New Bedford Harbor Superfund Site

U.S. Army Corps of Engineers New England District

Draft Final North Street Saltmarsh Intertidal Work Plan

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Acronyms and Abbreviations

95UCL	95 percent Upper Confidence Limit
APP	Accident Prevention Plan
bgs	below ground surface
cy	cubic yards
DDA	debris disposal area
EPA	Environmental Protection Agency
ft.	foot/feet
mg/kg	milligrams per kilogram
MHW	Mean High Water
MLLW	Mean Lower Low Water
NAE	U.S. Army Corps of Engineers, New England District
NAVD88	North American Vertical Datum of 1988
NBHSS	New Bedford Harbor Superfund Site
PCB	polychlorinated biphenyls
ROD	Record of Decision
TCL	target cleanup level

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1.0 Background

This parcel specific intertidal work plan for the North Street Saltmarsh (Parcel # 015-0043) provides information concerning remediation and restoration of this particular parcel, including figures of the excavation area, equipment access plans, sample locations, existing and proposed wetland cover, topography and a schedule summarizing the activities and timelines.

As described herein, certain areas of polychlorinated biphenyl (PCB) contamination in the sediment and soil on this parcel exceed the established site-specific target cleanup level (TCL) for intertidal sediment on residential properties and therefore require remediation. Disturbed areas will be backfilled with clean soil and restored to the approximate original elevation and vegetation type to the extent practicable.

2.0 Parcel Site Description

The North Street Saltmarsh is an undeveloped shoreline parcel covered primarily with saltmarsh vegetation, brush and scattered clusters of trees. It is located on the eastern side of the Lower New Bedford Harbor in the Town of Fairhaven. The property is bounded to the north by residential properties and Hedge St., to the east by residential properties and Cherry St, and to the south by a residential property. The western side of the property is bounded by the Harbor (Figure 2-1). A tidal creek in the southwest corner of the property flows into a small saltmarsh that contains tidal and non-tidal wetland communities. Seawater inundates the low lying areas through this tidal creek during higher than average tides (e.g., moon tides or storm events).

The western boundary of the property includes the Harbor shoreline. The shore includes beach deposits and low marsh and high marsh vegetation. As shown on Figure 2-2, the center of the property includes low marsh, open water (panne), high marsh, beach and *Phragmites*. The low marsh area is vegetated with smooth cordgrass; high marsh species include salt meadow cordgrass, saltgrass, blackgrass, seaside goldenrod, saltmarsh aster, and switchgrass.

Multiple rounds of PCB sampling of sediment and soil from the subtidal, intertidal, and upland areas have provided data to support remedial planning for the site (Table 2-1). Figure 2-3 shows the sampling locations within the saltmarsh and intertidal areas that were used to delineate the extent of contamination on the parcel. Based on the 95 percent Upper Confidence Limit (95UCL) of the arithmetic mean, the 1998 Record of Decision (ROD) for the New Bedford Harbor Superfund Site (NBHSS) (USEPA 1998) lists the TCL for intertidal sediment and soil in residential areas, including fringe saltmarshes bordering homes, as 1 milligram per kilogram (mg/kg) from 0 to 1 ft. below ground surface (bgs). An explanation of the 95UCL calculation is included in Section 3.1.

3.0 Excavation

Excavation using land-based or amphibious equipment will remove material as described in Section 3.1. The area identified for excavation is shown on Figure 2-1. Access to the site will be from the western terminus of North St. and through private property that is under an access agreement obtained by the U.S. Environmental Protection Agency (EPA). Excavation will proceed generally from the northern end of the excavation area to the south and from the eastern side to the west. A construction site plan, showing work areas, stockpile areas, potential temporary access road locations and other details is included as Figure 3-1. A temporary earthen berm barrier will be placed at the mouth of the inlet to the harbor to temporarily seal out tide water inflow from the harbor. The berm, described in Section 3.1, is intended to allow the excavator and haul trucks unrestricted access to the excavation area during all tide cycles during remediation and restoration. Excavated material will be loaded into roll-off trucks and transported to the debris disposal area (DDA) at EPA's Sawyer St. facility. The truck route from the North Street Saltmarsh site to the DDA is included as Figure 3-2. Excavation and load-out will continue until target elevations are reached as described in Section 3.1.

Immediately following excavation, site restoration will include backfilling of excavated areas with clean wetland topsoil to support revegetation of the saltmarsh. Smooth cordgrass will be replanted in the low saltmarsh areas that are remediated; salt meadow cordgrass and saltgrass will be replanted in the high saltmarsh areas. Further detail regarding site restoration is provided in Section 6.

Prior to demobilization from the site, all equipment will be dry decontaminated using hand tools and brushes to remove accumulated mud and debris. Workers performing dry decon will use appropriate personal protective equipment in accordance with the Accident Prevention Plan (APP). If necessary, equipment will be decontaminated at the Area C decontamination pad or the Area C DDA using conventional methods, such as solvent wash, pressure wash, steam cleaning and brush cleaning. Equipment requiring conventional decontamination will be covered with poly sheeting and transported to Area C.

3.1 Excavation Area

Since the property is zoned as residential and directly abuts many residential homes, EPA applied the 1 ppm TCL for this property. As a result, a contiguous section of the site, approximately 42,345 square feet in extent, will require excavation to a depth of 1.0 ft. (Figure 3-3). The area and depth of excavation were determined by multiple rounds of sediment/soil sampling for PCBs. Consistent with the Appendix B of the 1998 ROD (USEPA 1998), the metric for meeting the 1 mg/kg TCL in the top foot of intertidal soil/sediment is the 95UCL of the mean.

The data set used to calculate the 95UCL includes analytical results from samples collected throughout a grid of compliance sample locations (red dots shown on Figure 3-4). The grid includes samples from within and

outside the known contamination area. A survey control table will be developed to document the pre- and post-excavation horizontal and vertical coordinates of the compliance sample locations.

The final excavation area was determined based on characterization data and the 95UCL calculation to satisfy a resultant target value of 1.0 mg/kg. Because the material within the excavation footprint will be replaced with clean backfill, a value slightly above zero (0.01 mg/kg) was used in the calculations to represent the PCB concentration within the excavated area. Through the application of the 95UCL calculations, it was determined that the volume of material to be excavated is approximately 1,568 cubic yards (cy).

Surveys of the excavation area were completed to create existing topographic and wetland vegetation maps of the site (Figure 2-2). These survey data will also serve as benchmarks for backfill elevations and wetland planting during site restoration. Prior to site clearing or grubbing, mature, non-invasive tree and shrub species will be marked in the field and will be preserved when possible. A native tree and shrub inventory will be documented prior to excavation and will be used to develop a post-excavation planting plan. Other vegetation will be cleared from the site as necessary to permit excavation. Disturbance by grubbing will be minimized to the extent practicable.

The excavation will be conducted according to the contours and sediment/soil removal thicknesses shown on the Excavation Plan (Figure 3-5). Figures 3-5A through 3-5D provide the pre-excavation elevation values throughout the excavation footprint. Tide water influence in the excavation area will be controlled with the placement of an earthen berm at the wetland inlet in the southwest portion of the site as shown on the Construction Site Plan (Figure 3-1). Sevenson Environmental Services, Inc. will excavate to the vertical and horizontal control established and Jacobs will confirm that the requirements of this work plan have been met. Water produced during excavation will be allowed to drain by temporarily staging excavated material in stockpiles placed directly on top of unexcavated contaminated material above the Mean Higher High Water (MHHW) line. The temporary stockpiles will be located near the boundary of the excavation at the North Street site entry/exit. A temporary access gate will be installed near the site entrance/exit using construction fencing.

3.2 Access Roads and Staging Area

The excavator and on-site haul truck(s) will be equipped with low ground pressure tracks, tires or amphibious flotation pontoon capabilities. Gravel access roadways to the excavation area are not anticipated. Access roads within the excavation area will be developed using construction mats designed for the purpose. The approximate location(s) of the temporary access roads are shown on Figure 3-1.

To conserve space on the property, a containment cell for the excavated material placed outside the excavation zone will not be constructed. The material will be stockpiled on top of contaminated sediment that has not yet been excavated and will be allowed to drain. A dedicated excavator stationed on the gravel pad at the entrance/exit to the site will mix Portland cement or similar stabilizing agent into the excavated material as

necessary to reduce moisture content. The excavator will load the material into DOT-approved 25-cy roll off containers/trucks with watertight tailgate seals and liners. The roll-off containers will be inspected for leakage prior to transport to the DDA at the Sawyer St. facility. The stockpiled materials and contaminated sediment under the stockpile will be direct loaded into the same sealed and lined roll off container/truck. The truck route to the DDA is shown on Figure 3-2.

3.3 Vegetation Survey

The intertidal portion of the parcel was surveyed for the different types of vegetation that exist (Figure 2-2) by Jacobs environmental scientists and a licensed land surveyor in June 2017. This information will be used as a reference for site restoration to best replicate the current conditions. An objective of this Work Plan is to restore the functions of impacted vegetated wetlands on an approximate 1:1 net basis. Additional requirements for restoration and revegetation are provided in Section 6.

3.4 Loadout and Disposal

The excavated material will be loaded into sealed and lined roll-off containers that are staged on plastic sheeting at the entrance to the site. The roll off truck will pick up the loaded roll off container and leave the site via North Street. In the event that material is too wet for over the road shipment to Area C, Portland cement (or a similar stabilizing agent) will be added as needed. After unloading at Area C, the material will be placed on the ground at the DDA to allow for additional drainage of free water. A stabilizing agent (e.g., Portland cement) will be added as necessary at the DDA to meet moisture content criteria as defined by the off-site disposal facility.

The roll-off trucks will be weighed and manifested at the Sawyer Street facility prior to travel to a transload facility (truck to rail) in Worcester, MA. Rail cars will be loaded, weighed and manifested prior to travel to the Wayne Hazardous Waste Disposal facility in Belleville, MI. One composite sample of excavated material will be collected by Jacobs and submitted for PCB congener analysis. The estimated amount of PCBs removed will be determined and provided to the receiving facility if required. The sample will be collected from excavated material prior to the addition of a stabilizing agent.

3.5 Backfill

The excavation will be backfilled with clean wetland topsoil shortly following excavation. The soil will be delivered to the site via over-the-road dump trucks and off loaded into stockpiles created within the post-excavation footprint near the entrance to the site. An all-terrain dump truck will transport the wetland soil over temporary construction mats to the excavator for spreading. Post-backfill topography will closely match the pre-excavation topography. Cover elevations are based on the topographic and vegetation surveys. Low ground-pressure equipment and temporary construction mats may be used to minimize soil compaction during backfilling. Wetland topsoil will be used to backfill all excavations in order to support vegetation regrowth. No gravel substrate base will be used since no excavations will be deeper than 1 ft. All topsoil material will be

tested to ensure that it is not contaminated or a letter of certificate will be provided by the supplier documenting that all materials are from an uncontaminated virgin source. Otherwise, material testing will be conducted at a frequency of 1 sample per 500 cy.

Final graded slopes for low marsh restoration will not exceed 1V:5H to prevent tidal erosion and will not be less than 1V:15H to enable adequate drainage and prevent hypersaline conditions. Final graded slopes for high marsh areas will not exceed 1V:2H.

3.6 Schedule

A projected schedule for remediation of this site is included in Figure 3-6. Immediately following excavation, confirmatory samples (discussed in Section 3) will be collected and analyzed at an off-site lab by AECOM (the U.S. Army Corps of Engineers, New England District (NAE's) third party contractor) for total PCB congeners. Restoration activities will be initiated immediately following excavation. An After Action Report will be prepared upon receipt of all post excavation confirmatory sample data.

4.0 Post Excavation Samples

The excavation footprint was determined with 187 data points collected through extensive sampling efforts on the parcel, as well as the resulting calculation showing that the 95UCL of the mean meets the ROD's 1 ppm PCB TCL for residential shoreline areas. As a result, post-excavation sampling is not required at this particular property prior to backfilling.

5.0 Air Monitoring

The evaluation of existing PCB congener data (Table 2-1) indicates that the maximum concentration at the site is 29.9 mg/kg. As stipulated in the NBHSS Air Monitoring Plan, particulate monitoring during excavation is not required because the concentrations of PCBs in the sediment/soil at the North Street Saltmarsh site are below the threshold value of 500 mg/kg. Pre-excavation ambient air monitoring was initiated in January of 2018. Monthly airborne PCB monitoring during excavation will begin within the first week of the start of excavation. Analytical results will be reviewed by the EPA and NAE and will be compared to the action level criterion in the Air Monitoring Plan.

The monthly airborne PCB monitoring program may include up to four monitoring locations close to and equally spaced around the active excavation area. Additional locations may be added as deemed necessary by EPA. Air monitoring will not be conducted if there is no active excavation occurring.

6.0 Restoration

This restoration plan has been developed to achieve the following restoration objectives:

1) Restore impacted vegetated wetlands on an approximate 1:1 net basis for functions;
2) Minimize re-engineering of site topography; and
3) Emulate pre-cleanup soils, slopes and hydrology.

The principal restoration objective is to restore areas to a baseline or comparable condition to maintain the ecological viability of the marsh. The existing pre-construction wetland cover conditions (Figure 2-2), which are considered to be the baseline for establishing restoration goals on the NBHSS, were defined during site surveys conducted June 20, 2017 and January 18, 2018.

All excavated areas will be backfilled, regraded, and revegetated as appropriate to best replicate the pre-remediation conditions. In general, high and low marsh will be restored to pre-remediated conditions. Backfill material and plant species selection will be consistent with the *Draft Final Restoration Basis of Design/Design Analysis Report (90%) Remedial Design for New Bedford Harbor Superfund Site* (FW 2002). Proposed finished elevations are based on the pre-construction surveys. Vegetation types within the remediation area are shown in plan view in Figure 6-1 and cross section profile view in Figures 6-2, 6-3 and 6-4.

Soil backfill for high and low salt marsh areas will consist of 1 ft. of manufactured wetland topsoil to support vegetation regrowth. The topsoil will be sandy material with 3 to 7 percent organic material and have no more than 15 percent particle size greater than 0.04 inches (1 mm) with no particles exceeding 1/2" inch (12.5mm), no more than 15 percent particle size less than 0.01 inches (0.25 mm) and a median particle size approximately 0.02 inches (0.5 mm). Final graded slopes for low marsh restoration will not exceed 1V:5H in order to prevent tidal erosion and will not be less than 1V:15H to enable adequate drainage and prevent hypersaline conditions. Final graded slopes for high marsh areas will not exceed 1V:2H.

A table of the vegetation type elevation breaks for each plant type is included in the cross section Figures 6-2, 6-3 and 6-4. The proposed post-restoration acreage of each cover type, in comparison with pre-excavation totals, is included in Table 6-1.

Appropriate construction methodologies and environmental controls will be implemented to ensure successful establishment of the wetland restoration areas without adversely impacting safety, public health or adjacent land uses. Erosion protection measures, such as the placement of silt fence, will be implemented during the work as appropriate to prevent excessive bank scouring and erosion. If unforeseen conditions are identified that could affect the ability of the restoration to achieve the success standards adopted for the program, appropriate adaptive management measures will be developed and implemented in coordination with the NAE and EPA.

At the conclusion of all restoration activities, final vegetation and topographic surveys will be conducted to document the as-built elevation and vegetation conditions and to allow for graphical display of the restoration construction in cross-sectional view.

6.1 Revegetation

Areas will be revegetated with the appropriate plant species to reestablish the plant community composition to an approximate 1:1 basis on wetland functions and values compared to the 2017 pre-construction cover type. High marsh areas will be revegetated with 50 percent saltmeadow cordgrass (*Spartina patens*) and 50 percent coastal salt grass (*Distichlis spicata*) while areas of low marsh will be revegetated by 100 percent smooth cordgrass (*Spartina alterniflora*). Black Grass (*Juncus gerardii*) will be used as an alternative high marsh plant in the event of product availability issues. Generally, as shown on Figure 6-1, each marsh type will be planted in the areas where it was growing prior to site remediation. Planting of 2-inch saltgrass plugs will be conducted after excavation in accordance with favorable weather conditions and within the spring planting season from approximately April 15 to June 30. Planting periods in the early fall may also be considered based on professional judgement in consultation with NAE and EPA. Planting of trees and shrubs will be conducted between April 1 and October 31. Saltgrass plants will be obtained from a nursery that can provide plugs grown from a local New England seed source. Saltmarsh grass plugs will be installed 12 inches on center with roots separated to encourage growth.

Upland areas impacted by construction will be stabilized and seeded with the New England Conservation/Wildlife Seed Mixture (Table 6-2) as necessary to restore the areas to pre-construction conditions. The locations of proposed shrub restoration areas are shown in Figure 6-1. Shrub restoration will be completed by planting 1-gallon *Iva frutescens*, 24 inches to 30 inches on-center. To protect the shrub and saltmarsh restoration area from large flotsum debris from New Bedford Harbor, a row of “2-man” stones (approximately 2-ft. diameter) will be placed above the MHHW elevation on the natural bluff adjacent to the saltmarsh as shown in Figure 6-1.

Phragmites are present on the parcel in both dense, nearly monospecific stands and in sparse stands growing interspersed among other coastal vegetation. As indicated on Table 6-1, approximately 0.27 acres of *Phragmites* stands currently exist on the parcel. *Phragmites* that occurs within the excavation area will be removed and disposed of with the excavated sediment and replaced with the appropriate wetland species. No mechanical removal of *Phragmites* is proposed outside of excavation boundaries. All remaining areas of *Phragmites* within the subject property will be treated with herbicide as needed to promote a *Phragmites* free buffer adjacent to areas of restored marsh. Treatment generally occurs when the *Phragmites* flowers in late August to early September. A second treatment will occur approximately two weeks after the initial treatment. Dead *Phragmites* stalks will be hand-raked during the late fall/early winter to prepare the area for seeding with conservation seed mix at the beginning of the following growing season. In April/May, the existing topsoil will be scarified and conservation seed mix and temporary cover (15 lbs./acre annual rye) will be manually broadcast and raked into the soil. A spot-treatment of *Phragmites* regrowth in the seeded area will be conducted during the next flowering period in late August to early September.

6.2 Monitoring and Maintenance

If upland plants are installed to restore areas impact by construction, maintenance will include watering of tree and shrub plantings as needed, as well as weeding around shrub plantings as needed to enhance survival during the establishment period. Visual field reconnaissance inspections will be conducted by an environmental scientist. Invasive species regrowth controls will be implemented within the restored wetlands and immediately abutting treated areas during the first five years to contain regrowth of the wetland species *Phragmites australis*, Purple Loosestrife (*Lythrum salicaria*) and knotweed (*Polygonum cuspidatum*). Installed trees and shrubs will have a 12-month warranty period and will be replaced if found to be unhealthy. Beyond the warranty period, the allowable mortality rate is 15 percent or less for planted trees and shrubs. All plantings and invasive species controls on the site will be monitored and annual monitoring reports will be submitted for the first five full growing seasons following completion of restoration. Quantitative assessments of vegetation, soils and hydrology will be completed for the first three growing seasons. Observations will occur at least two times during the growing season – in late spring/early summer and again in late summer/early fall. If the marsh grass plant mortality rate exceeds 20 percent within any wetland habitat type (i.e., low marsh and high marsh) during the first growing season, the site will be evaluated and appropriate measures will be taken to ensure successful restoration. Qualitative monitoring and invasive species controls will be completed for two additional full growing seasons following the three seasons of bi-annual monitoring. An Annual Monitoring Report will be prepared and submitted to the NAE and EPA.

7.0 References

AECOM. 2017 (October). *Draft Final Intertidal Sediment Monitoring Field Sampling Plan Addendum 3 North Street Salt Marsh*

Foster Wheeler (FW). 2002 (November). *Draft Final Restoration Basis of Design/Design Analysis Report (90%) Remedial Design for New Bedford Harbor Superfund Site.*

Jacobs. 2015 (July). *Draft Final Ambient Air Monitoring Plan for Remediation Activities*. ACE J23 35BG1001 M17-0009.

U.S. Environmental Protection Agency (EPA). 1998 (September). Record of Decision for the Upper and Lower Harbor Operable Unit, New Bedford Harbor Superfund Site. USEPA Region 1 – New England.

USEPA OSWER 9285.6-10. 2002 (December). *Calculating the Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites*.

Figures

Marsh Island

Riverside Cemetary

Radio Transmission Tower

Radio Transmission Tower

Limits of Excavation

Taber St.

Hedge St.

Cherry St.

North St.

Main St.

Oxford St.

Lafayette St.

Lower Harbor (Acushnet River)

USGS, Mass GIS

Legend

Limits of Excavation

Elevation Data NAVD88 ft

0 200 400 Feet

Basemap Data Source: MassGIS, ESRI

March 2018

North Street Saltmarsh Site Location and Features

New Bedford Harbor Superfund Site

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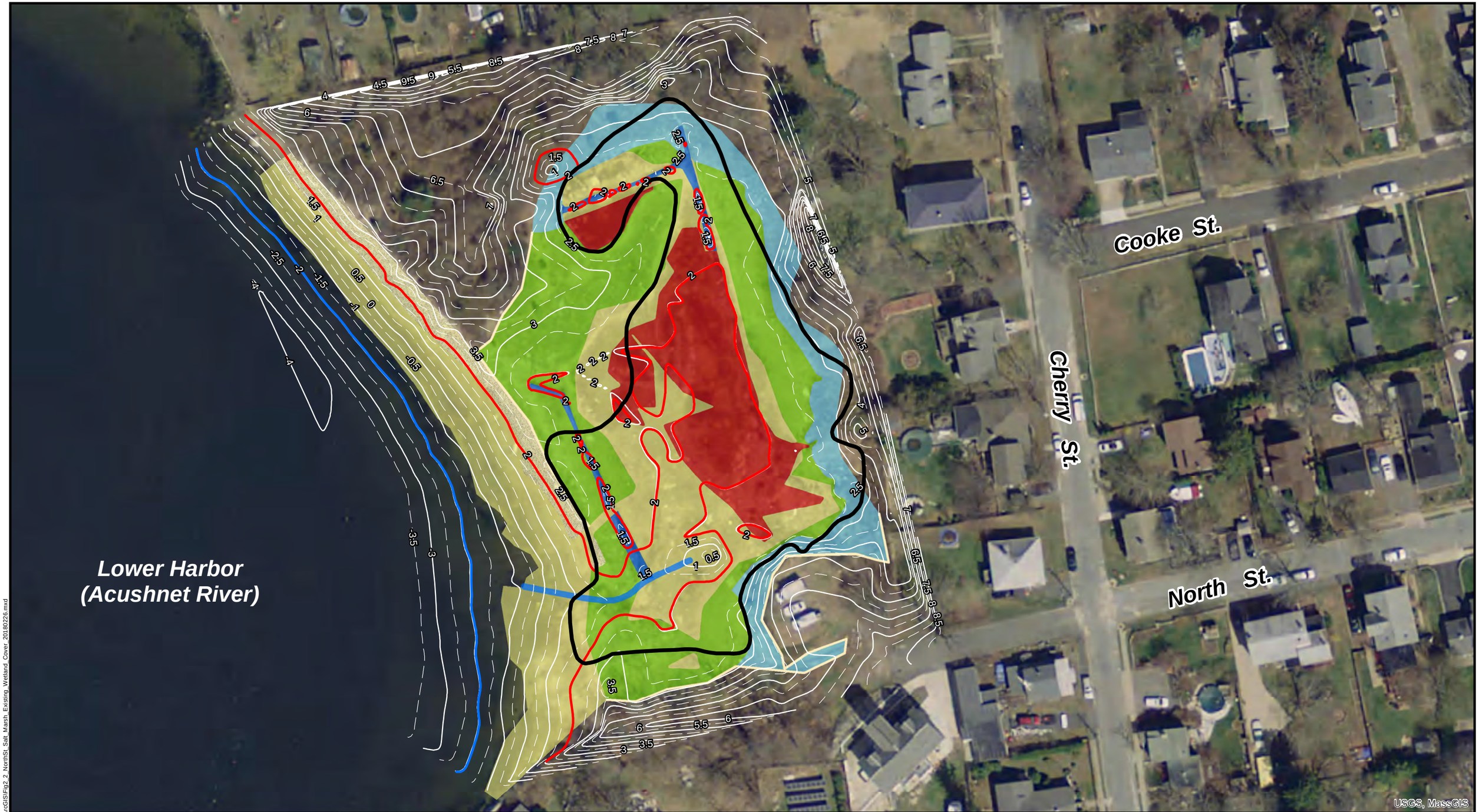
Figure 2-1

Path: Y:\NBH\Projects\35BG1001\20180116\ArcGIS\Fig2_1_NorthSt_Salt_Marsh_Site_Location_20180319.mxd



Legend

- MHHW (1.99 ft)
- MLLW (-1.97 ft)
- 1 ft Contour
- 0.5 ft Contour
- Limits of Excavation
- Top of Bank

Wetland Cover Types

- Creek
- Panne
- Beach
- High Marsh
- Low Marsh
- Phragmites

Elevation Data NAVD88 ft

0 50 100 Feet

Basemap Data Source: MassGIS, ESRI

March 2018

North Street Saltmarsh Existing Wetland Cover

New Bedford Harbor Superfund Site

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Figure 2-2

Path: Y:\NBH\Projects\35BG1001\20180116\ArcGIS\Fig2_2_NorthSt_Salt_Marsh_Existing_Wetland_Cover_20180226.mxd

Legend

- MLLW (-1.97 ft)
- MHHW (1.99 ft)
- Property/Parcel Line
- Sample Location
- **Revised Excavation Footprint**

Elevation Data NAVD88 ft

0 50 100 Feet

Basemap Data Source: MassGIS, ESRI

March 2018

North Street Saltmarsh Sampling Locations with Excavation Footprint (0-1 ft Depth Interval)

New Bedford Harbor Superfund Site

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Figure 2-3

Path: Y:\NBH\Projects\35BG1001\20180116\ArcGIS\Fig2_3_North_St_Saltmarsh_Sampling_Locations_Excavation_Location_20180226.mxd

Legend

- MLLW (-1.97 ft)
- MHHW (1.99 ft)
- Limits of Excavation
- Temporary Earthen Berm (Approximate Location)

Elevation Data NAVD88 ft

0 50 100 Feet

Basemap Data Source: MassGIS, ESRI

March 2018

North Street Saltmarsh Construction Site Plan

New Bedford Harbor Superfund Site

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Figure 3-1

Path: Y:\NBH\Projects\35BG1001\20180116\ArcGIS\Fig3_1_NorthSt_Saltmarsh_Construction_Site_Plan_20180226.mxd

Legend

Truck Route to DDA (Area C)

0 400 800 Feet

Basemap Data Source: MassGIS, ESRI

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Truck Route Between North Street Saltmarsh and Area C (DDA)

New Bedford Harbor Superfund Site

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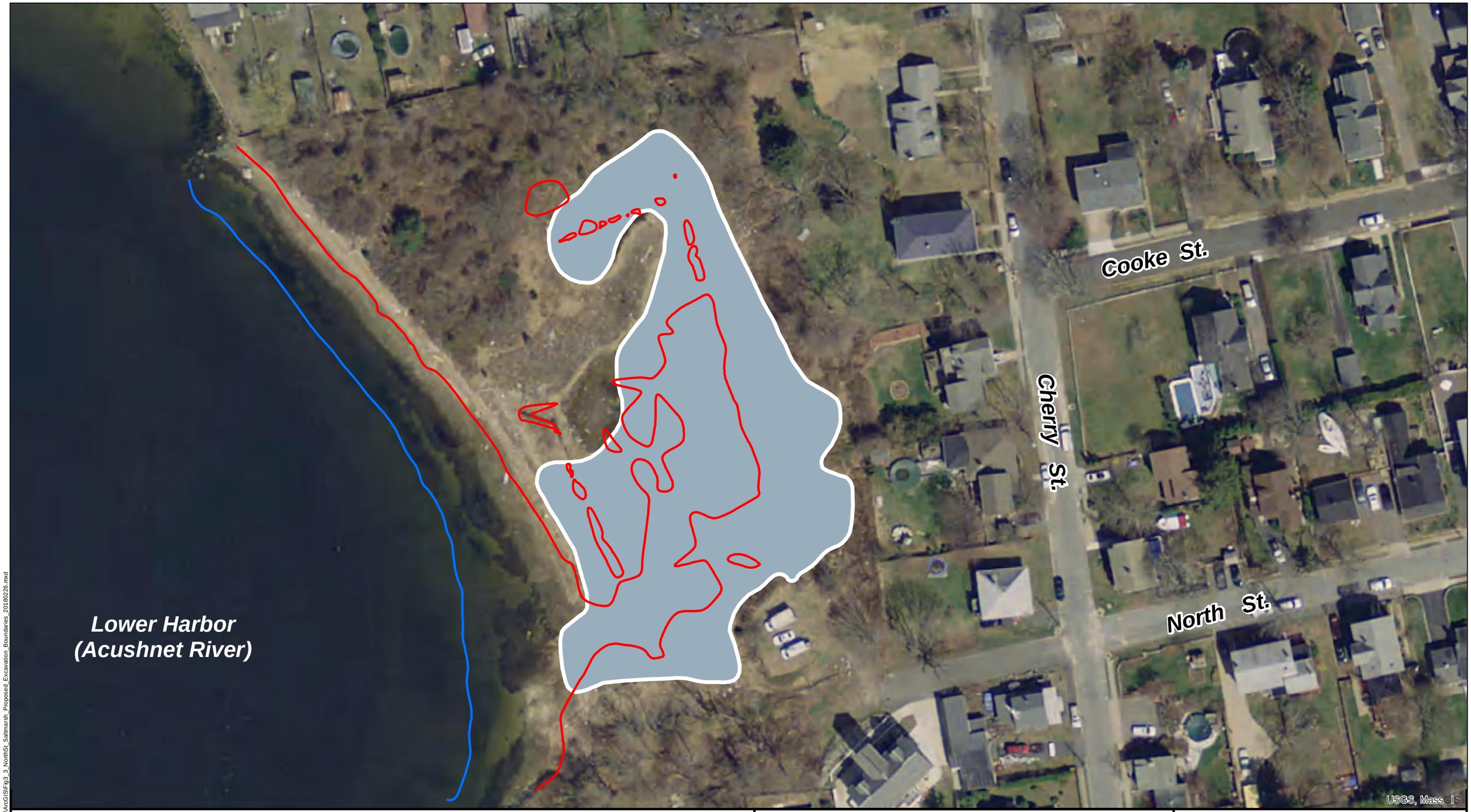
Figure 3-2

Path: Y:\NBH\Projects\35BG1001\20180116\ArcGIS\Fig3_2_NorthSt_Saltmarsh_Truck_Route_to_Area_C_20180226.mxd



Legend

- MLLW (-1.97 ft)
- MHHW (1.99 ft)

Thickness of Sediment to Remove, ft

- 1

Excavation Area: 42,345 s.f.
Excavation Volume: 1,568 c.y.

Elevation Data NAVD88 ft

0 50 100 Feet

Basemap Data Source:
MassGIS, ESRI

March 2018

North Street Saltmarsh
Proposed Excavation Boundaries

New Bedford Harbor Superfund Site

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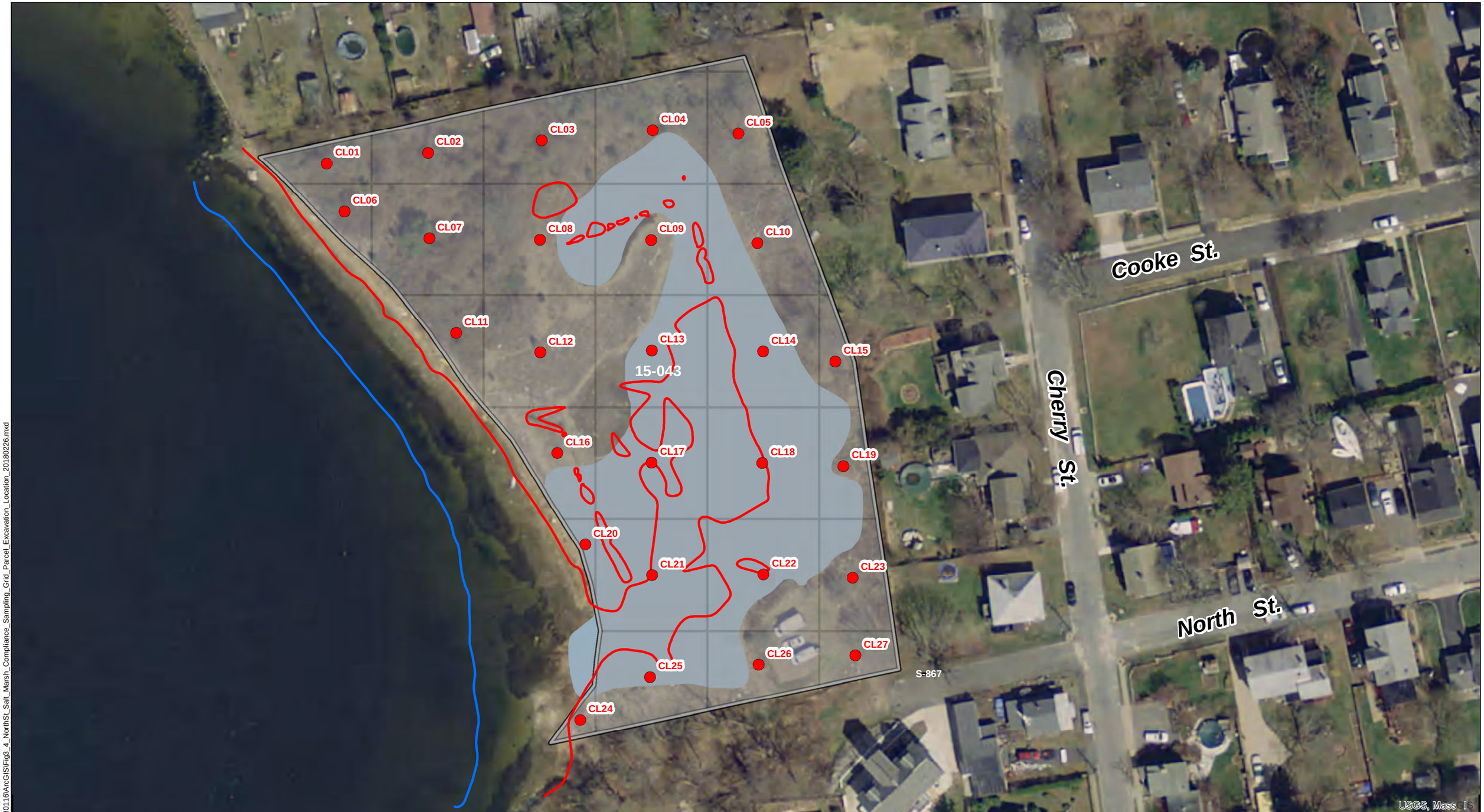
Figure 3-3

Path: Y:\NBH\Projects\35BG1001\20180116\ArcGIS\Fig3_3_NorthSt_Saltmarsh_Proposed_Excavation_Boundaries_20180226.mxd



Legend

- MLLW (-1.97 ft)
- MHHW (1.99 ft)
- Property/Parcel Line
- Compliance Sample Location
- Revised Excavation Footprint
- 75 Foot Compliance Sampling Grid

Elevation Data NAVD88 ft

0 50 100 Feet

Basemap Data Source: MassGIS, ESRI

March 2018

North St. Saltmarsh Compliance Sampling Grid for 95% UCL Calculations with Excavation Footprint (0-1 ft Depth Interval)

New Bedford Harbor Superfund Site

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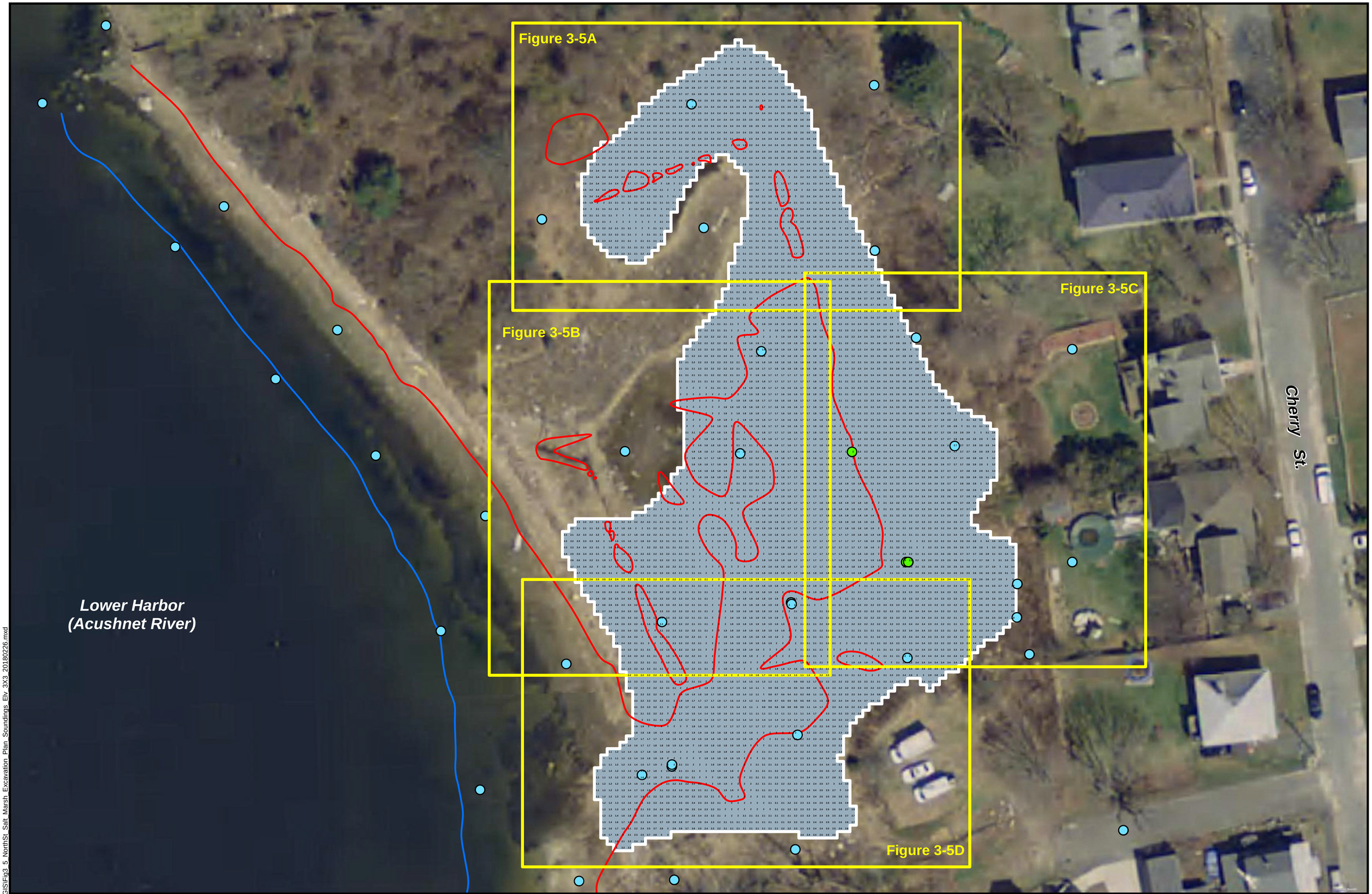
Figure 3-4

Path: Y:\NBH\Projects\35BG1001\20180116\ArcGIS\Fig3_4_NorthSt_Salt_Marsh_Compliance_Sampling_Grid_Parcel_Excavation_Location_20180226.mxd



Legend

Feet of Sediment to Remove

1

MLLW (-1.97 ft)

MHHW (1.99 ft)

Total PCB (mg/kg)

- 0 - 25
- 25 - 50
- 50 - 100
- 100 - 200
- 200 - 500
- >500

3.4 **Pre-Excavation Elevations NAVD88 - ft (June 2017 and Jan. 2018, North St. Saltmarsh Survey)**

Elevation Data NAVD88 ft

0 30 60 Feet

Basemap Data Source: MassGIS, ESRI

March 2018

Excavation Plan North Street Saltmarsh

Showing Cut Depths and Pre-Excavation Elevations

New Bedford Harbor Superfund Site

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Figure 3-5

Path: Y:\NBH\Projects\35BG1001\20180116\ArcGIS\Fig3_5_NorthSt_Salt_Marsh_Excavation_Plan_Soundings_Elv_3X3_20180226.mxd

Legend

Feet of Sediment to Remove

1

MLLW (-1.97 ft)

MHHW (1.99 ft)

Total PCB (mg/kg)

- 0 - 25
- 25 - 50
- 50 - 100
- 100 - 200
- 200 - 500
- >500

3.4 **Pre-Excavation Elevations NAVD88 - ft (June 2017 and Jan. 2018, North St. Saltmarsh Survey)**

Elevation Data NAVD88 ft

0 10 20 Feet

Basemap Data Source: MassGIS, ESRI

March 2018

Excavation Plan North Street Saltmarsh

Showing Cut Depths and Pre-Excavation Elevations

New Bedford Harbor Superfund Site

JACOBS

Figure 3-5A

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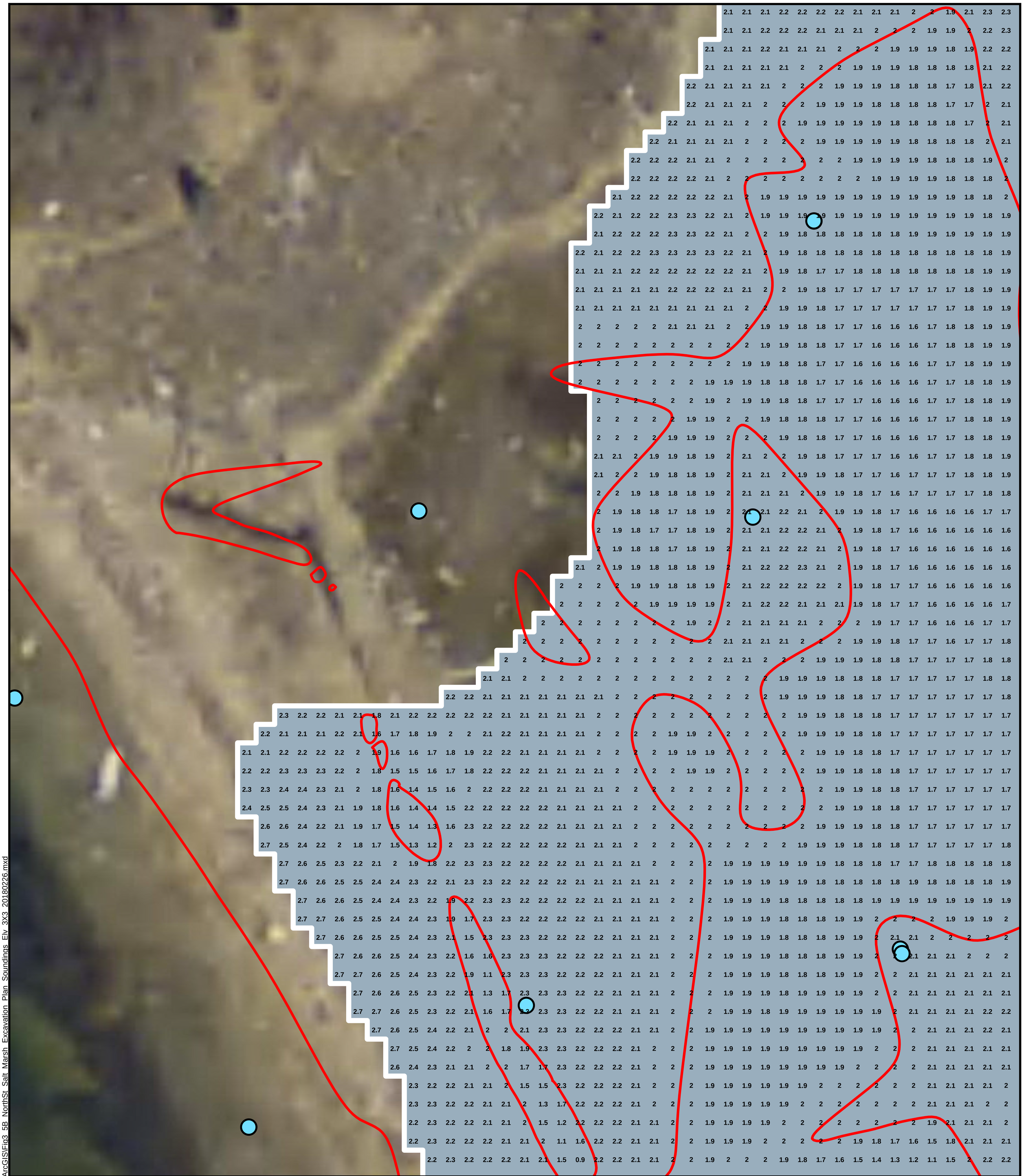

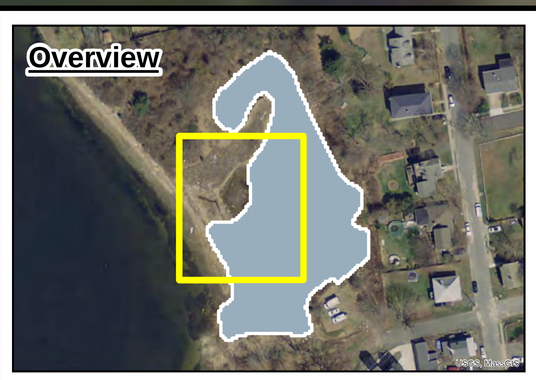

Legend

Feet of Sediment to Remove

- 1
- MLLW (-1.97 ft)
- MHHW (1.99 ft)

Total PCB (mg/kg)

- 0 - 25
- 25 - 50
- 50 - 100
- 100 - 200
- 200 - 500
- >500

3.4 **Pre-Excavation Elevations NAVD88 - ft (June 2017 and Jan. 2018, North St. Saltmarsh Survey)**

0 10 20 Feet

Basemap Data Source: MassGIS, ESRI

March 2018

Elevation Data NAVD88 ft

Excavation Plan
North Street Saltmarsh

Showing Cut Depths and Pre-Excavation Elevations

New Bedford Harbor Superfund Site

JACOBS

Figure 3-5B

Path: Y:\NBH\Projects\35BG1001\20180116\ArcGIS\Fig3_5B_NorthSt_Salt_Marsh_Excavation_Plan_Soundings_Elv_3X3_20180226.mxd

Legend

Feet of Sediment to Remove

- 1

- MLLW (-1.97 ft)
- MHHW (1.99 ft)

Total PCB (mg/kg)

- 0 - 25
- 25 - 50
- 50 - 100
- 100 - 200
- 200 - 500
- >500

3.4 **Pre-Excavation Elevations NAVD88 - ft (June 2017 and Jan. 2018, North St. Saltmarsh Survey)**

0 10 20 Feet

Basemap Data Source: MassGIS, ESRI

March 2018

Elevation Data NAVD88 ft

Excavation Plan
North Street Saltmarsh

Showing Cut Depths and Pre-Excavation Elevations

New Bedford Harbor Superfund Site

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Figure 3-5C

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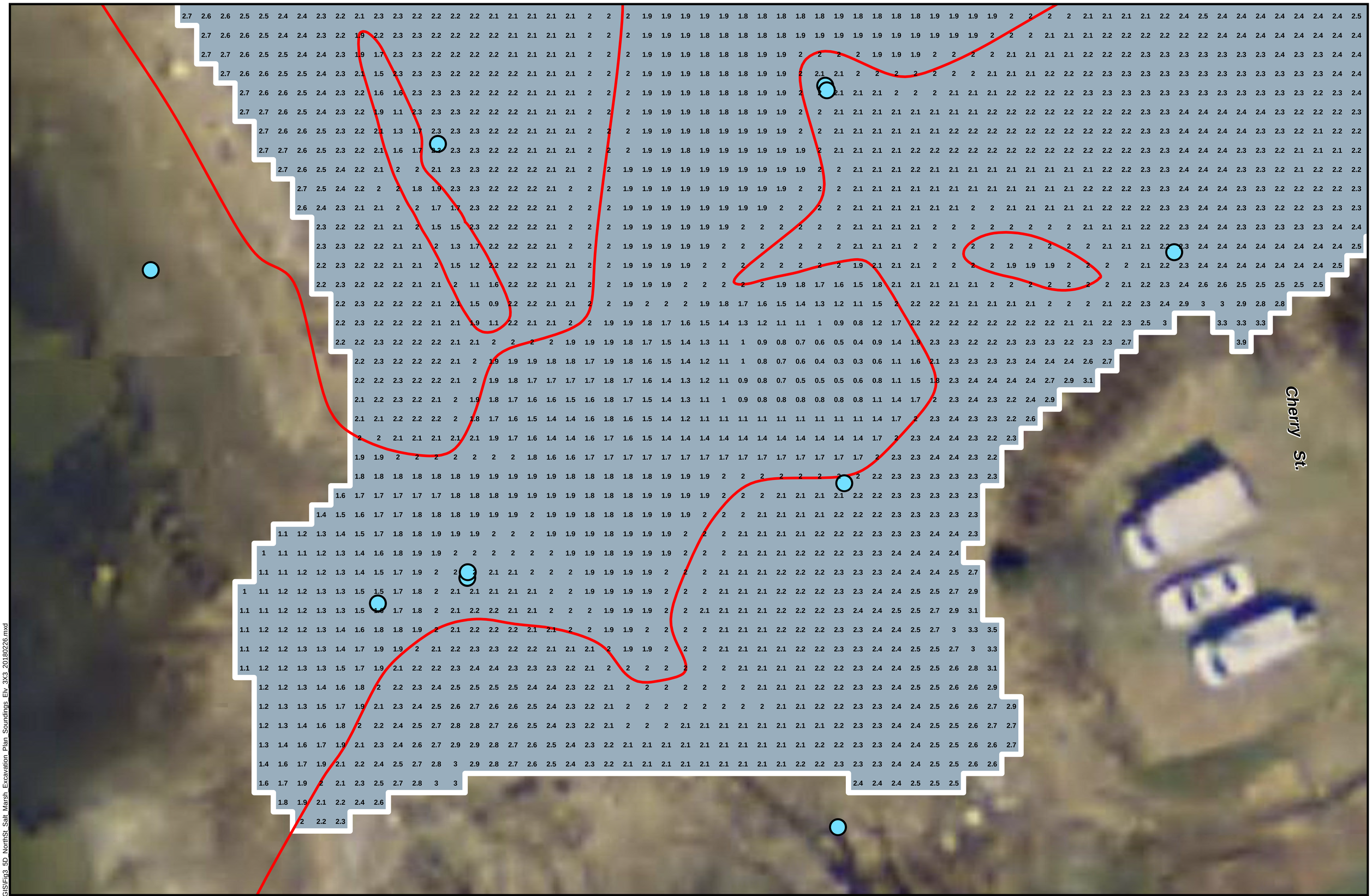

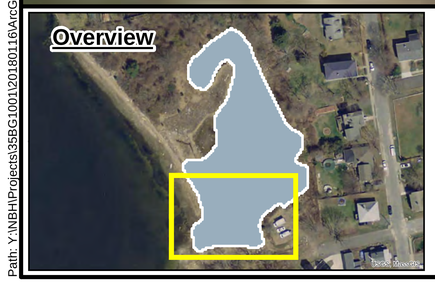

Legend

Feet of Sediment to Remove

1

MLLW (-1.97 ft)

MHHW (1.99 ft)

Total PCB (mg/kg)

- 0 - 25
- 25 - 50
- 50 - 100
- 100 - 200
- 200 - 500
- >500

3.4 **Pre-Excavation Elevations NAVD88 - ft (June 2017 and Jan. 2018, North St. Saltmarsh Survey)**

Elevation Data NAVD88 ft

0 10 20 Feet

Basemap Data Source: MassGIS, ESRI

March 2018

Excavation Plan North Street Saltmarsh

Showing Cut Depths and Pre-Excavation Elevations

New Bedford Harbor Superfund Site

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Figure 3-5D

Path: Y:\NBH\Projects\35BG1001\20180116\ArcGIS\Fig3_5D_NorthSt_Salt_Marsh_Excavation_Plan_Soundings_Elv_3X3_20180226.mxd

ID	Unique ID	Task Name	Duration	Start	Finish	Predecessors	Text1
1	**11**	**Comprehensive Plan**	**1339 days**	**Mon 3/13/17**	**Fri 8/19/22**		
247	**1315**	**Lower Harbor Intertidal - North Street Property**	**367 days**	**Mon 4/10/17**	**Tue 9/25/18**		**NSSM**
248	**1316**	**Determine Existing Conditions**	**20 days**	**Mon 4/10/17**	**Fri 5/5/17**		**NSSM**
252	**1320**	**Data Gaps**	**13 days**	**Wed 4/26/17**	**Fri 5/12/17**		**NSSM**
255	**1323**	**Prepare Draft Comprehensive Plan Sections**	**40 days**	**Wed 4/26/17**	**Tue 6/20/17**		**NSSM**
259	**1327**	**Prepare Data Gap Sampling Plan**	**35 days**	**Mon 5/8/17**	**Fri 6/23/17**		**NSSM**
263	**1331**	**Perform Data Gap Sample Collection and Lab Analysis**	**25 days**	**Mon 6/26/17**	**Fri 7/28/17**		**NSSM**
269	**1337**	**Update Comprehensive Plan with New Data**	**20 days**	**Mon 7/31/17**	**Fri 8/25/17**	**268**	**NSSM**
273	1341	Verify Remedial Approach and Design Criteria	10 days	Mon 8/28/17	Mon 9/11/17	272	NSSM
274	**1342**	**Draft Work Plan (65% Design)**	**157 days**	**Fri 7/7/17**	**Wed 2/28/18**		**NSSM**
275	1343	Prepare Draft Work Plan (65% Design)	10 days	Fri 7/7/17	Thu 7/20/17	267FF-1 day	NSSM
276	1344	USACE Review of 65% Design	15 days	Fri 7/21/17	Thu 8/10/17	275	NSSM
277	1809	EPA memo on 95%UCL approach	54 days	Fri 7/21/17	Thu 10/5/17	275	NSSM
278	1767	Re-evaluation of site data using 95% UCL	9 days	Fri 10/6/17	Wed 10/18/17	277	NSSM
279	1990	Remedial Approach Meeting	1 day	Thu 10/19/17	Thu 10/19/17		NSSM
280	1996	Prepare Sample Location Map	3 days	Fri 10/20/17	Tue 10/24/17	279	NSSM
281	1997	USACE/EPA Review of Sample Locations	1 day	Wed 10/25/17	Wed 10/25/17	280	NSSM
282	1998	Revise Sample Locations based on EPA/USACE	2 days	Thu 10/26/17	Fri 10/27/17	281	NSSM
283	**1810**	**AECOM additional 37 samples per EPA**	**70 days**	**Mon 10/30/17**	**Fri 2/16/18**		**NSSM**
284	1986	Sample Collection	6 days	Mon 10/30/17	Mon 11/6/17	282	NSSM
285	1987	IA Analysis	3 days	Tue 10/31/17	Thu 11/2/17	284SS+1 day	NSSM
286	1988	Congener Analysis	15 days	Tue 11/7/17	Fri 12/1/17	284	NSSM
287	1995	Arochlor Analysis	10 days	Tue 11/7/17	Tue 11/21/17	284	NSSM
288	1989	Data Validation	10 days	Mon 12/4/17	Fri 12/15/17	286,285,287	NSSM
289	4882	Deeper Sample Congener Analysis 1 to 2ft	15 days	Fri 1/12/18	Fri 2/2/18	287FS+29 days	NSSM
290	4883	Data Validation	10 days	Mon 2/5/18	Fri 2/16/18	289	NSSM
291	1768	Revised Matrix Assessment	2 days	Mon 12/4/17	Tue 12/5/17	286	NSSM
292	1769	Calculation of 95% UCL based upon grid	2 days	Mon 12/4/17	Tue 12/5/17	286	NSSM
293	3048	Model extent of excavation: 0-1 ft samples	5 days	Mon 12/4/17	Fri 12/8/17	286,287	NSSM
294	4884	Calculation of 95% UCL based upon grid	2 days	Tue 2/20/18	Wed 2/21/18	292,290	NSSM
295	4885	Model extent of excavation: 1 ft samples	5 days	Thu 2/22/18	Wed 2/28/18	294	NSSM
296	1346	***USACE Contracting - North Street***	*60 days*	*Fri 7/21/17*	*Fri 10/13/17*	*275*	NSSM
297	**1345**	**Draft Streamlined work plan**	**57 days**	**Mon 12/4/17**	**Thu 3/1/18**		**NSSM**
298	4645	Prepare Draft Stream Line Document (incl 95% and blw 1 ft samples)	36 days	Mon 12/4/17	Tue 1/30/18	293SS	NSSM
299	4646	EPA/USACE Review	7 days	Wed 1/31/18	Thu 2/8/18	298	NSSM
300	4647	Prepare RTC	7 days	Fri 2/9/18	Tue 2/20/18	299	NSSM
301	3894	USACE/EPA review of RTC	7 days	Wed 2/21/18	Thu 3/1/18	300	NSSM
302	4769	TBD Work Scope Submittal to Corps with revised volumes/roads	1 day	Tue 1/30/18	Tue 1/30/18	298FF	NSSM
303	**1347**	**Prepare Draft Final Streamlined Work Plan**	**15 days**	**Fri 3/2/18**	**Thu 3/22/18**		**NSSM**
304	1348	Prepare Draft Final Streamlined Work Plan	5 days	Fri 3/2/18	Thu 3/8/18	301,293,295	NSSM
305	1349	USACE review of Draft Final Work Plan	5 days	Fri 3/9/18	Thu 3/15/18	304	NSSM
306	1350	Prepare RTC	5 days	Fri 3/16/18	Thu 3/22/18	305	NSSM
307	1999	***USACE Contracting - Revised Scope based on revised volumes***	*60 days*	*Fri 2/9/18*	*Fri 5/4/18*	*299*	NSSM
308	2000	JE prepare proposal	10 days	Mon 2/26/18	Fri 3/9/18	307SS+10 days	NSSM
309	1355	**Execute Remedial Option - North Street Property**	20 days	Mon 5/7/18	Mon 6/4/18	306,307	NSSM
310	**1356**	**Prepare Compliance Sampling Plan**	**20 days**	**Fri 3/23/18**	**Thu 4/19/18**		**NSSM**
311	1357	Prepare Draft Compliance Sampling Plan	10 days	Fri 3/23/18	Thu 4/5/18	306	NSSM
312	1358	USACE Review of Draft Sampling Plan	5 days	Fri 4/6/18	Thu 4/12/18	311	NSSM
313	1359	RTC and Draft Final Sampling Plan	5 days	Fri 4/13/18	Thu 4/19/18	312	NSSM
314	**1360**	**AECOM Compliance Sample Collection and Lab Analysis**	**50 days**	**Mon 5/21/18**	**Tue 7/31/18**		**NSSM**
315	1361	Compliance Sample Collection	10 days	Mon 5/21/18	Mon 6/4/18	313,309FF	NSSM
316	1362	IA Sampling	10 days	Mon 5/21/18	Mon 6/4/18	315SS	NSSM
317	1363	Congener Analysis	15 days	Tue 6/5/18	Mon 6/25/18	316	NSSM
318	1364	Data Validation	15 days	Tue 6/26/18	Tue 7/17/18	317	NSSM
319	1365	Sample reporting	10 days	Wed 7/18/18	Tue 7/31/18	318	NSSM
320	4881	**Restoration**	20 days	Tue 6/5/18	Mon 7/2/18	309	NSSM
321	**1367**	**Prepare After Action Report**	**49 days**	**Wed 7/18/18**	**Tue 9/25/18**		**NSSM**
322	1368	Prepare draft document	20 days	Wed 7/18/18	Tue 8/14/18	309,320FS+5 d	NSSM
323	1369	USACE/EPA review	10 days	Wed 8/15/18	Tue 8/28/18	322	NSSM
324	2028	Prepare RTC	10 days	Wed 8/29/18	Wed 9/12/18	323	NSSM
325	2029	USACE/EPA review of RTC	5 days	Thu 9/13/18	Wed 9/19/18	324	NSSM
326	1370	Prepare Draft Final After Action Report	4 days	Thu 9/20/18	Tue 9/25/18	325	NSSM

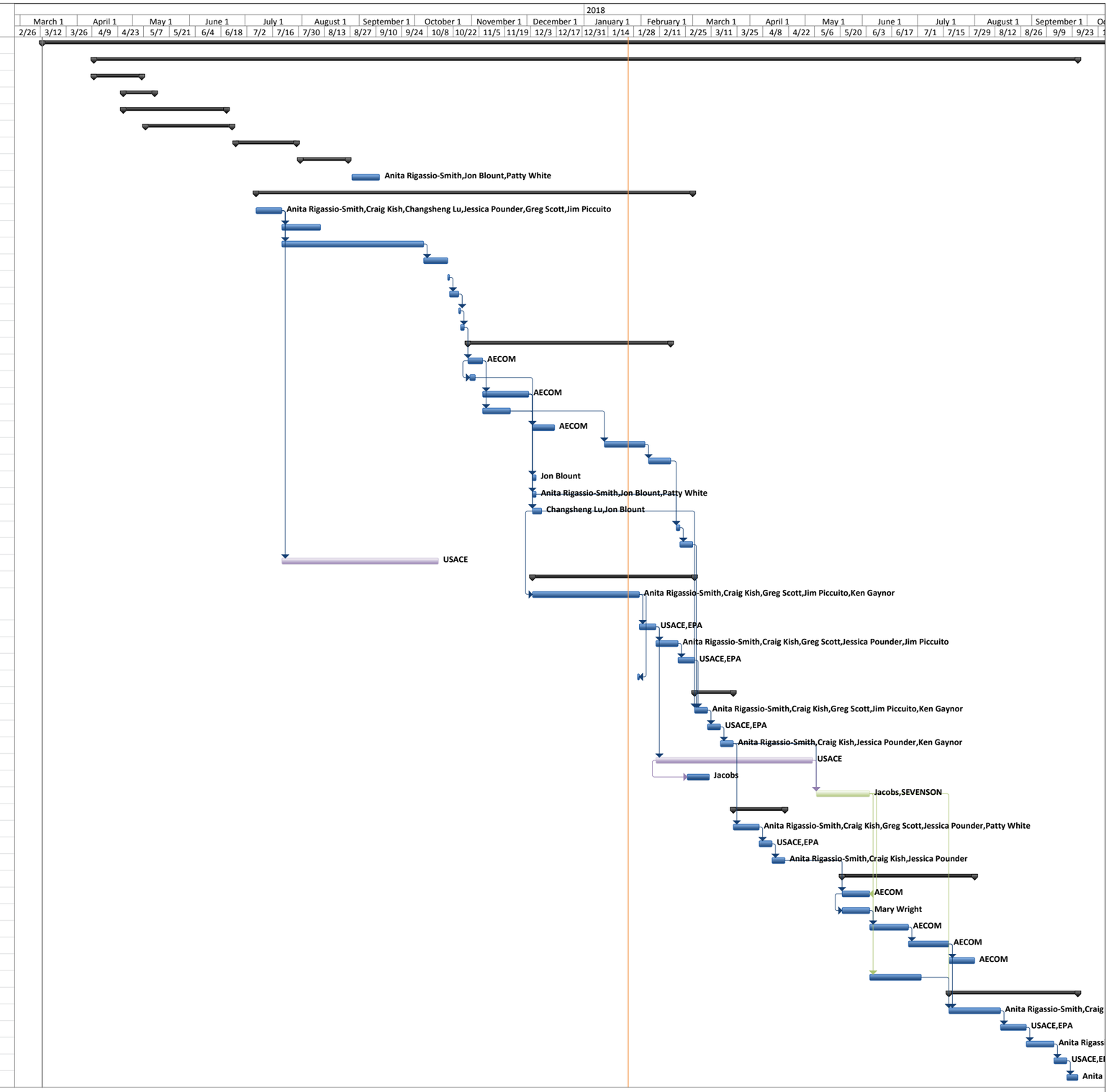


Figure 3-6
North Street Salt Marsh Intertidal Remediation Schedule
Date: January 30,2018

Task | Split | Milestone | Summary | Project Summary | External Tasks | External Milestone | Inactive Task | Inactive Milestone | Inactive Summary | Manual Task | Duration-only | Manual Summary Rollup | Manual Summary | Start-only | Finish-only | Deadline | Progress

Legend

- Two-Man-Stones
- Proposed Mean Higher High Water
- Mean Lower Low Water Elevation
- NSSM Parcel Limit
- Cross Sections
- Phragmites to be Treated and Seeded with Conservation Mix
- Proposed Shrub Restoration Area
- Limit of Excavation
- Proposed Creek
- Proposed High Marsh
- Proposed Low Marsh
- Proposed Panne
- Phragmites to Conservation Seed Mix

0 50 100 Feet

Basemap Data Source:
MassGIS, ESRI

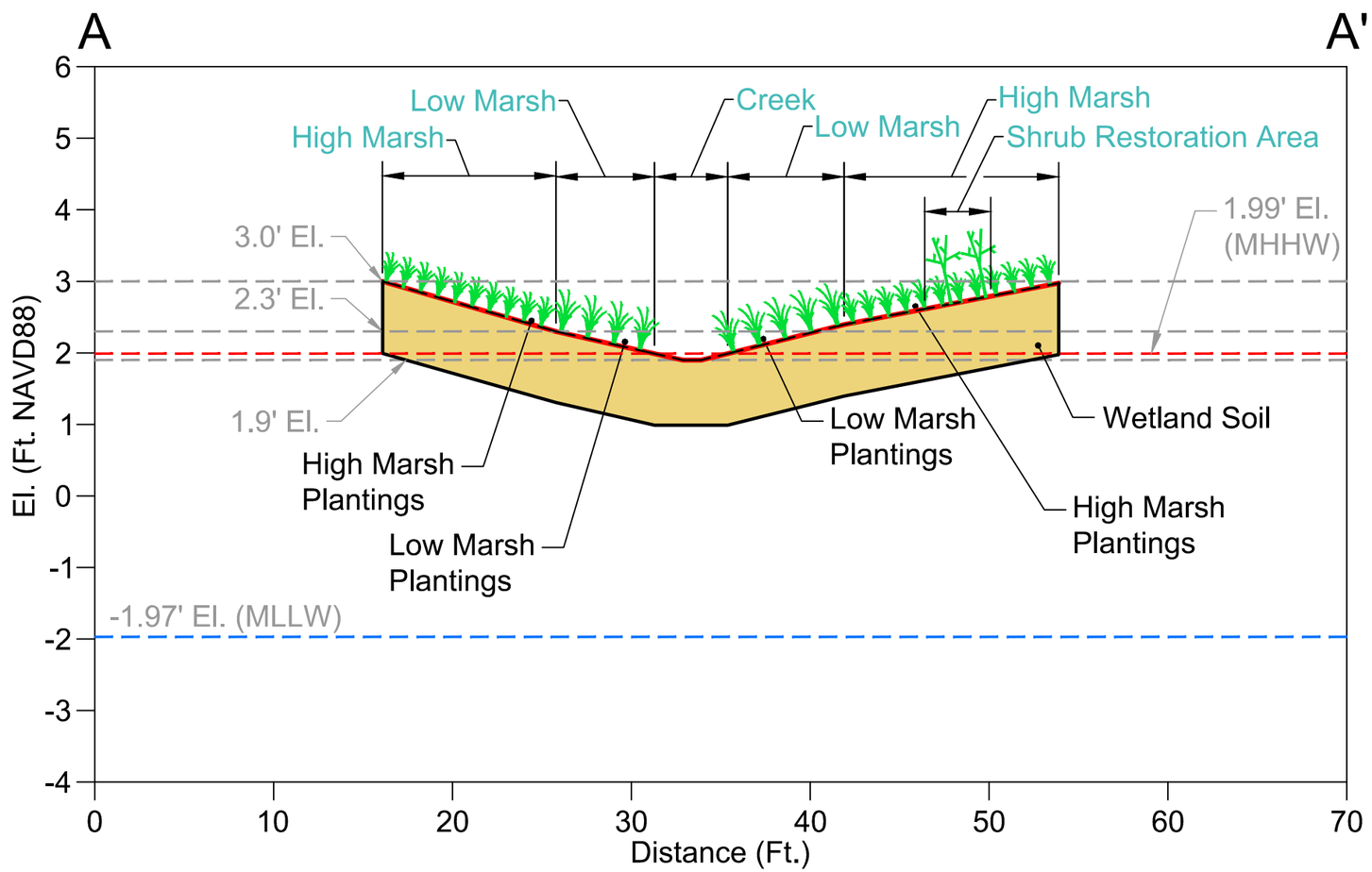
May 2018

North Street Salt Marsh
Proposed Post Restoration Wetland Cover Types and Cross Section Locations

New Bedford Harbor Superfund Site

JACOBS

Figure 6 - 1



Vegetation Type Elevation Breaks	
High Marsh to Low Marsh	2.3 Feet
Low Marsh to Creek	2.0 Feet

Legend

- Pre-Construction Surface
- Bottom of Excavaton
- Post-Construction Surface
- (MHHW) Mean Higher High Water
- (MLLW) Mean Lower Low Water

0 V:2 H:8
Scale in Feet

JACOBS

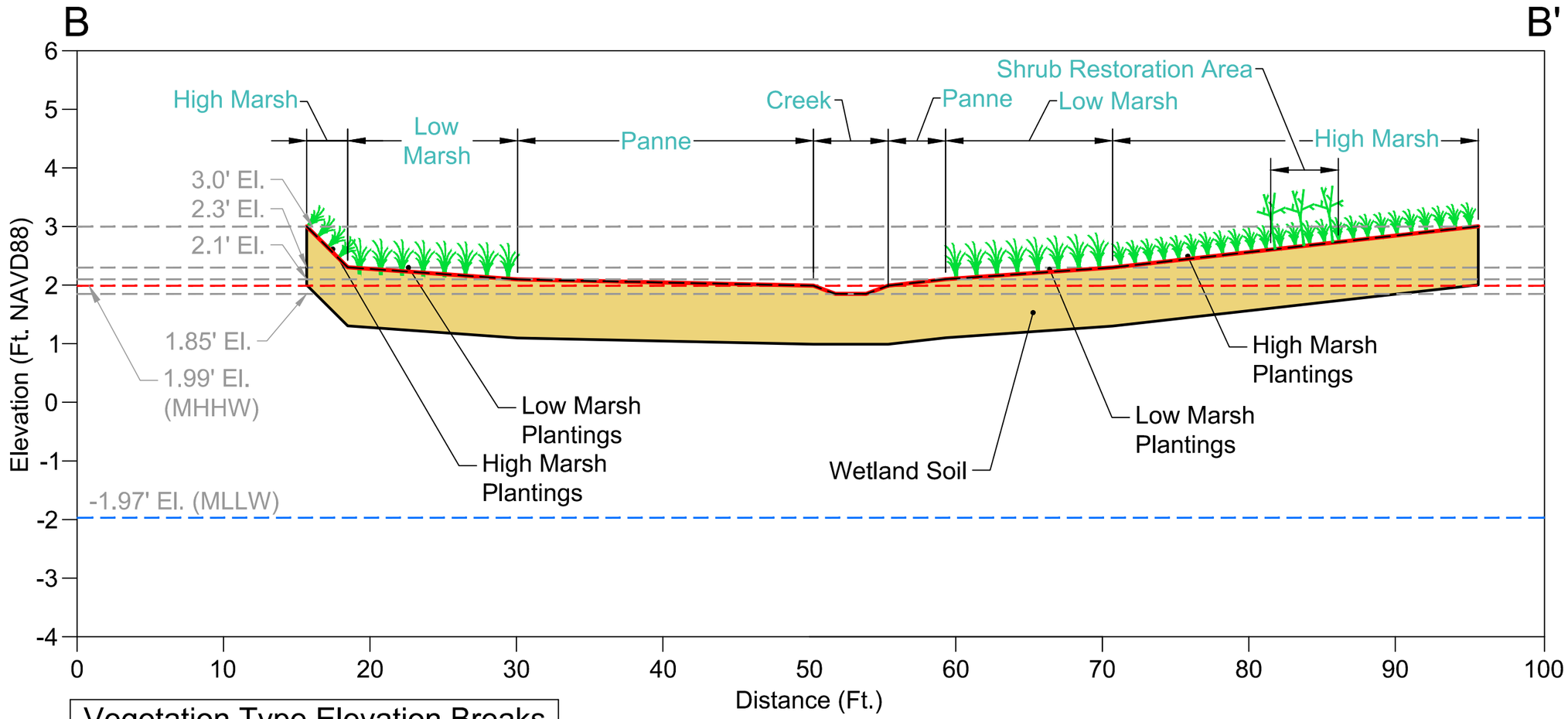
North Street Saltmarsh
Proposed Conditions Plan "A-A"

New Bedford Harbor Superfund Site

05/02/18 Salt Marsh Plans and Sections.dwg

Figure 6-2

last modified: 05/02/18 printed: 05/03/18 by ba P:\USACE\2016\35BG10016\00 Discipline Files\670 Environmental\2016 Restoration Plan\Miguel Property\Cad\Salt Marsh Plans And Sections.dwg



Vegetation Type Elevation Breaks	
High Marsh to Low Marsh	2.3 Feet
Low Marsh to Panne	2.1 Feet
Panne to Creek	2.0 Feet

Legend

- Pre-Construction Surface
- Bottom of Excavaton
- Post-Construction Surface
- (MHHW) Mean Higher High Water
- (MLLW) Mean Lower Low Water

0 V:2 H:8
Scale in Feet

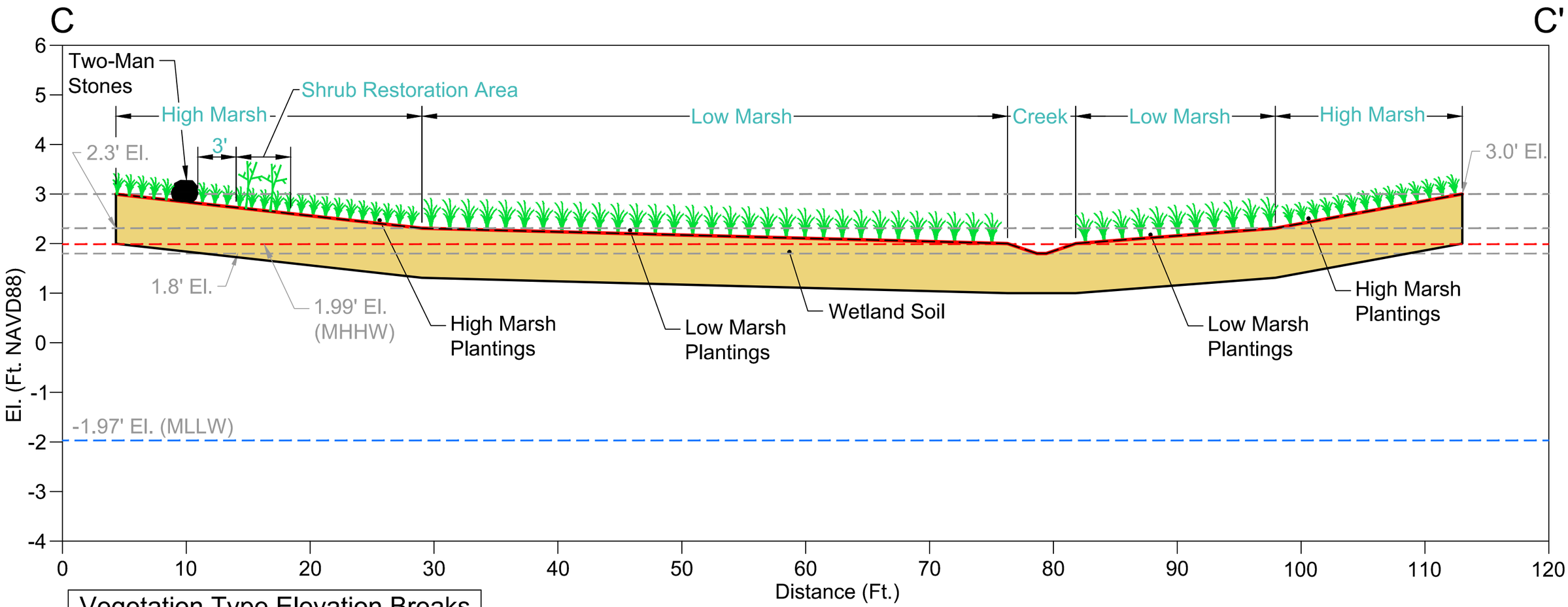
JACOBS

North Street Saltmarsh
Proposed Conditions Plan "B-B"
New Bedford Harbor Superfund Site

05/02/18 Salt Marsh Plans and Sections.dwg

Figure 6-3

last modified: 05/02/18 printed: 05/03/18 by ba P:\USACE\2016\35BG10031\600 Discipline Files\670 Environmental\2016 Restoration Plan\Miguel Property\Cad\Salt Marsh Plans And Sections.dwg



Vegetation Type Elevation Breaks	
High Marsh to Low Marsh	2.3 Feet
Low Marsh to Creek	2.0 Feet

Legend

- Pre-Construction Surface
- Bottom of Excavaton
- Post-Construction Surface
- (MHHW) Mean Higher High Water
- (MLLW) Mean Lower Low Water

0 V:2 H:8
Scale in Feet

JACOBS

North Street Saltmarsh
Proposed Conditions Plan "C-C"
New Bedford Harbor Superfund Site

05/02/18 Salt Marsh Plans and Sections.dwg

Figure 6-4

last modified: 05/02/18 printed: 05/03/18 by ba P:\USACE\2016\35BG10031600 Discipline Files\670 Environmental\2016 Restoration Plan\Miguel Property\Cad\Salt Marsh Plans And Sections.dwg

Tables

Table 2-1
North Street Saltmarsh PCB Data

Location	Sample Collect Date	Top Depth (ft)	Bottom Depth(ft)	Congener Conc (mg/kg)	Q	IA Conc (mg/kg)	Q	NOAA 18 X 2.6 (mg/kg)	Q	Aroclor (mg/kg)	Q	Notes
INT273	10/21/2015	0	1	NA		0.5		NA				
INT274	10/21/2015	0	1	NA		0.5	U	NA				
INT275	10/21/2015	0	1	NA		0.5		NA				
INT276	10/21/2015	0	1	1.37		0.6		1.85				
INT276	10/21/2015	1	2	NA		0.5	U	NA				
INT277	10/21/2015	0	1	0.0452		0.8		0.06				
INT277	10/21/2015	1	2	NA		0.5	U	NA				
INT278	10/21/2015	0	1	3.5		1.3		4.16				
INT278	10/21/2015	1	2	NA		0.5	U	NA				
INT279	10/21/2015	0	1	25.1		19.1		24.96				co-located with S-507
INT279	10/21/2015	1	2	6.91		7.8		7.54				
INT279a	6/6/2016	0	1	NA		83.2		NA				congener at INT279 supercedes IA at INT279a
INT279a	6/6/2016	1	2	NA		0.7		NA				
INT279a	6/6/2016	2	2.9	0.0438		NA		0.04				
INT280	10/21/2015	0	1	2.44		1.8		2.47				
INT280	10/21/2015	1	2	NA		0.5	U	NA				
INT281	10/21/2015	0	1	11.9		6.9		12.48				
INT281	10/21/2015	1	2	7.48		7.6		7.8				
INT281a	5/26/2016	0	1	NA		0.8		NA				
INT281a	5/26/2016	1	2	NA		0.4	J	NA				
INT281a	5/26/2016	2	2.5	4.76		NA		5.46				
INT282	10/21/2015	0	1	12.5		7.7		13.52				
INT282	10/21/2015	1	2	0.208		0.6		0.22				
INT372	5/26/2016	0	1	3.64		NA		3.9				
INT372	5/26/2016	1	2	0.0329		NA		0.04				
INT374	5/26/2016	0	1	1.5		NA		1.43				
INT374	5/26/2016	1	2	0.134		NA		0.14				
INT375	7/20/2016	0	1	0.28		NA		0.29				
INT376	5/26/2016	0	1	2.03		NA		2.42				
INT376	5/26/2016	1	2	0.139		NA		0.15				
INT377	5/26/2016	0	1	1.54		NA		1.85				
INT377	5/26/2016	1	2	0.085		NA		0.1				
INT378	6/6/2016	0	1	28		NA		28.6				
INT378	6/6/2016	1	2	0.0692		NA		0.07				
INT379	5/26/2016	0	1	0.223		NA		0.23				
INT380	5/26/2016	0	1	9.82		NA		12.5				
INT380	5/26/2016	1	2	0.0111		NA		0.01				
INT381	7/6/2016	0	1	0.348		NA		0.34				
INT382	5/26/2016	0	1	3.3		NA		2.86				
INT382	5/26/2016	1	2	0.175		NA		0.16				
INT383	6/6/2016	0	1	4.99		NA		5.46				
INT383	6/6/2016	1	2	0.0989		NA		0.91				
INT384	5/26/2016	0	1	0.335		NA		0.34				
INT385	7/6/2016	0	1	0.769		NA		0.78				
INT410	5/26/2016	0	1	NA		4.6		NA				co-located with S-863
INT410	5/26/2016	1	2	NA		0.24	J	NA				
INT410	5/26/2016	2	3	0.296		NA		0.34				
INT411	5/26/2016	0	1	2.57		NA		3.12				
INT411	5/26/2016	1	2	0.4		NA		0.44				
INT412	5/26/2016	0	1	0.607		NA		0.75				
INT549	5/12/2017	0	1	NA		1.7		NA				
INT549	5/12/2017	1	2	NA		1		NA				
INT550	5/12/2017	0	1	NA		9		NA				
INT550	5/12/2017	1	2	NA		0.5		NA				
INT551	5/12/2017	0	1	NA		1.5		NA				
INT551	5/12/2017	1	2	NA		0.4		NA				
INT552	5/12/2017	0	1	NA		1.6		NA				
INT552	5/12/2017	1	2	NA		1.7		NA				
S-317	10/4/1999	0	1	NA		NA		0.988				
S-317	10/4/1999	1	2	NA		NA		ND				
S-318	10/4/1999	0	1	NA		NA		16.12				co-located with INT281
S-318	10/4/1999	1	2	NA		NA		0.286				
S-507	10/4/1999	0	1	NA		NA		28.6				co-located with INT279/279a
S-507	10/4/1999	1	2	NA		NA		0.754				
S-862	10/31/2000	0	1	NA		NA		12.22				
S-862	10/31/2000	1	2	NA		NA		0.728				
S-863	10/31/2000	0	1	NA		NA		17.68				co-located with INT410
S-863	10/31/2000	1	2	NA		NA		2.574				
S-864	10/31/2000	0	1	NA		NA		0.0858				
S-864DUP	10/31/2000	0	1	NA		NA		0.312				
S-864	10/31/2000	1	2	NA		NA		ND				
S-865	10/30/2000	0	1	NA		NA		0.364				
S-865	10/30/2000	1	2	NA		NA		0.0468				
S-866	10/30/2000	0	1	NA		NA		ND				
S-866	10/30/2000	1	2	NA		NA		ND				

Table 2-1
North Street Saltmarsh PCB Data

Location	Sample Collect Date	Top Depth (ft)	Bottom Depth(ft)	Congener Conc (mg/kg)	Q	IA Conc (mg/kg)	Q	NOAA 18 X 2.6 (mg/kg)	Q	Aroclor (mg/kg)	Q	Notes
S-867	10/30/2000	0	1	NA		NA		ND				
S-867	10/30/2000	1	2	NA		NA		ND				
S-CL01 A	11/1/17	0	1	0.0233		0.1662		NA		0		
S-CL01 B	11/1/17	1	2	NA		0.0638		NA		NA		
S-CL01 C	11/1/17	2	3	NA		0.3241		NA		NA		
S-CL02 A	11/3/17	0	1	0.00327		0		NA		0.0094		
S-CL02 B	11/3/17	1	2	NA		0		NA		NA		
S-CL02 C	11/3/17	2	3	NA		0		NA		NA		
S-CL03 A	11/6/17	0	1	0.012		0.0227		NA		0		
S-CL03 B	11/6/17	1	2	NA		0.1759		NA		0.0071		
S-CL03 C	11/6/17	2	3	NA		0.0583		NA		NA		
S-CL04 A	11/6/17	0	1	0.0694		0.1912		NA		0.057		
S-CL04 B	11/6/17	1	2	NA		0		NA		NA		
S-CL05 A	11/6/17	0	1	0.133		0.232		NA		0.14		
S-CL05 B	11/6/17	1	2	NA		0.0753		NA		NA		
S-CL05 C	11/6/17	2	3	NA		0.0584		NA		NA		
S-CL06 A	11/3/17	0	1	0.0085		0		NA		0.009		
S-CL06 A Rep	11/3/17	0	1	0.0165		0		NA		0.021		
S-CL06 B	11/3/17	1	2	NA		0		NA		NA		
S-CL07 A	11/2/17	0	1	0.00755		0.1245		NA		0		
S-CL07 A Rep	11/2/17	0	1	0.0059		0.0345		NA		0		
S-CL08 A	11/3/17	0	1	0.111		0		NA		0.09		
S-CL08 A Rep	11/3/17	0	1	0.102		0		NA		0.077		
S-CL09 A	11/3/17	0	1	0.0737		0		NA		0.11		
S-CL09 B	11/3/17	1	2	NA		0		NA		NA		
S-CL09 C	11/3/17	2	3	NA		0		NA		NA		
S-CL10 A	11/3/17	0	1	0.553		0		NA		2.3		
S-CL10 B	11/3/17	1	2	NA		0		NA		0		
S-CL10 C	11/3/17	2	3	NA		0		NA		NA		
S-CL11 A	11/6/17	0	1	0.00571		0.1154		NA		0		
S-CL11 A Rep	11/6/17	0	1	0.00723		0.0687		NA		0		
S-CL11 B	11/6/17	1	2	NA		0.0319		NA		NA		
S-CL11 C	11/6/17	2	3	NA		0.0081		NA		NA		
S-CL12 A	11/3/17	0	1	0.159		0		NA		0.2		
S-CL12 B	11/3/17	1	2	NA		0		NA		NA		
S-CL12 C	11/3/17	2	3	NA		0		NA		NA		
S-CL13 A	11/2/17	0	1	3.16		15.1353		NA		12		
S-CL13 B	11/2/17	1	2	NA		2.7885		NA		0.5		
S-CL13 C	11/2/17	2	3	NA		0.4597		NA		NA		
S-CL14 A	11/2/17	0	1	29.9		82.815		NA		5.4		
S-CL14 B	11/2/17	1	2	NA		0.6561		NA		0.18		
S-CL14 C	11/2/17	2	3	NA		0.0044		NA		NA		
S-CL15 A	11/2/17	0	1	0.455		0.9773		NA		0.28		
S-CL15 B	11/2/17	1	2	NA		0.1717		NA		0		
S-CL15 C	11/2/17	2	3	NA		0.2599		NA		NA		
S-CL16 A	11/2/17	0	1	4.86		3.1137		NA		1.2		
S-CL16 B	11/2/17	1	2	0.0113		0.1199		NA		0		
S-CL16 C	11/2/17	2	3	NA		0.0945		NA		NA		
S-CL17 A	11/2/17	0	1	5.15		5.5393		NA		1.30		
S-CL17 B	11/2/17	1	2	NA		1.5939		NA		NA		
S-CL17 C	11/2/17	2	3	NA		0.7783		NA		NA		
S-CL18 A	11/2/17	0	1	17.3		6.3248		NA		7.4		
S-CL18 B	11/2/17	1	2	NA		3.6742		NA		6.2		
S-CL18 C	11/2/17	2	3	NA		0.4736		NA		NA		
S-CL19 A	11/2/17	0	1	0.601		0.7796		NA		0.34		
S-CL19 B	11/2/17	1	2	NA		0.9259		NA		0.63		
S-CL19 B Rep	11/2/17	2	3	NA		0.801		NA		NA		
S-CL19 C	11/2/17	2	3	NA		0.5644		NA		NA		
S-CL20 A	11/1/17	0	1	9.15		6.1054		NA		6.9		
S-CL20 B	11/1/17	1	2	NA		0.9659		NA		0.84		
S-CL20 C	11/1/17	2	3	NA		0.7805		NA		NA		
S-CL21 A	11/2/17	0	1	15.2		4.8764		NA		5.5		
S-CL21 B	11/2/17	1	2	NA		0.4485		NA		1.2		
S-CL21 C	11/2/17	2	3	NA		0.2795		NA		NA		
S-CL22 A	11/2/17	0	1	12.8		2.3787		NA		3.9		
S-CL22 B	11/2/17	1	2	NA		3.8328		NA		1.43		
S-CL22 C	11/2/17	2	3	NA		5.8414		NA		NA		
S-CL22 C Rep	11/2/17	2	3	NA		5.7475		NA		NA		
S-CL23 C	11/2/17	2	3	NA		0		NA		NA		
S-CL23 A	11/2/17	0	1	3.04		3.2173		NA		1.1		
S-CL23 B	11/2/17	1	2	NA		1.8387		NA		NA		
S-CL24 A	11/1/17	0	1	0.0104		0.1899		NA		0.032		
S-CL24 B	11/1/17	1	2	NA		0.0418		NA		NA		
S-CL24 C	11/1/17	2	3	NA		0.2116		NA		NA		
S-CL25 A	11/1/17	0	1	3.59		2.7918		NA		1.3		

Table 2-1
North Street Saltmarsh PCB Data

Location	Sample Collect Date	Top Depth (ft)	Bottom Depth(ft)	Congener Conc (mg/kg)	Q	IA Conc (mg/kg)	Q	NOAA 18 X 2.6 (mg/kg)	Q	Aroclor (mg/kg)	Q	Notes
S-CL25 B	11/1/17	1	2	NA		5.4802		NA		NA		
S-CL25 C	11/1/17	2	3	NA		5.2004		NA		NA		
S-CL26 A	11/1/17	0	1	2.75		2.2586		NA		0.14		
S-CL26 B	11/1/17	1	2	NA		2.5791		NA		NA		
S-CL26 C	11/1/17	2	3	NA		4.3166		NA		NA		
S-CL27 A	11/1/17	0	1	0.168		0.0864		NA		0.088		
S-DG01 A	11/6/17	0	1	5.65		5.6521		NA		6		
S-DG02 A	11/3/17	0	1	11.4		5.0242		NA		4.7		
S-DG02 B	11/3/17	1	2	1.11		1.9175		NA		1.53		
S-DG02 C	11/3/17	2	3	0.158		0.1484		NA		0.193		
S-DG03 A	11/3/17	0	1	11.9		6.2042		NA		6.6		
S-DG03 B	11/3/17	1	2	3.41		4.0793		NA		1.3		
S-DG03 C	11/3/17	2	3	0.47		0		NA		0.074		
S-DG03 C Rep	11/3/17	2	3	0.438		0.0855		NA		2.49		
S-DG04 A	11/3/17	0	1	1.09		0.7719		NA		0.5		
S-DG04 B	11/3/17	1	2	0.0257		0.2397		NA		0.345		
S-DG04 C	11/3/17	2	3	0.00275		0		NA		0.62		
S-DG05 A	11/2/17	0	1	0.309		0.6012		NA		0.06		
S-DG05 B	11/2/17	1	2	0.0114		0		NA		0		
S-DG05 C	11/2/17	2	3	0.000839		0		NA		0.396		
S-DG06 A	11/3/17	0	1	0.204		0.2639		NA		0.083		
S-DG06 B	11/3/17	1	2	0.0763		0.0865		NA		0.044		
S-DG06 C	11/3/17	2	3	0.0241		0.0973		NA		0.032		
S-DG07 A	11/2/17	0	1	8.07		4.6418		NA		8		
S-DG07 B	11/2/17	1	2	NA		0.1458		NA		0.31		
S-DG07 C	11/2/17	2	3	0.139		0		NA		0.099		
S-DG08 A	11/1/17	0	1	10.8		4.956		NA		6.9		
S-DG08 B	11/1/17	1	2	NA		4.435		NA		2.85		
S-DG08 C	11/1/17	2	3	NA		3.2661		NA		1.9		
S-DG08 B	11/3/17	1	2	NA		0.2347		NA		NA		
S-DG08 C	11/3/17	2	3	NA		0.1796		NA		NA		
S-DG09 A	11/1/17	0	1	12.7		2.1297		NA		1.8		
S-DG09 B	11/1/17	1	2	NA		5.4229		NA		2.3		
S-DG09 C	11/1/17	2	3	NA		1.6144		NA		0.79		
S-DG10 A	11/2/17	0	1	1.37		1.7965		NA		0.85		
S-DG10 B	11/2/17	1	2	0.0411		0		NA		0		
S-DG10 C	11/2/17	2	3	0.0129		0		NA		0		

NA = Not Analyzed
0 = Not Detected (no value reported)
U = Not detected (half of the DL used)
J = Estimated value

Value superceded by more definitive analytical method or resampling

Table 6-1
Proposed Excavated Restoration Acreages by Cover Type

Habitat Type	Existing Pre-Construction Area [acres]	Proposed Area of Restoration [acres]
High Marsh	0.28	0.43
Low Marsh	0.33	0.33
Panne	0.28	0.2
Creek	0.03	0.06
Scrub-Shrub[1]	0.06	0.06
Phragmites[2]	0.27	0.28
TOTAL	**1.25**	**1.36**

Notes:

[1] Schrub-shrub planted with High Marsh

[2] Phragmites restoration: 0.11 acres by removal and conversion to high marsh; 0.17 acres by herbicide treatment and seeded with upland conservation mix.

Table 6-2
New England Conservation-Wildlife Seed Mixture

Botanical Name	Common Name	Wetland Indicator Status
Elymus virginicus	Virginia Wild Rye	FACW-
Schizachyrium scoparium	Little Bluestem	FACU
Festuca rubra	Creeping Red Fescue	FACU
Andropogon gerardii	Big Bluestem	FAC
Chamaecrista fasciculata	Partridge Pea	FACU
Panicum clandestinum	Deer Tongue	FAC+
Panicum virgatum	Switch Grass	FAC
Sorghastrum nutans	Indian Grass	UPL
Helenium autumnale	Common Sneezeweed	FACW+
Heliopsis helianthoides	Ox Eye Sunflower	UPL
Verbena hastata	Blue Vervain	FACW
Asclepias syriaca	Common Milkweed	FACU-
Aster umbellatus	Flat Topped/Umbrella Aster	FACW
Eupatorium purpureum	Purple Joe Pye Weed	FAC
Solidago juncea	Early Goldenrod	N/A
Zizia aurea	Golden Alexanders	FAC