New Bedford Harbor Superfund Site

U.S. Army Corps of Engineers New England District

Draft Final Intertidal Work Plan for Parcel 25-34, East Zone 1

ACE-J23-35BG2000-M1-0114|0

September 2019

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New Bedford Harbor Superfund Site

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Document history and status

Revision	Date	Description	By	Review	Approved

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Tables

Appendix

Acronyms and Abbreviations

cy	cubic yards
EPA	U.S. Environmental Protection Agency
ft	foot/feet
Generic Work Plan	*Draft Final Generic Upper Harbor Intertidal Work Plan Revision 1*
GPS	global positioning system
mg/kg	milligrams per kilogram
NAE	U.S. Army Corps of Engineers, New England District
NBHSS	New Bedford Harbor Superfund Site
PCB	polychlorinated biphenyl
PECC	pre-excavation confirmatory congener
ROD	Record of Decision
RTK	real time kinematic
sf	square feet
TCL	target cleanup level
TSCA	Toxic Substances Control Act

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1.0 Introduction

This work plan for Parcel 25-34 provides information concerning shoreline remediation and restoration pursuant to the New Bedford Harbor Superfund Site (NBHSS), including maps and figures of the excavation area, equipment access plans, sample locations, and existing and proposed wetland cover and topography. The *Draft Final Generic Upper Harbor Intertidal Work Plan Revision 1* (Generic Work Plan; Jacobs 2019a) describes the means and methods for intertidal excavation, material stabilization, drainage water management, transport and disposal of polychlorinated biphenyl (PCB)-contaminated intertidal sediments, restoration of excavated areas and post-remediation monitoring and maintenance. This parcel-specific work plan provides additional detail and describes any deviations from the procedures in the Generic Work Plan.

As described herein, certain areas of the sediment and soil on the parcel contain PCB contamination that exceeds the established target cleanup levels (TCLs) for intertidal sediment. The PCB TCLs are provided in the 1998 U.S. Environmental Protection Agency (EPA) Record of Decision (ROD) for the NBHSS (EPA 1998). The TCL for sediment and soil in saltmarshes and shoreline areas with little or no public access is 50 milligrams per kilogram (mg/kg), which is a not-to-exceed value. The TCL for Upper Harbor mudflats and subtidal areas is 10 mg/kg, which must be attained as an average on an Upper Harbor-wide basis. Sediment and soil with PCB concentrations in exceedance of the TCLs will be removed and disposed in an off-site Toxic Substances Control Act (TSCA) permitted landfill. Following contaminated sediment removal, areas that originally supported vegetative cover will be backfilled with clean topsoil and restored with a similar vegetation type and, to the extent practicable, restored to the original elevation. Unvegetated areas (i.e., mudflats) will be backfilled as needed to stabilize the shoreline.

2.0 Parcel Description

Parcel 25-34 is located within the intertidal management area referred to as East Zone 1 on the eastern shore of the Acushnet River in Acushnet, MA where the river widens to become the New Bedford Upper Harbor. A site location map showing the parcel location and the limit of planned excavation within the parcel is provided in Figure 2-1. The parcel is predominately comprised of undeveloped land, with some residential development in the southeast portion. The undeveloped portion consists of vegetative cover; primarily clusters of trees and shrubs, saltmarsh, and the invasive grass, *Phragmites australis*. A tidal channel with fringing mudflats and saltmarsh is located in the north-central portion of the parcel. This channel drains the upland area in the east and southeast portions of the parcel and receives episodic stormwater discharges from the P.J. Keating quarry on South Main Street in Acushnet. An isolated upland area referred to as Pear Island is located at the northwest border of the parcel. Overhead high-voltage power lines traverse the parcel from south-southwest to north-northeast across the proposed excavation area (the towers are outside of the excavation area). The parcel is bounded to the north by Parcel 25-34A, to the east by residential properties, to the south by Parcels 25-43 and 25-36, and to the west by Upper New Bedford Harbor.

The existing wetland vegetation was surveyed by Jacobs in 2017. The mapped survey results and the outline of the excavation area are shown in Figure 2-2. The excavation area includes mudflats, beach, stream channels, low marsh, high marsh, scrub-shrub marsh, forested wetland, and *Phragmites*. Sediment and soil samples collected during the site investigation/characterization phase were analyzed for total PCBs. The analytical results summarized in Table 2-1 were used to support remediation planning. The sample locations used to delineate the extent of PCB contamination within the Parcel 25-34 area are shown in Figure 2-3.

3.0 Excavation

3.1 Site Preparation

Access to the portions of the parcel requiring remediation will be through private property that is currently under an access agreement obtained by EPA. Temporary roads will be built to create equipment access to the remediation areas. A construction site plan showing the excavation areas, staging/containment cell area, and temporary access roads is provided as Figure 3-1. The conceptual layout of the staging area is shown in Figure 3-2. The dimensions and final location of the staging area may be altered based on field conditions.

Prior to any site clearing or grubbing necessary to build the access road to the excavation areas, mature, non-invasive tree and shrub species will be marked in the field and preserved when possible during construction. A native tree and shrub inventory is included as Appendix A. Other vegetation will be cleared from the site as necessary to permit access road construction and remedial excavation. Disturbance of the property will be minimized to the extent practicable and all impacted areas will be restored upon completion of remedial activities.

3.2 Excavation Plan

Using PCB data collected through multiple rounds of sampling, a 3-dimensional excavation model was developed as depicted in the Parcel 25-34 Excavation Plan in Figure 3-3. The cut depth, areal extent of contamination and pre-excavation surface elevations for contaminant removal areas within Parcel 25-34 are shown in Figure 3-3a (northwest portion), Figure 3-3b (northeast portion), Figure 3-3c (southwest portion), and Figure 3-3d (southeast portion). A barge-mounted dredge was used to remove a portion of the mudflat sediments adjacent to Parcel 25-34. The landward extent of dredging is shown in Figures 3-3a, 3-3b and 3-3c. The total area to be excavated is approximately 172,500 square feet (sf) and has a corresponding volume of 9,580 cubic yards (cy), which includes approximately 380 cy of soil below TCLs that will be excavated to achieve the restoration design described in Section 7.0.

The amphibious excavator will remove contaminated sediment in the mudflat and saltmarsh areas at low tide when the intertidal zone is exposed. The excavations will not be isolated from the Upper Harbor during remediation activities. Excavations deeper than 4 ft will be immediately backfilled after post-excavation compliance activities have been completed, within the same tidal cycle. Positive drainage will be used to maintain the main stream channel draining the upland area to the east and southeast during excavation and backfill activities. The construction manager will coordinate with the P.J. Keating company to manage the periodic stormwater discharges from the quarry.

If *Phragmites* roots come up as a single mass that is thicker than the cut depth, the entire mass will be removed. Following excavation, the area will be smoothed with the excavator as needed to create an even surface prior to placement of backfill.

Sections 4.3.2 and 4.3.3 of the Generic Work Plan describe on-site materials management procedures for the east side of the Upper Harbor, including collection, treatment and discharge of wastewater from the containment cell in the staging area to the Upper Harbor. Alternatively, wastewater may be containerized and transported to Area C for treatment and disposal as described in the Generic Work Plan for the west side of the Upper Harbor.

3.3 Post Excavation Compliance

Confirmation of compliance with the TCLs will be based on pre-excavation confirmatory congener (PECC) sampling and collection of post-excavation survey data to demonstrate that the excavation achieved the horizontal and vertical design limits. The PECC sample locations shown in Figure 3-4 include excavation sidewall and floor locations where PCB congener concentrations were previously determined to be below the TCL. PECC sample results are highlighted in Table 2-1. Post-excavation confirmatory samples for mudflats that are subtidal after excavation will be collected as part of the subtidal confirmatory sampling program.

Compliance survey locations are spaced at approximate 100-foot (ft) intervals along the excavation sidewalls and in an approximate 100-ft grid pattern on the excavation floor as shown in Figure 3-4. Design elevation compliance measurements at the compliance survey locations will be made using a real-time kinematic (RTK) global positioning system (GPS) with vertical and horizontal accuracies of less than 0.1 ft. Compaction by heavy equipment after excavation will be avoided until target elevations are confirmed by RTK survey. Table 3-1 provides a survey control table to document the pre- and post-excavation compliance measurements. Additional removal will be performed if a post-excavation elevation survey indicates that a compliance survey location was not excavated to the target elevation or horizontal extent. Additional removal will be performed as described in Section 4.5 of the Generic Work Plan.

If the PECC approach is proven to be ineffective in the pre-confirmatory pilot test, then post-excavation confirmatory samples will be collected at the PECC locations, and the excavation will not be backfilled until it is confirmed to be clean.[1] Confirmatory samples will be analyzed for PCB congeners with a 5-day turnaround time for the analysis.

4.0 Backfill

Upon verification that compliance with the TCLs has been met, the excavation in previously vegetated areas will be backfilled with clean manufactured topsoil. The topsoil will meet the quality requirements identified in the *Draft Final Topsoil Acceptance Plan* (Jacobs 2019b). Topsoil backfill will consist of 6 to 12 inches of topsoil to support vegetation regrowth and achieve the restoration design provided in Section 7.0. Where the excavation depth exceeds 1 ft, a 3-inch minus clean gravel substrate will be placed to within 1 ft of the target grade and topsoil will be placed on top of the substrate to bring the surface to the target elevation. A specification for the gravel backfill is provided in the Generic Work Plan. The gravel substrate and topsoil will be delivered to the restoration areas by over-the-road dump trucks and offloaded into stockpiles near the excavation area. A clean, decontaminated all-terrain dump truck or tracked excavator will transport the topsoil for spreading. Post-backfill saltmarsh topography will match the restoration surface described in Section 7.0 with a tolerance of +/- 0.3 ft except in areas previously colonized by *Phragmites,* where the surface may be lower than the planned restoration surface if additional *Phragmites* root mat is removed during excavation. The surface may be restored to an elevation of 0.1 to 0.2 ft above the planned grade to allow for natural soil compaction. During the restoration process, the elevation of the placed topsoil will be checked periodically with the GPS Rover and with the excavator bucket. Elevation measurements will be taken after each area is backfilled, prior to relocating the excavator. Excavated mudflats will not be backfilled except where needed to provide drainage or slope stability. The bed of the main stream

[1] Excavations deeper than 4 ft will be backfilled after the confirmatory sample is collected but prior to receiving confirmatory sample results.

channel will be backfilled with gravel and the tops of the restored banks will be lined with coir logs to protect the restored channel from erosion.

5.0 Schedule

The durations of the remedial activities included in this Work Plan are listed below. A more detailed construction planning schedule will be developed prior to field activities and will be attached to this Work Plan as Appendix C.

Activity	Anticipated Duration
Excavation	5.5 months
Restoration	4.5 months
After Action Report	3 months

6.0 Air Monitoring

The evaluation of existing PCB congener data (Table 2-1) indicates that the maximum concentration at Parcel 25-34 is 9,800 mg/kg. Particulate and airborne PCB monitoring will be conducted in accordance with the guidelines provided in the *NBHSS Draft Final Ambient Air Monitoring Plan for Remediation Activities Revision 2* (Ambient Air Monitoring Plan; Jacobs 2018a).

7.0 Restoration

All excavated areas except mudflats will be backfilled, regraded, and revegetated to best replicate the pre-remediation conditions and restrict the re-establishment of invasive species. A pre-construction tree and shrub inventory of plants within the excavation area and access road area is included in Appendix A. The pre-construction wetland cover conditions shown on Figure 2-2 include stands of the non-native invasive grass *Phragmites*. Engineered swales were added to the restoration design to increase tidal inundation and discourage *Phragmites* recolonization. *Phragmites* that occurs within the excavation area will be removed and disposed of with the excavated sediment and replaced with the appropriate wetland species. Restored vegetation types within the remediation area are shown in plan view in Figure 7-1. A conceptual as-built cross section is provided in Figure 7-2 and construction cross sections are provided in Appendix B. The existing and proposed post-restoration acreage of each cover type is included in Table 7-1. Tree and shrub species identified for restoration are included in Table 7-2 and in the Shrub Area Plantings notes included in Figure 7-1.

Coir fiber rolls will be installed to dissipate wave energy at the base of the low marsh slope as shown on Figures 7-1 and 7-2 such that the top of the log is approximately at final grade. Coir logs also will be installed at the top of the bank along the entire length of the main channel. Connecting edges of the rolls will be secured together with twine or another suitable tie. All coir rolls will be staked in place with 2-inch hardwood stakes with approximate 2 ft spacing. Planting of trees, shrubs, and 2-inch bare-root salt grass plugs will be conducted after excavation and backfill in accordance with favorable weather conditions and within the planting season from approximately April 15 to June 30 or in the early fall. Salt grass plants will be obtained from a nursery that can provide plugs grown from a Northeastern U.S. genotype seed stock.

Herbivory deterrents will be used to protect the seedlings during the establishment period. A combination fence and rope grid system similar to the one installed at the Pierce Mill Cove intertidal restoration area will be constructed (Jacobs, 2018b). 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 U.S. Army Corps of Engineers, New England District (NAE) and EPA.

Although a portion of the *Phragmites* root mat may remain at depth after excavation, no measures will be taken to remove or treat the residual roots and rhizomes because complete removal would require significant over-excavation and the likely presence of water in the excavation precludes other approaches such as burning root stock or broad application of herbicides. No mechanical removal of *Phragmites* is proposed outside of excavation boundaries. All remaining areas of *Phragmites* within 30 ft of the restored marsh will be treated with herbicide in accordance with the guidelines in the Generic Work Plan to promote a *Phragmites* free buffer. At the conclusion of all restoration activities, final vegetation and topographic surveys will be conducted to document the as-built elevation and vegetative cover conditions. The After Action Report for this parcel will include these surveys, including the cross-section drawings in Attachment B with updated elevations.

8.0 References

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.

Jacobs. 2019a (May). *Draft Final Generic Upper Harbor Intertidal Work Plan Revision 1*. ACE-J23-35BG2000 M1-0109.

——— 2019b (January). *Draft Final Topsoil Acceptance Plan*. ACE J23 35BG2000 M1-0076.

——— 2018a (April). *Draft Final Ambient Air Monitoring Plan for Remediation Activities Revision 2*. ACE-J23-35BG2000-M17-0016.

——— 2018b (November). *NBHSS Draft Final Pierce Mill Cove Herbivory Control Plan.* ACE-J23-35BG2000-M17-0040.

Figures

Legend

- Proposed Limits of Excavation
- Parcel Boundary
- East Zone 1 Management Area

0 400 800 Feet

Basemap Data Source: MassGIS, ESRI

July 2019

Intertidal East Zone 1
Parcel 25-34
Site Location and Features

New Bedford Harbor Superfund Site

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Figure 2-1

Path: C:\Users\scottpa\Documents\NBH1358G1001\20180901_Intertidal\EZ1\ArcGIS\WP_Figures\Fig 2-1 EZ1_WP_Parcel_25_34_Site_Location_20190723.mxd

Notes:

Existing vegetative cover was surveyed by Nearview, LLC (October 2017).

25-34A

25-34

25-43

25-36

0'

5'

10'

Legend

- 0-1' Excavation Depth
- 1-2' Excavation Depth
- 2-3 Excavation Depth
- 3-4' Excavation Depth
- 4-5' Excavation Depth
- 5-6' Excavation Depth
- Mean Lower Low Water
- Mean Higher High Water
- Parcel Boundary
- 1-foot Contour
- Beach
- High Marsh
- Low Marsh
- Mudflat
- Palustrine Forested Wetland
- Phragmites
- Scrub-Shrub Marsh
- Stream
- Upland

0 50 100 Feet

August 2019

Basemap Data Source: MassGIS, ESRI

Vertical Datum: NAVD88

Upper Harbor East Zone 1, Parcel 25-34
Existing Vegetation and Topography

New Bedford Harbor Superfund Site

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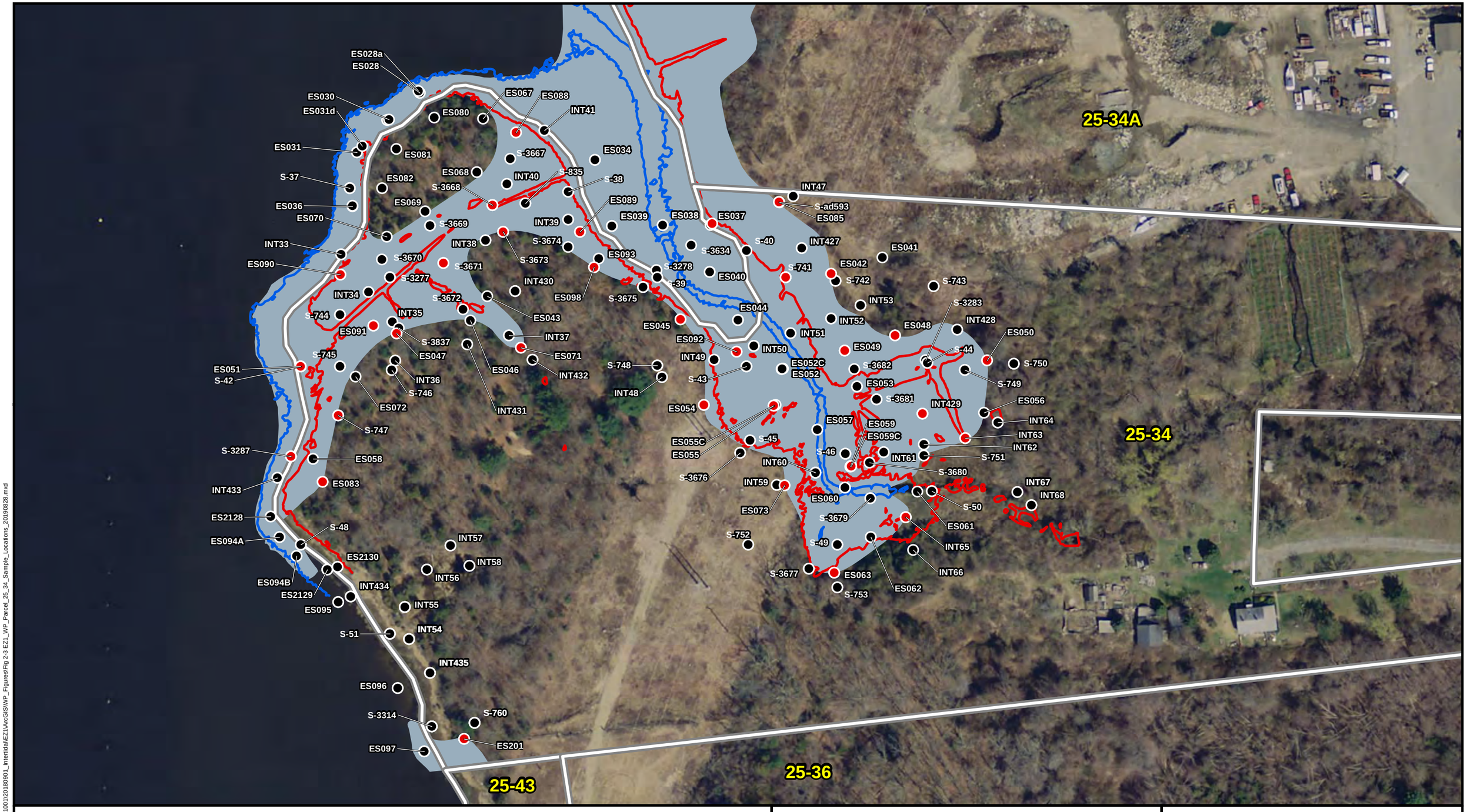
Figure 2-2



Legend

- PCB Characterization and PECC Sample Location
- PCB Characterization Sample Location
- Limits of Excavation
- MHHW (1.99 ft)
- MLLW (-1.97 ft)
- Parcel Boundary

Vertical Datum NAVD88 ft

0 100 200 Feet

Basemap Data Source: MassGIS, ESRI

August 2019

Intertidal East Zone 1
Parcel 25-34
Sampling Locations with Excavation Footprint
(0-1 ft Depth Interval)

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Figure 2-3

Path: C:\Users\scottgal\Documents\NBH\35BG100120180901_Intertidal\EZ1\ArcGIS\WP_Figures\Fig 2-3 EZ1_WP_Parcel_25_34_Sample_Locations_20190828.mxd

Slocum St
Tittleist Dr
Hope St
Rock St
Prouteau St
25-24
Temporary Gravel Access Road
25-31
Temporary Gravel Access Road
East Zone 1
Approximate
Treated Wastewater
Discharge Point
25-34A
Staging Area,
Containment Cell
and Load Out Area
S Main St
25-34
Lecuyer Ln
25-36
25-43

Path: C:\Users\scottna\Documents\NBH\35BG1001\20180901_Intertidal\EZ1\ArcGIS\WP_Figures\Fig 3-1 EZ1_WP_Parcel_25_34_Construction_Site_Plan_15ft_Road_20190722.mxd

Legend

- Proposed Limits of Excavation
- Proposed Staging Area / Containment Cell
- 15ft Temporary Gravel Access Road
- MHHW (1.99 ft.)
- MLLW (-1.97 ft.)
- Parcel Boundary

Pre-Excavation MHHW and MLLW Elevations NAVD88 ft.
(Green Seal, May, 2018)

N

Basemap Photography: ESRI; DigitalGlobe (2017)

0 110 220
Feet

1:2,640

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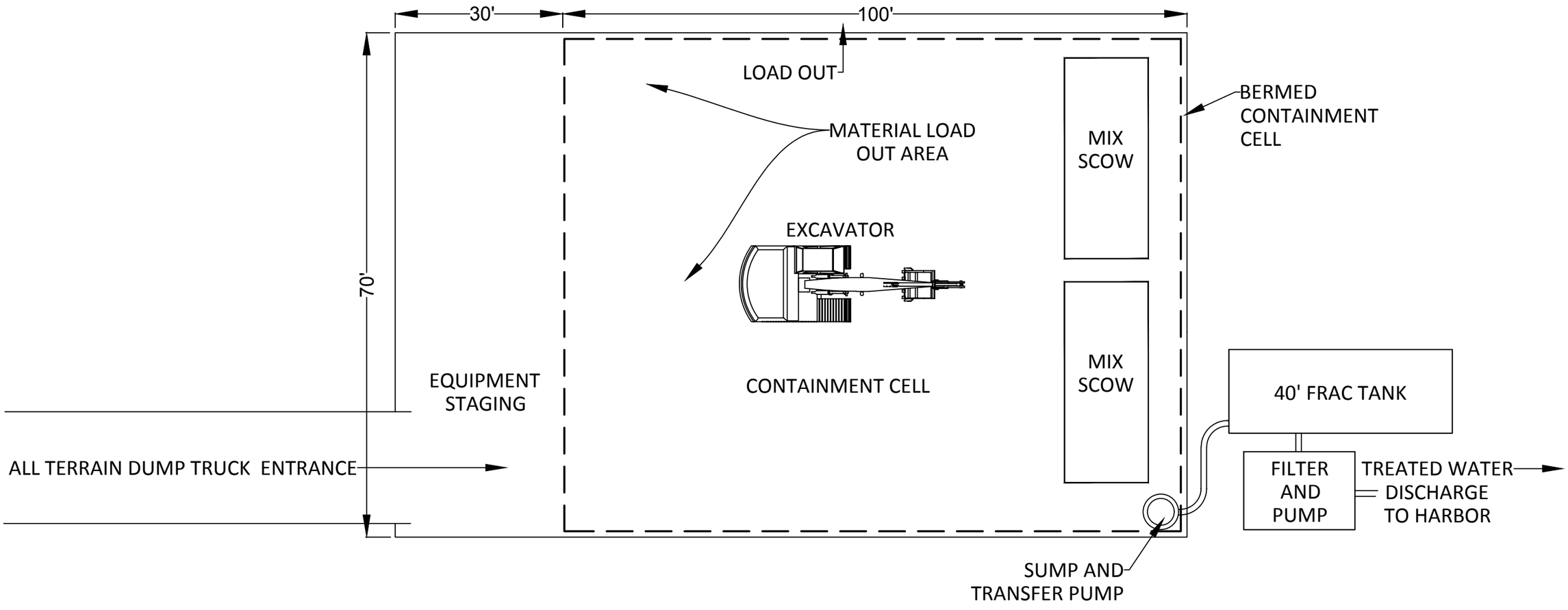
Intertidal East Zone 1 Construction Site Plan

New Bedford Harbor Superfund Site

July 2019 | Figure 3-1

ROADWAY FOR LOAD OUT - 30 CY DUMP TRAILER



Not To Scale

JACOBS™

Conceptual Staging and Containment Layout
(Subject to Field Adjustments)
Intertidal East Zone 1
New Bedford Harbor Superfund Site

December 2018 | Figure 3-2

last modified: 12/10/18 printed: 12/10/18 by sc C:\Users\scottgal\Documents\NBH\35BG10012018080901 Intertidal\EZ1\AutoCAD\Fig3-2 EZ1 Typical Laydown Area (Staging and Containment) 20181205.dwg

See Figure 3-3a

See Figure 3-3b

See Figure 3-3c

See Figure 3-3d

25-34

25-34A

25-34

25-36

25-43

A

B

C

See Figure 3-3c

See Figure 3-3c

Legend

- MHHW (1.99 ft.)
- MLLW (-1.97 ft.)
- Parcel Boundary

Feet of Sediment to Remove

6	3
5	2
4	1

2.1 Pre-Excavation Elevations NAVD88 ft. (Green Seal, May, 2018)

Pre-Excavation MHHW and MLLW Elevations NAVD88 ft. (Green Seal, May, 2018)

0 50 100 150 200 Feet

Basemap Data Source: MassGIS, ESRI

September 2019

Intertidal East Zone 1 Parcel 25-34 Excavation Plan Showing Cut Depths and Pre-Excavation Elevations

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Figure 3-3

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25-34A

25-34

Legend

- Inland Reach of Dredge
- MHHW (1.99 ft.)
- MLLW (-1.97 ft.)
- Parcel Boundary

Feet of Sediment to Remove

- 3
- 2
- 1

2.1 Pre-Excavation Elevations NAVD88 ft. (Green Seal, May, 2018)

Pre-Excavation MHHW and MLLW Elevations NAVD88 ft. (Green Seal, May, 2018)

0 30 60 Feet

N

Basemap Data Source: MassGIS, ESRI

July 2019

Intertidal East Zone 1
Northwest Portion of Parcel 25-34
Excavation Plan
Showing Cut Depths and Pre-Excavation Elevations

New Bedford Harbor Superfund Site

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Figure 3-3a

Path: C:\Users\scottga\Documents\NBH\35BG1001\20180901_Intertidal\EZ1\ArcGIS\WP_Figures\Fig 3-3a EZ1_WP_Parcel_25_34_Excavation_Plan_20190723.mxd

USGS, MassGIS

25-34A

25-34

Legend

- Inland Reach of Dredge
- MHHW (1.99 ft.)
- MLLW (-1.97 ft.)
- Parcel Boundary

Feet of Sediment to Remove

5	2
4	1
3	

2.1 Pre-Excavation Elevations NAVD88 ft. (Green Seal, May, 2018)

Pre-Excavation MHHW and MLLW Elevations NAVD88 ft. (Green Seal, May, 2018)

0 30 60 Feet

N

Basemap Data Source: MassGIS, ESRI

September 2019

Intertidal East Zone 1
Northeast Portion of Parcel 25-34
Excavation Plan
Showing Cut Depths and Pre-Excavation Elevations

New Bedford Harbor Superfund Site

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USGS, MassGIS

Figure 3-3b

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A

B

C

25-34

USGS, MassGIS

USGS, MassGIS

USGS, MassGIS

Legend

- Inland Reach of Dredge
- MHHW (1.99 ft.)
- MLLW (-1.97 ft.)
- Parcel Boundary

Feet of Sediment to Remove

- 2
- 1

2.1 Pre-Excavation Elevations NAVD88 ft. (Green Seal, May, 2018)

Pre-Excavation MHHW and MLLW Elevations NAVD88 ft. (Green Seal, May, 2018)

0 30 60 Feet

N

Basemap Data Source: MassGIS, ESRI

July 2019

Intertidal East Zone 1
Southwest Portion of Parcel 25-34
Excavation Plan
Showing Cut Depths and Pre-Excavation Elevations

New Bedford Harbor Superfund Site

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Figure 3-3c

Path: C:\Users\scottga\Documents\NBH\35BG1001\20180901_Intertidal\EZ1\ArcGIS\MP_Figures\Fig 3-3c EZ1_WP_Parcel_25_34_Excavation_Plan_20190723.mxd

25-34

USGS, MassGIS

Legend

- MHHW (1.99 ft.)
- MLLW (-1.97 ft.)
- Parcel Boundary

Feet of Sediment to Remove

6	3
5	2
4	1

2.1 Pre-Excavation Elevations NAVD88 ft. (Green Seal, May, 2018)

Pre-Excavation MHHW and MLLW Elevations NAVD88 ft. (Green Seal, May, 2018)

0 30 60 Feet

Basemap Data Source: MassGIS, ESRI

July 2019

Intertidal East Zone 1
Southeast Portion of Parcel 25-34
Excavation Plan
Showing Cut Depths and Pre-Excavation Elevations

New Bedford Harbor Superfund Site

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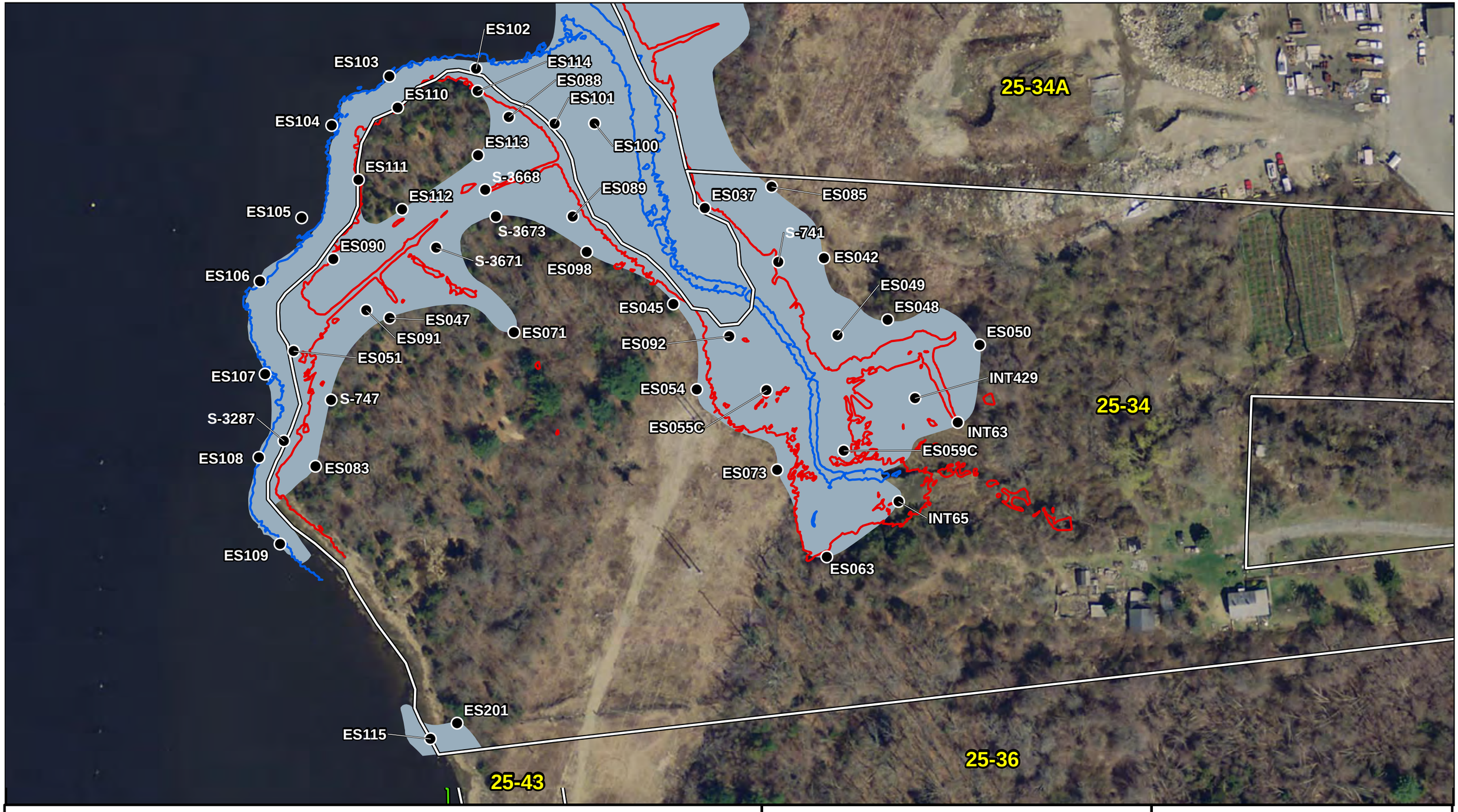
Figure 3-3d

Path: C:\Users\scotgal\Documents\NBH035BG100\120180901_Intertidal\EZ1\ArcGIS\WP_Figures\Fig 3-3d EZ1_WP_Parcel_25_34_Excavation_Plan_20190723.mxd



Legend

- Compliance Survey Location
- Proposed Limits of Excavation
- Inland Reach of Dredge
- MHHW (1.99 ft)
- MLLW (-1.97 ft)
- Property Parcel Line

Vertical Datum NAVD88 ft

0 100 200 Feet

Basemap Data Source: MassGIS, ESRI

July 2019

Intertidal East Zone 1
Parcel 25-34
Compliance Survey Locations with Excavation Footprint
(0-1 ft Depth Interval)

New Bedford Harbor Superfund Site

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Figure 3-4

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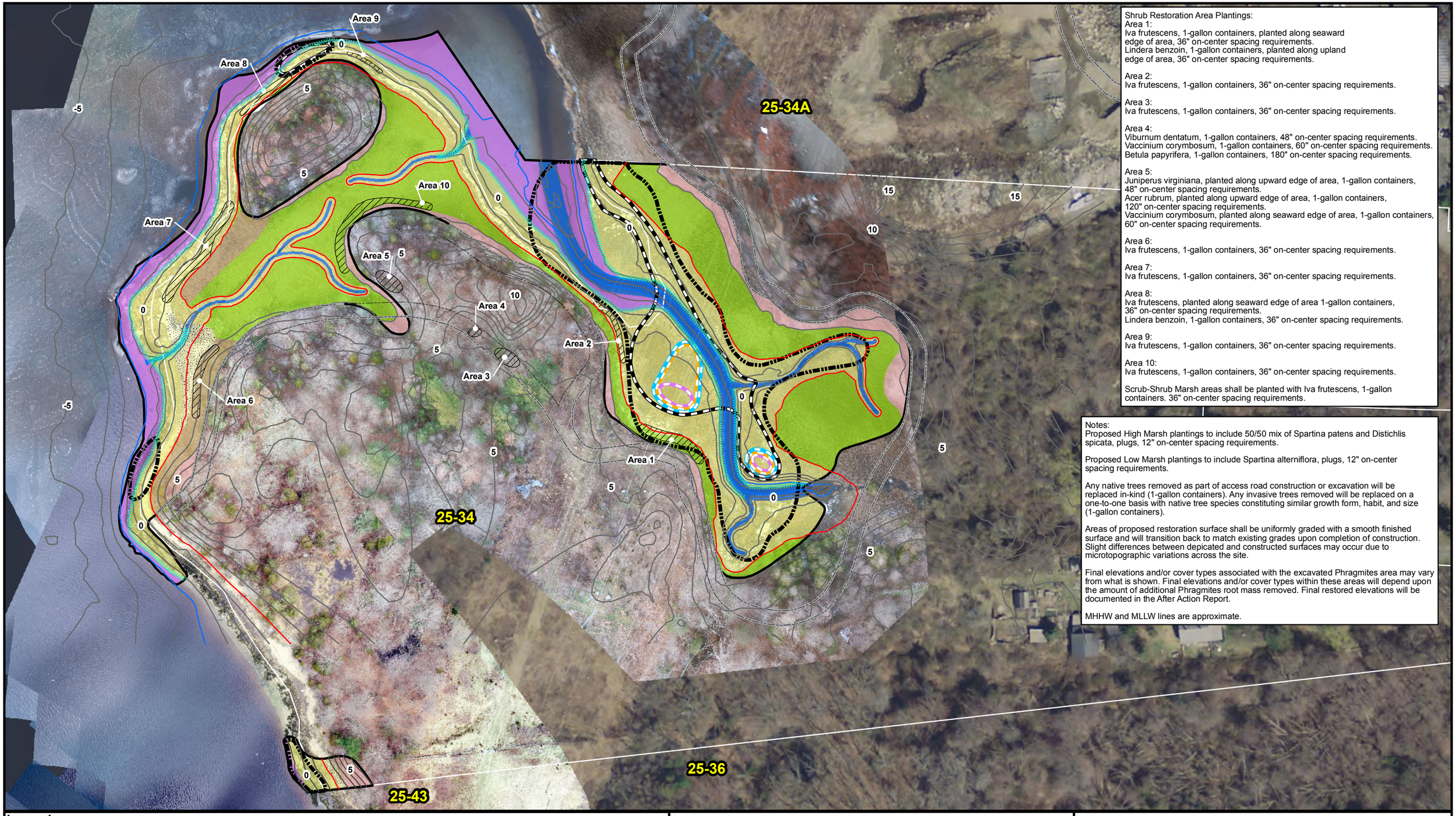

Shrub Restoration Area Plantings:
Area 1:
Iva frutescens, 1-gallon containers, planted along seaward edge of area, 36" on-center spacing requirements.
Lindera benzoin, 1-gallon containers, planted along upland edge of area, 36" on-center spacing requirements.

Area 2:
Iva frutescens, 1-gallon containers, 36" on-center spacing requirements.

Area 3:
Iva frutescens, 1-gallon containers, 36" on-center spacing requirements.

Area 4:
Viburnum dentatum, 1-gallon containers, 48" on-center spacing requirements.
Vaccinium corymbosum, 1-gallon containers, 60" on-center spacing requirements.
Betula papyrifera, 1-gallon containers, 180" on-center spacing requirements.

Area 5:
Juniperus virginiana, planted along upward edge of area, 1-gallon containers, 48" on-center spacing requirements.
Acer rubrum, planted along upward edge of area, 1-gallon containers, 120" on-center spacing requirements.
Vaccinium corymbosum, planted along seaward edge of area, 1-gallon containers, 60" on-center spacing requirements.

Area 6:
Iva frutescens, 1-gallon containers, 36" on-center spacing requirements.

Area 7:
Iva frutescens, 1-gallon containers, 36" on-center spacing requirements.

Area 8:
Iva frutescens, planted along seaward edge of area 1-gallon containers, 36" on-center spacing requirements.
Lindera benzoin, 1-gallon containers, 36" on-center spacing requirements.

Area 9:
Iva frutescens, 1-gallon containers, 36" on-center spacing requirements.

Area 10:
Iva frutescens, 1-gallon containers, 36" on-center spacing requirements.

Scrub-Shrub Marsh areas shall be planted with Iva frutescens, 1-gallon containers. 36" on-center spacing requirements.

Notes:
Proposed High Marsh plantings to include 50/50 mix of Spartina patens and Distichlis spicata, plugs, 12" on-center spacing requirements.

Proposed Low Marsh plantings to include Spartina alterniflora, plugs, 12" on-center spacing requirements.

Any native trees removed as part of access road construction or excavation will be replaced in-kind (1-gallon containers). Any invasive trees removed will be replaced on a one-to-one basis with native tree species constituting similar growth form, habit, and size (1-gallon containers).

Areas of proposed restoration surface shall be uniformly graded with a smooth finished surface and will transition back to match existing grades upon completion of construction. Slight differences between depicated and constructed surfaces may occur due to microtopographic variations across the site.

Final elevations and/or cover types associated with the excavated Phragmites area may vary from what is shown. Final elevations and/or cover types within these areas will depend upon the amount of additional Phragmites root mass removed. Final restored elevations will be documented in the After Action Report.

MHHW and MLLW lines are approximate.

Legend

- Proposed Coir Log
- 1-foot Contour
- Mean Lower Low Water
- Mean Higher High Water
- 0-1' Excavation Depth
- 1-2' Excavation Depth
- 2-3' Excavation Depth
- 3-4' Excavation Depth
- 4-5' Excavation Depth
- 5-6' Excavation Depth
- Proposed Shrub Restoration Areas
- Parcel Boundary
- Proposed Access
- Proposed Beach
- Proposed High Marsh
- Proposed Low Marsh
- Minimal Backfill as Needed for Drainage or Slope Stability
- Proposed Scrub-Shrub Marsh
- Proposed Stream
- Proposed Upland

0 50 100 Feet

September 2019

Basemap Data Source: MassGIS, ESRI

Vertical Datum: NAVD88

Upper Harbor East Zone 1, Parcel 25-34
Proposed Wetland Cover Types and Topography

New Bedford Harbor Superfund Site

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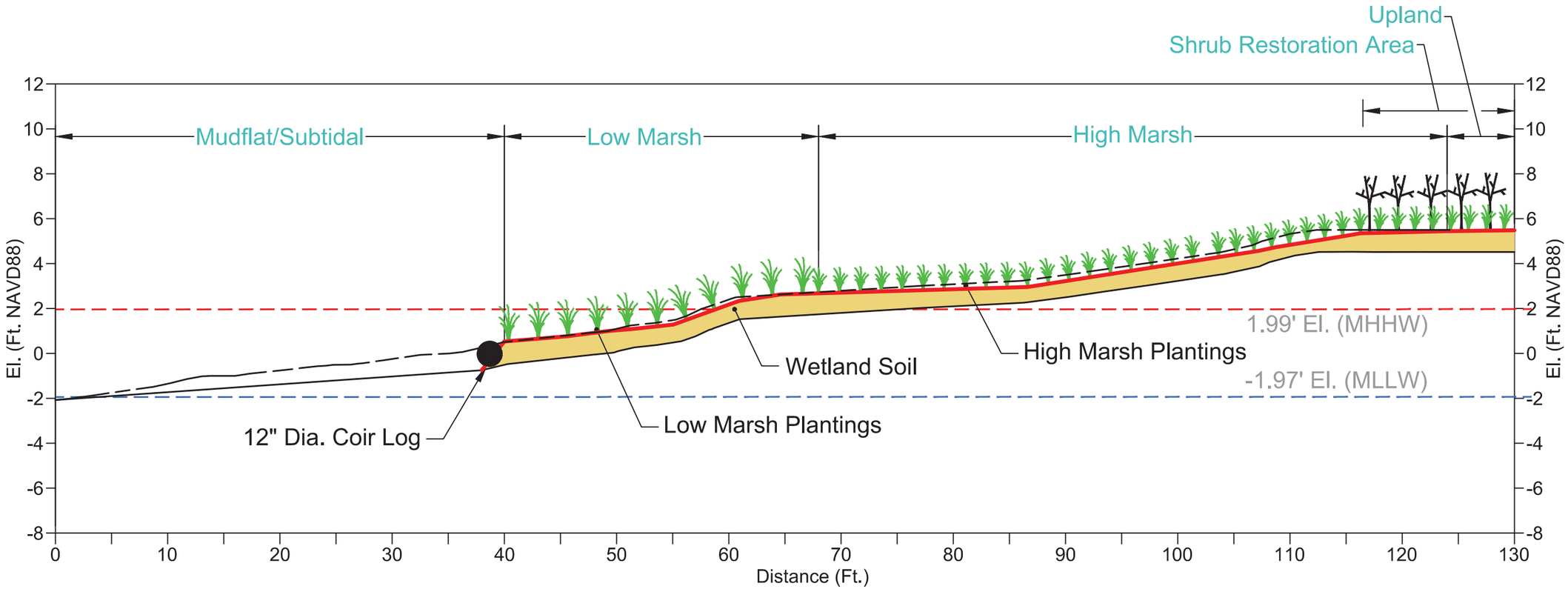
Figure 7-1



Legend

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

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Upper Harbor East Zone 1
Conceptual Cross Section
New Bedford Harbor Superfund Site

11/02/18 25-24 & 24-31.dwg

Figure 7-2

last modified: 11/2/18 printed: 11/2/18 by: REBHOLJL \\BOSFIL11\Data2\NAL_pro\USACE\2016\35BG1001600 Discipline Files\670 Environmental\2018_Restoration\GIS\Data\EZ1\CAD\Oct 22\25-24 & 24-31.dwg

Tables

Table 2-1
Parcel 25-34 Pre-Excavation PCB Characterization Sample Results

Parcel	Type	Sample ID	Station ID	Sample Depth Top (ft)	Sample Depth Bottom (ft)	Sample Date	Description	Total PCB (mg/kg)	Final Qualifier
25-34	Saltmarsh	S-ES028-18FSP4-00-10	ES028	0.0	1.0	3/12/2018	Total 209 PCB cong (excl non-detects)	157	
25-34	Saltmarsh	S-ES028-18FSP4-10-20	ES028	1.0	2.0	3/12/2018	Total 209 PCB cong (excl non-detects)	23.3	
25-34	Saltmarsh	S-ES028-18FSP4-20-25	ES028a	2.0	2.5	5/17/2018	Total 209 PCB cong (excl non-detects)	80.6	
25-34	Saltmarsh	S-ES028R-18FSP4-00-10-REP	ES028	0.0	1.0	3/12/2018	Total 209 PCB cong (excl non-detects)	80.6	
25-34	Saltmarsh	S-ES030-18FSP4-00-10	ES030	0.0	1.0	3/12/2018	Total 209 PCB cong (excl non-detects)	135	
25-34	Saltmarsh	S-ES030-18FSP4-10-20	ES030	1.0	2.0	3/12/2018	Total 209 PCB cong (excl non-detects)	11	
25-34	Saltmarsh	S-ES030-18FSP4-20-30	ES030	2.0	3.0	5/17/2018	Total 209 PCB cong (excl non-detects)	2.93	
25-34	Saltmarsh	S-ES030R-18FSP4-20-30-REP	ES030	2.0	3.0	5/17/2018	Total 209 PCB cong (excl non-detects)	10.7	
25-34	Saltmarsh	S-ES031-18FSP4-00-10	ES031	0.0	1.0	3/12/2018	Total 209 PCB cong (excl non-detects)	120	
25-34	Saltmarsh	S-ES031-18FSP4-10-20	ES031	1.0	2.0	3/12/2018	Total 209 PCB cong (excl non-detects)	4.48	
25-34	Saltmarsh	S-ES031-18FSP4-20-30	ES031d	2.0	3.0	5/17/2018	Total 209 PCB cong (excl non-detects)	1.24	
25-34	Mudflat	S-ES034-18FSP4-10-20	ES034	1.0	2.0	3/7/2018	Total 209 PCB cong (excl non-detects)	18.9	
25-34	Mudflat	S-ES034-18FSP4-20-29	ES034	2.0	2.9	3/7/2018	Total 209 PCB cong (excl non-detects)	0.106	
25-34	Saltmarsh	S-ES036-18FSP4-00-10	ES036	0.0	1.0	3/12/2018	Total 209 PCB cong (excl non-detects)	124	
25-34	Saltmarsh	S-ES036-18FSP4-10-20	ES036	1.0	2.0	3/13/2018	Total 209 PCB cong (excl non-detects)	35.7	
25-34	Saltmarsh	S-ES036-18FSP4-20-30	ES036	2.0	3.0	5/16/2018	Total 209 PCB cong (excl non-detects)	4.31	
25-34	Saltmarsh	S-ES037-18FSP4-10-20	ES037	1.0	2.0	3/19/2018	Total 209 PCB cong (excl non-detects)	1150	
25-34	Saltmarsh	S-ES037-18FSP4-20-30	ES037	2.0	3.0	3/19/2018	Total 209 PCB cong (excl non-detects)	143	
25-34	Saltmarsh	S-ES037-18FSP4-30-40	ES037	3.0	4.0	5/17/2018	Total 209 PCB cong (excl non-detects)	42.5	
25-34	Mudflat	S-ES038-18FSP4-10-20	ES038	1.0	2.0	3/20/2018	Total 209 PCB cong (excl non-detects)	428	
25-34	Mudflat	S-ES038-18FSP4-20-30	ES038	2.0	3.0	3/20/2018	Total 209 PCB cong (excl non-detects)	0.139	
25-34	Mudflat	S-ES038-18FSP4-30-35	ES038	3.0	3.5	3/20/2018	Total 209 PCB cong (excl non-detects)	0.84	
25-34	Mudflat	S-ES039-18FSP4-10-20	ES039	1.0	2.0	3/22/2018	Total 209 PCB cong (excl non-detects)	0.585	
25-34	Mudflat	S-ES039-18FSP4-20-30	ES039	2.0	3.0	3/22/2018	Total 209 PCB cong (excl non-detects)	0.0549	
25-34	Mudflat	S-ES039-18FSP4-30-33	ES039	3.0	3.3	3/22/2018	Total 209 PCB cong (excl non-detects)	4.5	
25-34	Mudflat	S-ES040-18FSP4-10-20	ES040	1.0	2.0	3/20/2018	Total 209 PCB cong (excl non-detects)	780	
25-34	Mudflat	S-ES040-18FSP4-20-30	ES040	2.0	3.0	3/20/2018	Total 209 PCB cong (excl non-detects)	26.4	
25-34	Mudflat	S-ES040-18FSP4-30-32	ES040	3.0	3.2	3/20/2018	Total 209 PCB cong (excl non-detects)	0.326	
25-34	Saltmarsh	S-ES041-18FSP4-00-10	ES041	0.0	1.0	3/19/2018	Total 209 PCB cong (excl non-detects)	0.0567	
25-34	Saltmarsh	S-ES042-18FSP4-00-10	ES042	0.0	1.0	3/19/2018	Total 209 PCB cong (excl non-detects)	1.77	
25-34	Saltmarsh	S-ES043-18FSP4-00-10	ES043	0.0	1.0	3/6/2018	Total 209 PCB cong (excl non-detects)	0.804	
25-34	Mudflat	S-ES044-18FSP4-10-20	ES044	1.0	2.0	3/12/2018	Total 209 PCB cong (excl non-detects)	152	
25-34	Mudflat	S-ES044-18FSP4-20-30	ES044	2.0	3.0	3/12/2018	Total 209 PCB cong (excl non-detects)	2.42	
25-34	Mudflat	S-ES044-18FSP4-30-33	ES044	3.0	3.3	3/12/2018	Total 209 PCB cong (excl non-detects)	1.45	
25-34	Saltmarsh	S-ES045-18FSP4-00-10	ES045	0.0	1.0	3/22/2018	Total 209 PCB cong (excl non-detects)	0.356	
25-34	Saltmarsh	S-ES046-18FSP4-00-10	ES046	0.0	1.0	3/12/2018	Total 209 PCB cong (excl non-detects)	1.46	
25-34	Saltmarsh	S-ES047-18FSP4-00-10	ES047	0.0	1.0	3/6/2018	Total 209 PCB cong (excl non-detects)	2.28	
25-34	Saltmarsh	S-ES048-18FSP4-00-10	ES048	0.0	1.0	3/19/2018	Total 209 PCB cong (excl non-detects)	2.3	
25-34	Saltmarsh	S-ES049-18FSP4-10-20	ES049	1.0	2.0	3/19/2018	Total 209 PCB cong (excl non-detects)	24.2	
25-34	Saltmarsh	S-ES049-18FSP4-20-30	ES049	2.0	3.0	3/19/2018	Total 209 PCB cong (excl non-detects)	9.51	

Table 2-1
Parcel 25-34 Pre-Excavation PCB Characterization Sample Results

Parcel	Type	Sample ID	Station ID	Sample Depth Top (ft)	Sample Depth Bottom (ft)	Sample Date	Description	Total PCB (mg/kg)	Final Qualifier
25-34	Saltmarsh	S-ES050-18FSP4-00-10	ES050	0.0	1.0	3/19/2018	Total 209 PCB cong (excl non-detects)	1.91	
25-34	Saltmarsh	S-ES051-18FSP4-10-20	ES051	1.0	2.0	3/12/2018	Total 209 PCB cong (excl non-detects)	13.7	
25-34	Saltmarsh	S-ES051-18FSP4-20-30	ES051	2.0	3.0	3/12/2018	Total 209 PCB cong (excl non-detects)	12.5	
25-34	Saltmarsh	S-ES052-18FSP4-10-20	ES052	1.0	2.0	3/20/2018	Total 209 PCB cong (excl non-detects)	52.9	
25-34	Saltmarsh	S-ES052-18FSP4-20-30	ES052	2.0	3.0	3/20/2018	Total 209 PCB cong (excl non-detects)	41.5	
25-34	Saltmarsh	S-ES052-18FSP4-30-40	ES052	3.0	4.0	3/20/2018	Total 209 PCB cong (excl non-detects)	281	
25-34	Saltmarsh	S-ES052-18FSP4-40-50	ES052	4.0	5.0	5/16/2018	Total 209 PCB cong (excl non-detects)	139	
25-34	Saltmarsh	S-ES052C-18FSP4-50-60	ES052C	5.0	6.0	6/15/2018	Total 209 PCB cong (excl non-detects)	3.37	
25-34	Saltmarsh	S-ES052C-18FSP4-60-67	ES052C	6.0	6.7	6/15/2018	Total 209 PCB cong (excl non-detects)	11.3	
25-34	Mudflat	S-ES053-18FSP4-10-20	ES053	1.0	2.0	3/22/2018	Total 209 PCB cong (excl non-detects)	52	
25-34	Mudflat	S-ES053-18FSP4-20-30	ES053	2.0	3.0	3/22/2018	Total 209 PCB cong (excl non-detects)	3.21	
25-34	Saltmarsh	S-ES054-18FSP4-00-10	ES054	0.0	1.0	3/22/2018	Total 209 PCB cong (excl non-detects)	1.17	
25-34	Saltmarsh	S-ES055-18FSP4-10-20	ES055	1.0	2.0	3/20/2018	Total 209 PCB cong (excl non-detects)	305	
25-34	Saltmarsh	S-ES055-18FSP4-20-30	ES055	2.0	3.0	3/20/2018	Total 209 PCB cong (excl non-detects)	846	
25-34	Saltmarsh	S-ES055-18FSP4-30-40	ES055	3.0	4.0	3/20/2018	Total 209 PCB cong (excl non-detects)	219	
25-34	Saltmarsh	S-ES055-18FSP4-40-50	ES055	4.0	5.0	5/16/2018	Total 209 PCB cong (excl non-detects)	97.2	
25-34	Saltmarsh	S-ES055C-18FSP4-50-60	ES055C	5.0	6.0	6/13/2018	Total 209 PCB cong (excl non-detects)	55.2	
25-34	Saltmarsh	S-ES055C-18FSP4-60-68	ES055C	6.0	6.8	6/13/2018	Total 209 PCB cong (excl non-detects)	9.48	
25-34	Saltmarsh	S-ES056-18FSP4-00-10	ES056	0.0	1.0	3/20/2018	Total 209 PCB cong (excl non-detects)	3.04	
25-34	Mudflat	S-ES057-18FSP4-10-20	ES057	1.0	2.0	3/26/2018	Total 209 PCB cong (excl non-detects)	0.017	
25-34	Mudflat	S-ES057-18FSP4-20-30	ES057	2.0	3.0	3/26/2018	Total 209 PCB cong (excl non-detects)	0.016	
25-34	Mudflat	S-ES057-18FSP4-30-41	ES057	3.0	4.1	3/26/2018	Total 209 PCB cong (excl non-detects)	0.0126	
25-34	Saltmarsh	S-ES058-18FSP4-00-10	ES058	0.0	1.0	3/15/2018	Total 209 PCB cong (excl non-detects)	116	
25-34	Saltmarsh	S-ES058-18FSP4-10-20	ES058	1.0	2.0	3/15/2018	Total 209 PCB cong (excl non-detects)	3.96	
25-34	Saltmarsh	S-ES059-18FSP4-10-20	ES059	1.0	2.0	3/20/2018	Total 209 PCB cong (excl non-detects)	743	
25-34	Saltmarsh	S-ES059-18FSP4-20-30	ES059	2.0	3.0	3/20/2018	Total 209 PCB cong (excl non-detects)	620	
25-34	Saltmarsh	S-ES059-18FSP4-30-40	ES059	3.0	4.0	3/20/2018	Total 209 PCB cong (excl non-detects)	580	
25-34	Saltmarsh	S-ES059-18FSP4-40-50	ES059	4.0	5.0	5/16/2018	Total 209 PCB cong (excl non-detects)	205	
25-34	Saltmarsh	S-ES059C-18FSP4-50-60	ES059C	5.0	6.0	6/15/2018	Total 209 PCB cong (excl non-detects)	176	
25-34	Saltmarsh	S-ES059C-18FSP4-60-70	ES059C	6.0	7.0	6/15/2018	Total 209 PCB cong (excl non-detects)	2.34	
25-34	Mudflat	S-ES060-18FSP4-10-20	ES060	1.0	2.0	3/26/2018	Total 209 PCB cong (excl non-detects)	14.3	
25-34	Mudflat	S-ES060-18FSP4-20-30	ES060	2.0	3.0	3/26/2018	Total 209 PCB cong (excl non-detects)	0.0165	
25-34	Mudflat	S-ES060-18FSP4-30-32	ES060	3.0	3.2	3/26/2018	Total 209 PCB cong (excl non-detects)	0.896	
25-34	Saltmarsh	S-ES061-18FSP4-00-10	ES061	0.0	1.0	3/20/2018	Total 209 PCB cong (excl non-detects)	5.6	
25-34	Saltmarsh	S-ES062-18FSP4-10-20	ES062	1.0	2.0	3/26/2018	Total 209 PCB cong (excl non-detects)	24.3	
25-34	Saltmarsh	S-ES062-18FSP4-20-30	ES062	2.0	3.0	3/26/2018	Total 209 PCB cong (excl non-detects)	4.55	
25-34	Saltmarsh	S-ES063-18FSP4-00-10	ES063	0.0	1.0	3/22/2018	Total 209 PCB cong (excl non-detects)	32.9	
25-34	Saltmarsh	S-ES067-18FSP4-00-10	ES067	0.0	1.0	3/6/2018	Total 209 PCB cong (excl non-detects)	1.38	
25-34	Saltmarsh	S-ES068-18FSP4-00-10	ES068	0.0	1.0	3/6/2018	Total 209 PCB cong (excl non-detects)	8.53	
25-34	Saltmarsh	S-ES069-18FSP4-00-10	ES069	0.0	1.0	3/6/2018	Total 209 PCB cong (excl non-detects)	15.6	

Table 2-1
Parcel 25-34 Pre-Excavation PCB Characterization Sample Results

Parcel	Type	Sample ID	Station ID	Sample Depth Top (ft)	Sample Depth Bottom (ft)	Sample Date	Description	Total PCB (mg/kg)	Final Qualifier
25-34	Saltmarsh	S-ES070-18FSP4-00-10	ES070	0.0	1.0	3/6/2018	Total 209 PCB cong (excl non-detects)	32.8	
25-34	Saltmarsh	S-ES071-18FSP4-00-10	ES071	0.0	1.0	3/6/2018	Total 209 PCB cong (excl non-detects)	1.45	
25-34	Saltmarsh	S-ES072-18FSP4-00-10	ES072	0.0	1.0	3/15/2018	Total 209 PCB cong (excl non-detects)	1.61	
25-34	Saltmarsh	S-ES073-18FSP4-00-10	ES073	0.0	1.0	3/22/2018	Total 209 PCB cong (excl non-detects)	0.0263	
25-34	Saltmarsh	S-ES080-18FSP4-00-10	ES080	0.0	1.0	5/16/2018	Total 209 PCB cong (excl non-detects)	0.272	
25-34	Saltmarsh	S-ES081-18FSP4-00-10	ES081	0.0	1.0	5/16/2018	Total 209 PCB cong (excl non-detects)	0.563	
25-34	Saltmarsh	S-ES082-18FSP4-00-10	ES082	0.0	1.0	5/16/2018	Total 209 PCB cong (excl non-detects)	0.143	
25-34	Saltmarsh	S-ES083-18FSP4-00-10	ES083	0.0	1.0	5/16/2018	Total 209 PCB cong (excl non-detects)	1.51	
25-34	Saltmarsh	S-ES085-18FSP4-00-10	ES085	0.0	1.0	7/12/2018	Total 209 PCB cong (excl non-detects)	10.3	
25-34	Saltmarsh	S-ES088-18FSP4-10-20	ES088	1.0	2.0	7/12/2018	Total 209 PCB cong (excl non-detects)	6.7	
25-34	Saltmarsh	S-ES089-18FSP4-10-20	ES089	1.0	2.0	7/12/2018	Total 209 PCB cong (excl non-detects)	11	
25-34	Saltmarsh	S-ES090-18FSP4-10-20	ES090	1.0	2.0	7/12/2018	Total 209 PCB cong (excl non-detects)	2.41	
25-34	Saltmarsh	S-ES091-18FSP4-10-20	ES091	1.0	2.0	7/12/2018	Total 209 PCB cong (excl non-detects)	14.3	
25-34	Saltmarsh	S-ES092-18FSP4-20-30	ES092	2.0	3.0	7/12/2018	Total 209 PCB cong (excl non-detects)	4.39	
25-34	Saltmarsh	S-ES093-18FSP4-00-10	ES093	0.0	1.0	7/12/2018	Total 209 PCB cong (excl non-detects)	2140	
25-34	Mudflat	S-ES094A-17ADD5-00-10	ES094A	0.0	1.0	7/19/2018	Aroclor 1254 - Immunoassay	29.7	D
25-34	Mudflat	S-ES094A-17ADD5-10-15	ES094A	1.0	1.5	7/19/2018	Aroclor 1254 - Immunoassay	2.59	
25-34	Mudflat	S-ES094B-17ADD5-00-10	ES094B	0.0	1.0	7/19/2018	Aroclor 1254 - Immunoassay	81.5	D
25-34	Mudflat	S-ES094B-17ADD5-10-20	ES094B	1.0	2.0	7/19/2018	Aroclor 1254 - Immunoassay	37.3	D
25-34	Mudflat	S-ES095-17ADD5-00-10	ES095	0.0	1.0	7/19/2018	Aroclor 1254 - Immunoassay	3.57	
25-34	Mudflat	S-ES095-17ADD5-10-20	ES095	1.0	2.0	7/19/2018	Aroclor 1254 - Immunoassay	0.53	
25-34	Mudflat	S-ES096-17ADD5-00-10	ES096	0.0	1.0	7/19/2018	Aroclor 1254 - Immunoassay	0.27	
25-34	Mudflat	S-ES096-17ADD5-10-20	ES096	1.0	2.0	7/19/2018	Aroclor 1254 - Immunoassay	0.50	U
25-34	Mudflat	S-ES097-17ADD5-00-10	ES097	0.0	1.0	7/20/2018	Aroclor 1254 - Immunoassay	85.0	D
25-34	Mudflat	S-ES097-17ADD5-10-20	ES097	1.0	2.0	7/20/2018	Aroclor 1254 - Immunoassay	221	D
25-34	Mudflat	S-ES097-17ADD5-20-30	ES097	2.0	3.0	7/20/2018	Aroclor 1254 - Immunoassay	0.50	U
25-34	Saltmarsh	S-ES098-18FSP4-00-10	ES098	0.0	1.0	7/31/2018	Total 209 PCB cong (excl non-detects)	4.83	
25-34	Saltmarsh	S-ES201-18FSP11-00-10	ES201	0.0	1.0	6/4/2018	Total 209 PCB cong (excl non-detects)	2.13	
25-34	Saltmarsh	S-ES2128-18FSP11-00-10	ES2128	0.0	1.0	10/2/2018	Total 209 PCB cong (excl non-detects)	681	
25-34	Saltmarsh	S-ES2128-18FSP11-10-20	ES2128	1.0	2.0	10/2/2018	Aroclor 1254 - Immunoassay	1.8	J
25-34	Saltmarsh	S-ES2129-18FSP11-00-10	ES2129	0.0	1.0	10/2/2018	Total 209 PCB cong (excl non-detects)	9.48	
25-34	Saltmarsh	S-ES2129-18FSP11-10-20	ES2129	1.0	2.0	10/2/2018	Aroclor 1254 - Immunoassay	0.88	J
25-34	Saltmarsh	S-ES2130-18FSP11-00-10	ES2130	0.0	1.0	10/2/2018	Total 209 PCB cong (excl non-detects)	8.26	
25-34	Saltmarsh	S-ES2130-18FSP11-10-20	ES2130	1.0	2.0	10/2/2018	Aroclor 1254 - Immunoassay	1.8	J
25-34	Saltmarsh	S-15A-INT33-00-10	INT33	0.0	1.0	4/27/2015	Aroclor 1254 - Immunoassay	763	D
25-34	Saltmarsh	S-15A-INT33-10-20	INT33	1.0	2.0	4/27/2015	Aroclor 1254 - Immunoassay	0.50	U
25-34	Saltmarsh	S-15A-INT34-00-10	INT34	0.0	1.0	4/27/2015	Aroclor 1254 - Immunoassay	1636	D
25-34	Saltmarsh	S-15A-INT34-10-20	INT34	1.0	2.0	4/27/2015	Aroclor 1254 - Immunoassay	0.50	U
25-34	Saltmarsh	S-15A-INT35-00-10	INT35	0.0	1.0	4/27/2015	Total 139 PCB cong (excl non-detects)	130	
25-34	Saltmarsh	S-15A-INT35-10-20	INT35	1.0	2.0	4/27/2015	Aroclor 1254 - Immunoassay	0.60	

Table 2-1
Parcel 25-34 Pre-Excavation PCB Characterization Sample Results

Parcel	Type	Sample ID	Station ID	Sample Depth Top (ft)	Sample Depth Bottom (ft)	Sample Date	Description	Total PCB (mg/kg)	Final Qualifier
25-34	Saltmarsh	S-15A-INT36-00-10	INT36	0.0	1.0	4/27/2015	Aroclor 1254 - Immunoassay	0.80	
25-34	Saltmarsh	S-15A-INT36-10-20	INT36	1.0	2.0	4/27/2015	Aroclor 1254 - Immunoassay	0.70	
25-34	Saltmarsh	S-15A-INT37-00-10	INT37	0.0	1.0	4/27/2015	Aroclor 1254 - Immunoassay	844	D
25-34	Saltmarsh	S-15A-INT37-10-20	INT37	1.0	2.0	4/27/2015	Aroclor 1254 - Immunoassay	0.80	
25-34	Saltmarsh	S-15A-INT38-00-10	INT38	0.0	1.0	4/27/2015	Aroclor 1254 - Immunoassay	9.20	
25-34	Saltmarsh	S-15A-INT38-10-20	INT38	1.0	2.0	4/27/2015	Aroclor 1254 - Immunoassay	0.80	
25-34	Saltmarsh	S-15A-INT39-00-10	INT39	0.0	1.0	4/27/2015	Aroclor 1254 - Immunoassay	486	D
25-34	Saltmarsh	S-15A-INT39-10-20	INT39	1.0	2.0	4/27/2015	Aroclor 1254 - Immunoassay	0.60	
25-34	Saltmarsh	S-15A-INT40-00-10	INT40	0.0	1.0	4/27/2015	Aroclor 1254 - Immunoassay	33.0	D
25-34	Saltmarsh	S-15A-INT40-10-20	INT40	1.0	2.0	4/27/2015	Aroclor 1254 - Immunoassay	0.70	
25-34	Saltmarsh	S-15A-INT40-00-10-REP	INT40	0.0	1.0	4/27/2015	Aroclor 1254 - Immunoassay	234	D
25-34	Saltmarsh	S-15A-INT40-10-20-REP	INT40	1.0	2.0	4/27/2015	Aroclor 1254 - Immunoassay	0.90	
25-34	Saltmarsh	S-15A-INT41-00-10	INT41	0.0	1.0	4/27/2015	Aroclor 1254 - Immunoassay	1749	D
25-34	Saltmarsh	S-15A-INT41-10-20	INT41	1.0	2.0	4/27/2015	Aroclor 1254 - Immunoassay	3.60	
25-34	Saltmarsh	S-17Y-INT427-00-10	INT427	0.0	1.0	5/25/2017	Aroclor 1254 - Immunoassay	274	D
25-34	Saltmarsh	S-17Y-INT427-10-20	INT427	1.0	2.0	5/25/2017	Aroclor 1254 - Immunoassay	5.1	
25-34	Saltmarsh	S-17Y-INT428-00-10	INT428	0.0	1.0	5/25/2017	Total 139 PCB cong (excl non-detects)	38	
25-34	Saltmarsh	S-17Y-INT428-10-20	INT428	1.0	2.0	5/25/2017	Aroclor 1254 - Immunoassay	3.9	
25-34	Saltmarsh	S-17Y-INT429-00-10	INT429	0.0	1.0	5/25/2017	Total 139 PCB cong (excl non-detects)	62	
25-34	Saltmarsh	S-INT429-18FSP4-10-20	INT429	1.0	2.0	7/12/2018	Total 209 PCB cong (excl non-detects)	6.53	
25-34	Saltmarsh	S-17U-INT430-00-10	INT430	0.0	1.0	6/1/2017	Aroclor 1254 - Immunoassay	3.6	
25-34	Saltmarsh	S-17U-INT430-10-20	INT430	1.0	2.0	6/1/2017	Aroclor 1254 - Immunoassay	3.8	J
25-34	Saltmarsh	S-17U-INT431-00-10	INT431	0.0	1.0	6/1/2017	Aroclor 1254 - Immunoassay	1.7	
25-34	Saltmarsh	S-17U-INT431-10-20	INT431	1.0	2.0	6/1/2017	Aroclor 1254 - Immunoassay	1.7	
25-34	Saltmarsh	S-17U-INT432-00-10	INT432	0.0	1.0	6/1/2017	Aroclor 1254 - Immunoassay	1.9	
25-34	Saltmarsh	S-17U-INT432-10-20	INT432	1.0	2.0	6/1/2017	Aroclor 1254 - Immunoassay	3.4	
25-34	Saltmarsh	S-17Y-INT433-00-10	INT433	0.0	1.0	5/30/2017	Aroclor 1254 - Immunoassay	386	D
25-34	Saltmarsh	S-17Y-INT433-10-20	INT433	1.0	2.0	5/30/2017	Total 139 PCB cong (excl non-detects)	190	
25-34	Saltmarsh	S-17U-INT434-00-10	INT434	0.0	1.0	6/1/2017	Aroclor 1254 - Immunoassay	6.4	D
25-34	Saltmarsh	S-17U-INT434-10-20	INT434	1.0	2.0	6/1/2017	Aroclor 1254 - Immunoassay	2	
25-34	Saltmarsh	S-17Y-INT435-00-10	INT435	0.0	1.0	5/30/2017	Aroclor 1254 - Immunoassay	0.52	
25-34	Saltmarsh	S-17Y-INT435-10-20	INT435	1.0	2.0	5/30/2017	Aroclor 1254 - Immunoassay	0.55	
25-34	Saltmarsh	S-15A-INT47-00-10	INT47	0.0	1.0	4/23/2015	Total 139 PCB cong (excl non-detects)	0.60	
25-34	Saltmarsh	S-15A-INT47-10-20	INT47	1.0	2.0	4/23/2015	Aroclor 1254 - Immunoassay	0.50	U
25-34	Saltmarsh	S-15A-INT48-00-10	INT48	0.0	1.0	4/22/2015	Aroclor 1254 - Immunoassay	0.90	
25-34	Saltmarsh	S-15A-INT48-10-20	INT48	1.0	2.0	4/22/2015	Aroclor 1254 - Immunoassay	0.60	
25-34	Saltmarsh	S-15A-INT49-00-10	INT49	0.0	1.0	4/22/2015	Aroclor 1254 - Immunoassay	733	D
25-34	Saltmarsh	S-15A-INT49-10-20	INT49	1.0	2.0	4/22/2015	Aroclor 1254 - Immunoassay	5.10	
25-34	Saltmarsh	S-15A-INT50-00-10	INT50	0.0	1.0	4/22/2015	Total 139 PCB cong (excl non-detects)	110	
25-34	Saltmarsh	S-15A-INT50-10-20	INT50	1.0	2.0	4/22/2015	Aroclor 1254 - Immunoassay	288	D

Table 2-1
Parcel 25-34 Pre-Excavation PCB Characterization Sample Results

Parcel	Type	Sample ID	Station ID	Sample Depth Top (ft)	Sample Depth Bottom (ft)	Sample Date	Description	Total PCB (mg/kg)	Final Qualifier
25-34	Saltmarsh	S-15A-INT50-20-30	INT50	2.0	3.0	4/22/2015	Aroclor 1254 - Immunoassay	360	D
25-34	Saltmarsh	S-15A-INT51-00-10	INT51	0.0	1.0	4/23/2015	Aroclor 1254 - Immunoassay	2348	D
25-34	Saltmarsh	S-15A-INT51-10-20	INT51	1.0	2.0	4/23/2015	Aroclor 1254 - Immunoassay	261	D
25-34	Saltmarsh	S-15A-INT52-00-10	INT52	0.0	1.0	4/23/2015	Aroclor 1254 - Immunoassay	315	D
25-34	Saltmarsh	S-15A-INT52-10-20	INT52	1.0	2.0	4/23/2015	Aroclor 1254 - Immunoassay	2.70	
25-34	Saltmarsh	S-15A-INT53-00-10	INT53	0.0	1.0	4/23/2015	Total 139 PCB cong (excl non-detects)	0.16	
25-34	Saltmarsh	S-15A-INT53-10-20	INT53	1.0	2.0	4/23/2015	Aroclor 1254 - Immunoassay	0.50	U
25-34	Saltmarsh	S-15A-INT54-00-10	INT54	0.0	1.0	4/20/2015	Aroclor 1254 - Immunoassay	5.40	D
25-34	Saltmarsh	S-15A-INT54-10-20	INT54	1.0	2.0	4/20/2015	Aroclor 1254 - Immunoassay	2.80	
25-34	Saltmarsh	S-15A-INT55-00-10	INT55	0.0	1.0	4/20/2015	Total 139 PCB cong (excl non-detects)	22.0	
25-34	Saltmarsh	S-15A-INT55-10-20	INT55	1.0	2.0	4/20/2015	Aroclor 1254 - Immunoassay	3.00	
25-34	Saltmarsh	S-15A-INT56-00-10	INT56	0.0	1.0	4/20/2015	Total 139 PCB cong (excl non-detects)	8.70	
25-34	Saltmarsh	S-15A-INT56-10-20	INT56	1.0	2.0	4/20/2015	Aroclor 1254 - Immunoassay	1.10	
25-34	Saltmarsh	S-15A-INT57-00-10	INT57	0.0	1.0	4/22/2015	Aroclor 1254 - Immunoassay	1.90	
25-34	Saltmarsh	S-15A-INT57-10-20	INT57	1.0	2.0	4/22/2015	Aroclor 1254 - Immunoassay	0.60	
25-34	Saltmarsh	S-15A-INT58-00-10	INT58	0.0	1.0	4/22/2015	Aroclor 1254 - Immunoassay	3.90	
25-34	Saltmarsh	S-15A-INT58-10-20	INT58	1.0	2.0	4/22/2015	Aroclor 1254 - Immunoassay	0.50	U
25-34	Saltmarsh	S-15A-INT59-00-10	INT59	0.0	1.0	4/22/2015	Aroclor 1254 - Immunoassay	0.80	
25-34	Saltmarsh	S-15A-INT59-10-20	INT59	1.0	2.0	4/22/2015	Aroclor 1254 - Immunoassay	1.10	
25-34	Saltmarsh	S-15A-INT60-00-10	INT60	0.0	1.0	4/22/2015	Aroclor 1254 - Immunoassay	143	D
25-34	Saltmarsh	S-15A-INT60-10-20	INT60	1.0	2.0	4/22/2015	Aroclor 1254 - Immunoassay	378	D
25-34	Saltmarsh	S-15A-INT60-20-28	INT60	2.0	2.8	4/22/2015	Aroclor 1254 - Immunoassay	8.30	
25-34	Saltmarsh	S-15A-INT61-00-10	INT61	0.0	1.0	4/23/2015	Aroclor 1254 - Immunoassay	359	D
25-34	Saltmarsh	S-15A-INT61-10-20	INT61	1.0	2.0	4/23/2015	Aroclor 1254 - Immunoassay	1.50	
25-34	Saltmarsh	S-15A-INT62-00-10	INT62	0.0	1.0	4/23/2015	Aroclor 1254 - Immunoassay	93.3	D
25-34	Saltmarsh	S-15A-INT62-10-20	INT62	1.0	2.0	4/23/2015	Aroclor 1254 - Immunoassay	2.00	
25-34	Saltmarsh	S-15A-INT63-00-10	INT63	0.0	1.0	4/23/2015	Total 139 PCB cong (excl non-detects)	25.0	
25-34	Saltmarsh	S-15A-INT63-10-20	INT63	1.0	2.0	4/23/2015	Aroclor 1254 - Immunoassay	3.00	
25-34	Saltmarsh	S-15A-INT64-00-10	INT64	0.0	1.0	4/23/2015	Aroclor 1254 - Immunoassay	1.20	
25-34	Saltmarsh	S-15A-INT64-10-20	INT64	1.0	2.0	4/23/2015	Aroclor 1254 - Immunoassay	0.70	
25-34	Saltmarsh	S-15A-INT65-00-10	INT65	0.0	1.0	4/22/2015	Total 139 PCB cong (excl non-detects)	31.0	
25-34	Saltmarsh	S-15A-INT65-10-20	INT65	1.0	2.0	4/22/2015	Aroclor 1254 - Immunoassay	3.50	
25-34	Saltmarsh	S-15A-INT66-00-10	INT66	0.0	1.0	4/23/2015	Aroclor 1254 - Immunoassay	0.90	
25-34	Saltmarsh	S-15A-INT67-00-10	INT67	0.0	1.0	4/22/2015	Aroclor 1254 - Immunoassay	2.30	
25-34	Saltmarsh	S-15A-INT67-10-20	INT67	1.0	2.0	4/22/2015	Aroclor 1254 - Immunoassay	2.40	
25-34	Saltmarsh	S-15A-INT68-00-10	INT68	0.0	1.0	4/22/2015	Aroclor 1254 - Immunoassay	8.00	D
25-34	Saltmarsh	S-15A-INT68-10-20	INT68	1.0	2.0	4/22/2015	Aroclor 1254 - Immunoassay	1.30	
25-34	Saltmarsh	S-3277-0.0-1.0	S-3277	0.0	1.0	10/8/2001	Total 18 NOAA PCB cong (excl non-detects)	1690	
25-34	Saltmarsh	S-3277-1.0-2.0	S-3277	1.0	2.0	10/5/2001	Total 18 NOAA PCB cong (excl non-detects)	7.28	
25-34	Saltmarsh	S-3277-2.0-3.0	S-3277	2.0	3.0	10/5/2001	Total 18 NOAA PCB cong (excl non-detects)	31.2	

Table 2-1
Parcel 25-34 Pre-Excavation PCB Characterization Sample Results

Parcel	Type	Sample ID	Station ID	Sample Depth Top (ft)	Sample Depth Bottom (ft)	Sample Date	Description	Total PCB (mg/kg)	Final Qualifier
25-34	Saltmarsh	S-3278-1.4-1.9	S-3278	1.4	1.9	10/2/2001	Total 18 NOAA PCB cong (excl non-detects)	3120	
25-34	Saltmarsh	S-3278-2.1-2.6	S-3278	2.1	2.6	10/2/2001	Total 18 NOAA PCB cong (excl non-detects)	2.60	
25-34	Saltmarsh	S-3283-0.0-1.0	S-3283	0.0	1.0	10/22/2001	Total 18 NOAA PCB cong (excl non-detects)	3640	
25-34	Saltmarsh	S-3287-0.0-.3	S-3287	0.0	0.3	10/24/2001	Total 18 NOAA PCB cong (excl non-detects)	338	
25-34	Saltmarsh	S-3287-2.0-3.0	S-3287	2.0	3.0	10/24/2001	Total 18 NOAA PCB cong (excl non-detects)	1.66	
25-34	Saltmarsh	S-3314-0.0-1.0	S-3314	0.0	1.0	10/24/2001	Total 18 NOAA PCB cong (excl non-detects)	4.94	
25-34	Saltmarsh	S-3314-1.0-2.0	S-3314	1.0	2.0	10/24/2001	Total 18 NOAA PCB cong (excl non-detects)	0.07	
25-34	Mudflat	S-3634-2.5-3.0	S-3634	2.5	3.0	10/2/2001	Total 18 NOAA PCB cong (excl non-detects)	3.38	
25-34	Saltmarsh	S-3667-0.0-1.0	S-3667	0.0	1.0	10/9/2001	Total 18 NOAA PCB cong (excl non-detects)	1066	
25-34	Saltmarsh	S-3668-0.0-1.0	S-3668	0.0	1.0	10/9/2001	Total 18 NOAA PCB cong (excl non-detects)	62.4	
25-34	Saltmarsh	S-3668-1.0-2.0	S-3668	1.0	2.0	10/9/2001	Total 18 NOAA PCB cong (excl non-detects)	0.21	
25-34	Saltmarsh	S-3668-2.0-3.0	S-3668	2.0	3.0	10/9/2001	Total 18 NOAA PCB cong (excl non-detects)	1.59	
25-34	Saltmarsh	S-3669-0.0-1.0	S-3669	0.0	1.0	10/9/2001	Total 18 NOAA PCB cong (excl non-detects)	260	
25-34	Saltmarsh	S-3669-1.0-1.5	S-3669	1.0	1.5	10/9/2001	Total 18 NOAA PCB cong (excl non-detects)	1.27	
25-34	Saltmarsh	S-3670-0.0-1.0	S-3670	0.0	1.0	10/9/2001	Total 18 NOAA PCB cong (excl non-detects)	1508	
25-34	Saltmarsh	S-3671-0.0-1.0	S-3671	0.0	1.0	10/9/2001	Total 18 NOAA PCB cong (excl non-detects)	18.7	
25-34	Saltmarsh	S-3671-1.0-2.0	S-3671	1.0	2.0	10/9/2001	Total 18 NOAA PCB cong (excl non-detects)	0.52	
25-34	Saltmarsh	S-3672-0.0-1.0	S-3672	0.0	1.0	10/9/2001	Total 18 NOAA PCB cong (excl non-detects)	88.4	
25-34	Saltmarsh	S-3673-0.0-1.0	S-3673	0.0	1.0	10/9/2001	Total 18 NOAA PCB cong (excl non-detects)	5.20	
25-34	Saltmarsh	S-3673-1.0-2.0	S-3673	1.0	2.0	10/9/2001	Total 18 NOAA PCB cong (excl non-detects)	0.81	
25-34	Saltmarsh	S-3674-0.0-.5	S-3674	0.0	0.5	10/9/2001	Total 18 NOAA PCB cong (excl non-detects)	5.98	
25-34	Saltmarsh	S-3675-.5-1.0	S-3675	0.5	1.0	10/22/2001	Total 18 NOAA PCB cong (excl non-detects)	2.37	
25-34	Saltmarsh	S-3675-2.0-3.0	S-3675	2.0	3.0	10/22/2001	Total 18 NOAA PCB cong (excl non-detects)	0.14	
25-34	Saltmarsh	S-3675-3.0-4.0	S-3675	3.0	4.0	10/22/2001	Total 18 NOAA PCB cong (excl non-detects)	0.01	
25-34	Saltmarsh	S-3676-0.0-1.0	S-3676	0.0	1.0	10/22/2001	Total 18 NOAA PCB cong (excl non-detects)	0.94	
25-34	Saltmarsh	S-3676-2.0-3.0	S-3676	2.0	3.0	10/22/2001	Total 18 NOAA PCB cong (excl non-detects)	0.08	
25-34	Saltmarsh	S-3677-.3-1.0	S-3677	0.3	1.0	10/5/2001	Total 18 NOAA PCB cong (excl non-detects)	8.06	
25-34	Saltmarsh	S-3677-1.0-2.0	S-3677	1.0	2.0	10/5/2001	Total 18 NOAA PCB cong (excl non-detects)	0.42	
25-34	Saltmarsh	S-3679-0.0-.5	S-3679	0.0	0.5	10/22/2001	Total 18 NOAA PCB cong (excl non-detects)	468	
25-34	Saltmarsh	S-3679-1.5-2.0	S-3679	1.5	2.0	10/22/2001	Total 18 NOAA PCB cong (excl non-detects)	85.8	
25-34	Saltmarsh	S-3680-0.0-1.0	S-3680	0.0	1.0	10/22/2001	Total 18 NOAA PCB cong (excl non-detects)	728	
25-34	Saltmarsh	S-3680-1.0-2.0	S-3680	1.0	2.0	10/22/2001	Total 18 NOAA PCB cong (excl non-detects)	65.0	
25-34	Saltmarsh	S-3681-0.0-1.0	S-3681	0.0	1.0	10/22/2001	Total 18 NOAA PCB cong (excl non-detects)	120	
25-34	Saltmarsh	S-3681-1.0-2.0	S-3681	1.0	2.0	10/22/2001	Total 18 NOAA PCB cong (excl non-detects)	12.0	
25-34	Saltmarsh	S-3681-2.0-3.0	S-3681	2.0	3.0	10/22/2001	Total 18 NOAA PCB cong (excl non-detects)	1.95	
25-34	Saltmarsh	S-3682-0.0-1.0	S-3682	0.0	1.0	10/22/2001	Total 18 NOAA PCB cong (excl non-detects)	122	
25-34	Saltmarsh	S-0037-1	S-37	0.0	1.0	9/14/1999	Total PCB Congeners (sum CONG x factor)	3.50	
25-34	Saltmarsh	S-0037-2	S-37	1.0	2.0	9/14/1999	Total PCB Congeners (sum CONG x factor)	0.68	
25-34	Saltmarsh	S-0037-3	S-37	2.0	3.0	9/14/1999	Total PCB Congeners (sum CONG x factor)	0.42	
25-34	Saltmarsh	S-0038-1	S-38	0.0	1.0	8/31/1999	Total PCB Congeners (sum CONG x factor)	21.0	

Table 2-1
Parcel 25-34 Pre-Excavation PCB Characterization Sample Results

Parcel	Type	Sample ID	Station ID	Sample Depth Top (ft)	Sample Depth Bottom (ft)	Sample Date	Description	Total PCB (mg/kg)	Final Qualifier
25-34	Saltmarsh	S-0038-2	S-38	1.0	2.0	8/31/1999	Total PCB Congeners (sum CONG x factor)	16.0	
25-34	Saltmarsh	S-3837-1.2-2.0	S-3837	1.2	2.0	10/5/2001	Total 18 NOAA PCB cong (excl non-detects)	0.19	
25-34	Saltmarsh	S-0039-1	S-39	0.0	1.0	9/14/1999	Total PCB Congeners (sum CONG x factor)	1100	
25-34	Saltmarsh	S-0039-2	S-39	1.0	2.0	9/14/1999	Total PCB Congeners (sum CONG x factor)	1300	
25-34	Saltmarsh	S-0040-1	S-40	0.0	1.0	9/9/1999	Total PCB Congeners (sum CONG x factor)	3800	
25-34	Saltmarsh	S-0040-2	S-40	1.0	2.0	9/9/1999	Total PCB Congeners (sum CONG x factor)	70.0	
25-34	Saltmarsh	S-0042-1	S-42	0.0	1.0	9/14/1999	Total PCB Congeners (sum CONG x factor)	5000	
25-34	Saltmarsh	S-0043-1	S-43	0.0	1.0	9/14/1999	Total PCB Congeners (sum CONG x factor)	190	
25-34	Saltmarsh	S-0043-1DUP	S-43	0.0	1.0	9/14/1999	Total PCB Congeners (sum CONG x factor)	230	
25-34	Saltmarsh	S-0043-2	S-43	1.0	2.0	9/14/1999	Total PCB Congeners (sum CONG x factor)	2500	
25-34	Saltmarsh	S-0043-3	S-43	2.0	3.0	9/14/1999	Total PCB Congeners (sum CONG x factor)	280	
25-34	Saltmarsh	S-0044-2	S-44	1.0	2.0	9/9/1999	Total PCB Congeners (sum CONG x factor)	280	
25-34	Saltmarsh	S-0044-3	S-44	2.0	3.0	9/9/1999	Total PCB Congeners (sum CONG x factor)	21.0	
25-34	Saltmarsh	S-0045-1	S-45	0.0	1.0	8/31/1999	Total PCB Congeners (sum CONG x factor)	1300	
25-34	Saltmarsh	S-0045-2	S-45	1.0	2.0	8/31/1999	Total PCB Congeners (sum CONG x factor)	2500	
25-34	Saltmarsh	S-0046-1	S-46	0.0	1.0	8/30/1999	Total PCB Congeners (sum CONG x factor)	85.0	
25-34	Saltmarsh	S-0046-2	S-46	1.0	2.0	8/30/1999	Total PCB Congeners (sum CONG x factor)	88.0	
25-34	Saltmarsh	S-0046-3	S-46	2.0	3.0	8/30/1999	Total PCB Congeners (sum CONG x factor)	72.0	
25-34	Saltmarsh	S-0048-1	S-48	0.0	1.0	9/14/1999	Total PCB Congeners (sum CONG x factor)	25.0	
25-34	Saltmarsh	S-0048-2	S-48	1.0	2.0	9/14/1999	Total PCB Congeners (sum CONG x factor)	0.88	
25-34	Saltmarsh	S-0048-3	S-48	2.0	3.0	9/14/1999	Total PCB Congeners (sum CONG x factor)	0.62	
25-34	Saltmarsh	S-0049-1	S-49	0.0	1.0	8/30/1999	Total PCB Congeners (sum CONG x factor)	9800	
25-34	Saltmarsh	S-0049-2	S-49	1.0	2.0	8/30/1999	Total PCB Congeners (sum CONG x factor)	680	
25-34	Saltmarsh	S-0049-3	S-49	2.0	3.0	8/30/1999	Total PCB Congeners (sum CONG x factor)	3.20	
25-34	Saltmarsh	S-0050-1	S-50	0.0	1.0	8/30/1999	Total PCB Congeners (sum CONG x factor)	1.40	
25-34	Saltmarsh	S-0050-2	S-50	1.0	2.0	8/30/1999	Total PCB Congeners (sum CONG x factor)	0.06	
25-34	Saltmarsh	S-0051-1	S-51	0.0	1.0	9/14/1999	Total PCB Congeners (sum CONG x factor)	3.20	
25-34	Saltmarsh	S-0051-1DUP	S-51	0.0	1.0	9/14/1999	Total PCB Congeners (sum CONG x factor)	3.50	
25-34	Saltmarsh	S-0051-2	S-51	1.0	2.0	9/14/1999	Total PCB Congeners (sum CONG x factor)	2.10	
25-34	Saltmarsh	S-0741-1	S-741	0.0	1.0	10/17/2000	Total 18 NOAA PCB cong (excl non-detects)	3120	
25-34	Saltmarsh	S-0741-2	S-741	1.0	2.0	10/17/2000	Total 18 NOAA PCB cong (excl non-detects)	33.8	
25-34	Saltmarsh	S-0742-1	S-742	0.0	1.0	10/17/2000	Total 18 NOAA PCB cong (excl non-detects)	28.6	
25-34	Saltmarsh	S-0742-2	S-742	1.0	2.0	10/17/2000	Total 18 NOAA PCB cong (excl non-detects)	0.57	
25-34	Saltmarsh	S-0743-1	S-743	0.0	1.0	10/17/2000	Total 18 NOAA PCB cong (excl non-detects)	0.13	
25-34	Saltmarsh	S-0743-2	S-743	1.0	2.0	10/17/2000	Total 18 NOAA PCB cong (excl non-detects)	0.0	U
25-34	Saltmarsh	S-0744-1	S-744	0.0	1.0	10/11/2000	Total 18 NOAA PCB cong (excl non-detects)	2860	
25-34	Saltmarsh	S-0744-2	S-744	1.0	2.0	10/11/2000	Total 18 NOAA PCB cong (excl non-detects)	3.90	
25-34	Saltmarsh	S-0745-1	S-745	0.0	1.0	10/11/2000	Total 18 NOAA PCB cong (excl non-detects)	3900	
25-34	Saltmarsh	S-0745-2	S-745	1.0	2.0	10/11/2000	Total 18 NOAA PCB cong (excl non-detects)	2.26	
25-34	Saltmarsh	S-0746-1	S-746	0.0	1.0	10/11/2000	Total 18 NOAA PCB cong (excl non-detects)	0.03	

Table 2-1
Parcel 25-34 Pre-Excavation PCB Characterization Sample Results

Parcel	Type	Sample ID	Station ID	Sample Depth Top (ft)	Sample Depth Bottom (ft)	Sample Date	Description	Total PCB (mg/kg)	Final Qualifier
25-34	Saltmarsh	S-0746-2	S-746	1.0	2.0	10/11/2000	Total 18 NOAA PCB cong (excl non-detects)	0.0	U
25-34	Saltmarsh	S-0747-1	S-747	0.0	1.0	10/11/2000	Total 18 NOAA PCB cong (excl non-detects)	0.78	
25-34	Saltmarsh	S-0747-1DUP	S-747	0.0	1.0	10/11/2000	Total 18 NOAA PCB cong (excl non-detects)	0.83	
25-34	Saltmarsh	S-0747-2	S-747	1.0	2.0	10/11/2000	Total 18 NOAA PCB cong (excl non-detects)	1.72	
25-34	Saltmarsh	S-0748-1	S-748	0.0	1.0	10/20/2000	Total 18 NOAA PCB cong (excl non-detects)	1.87	
25-34	Saltmarsh	S-0748-2	S-748	1.0	2.0	10/20/2000	Total 18 NOAA PCB cong (excl non-detects)	0.04	
25-34	Saltmarsh	S-0749-1	S-749	0.0	1.0	10/17/2000	Total 18 NOAA PCB cong (excl non-detects)	67.6	
25-34	Saltmarsh	S-0749-2	S-749	1.0	2.0	10/17/2000	Total 18 NOAA PCB cong (excl non-detects)	2.47	
25-34	Saltmarsh	S-0749-3	S-749	2.0	3.0	10/17/2000	Total 18 NOAA PCB cong (excl non-detects)	0.0	U
25-34	Saltmarsh	S-0750-1	S-750	0.0	1.0	10/17/2000	Total 18 NOAA PCB cong (excl non-detects)	0.44	
25-34	Saltmarsh	S-0750-2	S-750	1.0	2.0	10/17/2000	Total 18 NOAA PCB cong (excl non-detects)	0.0	U
25-34	Saltmarsh	S-0751-1	S-751	0.0	1.0	10/17/2000	Total 18 NOAA PCB cong (excl non-detects)	2.08	
25-34	Saltmarsh	S-0751-2	S-751	1.0	2.0	10/17/2000	Total 18 NOAA PCB cong (excl non-detects)	1.77	
25-34	Saltmarsh	S-0752-1	S-752	0.0	1.0	10/20/2000	Total 18 NOAA PCB cong (excl non-detects)	0.0	U
25-34	Saltmarsh	S-0752-2	S-752	1.0	2.0	10/20/2000	Total 18 NOAA PCB cong (excl non-detects)	0.0	U
25-34	Saltmarsh	S-0753-1	S-753	0.0	1.0	10/20/2000	Total 18 NOAA PCB cong (excl non-detects)	1.33	
25-34	Saltmarsh	S-0753-2	S-753	1.0	2.0	10/20/2000	Total 18 NOAA PCB cong (excl non-detects)	0.29	
25-34	Saltmarsh	S-0760-1	S-760	0.0	1.0	10/11/2000	Total 18 NOAA PCB cong (excl non-detects)	16.4	
25-34	Saltmarsh	S-0760-2	S-760	1.0	2.0	10/11/2000	Total 18 NOAA PCB cong (excl non-detects)	0.0	U
25-34	Saltmarsh	S-0835-1	S-835	0.0	1.0	10/11/2000	Total 18 NOAA PCB cong (excl non-detects)	59.8	
25-34	Saltmarsh	S-0835-2	S-835	1.0	2.0	10/11/2000	Total 18 NOAA PCB cong (excl non-detects)	1.01	
25-34	Saltmarsh	S-ad593	S-ad593	0.0	1.0	Pre-ROD	Total PCB Congeners (sum CONG x factor)[1]	2.00	

Notes:
Pre-excavation confirmatory congener samples are highlighted green.
D - reported value is from a dilution; J - estimated value; U - not detected.
Total 18 NOAA PCB congeners multiplied by a factor of 2.6.
[1] Pre-ROD sample result is most likely a total Aroclor value although it is reported in the project database as Sum 18 NOAA PCB congeners X factor.

Table 3-1
Compliance Survey Control Table for East Zone 1 Parcel 25-34

Parcel	Station ID	Location	Easting	Northing	Design Elevation	Post-Excavation Elevation	Δ (ft)
			MA State Plane ft, NAD83		NAVD88 ft		
25-34	ES037	Floor	816659.9	2706958.8	-2.0	TBD	TBD
25-34	ES049	Floor	816810.4	2706817.8	1.5	TBD	TBD
25-34	ES051	Floor	816199.9	2706800.1	0.2	TBD	TBD
25-34	ES055C	Floor	816730.7	2706756.1	-4.1	TBD	TBD
25-34	ES059C	Floor	816817.6	2706688.0	-4.5	TBD	TBD
25-34	ES088	Floor	816441.6	2707062.7	1.7	TBD	TBD
25-34	ES089	Floor	816513.3	2706951.1	1.5	TBD	TBD
25-34	ES090	Floor	816244.6	2706903.2	1.4	TBD	TBD
25-34	ES091	Floor	816281.5	2706845.8	1.3	TBD	TBD
25-34	ES092	Floor	816689.0	2706816.6	-2.3	TBD	TBD
25-34	INT429	Floor	816897.6	2706747.2	1.5	TBD	TBD
25-34	S-3287	Floor	816189.0	2706699.0	-0.5	TBD	TBD
25-34	S-3668	Floor	816415.0	2706981.0	1.0	TBD	TBD
25-34	S-3671	Floor	816360.0	2706916.0	1.2	TBD	TBD
25-34	S-741	Floor	816744.0	2706900.0	1.1	TBD	TBD
25-34	ES115	Floor	816353.5	2706364.5	-0.1	TBD	TBD
25-34	ES042	Sidewall	816795.2	2706904.2	2.3	TBD	TBD
25-34	ES045	Sidewall	816626.2	2706852.8	4.0	TBD	TBD
25-34	ES047	Sidewall	816307.7	2706837.1	2.5	TBD	TBD
25-34	ES048	Sidewall	816866.8	2706834.9	2.9	TBD	TBD
25-34	ES050	Sidewall	816970.1	2706806.8	2.4	TBD	TBD
25-34	ES054	Sidewall	816652.4	2706756.8	2.7	TBD	TBD
25-34	ES063	Sidewall	816798.5	2706568.7	1.4	TBD	TBD
25-34	ES071	Sidewall	816447.2	2706821.0	1.2	TBD	TBD
25-34	ES073	Sidewall	816742.8	2706666.6	4.0	TBD	TBD
25-34	ES083	Sidewall	816224.5	2706670.5	5.2	TBD	TBD
25-34	ES085	Sidewall	816736.6	2706984.5	2.1	TBD	TBD
25-34	ES098	Sidewall	816529.0	2706911.3	3.7	TBD	TBD
25-34	ES201	Sidewall	816383.4	2706382.0	26.2	TBD	TBD
25-34	INT63	Sidewall	816945.6	2706719.7	1.4	TBD	TBD
25-34	INT65	Sidewall	816878.9	2706630.9	0.7	TBD	TBD
25-34	S-3673	Sidewall	816427.0	2706951.0	1.5	TBD	TBD
25-34	S-747	Sidewall	816242.0	2706745.0	2.9	TBD	TBD
25-34	ES100	Sidewall	816537.8	2707055.4	-2.5	TBD	TBD
25-34	ES101	Sidewall	816492.9	2707055.2	-2.0	TBD	TBD
25-34	ES102	Sidewall	816404.7	2707116.9	-1.7	TBD	TBD
25-34	ES103	Sidewall	816307.5	2707108.6	-3.0	TBD	TBD
25-34	ES104	Sidewall	816242.9	2707053.2	-3.1	TBD	TBD
25-34	ES105	Sidewall	816209.0	2706949.4	-3.5	TBD	TBD
25-34	ES106	Sidewall	816162.3	2706878.1	-3.3	TBD	TBD
25-34	ES107	Sidewall	816167.9	2706774.0	-3.3	TBD	TBD
25-34	ES108	Sidewall	816160.9	2706680.5	-3.0	TBD	TBD
25-34	ES109	Sidewall	816184.8	2706583.3	-3.2	TBD	TBD
25-34	ES110	Sidewall	816316.8	2707073.1	0.9	TBD	TBD
25-34	ES111	Sidewall	816272.7	2706992.2	1.1	TBD	TBD
25-34	ES112	Sidewall	816321.8	2706959.1	2.6	TBD	TBD
25-34	ES113	Sidewall	816407.0	2707019.7	2.5	TBD	TBD
25-34	ES114	Sidewall	816406.4	2707092.0	1.2	TBD	TBD

Notes:
Elevation measurements at sidewall locations will be taken at the base of the sidewall (bottom of the excavation).
Locations ES100 through ES115 are compliance survey locations only (no associated PCB sample data).
MA - Massachusetts; NAD83 - North American Datum 1983; NAVD88 - North American Vertical Datum 1988; ft - feet; TBD - to be determined.
Δ - difference between post-excavation elevation and design elevation.

Table 7-1
Proposed Restoration Acreages by Cover Type for Parcel 25-34

Habitat Type	Existing Pre-Construction Area [acres]	Proposed Area of Restoration [acres]
Phragmites	0.439	0.000
Beach	0.069	0.064
High Marsh	1.209	1.158
Low Marsh	1.061	1.527
Scrub-Shrub Marsh	0.169	0.142
Mudflat/subtidal	0.560	0.539
Palustrine Forested Wetland	0.026	0.000
Upland	0.171	0.267
Stream	0.246	0.253
TOTAL	**3.950**	**3.950**

Table 7-2
Parcel 25-34 Shrub Restoration Summary

Scientific Name	Common Name	On-Center Spacing Requirements (inches)	Number of Proposed Plants	Shrub Restoration Area
Iva frutescens	high-tide bush	36"	54	Area 1
Lindera benzoin	spicebush	36"	54	Area 1
Iva frutescens	high-tide bush	36"	52	Area 2
Vaccinium corymbosum	highbush blueberry	60"	17	Area 3
Vaccinium corymbosum	highbush blueberry	60"	2	Area 4
Viburnum dentatum	southern arrowwood	48"	3	Area 4
Vaccinium corymbosum	highbush blueberry	60"	10	Area 5
Juniperus virginiana	eastern red cedar	48"	16	Area 5
Iva frutescens	high-tide bush	36"	92	Area 6
Iva frutescens	high-tide bush	36"	180	Area 7
Iva frutescens	high-tide bush	36"	23	Area 8
Clethra alnifolia	sweet pepperbush	48"	23	Area 8
Iva frutescens	high-tide bush	36"	23	Area 9
Iva frutescens	high-tide bush	36"	208	Area 10
Total Proposed Trees/Shrubs for Parcel 25-34			**757**	

Appendix A

Parcel 25-34 Tree and Shrub Inventory

JACOBS

Memorandum

Subject	Parcel 25-34 Native Tree and Shrub Inventory	**Project Name**	New Bedford Harbor Superfund Site
Attention	Marie Esten USACE	**Project No.**	35BG2000
From	Jessica Rebholz/Kim Degutis	**Document Control No.**	ACE-J23-35BG2000-M1-0114
Date	2 July 2018		

Attachments: Figure 1 Existing Trees and Shrubs, Parcel 25-34, Tables 3-1 through 3-14 (inventory results)

1.0 Background

Jacobs conducted an inventory of existing trees and shrubs on Parcel 25-34 in the intertidal remediation area (Figure 1) on 31 May 2018.[1] The purpose of the inventory was to identify existing trees and shrubs that would be removed in association with site remediation activities, including construction of the gravel access road and areas of excavation associated with contaminated sediment and soil removal. The information collected from this inventory is intended to be used to inform selection of proposed native woody species for future restoration plantings.

2.0 Methods

For the purposes of the inventory, trees were defined as any nonclimbing, woody plant that had at least one erect perennial stem (trunk) with a diameter at breast height (DBH) of 3.0 inches or greater, regardless of height. Jacobs' wetland biologists walked the planned remediation portions of Parcel 25-34 and identified all trees within the proposed excavation area and proposed access road. Tree locations were recorded using a Trimble Geo 7X GPS, capable of sub-meter accuracy.

For the purposes of the inventory, shrubs were defined as any nonclimbing, woody plant with a DBH less than 3.0 inches. Shrubs were inventoried according to dominant shrub types that appeared to constitute similar species diversity and percent areal cover. For purposes of documentation and reference, the results of the tree and shrub inventories are recorded by sub-area in separate tables included in Section 3 below.

3.0 Results

Eastern red cedar (*Juniperus virginiana*) is the dominant tree type within Parcel 25-34. All of the trees identified on-site are considered native and non-invasive. A list of the trees identified is provided in Table 3-1. For each species, the number of individual trees noted was calculated as an indication of the relative dominance of the species on-site.

Several species make up the dominant shrub types within Parcel 25-34 (Tables 3-2 – 3-14). High-tide bush (*Iva frutescens*) was found on 8 of the 13 inventoried areas, and northern spicebush (*Lindera benzoin*) was found on 4 of the 13 inventoried areas. The majority of the shrubs identified are considered native and non-invasive (Tables 3-2 – 3-14).

Each area where shrubs were identified and inventoried is identified on Figure 1. Shrubs were classified by genus and species. Tables 3-2 through 3-14 also identify whether the shrub occurred in an upland area or within a wetland.

4.0 Conclusion

The species makeup of the Parcel 25-34 remediation area is comprised of predominantly native, non-invasive trees and shrubs, with high-tide bush (*Iva frutescens*) and northern spicebush (*Lindera benzoin*) generally being the dominant shrub types and eastern red cedar (*Juniperus virginiana*) being the dominant tree.

[1] A small portion of the excavation area in the southwest corner of the parcel is included in the East Zone 2 tree and shrub survey.

Legend

- Paper birch
- Red cedar
- Red oak
- Black cherry
- Red maple
- White pine
- American linden
- Bitternut hickory
- White oak
- Inventoried Shrub Areas
- Proposed Excavation Boundary
- MHHW
- MLLW
- Proposed Access Road

0 75 150 300 Feet

1:1,125

N

Basemap Data Source:
MassGIS, ESRI

August 2019

Parcel 25-34
Existing Trees and Shrubs

New Bedford Harbor Superfund Site

JACOBS

Figure 1

Table 3-1
Existing Tree Inventory for Parcel 25-34

Scientific Name	Common Name	Tree Count (≥3" DBH)	Invasive[1]	Native/Non-Native[2]
Acer rubrum	red maple	6	no	native, county documented
Quercus alba	white oak	9	no	native, county documented
Tilia americana	American linden	2	no	native, county documented
Pinus strobus	Eastern white pine	1	no	native, county documented
Quercus rubra	northern red oak	15	no	native, county documented
Betula papyrifera	paper birch	11	no	native, county documented
Prunus serotina	black cherry	2	no	native, county documented
Juniperus virginiana	eastern red cedar	19	no	native, county documented
Carya cordiformis	bitternut hickory	1	no	native, county documented
	Total	**66**		

[1]According to "The Evaluation of Non-Native Plant Species for Invasiveness in Massachusetts": https://www.mass.gov/files/documents/2016/08/tm/invasive-plantlist.pdf

[2]New England Wildflower Society. 2011. Go Botany, 12 April 2018 (https://gobotany.newenglandwild.org/). New England Wildflower Society, Framingham, MA

Table 3-2
Existing Shrub Cover for Parcel 25-34, Area 1

Scientific Name	Common Name	Area 1 Percent Areal Cover	Invasive[1]	Native/Non-Native[2]	Upland/Wetland
Lindera benzoin	northern spicebush	25%	no	native, county documented	wetland

Table 3-3
Existing Shrub Cover for Parcel 25-34, Area 2

Scientific Name	Common Name	Area 2 Percent Areal Cover	Invasive[1]	Native/Non-Native[2]	Upland/Wetland
Juniperus virginiana	eastern red cedar	15%	no	native, county documented	upland
Lonicera morrowii	Morrow's honeysuckle	30%	yes	non-native, county documented	both

[1]According to "The Evaluation of Non-Native Plant Species for Invasiveness in Massachusetts": https://www.mass.gov/files/documents/2016/08/tm/invasive-plantlist.pdf

[2]New England Wildflower Society. 2011. Go Botany, 12 April 2018 (https://gobotany.newenglandwild.org/). New England Wildflower Society, Framingham, MA

Table 3-4
Existing Shrub Cover for Parcel 25-34, Area 3

Scientific Name	Common Name	Area 3 Percent Areal Cover	Invasive[1]	Native/Non-Native[2]	Upland/Wetland
Iva frutescens	hightide bush	40%	no	native, county documented	wetland
Lindera benzoin	northern spicebush	40%	no	native, county documented	wetland

[1]According to "The Evaluation of Non-Native Plant Species for Invasiveness in Massachusetts": https://www.mass.gov/files/documents/2016/08/tm/invasive-plantlist.pdf

[2]New England Wildflower Society. 2011. Go Botany, 12 April 2018 (https://gobotany.newenglandwild.org/). New England Wildflower Society, Framingham, MA

Table 3-5
Existing Shrub Cover for Parcel 25-34, Area 4

Scientific Name	Common Name	Area 4 Percent Areal Cover	Invasive[1]	Native/Non-Native[2]	Upland/Wetland
Lindera benzoin	northern spicebush	25%	no	native, county documented	wetland
Juniperus virginiana	eastern red cedar	5%	no	native, county documented	upland
Quercus rubra	red oak	5%	no	native, county documented	upland

[1]According to "The Evaluation of Non-Native Plant Species for Invasiveness in Massachusetts": https://www.mass.gov/files/documents/2016/08/tm/invasive-plantlist.pdf

[2]New England Wildflower Society. 2011. Go Botany, 12 April 2018 (https://gobotany.newenglandwild.org/). New England Wildflower Society, Framingham, MA

Table 3-6
Existing Shrub Cover for Parcel 25-34, Area 5

Scientific Name	Common Name	Area 5 Percent Areal Cover	Invasive[1]	Native/Non-Native[2]	Upland/Wetland
Iva frutescens	hightide bush	75%	no	native, county documented	wetland

[1]According to "The Evaluation of Non-Native Plant Species for Invasiveness in Massachusetts": https://www.mass.gov/files/documents/2016/08/tm/invasive-plantlist.pdf

[2]New England Wildflower Society. 2011. Go Botany, 12 April 2018 (https://gobotany.newenglandwild.org/). New England Wildflower Society, Framingham, MA

Table 3-7
Existing Shrub Cover for Parcel 25-34, Area 6

Scientific Name	Common Name	Area 6 Percent Areal Cover	Invasive[1]	Native/Non-Native[2]	Upland/Wetland
Iva frutescens	hightide bush	30%	no	native, county documented	wetland

[1]According to "The Evaluation of Non-Native Plant Species for Invasiveness in Massachusetts": https://www.mass.gov/files/documents/2016/08/tm/invasive-plantlist.pdf

[2]New England Wildflower Society. 2011. Go Botany, 12 April 2018 (https://gobotany.newenglandwild.org/). New England Wildflower Society, Framingham, MA

Table 3-8
Existing Shrub Cover for Parcel 25-34, Area 7

Scientific Name	Common Name	Area 7 Percent Areal Cover	Invasive[1]	Native/Non-Native[2]	Upland/Wetland
Betula papyrifera	paper birch	30%	no	native, county documented	upland
Viburnum dentatum	southern arrowwood	5%	no	native, county documented	wetland
Vaccinium corymbosum	highbush blueberry	20%	no	native, county documented	wetland

[1]According to "The Evaluation of Non-Native Plant Species for Invasiveness in Massachusetts": https://www.mass.gov/files/documents/2016/08/tm/invasive-plantlist.pdf

[2]New England Wildflower Society. 2011. Go Botany, 12 April 2018 (https://gobotany.newenglandwild.org/). New England Wildflower Society, Framingham, MA

Table 3-9
Existing Shrub Cover for Parcel 25-34, Area 8

Scientific Name	Common Name	Area 8 Percent Areal Cover	Invasive[1]	Native/Non-Native[2]	Upland/Wetland
Juniperus virginiana	eastern red cedar	10%	no	native, county documented	upland
Acer rubrum	red maple	6%	no	native, county documented	wetland
Vaccinium corymbosum	highbush blueberry	60%	no	native, county documented	wetland

[1]According to "The Evaluation of Non-Native Plant Species for Invasiveness in Massachusetts": https://www.mass.gov/files/documents/2016/08/tm/invasive-plantlist.pdf

[2]New England Wildflower Society. 2011. Go Botany, 12 April 2018 (https://gobotany.newenglandwild.org/). New England Wildflower Society, Framingham, MA

Table 3-10
Existing Shrub Cover for Parcel 25-34, Area 9

Scientific Name	Common Name	Area 9 Percent Areal Cover	Invasive[1]	Native/Non-Native[2]	Upland/Wetland
Iva frutescens	hightide bush	75%	no	native, county documented	wetland

[1]According to "The Evaluation of Non-Native Plant Species for Invasiveness in Massachusetts": https://www.mass.gov/files/documents/2016/08/tm/invasive-plantlist.pdf

[2]New England Wildflower Society. 2011. Go Botany, 12 April 2018 (https://gobotany.newenglandwild.org/). New England Wildflower Society, Framingham, MA

Table 3-11
Existing Shrub Cover for Parcel 25-34, Area 10

Scientific Name	Common Name	Area 10 Percent Areal Cover	Invasive[1]	Native/Non-Native[2]	Upland/Wetland
Iva frutescens	hightide bush	60%	no	native, county documented	wetland

[1]According to "The Evaluation of Non-Native Plant Species for Invasiveness in Massachusetts": https://www.mass.gov/files/documents/2016/08/tm/invasive-plantlist.pdf

[2]New England Wildflower Society. 2011. Go Botany, 12 April 2018 (https://gobotany.newenglandwild.org/). New England Wildflower Society, Framingham, MA

Table 3-12
Existing Shrub Cover for Parcel 25-34, Area 11

Scientific Name	Common Name	Area 11 Percent Areal Cover	Invasive[1]	Native/Non-Native[2]	Upland/Wetland
Iva frutescens	hightide bush	75%	no	native, county documented	wetland

[1]According to "The Evaluation of Non-Native Plant Species for Invasiveness in Massachusetts": https://www.mass.gov/files/documents/2016/08/tm/invasive-plantlist.pdf

[2]New England Wildflower Society. 2011. Go Botany, 12 April 2018 (https://gobotany.newenglandwild.org/). New England Wildflower Society, Framingham, MA

Table 3-13
Existing Shrub Cover for Parcel 25-34, Area 12

Scientific Name	Common Name	Area 12 Percent Areal Cover	Invasive[1]	Native/Non-Native[2]	Upland/Wetland
Lindera benzoin	northern spicebush	35%	no	native, county documented	wetland
Iva frutescens	hightide bush	10%	no	native, county documented	wetland

[1]According to "The Evaluation of Non-Native Plant Species for Invasiveness in Massachusetts": https://www.mass.gov/files/documents/2016/08/tm/invasive-plantlist.pdf

[2]New England Wildflower Society. 2011. Go Botany, 12 April 2018 (https://gobotany.newenglandwild.org/). New England Wildflower Society, Framingham, MA

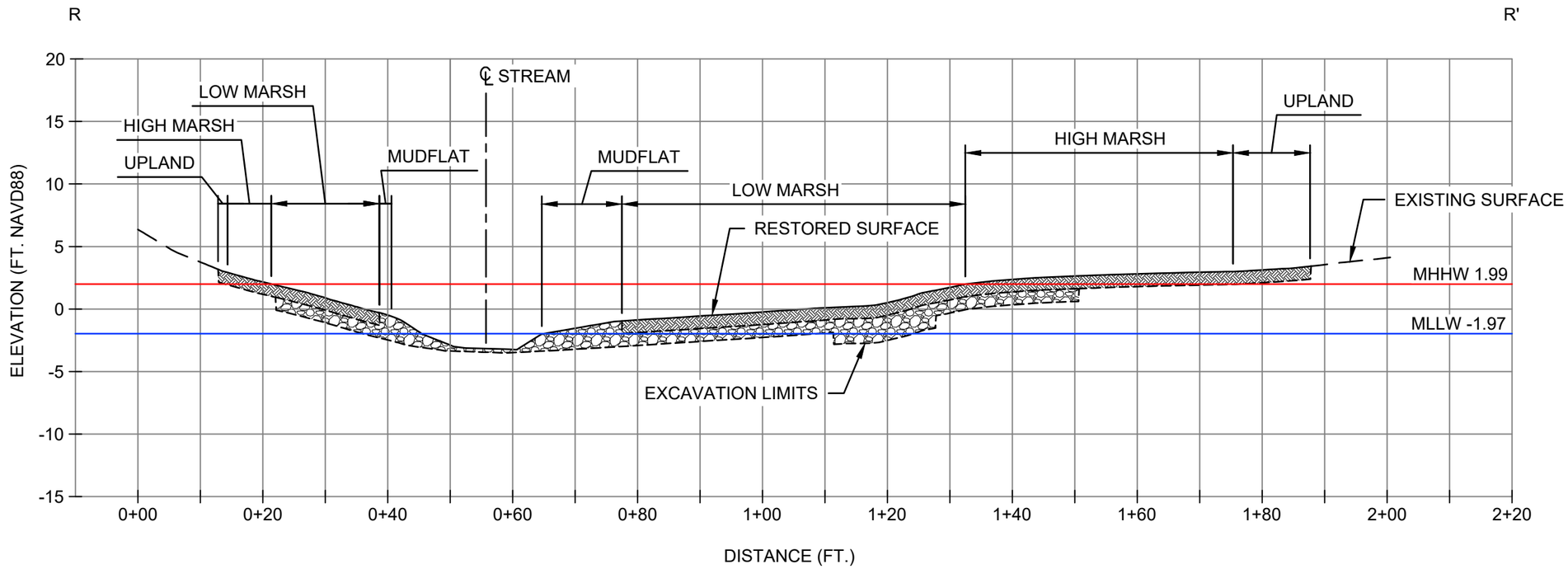
Table 3-14
Existing Shrub Cover for Parcel 25-34, Area 13

Scientific Name	Common Name	Area 13 Percent Areal Cover	Invasive[1]	Native/Non-Native[2]	Upland/Wetland
Iva frutescens	hightide bush	10%	no	native, county documented	wetland

[1]According to "The Evaluation of Non-Native Plant Species for Invasiveness in Massachusetts": https://www.mass.gov/files/documents/2016/08/tm/invasive-plantlist.pdf

[2]New England Wildflower Society. 2011. Go Botany, 12 April 2018 (https://gobotany.newenglandwild.org/). New England Wildflower Society, Framingham, MA

Appendix B
Cross Sections



LEGEND:

- MHHW 1.99
- MLLW -1.97
- GRAVEL SUBGRADE BACKFILL
- TOPSOIL BACKFILL

NOTES:

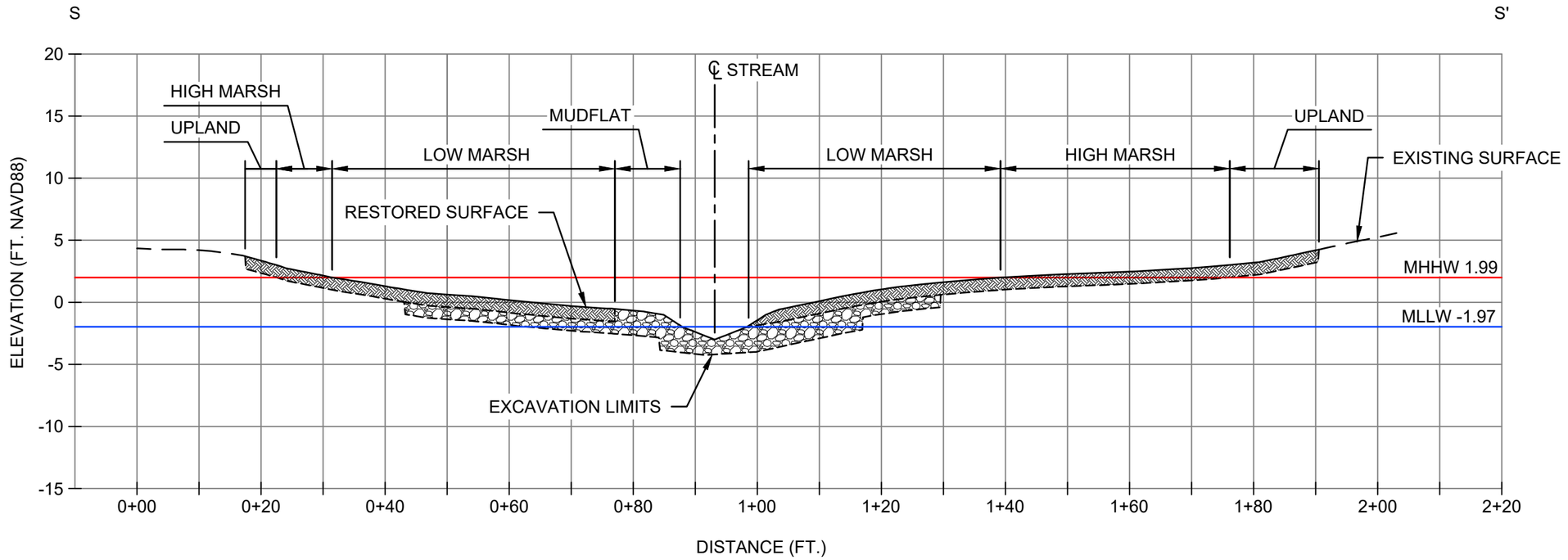
1. MUDFLATS WILL BE BACKFILLED TO PRE-EXCAVATION ELEVATIONS SEAWARD OF THE COIR LOGS INSTALLED AT THE LOW MARSH/MUDFLAT BOUNDARY.
2. COIR LOGS WILL BE INSTALLED AT THE TOP OF THE BANK BETWEEN THE CHANNEL AND RESTORED MUDFLAT OR LOW MARSH.

JACOBS®

EAST ZONE 1
PARCEL 25-34
SECTION R-R'
NEW BEDFORD HARBOR

AUGUST 2019 | FIGURE 1

BY:ENGLANLL
LAST SAVED:8/27/2019
CREATED:8/25/2019



LEGEND:

- MHHW 1.99
- MLLW -1.97
- GRAVEL SUBGRADE BACKFILL
- TOPSOIL BACKFILL

NOTES:

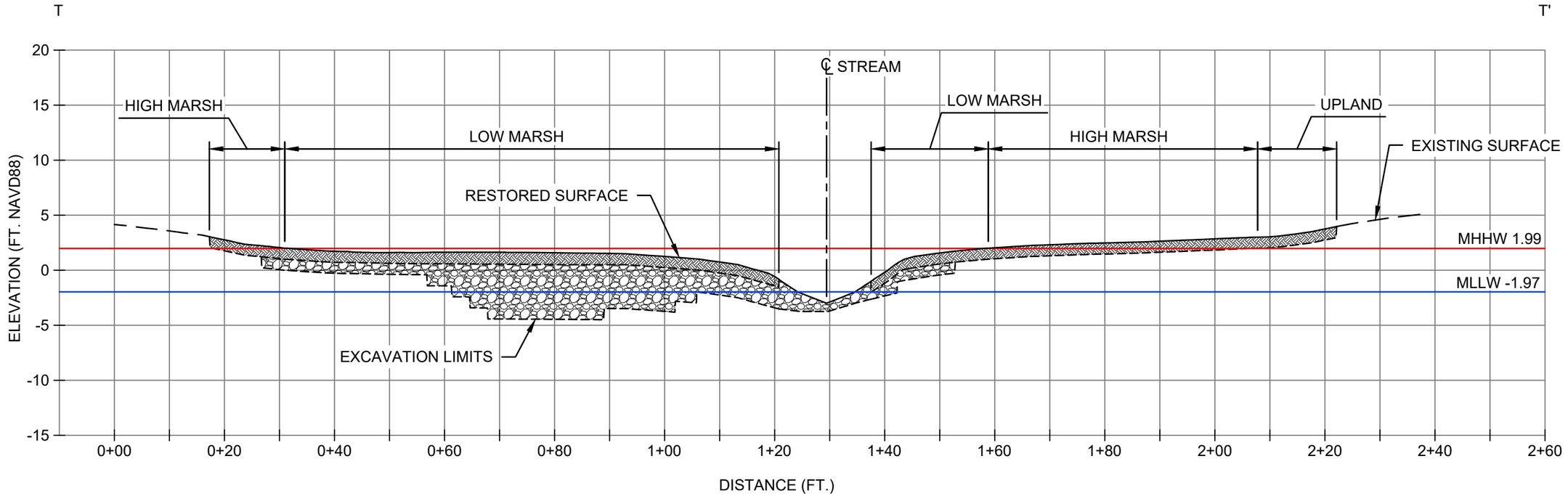
1. MUDFLATS WILL BE BACKFILLED TO PRE-EXCAVATION ELEVATIONS SEAWARD OF THE COIR LOGS INSTALLED AT THE LOW MARSH/MUDFLAT BOUNDARY.
2. COIR LOGS WILL BE INSTALLED AT THE TOP OF THE BANK BETWEEN THE CHANNEL AND RESTORED MUDFLAT OR LOW MARSH.

JACOBS®

EAST ZONE 1
PARCEL 25-34
SECTION S-S'
NEW BEDFORD HARBOR

AUGUST 2019 | FIGURE 2

BY:ENGLANLL
LAST SAVED:8/27/2019
CREATED:8/25/2019



LEGEND:

- MHHW 1.99
- MLLW -1.97
- GRAVEL SUBGRADE BACKFILL
- TOPSOIL BACKFILL

NOTE:

1. COIR LOGS WILL BE INSTALLED AT THE TOP OF THE BANK BETWEEN THE CHANNEL AND LOW MARSH.

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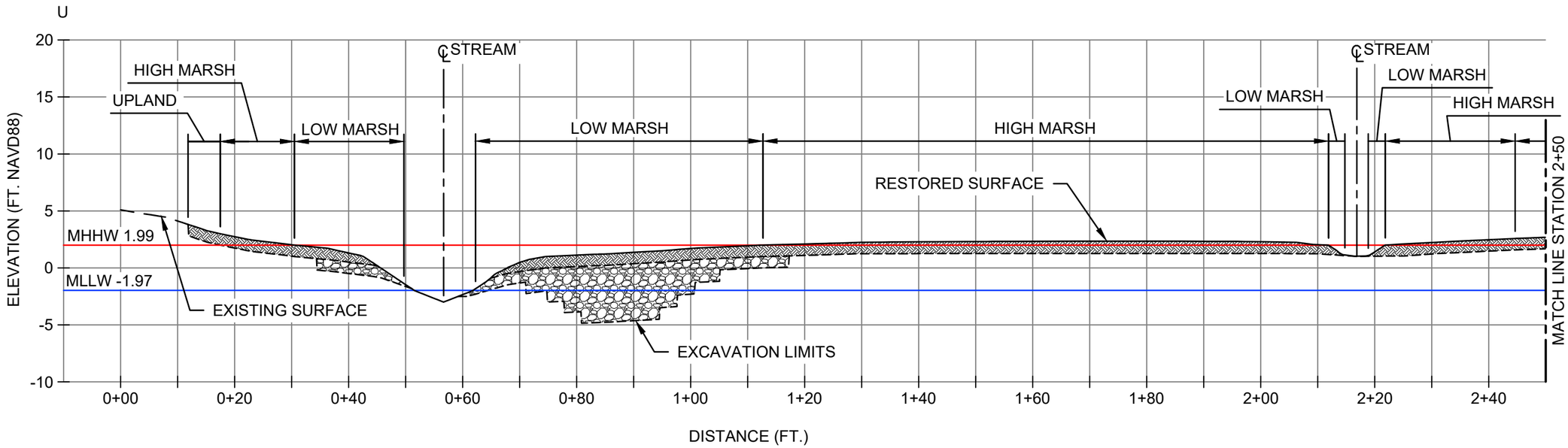
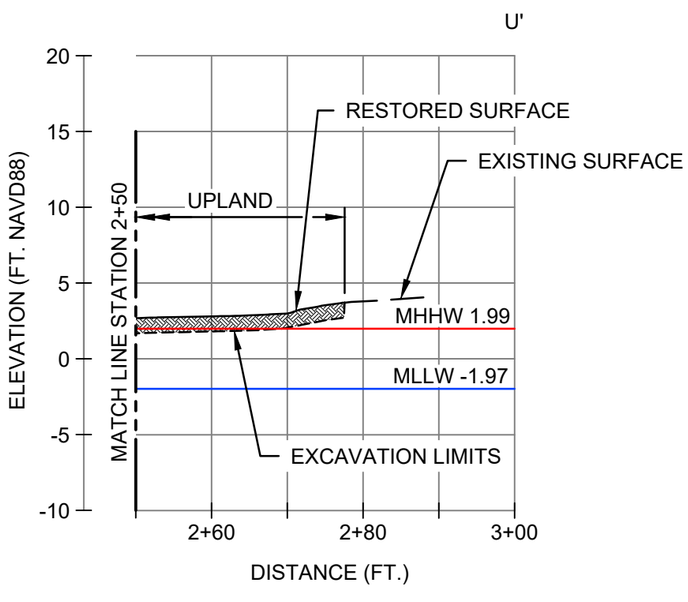
EAST ZONE 1
PARCEL 25-34
SECTION T-T'
NEW BEDFORD HARBOR

AUGUST 2019 | FIGURE 3

BY:ENGLANLL
LAST SAVED:8/27/2019
CREATED:8/25/2019





LEGEND:

- MHHW 1.99
- MLLW -1.97
- GRAVEL SUBGRADE BACKFILL
- TOPSOIL BACKFILL

NOTE:

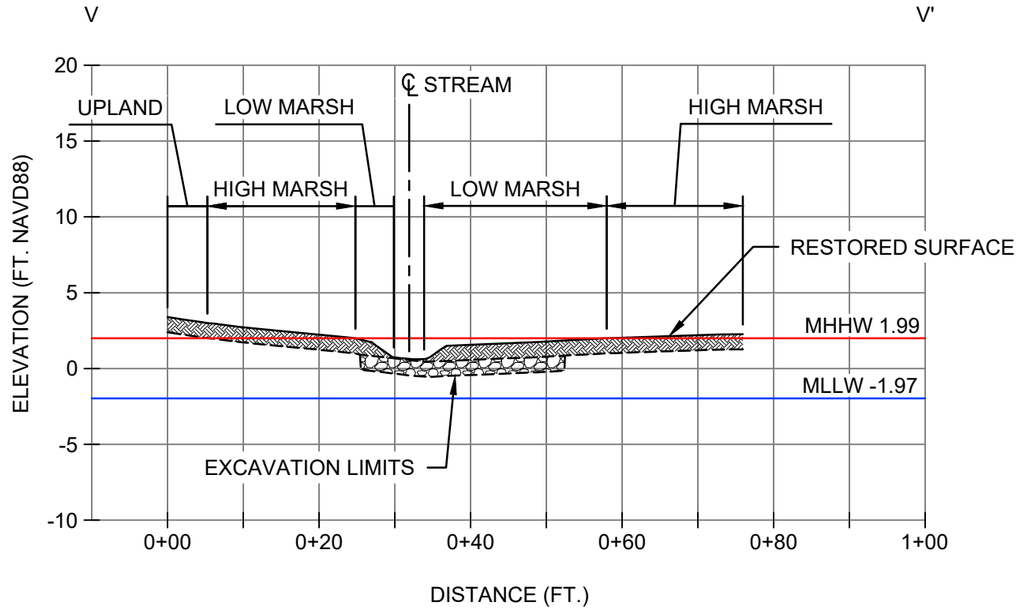
1. COIR LOGS WILL BE INSTALLED AT THE TOP OF THE BANK BETWEEN THE CHANNEL AND LOW MARSH.

JACOBS®

EAST ZONE 1
PARCEL 25-34
SECTION U-U'
NEW BEDFORD HARBOR

AUGUST 2019 | FIGURE 4

CREATED:8/25/2019 LAST SAVED:8/27/2019 BY:ENGLANLL



LEGEND:

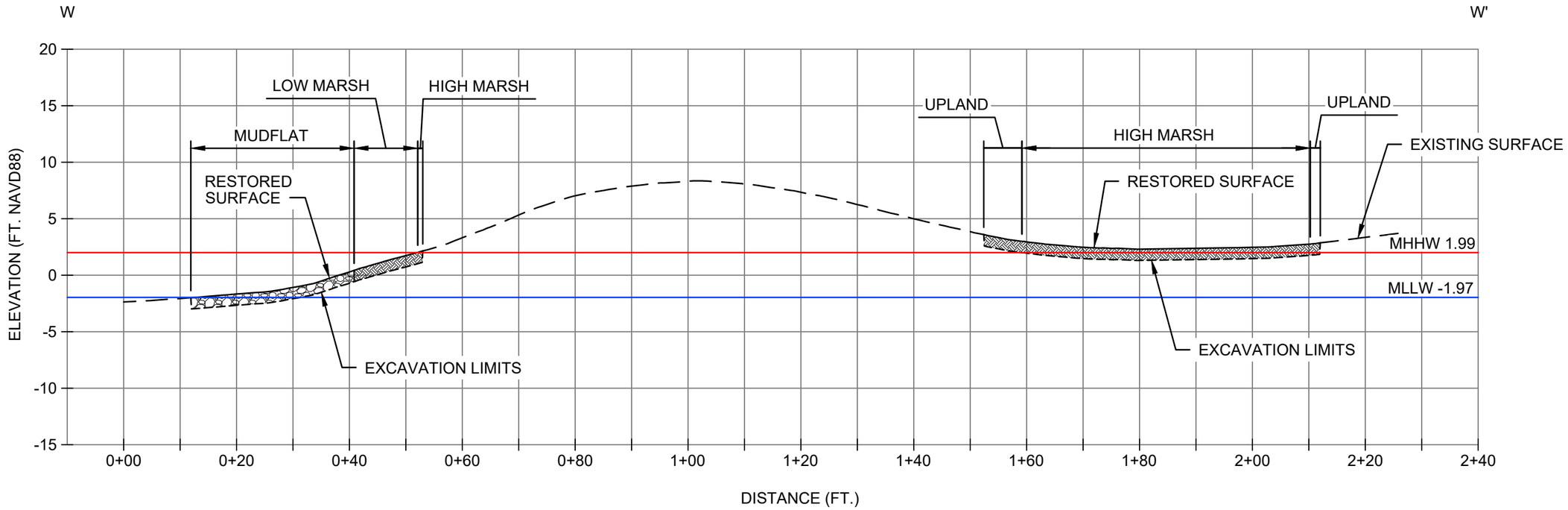
- MHHW 1.99
- MLLW -1.97
- GRAVEL SUBGRADE BACKFILL
- TOPSOIL BACKFILL

JACOBS®

EAST ZONE 1
PARCEL 25-34
SECTION V-V'
NEW BEDFORD HARBOR

AUGUST 2019 | FIGURE 5

CREATED: 8/25/2019 LAST SAVED: 8/27/2019 BY: ENGLANLL



LEGEND:

- MHHW 1.99
- MLLW -1.97
- GRAVEL SUBGRADE BACKFILL
- TOPSOIL BACKFILL

NOTE:

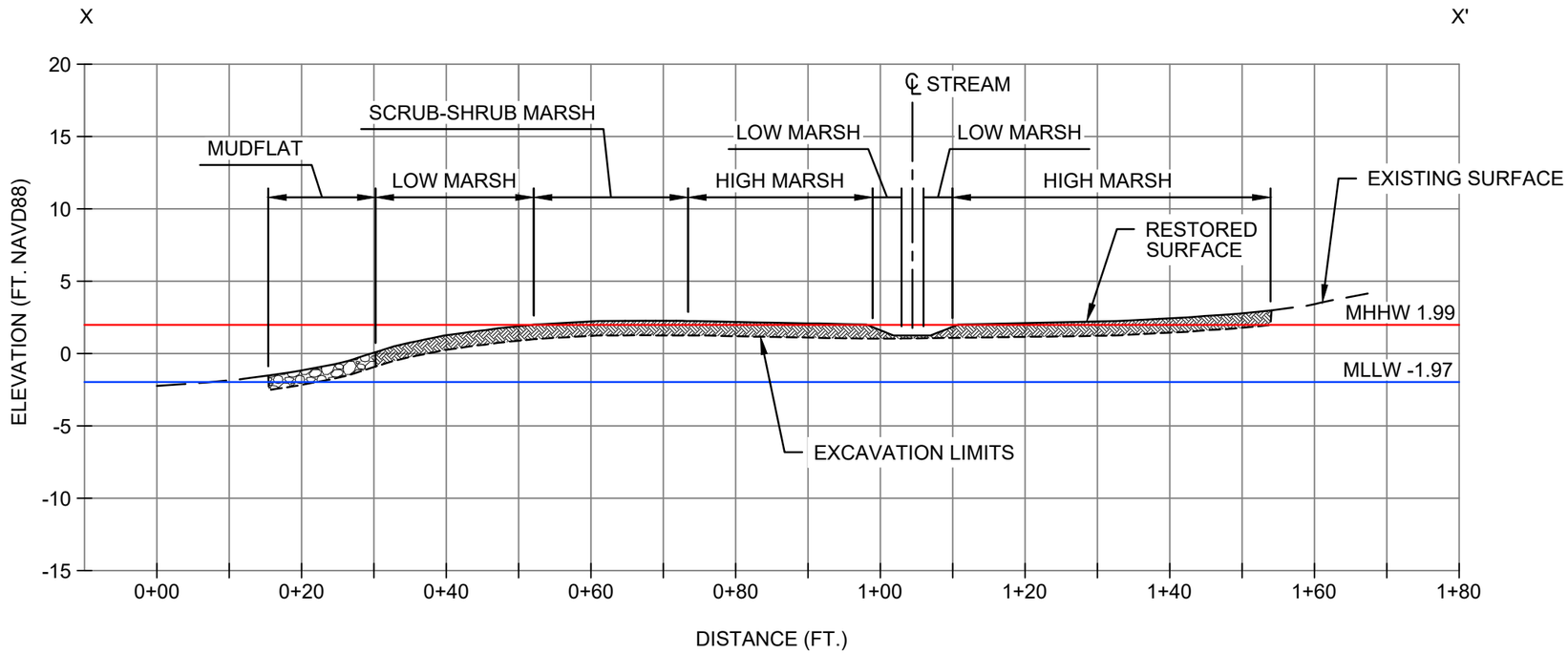
1. MUDFLATS WILL BE BACKFILLED TO PRE-EXCAVATION ELEVATIONS TO APPROXIMATELY 10 FEET SEAWARD OF THE COIR LOGS INSTALLED AT THE LOW MARSH/MUDFLAT BOUNDARY, THEN SLOPED DOWNWARD TO MEET THE EXISTING HARBOR BOTTOM.

JACOBS®

EAST ZONE 1
PARCEL 25-34
SECTION W-W'
NEW BEDFORD HARBOR

AUGUST 2019 | FIGURE 6

BY:ENGLANLL
LAST SAVED:8/27/2019
CREATED:8/25/2019



LEGEND:

- MHHW 1.99
- MLLW -1.97
- GRAVEL SUBGRADE BACKFILL
- TOPSOIL BACKFILL

NOTE:

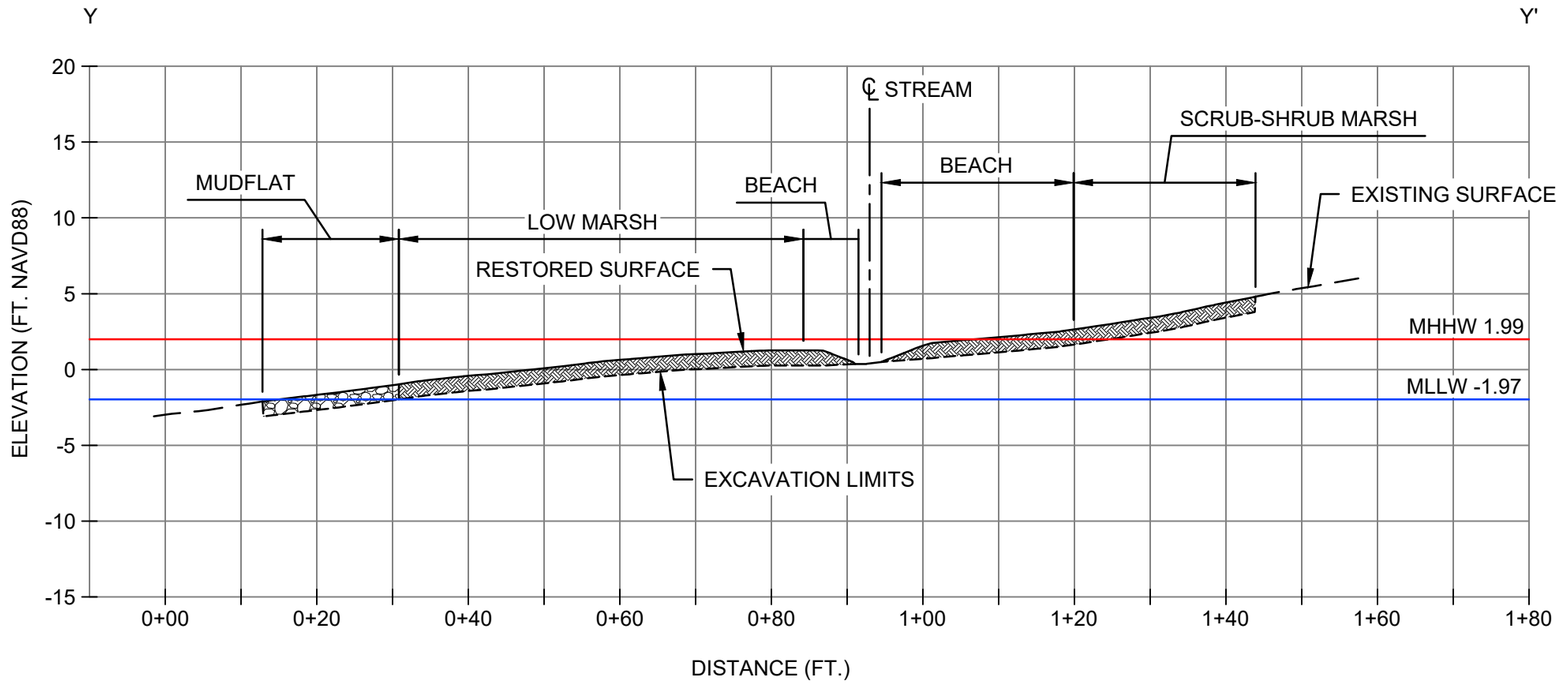
1. MUDFLATS WILL BE BACKFILLED TO PRE-EXCAVATION ELEVATIONS TO APPROXIMATELY 10 FEET SEAWARD OF THE COIR LOGS INSTALLED AT THE LOW MARSH/MUDFLAT BOUNDARY, THEN SLOPED DOWNWARD TO MEET THE EXISTING HARBOR BOTTOM.

JACOBS®

EAST ZONE 1
PARCEL 25-34
SECTION X-X'
NEW BEDFORD HARBOR

AUGUST 2019 | FIGURE 7

BY:ENGLANLL
LAST SAVED:8/27/2019
CREATED:8/25/2019



LEGEND:

- MHHW 1.99
- MLLW -1.97
- GRAVEL SUBGRADE BACKFILL
- TOPSOIL BACKFILL

NOTE:

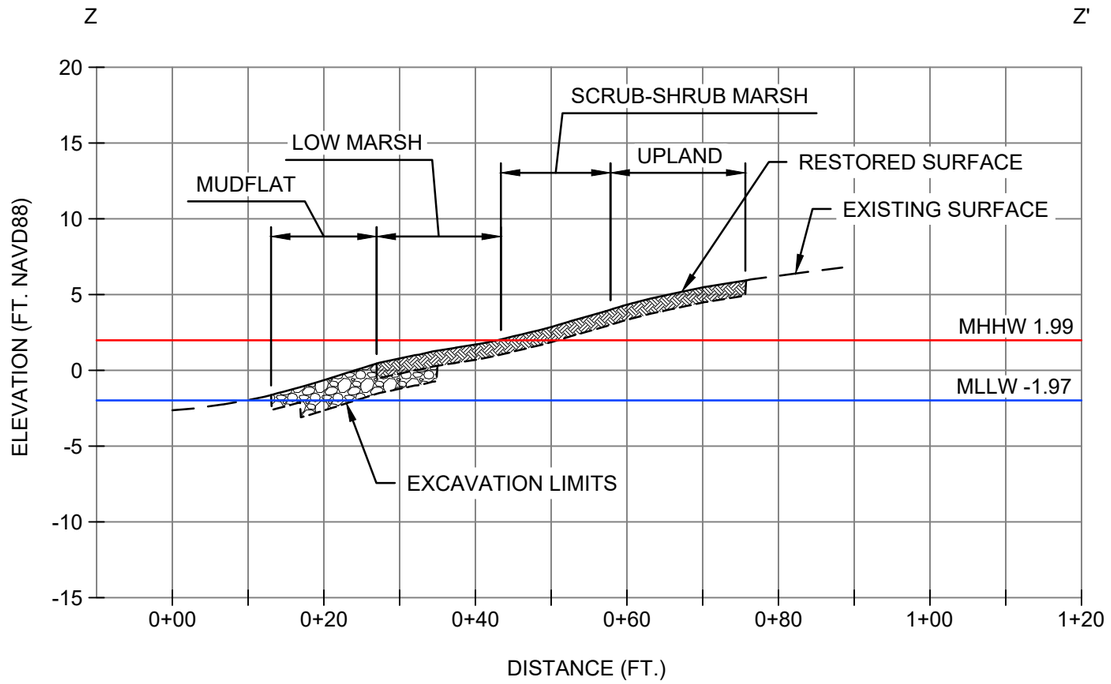
1. MUDFLATS WILL BE BACKFILLED TO PRE-EXCAVATION ELEVATIONS TO APPROXIMATELY 10 FEET SEAWARD OF THE COIR LOGS INSTALLED AT THE LOW MARSH/MUDFLAT BOUNDARY, THEN SLOPED DOWNWARD TO MEET THE EXISTING HARBOR BOTTOM.

JACOBS®

EAST ZONE 1
PARCEL 25-34
SECTION Y-Y'
NEW BEDFORD HARBOR

AUGUST 2019 | FIGURE 8

BY:ENGLANLL
LAST SAVED:8/27/2019
CREATED:8/25/2019



LEGEND:

- MHHW 1.99
- MLLW -1.97
- GRAVEL SUBGRADE BACKFILL
- TOPSOIL BACKFILL

NOTE:

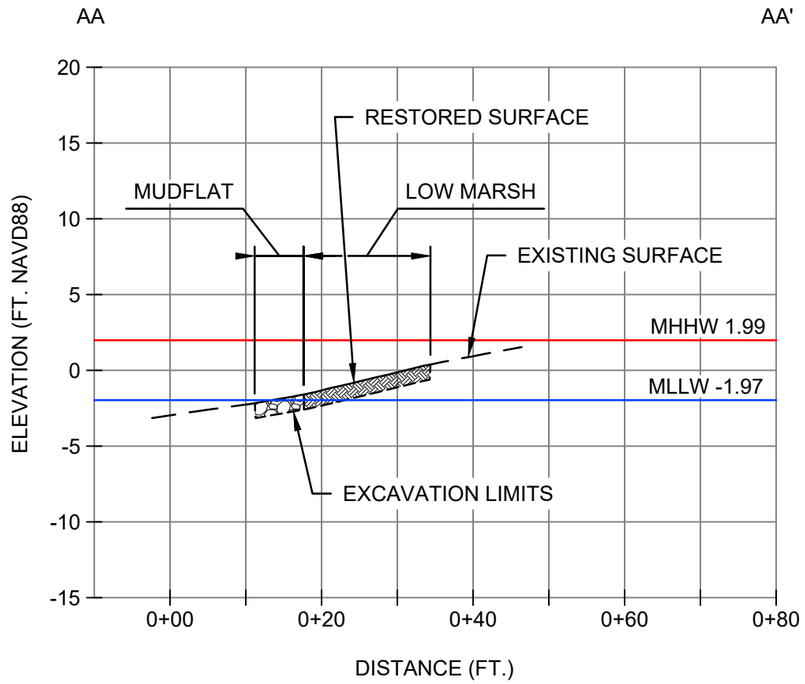
1. MUDFLATS WILL BE BACKFILLED TO PRE-EXCAVATION ELEVATIONS TO APPROXIMATELY 10 FEET SEAWARD OF THE COIR LOGS INSTALLED AT THE LOW MARSH/MUDFLAT BOUNDARY, THEN SLOPED DOWNWARD TO MEET THE EXISTING HARBOR BOTTOM.

JACOBS®

EAST ZONE 1
PARCEL 25-34
SECTION Z-Z'
NEW BEDFORD HARBOR

AUGUST 2019 | FIGURE 9

BY:ENGLANLL
LAST SAVED:8/27/2019
CREATED:8/25/2019



LEGEND:

- MHHW 1.99
- MLLW -1.97
- GRAVEL SUBGRADE BACKFILL
- TOPSOIL BACKFILL

NOTE:

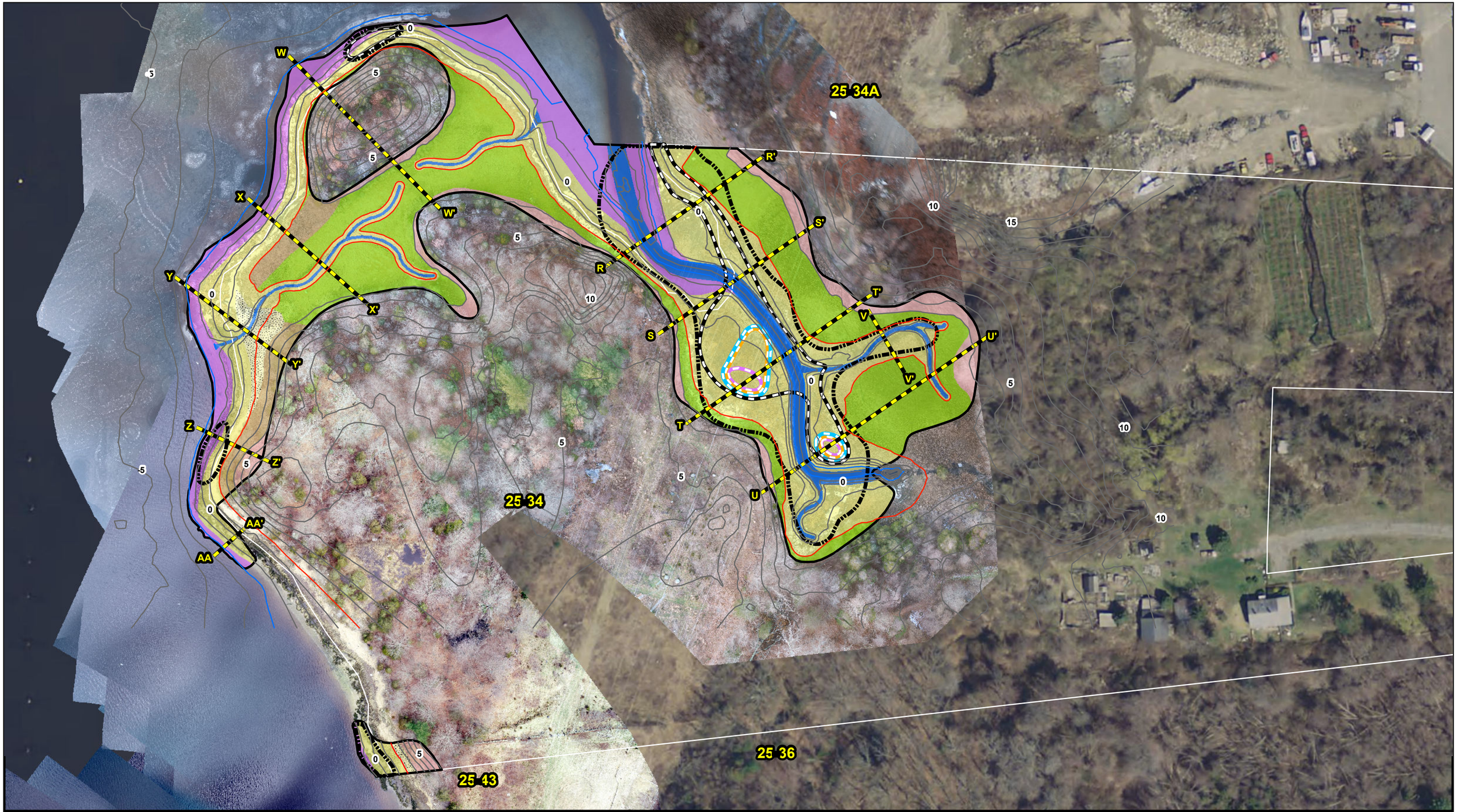
1. MUDFLATS WILL BE BACKFILLED TO PRE-EXCAVATION ELEVATIONS TO APPROXIMATELY 10 FEET SEAWARD OF THE COIR LOGS INSTALLED AT THE LOW MARSH/MUDFLAT BOUNDARY, THEN SLOPED DOWNWARD TO MEET THE EXISTING HARBOR BOTTOM.

JACOBS®

EAST ZONE 1
PARCEL 25-34
SECTION AA-AA'
NEW BEDFORD HARBOR

AUGUST 2019 | FIGURE 10

CREATED:8/25/2019 LAST SAVED:8/27/2019 BY:ENGLANLL



Legend

- 1-foot Contour
- Mean Lower Low Water
- Mean Higher High Water
- Cross Section Locations
- 0-1' Excavation Depth
- 1-2' Excavation Depth
- 2-3' Excavation Depth
- 3-4' Excavation Depth
- 4-5' Excavation Depth
- 5-6' Excavation Depth
- Parcel Boundary
- Proposed Beach
- Proposed High Marsh
- Proposed Low Marsh
- Minimal Backfill as Needed for Drainage or Slope Stability
- Proposed Scrub-Shrub Marsh
- Proposed Stream
- Proposed Upland

0 50 100 Feet

September 2019

Basemap Data Source: MassGIS, ESRI

Vertical Datum: NAVD88

Upper Harbor East Zone 1 Parcel 25-34 Cross Section Locations

New Bedford Harbor Superfund Site

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Figure 11

Appendix C

Schedule

(to be added at a later date)