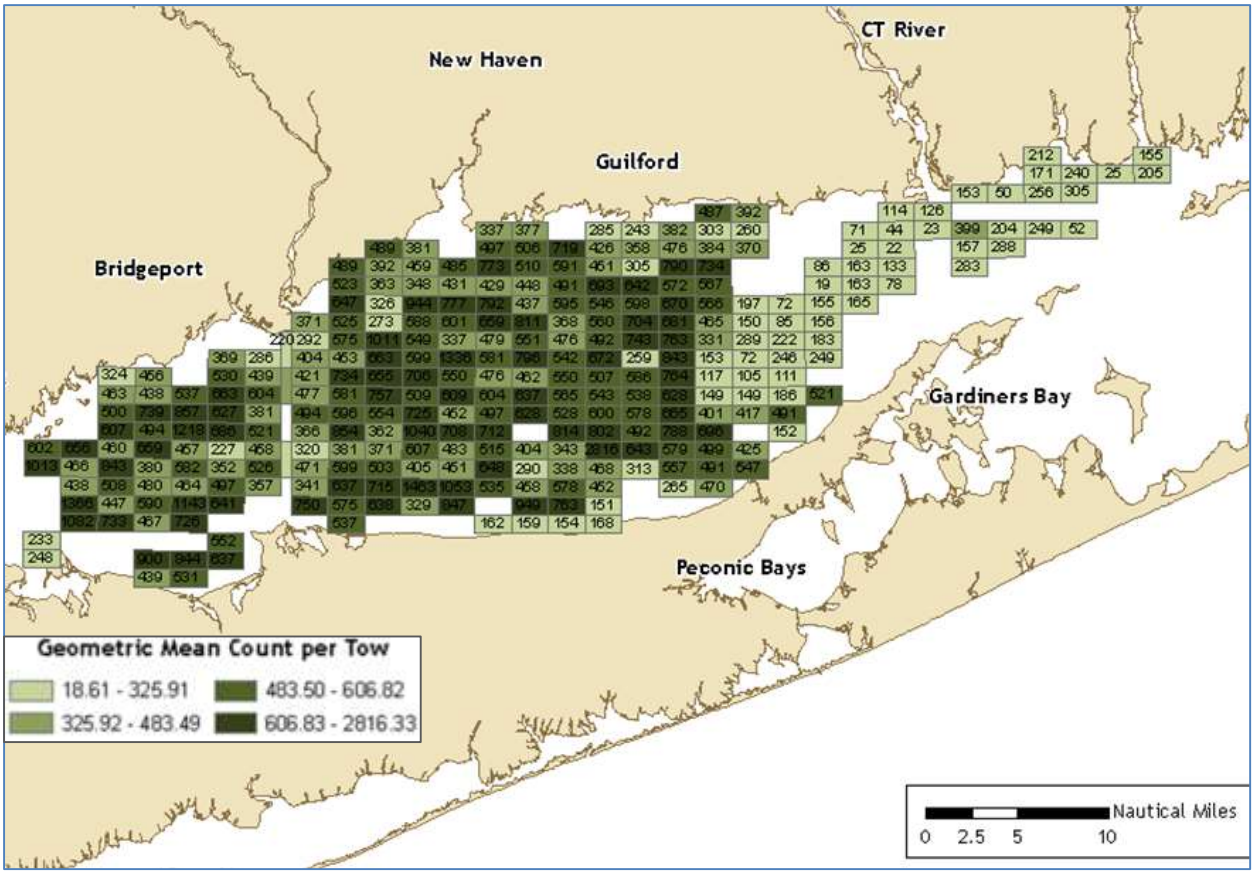

Figure 3. Mean finfish abundance per tow by location during the CTDEEP Long Island Sound Trawl Surveys, 1984-2012 (Source: CTDEEP, unpublished data, August 2013).

In 2013, trawl data was collected in eastern LIS. At the NLDS, the most abundant finfish species present was scup (1,137 individuals); it also had the greatest biomass. There was no significant difference between the abundance or CPUE near and off of the three alternative sites evaluated in the site designation for species of interest identified during the survey, namely scup, winter flounder, striped bass, bluefish, windowpane flounder, and striped sea robin (Table 4).

Table 3. Average Catch per Unit Effort for Finfish Species of Interest for the eastern region of LIS

Species of Interest		Average Catch per Unit Effort (CPUE)		P-value
		Near-site	Off-site	
Primary	Scup	8.19	7.40	0.919
	Winter flounder	0.18	0.29	0.530
	Striped bass	0.02	0.01	0.519
	Bluefish	0.01	0.00	0.374
Secondary	Windowpane flounder	0.12	0.86	0.309
	Striped sea robin	0.02	0.07	0.329

Source: EPA, 2016

Important commercial or recreational bivalve mollusk resources within Long Island Sound include the bay scallop (*Argopecten irradians*), eastern oyster (*Crassostrea virginica*), northern quahog/hard clam (*Mercenaria mercenaria*), softshell clam (*Mya arenaria*), and surf clam (*Spisula solidissima*). Lobster *(Homarus americanus),* longfin squid *(Loligo pealeii),* horseshoe crab *(Limulus polyphemus),* channeled whelk *(Busycon canaliculatum),* and knobbed whelk *(Busycon carica).* With the exception of lobster and longfin squid, commercially and recreationally important shellfish resources of Long Island Sound occur in shallow nearshore waters.

Based on the CTDEEP data, lobsters, which were most abundant on muddy substrate, occurred Sound-wide in all seasons during the study period (i.e., 1984 to 2000). Prior to 1999, lobsters were most abundant in western and central Long Island Sound. Since then, much of the remnant lobster population has been concentrated in deeper waters of central Long Island Sound and the Race (EPA, 2016).

Endangered/Threatened Species

This section provides a summary of known endangered, threatened, and "special concern" species within the Long Island Sound region. An endangered species is one whose overall survival in a particular region or locality is in jeopardy as a result of loss or change in habitat, overall exploitation by man, predation, adverse interspecies competition, or disease. Unless an endangered species receives protective assistance, extinction may occur. Threatened or rare species are those with populations that have become notably decreased because of the development of any number of limiting factors leading to a deterioration of the environment. A species may also be considered as a species of "special concern." These may be any native species for which a welfare concern or risk of endangerment has been documented within a state (NYSDEC 2003). Endangered and threatened species are protected under the Federal Endangered Species Act, 16 U.S.C. §§ 1531 et seq. and under state law while species listed as "special concern" are protected only by state law.

In 2015 and 2012, the Rufa Red Knot (Calidris canutus rufa) and the Atlantic sturgeon (Acipenser oxyrinchus oxyrinchus) were added to the federal endangered species list. The bald eagle (Haliaeetus leucocephalus) was removed from the endangered species list in 2007. No other changes to federally listed endangered species with potential habitat in the study area were noted (Table 1). Two additional species are not expected to be offshore at the disposal site but may be found nearshore are the Piping plover (*Charadrius melodus*) and Upland sandpiper *(Bartramia longicauda)*. The Piping plover remains a threatened species for the states of CT and RI (USFWS, 2016), but is listed as an endangered species under the NY state endangered species list. The Upland sandpiper *(Bartramia longicauda)* is not listed as a federal species but listed as a state endangered species for RI and threatened species for NY.

The red knot, piping plover, upland sandpiper are not expected to be present at ELDS with any regularity because the forage or migrate to intertidal areas and under USFWS purview. As part of the DSEIS, EPA coordinated with USFWS and NMFS.

Endangered and Threatened Mammals

Eight endangered marine mammals and reptiles were originally identified for the EIS study area. In general, whales and other marine mammals are not frequently observed in LIS, however, incidental sightings have resulted in the inclusion of several species on the endangered species list for Connecticut and New York (EPA, 2004). Coordination with NMFS for ELDS is ongoing. Marine mammals are not expected to spend significant portions of time within the ELDS and adverse impacts to mammals are not likely to occur.

Endangered and Threatened Reptiles

Sea turtles are the only endangered reptile species noted in the Long Island Sound area. Sea turtles are highly migratory and are often found throughout the world's oceans (NOAA, 1995). Pursuant to Section 7 of the Endangered Species Act, EPA requested input from resource and state agencies (NOAA, USFWS, CTDEEP and NYSDEC) on the identification of Threatened and Endangered Species in Long Island Sound. Their assessment noted the five species of sea turtles as possibly being found in the waters of Long Island Sound.

Use of Long Island Sound by turtles appears related to the availability of prey, annual migration patterns, and age. The coastal waters of New York provide an important habitat for juvenile Kemp's ridley, green, and loggerhead turtles and adult-sized leatherbacks.

Hawksbill turtles are only an incidental visitor to Long Island Sound, therefore Long Island Sound is not considered important habitat to the Hawksbill turtle.

Table 4 – Endangered Marine Mammals and Reptiles for Connecticut and New York

Species	Federal Status	CT Status	NY Status
Humpback whale (Megaptera novaeangliae)	Endangered	NA*	Endangered
Fin whale (Balaenoptera physalus)	Endangered	NA*	Endangered
Right whale (Eubalaena glacialis)	Endangered	NA*	Endangered
Kemp's ridley sea turtle (Lepidochelys kempii)	Endangered	Endangered	Endangered
Loggerhead sea turtle (Caretta caretta)	Threatened	Threatened	Threatened
Leatherback sea turtle (Dermochelys coriacea)	Endangered	Endangered	Endangered
Green sea turtle (Chelonia mydas)	Threatened	Threatened	Threatened
Hawksbill sea turtle (Eretmochelys imbricata)	Endangered	NA*	Endangered

Notes: NA – not listed *.
CT list accessed 12/29/15, effective 8/5/15.
http://www.ct.gov/dEep/cwp/view.asp?a=2702&q=323488&deepNav_GID=1628
NY list accessed 12/23/15 http://www.dec.ny.gov/animals/7494.html - last updated 8/8/2007

Endangered and Threatened Fish

Two endangered fish may be located in the vicinity of ELDS, the shortnose sturgeon (Acipenser brevirostrum) and the Atlantic sturgeon (Acipenser oxyrinchus oxyrinchus). The original SMMP identified the shortnose sturgeon as federally endangered as well as endangered in both CT and NY. The Atlantic sturgeon was listed as "threatened in inland waters" for the state of Connecticut in the prior SMMP and is now a federally protected endangered species. The state of CT now lists it as endangered. Sturgeon are not expected to be impacted by disposal activities at ELDS as they are highly mobile species.

Shortnose sturgeon occur in the lower Connecticut River from the Holyoke Pool to Long. Unlike other anadromous species such as salmon and shad, shortnose sturgeon do not appear to make long-distance offshore migrations. It can be inferred that shortnose sturgeon utilizes portions of Long Island Sound since it is known to spawn in the Connecticut River. Shortnose

sturgeon have not been observed in Long Island Sound during CTDEEP trawls since 1984.

The Atlantic sturgeon (Acipenser oxyrinchus oxyrinchus) is listed as "threatened in inland waters" for the state of Connecticut (CTDEP, 2003). This designation means that the Atlantic sturgeon is not protected within the waters of Long Island Sound under the Connecticut's endangered species legislation, but a moratorium on harvesting the species in Long Island Sound has been enacted. In February 2003, a proposal was made to change the status of the Atlantic sturgeon to "endangered in all state waters" (personal communication Tom Savoy, Connecticut Marine Fisheries Division), and is still under consideration at this time.

Atlantic sturgeon is an anadromous species that lives up to 60 years, reaching lengths up to 14 feet (4 meters) and weighing over 800 pounds (363 kilograms). Long Island Sound may be an important feeding or resting area on-the-way to and from spawning areas in the Hudson River because all sizes of Atlantic sturgeon have been seen or captured in the Sound. Atlantic sturgeon were caught in all three basins of Long Island Sound but were mainly located in the vicinity of Falkner Island (Savoy and Pacileo, 2003).

Endangered and Threatened Birds

Long Island Sound is utilized by a wide diversity of marine and coastal birds including both migratory and resident species. Open-water bird species found in Long Island Sound include waterfowl, colonial water birds, and pelagic species. Shorebirds and raptors may occasionally use open-water habitats for foraging or as fly-over during migrations, but are not likely to be present in offshore waters.

19 birds were identified as endangered or threatened in the study area and 13 were identified as species of concern (EPA, 2016). Of these species, only four are known to use offshore open water areas (Table 3). Of these, only the Roseate tern is on the federal endangered species list, the Least tern is listed as a threatened species in all states. The Piping Plover, sand piper, and red knot, sand piper are species are not likely to be present in offshore waters.

Table 5 - Endangered or Threatened Birds

Name	Classifi-cation	Season Uses LIS	Federal Status	CT State Status	NY State Status	RI State Status	Offshore/ Open Water Use
Common tern (Sterna hirundo)	Colonial Waterbird	Spring-Early Fall	-	Special concern*	Threatened		Occasional
Least tern (Sterna antillum)	Colonial Waterbird	Spring-Summer	-	Threatened	Threatened	Threatened	Occasional

Roseate tern (Sterna dougallii)	Colonial Waterbird	Spring-Early Fall	Endangered	Endangered	Endangered	Endangered	Occasional
Common loon (Gavia immer)	Pelagic	Winter	-	Special Concern*	Special Concern		Occasional

Notes: CT list accessed 12/29/15, effective 8/5/15. http://www.ct.gov/dEep/cwp/view.asp?a=2702&q=323488&deepNav_GID=1628 NY list accessed 12/23/15 http://www.dec.ny.gov/animals/7494.html - last updated 8/8/2007

Essential Fish Habitat

In eastern Long Island Sound, EFH has been designated for 38 managed species (species with active FMPs). Fifteen of these species have designated EFH within the vicinity of eastern LIS. The data were compiled from the National Oceanic and Atmospheric Administration's Guide to Essential Fish Habitat Designations in the Northeastern United States (NOAA, 2014a). This guide summarizes EFH designated by species and life stage for that species (i.e., eggs, larvae, juveniles, and adults) in 10-minute by 10-minute squares1 of latitude and longitude (hereafter referred to as just "squares"). Therefore, the ELDS site is represented by NOAA as square #41107200 (Figure 5).

The five species that may be found near ELDS are: bluefish (Pomatomus saltatrix), little skate (Leucoraja erinacea), windowpane flounder (Scophthalmus aquosus), winter flounder (Pseudopleuonectes americanus), and winter skate (Leucoraja ocellata). Eight endangered marine mammals and reptiles were originally identified for the EIS study area.

EPA has requested EFH consultation. Coordination with NMFS is ongoing. Although temporary impacts to prey, adverse impacts to Essential Fish habitat is not likely to occur.

Additionally, monitoring under the DAMOS program has consistently demonstrated that the benthic communities readily recover after disposal events (e.g., AECOM, 2009). Increased turbidity immediately following dredged material disposal events could also temporarily reduce foraging ability due to decreased visibility in the water column.

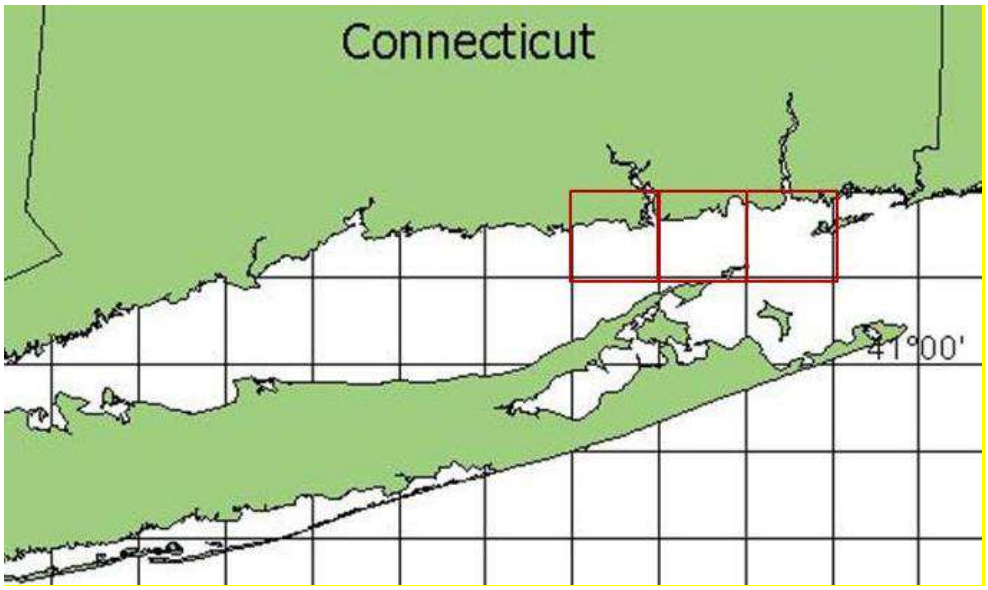

Figure 4. NOAA Fisheries 10 x 10 minute EFH squares (NMFS, 2016)

There are no cultural resources in the ELDS. EPA has consulted with the tribes and CT State Historic Preservation office. There is one documented submerged wreck within the ELDS area .1 nm west of the previously used NLDS site at 41°15.936'N, 72°05.292'W. A 200 foot buffer will be maintained to avoid disposal near the wreck. This wreck is recorded in all databases.

This wreck is an unknown vessel in 57 feet (18 m) of water and has been classified by NOAA as "submerged/dangerous." No other information regarding this wreck (*e.g.*, age, vessel type) is available.

There are three "obstructions" within the boulder area of Site NL-Wa (south portion of ELDS). The AWOIS database lists these obstructions as rocks in water depths of 45 to 48 feet (14 to 15 m). A fourth obstruction is located on the southern boundary of Site NL-Wa. It is located at a water depth of 59 feet (18 m), and was confirmed by a private diver to be a buoy with lighting hardware removed according to the AWOIS database.

4.6 Site Capacity

The estimated site capacity of ELDS is 27 million cubic yards (EPA, 2016). Disposal has occurred at the NLDS portion of the ELDS site (see Disposal History). Capacity will be modified by USACE in final SMMP.

5.0 DISPOSAL HISTORY

The ELDS encompasses 50% of the previously used New London Site. At the New London site, there is a known continuous record of use of any disposal site in Long Island Sound (EPA, 2004). According to USACE records, the beginning of detailed record keeping at NLDS, a total of nearly 3.5 million cubic yards of dredged material has been placed at the site (see Table 4), but placement of dredged material in the vicinity of NLDS likely dates back to at least 1955. The largest volume of material placed at NLDS has originated from maintenance and improvement of the U.S. Navy facility in New London, but usage also includes a number of smaller private projects.

In 2016, a total of nearly 3.5 million cubic yards had been recorded as placed at the site since 1985 (see Table 4). The ELDS will receive volumes from Federal navigation projects in New Haven, Stamford, Norwalk and Bridgeport harbors, with numerous smaller harbors in Connecticut and New York contributing to the total disposal volumes (EPA, 2004).

Beginning as early as 1984, dredged material at ELDS has been placed at distinct mounds and managed to maximize site capacity and containment of material (EPA, 2004). These mounds have been monitored individually to assess stability, thickness of dredged material and benthic recolonization status relative to previous survey results and in comparison to nearby reference areas (Valente et al., 2012).

Table 6 - Disposal Events at NLDS (50% of NLDS is part of the ELDS site)

Year	Reported Placement Volume (cubic yards)
1984 Total	223,689
1985 Total	374,154
1986 Total	193,500
1987 Total	171,245
1988 Total	91,850
1989 Total	41,800
1990 Total	126,222
1991 Total	65,262
1992 Total	79,320
1993 Total	21,930
1994 Total	7,650
1995 Total	847,325
1996 Total	504,400
1997 Total	12,325
1998 Total	7,300
1999 Total	23,250
2000 Total	5,300

2001 Total	**1,995**
2002 Total	**11,425**
2003 Total	**4,450**
2004 Total	**8,000**
2005 Total	**8,700**
2006 Total	**382,135**
2007 Total	**No disposal**
2008 Total	**No disposal**
2009 Total	**No disposal**
2009-10	**3,318**
2010-11	**No disposal**
2011-12	**No disposal**
2012-13	**19,142**
2013-14	**No disposal**
2014-15	**180,676**
Total Record	**3,416,363**

Source: USACE, DAMOS program

6.0 MONITORING

The USACE-NAE and EPA share responsibility for monitoring of the ELDS site. In addition, monitoring data may be generated by the agencies or through coordination or use of data gathered under other programs. Monitoring data from other agencies (e.g., CTDEEP Trawl Surveys and Long Island Sound Study programs) will be utilized as appropriate to maximize the availability of information at ELDS.

EPA has the responsibility for determining that an unacceptable impact has occurred as a result of dredged material disposal at ELDS. However, such determinations will be made in consultation with other agencies and be based on available monitoring data. The data gathered from the monitoring program will be routinely evaluated by EPA, the USACE-NAE, and other agencies such as the National Marine Fisheries Service (NMFS), U.S. Fish and Wildlife Service (USFWS), and state regulatory agencies. EPA is responsible for determining any modification to site use or de-designation.

6.1 Monitoring Methods

Monitoring surveys at ELDS fall into two general categories: confirmatory studies and focused studies. Confirmatory studies are designed to test hypotheses related to expected physical and ecological response patterns following placement of dredged material on the seafloor at the active or recently active target locations within ELDS. The data collected and evaluated during these studies provide answers to strategic management questions in

determining the next step in the site management process. Focused studies are periodically undertaken within the monitoring program to follow up on any unexpected results from a confirmatory survey (such as slower than expected recolonization following cessation of placement at a given target location) or to evaluate inactive or historical placement areas within the site (such as following the passage of a large storm).

The primary monitoring tools for confirmatory surveys are collection of acoustic and imaging data. Acoustic surveys include the collection of bathymetric, backscatter, and side-scan data. The bathymetric data provide measurements of water depth that, when processed, can be used to map the seafloor topography. The mapped data is used to track changes in the size and location of seafloor features. Backscatter and side-scan sonar data provide images that support characterization of surficial topography, sediment texture, and roughness. Backscatter data can be processed into a seamless image with corrections for topography while side-scan sonar data retains a higher resolution image without correction for topography. The comparison of synoptic acoustic data types has the greatest utility for assessment of dredged material placement.

Sediment-profile imaging (SPI) is a monitoring technique used to provide data on the physical characteristics of the seafloor as well as the status of the benthic biological community. The technique involves deploying an underwater camera system to photograph a cross section of the sediment-water interface. SPI is coupled with a plan-view camera system to provide imaging of a larger area of the seafloor to aid characterization of the benthic biological community.

In addition to the above techniques, focused surveys may include any of the following:

- Collection of sediment or water samples for laboratory analysis
- Remotely operated vehicle surveys with camera and sampling capabilities
- Additional remote sensing techniques such as sub-bottom profiling

Specifics on monitoring techniques and data processing and analysis can be found in the most recent DAMOS contribution for NLDS (Carey, 2015).

6.2 Material Movement

The following potential effects (as defined in 40 CFR 228.10) will be discussed in this section:

1. Movement of materials into estuaries or marine sanctuaries or onto oceanfront beaches or shorelines.
2. Movement of materials toward productive fishery or shellfishery areas.

The site designation specifies that ELDS is a containment (non-dispersive site); therefore significant movement of materials out of the site is not expected. Loss of mound material could mean that the material is being lost inappropriately and may potentially impact areas outside of the site.

If material is transported beyond the site's boundary, bathymetric surveys will be conducted to ensure the changes in elevation for any mound is not greater than 1.0 feet (0.3 meter) over an area greater than 50 by 50 meters. Bathymetric baseline data for new or modified mounds will be collected after one year of consolidation. Bathymetric surveys of mounds (historic and recently completed) and the entire site will also be performed periodically. Information on mound size and height will be compared with previous data to determine if loss of material has occurred and reported in DAMOS reports and available on the USACE website.

Data from the sediment erosion modeling conducted during the site designation process suggest the location of the ELDS is optimal for mound stability.

Bathymetry will be used to define substantive changes in bathymetry and topography (greater than 0.5 foot [15 centimeters]). Sediment profile imagery may also be used to evaluate changes in sediment characteristics. The sediment profile imagery can be used to observe layers of material too thin to detect by precision bathymetric methods and can also be used to evaluate if the benthic community in the sediments has been disturbed or is under stress relative to the reference sites. Comparison of sediment profile imagery data from areas of concern to reference areas will be used to determine whether the transported material has a potential significant adverse biological effect (since it will be assessing benthic community health).

Changes in bathymetry across the mound of more than 1.0 feet (0.3 meters) or development of large areas of predominately muddy sediments not previously documented may be an indication of substantial transport of material from the site. If such changes are documented, Tier 3 characterization of sediment quality or further characterization of benthic communities may be required.

For the portion of the ELDS site that has received dredged material disposal (NLDS), monitoring results from four bathymetry surveys completed from 2000 through 2015, show no evidence of substantial movement of materials from NLDS to adjacent areas. This determination was made based on the following information:

Periodic bathymetric surveys of NLDS provide a means of comparison of depth changes in the disposal site. Four bathymetric surveys were completed at NLDS since 2000, including a focused survey in 2002 following the passage of a large coastal storm. Although Fishers Island shelters NLDS from long-fetch easterly and southeasterly winds, it is exposed to the west and southwest. As the October 2002 storm center tracked to the west of NLDS, a significant southwesterly wind pattern developed. The bathymetric survey performed soon

after this storm identified no large-scale changes in the topography of the seafloor at NLDS. The imaging survey did identify the presence of a shell lag deposit at some locations, indicative of small-scale winnowing of the surface sediments. However, the occurrence of advanced successional species, well-developed apparent redox potential discontinuity depths, and the presence of numerous biogenic surface features (e.g. worm tubes, burrows) over the shallower portions of the site provided evidence that there was minimal disturbance of surficial sediment

Periodic bathymetric surveys of ELDS provide a means of comparison of depth changes in the disposal site. Several bathymetric surveys were completed at ELDS as part of the DSEIS (Table 5).

The frequency of monitoring at a given site is driven by the amount of material placed at the site as well as previous findings and other relevant factors such as the passage of a large storm or reported issues in the area.

Table 7 – DAMOS Survey Activities at NLDS

Survey Date	Purpose of Survey	Reference
October 2015	Characterize the bathymetry and surficial sediment properties of the entire site using multibeam bathymetry	Battelle, data analysis is process
September 2014	Characterize the physical and biological conditions over NLDS and associated reference areas using sediment profile and plan view imaging	Carey and Fucile, 2015 (DAMOS Data Report 2015-01)
September 2010	Collection of cores to characterize the vertical distribution of material at a capped mound of dredged material at the site, including a comparison of laboratory analytical methodologies	AECOM, 2012 (DAMOS Contribution No. 189)
June-July 2006	Performance of multibeam bathymetry, imaging, benthic sampling, and coring to assess the recovery and stability of a capped mound at the site	AECOM, 2010 (DAMOS Contribution No. 182)
October 2002	Performance of single beam bathymetry, imaging, and side-scan sonar to evaluate the stability of deposits at NLDS following passage of a large coastal storm	SAIC, 2003 (DAMOS Contribution No. 149)
June 2001	Collections of cores and sediment grabs and performance of imaging to assess the recovery and stability of a capped mound at the site	SAIC, 2004 (DAMOS Contribution No. 152)
August 2000	Performance of single beam bathymetry and imaging survey over the entire site to assess stability and biological recovery of placement mounds at the site	SAIC, 2001 (DAMOS Contribution No. 133)

6.3 Biological Characteristics

The following potential effects (as defined in 40 CFR 228.10) will be discussed in this section:

1. Absence from the disposal site of pollution-sensitive biota characteristic of the general area.
2. Progressive, non-seasonal, changes in composition or numbers of pelagic, demersal, or benthic biota at or near the disposal site when these changes can be attributed to the effects of materials disposed at the site.
3. Accumulation of material constituents (including without limitation, human pathogens) in marine biota at or near the site.

Overall, based on results from 2001, 2006, and 2014 surveys, the benthic community within NLDS has recovered to the level of the reference sites. The recovery of a healthy benthic habitat coupled with the testing requirements for material placed at the site indicate that bioaccumulation potential is not considered significant. This determination was made based on the following information:

Current theory holds that organism-sediment interactions in fine-grained sediments follow a predictable sequence of development after a major disturbance such as dredged material disposal (Carey et al., 2015). This sequence has been subjectively divided into three successional stages (Rhoads and Germano, 1986). Successional stage is assigned by assessing which types of species or organisms-related activities are apparent in a SPI image. Stage 3 organisms, the most developed, are deposit-feeding infauna.

Sediment Profile Imaging (SPI) is a monitoring technique used to provide data on the physical characteristics of the seafloor as well as the status of the benthic biological community. The technique involves an underwater frame/camera system that can photograph a cross section of the sediment-water interface. Analysis of the resulting images for a standard set of characteristics allows comparison between different locations and different surveys. The DAMOS Program has successfully used SPI for over 25 years. One of the main characteristics described in SPI data is apparent Redox Potential Discontinuity (aRPD) depth. This parameter provides a measure of the integrated time history of the balance between near-surface oxygen conditions and biological reworking of sediments (Carey et al., 2015). As biological activity increases, the aRPD depth increases as organisms move sediment particles from the sediment surface down deeper into the sediments.

The 2001, 2006, and 2014 surveys all assessed the benthic recolonization over mounds where placement of dredged material has not occurred for multiple years. Recolonization was complete over these mounds, consistent with expectations based on the standard theory of infaunal succession. There was limited placement at the site between 2007 and early 2014, but with the

increase in placement for the 2014-15 season and anticipated continued placement in 2015-16, future surveys will be scheduled to track).

6.4 Water and Sediment Quality

Inclusive of 40 CFR 228.10 the following types of potential effects when evaluating impact at the disposal site discussed in this section include:

1. Progressive, non-seasonal, changes in water quality or sediment composition at the disposal site when these changes are attributable to materials disposed of at the site.

The water quality in Long Island Sound is strongly affected by runoff and discharges from its urban surroundings. The watershed of Long Island Sound has an area of approximately 16,250 square miles. The three largest rivers draining into Long Island Sound are, from east to west, the Thames River, Connecticut River, and Housatonic River. The Connecticut River enters the eastern Long Island Sound between Old Saybrook and Old Lyme, Connecticut. Covering approximately 75% of the total drainage area and the Thames River enters the eastern Long Island Sound between New London and Groton, Connecticut. Covering 9% of the drainage area. Except for selected coastal areas, waters in Long Island Sound are classified as SA waters. The best uses of Class SA waters are shellfishing for market purposes, primary and secondary contact recreation, and fishing.

Turbidity measurements are made in the spring and summer, the most productive seasons in Long Island Sound. CTDEEP has been monitoring turbidity indirectly by measuring water clarity (using a Secchi disk) since June 2000. The average Secchi depth in Long Island Sound is 7.5 feet (2.3 m).

The predominant grain size within the ELDS was sand, although sediments were on average finer-grained within the NLDS (due to the disposed dredged material) than at areas outside of the NLDS. Specifically, at the NLDS, the mean sand content was 53%, while the mean sand content at areas outside the NLDS ranged from 72% to 85%. The mean silt and clay content at the NLDS was 39%, which was approximately 2.5 times higher than the mean silt and clay content at all other areas outside the NLDS (mean of 18%). The highest silt and clay content was 78%, which was located in the area of the NLDS that received most of the dredged material in the previous decade (AECOM, 2009).

The TOC concentrations at stations within and around the ELDS were similar. The mean TOC concentration measured at the NLDS was 2.4%, which was about 2.5 times higher than the mean concentrations at all the other areas (mean of 0.9%). The highest TOC concentration measured was 3.5%. The most recent assessments of physical and chemical characteristics at the NLDS by the DAMOS program were conducted at the Seawolf Mound in 2006 and 2010 (AECOM, 2010; 2012). In the 2010 survey, sediments in the upper 1.7 feet (50 cm) contained 55 to 90% silt and clay, and 1.2 to 2.1% TOC, which was consistent with previous surveys at the mound.

Metal concentrations were sampled at individual station within the ELDS site. Mean metals concentrations were approximately twice as high at the NLDS as at Sites NL-Wa and NL-Wb, although none of the mean metal concentrations for those sites exceeded the ERL values. Metal concentrations at the three stations from the eastern part of Site NL-Wa located just to the west of the NLDS, had lower concentrations than Stations located within the NLDS, suggesting that dredged material is contained within the NLDS. Stability of the sediment at the disposal mounds is also evidenced by the DAMOS program surveys; the 2006 assessment of surface sediments at the Seawolf Mound found metals concentrations that were similar across the mound and that were consistent with pre-dredge characterization of the disposed material (AECOM, 2010).

Concentrations of Pesticides, PCBs and PAHs at ELDS are low and do not exceed the ER-L values. Additionally, surveys at the Seawolf Mound at the NLDS were conducted by the DAMOS program through the collection of 16 vibracores in 2010 (AECOM, 2012). The 2010 survey results indicated that PAH concentrations in the surface sediment (upper 1.7 feet [0.5 m]) were similar across the Seawolf Mound stations and were consistent with pre-dredge characterization of the capping material. Only one sample had a concentration slightly above the ERL value, but the total PAH concentrations of all individual stations was below the ERL value.

Available data for the Long Island Sound region indicate that sediments in the open waters of Long Island Sound are generally not toxic to benthic organisms. The toxicity tests during the 2013 benthic survey demonstrated that contaminants and physical conditions at the ELDS do not elicit a toxic response to exposed organisms.

In addition, the DSEIS evaluated the rate of dilution of the dissolved materials and very fine suspended sediments that may remain in the water after disposal operations and the direction of transport using, the circulation model FVCOM. The highest concentration occur after release. The material was diluted by tidal circulation and moved rapidly. After 12 hours, the diluted concentration was the range of 10^{-7}.

The STFATE predictions of the distribution of the disposed sediment on the seabed show that it is contained within the site and the mound is elongated along the axis of the current. Under mean flow conditions the maximum mound height after disposal from a 3,000 cy scow would be 0.21 feet (6.4 cm); under high flow conditions the maximum height would be 0.18 feet (5.5 cm). STFATE predictions for the amount of material reaching the seafloor show that under both mean and high flow conditions, 99-100% of the sand, silt, and clumps in the scow would reach the seafloor. Most of the clay also reaches the seafloor. Specifically, 83% of the clay is predicted to reach the seafloor during operations under high flow conditions, and 96% of it would reach the seafloor under mean flow conditions.

The STFATE simulations further show that the maximum relative concentration in the water column within the ELDS falls below 0.25% within 120 minutes of release of dredged material from the scow.

The longer-term (greater than 100 hours from release) transport and dilution of material in the water column after disposal operations show maximum concentrations in the range of 10^{-7} at locations on the coast of Connecticut, and Fishers Island and the North Fork of Long Island. These values reflect further dilution by a factor of approximately 100 from initial dilution at the site. An exception exists at the west coast of Fishers Island where releases from the ELDS would result in the maximum concentrations of 10^{-6}.

6.5 Quality Assurance

An important part of any monitoring program is a quality assurance (QA) regime to ensure that the monitoring data are reliable.

Relevant laboratories are required to submit Quality Assurance (QA) sheets with all analyses on a project-specific basis (see RIM, ITM and Green Book for further details).

Monitoring activities will be accomplished through a combination of EPA and USACE-NAE resources (e.g. employees, vessels, laboratories) and contractors. Documentation of QA/QC is required by both agencies for all monitoring activities (i.e., physical, chemical, and biological sampling and testing). QA is documented in the form of Quality Assurance Project Plans (QAPP) and/or Monitoring Work Plan. QAPPs are required for all EPA and USACE-NAE monitoring activities. Analytical methods, detection limits, and QA procedures are contained in the EPA and USACE-NAE Regional Testing Manual (EPA/USACE, 2004).

7.0 ANTICIPATED SITE USE

MPRSA 102(c)(3)(D) and (E) requires that the SMMP include consideration of the quantity of the material to be placed in the site, and the presence, nature, and bioavailability of the contaminants in the material as well as the anticipated use of the site over the long term. ELDS is designated to receive dredged material only. No other material may be placed in the site.

Projected dredging volumes for all 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), which is consistent with the pattern of dredging in Long Island Sound over the past 20 years.

A total of 52.9 million cubic yards is expected to be dredged in Long Island Sound over the next 30 years. Of that, approximately 22.6 million cubic yards of material are anticipated to be dredged in eastern Long Island Sound. Federal navigation projects with the rest of the volume coming from other facilities in Long Island Sound Sediments projected for disposal are expected to come primarily from maintenance dredging projects, although expansion dredging may be required for deeper draft vessels or from increased commerce in Long Island Sound.

Dredging and disposal in Long Island Sound has historically been accomplished using a bucket dredge to fill split hull or pocket scows for transport to the disposal site or by using hopper dredges. These types of equipment are expected to be the primary mode of any open-water placement in Long Island Sound in the future, although placement is not specifically limited to this equipment.

Historically one third of the dredged material volume comes from large projects (>500,000 cubic yards; 382,277 cubic meters), one third from medium sized projects (200,000 to 500,000 cubic yards; 152,911 to 382,277 cubic meters), and one third from small projects (<200,000 cubic yards; 152,911 cubic meters). The sediment properties are expected to be variable although the predominant sediment type is likely be silty material (silts, sandy silts, etc.). About 70 percent of the maintenance material volume can be characterized as silty material. Approximately 10 percent the expansion material can be characterized as sands and clays.

All projects using ELDS for disposal must be either permitted or authorized under MPRSA and the CWA (see Section 3.0). The quality of the material will be determined on a project specific basis under the testing requirements necessary to meet open-water disposal requirements of either CWA 404 or MPRSA 103. The quality of MPRSA material will be consistent with EPA's Ocean Dumping Regulations (40 CFR Part 227).

National guidance for determining whether dredged material is acceptable for open-water disposal is provided in the Ocean Testing Manual (Green Book; EPA and USACE, 1991) and in the Inland Testing Manual (ITM; EPA and USACE, 1998). The Regional Implementation Manual (RIM; Guidance for Performing Tests on Dredged Material to be Disposed in Open Waters, EPA New England Region/USACE-NAE, 2004), consistent with the Green Book and the Inland Testing Manual, provides specific testing and evaluation methods for dredged material projects at specific sites or groups of sites.

Site Capacity will be evaluated and reported by USACE-NAE every three years.

8.0 REVIEW AND REVISION OF THIS PLAN

MPRSA 102 (c)(3)(F) requires that the SMMP include a schedule for review and revision of the SMMP, which shall not be reviewed and revised less frequently than 10 years after adoption of the plan, and every 10 years thereafter. The EPA, the USACE-NAE, have agreed to review this plan annually as part of the annual agency planning meeting and coordinate with other state and federal agencies periodically.

9.0 COORDINATION AND OUTREACH

Section 307 of the Coastal Zone Management (CZM) Act of 1972 requires that Federal agencies proposing activities within or outside the coastal zone, that affect any land or water use, or natural resource of the coastal zone, 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 the National Environmental Policy Act (NEPA) process, EPA prepared a Federal determination of consistency with the Connecticut, New York, and Rhode Island approved Coastal Zone Management Programs in April 2016.

Concurrence regarding the Section 7 of the Endangered Species Act, and the Essential Fish Habitat is being obtained during the NEPA process for the DSEIS from the National Marine Fisheries Service (NMFS) and the U.S. Fish and Wildlife Service (USFWS) (EPA, 2016). The NMFS and USFWS concurrence will confirm that the selection and use of ELDS will not adversely affect threatened or endangered species or adversely modify critical habitat. EPA anticipates that no further consultation will be required and no conservation recommendations will be needed due to the use of ongoing and mutually agreed upon seasonal constraints on disposal operations (June 1 through October 1) as well as the ongoing disposal site monitoring program. The NMFS concurrence will confirm that the selection and use of ELDS will not adversely affect habitat.

Additionally, the New England Regional Dredging Team, comprised of representatives from EPA, USACE-NAE, NMFS, USFWS, and representatives from Connecticut, Massachusetts, New York, and Rhode Island. The team meets approximately every six months to discuss management and monitoring of New England dredged material disposal sites. Monitoring activities may be discussed at these meetings or additional meetings may be coordinated to discuss the SMMP.

The EPA and the USACE will continue to inform and involve the public regarding the monitoring program and USACE-NAE monitoring reports are available at the USACE-NAE website (http://www.nae.USACE.army.mil/Missions/DisposalAreaMonitoringSystem(DAMOS)/DisposalSites/CentralLongIslandSound.aspx) or information for the ELDS Site designation, SMMPs at the EPA New England Regional Dredged Material Program website (http://www.epa.gov/ocean-dumping/dredged-material-management-long-island-sound).

10.0 FUNDING

The costs involved in site management and monitoring will be shared between EPA the USACE-NAE. This SMMP will be in place until modified or the site is de-designated and closed.

Those monitoring programs conducted under other Federal (i.e., Long Island Sound Study) and state agencies (i.e., CTDEEP Trawl Survey) will depend solely on funds allocated to the programs by those agencies or other supporting agencies.

The timing of monitoring surveys and other activities will be governed by funding resources, the frequency of disposal at the site, and the results of previous monitoring data.

11.0 REFERENCES

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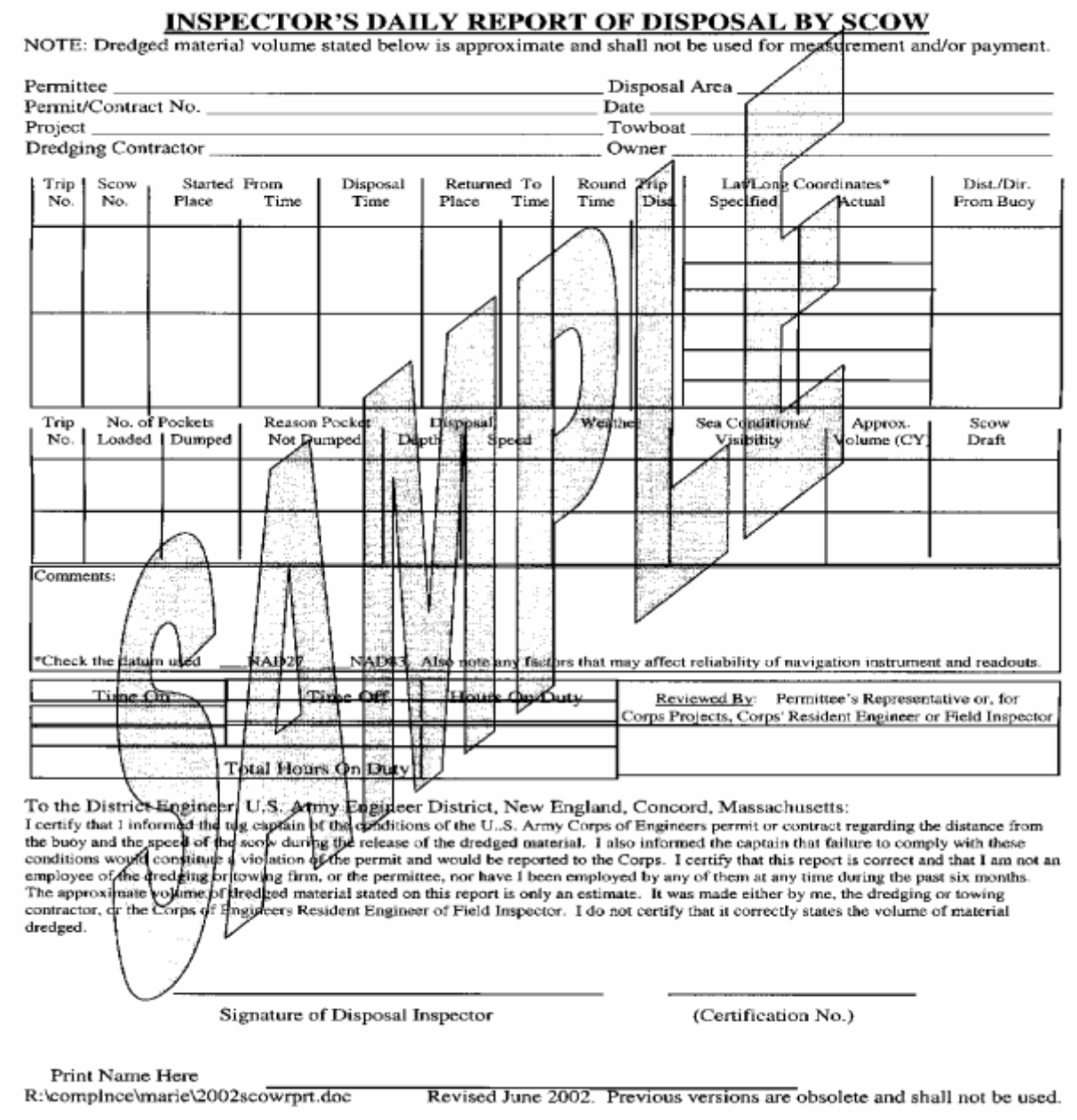
ATTACHMENT A: Monitoring Plan

1: Movement of the Dredged Material	2: Absence of Pollutant-Sensitive Biota	3: Changes in Water Quality	4: Changes in Benthic Health and Diversity	5: Accumulation of Material Constituents in Biota
Baseline taken within 1 year after disposal; entire site bathymetry at 3-4 year intervals	SPI within 1-3 years of disposal and survey of historic mounds once every 5 years.	Annual water quality measured in site vicinity (LISS Monitoring program data)	Annual CTDEEP trawl survey data	Sediment bioaccumulation potential estimated for sediments collected within site and reference areas at least every 5 years.
Mound changes by > 1.0 feet w/in 5 year interval	Significant differences between site and reference areas	Consistent gradients in measures of long-term water quality changes in vicinity	Significant differences in community composition or abundance from baseline or contiguous areas is found	Significant increase in bioaccumulation potential relative to baseline conditions or reference areas
Bathymetry taken ≤ 2 months after 10-year storm	SPI w/in 1-3 years of disposal and survey of historic mounds once every 5 yrs.	No additional studies*	No additional studies*	No additional studies*
Mound changes by > 1.5 feet from last survey	Significant differences between site and reference areas	No additional studies*	No additional studies*	No additional studies*
Bathymetry and sediment survey w/in 1 km. of site boundary	SPI at site and reference areas; grain size analysis	Water quality measured at site and reference areas	Studies may include measurement of species distribution at site and reference	Studies may include the collection of biota from site and reference areas

ATTACHMENT B: Example Scow Log



INSPECTOR'S DAILY REPORT OF DISPOSAL BY SCOW

NOTE: Dredged material volume stated below is approximate and shall not be used for measurement and/or payment.

Permittee _____ Disposal Area _____
Permit/Contract No. _____ Date _____
Project _____ Towboat _____
Dredging Contractor _____ Owner _____

Trip No.	Scow No.	Started From Place	Started From Time	Disposal Time	Returned To Place	Returned To Time	Round Trip Time	Round Trip Dist.	Lat/Long Coordinates* Specified	Lat/Long Coordinates* Actual	Dist./Dir. From Buoy

Trip No.	No. of Pockets Loaded	No. of Pockets Dumped	Reason Pocket Not Dumped	Disposal Depth	Speed	Weather	Sea Conditions/ Visibility	Approx. Volume (CY)	Scow Draft

Comments:

*Check the datum used ___NAD27 ___NAD83. Also note any factors that may affect reliability of navigation instrument and readouts.

Time On	Time Off	Hours On Duty
Total Hours On Duty		

Reviewed By: Permittee's Representative or, for Corps Projects, Corps' Resident Engineer or Field Inspector

To the District Engineer, U.S. Army Engineer District, New England, Concord, Massachusetts:
I certify that I informed the tug captain of the conditions of the U..S. Army Corps of Engineers permit or contract regarding the distance from the buoy and the speed of the scow during the release of the dredged material. I also informed the captain that failure to comply with these conditions would constitute a violation of the permit and would be reported to the Corps. I certify that this report is correct and that I am not an employee of the dredging or towing firm, or the permittee, nor have I been employed by any of them at any time during the past six months. The approximate volume of dredged material stated on this report is only an estimate. It was made either by me, the dredging or towing contractor, or the Corps of Engineers Resident Engineer of Field Inspector. I do not certify that it correctly states the volume of material dredged.

_____ _____
Signature of Disposal Inspector (Certification No.)

Print Name Here _____

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