NEW BEDFORD HARBOR
USEPA LOWER HARBOR CAD CELL
CFDA No.: 66.802

WORK PLAN

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New Bedford Harbor
USEPA Lower Harbor CAD Cell

Work Plan

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ABBREVIATIONS AND ACRONYMS

APEX	Apex Companies, LLC
ARAR's	Applicable, Relevant and Appropriate Requirements
CAD	Confined Aquatic Disposal
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
cy	cubic yards
CZM	The Office of Coastal Zone Management
EFHA	Essential Fish Habitat Assessment
ESA	Endangered Species Act
ESD	Explanation of Significant Differences
HASP	Health and Safety Plan
HTRW	Hazardous, Toxic, Radioactive Waste
iscy	in situ cubic yards
LHCC	Lower Harbor CAD Cell
MassDEP	Massachusetts Department of Environmental Protection
MADMF	Massachusetts Division of Marine Fisheries
MA EOEEA	Massachusetts Executive Office of Energy and Environmental Affairs
MLLW	mean lower low water
MOA	Memorandum of Agreement
NBH	New Bedford Harbor
NBHDC	New Bedford Harbor Development Commission
NBRA	New Bedford Re-Development Authority
NCP	National Contingency Plan
NGVD	National Geodetic Vertical Datum
NHESP	Natural Heritage and Endangered Species Program
NMFS	National Marine Fisheries Service
NOAA	National Oceanographic and Atmospheric Administration
NPL	National Priorities List
O&MP	Operations and Maintenance Plan
OU	Operable Unit
PCB	polychlorinated biphenyls
ppm	parts per million
QA	Quality Assurance
QA/QCP	Quality Assurance/Quality Control Plan
QC	Quality Control
RFQ	Request for Qualifications
ROD	Record of Decision
SAP	Sampling and Analysis Plan
SER	State-Enhanced Remedy
TSCA	Toxic Substance Control Act
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency

1.0 INTRODUCTION

1.1 Project Purpose and Summary

The New Bedford Harbor Development Commission (NBHDC) has prepared this Work Plan to support the US Environmental Protection Agency (USEPA) in their design and construction of a Confined Aquatic Disposal (CAD) Cell in New Bedford Harbor for USEPA use. The USEPA has modified the Record of Decision (ROD) for its Remedy for New Bedford Harbor Superfund Site via an Explanation of Significant Differences (ESD) to construct the CAD Cell using EPA funding through a Superfund Cooperative Agreement (CA). The CAD Cell is to be located within the area designated by the Dredge Materials Management Plan (DMMP) for New Bedford Harbor for CAD Cells and will provide approximately 300,000 cy of sediment disposal space, or as close to this volume as CA funding allows. The NBHDC has extensive experience with the design and construction of CAD Cells in New Bedford Harbor, and has agreed to design and construct the body of the USEPA Lower Harbor CAD Cell (LHCC), which the USEPA would then utilize for its cleanup operations in keeping with the new ESD. It is NBHDC's understanding that the USEPA would retain responsibility to conduct its own dredging of Superfund contaminated sediments and place those sediments in the constructed CAD Cell. The USEPA would also be responsible for the capping of the CAD Cell once filled, and for the maintenance of the CAD Cell until such time that the Harbor Remediation is complete, and the long term responsibility for USEPA facilities in the Harbor (including the LHCC) are transferred to the Massachusetts Department of Environmental Protection (MassDEP). The MassDEP will work with the NBHDC on the final uses and restrictions and Operation and Maintenance (O&M) plans for the facilities.

1.2 Site Description and Background Information

The New Bedford Harbor Superfund Site consists of approximately: 1,000 acres of urban tidal estuary and shoreline areas along the Acushnet River Estuary and New Bedford Harbor (the Upper and Lower Harbor); and approximately 17,000 acres in Buzzards Bay or the Outer Harbor. From the 1940's until the mid 1970's, PCBs were discharged into the Estuary, Harbor, and Bay by direct discharges and the sewer system of the City of New Bedford. These discharges contaminated the sediments at levels ranging from a few parts per million (ppm or mg/Kg) to over 200,000 mg/Kg PCBs. Other contaminants (such as heavy metals and PAHs) have also been discharged into the Site at various times since the 1800's. There are PCB contaminated wetland/salt marsh areas in the Estuary next to the shoreline of the City of New Bedford and the Towns of Acushnet and Fairhaven. The current human health risks from the Site are from frequent ingestion of local fish and shellfish, and frequent direct contact with PCBs in the sediments. In addition, the Harbor's marine ecosystem is severely damaged from the widespread PCB-contaminated sediment.

In addition to the public health and environmental impacts, contamination of the harbor area has had tremendous economic impacts on the local communities. The local shellfish/fishing and commercial lobster industry has suffered from the MA DPH fish taking and consumption ban in the Upper, Lower and Outer Harbor.. Also, contaminated sediments have made it difficult to conduct any

maintenance dredging for navigational purposes. Lack of maintenance dredging has resulted in limiting the size of commercial ships that can enter the harbor, thus limiting its use as a regional port facility. Superfund-related dredging is intended to remove contamination down to a level that no longer poses a risk to human health and the environment.

NBHDC understands that previously, before EPA's adoption of CAD Cell technology, the cleanup was estimated to cost over $400 million (net present value) or $1.7 billion in actual costs and take up to 46 years to complete, depending on EPA's level of funding for this effort. However, the use of CAD Cell technology will enable the USEPA to clean up approximately 750 acres or 80% of the harbor area needing remediation above the Hurricane Barrier (generally the area from the Coggeshall Street Bridge south to the Hurricane Barrier) in a matter of years, as opposed to the several decades it would take to clean up the navigable portions of the Harbor to the USEPA cleanup goals without the use of CAD Cell technology. Because the NBHDC is experienced at building CAD Cells in the Harbor efficiently and cost effectively, the NBHDC can assist the USEPA in maximizing the acceleration of the Harbor cleanup, thereby reclaiming the Harbor bottom for navigable interests and ecologic benefits sooner. In fact, EPA's Long Term Monitoring program results show statistically significant improvement of benthic quality in the Lower Harbor over the past ten years when three navigational CAD cells were constructed and filled.

A History of CAD Cells in New Bedford Harbor:

The DMMP, EOEA No. 11669 Final Environmental Impact Report (FEIR), was prepared for the Office of Coastal Zone Management (CZM) and the Cities of New Bedford and Fairhaven, MA to provide a state designation of a disposal site in New Bedford/Fairhaven Harbor for dredged material determined to be unsuitable for open-water disposal due to contamination. The FEIR identifies the Popes Island North site (one of the areas to the north of the Route 6 Bridge in New Bedford Harbor) as the preferred alternative disposal site, as well as the least environmentally damaging practicable alternative (LEDPA) under the Clean Water Act. To date, two CAD Cells have been constructed within the footprint of the DMMP disposal site that have already received contaminated sediment generated by navigational dredging projects at several locations throughout New Bedford Harbor. Conceptual layout plans of the construction of future CAD Cells within the DMMP boundary have been prepared, which depict the footprint of CAD Cells of varying size to reflect funding streams of different amounts. Experience dictates that fewer, larger CAD Cells are the best use of the finite space allotted in the DMMP, and are less ecologically disruptive, as well as the most cost effective use of government financial resources.

The NBHDC currently is planning to create another CAD Cell for its own use for navigational dredging in the Harbor. It is anticipated that dredge spoils from NBHDC's New Bedford Harbor Dredge – Phase IV, and potentially from the Commonwealth of Massachusetts South Terminal Dredge Project, will be placed in a newly created CAD Cell (CAD Cell #3); associated design, siting, and permitting activities are currently underway. Synergies associated with co-development of the USEPA LHCC at the same time that the next Navigational Dredging CAD Cell is developed would be significant and could potentially translate to construction of a single CAD Cell or adjacent CAD Cells of optimal size at minimal cost. In the event the construction of a joint Lower Harbor/Navigational CAD Cell is pursued, CA funding will only be used for construction of that portion of the CAD Cell to be used by Superfund.

1.3 Purpose

This Work Plan presents NBHDC's approach to perform the scope of work requested by the US Environmental Protection Agency (USEPA) to design and construct a CAD Cell in New Bedford Harbor. The following summarizes the major work components requested by USEPA that are addressed in this plan:

- Develop detailed engineering design plans and specifications for the construction of a LHCC in New Bedford Harbor with the capacity to accept disposal of approximately 300,000 cy of contaminated sediment;
- Perform geophysical underwater surveys and/or sediment sampling program to obtain information as needed to identify the exact location and develop the design of the CAD Cell;
- Obtain a U.S. Army Corps of Engineers (USACE) Suitability Determination to establish the depth beneath which dredge materials may are acceptable for open ocean disposal;
- Determine the volume of material to be generated by construction of the LHCC of unsuitable top-of-CAD materials that must be disposed of in existing CAD Cells and suitable bottom-of-CAD materials that may be disposed of at a USACE Active Open Water Dredged Material Disposal Site and/or other potentially beneficial reuse options, such as complete the capping of the existing pilot study cap in the Outer Harbor, and/or the capping of the Borrow Pit CAD Cell and CAD Cell #1;
- Prepare bid documents to include plans and specifications for public procurement of a contractor to construct the CAD Cell, in conformance with ESD obligations to pursue beneficial re-use of bottom-of-CAD material to the maximum extent practicable;
- Advertise the Request-for-Bid and solicit bid responses from qualified contractors, and select the contractor that has demonstrated its ability to perform the work at lowest bid cost to award the contract;
- Provide Resident Engineer services for the oversight of construction to ensure conformance with design specifications and confirm satisfactory completion of the project by conducting post-dredge surveys.

1.4 Assumptions

This section outlines major assumptions made during Work Plan preparation.

NBHDC had developed this Work Plan based upon the following assumptions:

- CAD Cell construction has proceeded through the State Enhanced Remedy (SER) since passage of the DMMP without separate on-site permitting requirements. As a result, it is currently assumed that additional on-site permitting tasks will not be required except for USACE Suitability Determination for off-site disposal.
- All contaminated material removed for construction of the LHCC will be transported for disposal to existing CAD Cells in New Bedford Harbor. If a "transitional" CAD Cell is needed to deal

with the contaminated "top" of the USEPA LHCC, the Work Plan and budget may need to be amended.

- The project will be conducted in coordination with USEPA and under USEPA and SER regulatory authority.
- The projected schedule for overall project completion is anticipated to be approximately 18 months from Notice to Proceed to completion.
- All NEPA related requirements have been met prior to the initiation of this contract, including NHPA Section 106, Fish and Wildlife, Endangered Species, etc.
- QA/QC, engineering, construction and monitoring requirements will be based on currently listed SER Performance Standards and any additional requirements USEPA deems necessary.
- EPA shall perform air monitoring for the project. NBHDC will team with its current Port SER dredging consultant, Apex Companies, LLC (Apex), under the current Master Services Agreement (HDC-FY08-002) to perform the Engineering, Design, and Engineering Oversight Tasks in this Work Plan.

1.5 Deliverables

As described in Section 2 – Work Approach and Task Plan of this Work Plan, the following documents and plans will be prepared as required and will be provided to USEPA as the work progresses:

- Site Specific QA/QC Plan
- Sampling and Analysis Plan
- Contractor Oversight Plan
- Health and Safety Plan
- Boring/Vibracore Sediment Characterization Logs
- Geotechnical Sediment Testing Reports
- Bathymetry Survey Plans
- Chemical/Biological Environmental Analytical Reports (if any)
- USACE Suitability Determination/Programmatic General Permit Documents (if any)
- Sub-Bottom/Seismic Survey Plans and Reports
- For Bid CAD Cell Design and Specifications
- Public Solicitation Bid Documents
- Contractor Submittals
- For Construction CAD Cell Design and Specifications
- After Action Report with As-Built Plans of the CAD Cell

2.0 WORK APPROACH AND TASK PLAN

This section of the Work Plan presents NBHDC's approach to the siting, design, and construction of a USEPA LHCC in New Bedford Harbor and conducting associated activities related to characterization of sediment for proper disposal, solicitation of contractors, and oversight of construction activities, including performance of site monitoring to ensure conformance with applicable regulations, the engineering design, and site-specific performance standards. Section 2.1 presents a generalized summary of the approach to work, while section 2.2 provides a more detailed presentation of the work as sequence of specific goals to be achieved over time.

2.1 General Approach and Sequence to Work

The NBHDC proposes the provide to the USEPA the services detailed in this Work Plan to construct a LHCC to provide approximately 300,000 cy of sediment disposal space. The project will commence with activities related to determining the exact location and elevation of the top of the proposed CAD Cell, and verifying the initial conditions at existing CAD Cells to establish their capacity to receive either contaminated material for disposal or suitable material for capping. Once the footprint of the CAD Cell has been established, geotechnical borings will be advanced and Vibracore sampling will be performed to characterize the composition of sediment materials to be removed from both the top of the CAD Cell and the bottom of the CAD Cell for design purposes and to inform potential contractors of the nature of the material to be handled during construction. A Sub-Bottom/Seismic Survey will be conducted within the CAD Cell to determine the sediment thickness and augment information generated by subsurface sampling to establish the depth to bedrock. NBHDC will assess the information obtained by subsurface remote sensing and the subsurface geotechnical investigation from within the dredge footprint in order to determine the final size and develop a detailed design of the CAD Cell. The results of the sediment characterization will also support procurement of a USACE Suitability Determination and preparation of a Programmatic General Permit application to obtain authorization for disposal of the material in open ocean water. As requested, NBHDC will provide technical support to USEPA for conducting up to five (5) Technical Working Group Meetings and up to three (3) Public Informational Meetings as may be required during the course of implementing the Task Plan described below.

If a joint Superfund/Navigational CAD Cell is pursued, CA funding will only be used for construction of that portion of the CAD Cell to be used by Superfund.

2.2 Task Plan

NBHDC has prepared the following pages to detail the services to be performed at the task/subtask level along with a discussion of the work to be performed under each task/subtask.

2.2.1 Task 1: Project-Specific Planning Documents and CAD Cell Area Bathymetric Survey

This task includes preparation of planning documents to guide project activities and determination of the exact elevations of existing and proposed underwater structures. In addition to finalizing amendments to this document into a Final Work Plan after award of CA funding, NBHDC will develop other site- and project-specific plans as necessary to guide activities related to the design, engineering, and construction of the LHCC. The plans to be developed, amended, and finalized include the following: Sampling and Analysis Plan; Contractor Oversight Plan; Health and Safety Plan; and Site Specific QA/QC Plan. A bathymetric survey of the CAD Cell area will be performed to determine exactly the elevations of the top of the proposed LHCC and to verify current conditions at existing CAD Cells that will receive either contaminated material for disposal or clean material for capping.

Prior to preparing a design, a marine survey of the existing CAD Cells (Borrow Pit CAD Cell, CAD Cell #1 and CAD Cell #2) will be needed to be completed. The surveys for the Borrow Pit CAD Cell and CAD Cell #1 will be needed in order to determine how much material will be utilized to cap these two areas during construction of the new CAD Cell. The survey of CAD Cell #2 will be required in order to calculate the volume remaining in CAD Cell #2 (the top of the new CAD Cell will need to be placed within CAD Cell #2; therefore, the size of the new CAD Cell will be partially dependent upon the remaining available volume within CAD Cell #2).

Additionally a wide swath of potential CAD Cell area will need to be re-surveyed in order to determine the existing condition initial elevations. This information is necessary in order to calculate and design proposed final elevations for the CAD Cell, and to determine necessary final grading. It is currently anticipated that the surveys listed above will take approximately 5 days to complete. Additional budget is included for processing and preparing the data for placement within the CAD Cell existing conditions drawings.

2.2.2 Task 2: CAD Cell Geotechnical Borings and Vibracores

This task includes characterization of the composition of material that will be removed from both the top of the CAD Cell and the bottom of the CAD Cell, and determination of the anticipated slopes within the CAD Cell for design purposes. Knowledge of the types of material encountered will help inform contractors with regard to the composition of material to be handled during construction. This information will also be used for obtaining a USACE Suitability Determination.

This task will involve completion of over-water subsurface borings and Vibracores in order to determine the exact composition of material within the area that the CAD Cell will be constructed. It is anticipated that bedrock is very deep in this area (although sub-bottom investigations will be needed confirm this assumption), and therefore, the borings will be very deep, and will require several days each. Subsurface information will be collected in order to provide information to contractors, and inform the design process with regard to angles of internal friction and potential methods for re-use of the material.

2.2.2.1 Advancement of Subsurface Borings

This subtask includes advancement of up to 10 borings (depending upon the speed of boring advancement) to bedrock from a floating barge located within the proposed alignment of the CAD Cell. It is currently anticipated that each boring will take at least three days (one day is budgeted for weather delays). This boring program will require mounting a drill rig onto a floating barge to be mobilized to the site specifically for this work, and anchoring the barge in place, in order to advance casing down to bedrock. At present, it is anticipated that a maximum of 31 days of water-side borings will be conducted at the site, and Apex has included budget for 31 days of drilling in its accompanying cost estimate.

Borings will be advanced to bedrock within the proposed footprint of the CAD Cell. It is also possible that there may be more than one potential location for the CAD Cell, in which case, at least one to two borings may be located outside of the ultimate footprint of the CAD Cell, in order to evaluate other potentially suitable locations. Borings will be advanced via drive-and-wash (or equivalent) methodology. It is currently anticipated that split-spoon sampling will be conducted on every five feet with a split-spoon sampler sampling on 2-foot intervals until refusal is reached, and that for each 2-foot interval, that a Standard Penetration Test will be conducted in order to aid in determining the stiffness and/or consolidation of underground geologic formations; however, it is possible that samples may be collected at every 2 foot interval to fully characterize the subsurface. In order to ensure that bedrock is reached when the borings reach refusal, a 10-foot rock core will be advanced at refusal. Soil boring logs and rock core logs will be created summarizing the results of subsurface borings.

2.2.2.2 Advancement of Vibracores

Up to 30 vibracores are anticipated to be advanced within the footprint of the proposed CAD Cell. The vibracores are intended to help delineate the difference between “parent” and “non-parent” material, which will help to delineate the types of material that are present within the surficial layers. The type of surficial material is important to determine during the design process, as the anticipated slopes of the material are highly dependent upon the gradation mix of sand and silt.

“Parent” material consists of a number of different combinations of silt, sand, gravel or rock. “Parent” geological material was formed and placed during the advancement and recession of the glaciers, approximately 13,000 years before industrial activity of man. Therefore, “parent” material typically is more tightly packed, and has a steeper angle than “non-parent” material. “Non-parent” material would typically have formed as a layer of fine-grained material that has deposited within New Bedford Harbor over the last several hundred years. This material is not typically compact, and will need a shallower angle of inclination during the design process.

In order to determine vertical delineation between “parent” and “non-parent” material within the proposed dredge footprint, vibracores will be advanced to refusal, and the results of the vibracore will be observed and catalogued. At present, it is anticipated that a maximum of 20 days of

vibracore work will be conducted at the site, and Apex has included budget for 20 days of vibracore work in its accompanying cost estimate.

2.2.2.3 Grain Size Determinations

As borings are advanced, a number of samples will be collected in order to characterize the geologic layers encountered during subsurface investigation. The samples will be categorized visually, but will also be submitted to a geotechnical laboratory for grain size analysis and Atterberg limits (if necessary). The grain size analysis will allow for a more analytical determination of the composition of geologic formations within the location of the CAD Cell. At present, it is anticipated that a maximum of 75 samples with be analyzed for grain size.

2.2.2.4 Sediment Chemical Characterization for Suitability Determination

The target location for the LHCC is situated within an envelope for which USACE previously issued a Suitability Determination for dredge materials to be disposed of at the Cape Cod Bay Disposal Site (CCBDS). It is possible that the final design footprint may fall partially or completely outside of this footprint, which may trigger the need for additional chemical characterization of sediment to support the effort to obtain a new or revised Suitability Determination. Furthermore, USACE has recently informed NBHDC of the potential availability of the Rhode Island Sound Disposal Site (RISDS) to receive suitable dredge materials for open water disposal generated during construction of the LHCC. It is unclear whether the existing Suitability Determination obtained for sediment disposal at CCBDS could be applied to material to be sent to RISDS instead or if additional chemical characterization would be required to obtain a new or revised Suitability Determination for use at RISDS.

2.2.3 Task 3: CAD Cell Sub-Bottom/Seismic Survey

This task includes assessment of the sediment thickness and geometry within the CAD Cell area. This activity involves the use of Sub-Bottom/Seismic Survey equipment within the CAD Cell to determine the sediment thickness. As the depth to bedrock is significant, and as the length of time needed to advance borings is also anticipated to be lengthy, a limited number of borings will be able to be advanced with the CAD Cell area within the existing budget. Therefore, the Sub-Bottom/Seismic Survey will allow a more complete picture of the potential CAD Cell footprint bedrock elevation. A Sub-Bottom/Seismic Survey will be conducted in an attempt to determine the thickness of sediment along traverses within the area. Used in conjunction with the existing boring information (to calibrate the data), the sub-bottom information will ameliorate the reduced number of borings mandated by the large depth to bedrock.

As the budget for advancement of borings is limited, this geophysical technique will be utilized in coordination with available boring information in order to interpolate the elevation of bedrock within the CAD Cell. Five days of survey are budgeted for this activity.

2.2.4 Task 4: CAD Cell Design

This task includes design of the CAD Cell. NBHDC (in partnership with its Port Navigational Dredging Engineering Contractor) has designed two prior CAD Cells within New Bedford Harbor, and therefore is qualified to oversee the design of the CAD Cell for this project. Additionally, design and construction of a CAD Cell will be undertaken under the regulatory purview of the USEPA and the State Enhanced Remedy committee. Final design engineering for construction of the CAD Cell includes the following subtasks:

- Review of historical information and data related to the proposed CAD Cell location.
- Assessment of subsurface remote sensing and subsurface geotechnical data from within the dredge footprint in order to determine the final size of the CAD Cell. Evaluation of logistical suitability of final dredge target elevations and dredge boundaries based upon the size of the future CAD Cell cap, the required capacity of the CAD Cell, and the amount of material that must be removed and disposed prior to removing clean material from the CAD Cell.
- Finalization of the plan dimensions and plan location of the dredge footprint for the CAD Cell. Also determination of design slope angles within the various strata, and dredge depth and bottom footprint dimensions (which is an iterative process).
- Because the combined remaining disposal volume within the CAD Cell #2 is fixed, the dredge footprint for the new CAD Cell would ideally be designed such that the volume of contaminated/organic silt disposed within CAD Cell #2 does not exceed the CAD Cell's remaining disposal capacity. Other disposal options, such as construction of a Transitional CAD Cell, may need to be evaluated if the volume of contaminated sediment generated by the construction of the LHCC exceeds the available capacity of CAD Cell #2.
- Determination of cell capacity based on design geometry and desired final grade after cell filling and capping. Incorporation of capacity and geometry information on project plans.
- Volumes of contaminated material and clean material (for disposal within CAD Cell #2, offshore disposal, use as capping for previous CAD Cells or capping at OU-3) will be calculated.
- Identification of beneficial re-use opportunities (project(s) with capacity to utilize the clean glaciofluvial material to be excavated during CAD cell construction), and coordination with the selected project(s).
- Plans, cross-sections and detail drawings will be prepared of the final design in order to suitably instruct bidders on the construction of the CAD Cell.

2.2.5 Task 5: Offshore Disposal Permitting/Suitability Determination

In creation of the CAD Cell, a significant quantity of clean material will be generated and will be disposed of offshore. In order to dispose of material offshore, a Suitability Determination needs to be procured from the U.S. Army Corps of Engineers (essentially a statement from USACE stating that the material is suitable for off-shore disposal) and a Programmatic General Permit application needs to be submitted to USACE for review and approval to authorize disposal of the material. The nearest disposal locations for the material are (1) the Cape Cod Bay Disposal Site, which is located within Cape Cod Bay, and (2) the Rhode Island Sound Disposal Site, located off Pt. Judith, Rhode Island.

NBHDC employs critical path methodology when applying for permits. Permits can often take a considerable amount of time to evaluate from regulatory agencies; therefore, this task will take priority over all other tasks, to prevent offshore disposal of material from the CAD Cell from delaying the start of construction of the overall project. Apex determines the timelines required for permits needed and sequences the applications to ensure that all permits are obtained as soon as possible.

2.2.6 Task 6: Prepare Dredge Contractor Procurement Package

This task includes activities related to the process for procuring a dredge contractor to construct the CAD Cell. NBHDC proposes to complete the design for the LHCC, including design plans and specifications, and prepare bid documents for the dredge program, which are anticipated to include the contract agreement, drawings, and technical specifications. The bid procurement package will provide specifications for excavation of contaminated sediment from the top-of-CAD Cell, to be disposed in other existing CAD Cell(s), and for excavation of sediment from the bottom-of-CAD Cell design footprint, for either offshore disposal or beneficial reuse.

2.2.6.1 Preparation of Bid Documents

These documents will be developed to bid the project out and will ultimately form the legal agreement between the NBHDC and the Contractor. The standard contract agreement will be modified as required for specific applicability to the construction of the LHCC, and will include instructions to bidders, notice to bidders, a sample contract, bond requirements, general conditions, supplementary conditions, a milestone schedule, and a bid quotation form. NBHDC proposes to submit a draft of the contract agreement with plans and specifications to the USEPA for review by procurement/legal prior to issuing the final document.

NBHDC will prepare the required contract drawings for inclusion in a package suitable for bidding. Contract drawings will include: existing conditions at the proposed LHCC site, limits of work, proposed construction, and sections and details as required to define the Scope of Work. Technical specifications will be prepared for inclusion in the bid package. Specification sections that will be developed to convey performance requirements are expected to include the following: Bidding Schedule, Summary of Work, Field Engineering and Control, Submittal Procedures, Construction Progress Schedules, Contractor Quality Control, Temporary Construction Facilities, General Safety Requirements, Dredging, Disposal, Dredge Material

Management, Plant and Equipment, Environmental Protection, Water Quality Monitoring and Control, and Measurement and Payment.

2.2.6.2 Oversight of the Solicitation for Bid Process

NBHDC will conduct the contractor procurement process, including publication of the Bid Package, providing notice of the Bid in the MA Central Register, participating in a pre-bid meeting for contractors, responding to written questions posed by potential bidders, and preparing Addenda to the Bid Package as necessary.

2.2.6.3 Selection of Contractor

After a competitive review of all responsive submittals, NBHDC will review the bid submissions and make a selection of a contractor to award a contract to construct the LHCC. In addition to submitting a bid at the lowest cost, to receive award of the contract, the successful contractor will also have to submit satisfactory qualifications that demonstrate a past history of its ability to perform the work with good references from previous customers.

2.2.7 Task 7: Construction Oversight/Resident Engineer

When a signed contract with a qualified dredge contractor has been executed, NBHDC's engineering consultant will provide Construction Oversight of the field activities associated with the construction of the LHCC and will serve as Resident Engineer to ensure conformance with contract specifications and the requirements of the SER process and other site-specific performance standards. The construction is expected to occur over a 7- to 10-month period (2 to 3 months for Top of CAD and 5 to 7 months for Bottom of CAD). It is assumed that field work will potentially be operational 24 hours per day, seven (7) days per week for approximately half of the expected construction period. These services will include:

- review and approval of contractor submittals;
- water quality monitoring during dredging;
- oversight of the dredge operations and scows during dredging;
- oversight of the dredge material disposal into the CAD cells;
- dredge process bathymetric surveys; and,
- documentation and oversight of the construction process, including daily logs, health & safety and quality control logs, and progress assessments.

The proposed scope of work for this subtask assumes the following:

- the time of contractor award to completion of in-water dredging activities will be 9 months;

- water quality monitoring during the CAD Cell construction will be performed as required by the site-specific Performance Standards and the SER process found in the SAP water quality monitoring section, and will be conducted during the day shift by a crew of two using one contractor research vessel,
- bathymetric surveys of the contractors work for QA/QC purposes will be conducted at a minimum of twice per week during Top of CAD, once per week during Bottom of CAD, and daily for any placement of material at an existing CAD Cell as a "cap;" and,
- all data shall be made available to the EPA during the project once they are validated.

2.2.7.1 Project Close-Out

As a guidance document of the SER process, the Performance Standards also requires the submission of an after-action close-out report when the dredge project has been completed to summarize relevant project information for use by the USEPA and the appropriate regulatory agencies. A post-dredge bathymetric survey will be conducted to examine the conditions of the area following the dredge work and summarized on as-built plans. To properly document conditions resulting from the LHCC dredge project, Apex will develop water quality data, pre- and post-dredge surveys, as-built plans, post-dredge sampling data (as appropriate), and a narrative of the findings of the information for presentation within a summary report.

3.0 MANAGEMENT PLAN

NBHDC will manage the LHCC dredge project consistent with the Management Principals for its previous CAD Cell construction projects. The NBHDC project management approach provides a clear project organization comprised of staff from NBHDC and its team consultant and member subcontractors.

Subcontract Management

Subcontracts are expected for this Work Scope; for laboratory services for sample analysis, and for drilling contractors (air sampling will be performed by USEPA). Subcontracts for laboratory testing, and the leasing of the equipment and boats required to conduct limited sampling are anticipated. NBHDC will manage all subcontracts including any equipment leases and/or material required to complete the work outlined in the tasks noted above.

4.0 PROJECT SCHEDULE

Work on the Task Plan outlined in this Work Plan will begin immediately upon notice to proceed. Based upon the existing schedule, the work is planned to be completed by the end of December 2012, assuming this Work Plan is approved by August 5, 2011. (Please refer to the Project Timeline in Attachment A for your information.) Otherwise, the work is scheduled to take approximately eighteen (18) months to complete.

The following critical path project milestones have been identified:

- Task 1 – Project-Specific Planning Documents and CAD Cell Area Bathymetric Survey: develop project-specific planning documents and perform initial underwater surveys of potential locations for the LHCC.
- Task 2 – CAD Cell Geotechnical Borings and Vibracores: implement sampling program to characterize the sediment for design purposes inform potential bidders of the composition of material to be handled during construction.
- Task 3 – CAD Cell Sub-Bottom/Seismic Survey: perform geophysical underwater surveys to assess the sediment thickness and geometry within the proposed CAD Cell area.
- Task 4 – CAD Cell Design: develop final engineering design for construction of the LHCC under the regulatory purview of the USEPA and the SER committee.
- Task 5 – Offshore Disposal Permitting: procure a Suitability Determination needs to be procured from USACE and submit a PGP application authorize open ocean disposal of underlying clean material.
- Task 6 – Prepare Dredge Contractor Procurement Package: prepare bid documents, oversee solicitation for bid process, assist in selection of successful bidder for award of contract, and obtain signed contract.
- Task 7 – Construction Oversight/Resident Engineer: oversee construction to ensure conformance with design specifications, perform water quality monitoring, and conduct post-dredge surveys to determine satisfactory completion of the project.

All tasks listed above are anticipated to be completed during the eighteen (18) months following issuance of the Notice to Proceed. Actual construction schedule will be based on the schedule developed during design and in coordination with the regulatory agencies, USEPA, and Dredging Contractor. The schedule presented is conceptual. As the USEPA LHCC project is dynamic, actual schedule dates will change and certain items may be added and/or deleted. The Project Schedule will be updated as needed to reflect actual work.

5.0 PROJECT COST ESTIMATE

NBHDC presents Budget Information in the attached Application for Federal Assistance SF-424 and associated forms. Based upon NBHDC's best estimate of the level of effort required to complete the Task Plan described above, NBHDC requests a budget of $9,000,000 to be assigned as follows: $600,000 for NBHDC staff, resources, and fees to directly manage and administer all project activities; $1,700,000 for NBHDC's Port SER dredging consultant to perform the Engineering, Design, and Engineering Oversight Tasks in this Work Plan; and $6,700,000 for the construction of the LHCC in conformance with engineering design plans and specifications. This Work Plan, Project Schedule, and Project Cost Estimate have been prepared in advance of performance of various site investigative activities and before development of the final engineering design of the LHCC. As a result, numerous assumptions have been relied upon which may require subsequent modification after existing site conditions become known that could have the potential to impact the final design and construction costs. Any additional unforeseen level of effort required to implement design changes and overcome construction challenges will be addressed through subsequent requests for modification.

ATTACHMENT A

USEPA LOWER HARBOR CAD CELL PROJECT TIMELINE