Draft Restoration Plan
And
Environmental Assessment

Applied Environmental Services
(Shore Realty) Superfund Site

June 2001
Hazardous Substances Releases

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I. Summary

This Draft Restoration Plan and Environmental Assessment (Draft RP/EA) has been jointly prepared by the National Oceanic and Atmospheric Administration (NOAA) of the U.S. Department of Commerce, the U.S. Fish and Wildlife Service (USFWS) on behalf of the Department of the Interior (DOI), and the New York State Department of Environmental Conservation (NYSDEC). Pursuant to the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) these federal and state agencies share trusteeship authority over the natural resources affected by releases from the Applied Environmental Services (a.k.a. AES and Shore Realty) Superfund Site and are collectively referred to as the Natural Resource Trustees (the Trustees) (42 USC 9607(f)(2)).

Under CERCLA, the Trustees are authorized to act on behalf of the public to assess damages for injury to, destruction of, or loss of natural resources caused by the release, or threatened release, of hazardous substances, and to hold responsible parties liable for those damages (42 USC 9607). Natural resource trustees ensure that funds recovered from responsible parties are used to restore, replace or acquire the equivalent of the natural resources that were injured and ecological services that were lost (42 USC 9607(f)(1)).

The Trustees referenced above, NOAA, DOI and the NYSDEC, determined that natural resources in the Hempstead Harbor/Motts Cove environment were injured by the release of hazardous substances from the Applied Environmental Services Superfund Site (the Site), which is located in Glenwood Landing, New York. In August 1992, the State of New York, the United States, and the Performing Parties Group (the PPG) - which includes cooperating past and current owners, operators, and generators - entered into a Consent Judgment settling claims under CERCLA relating to the existence, release, or threat of release of hazardous substances at or from the Site. On August 5, 1992 the Consent Judgment was entered by the U.S. District Court, Eastern District of New York. Under the terms of the Consent Judgment, the PPG is required to perform remedial activities and restoration at the site. Section X. of the Consent Judgment specifically requires the PPG to restore saltmarsh in the mudflats to the east and south of the Site after it is determined that ...discharges to the shoreline and mud flats adjacent to the Site have been sufficiently abated by the remedial program.

However, water levels in Motts Cove and Hempstead Harbor adjoining the Site currently do not provide optimum conditions for the long-term survival of a saltmarsh community. Although the Consent Judgment required planting appropriate saltmarsh vegetation, it did not require the PPG to fill to appropriate grade; neither the Trustees nor the PPG support adding fill to the area. For these reasons, the Natural Resource Trustees and the PPG have agreed to relocate the restoration project off-Site to ensure long-term survival of the restoration project and to obtain at least the equivalent resources and services as proposed under the Consent Judgment. The Trustees are now in the process of selecting an appropriate and feasible off-Site project that would be conducted in lieu of the initial on-Site project.

This Draft RP/EA describes both the original on-site restoration project set forth in the August 5, 1992 Consent Judgment between the State of New York, the United States, and the PPG, and the off-site restoration project currently preferred by the Trustees and the PPG. Discussion of the other restoration alternatives considered during the Trustees' analyses is also provided. These restoration alternatives were reviewed during an April 7, 2000 field visit by representatives from the NYSDEC, the Town of North Hempstead, and the PPG. A total of eleven sites were evaluated during the initial field visit. On May 11, 2000 representatives of NOAA conducted a subsequent field visit to several of the sites.

This document summarizes the facts of the release, the negotiated natural resource damages settlement, and the reason for a shift from on-Site restoration to off-Site restoration. In addition, this document summarizes the process by which the Trustees considered a range of potential restoration alternatives for the resource injuries and selected a preferred alternative. Finally, this document requests comment and input from the public with respect to the Trustees' selection of a preferred restoration alternative.

1.0 Introduction (Purpose and Need)

1.1 Background

The Applied Environmental Services Superfund Site is a 3.2-acre site located at One Shore Road, Glenwood Landing, Nassau County, New York on part of a peninsula surrounded by the waters of Motts Cove and Hempstead Harbor, which is off of Long Island Sound. Since 1939, numerous petrochemical operators have used the Site. Starting in 1974, part of the property was used for distribution and storage of chemical solvents. Between 1980 and 1983, a hazardous waste facility operated on the Site. AES accepted many types of hazardous waste, including waste oil, chlorinated organic solvents, acids, paints, benzene, toluene, heavy metals, and a variety of other organic chemical compounds. Shore Realty and NYSDEC performed a site cleanup during 1985 and 1986. Cleanup activities in the mid-1980s included removing hazardous waste stored in drums, containers, and tanks contaminated with toluene, ethylbenzene, naphthalene, and polychlorinated biphenyls (PCBs). The Site was placed on the National Priorities List (NPL) in June of 1986.

Remedial investigations documented the presence of volatile organics, semi-volatile organics, and metals in Site media. Site contaminants measured at the highest concentrations include ethylbenzene, toluene, and xylene. Several decades of improper handling and spills of chemicals have contaminated soil, sediments, and groundwater. The highest soil concentrations were detected along the western portion of the Site (in the vicinity of the access road and the bulkhead) and under the elevated tank farm. The greatest groundwater contamination was recorded from water table wells along the western portion of the Site. Contaminate leachate flowed from behind the deteriorated bulkheads to the mudflats and into Motts Cove and Hempstead Harbor. Another main pathway of toxic contamination was the discharge of shallow groundwater containing non-aqueous phase organic chemicals onto the mudflats during low tide.

The United States Environmental Protection Agency s (USEPA) 1991 Record of Decision (ROD) selected a remedy to directly address contaminants in the groundwater and soils of the Site, thereby indirectly addressing contaminants migrating to the sediments, surface water, and air. The remedy included active venting by vacuum extraction of contaminated unsaturated soils, extraction of contaminated groundwater from a series of shallow extraction wells, treatment of collected groundwater via air-stripping, reinjection of treated groundwater supplemented with nutrients and a chemical source of oxygen, and treatment of vapors from the treatment processes before release to the atmosphere. The treatment plant started normal operations in July 1995.

The performance standards for soils, groundwater, sediments, air and surface water set forth in the 1991 ROD are as follows: (a) reduce soil concentrations of benzene and methylene chloride such that their presence at the site does not present an added cancer risk of more than one in a million under the most conservative scenario; (b) reduce soil concentrations of organic contaminants so they don't leach into and contaminate groundwater above standards, to the extent feasible; (c) reduce contaminant concentrations in groundwater to below NYS groundwater standards, to the extent technically feasible; (d) indirectly remediate sediments by treating the source of contamination to the sediments, site soils and groundwater, (e) eliminate the exceedances of ambient air standards above the mudflats; and (f) eliminate the sheen on surface waters to comply with applicable surface water standards.

The selected remedy of groundwater source control should eliminate the flow of contaminated leachate and groundwater into Hempstead Harbor and Motts Cove and indirectly help to remediate contaminated sediments in the near shore harbor and the cove.

Supplemental investigations of Site soils and sediments will be undertaken, in order to determine: (a) whether soil excavation of certain areas is warranted to expedite cleanup of soils and groundwater; and (b) demonstrate that sediment contaminant concentrations (in particular benzene, toluene, ethyl benzene, and xylene (BTEX) and petroleum hydrocarbons) have been reduced from pre-remedial conditions. A determination of whether the sediment remediation goal - indirect remediation by treating the source of contaminants to the sediments, site soils, and groundwater - has been met will be based on the sampling results and analysis. A successful remediation of sediments will be attained when source contaminant levels in these 3 phases meet performance standards set forth in the ROD.

A section of perimeter bulkhead on the northern side of the property has deteriorated. The 1992 Consent Judgment set forth conditions under which the PPG would be required to repair, replace or renovate the bulkhead. Section X directed the PPG "to ensure... that the bulkhead no longer serves as a source for the release of hazardous substances, which were the subject of the ROD. Such actions may include, but are not limited to, renovation of the bulkhead, replacement of the bulkhead, or removal of the bulkhead along with shoreline reconstruction which preserves and/or enhances the biological and physical integrity of the shoreline and mud flats." The Trustees and USEPA have reached agreement with the PPG to replace the existing wooden bulkhead with a new steel bulkhead, which will stabilize the area and improve source control of site-specific contamination.

The supplemental sampling and the bulkhead replacement will be coordinated and integrated to the extent possible. Both activities should be implemented in 2001.

1.2 Affected Environment

The Site is located on the southeastern side of Hempstead Harbor (the Harbor), a major water body off of Long Island Sound. It is bordered by the Harbor to the west, Glen Cove to the south, a boat repair/reconditioning facility and road to the east, and an industrial property (Harbor Oil) to the north. There are two mudflat areas associated with the Site — a small inlet on the Hempstead Harbor side and the shoreline along the Glen Cove site. These two areas, Hempstead Harbor and Motts Cove, are identified in Appendix G to the Consent Judgment and in Exhibit I. Motts Cove is connected to Hempstead Harbor near the inland half of the harbor, which is constricted by a point of land. The land constriction reduces the rate and volume of tidal flushing in the inland half of the Harbor and Motts Cove. This restricted tidal flushing and the absence of any freshwater tributaries to the harbor area increase the probability of long residence times for polluted waters entering the inland half of the Harbor.

Prior to the releases of site-related contaminants, there were mudflats and tidal saltmarsh adjacent to the Site. Volatile organic compounds, semi-volatile organic compounds, and metals impacted the aquatic environment. According to the ROD, some PAHs and metals exceeded NYSDEC guidance values but it was acknowledged that off-Site sources may have contributed to the PAH contamination. A surface water sheen issue, as addressed in the ROD, was also attributed to Site releases. Once Site releases were documented, sampling demonstrated the presence of toxic levels of contaminants in these habitats. Bioassessment results indicated that leachate migrating from the Site adversely impacted estuarine biota in Motts Cove and the Harbor. The greatest impact has occurred in the mudflats and saltmarsh adjacent to the existing wooden bulkhead on Hempstead Harbor. Approximately 2 to 3 acres of mudflat and saltmarsh cordgrass (*Spartina alterniflora*) were severely impacted as a result of Site releases.

The Hempstead Harbor mudflats and marshes provide important spawning, nursery and foraging area for numerous aquatic species. NYSDOS and NYSDEC designated Hempstead Harbor as a significant coastal fish and wildlife habitat (Ozard 1984). Anadromous, catadromous, euryhaline and marine finfish, and invertebrates use the Harbor and Motts Cove; some of these species have commercial and recreational importance (NOAA 1991). Exhibit II summarizes finfish and shellfish species usage of the Harbor near Motts Cove. These waters have also been designated as Essential Fish Habitat (EFH) by the NOAA/National Marine Fisheries Service (NMFS) for 15 species under the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA) (Exhibit III).

The USFWS also recognized the western harbors of Long Island, including Hempstead Harbor, as a significant habitat area for many fish and wildlife species, including wintering waterfowl and wading birds, in their Significant Northeast Coastal Habitats report (USFWS 1997). Hempstead Harbor, along with the waters of Manhasset Bay and Little Neck Bay to the east, and adjoining portions of Westchester County shoreline, support an average of more than 10,000 scaup, representing 26% of the state's wintering population (National Audubon Society, 1998). The Harbor also supports significant numbers of canvasback, and American black duck, along with Canada goose, Atlantic brant, common goldeneye, oldsquaw, bufflehead, red-breasted merganser, and American widgeon.

Loss of wetlands and other aquatic habitats in the project area within Hempstead Harbor results in incremental adverse impacts (i.e., reduced productivity) to marine and estuarine fish and wildlife resources using not only these habitats but other habitats of Long Island Sound and other East Coast coastal waters for cover, foraging, spawning and nursery. Adverse affects on wintering populations could potentially result in more significant perturbations of waterfowl populations.

1.3 Natural Resource Trustees and Authorities

Trusteeship authority is designated pursuant to /9607(f)(2) of the Comprehensive Environmental Response, Compensation, and Liability Act (42 USC / 9601 et seq.; CERCLA), Subpart G of the National Oil and Hazardous Substances Pollution Contingency Plan (40 CFR Part 300.600(b); NCP), and Executive Order 12580 (January 23, 1987). NOAA and DOI are the designated federal trustees for natural resources affected by releases from the Applied Environmental Services Superfund Site. NYSDEC, designated by the Governor of the State of New York, serves as the state trustee for natural resources affected by releases from the Site.

Pursuant to /9607 of CERCLA, parties responsible for unauthorized releases of hazardous substances are liable for damages for injury to, destruction of, or loss of natural resources, including the costs of assessing damages (42 USC 9607(a)(4)(c)). Natural resource trustees act on behalf of the public to investigate releases of hazardous substances and establish liability; assess injury to natural resources and seek damages from responsible parties; and ensure that funds recovered from responsible parties are used solely to restore, replace, or acquire the equivalent of the injured resources. (42 USC 9607(f)(1))

1.4 Natural Resource Damage Settlement

In August 1992, the State of New York and the federal government executed a Consent Judgment settling claims under CERCLA relating to the existence, release, or threat of release of hazardous substances at or from the Site. The Consent Judgment was thereafter entered into the U.S. District Court, Eastern District of New York.

The Consent Judgment called for the Performing Parties Group (the PPG ; includes AES/Shore Realty cooperating past owners, operators, and generators) to perform certain remedial activities at the Site. Section X of the Consent Judgment settled natural resources damages claims between the federal trustees and the PPG by requiring the PPG to implement restoration activities in the mudflats to the east and south of the Site after it is determined that "...discharges to the shoreline and mud flats adjacent to the Site have been sufficiently abated by the remedial program to ensure that the mud flats and shoreline are in satisfactory condition to allow for the success of such planting". Under the terms of the Consent Judgment, the PPG is responsible for restoring saltmarsh areas in Hempstead Harbor and Motts Cove, adjacent to the Site. The PPG must plant saltmarsh grasses (e.g., *Spartina alterniflora*, *S. patens*, and/or *Distichlis spicata*) in these areas and possibly regrade the sediments. However, physical alteration of the mudflats to achieve optimal survival over the broadest area is not required under the Consent Judgment. If the initial plantings are unsuccessful, the PPG would then be required to plant more halophytic grasses - to make the planted areas sustainable and able to support biota, including marine and/or estuarine fish and invertebrate species.

Under the Consent Judgment, the PPG s combined cost commitment for the initial and follow-up plantings is $50,000. Additional monies were paid by the PPG to the Trustees on the behalf of the U. S. The sum of $60,000 was designated "for the design and implementation of a post-planting monitoring program" to determine the functional success of the wetlands restoration. Another $50,000 was paid to the Federal Trustees "for the past injury to, destruction of and loss of natural resources" for the said purpose of restoring, replacing or acquiring the equivalent of the affected natural resources off-Site. This $50,000 will be used for an enhancement project at another off-Site location and will be addressed in a separate document.

Due to concerns regarding the potential success of restoration in the inlet adjacent to the Site, which are unrelated to historical releases of hazardous substances from the Site, the Trustees have determined, and the PPG agrees, that the restoration actions proposed for Motts Cove and the Hempstead Harbor inlet should be relocated. Two major factors have led to this determination. First, there are a number of nearby sources of pollution and debris that impact the original on-Site restoration area. The area is vulnerable to erosion events. Storm water runoff from storm water culverts draining the adjacent county road and upgradient areas east of the Site directly impacts the inlet and Motts Cove. The inlet is a natural collection point for trash and other floating debris in the Harbor. It is not protected from wave action caused by marine traffic and storm events. The Motts Cove marsh area is adjacent to a boat marina, and is also a natural collection point for trash and other debris of various sizes - some of which is not readily removable (e.g. large concrete-based dock). Both areas (the inlet and Motts Cove marsh) are subject to trespassing and potential incidental dumping. Second, and of greatest concern to the Trustees, water depths on the Hempstead

Harbor side (in the inlet) exceed those required for successful growth of *Spartina* for a substantial part of the area originally set aside for restoration.

All of these factors would reduce the efficacy and acreage of *S. alterniflora* marsh ultimately restored at the inlet adjacent to the site. Likewise, the ecological services provided from such a restoration would be less or substantially different than originally envisioned. Hence, the Trustees have decided to seek an alternate restoration project/location to ensure that natural resources and the ecological services they provide are satisfactorily restored. This decision was made for the reasons discussed above, the restrictions set forth in Paragraph X.1. of the Consent Judgment, and the added costs to the Trustees to implement the activities (i.e., debris removal, fill to grade) not required under the Consent Judgment.

In lieu of conducting the restoration actions called for in the Consent Judgment, the Trustees and the PPG have explored other restoration options available in the Hempstead Harbor/Town of North Hempstead area. These options have a high probability of success and would produce ecological benefits at least equivalent to those derived from the restoration project presently required in the Consent Judgment. The PPG has indicated its desire to perform an alternative off-Site project for a cost not to exceed $50,000 (high end of cost range in Consent Judgment) plus the cost of the project design and has participated in the identification and review of candidate projects.

1.5 Public Participation

In accordance with the National Environmental Policy Act (42 USC / 4321 et seq.; NEPA), DOI and NOAA have prepared this Environmental Assessment to determine whether the proposed restoration project is expected to have a significant effect on the quality of the human environment. If a significant effect is expected, an Environmental Impact Statement (EIS) must be prepared, which will publicly analyze alternatives to the proposed project. If no significant effects are expected, the NEPA process concludes with the EA and issuance of a Finding of No Significant Impact (FONSI).

In analyzing the potential significance of a proposed project, federal agencies must consider: 1) the nature of the impacts - whether beneficial or detrimental; 2) impacts on public health and safety; 3) unique characteristics of the geographic area of the project; 4) whether the project is likely to generate controversy; 5) whether the project involves uncertain impacts or unknown risks; 6) the type of precedent created by implementing the project; 7) cumulative impacts of this project with future projects; 8) impacts on nationally significant cultural, scientific, or historic resources; 9) impacts on threatened or endangered species or their habitats; and 10) potential violations of federal, state or local environmental protection laws.

NOAA and DOI welcome input from the public in evaluating these significance criteria and in analyzing restoration alternatives that might minimize impacts on the environment. This input helps Trustees measure the likely success of the project in making the environment and the public whole for losses suffered from hazardous substance releases. Analysis based on information currently available suggests that the proposed restoration project will not have a significant effect on the quality of the human environment. If no new substantive information is received during the public comment period that would change the evaluation of the restoration alternatives and the selection of the preferred alternative, then the NEPA process will likely conclude with a FONSI. The proposed action will be implemented once the Stipulated Order to the 1992 Consent Judgment (modification of Consent Judgment) has been lodged in court, and state and federal permits authorizing the action are obtained.

This document will be available for public review and comment for 30 days from the date of publication of the notice of availability in New York newspapers and on NOAA's and USFWS's web pages.

2.0 Restoration Planning

2.1 Selection Criteria

The trustees used criteria based on 43 CFR 11.82(d) to evaluate alternative actions to accomplish restoration requirements. General evaluation criteria include the following:

1. Effectiveness: The extent to which each alternative can return the injured natural resources to baseline (primary restoration) or make the environment whole for the interim lost services provided by the resources (compensatory restoration);
2. Protectiveness: The extent to which implementation of the alternative avoids additional injury to the environment;
3. Technical feasibility: The level of uncertainty in the success of each alternative;
4. Cross-benefits: The extent to which each alternative benefits more than one resource and/or service;
5. Collateral effects: Concurrent effects of each alternative on the environment;
6. Consistency: Consistency with policies and compliance with federal, state, and local law; and
7. Cost considerations.

2.1.1. Goals of the Restoration Project

The restoration project s primary goal is to compensate for natural resources and services that were lost or adversely affected by releases from the Site. Restoration includes returning an injured resource to its prior condition, as well as the acquisition of other resources to compensate for those that were lost. It is the Trustee's policy, in this case, to consider restoration projects in the following priority order:

1. Restoration of in-kind natural resources at the same location, if cleanup or remediation will be sufficient to prevent future contaminant problems for an on-site restoration
2. Restoration or replacement of in-kind natural resources in the vicinity of the loss
3. Replacement or acquisition of other similar resources nearby
4. Out-of-kind restoration

"In-kind" means that the work focuses on habitats and species comparable to those that were injured, destroyed, or lost. "Out-of-kind" means that the work focuses on resources different than those that were injured, destroyed, or lost. Projects involving out-of-kind restoration are given lower priority than those entailing in-kind restoration. Acquisition means substituting an injured resource with another resource that provides the same or substantially similar services by acquiring a site for protection from potential development or alteration. The lowest priority is given to the acquisition of other resources. The Trustees will not select a project that solely requires acquisition of land for Federal management unless we determine that other restoration options are not possible.

2.2 Scope of Restoration Actions Considered

Both USEPA and NYSDEC signed the Record of Decision in 1991. The selected remedy required direct remediation of soils and groundwater and indirect remediation of surface water, sediments, and air. As such, the selected remedy addresses the principal threats posed by removing the source contaminants from the soils and groundwater. Actions to address the deteriorating condition of the wooden bulkhead facing Hempstead Harbor (see Section 1.1) will reduce the threat to the aquatic environment.

The injured resources considered for restoration consist of the approximately 2 to 3 acres of wetland habitat adjacent to the AES facility. Some indirect remediation of the sediments has occurred due to on-Site remedial activities. Based on visual observations, sheens on the mudflats and surface water appear to be less prevalent, and there may be some recovery of aquatic species. A determination of whether the sediment remediation goals have been met will be based on planned sampling and analysis tentatively scheduled for early - mid 2001.

As noted in the 1992 Consent Judgment, several natural resources were actually or potentially injured by Site releases to Hempstead Harbor and Motts Cove. As a restoration project had been previously selected and described in the Consent Judgment, the Trustees have agreed that the objectives of revised restoration planning for these injuries should fulfill the obligations previously set forth to replace lost habitat and ecological services with at least

equivalent habitat close to the site. What follows is a discussion of a range of feasible alternatives for restoration at an off-Site location.

2.2.1 Primary Restoration in Hempstead Harbor and Motts Cove adjoining AES (the Site)

As previously mentioned, the low substrate elevations in Motts Cove and Hempstead Harbor immediately proximate to the Site currently do not provide optimum conditions for the long-term survival of a saltmarsh community of the size originally envisioned. Since the Consent Judgment required planting appropriate saltmarsh vegetation but did not require the PPG to fill to an appropriate grade, the Trustees and the PPG have agreed to relocate the restoration project off-Site to obtain at least the equivalent habitat and services proposed under the Consent Judgment. Natural recovery and indirect remediation will serve as primary restoration at the site, which may not return the area to baseline conditions (i.e., the ecological conditions that were present before the incident).

Since primary restoration alone will probably not fully compensate for the adverse impacts to natural resources, compensatory restoration actions are necessary. This RP/EA focuses on the evaluation of alternatives for achieving compensatory restoration.

2.2.2 Compensatory Restoration

This section details the restoration alternatives considered for replacing or acquiring the equivalent of those ecological resources and lost services that could not be restored in areas of Hempstead Harbor and Motts Cove adjoining the Site.

The saltmarsh and mudflat injury began at the time of Site releases and may not reach baseline naturally, i.e. natural recovery. Restoring the same or ecologically similar habitat at a site near the injured wetland communities can provide compensation for the loss of ecological services.

2.2.2.1 Alternatives Considered and Analyzed

The Trustees are required to assess a reasonable number of possible restoration alternatives. A map showing the location of the candidate restoration projects is provided in Exhibit I.

A project may consist of a single action or a set of actions that may be undertaken. In their initial review of restoration alternatives, the Trustees identified desired characteristics for potential projects: 1) the restored habitat must be similar in type to the habitat impacted and provide similar services; 2) the project must be in the same watershed as the impacted wetland; and 3) the project must provide long-term or perpetual benefits to those resources that were known to have been or were potentially impacted, including fish and wildlife.

The Trustees also considered the potential success and longevity of the proposed project. Physical and logistical factors that could affect the success of a project, or the ability of the project to compensate for the natural resources and services that were lost, were considered. A restoration site that could not be protected from future development would generally be disfavored over one where future land use is restricted.

The Trustees evaluated the following 13 potential restoration alternatives:

2.2.2.1.a. Alternative 1: No Action

No Action is the alternative to which all other alternatives are compared in an EA as required by federal regulations. Under the No Action Alternative, no restoration, rehabilitation, replacement, or acquisition actions would occur. This alternative costs the least because no action would be taken, but such savings must be weighed against the potential for recovering loss.

In general, if no action is taken, natural recovery sometimes restores lost resources, but it may take much longer than if restoration action is taken; or it may result in different conditions than existed before the injury. Often, restoration plans can be designed to restore the resource as closely to its undamaged condition as possible and achieve this sooner than natural recovery would. If the No Action Alternative were selected and it would not replace the lost

resources at all, or would replace them with very different resources, the public and environment would not be made whole for past injuries from Site releases.

Natural recovery to baseline conditions in Motts Cove and the Hempstead Harbor inlet adjacent to the Applied Environmental Services Superfund Site is not expected in the short-term and possibly the long-term. This is because water depths in the area specified by the Consent Judgment for saltmarsh restoration are not conducive to survival of saltmarsh vegetation that otherwise might naturally colonize available substrate. Also, many sources of pollution and debris will remain locally regardless of actions taken on-Site, and these could inhibit growth of or destroy recovering saltmarsh vegetation. There are no future land use restrictions on the Site and Site development is likely. Development may further impede recovery prospects because unrestricted normal commercial or residential activities may be harmful to growth and continued survival of saltmarsh vegetation. Consequently, if the No Action Alternative were selected, the public would not be compensated since the result would be no replacement of lost resources or services.

The No Action alternative cannot be selected as the preferred alternative since compensatory restoration is already required by the August 1992 Consent Judgment but Alternative 1 is retained for comparative purposes.

2.2.2.1.b. Alternative 2: Restoration of In-Kind Natural Resources at the Same Location

The Site is surrounded by industrial, commercial, and suburban residential areas on the eastern shore of Hempstead Harbor directly north of Motts Cove. Restoration of natural resources on-Site, whether in-kind or out-of-kind, is not feasible or is potentially less viable than restoration in off-Site areas primarily because of a lack of intertidal habitat favorable for *Spartina* survival and growth. In addition, on-Site storm water culverts, trash inputs, and wave action, are not conducive to the survival of desirable saltmarsh vegetation. Also, the current plans for the AES property may include selling the land for redevelopment, which could negatively impact the proposed restoration. For these reasons, the on-Site restoration option originally specified in the Consent Judgment has been re-evaluated, determined to be no longer appropriate, and an off-Site location is now proposed as the preferred alternative for restoration.

2.2.2.1.c. Alternatives 3-5: Restoration or Replacement of In-Kind Natural Resources within Hempstead Harbor in the Vicinity of the Loss

Three potential in-kind restoration projects were identified: the Bar Beach Lagoon Area (preferred restoration alternative, (Alternative 3), North Hempstead Tidal Pool (Alternative 4), and North Hempstead Tidal/*Phragmites* Marsh (Alternative 5). All three of these potential restoration alternatives are included in the conceptual design of the Town of North Hempstead s Hempstead Harbor Shoreline Trail Project (Landtech Design 1997). The town of North Hempstead owns the Trail Project, which is adjacent to Hempstead Harbor, and is located directly across from the Site. The trail currently runs 1,500 feet along Hempstead Harbor, not far enough to reach the Tidal Pool or the Tidal/*Phragmites* Marsh. Further trail construction requires the purchase of privately owned lots. Each alternative is discussed in more detail below.

Alternative 3: North Hempstead Bar Beach Lagoon (Area 1 designation in Exhibit IV)

The 5±-acre tidal cove comprising Alternative 3 is situated within a Town of North Hempstead-owned park (Bar Beach). It is located across from the Site on the western shore of Hempstead Harbor and immediately east of West Shore Road in Port Washington, New York. The project area consists of a mosaic of intertidal mudflat, sand flat, patchy low saltmarsh dominated by smooth cordgrass (*Spartina alterniflora*), and shellfish beds dominated by ribbed mussel (*Geukensia demissa*) and American oyster (*Crassostrea virginica*). In general, localized habitat loss and disturbances have adversely affected the tidal cove community reducing the full-functioning capacity of the ecological system and the services provided to invertebrates, fish and wildlife. The presence of fill, shoreline erosion, decreased density of *Spartina*, near shore 10 to 50+ feet wide fringes of common reed (*Phragmites australis)*, and freshwater inputs contribute to the degraded conditions. As noted above, this preferred restoration alternative is the only in-kind alternative in the vicinity of the Applied Environmental Services Superfund Site. This project area is also adjacent to a recently constructed Hempstead Harbor Shoreline Trail.

Restoration activities: Several restoration alternative components that could be conducted at this site are listed in decreasing order of significance, as determined by the Trustees. Restoration tasks could include saltmarsh restoration by analyzing and removing fill (comprised of pea gravel and sand), regrading, and *Spartina alterniflora* planting; coastal shoreline restoration by removing concrete rubble along the shoreline, regrading and contouring, installing erosion controls and plantings of coastal species; *Phragmites* removal or control (estimated at 1.5 acres); and erosion control by retrofitting a 30"-diameter culvert with an outfall riprap apron or through diversion of the storm water input. If this project is ultimately selected for implementation, then the contractor will provide the Trustees guidance on the priority given to each of these tasks.

Alternative 4: North Hempstead Tidal Pool (Area 2 designation in Exhibit IV)

This area is also on the western shore of Hempstead Harbor located to the south of the Old Barge/Conveyor facility. It consists of a small intertidal pool and creek that has been significantly affected by sedimentation from a former sand and gravel mining operation west of West Shore Road. A large silt and clay delta has formed at the intertidal zone. The grain size, unconsolidated condition, and elevation of this material prevent saltmarsh plants from establishing in this area, estimated at 8,000 square feet. The tidal creek area has been invaded by *Phragmites* due to the freshwater influx. The surrounding uplands area is vegetated by early successional species, indicative of a disturbed area. There is a man-made berm vegetated by locust on the northern portion of the upland. The southwestern portion remains barren as it consists of a large dredge material disposal area. Another small tidal pool and creek are present to the southeast of the barren area, with *Phragmites* and old-field species to the south. The area currently attracts numerous shore birds. The nature trail constructed by the Town of North Hempstead does not extend as far south as this project area and Town funding is not currently available to extend the project.

Restoration activities: Numerous sediments/soils would have to be tested to detect the presence or absence of contamination potentially associated with the former sand and gravel mining operation, the concreted upland surfaces and disposed dredge material would have to be removed, salinity measured to verify that the planned restoration is appropriate for the area, and the site graded and contoured before revegetation with desirable species could be undertaken.

Dense stands of *Phragmites* (estimated at 1.5 acres) have invaded both the marine and freshwater portions of this tidal creek. However, if the *Phragmites* was removed along with their associated roots and rhizomes and the intertidal substrate lowered, this tidal pool could be restored to a higher functioning condition. To do so may require removing an earthen berm midway between the shore and the Harbor. At the head of the creek, where freshwater mixes with the tidal waters, sweet pepperbush, marsh hibiscus, narrow-leaved cattail, bulrushes, and other species that can survive in low brackish regimes would best replace *Phragmites*. Groundsel bush and other salt-tolerant shrub species along with salt meadow may be best suited for the transitional zones and smooth cordgrass for the lowest elevations in the creek intertidal zone. Restoration of the marsh along this tidal creek offers an opportunity to re-establish a more diverse plant community in contrast to the current monotypic stand of *Phragmites*.

Alternative 5: North Hempstead Tidal/Phragmites Marsh (Area 3 designation in Exhibit IV)

This project is also on the western shore of Hempstead Harbor located south of the North Hempstead Tidal Pool area. The project area is very flat and covered by an extensive tidal marsh consisting of both *Spartina alterniflora* and *Phragmites* areas. The shoreline area currently occupied by *Phragmites* is very wide (about 300 feet in width), dense, and extensive (about 6.6 acres). Small tidal creeks in this area provide a source of fresh water and continue to support the expansion of the *Phragmites* colony. A narrow band of upland is also present bordering West Shore Road. The Town's design for the Hempstead Harbor Shoreline Trail envisioned that it would be located along the base of the West Shore Road embankment but funding to construct the trail in this area is not currently available.

Restoration activities: This area has a large stand of *Phragmites* at the base of the highway slope, which interferes with the view at the base of the slope. Mechanical removal of the *Phragmites* and their associated root mass followed by herbicide application will be required to restore the area invaded by *Phragmites*. In addition, opening the area for more tidal water exchange will aid in controlling the re-establishment of the *Phragmites*, which generally does not establish in intertidal zones with normal salinities of 22 parts per thousand (ppt) or higher.

2.2.2.1.d. Alternatives 6-10: Replacement or Acquisition of Similar Resources within the Estuary Watershed

Four such restoration alternatives were identified. These alternatives are the Village of Roslyn-Bulkhead (Alternative 6), Mill Pond-Bayside (Alternative 7), the Leeds Pond-Bayside (Alternative 8), and the Forgey Estate (Alternative 9). These projects entail specific activities like replacing or removing bulkheads, *Phragmites* removal and control, collection of trash and debris from wetlands, and shoreline regrading. However, the proposed restoration sites are farther removed from the Site than the projects identified in Sections 2.2.2.1.b. and 2.2.2.1.c. and the impacted resources that the Trustees wish to replace. Since there are an adequate number of in-kind sites that were of higher priority for restoration per Section 2.1.1, the Trustees did not give further consideration to the four replacement/acquisition alternatives identified above.

2.2.2.1.e. Alternatives 10-13: Restoration or Replacement of Out-of-Kind Natural Resources in the Watershed

Four potential out-of-kind restoration projects were identified: Old Barge Dock (Alternative 10), Roslyn Pond Park-Silver Lake (Alternative 11), Mill Pond (Alternative 12), and Leeds Pond (Alternative 13). These projects include large debris removal, sediment removal and freshwater wetland creation/enhancement, and *Phragmites* removal from a very low brackish pond. The services restored by these out-of-kind projects are not comparable to those lost from releases at the Site; hence, they provide less ecological benefit than the projects identified in 2.2.2.1.b. and 2.2.2.1.c. of this section. The Trustees did not give further consideration to these alternatives since there is adequate number of in-kind restoration sites that have a high probability of success and are considered higher priority for restoration per Section 2.1.1.

2.2.2.2 Evaluation of Alternatives and Environmental Consequences

The Trustees are required to evaluate each of the possible restoration projects based on all relevant considerations, including the following factors: technical feasibility; the relationship of the expected costs of the proposed actions to the expected benefits; the results of any actual or planned response actions; the potential for additional injury resulting from the proposed actions, including long-term and indirect impacts; the natural recovery period of the injured resources; the ability of the resources to recover with or without alternative actions; the potential effects of the action on human health and safety; consistency with relevant Federal, State, and tribal policies; and compliance with applicable Federal, State, and tribal laws. The Trustees must also give consideration to their ability to secure protection of the restoration site.

The Trustees retained three of the 13 proposed restoration projects (Alternatives 3-5) described above for further evaluation. The No Action Alternative is the basis for comparison for each of these three alternatives. The No Action Alternative would cost the least of any alternative, but would also probably result in the least recovery of lost resources and services because of the unsuitable water depth for saltmarsh restoration, continued problems with local pollution and debris, and the likelihood of renewed unrestricted normal commercial or residential activities on the Site. Each of the other three alternatives would cost more than the No Action Alternative, but offer more recovery of lost resources and services. A 1992 Judgment settling natural resource damage claims provides funding for a restoration project.

2.2.2.2.a. Alternative 3: North Hempstead Bar Beach Lagoon

The North Hempstead Bar Beach Lagoon project is in the same watershed as, and is in close physical proximity to, the Applied Environmental Services Superfund Site. Implementation of this project would increase the acreage of existing saltmarsh, improve the function of the existing habitat, restore the equivalent of the resources injured or lost, and has a high potential for success.

Compared to the No Action Alternative, which is not likely to produce any significant recovery of the saltmarsh (i.e. return to prerelease conditions), this project would produce approximately two acres of saltmarsh within one or two growing seasons from the completion of the project. This saltmarsh is on property owned by the Town of North Hempstead, will be preserved in perpetuity, and would not be subject to commercial or residential development.

This proposed restoration site is also not as subject to pollution or debris from adjacent property as the on-site former saltmarsh area.

Implementation of the Bar Beach Lagoon project, the preferred restoration alternative, will not result in any additional injuries to fish and wildlife resources, as it will ensure protection of those resources at the property, and compensate for injuries at the Site. The proposed restoration is expected to improve fish and shellfish habitat and detrital export function of this tidal community. It should also attract migratory birds including passerines, waders, waterfowl, and shorebirds. These resources are similar to those injured at the Site.

The proposed project will have no adverse impacts on human health or safety, and is consistent with relevant Federal and State policies. In implementing the project, the PPG, the Town, and USFWS will ensure compliance with applicable Federal and State laws. The project will be protected and provide ecological benefits in perpetuity. This action does not require the acquisition of land as the property is owned and managed by the Town of North Hempstead.

The Bar Beach Lagoon restoration project will be integrated into an ongoing Hempstead Harbor Shoreline Trail Project with the Town, and the Town is committed to protecting the site in perpetuity. There is also a high potential for public benefit and use due to the construction of this trail and the physical location of the lagoon within the town-owned Bar Beach Park.

Additional factors make this project especially promising. The Town has been awarded a grant from the NOAA/NMFS Restoration Center Community Outreach program. These monies, which required matching funds and community involvement, are available for the Bar Beach Lagoon project. This partnership would increase the overall budget for the restoration project by $59,896 in the form of in-kind services, goods, and volunteer work (Exhibit V). In addition, the Long Island Wetland Restoration Initiative has tentatively agreed to mechanically remove, or provide assistance toward the physical control of, *Phragmites australis* in Bar Beach Lagoon in partnership with the Trustees, the PPG, and the Town of North Hempstead. Together, the restoration component of the natural resource damage settlement combined with these partnerships provide for a more comprehensive project than could have been accomplished with only the settlement money (maximum $50,000 plus design costs). It is anticipated that most, if not all, of the restoration tasks identified in Section 2.2.2.1.c. for this Alternative can be accomplished under the current budget.

2.2.2.2.b. Alternative 4: North Hempstead Tidal Pool

The North Hempstead Tidal Pool is in the same watershed as, and in close physical proximity to, the Site. Implementation would benefit similar species but this marsh restoration project presents more of a challenge than the Bar Beach Lagoon project and has a higher risk of failure. A freshwater creek, created by storm water flow or by groundwater seepage, flows through this area. Salinity levels vary along the creek. The input of freshwater supports the spread of *Phragmites* allowing for the establishment of *Phragmites* in both the estuarine or brackish and freshwater portions of the creek. Increasing tidal flow into this area and or diverting these creeks to promote growth of *Spartina* over that of *Phragmites* presents a greater engineering challenge than that posed by the storm water input from the culvert at Bar Beach Lagoon.

Other factors make this project less desirable and all could add to the project costs. These include the following: (1) Some of the property is privately owned and may not be available for purchase. (2) Sediment/soil contamination is likely but the extent is unknown. (3) The removal of concrete spoil covering the land surface could be difficult. (4) The *Phragmites* is denser in this area, may therefore be more difficult to remove permanently, and could require more long-term maintenance. (5) *Phragmites* removal would generate more waste material due to the presence of more reeds.

In contrast, at Bar Beach Lagoon area (Alternative 3), the sand/pea gravel fill slated for removal is not presumed to be contaminated, all of the property is publicly owned, the *Phragmites* is less dense so there would be less waste material to dispose of, and concrete removal is directed at debris disposed along the shoreline rather than a contiguous layer covering the upland surface. Also, the North Hempstead Tidal Pool area is not currently adjacent to an existing nature trail.

To derive the necessary benefits of restoration would require implementing a comprehensive plan to address concrete spoils, potential sediment contamination, removal of *Phragmites*, regrading/fill, and re-vegetation of desirable marsh species. Hence, there is greater uncertainty associated with achieving a successful restoration. The high costs required to complete this project limit the feasibility within the constraints of the current natural resources damage settlement. The anticipated costs for Alternative 4 are high enough that partnerships developed for Alternative 3 would not cover the additional expenses. The potential for public benefit is less than with Alternative 3 since the project is more removed from the town-owned Bar Beach Park and the public nature trail does not extend this far south. In all other respects, however, this is a highly desirable restoration project that would yield significant ecological benefits to invertebrates, fish and wildlife and restore services equivalent to those lost at the Site.

If this project was selected instead of the preferred Bar Beach Lagoon project, no adverse impacts on human health or safety are expected, and the project would be consistent with relevant Federal and State policies. If implemented, the PPG would ensure compliance with applicable Federal and State laws. This action requires the acquisition of land as the property is only partially owned and managed by the Town of North Hempstead. If the private parcel could not be purchased, the project could not be implemented in its entirety. This would jeopardize the restoration of some injured natural resources and lost services. Hence, this project could result in less ecological benefit than Alternative 3.

Compared to the No Action Alternative, which is not likely to produce any significant recovery of the saltmarsh (i.e. return to pre-release conditions), this project would enhance existing saltmarsh and benefit invertebrates, fish, and wildlife, as well as restore services equivalent to those lost at the Site. The Town of North Hempstead owns at least some of the potential project property. Hence the project would be preserved in perpetuity and would not be subject to commercial or residential development. Also, this tidal pool area is not as subject to pollution or debris from adjacent property as at the Site.

2.2.2.2.c. Alternative 5: North Hempstead Tidal/Phragmites Marsh

The North Hempstead Tidal/Phragmites Marsh is in the same watershed as, and in close physical proximity to, the Site. Implementation would benefit similar species but this marsh restoration project presents more of a challenge than Alternatives 3 and 4 and has the highest probability of failure. The primary focus of this project is to convert a *Phragmites* community into a *Spartina* marsh. *Phragmites* is difficult to remove chemically without subsequent treatments, so this would require long-term and possibly yearly treatment to control the regrowth of the *Phragmites*. Conversations with the NYSDEC permitting office suggest that this regulatory agency may not issue permits for large-scale or long-term herbicidal control of *Phragmites*. An alternative approach would be to alter the project area enough to significantly increase tidal exchange. Under this scenario, *Phragmites* might be controlled naturally. Channelization of the area may eliminate or substantially reduce *Phragmites* growth and improve tidal exchange. However, the *Phragmites* is so extensive and so pervasive (approximately 6.6 acres), mechanical means would not be practical or within the financial scope of this project. Also, there is an access problem. The *Phragmites* marsh is adjacent to steeply sloped terrain making it technically more difficult to maneuver equipment into the project area. *Phragmites* trenching would most likely have to be done by hand and would be labor-intensive due to the soft, unconsolidated nature of the substrate.

If successful, on the other hand, this restoration activity would result in equivalent benefit to the lost natural resources and services by improving habitat of invertebrates, fish and wildlife and augmenting services derived from tidal salt marshes. However, the projected cost to complete the work exceeds the monetary settlement available for restoration and appears to exceed the additional funds available through grant awards (if the Town used its award for this project instead of the Bar Beach Lagoon project). The Trustees also believed that it would be difficult to forge a partnership with the Long Island Wetland Restoration Initiative on this project. The North Hempstead Tidal/Phragmites Marsh requires the removal of much more *Phragmites* than at Bar Beach Lagoon and is the primary component of the project. The partnering group does not have adequate experience, time or equipment to implement a project on the scale of Alternative 5.

The lack of financial resources available to complete this project would make it technically infeasible at this time. In addition, these restoration activities would not be cost-effective relative to other options given the requirement for long-term maintenance to control *Phragmites.* The settlement package was for a fixed dollar amount and there are

insufficient funds for long-term maintenance, especially given the large acreage of *Phragmites* involved relative to Alternatives 3 and 4. There is a greater potential risk of failure if the yearly *Phragmites* maintenance is not undertaken. In addition, the potential for public benefit is less than with Alternative 3 since the project is farther removed from the town-owned Bar Beach Park and the public nature trail does not currently extend this far south. Hence, the ultimate benefits derived from this project could be less than from Alternative 3.

If Alternative 5 was implemented instead of the preferred project, no adverse impacts on human health or safety would be expected, and the project would be consistent with relevant Federal policies. However, the requisite herbicidal treatment may not be consistent with State policies. If implemented, the PPG would ensure compliance with applicable Federal and State laws. This action does not require the acquisition of land as the property is owned and managed by the Town of North Hempstead. The project would be protected and but the amount and quality of ecological benefits provided in perpetuity would depend on the Town s ability to commit to and implement a long-term maintenance program to control *Phragmites*.

Although this project is very costly and the outcome is less certain than the previous two projects, compared to the No Action Alternative, which is not likely to produce any significant recovery of the saltmarsh (i.e. return to pre-release conditions), this project would enhance existing saltmarsh and benefit invertebrates, fish, and wildlife, as well as restore services equivalent to those lost at the Site. This saltmarsh is on property owned by the Town of North Hempstead so no matter what degree of improvement is achieved, this marsh would be preserved in perpetuity and would not be subject to commercial or residential development. Also, the Tidal/*Phragmites* Marsh is not as subject to pollution or debris from adjacent property as at the Site.

2.2.2.3 Preferred Project

Based on the evaluation and comparison of projects, the Trustees have selected Alternative 3, the Bar Beach Lagoon Project, as the off-Site in-kind Preferred Project. Our reasons for selecting the Bar Beach Lagoon project as the preferred restoration project are as follows: 1) The project is located across from the injured resources and the restoration activities will benefit the same or similar biological resources to those injured by Site releases; 2) The project has the highest potential for success; 3) The project will be conducted with other ongoing restoration activities planned by the Town that will increase the ecological value of this alternative; 5) The project can be conducted within the constraints of the existing budget; 6) The project appears as though it will provide the greatest amount of ecological benefit relative to the other projects for the limited budget that is available; and (7) The Town s shoreline trail runs adjacent to the project area providing the public opportunities to view wildlife utilizing this habitat.

Expected improvements include increased vegetative cover and density derived directly from plantings (approximately $\leq$ 0.5 acre) and indirectly from site enhancement (approximately 2 acres). Amelioration of substrate conditions (i.e., reduced erosion, and reduced freshwater input) should abate the degrading conditions and increase *Spartina* over current conditions through natural colonization. Habitat quality will improve due to increases in vegetative cover and structural complexity thereby benefiting macroinvertebrates, fish and birds.

Finally, the Town owns the property and has made a long-term commitment to preserve this area for conservation purposes. Thus, the benefits conferred by this alternative will be preserved in perpetuity.

This represents our planned action to restore natural resources and ecological services. The Trustees have determine that this project will make the environment and public "whole" from the loss of such resources due to past releases from the Applied Environmental Services Superfund Site.

3.0 Proposed Restoration Project

The Bar Beach Lagoon project is the preferred restoration alternative. Details of the proposed restoration activity are provided immediately below. Photos of the preferred restoration site can be found in Exhibit VI.

The Bar Beach Lagoon and the Hempstead Harbor Shoreline Trail Project will augment each other and increase opportunities for public use of the area. For a description of the Hempstead Harbor Shoreline Trail Project, please see the 1997 document entitled Design Report for the Hempstead Harbor Shoreline Trail (the Trail Report).

The Bar Beach Lagoon restoration project, combined with a separate enhancement project (not described in this document), will restore natural resources, and make the environment and public whole from the loss of such resources and services associated with Site releases.

3.1 Site Selection

The Trustees have selected Bar Beach Lagoon as the preferred restoration alternative. The preferred restoration alternative is located on the southern side of Bar Beach, which is a high use recreational beach, boat-launching park. The lagoon is a 5±-acre tidal cove that is connected to Hempstead Harbor providing services to the same or similar resources injured by Site releases, is in close physical proximity to the Applied Environmental Services Superfund Site where injury to natural resources occurred, and is near the trailhead for the Hempstead Harbor Shoreline Trail.

The resources to be restored at Bar Beach Lagoon are similar to those that were injured by the releases from the Site. The currently degraded lagoon was historically occupied by saltmarsh or smooth cordgrass (*Spartina alterniflora*), whose cover has decreased due to changes in the topographic elevation of the lagoon substrate resulting from erosion, subsidence and/or a rise in sea level. In its present state, the lagoon is mostly open water habitat consisting of a mosaic of intertidal mudflat, sandflat, patchy low salt marsh dominated by *Spartina alterniflora*, and shellfish beds dominated by ribbed mussel (*Geukensia demissa*) and American oyster (*Crassostrea virginica*). *Phragmites*, an undesirable invasive plant species, occurs at the northwest edge and southwestern corner of the lagoon where it abruptly transitions to upland woody vegetation. The influx of fresh water from the large storm water outfall also supports the spreading of *Phragmites*, which is mildly salt-intolerant. This lagoon is currently in a downward degradation trend, which unless corrected, will most likely result in the loss of habitat diversity and the creation of a strictly open water system surrounded by *Phragmites*, which will have out-competed all other vegetative species. This habitat type has a very low ecological value. The County-owned storm water discharge may be contributing locally to minor erosion of the intertidal sediments. Drainage channels in the tidal flats created by these freshwater releases are most obvious during low tide intervals.

The lagoon is the first natural feature that trail users will see once the Hempstead Harbor Shoreline Trail is open for public use. The town may construct a viewing platform with benches and a wooden walk leading to the trailhead near the northern shoreline of Bar Beach Lagoon. Hence, the public using the trail will receive direct benefit from the enhancement of this area. The lagoon area has fairly good access for construction crews and equipment, with the Bar Beach parking lot serving as a good construction staging location.

The PPG damage assessment funds decreed in the 1992 Consent Judgment are limited to $50,000 and will not be sufficient to resolve all of the ecological and anthropogenic challenges facing the lagoon. However, the Trustees and the Town of North Hempstead are working cooperatively with each other and with the Long Island Wetland Restoration Initiative to fund and implement additional projects in this same lagoon that are to be conducted with the Preferred Restoration Alternative. These additional projects will allow restoration of additional aspects of the lagoon that were not addressed by the funds allocated by the PPG for the Preferred Restoration Alternative. This synergy of projects will confer a greater benefit to the ecological resources and to the public in a highly cost-efficient manner. A description of the current project design follows.

3.2 Project Design

The Preferred Restoration Alternative would improve fish, bird, and shellfish habitat; enhance the detrital export functioning of this tidal community; and provide an opportunity for the public to enjoy this ecosystem due to its proximity to the Hempstead Harbor Shoreline Trail. The following specific tasks and activities, which would be conducted as part of the Preferred Restoration Alternative, are presented in decreasing order of priority and ecological significance:

<u>Salt Marsh Restoration</u>
This task will involve removing pea gravel and other non-native fill material from a peninsula in the northwest corner of the tidal cove. An area of approximately 4,500 square feet (0.1 acres) of low saltmarsh appears to have been filled in this location. An average 4.5-foot excavation depth is proposed to return this area to optimal intertidal

elevations capable of supporting the growth and colonization of planted smooth cordgrass and other low marsh vegetation.

Implementing this task will require performing an initial topographic survey tied into vertical benchmark(s) with known tidal datum. This information will be provided in a base map indicating both existing and proposed elevations. To complete this saltmarsh restoration, a backhoe or front-end loader will be needed to excavate the estimated 600 cubic yards (cy) of fill material. Equipment will access the fill peninsula via the nearby parking lot and disturbed uplands. Before beginning the excavation, silt fence will be installed at mean high water (MHW) to minimize the potential for sedimentation to the nearby marsh and mudflat. The excavation will proceed, beginning from the tip of the peninsula and progressing landward. The peninsula will be subgraded at least 6 inches and backfilled with clean plantable soils to avoid the potential for gravel or other debris in the final grade elevation. All excavated material will be transferred to a designated upland site. This excavation work should be completed during the early spring. Approximately 2,200 smooth cordgrass plugs will then be planted in the final graded area, preferably during the early growing season. Our preference is to conduct the work in 2001 but it may be postponed until 2002

Coastal Shoreline Restoration

This task involves removing and regrading the northern shore of the tidal cove, which currently consists of concrete rubble, other solid waste debris, and fill historically placed in this location as part of the construction of the adjacent parking area for Bar Beach Park. The specific area to be addressed during this task is a section of shoreline, approximately 300 feet long. Fill will be removed, and the bank will be regraded using clean soil and then stabilized with plantings of native wetland and coastal upland plant species.

The work will involve excavating debris and regrading an area of approximately 1,500 sq. ft. Before beginning excavation, silt fencing will be properly installed at mean high water (MHW). A backhoe will be needed to complete the excavation, although caution will be used to prevent significant disturbance to the low saltmarsh community at and below MHW. Where possible, rubble will be removed manually. Particular attention will be given to stabilizing an eroding 30-foot bank segment in the northern terminus of this shoreline work area.

All excavated material will be transferred to a designated upland site. Should debris and/or poor soils be encountered at the proposed final grade, the area will be subgraded to a maximum depth of 1 foot below final grade and backfilled with clean, plantable soils to the depicted final grades. As much as 150± cy of clean, plantable soil may be required. Once the excavation and grading is completed, the work area will be covered with a geofabric or mulch to minimize potential erosion. A rapid-germinating, salt-tolerant seed mix may also be applied to prevent erosion potential. This excavation work will be completed during early spring.

Once all grading is completed, shrub and emergent plants will be installed to approximate a zoned coastal shoreline community. Native species and regional stock will be used including seaside rose (*Rosa maritima*), salt bush (*Iva frutescens*) (70 container, 3-4-foot height) or other appropriate native substitutes, and American beach grass (*Ammophila breviculata*) (550 peat pot). Approximately 1,000 smooth cordgrass plugs will also be planted within the intertidal zone at the toe of the slope, preferably during the early growing season.

Invasive Plant Control

This task involves removing and controlling *Phragmites australis*, an invasive undesirable species that dominates the western and southwestern portions of the tidal cove shoreline. This invasive plant has taken over the relatively narrow high marsh (irregularly flooded) zone within the tidal cove and varies from 10 to 50+ feet wide. Its colonization and growth is likely attributed to freshwater inputs (groundwater and surface runoff) from the upland slopes immediately adjacent to the marsh. *Phragmites* is generally intolerant of pore-water salinity levels greater than 20 ppt, and is intolerant of regular flooding by full-salinity seawater.

The control of *Phragmites* at this site, an area estimated at 5,000 to 10,000 sq. ft. (0.1 to 0.2 acres), will be accomplished by mechanical, physical, and/or chemical techniques. The current plan to is to implement mechanical or physical controls in partnership with Long Island Wetland Restoration Initiative using the USFWS amphibious excavator or low ground pressure equipment. Mechanical techniques would focus on excavation activities to remove roots and rhizomes and increase water depth, thereby decreasing the suitability of the addressed habitat for recolonization by *Phragmites*. Such activities would also increase the likelihood of natural colonization by desirable

species and decrease the available *Phragmites* seed stock and rhizomes extending into other restored areas of the Bar Beach Lagoon. *Spartina* will be planted (late April-early May) after the *Phragmites* is removed and the area is regraded. Where mechanical techniques cannot be employed, physical changes in the environment s hydrology might be implemented. For example, a ditch could be dug around the perimeter of the *Phragmites*. Additional ditches could be dug through the *Phragmites* to increase the movement of more saline water into the area and to help break down the root mass. Alternatively, saline harbor water could be pumped into the perimeter-ditched area.

Herbicide might be used on a limited basis to address any *Phragmites* regrowth. Alternatively, systemic herbicide could be properly applied to cut stalks once the plants have reached full flowering as the primary control mechanism. Cutting and herbicide application would be overseen by a qualified landscaper/herbicide specialist and completed during August or early September. A second herbicide application may be needed the following growing season. All plant cuttings will be removed to the town landfill.

Storm Water Outfall Retrofit

This task involves actions to attempt to minimize the adverse impacts of the storm water outfall upon sediments and substrate quality. A 30-inch diameter culvert is located at the western portion of the lagoon, with the pipe invert elevation situated near mean high water. The culvert transports storm water runoff from nearby West Shore Road and surrounding uplands. On May 11, 2000, staff from NOAA and the Town of North Hempstead observed clear base flows passing from the culvert into the cove. Immediately down gradient of the outfall, scattered boulders and debris form a poorly functioning riprap apron. Excessive flow velocities have caused minor erosion (i.e., gully formation) of the intertidal substrate at this outfall during low tide cycle periods.

The proposed work focuses on modifying the existing riprap apron to eliminate future erosion. This will be achieved by temporarily removing the existing boulders, installing a geofabric, and placing the stockpiled and additional stone (2 to 3-foot diameter) in an approximate 5-foot wide band downstream of the culvert, fanning out to the low water elevation. Approximately 8 cy of large stone will be needed to eliminate this minor erosion area. Alternatively, the discharge of storm water may be relocated to beyond the saltmarsh perimeter.

Sequencing of Events

The principal components of the preferred alternative are saltmarsh restoration and shoreline stabilization. Retrofitting the culvert or diverting the storm water input will be implemented if deemed critical by the contractor. *Phragmites* control may be implemented as a secondary component of the project. The implementation of *Phragmites* control is contingent upon resolving access issues and on the Long Island Wetland Initiative's success at operating the equipment for said purposes. If all four subprojects are undertaken, then the four will be integrated and sequenced appropriately. It is anticipated that the *Phragmites* removal will be completed first, which may require some regrading of the slope to the south of the culvert and to the fill area to the north of the culvert. At around the same time, rubble removal from the shoreline adjacent to the parking lot can commence. Final grading and planting will be the last tasks completed. Money placed in escrow for contingency planting may ultimately be used to restore other areas (i.e., increase *Spartina* density) within the tidal cove once monitoring results have been evaluated.

3.3 Permitting Considerations

In order to perform the preferred restoration project, permits will need to be obtained from the U.S. Army Corps of Engineers (USACE) and the New York State Department of Environmental Conservation. Permit applications will be jointly submitted by all appropriate parties to NYSDEC and USACE under Article 25 (wetland permit) and will seek confirmation of applicability of a Nationwide Permit #27.

Slight modifications or adjustments may have to be made to the restoration project design based on input received during the USACE/NYSDEC permitting process and on the final budget. The implemented project will provide ecological benefits at least equivalent to those envisioned in the current preferred alternative and will compensate for the loss of resources and services due to releases from the Site.

3.4 Monitoring Requirements and Performance Criteria

Under the terms of the Consent Judgment, the Federal and State Trustees were awarded $60,000 to develop and implement a detailed monitoring program to assess the success of this and other Site-related restoration projects. Permanent shoreline transects and saltmarsh plots will be chosen for the assessments. Photographs of each area will be taken at designated locations depicted on a site map and measurements will be collected to assess the extent of plant survival and growth and improvement in marsh functioning. The basic components of the wetland restoration monitoring will include an evaluation of the major indicators of ecosystem functioning, along with features most important to the public (Pinit and Bellmer 2000; Wilbur et al. 2000). The study will include at least one reference location selected in the vicinity of the restoration project. The duration of the monitoring study should be a minimum of 5 years. Monitoring events shall take place as follows: (a) vegetation plot monitoring - once per growing season during the period August 1-September 30; and (b) fish, macro-invertebrate, and wildlife monitoring - twice per year during the periods of April 1-June 15 and September 1-November 15.

Monitoring components will include assessment of the survival of the saltmarsh and shoreline plantings, physical stability of substrate, and surveys of macroinvertebrates, fish and birds using the marsh and stabilized shoreline. Parameters measured will include substrate elevation; percent plant (i.e. *S. alterniflora*) cover, height, density, and vigor; usage by waterfowl, wading, and shore birds; species composition and numbers of macroinvertebrates (excluding insects), especially fiddler crabs, bivalves, and gastropods; and fish use (species richness, abundance, and age class). The experimental design will consist of ten vegetative plots in the restoration area and at least 6 in the reference area(s). These plot locations will be shown on a scaled site map.

The performance criteria for the restoration project are: 1) 90% survival of *Spartina alterniflora* plantings after two full growing seasons; 2) 90% survival of planted shoreline vegetation after two full growing seasons; (3) 85% cover of the restoration area (marsh and stabilized coastal shoreline) within 5 years of initial planting; 4) minimal re-establishment of *Phragmites australis* and other undesirable invasive vegetation to 10% or less of the total restored area; and (5) species abundance, richness, and composition of macroinvertebrates, fish and birds similar to (i.e., demonstrating strong positive trend toward or not significantly different from) reference marsh.

The Trustees will utilize the data and information gathered from the monitoring program to assess the success of the project and determine whether mid-course corrections to the restoration plan are necessary to achieve the restoration goals specified in the performance criteria. For example, monitoring of vegetative success will be completed during the latter portion (mid August to early September) of the first and second growing seasons to determine if performance criteria (1) and (2) are met. In the event that the success criteria are not met, the Trustees will determine the amount and type of corrective action required. Such actions could include supplemental planting of saltmarsh and shoreline vegetation and controlling invasive species per the contractor's guarantee, government permits and the criteria set forth in the preceding paragraph.

Any and all contracts issued in connection with the restoration site will include a provision whereby the contractor, and any subcontractor, guarantees that project implementation and construction complies with the approved design. Project completion is dependent on meeting the performance criteria described above. The Trustees will use the data and observations from the monitoring program to evaluate the success of the restoration actions and to determine whether the contractor will be required to perform additional plantings per the contractual guarantee, government permits, and requirements set forth in this document. All appropriate parties will be responsible for compliance with all permit requirements.

In addition, a small portion of the settlement funds will be placed in an interest-bearing escrow account to cover potential future plantings in case of unexpected plant die-off, or other restoration site disturbances, beyond the scope of the contractor's guarantees or regulatory agency permit requirements. If the Trustees do not utilize the money from this account for replanting or other site modifications, the Trustees will determine how that additional money will be spent to further benefit the affected resources. The Trustees may provide money from the escrow account to the Town of North Hempstead to be used for the maintenance, or enhancement, of the Bar Beach Lagoon restoration project. In that event, the Town of North Hempstead would be required to coordinate those activities with the Trustees and obtain their approval. Alternatively, the Trustees may direct the money to another project in the area.

3.5 Proposed Project Implementation

The PPG is responsible for the design of the Preferred Restoration Alternative, subject to Trustee approval prior to implementation, and for securing contracts for the performance of the restoration work. The PPG's responsibilities focus, to the greatest extent, on the saltmarsh restoration and coastal shoreline stabilization components. Post-design tasks include removing fill material, regrading the marsh and shoreline, purchasing plants, and overseeing the plantings. The PPG proposes to use the services of a qualified wetland consultant (e.g., PWS, Society for Wetland Scientists) from the region for portions of the restoration activities at the proposed site, including saltmarsh restoration in the fill area and shoreline stabilization. The final selection of a contractor(s) will be based on the Trustees evaluation and approval of the design and construction bid packages.

The Town of North Hempstead brings additional resources to the restoration project. The Town's funds through the NOAA Community Outreach grant and in-kind services will cover expenses associated with equipment and equipment operators, transport and disposal of dewatered fill and debris from the restoration site to the town landfill, tipping fees, technical oversight, sampling and analysis of soils from the fill removal area, coordination with and logistics associated with local community group volunteers, and supplies. Volunteers from local non-governmental organizations under the guidance of the Town of North Hempstead will plant desired species. The NOAA grant money awarded to the Town may also supplement the purchase of plants. The Long Island Wetland Restoration Initiative may attempt to remove *Phragmites* along the perimeter of Bar Beach Lagoon and/or assist in the modification of the local hydrology to diminish the survival of *Phragmites* and enhance the habitat for more desirable species.

3.6 Compliance with Environmental Laws

3.6.1 Anadromous Fish Conservation Act

The Anadromous Fish Conservation Act (16 USC 757a *et seq*.) provides authority to conserve, develop, and enhance anadromous fishery resources. The preferred alternative should improve habitat quality thereby enhancing anadromous fish resources.

3.6.2 Archeological Resources and Historical Preservation

Numerous acts afford protection to antiquities, abandoned shipwrecks, archeological resources, historic buildings and historic sites. These include the Abandoned Shipwreck Act of 1987 43 USC 2102 *et seq*.), the Archeological Resources Protection Act of 1979 (16 USC 470, *et seq*.), the Historic Sites Act of 1935 (16 USC 461-467), the Historical and Archeological Data Preservation Act (16 USC 469-469c), and the National Historic Preservation Act of 1966 as amended (16 USC 470-470t, 110).

The Trustees have coordinated with the Town of North Hempstead (owner of property), NYSDEC and New York State Historic Preservation (SHPO). No known historic or pre-historic data, sites, or relics that may be lost or impacted by the proposed project have been identified.

3.6.3 Clean Air Act

The Clean Air Act directs USEPA to set limits on air emissions to ensure basic protection of health and the environment. All construction activity will be done with conventional equipment in compliance with all local ordinances.

3.6.4 Clean Water Act

The Clean Water Act (CWA), 33 USC 1251, *et seq*., is the principal law governing pollution control and water quality of the nation's waterways. Section 404 of the law authorizes permit program for the disposal of dredged or fill material into navigable waters. The USACE administers the program. In general, restoration projects that move material into or out of waters or wetlands--for example, hydrologic restoration of marshes--require Section 404 permits. These restoration activities will be addressed under nationwide permit #27.

3.6.5 Coastal Zone Management Act

The goal of the federal Coastal Zone Management Act (CZMA), 16 USC 1451, *et seq*., 15 CFR Part 923, is to preserve, protect, develop and, where possible, restore and enhance the nation's coastal resources. The federal government provides grants to states with federally approved coastal management programs. The State of New York has a federally approved program. Section 1456 of the CZMA requires that any federal action inside or outside of the coastal zone that affects any land or water use or natural resources of the coastal zone shall be consistent, to the maximum extent practicable, with the enforceable policies of approved state management programs. It states that no federal license or permit may be granted without giving the State the opportunity to concur that the project is consistent with the state's coastal policies. The regulations outline the consistency procedures.

The Trustees do not believe that the preferred alternative will adversely affect the state's coastal zone. However, to comply with the CZMA, the Trustees intend to seek the concurrence of the State of New York that their preferred restoration alternative is consistent to the maximum extent practicable with the enforceable policies of the state coastal program.

3.6.6 Endangered Species Act

The federal Endangered Species Act (ESA), 16 USC 1531, *et seq*., 50 CFR Parts 17, 222, 224, directs all federal agencies to conserve endangered and threatened species and their habitats and encourages such agencies to utilize their authority to further these purposes. Under the Act, NMFS and USFWS publish lists of endangered and threatened species. Section 7 of the Act requires that federal agencies consult with these two agencies to minimize the effects of federal actions on endangered and threatened species. Prior to implementation of these projects, the Trustees will conduct Section 7 consultations in conjunction with EFH consultation.

Except for occasional transient individuals, no Federally listed or proposed endangered or threatened species under our jurisdiction are known to exist in the Bar Beach Lagoon area. In addition, no habitat in the project impact area is currently designated or proposed "critical habitat" in accordance with provisions of the Endangered Species Act (87 Stat. 884, as amended; 16 USC 1531 et seq.). Therefore, no Biological Assessment or further Section 7 consultation under the Endangered Species Act is required with the Service. Should project plans change, or if additional information on listed or proposed species or critical habitat becomes available, this determination may be reconsidered.

3.6.7 Estuaries Protection Act

The Estuary Protection Act, 16 USC 1221-1226, highlights the values of estuaries and the need to conserve natural resources. It authorizes the Secretary of the Interior, in cooperation with other Federal agencies and the States, to study and inventory estuaries of the US, to determine whether such areas should be acquired by the Federal Government for protection, to assess impacts of commercial and industrial developments on estuaries, to enter into cost-sharing agreements with States and subdivisions for permanent management of estuarine areas in their possession, and to encourage State and local governments to consider the importance of estuaries in their planning activities related to Federal natural resource grants. The proposed activity includes federal funding to the Town of North Hempstead through a NOAA/NMFS/RC Community Grant award. The preferred alternative will enhance the ecological habitats in the surrounding area of Bar Beach Lagoon.

3.6.8 Fish and Wildlife Conservation Act

The Fish and Wildlife Conservation Act of 1980, 16 USC 2901 and 50 CFR 83, provides for the consideration of impacts on wetlands, protected habitats and fisheries. The restoration project will enhance habitat thereby benefiting natural resources. In addition, public access is not restricted and the Town of North Hempstead's nature trail provides the public wildlife viewing opportunities.

3.6.9 Fish and Wildlife Coordination Act

The Fish and Wildlife Coordination Act (FWCA), 16 USC 661, *et seq*., states that wildlife conservation shall receive equal consideration with other features of water-resource development. The Act requires Federal permitting and licensing agencies to consult with NOAA/NMFS, USFWS, and state wildlife agencies before permitting any activity that in any way modifies any body of water to minimize the adverse impacts of such actions on fish and wildlife resources and habitat.

NOAA and USFWS are joint federal natural resource trustees who have worked cooperatively on evaluating various restoration projects and in selecting the preferred alternative. As part of the process, NOAA/CPRD consulted with NOAA/NMFS. No adverse impacts are expected; in fact, the Trustees expect the project to benefit fish and wildlife resources and habitat.

3.6.10 Magnuson-Stevens Fishery Conservation and Management Act

The Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA), 16 USC 1801, *et seq*., as amended and reauthorized by the Sustainable Fisheries Act (Public Law 104-297), established a program to promote the protection of essential fish habitat (EFH) in the review of projects conducted under Federal permits, licenses, or other authorities that affect or have the potential to affect such habitat. After EFH has been described and identified in fishery management plans by the regional fishery management councils, Federal agencies are obligated to consult with the Secretary of the U.S. Department of Commerce with respect to any action authorized, funded, or undertaken or proposed to be authorized, funded, or undertaken, by such agency that may adversely affect any EFH.

The Bar Beach Lagoon saltmarsh restoration project will take place in Hempstead Harbor, which is part of Long Island Sound. The portion of Long Island Sound affecting Hempstead Harbor has been designated EFH for one or more life stages of fifteen species of fish (Exhibit III). These species are managed by the New England and Mid-Atlantic Fishery Management Councils under the following fishery management plans (FMP): Northeast Multispecies; Summer Flounder, Scup and Black Sea Bass; Atlantic Mackerel, Squid, and Butterfish; and Bluefish FMPs.

The Bar Beach Lagoon saltmarsh restoration project described in Sections 3.0 to 3.2 proposes to enhance a degraded saltmarsh adversely impacted by dumping of rubble along the shoreline, placement of fill in the wetland proper, subsidence or erosion of sediment, loss of *Spartina alterniflora*, and spread of an undesirable plant species, *Phragmites australis*. While the design document will contain exact project details and describe current conditions, the Trustees propose four main tasks to improve current conditions. These tasks were outlined previously and include coastal shoreline stabilization, saltmarsh restoration, *Phragmites* control, and apron riprap retrofitting. The proposed restoration project will provide better-quality habitat and a more stable environment. Removal of fill and *Phragmites,* along with the optimization of marsh elevations, will increase acreage suitable for *Spartina* growth. This will create new foraging habitat and refugia. As such, saltmarsh fish, shellfish, and invertebrates will directly benefit from the shoreline and wetland stabilization, grading, planting, and erosion control efforts. Implementation of appropriate Best Management Practices (BMPs) should minimize turbidity and any impacts should be short-termed and localized. For the foregoing reasons, the Bar Beach Lagoon saltmarsh restoration project will not adversely affect EFH for any of the species or life stages listed above and therefore EFH Consultation is not required pursuant to section 305(b)(2) of the MSFMCA.

After conceptual restoration project details were developed, the Trustees evaluated and coordinated their plans with the NOAA National Marine Fisheries Service (NMFS) Northeast Region to ensure no adverse impacts to EFH. If the proposed project plans are substantially revised or if new information becomes available that affects this analysis, then consultation with the NMFS Northeast Region will be undertaken prior to project implementation.

3.6.11 Marine Mammal Protection Act

The Marine Mammal Protection Act (16 USC 1361, *et seq*.) establishes a moratorium on the taking and importation of marine mammals and marine mammal products, with exceptions for scientific research, allowable incidental taking, subsistence activities by Alaskan natives, and hardship. The Act provides authority to manage and protect

marine mammals, including maintenance of the ecosystem. The Trustees coordination with NOAA/NMFS shows no interaction with marine mammals in the area of the proposed restoration.

3.6.12 Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA), 16 USC 715, *et seq*., provides for the protection of migratory birds. The MBTA does not specifically protect the habitat of these birds but may be used to consider time of year restrictions for remedial activities on sites where it is likely migratory birds may be nesting and/or to stipulate maintenance schedules that would avoid the nesting seasons of migratory birds.

3.6.13 National Environmental Policy Act

Congress enacted NEPA in 1969 to establish a national policy for the protection of the environment. NEPA applies to federal agency actions that affect the human environment. Federal agencies are obligated to comply with NEPA regulations adopted by the Council on Environmental Quality (CEQ). NEPA requires that an Environmental Assessment (EA) be prepared in order to determine whether the proposed restoration actions will have a significant effect on the quality of the human environment. If an impact is considered significant, then an Environmental Impact Statement (EIS) is prepared. If the impact is considered not significant, then a Finding of No Significant Impact (FONSI) is issued.

The Trustees have integrated this Restoration Plan with the NEPA and CEQ processes to comply, in part, with those requirements. This integrated process allows the Trustees to meet the public involvement requirements of NEPA and CEQ concurrently.

3.6.14 Rivers and Harbors Act

The federal Rivers and Harbors Act (RHA), 33 USC 401, *et seq.*, regulates development and use of the nation's navigable waterways. Section 10 of the Act prohibits unauthorized obstruction or alteration of navigable waters and vests the USACE with authority to regulate discharges of fill and other materials into such waters. Restoration actions that require Section 404 Clean Water Act permits are likely also to require permits under Section 10 of the RHA. However, a single permit usually serves for both. Therefore, the Trustees can ensure compliance with the RHA through the same mechanism. These restoration activities will be addressed under the U.S. Corps of Engineers nationwide permit.

3.6.15 Executive Order 11514 Protection and Enhancement of Environmental Quality, as amended by Executive Order 11911 Relating to Protection and Enhancement of Environmental Quality

Executive Orders 11514 and 11991 require that federal agencies monitor, evaluate and control their activities to protect and enhance the quality of the Nation's environment to sustain and enrich human life; inform the public about these activities; share data gathered on existing or potential environmental problems or control methods; and cooperate with other governmental agencies. The preferred alternative fully addresses the intent of the Executive Order.

3.6.16 Executive Order 11990 Protection of Wetlands

Executive Order 11990 (40 CFR 6392 (a) and Appendix A) requires federal agencies to avoid the adverse impacts associated with the destruction or loss of wetlands, to avoid new construction in wetlands if alternatives exist, and to develop mitigative measures if adverse impacts are unavoidable.

The preferred alternative is in compliance with and fully addresses the intent of the Executive Order.

3.6.17 Executive Order 12898 Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations and Executive Order 12948 Amendment to Executive Order No. 12898

Executive Orders 12898 and 12948 require each federal agency to identify and address, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies and activities on

minority and low-income populations. The Trustees have concluded that there are no low income or ethnic minority communities that would be adversely affected by the proposed restoration activities. The preferred alternative will be implemented on property owned by the Town of North Hempstead and is adjacent to Bar Beach Park and to the Hempstead Harbor Shoreline Trail. This nature trail provides public access and bird watching opportunities.

3.6.18 Executive Order 12962 Recreational Fisheries

Executive Order 12962 requires that federal agencies, to the extent permitted by law and where practicable, and in cooperation with States and Tribes, improve the quantity, function, sustainable productivity, and distribution of U.S. aquatic resources for increased recreational fishing opportunities. The Trustees (NOAA, USFWS and NYSDEC) worked in cooperation to select the preferred alternative and to assure compliance with the intent of the Executive Order.

4.0 Public Notice and Comments

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) requires the Trustees to develop and adopt a Restoration Plan before settlement monies can be used for such activities. In doing so, there must be adequate public notice and opportunity for hearing and consideration of all public comment. Accordingly, the Trustees are publishing and distributing this Draft Restoration Plan and Environmental Assessment (Draft Plan) and seeking comments on it. The Trustees will also publish a Notice of Availability of this Draft Plan in the Federal Register, the Roslyn News, and the Port Washington News. A copy of this Draft Plan is also available for review during office hours at the following locations: (1) Michelle Schimel, Town Clerk, Town of North Hempstead, 200 Plandome Road, Manhassett, NY 11030 (516-869-7646); (2) USEPA Administrative Records Office, 290 Broadway, 18th Floor, New York, NY 10007 (212-637-4308); (3) Bryant Library, 2 Paper Mill Road, Roslyn, NY (516-621-2240); (4) Port Washington Library, Manorhaven Blvd, Port Washington (516-883-4400); (5) Lisa Holst, Long Island Sound Study Habitat Restoration, NYSDEC Bureau of Marine Resources, 205 North Belle Meade Road, Suite 1, East Setauket, NY (631-444-0469); (6) Steve Sanford, NYSDEC/NRDU, Division of Fish, Wildlife, and Marine Resources, 50 Wolf Road, Rm 403, Albany, NY (518-457-7987). It is also available on two websites: NOAA s at http://response.restoration.noaa.gov/cpr/library/publications.html and USFWS's at http://contaminants.fws.gov/Issues/Restoration.cfm.

Comments should be sent to Lisa Rosman, NOAA/CPRD, via fax at 212-637-4207 or via email at lisa.rosman@noaa.gov. Commentors should provide their name, address, and telephone number (clearly printed). All comments received on the Draft Plan will be considered and a response will be provided either through revision of this Draft Plan and incorporation into the Final Restoration Plan or by letter to the commentor. A Final Restoration Plan will be published with an anticipated publication date of 30 - 45 days after the close of the comment period.

5.0 References

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USFWS. 1997. Significant Habitats and Habitat Complexes of the New York Bight Watershed. Charlestown, Rhode Island: U.S. Fish and Wildlife Service Southern New England-New York Bight Ecosystems Program.

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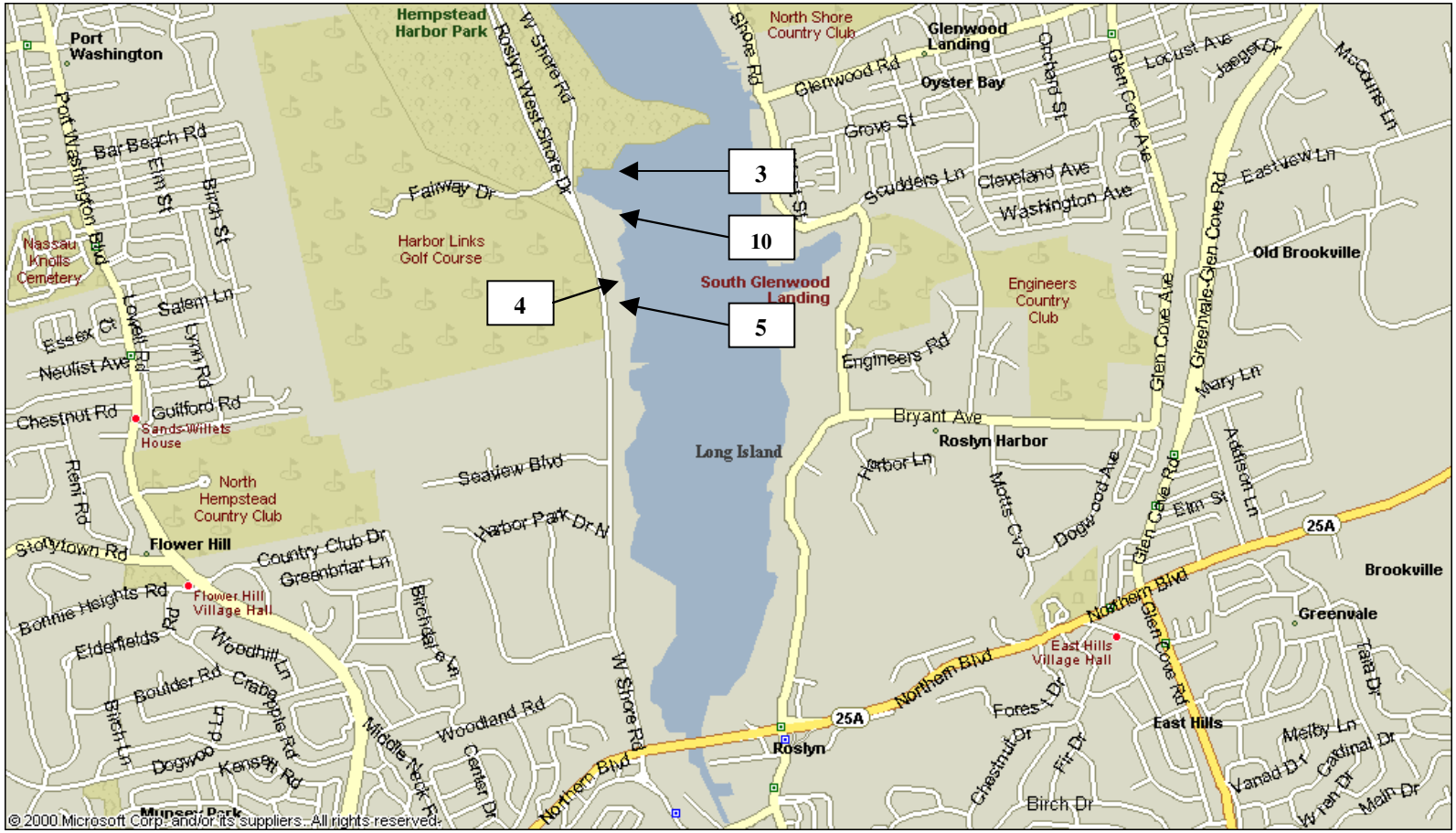
Exhibit I. Location Map of Candidate Restoration Projects



3. N. Hempstead Bar Beach Lagoon
4. N. Hempstead Tidal Pool
5. N. Hempstead Tidal /Phragmites Marsh
10. Old Barge Dock

Exhibit II. Fish and shellfish species in Hempstead Harbor near Motts Cove

Common Name	Scientific Name	Spawning Ground	Nursery Ground	Adult Forage	Comm. Fishery	Rec. Fishery
Anadromous						
Blueback herring	*Alosa aestivalis*	♦	♦			
Alewife	*Alosa pseudoharengus*	♦	♦			
American shad*	*Alosa sapidissima*	♦	♦			
Striped bass	*Morone saxatilis*	♦	♦			♦
Catadromous						
American eel	*Anguila rostrata*		♦	♦		
Euryhaline						
Atlantic menhaden	*Brevoortia tyrannus*		♦	♦		
Mummichog	*Fundulus heteroclitus*	♦	♦	♦		
Striped killifish	*Fundus majalis*	♦	♦	♦		
Atlantic silversides	*Menidia menidia*	♦	♦	♦		
Marine						
Black sea bass*	*Centropristis striata*		♦			
Weakfish*	*Cynoscion regalis*	♦	♦			
Northern kingfish*	*Menticirrhus* spp.	♦	♦			
Oyster toadfish	*Upsanus tau*	♦	♦	♦		
Summer flounder*	*Paralichthys dentatus*	♦	♦	♦		♦
Bluefish	*Pomatomus saltatrix*			♦		♦
Winter flounder*	*Pseudopleuronectes americanus*	♦	♦	♦		♦
Windowpane	*Scophalmus aquosus*	♦	♦	♦		
Northern puffer*	*Sphoeroides maculatus*			♦		
Scup	*Stenotomus chrysops*	♦	♦			♦
Tautog	*Tautoga onitis*	♦	♦	♦	♦	♦
Red hake	*Urophycis chuss*	♦	♦			
White hake	*Urophycis tenuis*	♦	♦			

Common Name	Scientific Name	Spawning Ground	Nursery Ground	Adult Forage	Comm. Fishery	Rec. Fishery
Invertebrates						
Blue crab*	*Callinectus sapidus*	♦	♦	♦		♦
Sand shrimp	*Crangon septemspinosa*	♦	♦	♦		
American lobster	*Homarus americanus*	♦	♦	♦	♦	♦
Hard shell clam+	*Mercenaria mercenaria*	♦	♦	♦	♦	♦
Soft shell clam	*Mya arenaria*	♦	♦	♦		
Blue mussel	*Mytilus edulis*	♦	♦	♦		♦
Grass shrimp	*Paleomonetes pugio*	♦	♦	♦		
Manta shrimp	*Squilla empusa*	♦	♦	♦		

* Rare or infrequent in Hempstead Harbor (Zawacki, pers. comm. 1990)

\+ Hard shell clams harvested west of Matinicock Point (including Hempstead Harbor) must be transferred to certified waters in eastern Long Island Sound for depuration lasting at least 21 days (Hastback, pers. comm. 1990 and 1991)

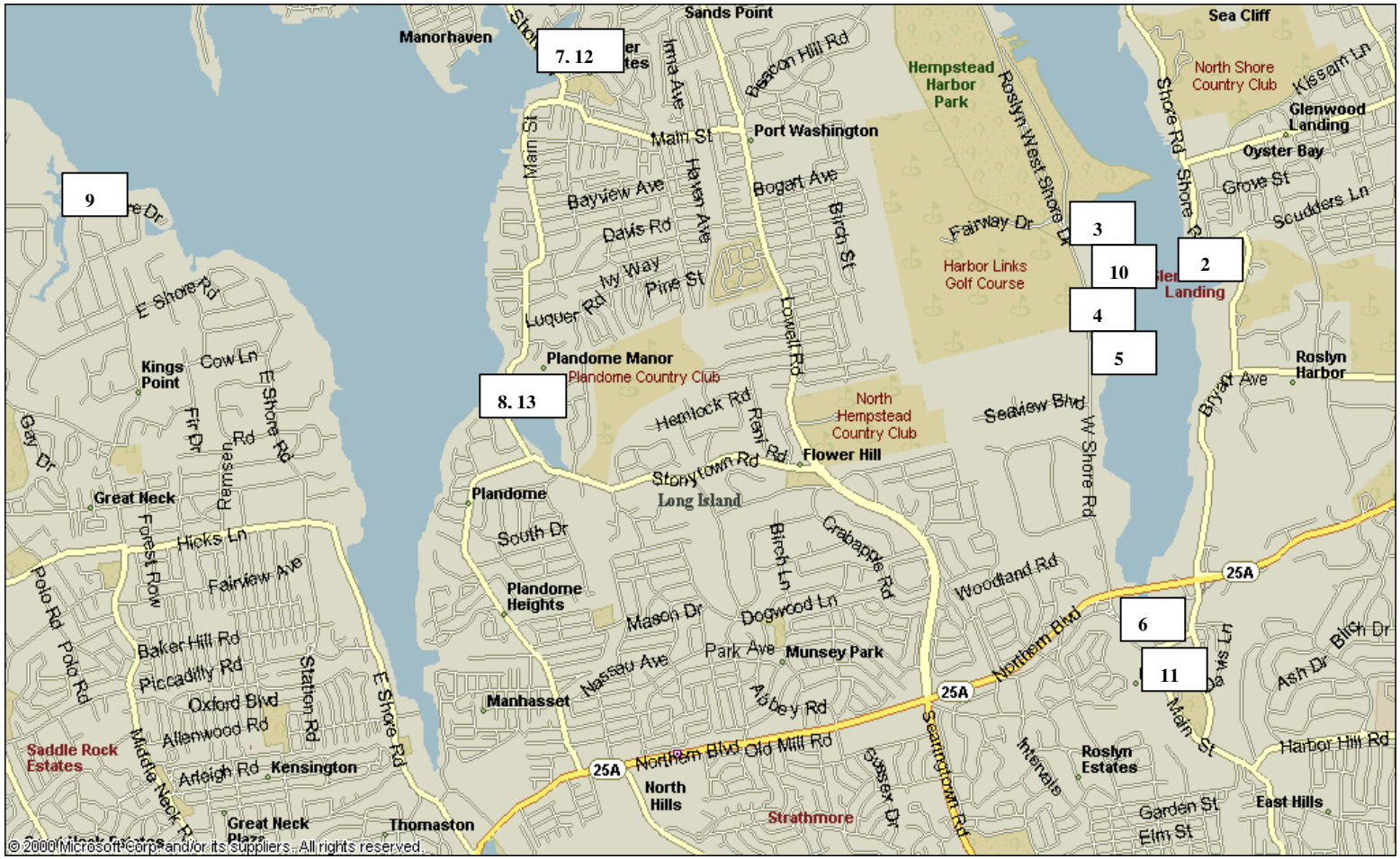
Taken from NOAA (1991)

Exhibit III. Summary of Essential Fish Habitat Designation for Waters within Long Island Sound Affecting Hempstead Harbor

Species	**Eggs**	**Larvae**	**Juveniles**	**Adults**
Atlantic salmon(*Salmo salar*)			X	X
Pollock (*Pollachius virens*)			X	X
Red hake (*Urophycis tenuis*)	X	X	X	X
Winter flounder (*Pleuronectes americanus*)	X	X	X	X
Windowpane flounder (*Scopthalmus aquosus*)	X	X	X	X
Atlantic sea herring (*Clupea harengus*)			X	X
Bluefish (*Pomatomus saltatrix*)			X	X
Atlantic mackerel (*Scomber scombrus*)	X	X	X	X
Summer flounder (*Paralicthys dentatus*)			X	
Scup (*Stenotomus chrysops*)	X	X	X	X
Black sea bass (*Centropristus striata*)			X	
King mackerel (*Scomberomorus cavalla*)	X	X	X	X
Spanish mackerel (*Scomberomorus maculatus*)	X	X	X	X
Cobia (*Rachycentron canadum*)	X	X	X	X
Sand tiger shark (*Odontaspis taurus*)		X		

Created from http:www.nero.nmfs.gov/ro/STATES4/conn_li_ny/40507330.html

Exhibit IV. Map of Town of Hempstead Harbor Shoreline Trail Project



Restoration Alternatives:

1. No Action
2. NPL Site
3. N. Hempstead Bar Beach Lagoon
4. N. Hempstead Tidal Pool
5. N. Hempstead Tidal/*Phragmites* Marsh
6. Village Roslyn Bulkhead
7. Mill Pond-Bayside
8. Leeds Pond-Bayside
9. Forgey Estate
10. Old Barge Dock
11. Roslyn Pond Park
12. Mill Pond
13. Leeds Pond

Exhibit V. Estimated Budget for Bar Beach Lagoon Restoration Project[1]

Matching Funds	
PPG-Trustee NRDA settlement	$ 50,000
Town of North Hempstead Match	$ 32,584
Volunteer Match	$ 2,400
Match Subtotal	$ 84,984
NOAA/NMFS/RC Grant Award To Town	$ 24,912
Total Project Cost	$109,896[2]

Estimated Cost Breakdown of Project

Project Cost In Cash	
Engineering Consultant	$ 12,350
Soil Sample Testing by Analytic Lab	$ 2,500
Project Construction	$ 46,900
Wetland Plants	$ 5,000
Equipment Rental	$ 8,162
Cash Subtotal	$ 74,912
Project Cost In Goods and Services	
Volunteer Work	$ 2,400
Town Match	$ 32,584
Goods and Services Subtotal	$ 34,984
Cash Subtotal	$ 74,912
Total Project Cost	$109,896

[1] These estimates do not include cost of project area field survey design or monitoring. The PPG 1992 settlement with the Natural Resource Trustees set aside $60,000 for monitoring. The PPG has also agreed to fund the cost of the restoration design.

[2] The $59,896 increase in budget above the NRDA settlement stems from our partnership with the Town of North Hempstead. Their contribution includes goods and services ($32,584), volunteer labor ($2,400) and the NOAA/NMFS/RC grant ($24,912).

Exhibit VI. Photographs of Proposed Restoration Project Bar Beach Lagoon

Photograph 1: Bar Beach Lagoon at low tide, facing inland from Hempstead Harbor. In the background is Shore Road. In the middle of the photograph one of several channels that meander through the lagoon can be seen along with an area where small clumps of Spartina remain (darker green area in middle of photograph). The light brown area that is along the perimeter of the tidal flats is the area that has been invaded by Phragmites.

Photograph 2: Bar Beach Lagoon at high tide, facing inland from Hempstead Harbor. In the background is Shore Road. The only vegetation that appears in this photograph is the brownish Phragmites. No emergent grasses are present in this photograph because they are submerged. Spartina may become visible in a month once it has re-grown from its winter dieback.

Photograph 3: Bar Beach Lagoon at low tide, facing the south side of the lagoon with Hampstead Harbor on the left and Shore Road on the right. Historical pier pilings can be seen in the foreground and Spartina clumps scattered in the middle of the tidal flats area.

Photograph 4: Bar Beach Lagoon at high tide, facing the south side of the lagoon with Hampstead Harbor on the left and Shore Road on the right. Only a small portion of the historical pier pilings can still be seen on the left side during high tide. In the foreground a few Phragmites stems/blooms can be seen.

Photograph 5: Bar Beach Lagoon at low tide, facing Shore Road which is at the top of the photograph. Historical pier pilings can be seen in the foreground. Spartina is the green area immediately above the pilings, with Phragmites (light brown) above the Spartina.

Photograph 6: Bar Beach Lagoon at high tide, facing Shore Road. The historical pier pilings cannot be seen and are submerged below the open water area, only Phragmites remain above the water surface. Upland trees makeup the outer perimeter of this lagoon/inlet.

Photograph 7: The northern most shoreline of the Bar Beach Lagoon, which is adjacent to the Bar Beach parking lot. Note the sharp slope containing rubble and debris. The material that makes up the shoreline is a mixture of loosely consolidated soil and rubble/debris, which makes the shoreline moderately unstable.

Photograph 8: Close-up of the material that makes up the shoreline. The shoreline is mostly loosely consolidated soils with a significant amount of cobble sized (and larger) rubble.

Photograph 9: Another view of the northern shoreline of the Bar Beach Lagoon. In this photograph large rubble debris can be seen. The tall light brown vegetation is Phragmites. The green vegetation found along the high water line is mostly Spartina. This shoreline could be recontoured to create additional inter-tidal area appropriate for Spartina colonization. The rubble may need to remain in order to stabilize and trap sediments.

Photograph 10: Close-up of the material that makes up the shoreline. The shoreline is mostly loosely consolidated soils with a significant amount of cobble sized (and larger) rubble.

Photograph 11: Additional soil material that is owned by the Town of North Hempstead, which may be available for fill material.

Photograph 12: A view of Bar Beach Lagoon from the trail along Shore Road, looking our towards Hempstead Harbor. Phragmites can be seen in the foreground of the photograph along with sediment fencing that has been placed along the trail way to prevent shoreline erosion.

Photograph 13: Another view of the Bar Beach Lagoon from the trail way along Shore Road, looking out towards Hempstead Harbor. The light brown, tall vegetation is Phragmites. The darker green areas and clumps are Spartina. This photograph clearly shows the difference in topographic elevation of the tidal flat areas and the Spartina clumps. Additional sediment would have to be placed in the tidal flat areas for Spartina planting to be successful. If the Phragmites were removed the elevation would most likely be reduced to an elevation appropriate for Spartina re-colonization.

Photograph 14: The southern shoreline of Bar Beach Lagoon as viewed from the trail way, is inundated by Phragmites.

Photograph 15: The 24 stormwater outfall that discharges into the Bar Beach Lagoon that runs under Shore Road and the trail way discharges into the lagoon once it enters the lagoon. This photograph was taken at low tide in the lagoon and on a clear non-rainy day, thus the outfall appears to have a continuous discharge. The discharge appears to have created the channels that meander throughout the tidal flats. The County, according to Denise Herrington of the town of North Hempstead, apparently owns the outfall.