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New Bedford Harbor Superfund Site

U.S. Army Corps of Engineers New England District

Draft Final Intertidal Work Plan for West Zone 2-3

ACE-J23-35BG6000-M1-0029

August 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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Figures

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
IA	immunoassay
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
RAL	remedial action level
ROD	Record of Decision
RTK	Real Time Kinematic
sf	square feet
TCL	target cleanup level
TSCA	Toxic Substances Control Act
UCL	upper confidence limit

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1.0 Introduction

This Work Plan for West Zone 2-3 provides information concerning shoreline remediation and restoration pursuant to the New Bedford Harbor Superfund Site (NBHSS), including maps and figures of the excavation areas, 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 zone-specific work plan provides additional detail and documents deviations from the procedures in the Generic Work Plan.

As described herein, certain areas of the sediment and soil on the parcels 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 TCLs for intertidal shoreline areas in West Zones 2-3 are 25 milligrams per kilogram (mg/kg) for the top 1 foot (ft) (95% upper confidence limit [UCL] of the mean concentration), and 50 mg/kg below 1 ft landward of the mudflats (not-to-exceed value). This 25 mg/kg TCL has been applied because of the anticipated construction of a recreational public walking path along the Upper Harbor western shoreline. 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 exceeding the TCLs will be removed and disposed of 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 to the original elevation and restored with a similar vegetation type. Unvegetated areas (i.e., mudflats) will be backfilled as needed to stabilize the shoreline.

2.0 Parcel Description

The intertidal management area referred to as West Zone 2-3 is located on the western shore of the Upper New Bedford Harbor in New Bedford, MA. West Zone 2-3 consists of four parcels: 112-133, 111-146, 111-98, and 111-155; portions of each parcel will be remediated. A site location map showing the West Zones 2-3 parcels and the limits of the planned excavations is provided in Figure 2-1. This map also shows the planned limits of a subaqueous cap that will be constructed over two wooden cribs that will be removed from the subtidal area adjacent to Parcels 111-146 and 111-98.

Parcel 112-133 is comprised of an industrial building and parking area in the western portion with a narrow area of undeveloped land in the eastern portion. The shoreline consists of mudflats, low marsh, high marsh, and scrub-shrub marsh. The parcel is bounded to the north by Parcel 112-88, to the west by Belleville Avenue, to the south by Parcel 111-146, and to the east by the Upper Harbor. Parcel 111-146 is comprised of industrial buildings and a parking area on the western portion with a relatively narrow area of undeveloped land in the eastern portion. The shoreline of this parcel consists of rip rap, mudflats, low marsh, scrub-shrub marsh, and phragmites. The parcel is bounded to the north by Parcel 112-133, to the west by Belleville Avenue, to the south by Parcel 111-98, and to the east by the Upper Harbor. Parcel 111-98 is comprised of an industrial building and parking area in the western portion and a relatively narrow area of undeveloped land in the eastern portion. The shoreline of this parcel consists of rip rap, low marsh, and mudflats. The parcel is bounded to the north by Parcel 111-146, to the west by Belleville Avenue, to the south by Parcel 111-155, and to the east by the Upper Harbor. Parcel 111-155 is comprised of a parking area and a roadway in the western portion and a narrow area of undeveloped land in

the eastern portion bounded by a near-vertical rock wall. The shoreline of this parcel consists of rip rap, mudflats, and low marsh. The parcel is bounded to the north by Parcel 111-98, to the west by Belleville Avenue, to the south by Parcel 105-170, and to the east by the Upper Harbor. Remediation of contaminated sediments will take place along the undeveloped shoreline within each parcel.

The existing wetland vegetation for West Zone 2-3 was surveyed in 2017. The mapped survey results and the outlines of the excavation areas are provided in Figure 2-2a through Figure 2-2c. Sediment and soil samples collected during the site investigation/characterization phase were analyzed for total PCBs by both immunoassay (IA) and congener methods. The analytical results summarized in Table 2-1a through Table 2-1d were used to support remediation planning. The PCB characterization sample locations used to delineate the extent of PCB contamination within West Zone 2-3 are shown in Figure 2-3a through Figure 2-3c. A subset of these locations was also designated as confirmatory sample locations, which are described further in Section 3.3.

3.0 Excavation

3.1 Site Preparation

Access to the portions of Parcels 112-133, 111-146, 111-98, and 111-55 requiring remediation will be through private property that is currently under access agreements obtained by EPA. Temporary roads will be built to create equipment access to the remediation areas. The temporary roads will be constructed using a geotextile base covered by either 12 inches of dense-grade aggregate or by construction mats. The use of aggregate or mats will be determined in the field when the roads are cleared. Approximately 1,800 linear feet (ft) of temporary access roads will be constructed. The roads will be approximately 15 ft wide. Existing parking lots on Parcel 112-133 also will be used to access remediation areas. A construction site plan showing the excavation areas and temporary access roads is provided as Figure 3-1.

On Parcel 111-146, remnants of buried power distribution cables traverse the planned excavations in the area shown on Figure 3-1. These cables will be removed from the excavation areas prior to remediation. Cable removal will be addressed in a separate work plan.

Prior to any site clearing or grubbing necessary to build the access roads to the excavation areas, mature, non-invasive tree and shrub species will be marked in the field and preserved when possible during construction. Native tree and shrub inventories for Parcels 112-133, 111-146, 111-98, and 111-55 are included as Appendix A. Other vegetation will be cleared from the site as necessary to permit access road construction and remedial excavation. Construction access was designed to minimize disturbance of the property to the maximum extent practicable.

3.2 Excavation Plan

Using PCB data collected through multiple rounds of sampling, a 3-dimensional excavation model was developed as depicted in the West Zone 2-3 Excavation Plans in Figures 3-2a, 3-2b, 3-2c, 3-2d, and 3-2e. The horizontal and vertical extents of the excavations include all sample locations with total PCB concentrations exceeding TCLs (for non-mudflat locations), and mudflat locations with PCB concentrations exceeding the subtidal/mudflat remedial action level (RAL) of 30 mg/kg.[1] The cut depth, areal extent of contamination and pre-excavation surface

[1]The excavations were designed to achieve a 95UCL of the mean PCB concentration in the 0-1 ft depth interval of <25 mg/kg and all PCB concentrations <50 mg/kg below 1 ft after remediation.

elevations for the excavation areas are shown on Figure 3-2a and Figure 3-2b for Parcel 112-133[2], on Figure 3-2c and Figure 3-2d for Parcel 111-146, and on Figure 3-2e for Parcels 111-98 and 111-155. The total area to be excavated is approximately 137,682 square feet (sf) and has a corresponding volume of 7,688 cubic yards (cy). The eastern (seaward) edge of the intertidal excavation area has been adjusted to align with the landward extent of subtidal dredging, which has been completed.

The onsite materials management and excavation water management procedures provided in Section 4.3 of the Generic Work Plan assume that the Debris Disposal Area (DDA) at Area C will be available to support remediation activities. If the DDA is not available, then an alternative staging and dewatering area will be identified.

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 Figures 2-3a, 2-3b, and 2-3c include top-of-bank, excavation sidewall and excavation floor locations where PCB congener concentrations were previously determined to be below the TCLs. PECC sample results are shown in Tables 2-1a, 2-1b, 2-1c, and 2-1d. In areas where the excavation extends to the base of shoreline rip rap, top-of-bank PECC samples were collected immediately above the rip rap at approximate 100-ft intervals. Post-excavation confirmatory samples for mudflats that are subtidal after excavation will be collected as part of the subtidal confirmatory sampling program.

If the PECC approach is proven to be ineffective at a previous intertidal pilot test area (i.e., in East Zone 1 or West Zone 1, whichever is remediated first), 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 below the TCLs.

Compliance survey locations are spaced at approximate 100-ft intervals along the excavation sidewalls and floors. 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. Survey control tables have been developed to document the pre- and post-excavation compliance measurements and are provided in Tables 3-1a, 3-1b and 3-1c. Compliance survey locations are shown in Figures 3-3a, 3-3b, and 3-3c. Additional removal will be performed if a post-excavation elevation survey indicates that a compliance survey location was not excavated to the target elevation. Additional removal will be performed as described in Section 4.5 of the Generic Work Plan.

4.0 Backfill

After verification that compliance with the TCLs and design elevations has been met, the excavations will be backfilled with clean manufactured topsoil. The topsoil will meet the quality requirements identified in the *Draft Final Topsoil Acceptance Plan* (Jacobs 2019b). Backfill in saltmarsh areas will consist of 12 inches of topsoil to support vegetation regrowth and achieve the restoration design provided in Section 7.0. Where 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. Excavated mudflats will be backfilled

[2] A separate cleanup under state authority is planned for Parcel 112-133; however, the scope and extent of that State-lead cleanup is not yet finalized as of the date of this work plan. Thus, the shoreline excavation extent shown herein for Parcel 112-133 may be subject to change as a result.

with gravel as needed to provide slope stability or drainage. 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 areas. A clean, decontaminated all-terrain dump truck or tracked excavator will transport the topsoil for spreading. Post-backfill saltmarsh topography will closely match the pre-excavation topography with a tolerance of +/- 0.3 ft as described in Section 7.0. 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.

5.0 Schedule

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

Activity	Anticipated Duration
Excavation	4.5 months
Restoration	3.5 months
After Action Report	3 months

6.0 Air Monitoring

The evaluation of existing PCB congener data (Tables 2-1a, 2-1b, 2-1c, 2-1d) indicates that the maximum PCB concentration at Parcel 112-133 is 4,160 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* (Jacobs 2018a).

7.0 Restoration

All excavated areas except mudflats will be backfilled, regraded, and revegetated to best replicate the pre-remediation conditions as outlined in the Generic Work Plan (Jacobs 2019a). Mudflats will be backfilled to pre-excavation elevations to approximately 10 ft seaward of the low marsh/mudflat boundary, then sloped downward to meet the existing harbor bottom. As specified in the Generic Work Plan, upland areas impacted by remediation activities will be seeded with conservation seed mix. Any trees removed as part of access road construction or excavation will be replaced at the same or nearby suitable location. A pre-construction tree and shrub inventory of plants within the excavation area and access road area is included in Appendix A.

Proposed restored vegetation types within the remediation areas are shown in plan view in Figure 7-1a, Figure 7-1b, and Figure 7-1c. A conceptual cross section is provided in Figure 7-2 and construction cross sections are provided in Appendix B. Tree and shrub species identified for restoration are included in the Shrub Area Plantings notes included in Figures 7-1a, 7-1b, and 7-1c. The existing and proposed post-restoration acreages of each cover type are included in Tables 7-1a, 7-1b, and 7-1c and shrub restoration summaries are provided in Tables 7-2a, 7-2b, and 7-2c.

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 (Jacobs 2019a). Salt grass plants will be obtained from a nursery that 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 (Jacobs 2019a). 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. Monitoring and maintenance in restored areas will be performed as described in the Generic Work Plan (Jacobs 2019a). 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.

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-M17-0034.

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

Figures

112-133

111-146

111-98

111-155

Belleville Ave

New Bedford Harbor

West Zone 2

West Zone 3

Upper Harbor

Site Location

Legend

- Proposed Limits of Excavation
- Planned Crib Cap Limits
- Parcel Boundary
- West Zone 2 Management Area
- West Zone 3 Management Area

Basemap Data Source: MassGIS, ESRI

Source: Esri, DigitalBoss, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

0 150 300 Feet

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo,

Intertidal West Zones 2 and 3 Site Location and Features

New Bedford Harbor Superfund Site

July 2019 **Figure 2-1**

Path: C:\Users\scottga\Documents\NBH35BG\100120180901_Intertidal\WZ2_and_WZ3\ArcGIS\WP_Figures\Fig 2-1 WZ2_WZ3_WP_Site_Location_20190711.mxd

Notes:

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

112 133

111 146

5

0

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
- 1-foot Contour
- Mean Lower Low Water
- Mean Higher High Water
- Parcel Boundary
- High Marsh
- Low Marsh
- Mudflat
- Scrub-Shrub Marsh
- Upland/Lawn
- Upland

0 50 100 Feet

July 2019

Basemap Data Source:
Green Seal Environmental, MassGIS

Vertical Datum:
NAVD88

Intertidal West Zone 2-3 Parcel 112-133
Existing Vegetation, Topography, and Excavation Area

New Bedford Harbor Superfund Site

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Figure 2-2a

Notes:

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

111 146

112 133

111-98

5

0

-5

Legend

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

0 50 100 Feet

May 2019

Basemap Data Source:
Green Seal Environmental, MassGIS

Vertical Datum:
NAVD88

Intertidal West Zone 2-3 Parcel 111-146
Existing Vegetation, Topography, and Excavation Area

New Bedford Harbor Superfund Site

JACOBS

Figure 2-2b

Notes:

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

111 155

111 98

111 146

5

0

0

5

5

Legend

- 0-1' Excavation Depth
- 1-2' Excavation Depth
- 1-foot Contour
- Mean Lower Low Water
- Mean Higher High Water
- Parcel Boundary
- Mudflat
- Upland/Lawn
- Low Marsh

0 25 50 Feet

May 2019

Basemap Data Source:
Green Seal Environmental, MassGIS

Vertical Datum:
NAVD88

Intertidal West Zone 2-3 Parcels 111-98/111-155
Existing Vegetation, Topography, and Excavation Area

New Bedford Harbor Superfund Site

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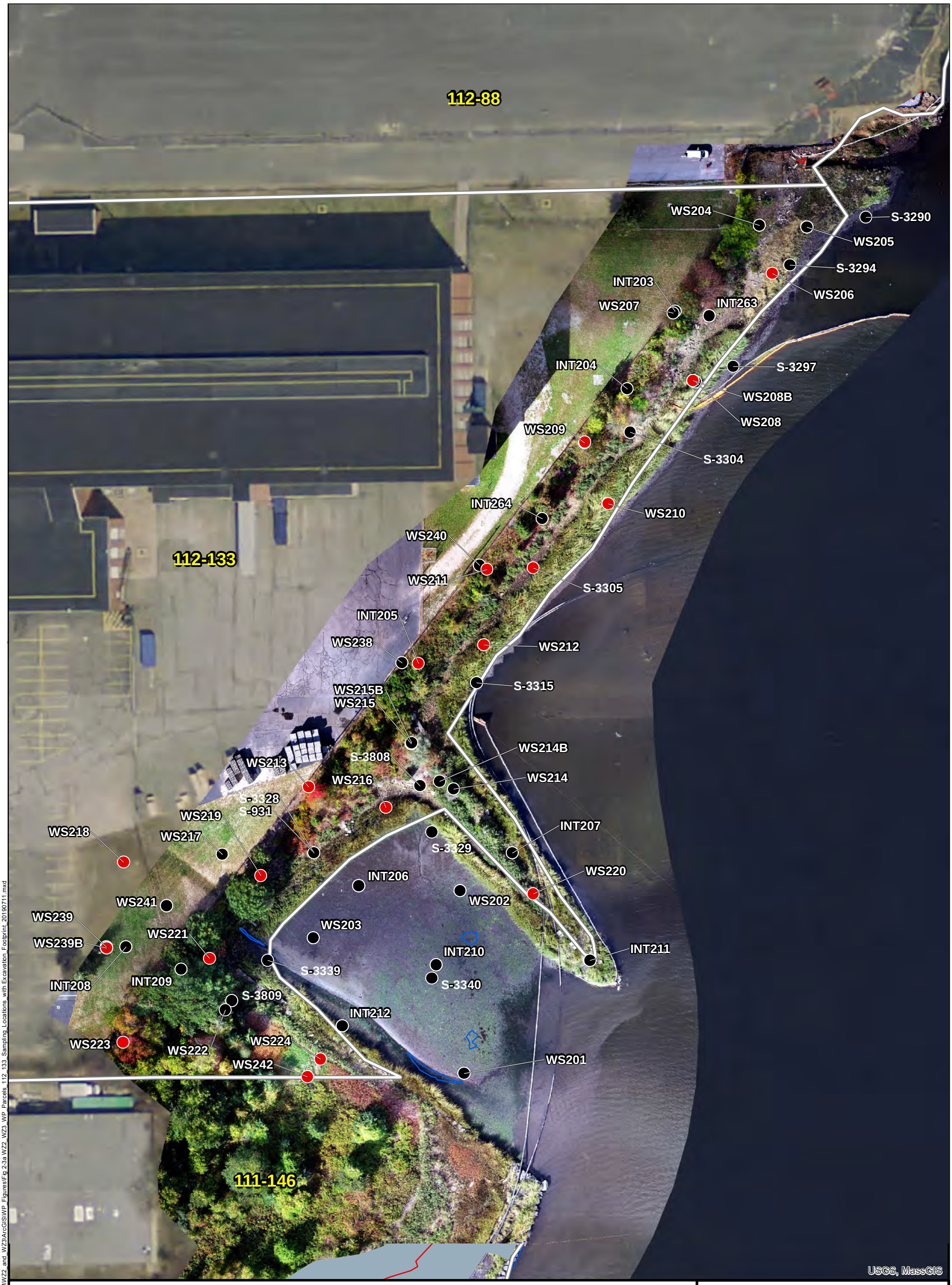
Figure 2-2c



Path: C:\Users\scottga\Documents\NBH35BG\100120180901_Intertidal\WZ2_and_WZ3\ArcGIS\WP_Figures\Fig 2-3a WZ2_WZ3_WP_Parcels_112_133_Sampling_Locations_with Excavation_Footprint_20190711.mxd

Legend

- Pre-Excavation Confirmatory Congener (PECC) Sample Location
- PCB Characterization Sample Location
- Proposed Limits of Excavation
- MHHW (1.99 ft)
- MLLW (-1.97 ft)
- Parcel Boundary

MHHW and MLLW Elevations NAVD88 ft.
(Green Seal, 2018)

Basemap Source: MassGIS 2014 and Green Seal 2018

0 60 120 Feet

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Intertidal West Zones 2 and 3
Parcel 112-133
Sampling Locations with Excavation Footprint
(0-1 ft Depth Interval)

New Bedford Harbor Superfund Site

July 2019

Figure 2-3a

Legend

- Pre-Excavation Confirmatory Congener (PECC) Sample Location
- PCB Characterization Sample Location
- Proposed Limits of Excavation
- MHHW (1.99 ft)
- MLLW (-1.97 ft)
- Parcel Boundary

MHHW and MLLW Elevations NAVD88 ft.
(Green Seal, 2018)

Basemap Source: MassGIS 2014 and Green Seal 2018

0 60 120 Feet

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Intertidal West Zones 2 and 3
Parcel 111-146
Sampling Locations with Excavation Footprint
(0-1 ft Depth Interval)

New Bedford Harbor Superfund Site

July 2019 **Figure 2-3b**

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111-146
111-98
111-155
105-170
WS314
WS315
INT225
INT226
WS316
INT227
WS317
WS319
WS318
WS320
INT228
INT229

Legend

- Pre-Excavation Confirmatory Congener (PECC) Sample Location
- PCB Characterization Sample Location
- Proposed Limits of Excavation
- MHHW (1.99 ft)
- MLLW (-1.97 ft)
- Parcel Boundary

MHHW and MLLW Elevations NAVD88 ft.
(Green Seal, 2018)

Basemap Source: MassGIS 2014 and Green Seal 2018

N

0 40 80
Feet

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Intertidal West Zones 2 and 3
Parcels 111-98 and 111-155
Sampling Locations with
Excavation Footprint
(0-1 ft Depth Interval)

New Bedford Harbor Superfund Site

July 2019 **Figure 2-3c**

Path: C:\Users\scottgal\Documents\NBH\35BG100\20180901_Intertidal\WZ2_and_WZ3\ArcGIS\WP_Figures\Fig 2-3c WZ2_WZ3_WP_Parcels_111_98_and_111_155_Sampling_Locations_with Excavation_Footprint_20190711.mxd

Legend

- Temporary Gravel Access Road
- Existing Access
- Access From Main Road
- Proposed Limits of Excavation
- Planned Crib Cap Limits
- Cable Area
- MHHW (1.99 ft)
- MLLW (-1.97 ft)
- Parcel Boundary

N

Aerial Photography Green Seal 2018 and MassGIS 2014

0 65 130 Feet

1:1,560

MHHW and MLLW Elevations NAVD88 ft. (Green Seal, 2018)

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Intertidal West Zones 2 and 3 Construction Site Plan

New Bedford Harbor Superfund Site

July 2019 | Figure 3-1

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112-88

112-133

Legend

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

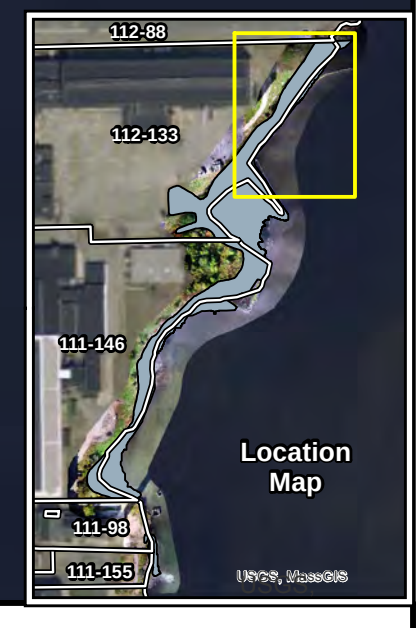
Feet of Sediment To Remove

- 1
- 2
- 3
- 4
- 5
- 6

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

0 5 10 20 30 40 Feet

Pre-Excavation, MHHW and MLLW Elevations NAVD88 ft.
and Basemap Photography Sources: Green Seal 2018 and MassGIS 2014



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Intertidal West Zones 2 and 3 Northern Portion of Parcel 112-133 Excavation Plan Showing Cut Depths and Pre-Excavation Elevations

New Bedford Harbor Superfund Site

August 2019 **Figure 3-2a**

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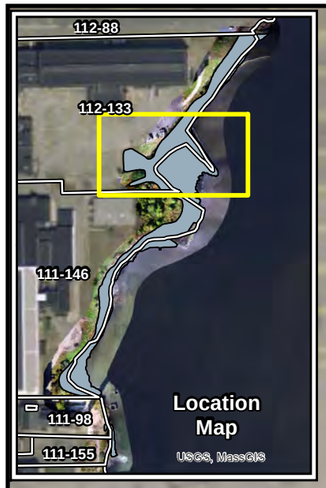

Legend

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

Feet of Sediment To Remove

1		4	
2		5	
3		6	

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

Pre-Excavation, MHHW and MLLW Elevations NAVD88 ft.
and Basemap Photography Sources: Green Seal 2018, MassGIS 2014

0 70 Feet

N

August 2019

USGS

Intertidal West Zones 2 and 3 Southern Portion of Parcel 112-133 Excavation Plan Showing Cut Depths and Pre-Excavation Elevations

New Bedford Harbor Superfund Site

JACOBS

Figure 3-2b

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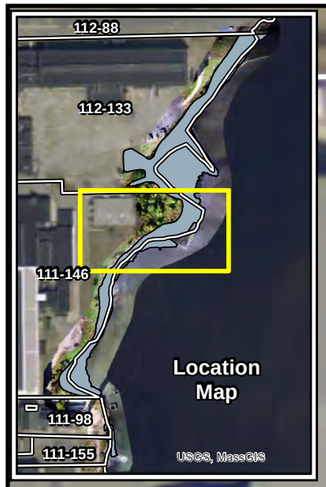

112-133

111-146

Legend

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

Feet of Sediment To Remove

- 1
- 2
- 3
- 4

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

Pre-Excavation, MHHW and MLLW Elevations NAVD88 ft. and Basemap Photography Sources: Green Seal 2018, MassGIS 2014

0 70 Feet

August 2019

Intertidal West Zones 2 and 3, Northern Portion of Parcel 111-146 Excavation Plan Showing Cut Depths and Pre-Excavation Elevations

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Figure 3-2c

Path: C:\Users\scottgai\Documents\NBH\35BG100120180901_IntertidalW22_and_W23\ArcGIS\WP_Figures\Fig 3-2c W22_W23_WP_Parcel_111_146_Excavation_Plan_North_Portion_20190809.mxd

111-146

111-98

Legend

- Inland Reach of Dredge
- Crib Cap Limits
- MHHW (1.99 ft)
- MLLW (-1.97 ft)
- Parcel Boundary

Feet of Sediment To Remove

- 1
- 2
- 3
- 4
- 5

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

0 5 10 20 30 40 Feet

Pre-Excavation, MHHW and MLLW Elevations NAVD88 ft.
and Basemap Photography Sources: Green Seal 2018 and MassGIS 2014

USGS, JACOBS™

Intertidal West Zones 2 and 3 Southern Portion of Parcel 111-146 Excavation Plan Showing Cut Depths and Pre-Excavation Elevations

New Bedford Harbor Superfund Site

August 2019 **Figure 3-2d**

Path: C:\Users\scottga\Documents\NBH\35BG1001\20180901_Intertidal\WZ2_and_WZ3\ArcGIS\WP_Figures\Fig 3-2d WZ2_WZ3_WP_Parcel_111_146_Excavation_Plan_South_Portion_20190809.mxd

111-146

111-98

111-155

105-170

Legend

- Inland Reach of Dredge
- Crib Cap Limits
- MHHW (1.99 ft)
- MLLW (-1.97 ft)
- Parcel Boundary

Feet of Sediment To Remove

- 1
- 2

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

0 5 10 20 30 40 Feet

Pre-Excavation, MHHW and MLLW Elevations NAVD88 ft.
and Basemap Photography Sources: Green Seal 2018 and MassGIS 2014

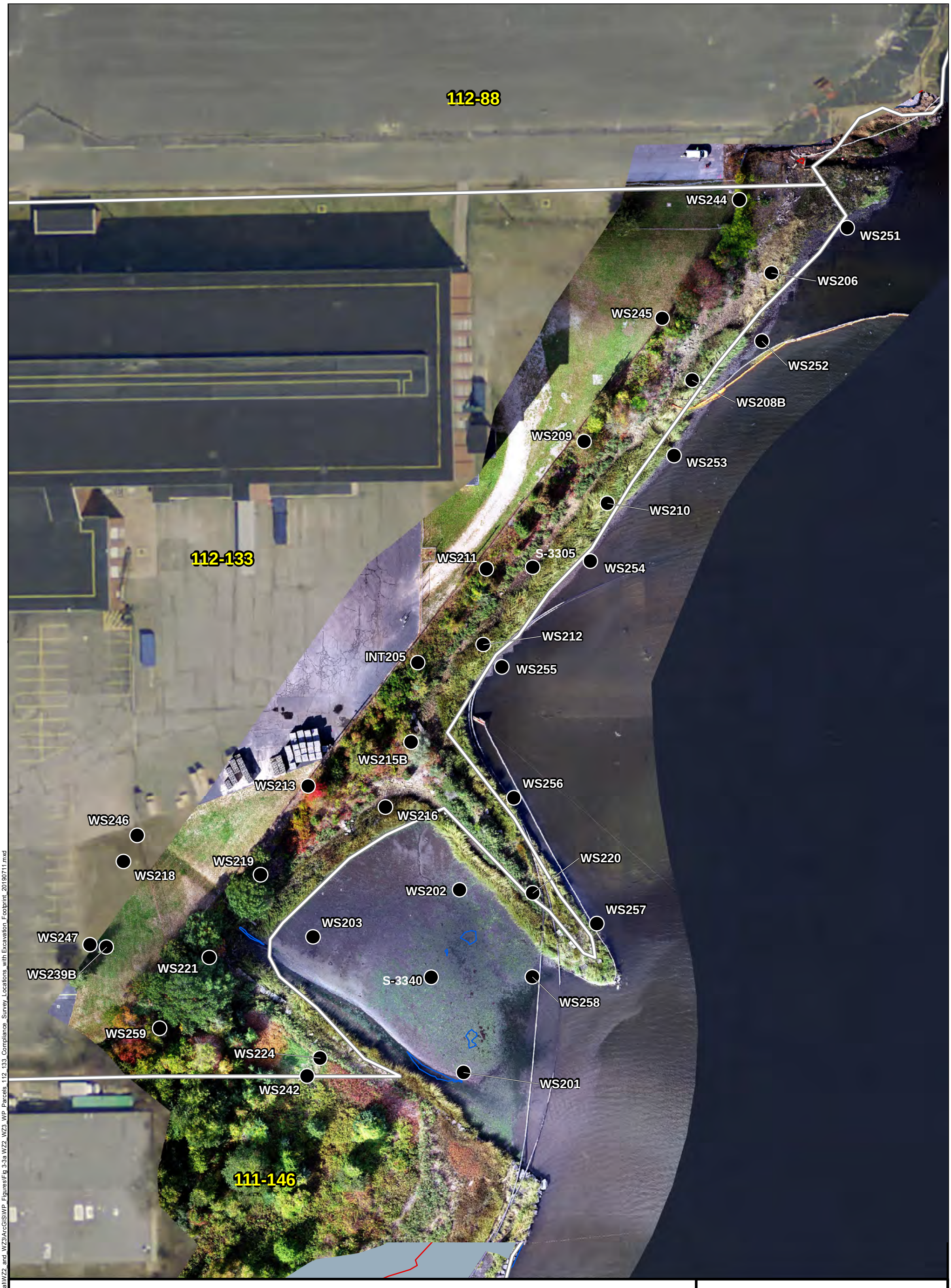
JACOBS™

Intertidal West Zones 2 and 3
Parcels 111-98 and 111-155
Excavation Plan
Showing Cut Depths and
Pre-Excavation Elevations

New Bedford Harbor Superfund Site

August 2019 **Figure 3-2e**

Path: C:\Users\scottga\Documents\NBH\35BG1001\20180901_Intertidal\WZ2_and_WZ3\ArcGIS\WP_Figures\Fig 3-2e WZ2_WZ3_WP_Parcels_111_98_and_111_155_Excavation_Plan_20190809.mxd



Legend

- Compliance Survey Location
- Parcel Boundary
- MHHW (1.99 ft)
- MLLW (-1.97 ft)
- Proposed Limits of Excavation

Basemap Source: MassGIS 2014 and Green Seal 2018

0 60 120 Feet

MHHW and MLLW Elevations NAVD88 ft.
(Green Seal, 2018)

JACOBS™

Intertidal West Zones 2 and 3
Parcel 112-133
Compliance Survey Locations with Excavation Footprint
(0-1 ft Depth Interval)

New Bedford Harbor Superfund Site

July 2019 **Figure 3-3a**

Path: C:\Users\scottgat\Documents\NBH\35BG1001\20180901_Intertidal\WZ2_and_WZ3\ArcGIS\WP_Figures\Fig 3-3a WZ2_WZ3_WP_Parcels_112_133_Compliance_Survey_Locations_with Excavation_Footprint_20190711.mxd

112-133

111-146

111-98

WS260
S-3351
WS248
WS225
WS226
WS243
WS261
WS228
WS262
WS231
WS229
WS249
WS264
WS263
WS234
WS265
WS250
WS236B
WS328
WS301
WS323
WS305
WS329
WS324
WS306B
WS330
WS325
WS308
WS326
WS331
WS311
WS332
WS312
WS313

USGS, MassGIS

Legend

- Compliance Survey Location
- MHHW (1.99 ft)
- MLLW (-1.97 ft)
- Proposed Limits of Excavation
- Parcel Boundary

MHHW and MLLW Elevations NAVD88 ft.
(Green Seal, 2018)

Basemap Source: MassGIS 2014 and Green Seal 2018

0 60 120
Feet

JACOBS™

Intertidal West Zones 2 and 3
Parcel 111-146
Compliance Survey Locations with Excavation Footprint
(0-1 ft Depth Interval)

New Bedford Harbor Superfund Site

July 2019

Figure 3-3b

Path: C:\Users\scottga\Documents\NBH135BG1001\20180901_Intertidal\WZ2_and_WZ3\ArcGIS\WP_FiguresIFig 3-3b WZ2_WZ3_WP_Parcels_111_146_Compliance_Survey_Locations_with Excavation_Footprint_20190711.mxd

111-146

111-98

WS333

WS327

INT227

WS334

WS317

WS318

111-155

105-170

Legend

- Compliance Survey Location
- Proposed Limits of Excavation
- MHHW (1.99 ft)
- MLLW (-1.97 ft)
- Parcel Boundary

MHHW and MLLW Elevations NAVD88 ft.
(Green Seal, 2018)

Basemap Source: MassGIS 2014 and Green Seal 2018

N

0 40 80 Feet

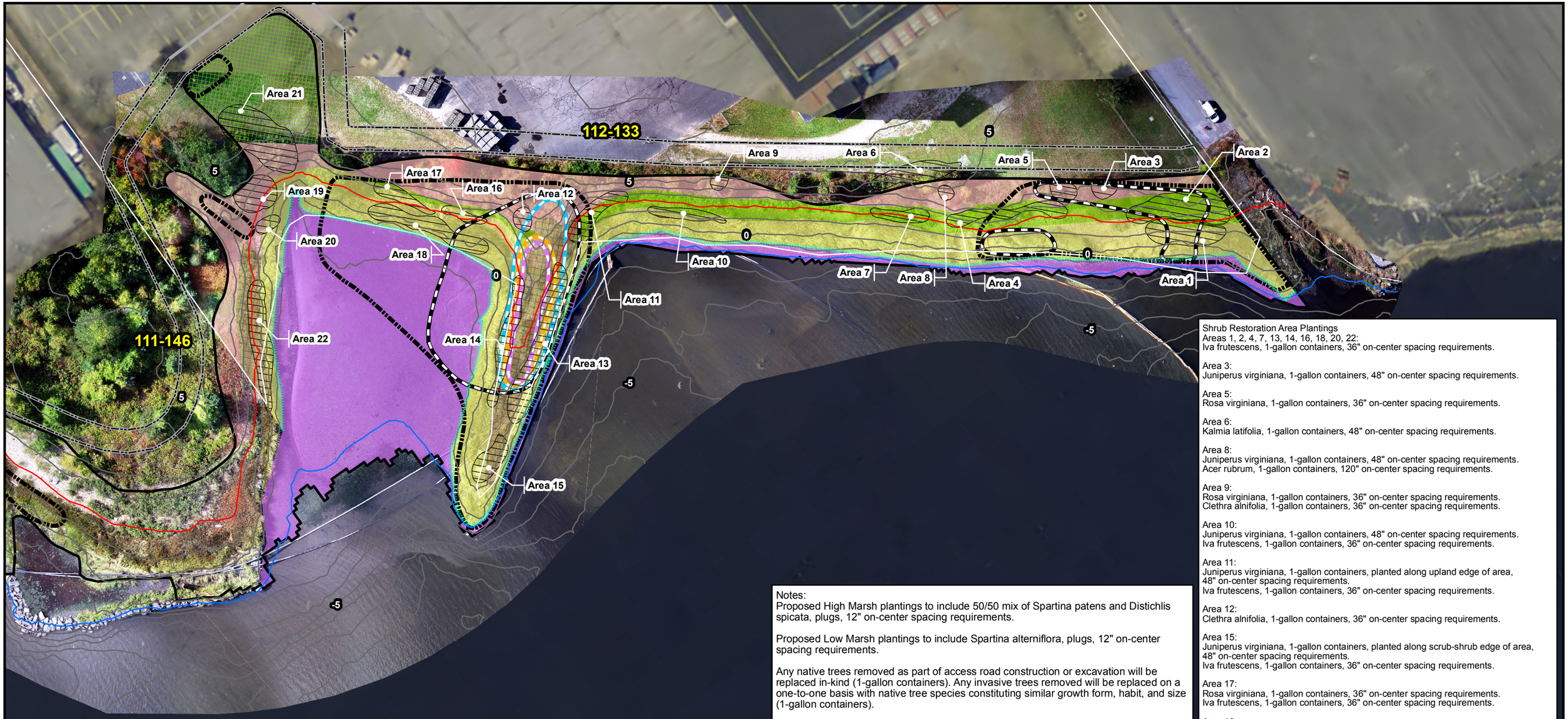
JACOBS™

Intertidal West Zones 2 and 3
Parcels 111-98 and 111-155
Compliance Survey Locations with Excavation Footprint
(0-1 ft Depth Interval)

New Bedford Harbor Superfund Site

July 2019 **Figure 3-3c**

Path: C:\Users\scottgal\Documents\NBH\35BG100\20180901_Intertidal\WZ2_and_WZ3\ArcGIS\WP_Figures\Fig 3-3c WZ2_WZ3_WP_Parcels_111_98_and_111_155_Compliance_Survey_Locations_with Excavation_Footprint_20190711.mxd



Shrub Restoration Area Plantings
Areas 1, 2, 4, 7, 13, 14, 16, 18, 20, 22:
Iva frutescens, 1-gallon containers, 36" on-center spacing requirements.

Area 3:
Juniperus virginiana, 1-gallon containers, 48" on-center spacing requirements.

Area 5:
Rosa virginiana, 1-gallon containers, 36" on-center spacing requirements.

Area 6:
Kalmia latifolia, 1-gallon containers, 48" on-center spacing requirements.

Area 8:
Juniperus virginiana, 1-gallon containers, 48" on-center spacing requirements.
Acer rubrum, 1-gallon containers, 120" on-center spacing requirements.

Area 9:
Rosa virginiana, 1-gallon containers, 36" on-center spacing requirements.
Clethra alnifolia, 1-gallon containers, 36" on-center spacing requirements.

Area 10:
Juniperus virginiana, 1-gallon containers, 48" on-center spacing requirements.
Iva frutescens, 1-gallon containers, 36" on-center spacing requirements.

Area 11:
Juniperus virginiana, 1-gallon containers, planted along upland edge of area, 48" on-center spacing requirements.
Iva frutescens, 1-gallon containers, 36" on-center spacing requirements.

Area 12:
Clethra alnifolia, 1-gallon containers, 36" on-center spacing requirements.

Area 15:
Juniperus virginiana, 1-gallon containers, planted along scrub-shrub edge of area, 48" on-center spacing requirements.
Iva frutescens, 1-gallon containers, 36" on-center spacing requirements.

Area 17:
Rosa virginiana, 1-gallon containers, 36" on-center spacing requirements.
Iva frutescens, 1-gallon containers, 36" on-center spacing requirements.

Area 19:
Juniperus virginiana, 1-gallon containers, 48" on-center spacing requirements.
Quercus rubra, 1-gallon containers, 120" on-center spacing requirements.

Area 21:
Juniperus virginiana, 1-gallon containers, 48" on-center spacing requirements.
Quercus rubra, 1-gallon containers, 120" on-center spacing requirements.
Acer rubrum, 1-gallon containers, 120" on-center spacing requirements.

Scrub-Shrub Marsh areas shall be planted with a 50/50 mix of Iva frutescens, 1-gallon containers, 36" on-center spacing requirements, and Juniperus virginiana, 1-gallon containers, 48" 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 depicted and constructed surfaces may occur due to microtopographic variations across the site.

Final restored elevations will be documented in the After Action Report.

MHHW and MLLW lines are approximate.

Upland/lawn areas shall be seeded with contractor's lawn seed mix.

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
- Proposed Access Road
- 1-foot Contour
- Mean Higher High Water
- Mean Lower Low Water
- Proposed Coir Log
- Parcel Boundary
- Proposed Shrub Restoration Area
- Proposed High Marsh
- Proposed Low Marsh
- Minimal Backfill as Needed for Drainage or Slope Stability
- Proposed Scrub-Shrub Marsh
- Proposed Upland/Lawn
- Proposed Upland

0 60 120 Feet

July 2019

Basemap Data Source:
Green Seal Environmental, MassGIS

Vertical Datum:
NAVD88

Intertidal West Zone 2-3 Parcel 112-133 Proposed Wetland Cover Types and Topography

New Bedford Harbor Superfund Site

JACOBS

Figure 7-1a

Shrub Restoration Area Plantings
Area 1:
Iva frutescens, 1-gallon containers, 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.
Rosa virginiana, 1-gallon containers, 36" on-center spacing requirements.
Lindera benzoin, 1-gallon containers, 36" on-center spacing requirements.

Area 4:
Iva frutescens, 1-gallon containers, 36" on-center spacing requirements.
Lindera benzoin, 1-gallon containers, 36" on-center spacing requirements.

Area 5:
Acer rubrum, 1-gallon containers, 120" on-center spacing requirements.
Solidago bicolor, 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.

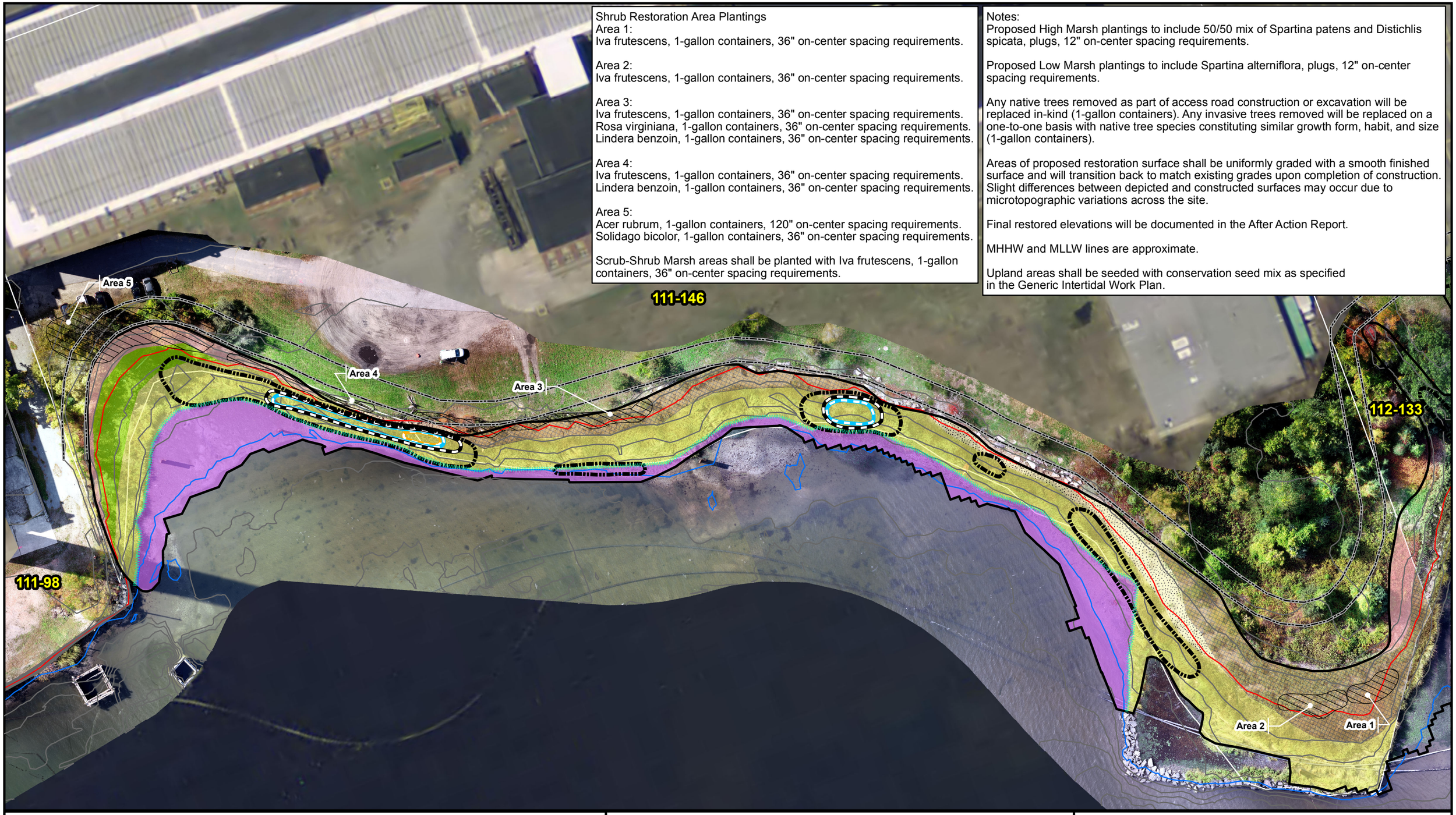
Any native trees removed as part of access road construction or excavation will be replaced in-kind (1-gallon containers). Any invasive trees removed will be replaced on a one-to-one basis with native tree species constituting similar growth form, habit, and size (1-gallon containers).

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 depicted and constructed surfaces may occur due to microtopographic variations across the site.

Final restored elevations will be documented in the After Action Report.

MHHW and MLLW lines are approximate.

Upland areas shall be seeded with conservation seed mix as specified in the Generic Intertidal Work Plan.



Legend

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

0 50 100 Feet

May 2019

Basemap Data Source:
Green Seal Environmental, MassGIS

Vertical Datum:
NAVD88

Intertidal West Zone 2-3
Parcel 111-146
Proposed Wetland Cover Types
New Bedford Harbor Superfund Site

JACOBS

Figure 7-1b

Notes:
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 depicted and constructed surfaces may occur due to microtopographic variations across the site.

Final restored elevations will be documented in the After Action Report.

MHHW and MLLW lines are approximate.

Upland/lawn areas shall be seeded with conservation seed mix as specified in the Generic Intertidal Work Plan.

Shrub Restoration Area Plantings
Area 1:
Rosa virginiana, 1-gallon containers, 36" on-center spacing requirements.
Rhus glabra, 1-gallon containers, 36" on-center spacing requirements.
Lindera benzoin, 1-gallon containers, 36" on-center spacing requirements.
Juniperus virginiana, 1-gallon containers, planted landward edge of area, 48" on-center spacing requirements.

Area 2:
Lindera benzoin, 1-gallon containers, 36" on-center spacing requirements.
Solidago bicolor, 1-gallon containers, planted along upland edge of area, 36" on-center spacing requirements.

111-155
111-98
111-146
105-170
Area 1
Area 2
5
0
-5

Legend

- Proposed Coir Log
- 1-foot Contour
- Mean Lower Low Water
- Mean Higher High Water
- 0-1' Excavation Depth
- 1-2' Excavation Depth
- Proposed Shrub Restoration
- Parcel Boundary
- Proposed Access Road
- Proposed Low Marsh
- Minimal Backfill as Needed for Drainage or Slope Stability
- Proposed Upland/Lawn

0 50 100 Feet

July 2019

Basemap Data Source:
Green Seal Environmental, MassGIS

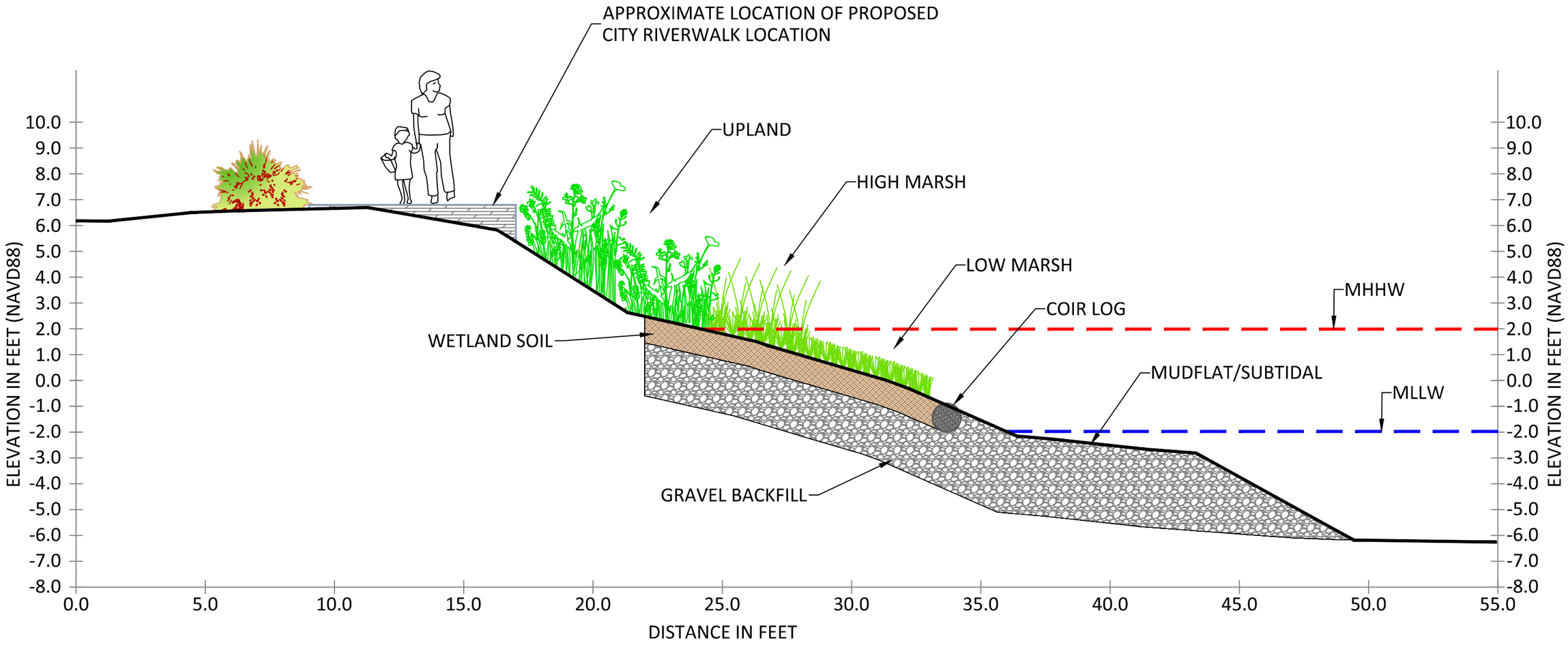
Vertical Datum:
NAVD88

Intertidal West Zone 2-3 Parcels 111-98/111-155
Proposed Wetland Cover Types and Topography

New Bedford Harbor Superfund Site

JACOBS

Figure 7-1c



0 4 feet

JACOBS™

West Zones 2 and 3
Conceptual Cross Section

New Bedford Harbor Superfund Site

May 2019 | Figure 7-2

Tables

Table 2-1a
Pre-Excavation PCB Characterization Sample Results for Parcel 112-133

Parcel	Type	Sample ID	Station ID	Sample Depth Top (ft)	Sample Depth Bottom (ft)	Sample Date	Description	Total PCB (mg/kg)	Final Qualifier
112-133	Upland	S-15G-INT203-00-10	INT203	0.0	1.0	8/6/2015	PCB from Immunoassay (Aroclor 1254)	2885	D
112-133	Upland	S-15G-INT203-10-20	INT203	1.0	2.0	8/6/2015	PCB from Immunoassay (Aroclor 1254)	1767	D
112-133	Upland	S-15G-INT203-20-30	INT203	2.0	3.0	8/6/2015	PCB from Immunoassay (Aroclor 1254)	51	D
112-133	Upland	S-15G-INT204-00-10	INT204	0.0	1.0	8/6/2015	PCB from Immunoassay (Aroclor 1254)	87	D
112-133	Upland	S-15G-INT204-10-20	INT204	1.0	2.0	8/6/2015	PCB from Immunoassay (Aroclor 1254)	1.9	
112-133	Upland	S-15G-INT205-00-10	INT205	0.0	1.0	8/6/2015	Total 139 PCB cong (excl non-detects)	28.0	
112-133	Upland	S-15G-INT205-10-20	INT205	1.0	2.0	8/6/2015	PCB from Immunoassay (Aroclor 1254)	2.2	
112-133	Mudflat	S-15G-INT206-00-10	INT206	0.0	1.0	8/4/2015	PCB from Immunoassay (Aroclor 1254)	2585	D
112-133	Mudflat	S-15G-INT206-10-20	INT206	1.0	2.0	8/4/2015	PCB from Immunoassay (Aroclor 1254)	55	D
112-133	Mudflat	S-15G-INT206-20-30	INT206	2.0	3.0	8/4/2015	PCB from Immunoassay (Aroclor 1254)	0.8	
112-133	Mudflat	S-15G-INT206-30-40	INT206	3.0	4.0	8/4/2015	PCB from Immunoassay (Aroclor 1254)	1.0	
112-133	Saltmarsh	S-15G-INT207-00-10	INT207	0.0	1.0	8/6/2015	PCB from Immunoassay (Aroclor 1254)	1388	D
112-133	Saltmarsh	S-15G-INT207-10-15	INT207	1.0	1.5	8/6/2015	PCB from Immunoassay (Aroclor 1254)	694	D
112-133	Saltmarsh	S-15G-INT207-40-60	INT207	4.0	6.0	8/6/2015	PCB from Immunoassay (Aroclor 1254)	244	D
112-133	Upland	S-15G-INT208-00-10	INT208	0.0	1.0	8/6/2015	Total 139 PCB cong (excl non-detects)	49.0	
112-133	Upland	S-15G-INT208-10-20	INT208	1.0	2.0	8/6/2015	PCB from Immunoassay (Aroclor 1254)	8.8	
112-133	Upland	S-15G-INT208-20-30	INT208	2.0	3.0	8/6/2015	PCB from Immunoassay (Aroclor 1254)	4.0	
112-133	Upland	S-15G-INT209-00-10	INT209	0.0	1.0	8/6/2015	PCB from Immunoassay (Aroclor 1254)	2.5	
112-133	Upland	S-15G-INT209-10-20	INT209	1.0	2.0	8/6/2015	PCB from Immunoassay (Aroclor 1254)	1.2	
112-133	Mudflat	S-15G-INT210-00-10	INT210	0.0	1.0	8/4/2015	PCB from Immunoassay (Aroclor 1254)	89	D
112-133	Mudflat	S-15G-INT210-10-20	INT210	1.0	2.0	8/4/2015	Total 139 PCB cong (excl non-detects)	27.0	
112-133	Mudflat	S-15G-INT210-20-30	INT210	2.0	3.0	8/4/2015	Total 139 PCB cong (excl non-detects)	30.0	
112-133	Mudflat	S-15G-INT210-30-40	INT210	3.0	4.0	8/4/2015	PCB from Immunoassay (Aroclor 1254)	0.7	
112-133	Saltmarsh	S-15G-INT211-00-10	INT211	0.0	1.0	8/6/2015	PCB from Immunoassay (Aroclor 1254)	474	D
112-133	Saltmarsh	S-15G-INT211-10-20	INT211	1.0	2.0	8/6/2015	PCB from Immunoassay (Aroclor 1254)	156	D
112-133	Saltmarsh	S-15G-INT211-20-30	INT211	2.0	3.0	8/6/2015	Total 139 PCB cong (excl non-detects)	37.0	
112-133	Mudflat	S-15G-INT212-00-10	INT212	0.0	1.0	8/4/2015	PCB from Immunoassay (Aroclor 1254)	68	D
112-133	Mudflat	S-15G-INT212-10-15	INT212	1.0	1.5	8/4/2015	PCB from Immunoassay (Aroclor 1254)	0.7	
112-133	Mudflat	S-15G-INT212-15-25	INT212	1.5	2.5	8/4/2015	PCB from Immunoassay (Aroclor 1254)	0.5	U
112-133	Upland	S-15G-INT263-00-10	INT263	0.0	1.0	8/6/2015	PCB from Immunoassay (Aroclor 1254)	182	D
112-133	Upland	S-15G-INT263-10-20	INT263	1.0	2.0	8/6/2015	PCB from Immunoassay (Aroclor 1254)	384	D
112-133	Upland	S-15G-INT263-20-30	INT263	2.0	3.0	8/6/2015	PCB from Immunoassay (Aroclor 1254)	2.2	
112-133	Upland	S-15G-INT264-00-10	INT264	0.0	1.0	8/6/2015	PCB from Immunoassay (Aroclor 1254)	8.2	D
112-133	Upland	S-15G-INT264-10-20	INT264	1.0	2.0	8/6/2015	PCB from Immunoassay (Aroclor 1254)	3.4	
112-133	Mudflat	S-3290-2.1-2.6	S-3290	2.1	2.6	9/21/2001	Total 18 NOAA PCB cong (excl non-detects)	1.6	
112-133	Saltmarsh	S-3294-1.8-2.3	S-3294	1.8	2.3	8/23/2001	Total 18 NOAA PCB cong (excl non-detects)	286	
112-133	Saltmarsh	S-3294-2.3-2.8	S-3294	2.3	2.8	8/23/2001	Total 18 NOAA PCB cong (excl non-detects)	15.9	
112-133	Mudflat	S-3297-1.2-1.7	S-3297	1.2	1.7	8/23/2001	Total 18 NOAA PCB cong (excl non-detects)	11.2	
112-133	Mudflat	S-3297-1.7-2.2	S-3297	1.7	2.2	8/23/2001	Total 18 NOAA PCB cong (excl non-detects)	6.0	
112-133	Upland	S-3304-0.0-1.0	S-3304	0.0	1.0	11/14/2001	Total 18 NOAA PCB cong (excl non-detects)	46.8	

Table 2-1a
Pre-Excavation PCB Characterization Sample Results for Parcel 112-133

Parcel	Type	Sample ID	Station ID	Sample Depth Top (ft)	Sample Depth Bottom (ft)	Sample Date	Description	Total PCB (mg/kg)	Final Qualifier
112-133	Upland	S-3304-1.0-2.0	S-3304	1.0	2.0	11/14/2001	Total 18 NOAA PCB cong (excl non-detects)	8.6	
112-133	Saltmarsh	S-3305-0.0-1.0	S-3305	0.0	1.0	11/14/2001	Total 18 NOAA PCB cong (excl non-detects)	177	
112-133	Saltmarsh	S-3305-1.0-2.0	S-3305	1.0	2.0	11/14/2001	Total 18 NOAA PCB cong (excl non-detects)	9.4	
112-133	Saltmarsh	S-3305-1.0-2.0REP	S-3305	1.0	2.0	11/14/2001	Total 18 NOAA PCB cong (excl non-detects)	21.8	
112-133	Saltmarsh	S-3305-2.0-3.0	S-3305	2.0	3.0	11/14/2001	Total 18 NOAA PCB cong (excl non-detects)	8.1	
112-133	Saltmarsh	S-3315-1.5-2.0	S-3315	1.5	2.0	8/28/2001	Total 18 NOAA PCB cong (excl non-detects)	0.52	
112-133	Saltmarsh	S-3315-2.0-2.5	S-3315	2.0	2.5	8/28/2001	Total 18 NOAA PCB cong (excl non-detects)	0.18	
112-133	Saltmarsh	S-3328-0.0-1.0	S-3328	0.0	1.0	11/15/2001	Total 18 NOAA PCB cong (excl non-detects)	598	
112-133	Saltmarsh	S-3328-1.0-2.0	S-3328	1.0	2.0	11/15/2001	Total 18 NOAA PCB cong (excl non-detects)	83.2	
112-133	Mudflat	S-3329-3.0-3.5	S-3329	3.0	3.5	8/27/2001	Total 18 NOAA PCB cong (excl non-detects)	2.5	
112-133	Saltmarsh	S-3339-.8-1.3	S-3339	0.8	1.3	9/13/2001	Total 18 NOAA PCB cong (excl non-detects)	0.31	
112-133	Mudflat	S-3340-2.8-3.3	S-3340	2.8	3.3	8/27/2001	Total 18 NOAA PCB cong (excl non-detects)	0.91	
112-133	Saltmarsh	S-3808-0.0-1.0	S-3808	0.0	1.0	11/14/2001	Total 18 NOAA PCB cong (excl non-detects)	4160	
112-133	Saltmarsh	S-3808-1.0-2.0	S-3808	1.0	2.0	11/14/2001	Total 18 NOAA PCB cong (excl non-detects)	4160	
112-133	Channel	S-3809-0.0-1.0	S-3809	0.0	1.0	11/14/2001	Total 18 NOAA PCB cong (excl non-detects)	78.0	
112-133	Channel	S-3809-1.0-2.0	S-3809	1.0	2.0	11/14/2001	Total 18 NOAA PCB cong (excl non-detects)	143	
112-133	Saltmarsh	S-0931-1	S-931	0.0	1.0	10/6/2000	Total 18 NOAA PCB cong (excl non-detects)	54.6	
112-133	Saltmarsh	S-0931-2	S-931	1.0	2.0	10/6/2000	Total 18 NOAA PCB cong (excl non-detects)	133	
112-133	Mudflat	S-WS201-17ADD5-00-10	WS201	0.0	1.0	7/18/18	PCB from Immunoassay (Aroclor 1254)	271	
112-133	Mudflat	S-WS201-17ADD5-10-20	WS201	1.0	2.0	7/18/18	PCB from Immunoassay (Aroclor 1254)	0.2	
112-133	Mudflat	S-WS201-17ADD5-20-30	WS201	2.0	3.0	7/18/18	PCB from Immunoassay (Aroclor 1254)	1.0	
112-133	Mudflat	S-WS202-17ADD5-00-10	WS202	0.0	1.0	7/18/18	PCB from Immunoassay (Aroclor 1254)	160	
112-133	Mudflat	S-WS202-17ADD5-10-20	WS202	1.0	2.0	7/18/18	PCB from Immunoassay (Aroclor 1254)	47	
112-133	Mudflat	S-WS202-17ADD5-20-30	WS202	2.0	3.0	7/18/18	PCB from Immunoassay (Aroclor 1254)	58	
112-133	Mudflat	S-WS202-17ADD5-30-37	WS202	3.0	3.7	7/18/18	PCB from Immunoassay (Aroclor 1254)	1.2	
112-133	Mudflat	S-WS203-17ADD5-00-10	WS203	0.0	1.0	7/18/18	PCB from Immunoassay (Aroclor 1254)	179	
112-133	Mudflat	S-WS203-17ADD5-10-20	WS203	1.0	2.0	7/18/18	PCB from Immunoassay (Aroclor 1254)	25	
112-133	Mudflat	S-WS203-17ADD5-20-30	WS203	2.0	3.0	7/18/18	PCB from Immunoassay (Aroclor 1254)	0.3	
112-133	Upland	S-WS204-18FSP13-00-10	WS204	0.0	1.0	11/5/2018	PCB from Immunoassay (Aroclor 1254)	770	JD
112-133	Upland	S-WS204-18FSP13-10-20	WS204	1.0	2.0	11/5/2018	PCB from Immunoassay (Aroclor 1254)	240	JD
112-133	Upland	S-WS204-18FSP13-20-30	WS204	2.0	3.0	11/5/2018	PCB from Immunoassay (Aroclor 1254)	320	JD
112-133	Saltmarsh	S-WS205-18FSP13-00-10	WS205	0.0	1.0	11/5/2018	PCB from Immunoassay (Aroclor 1254)	290	JD
112-133	Saltmarsh	S-WS205-18FSP13-10-20	WS205	1.0	2.0	11/5/2018	PCB from Immunoassay (Aroclor 1254)	95	JD
112-133	Saltmarsh	S-WS205-18FSP13-20-30	WS205	2.0	3.0	11/5/2018	PCB from Immunoassay (Aroclor 1254)	8.7	J
112-133	Saltmarsh	S-WS205-18FSP13-30-40	WS205	3.0	4.0	11/5/2018	PCB from Immunoassay (Aroclor 1254)	9.6	J
112-133	Saltmarsh	S-WS206-18FSP13-10-20	WS206	1.0	2.0	11/5/2018	Total 209 PCB cong (excl non-detects)	165	
112-133	Saltmarsh	S-WS206-18FSP13-20-30	WS206	2.0	3.0	11/5/2018	Total 209 PCB cong (excl non-detects)	23.0	
112-133	Saltmarsh	S-WS206-18FSP13-30-40	WS206	3.0	4.0	11/5/2018	PCB from Immunoassay (Aroclor 1254)	19	JD
112-133	Upland	S-WS207-18FSP13-20-30	WS207	2.0	3.0	11/1/2018	PCB from Immunoassay (Aroclor 1254)	530	JD
112-133	Upland	S-WS207-18FSP13-30-40	WS207	3.0	4.0	11/1/2018	Total 209 PCB cong (excl non-detects)	38.1	

Table 2-1a
Pre-Excavation PCB Characterization Sample Results for Parcel 112-133

Parcel	Type	Sample ID	Station ID	Sample Depth Top (ft)	Sample Depth Bottom (ft)	Sample Date	Description	Total PCB (mg/kg)	Final Qualifier
112-133	Upland	S-WS207-18FSP13-40-50	WS207	4.0	5.0	11/1/2018	Total 209 PCB cong (excl non-detects)	28.8	
112-133	Saltmarsh	S-WS208-18FSP13-00-10	WS208	0.0	1.0	11/5/2018	PCB from Immunoassay (Aroclor 1254)	80	JD
112-133	Saltmarsh	S-WS208-18FSP13-10-20	WS208	1.0	2.0	11/5/2018	PCB from Immunoassay (Aroclor 1254)	84	JD
112-133	Saltmarsh	S-WS208-18FSP13-20-30	WS208	2.0	3.0	11/5/2018	Total 209 PCB cong (excl non-detects)	126	
112-133	Saltmarsh	S-WS208B-18FSP13-30-40	WS208B	3.0	4.0	1/24/2019	Total 209 PCB cong (excl non-detects)	40.1	
112-133	Saltmarsh	S-WS208B-18FSP13-40-50	WS208B	4.0	5.0	1/24/2019	Total 209 PCB cong (excl non-detects)	150	
112-133	Saltmarsh	S-WS208B-18FSP13-50-60	WS208B	5.0	6.0	1/24/2019	Total 209 PCB cong (excl non-detects)	33.3	
112-133	Upland	S-WS209-18FSP13-00-10	WS209	0.0	1.0	11/1/2018	Total 209 PCB cong (excl non-detects)	5.1	
112-133	Upland	S-WS209R-18FSP13-00-10-REP	WS209	0.0	1.0	11/1/2018	Total 209 PCB cong (excl non-detects)	5.5	
112-133	Upland	S-WS209-18FSP13-10-20	WS209	1.0	2.0	11/1/2018	PCB from Immunoassay (Aroclor 1254)	3.8	J
112-133	Upland	S-WS209R-18FSP13-10-20-REP	WS209	1.0	2.0	11/1/2018	PCB from Immunoassay (Aroclor 1254)	2.5	JB
112-133	Saltmarsh	S-WS210-18FSP13-00-10	WS210	0.0	1.0	11/5/2018	PCB from Immunoassay (Aroclor 1254)	86	JD
112-133	Saltmarsh	S-WS210-18FSP13-10-20	WS210	1.0	2.0	11/5/2018	Total 209 PCB cong (excl non-detects)	17.5	
112-133	Upland	S-WS211-18FSP13-00-10	WS211	0.0	1.0	11/1/2018	Total 209 PCB cong (excl non-detects)	29.6	
112-133	Upland	S-WS211-18FSP13-10-20	WS211	1.0	2.0	11/1/2018	PCB from Immunoassay (Aroclor 1254)	6.6	J
112-133	Saltmarsh	S-WS212-18FSP13-00-10	WS212	0.0	1.0	11/5/2018	PCB from Immunoassay (Aroclor 1254)	77	JD
112-133	Saltmarsh	S-WS212-18FSP13-10-20	WS212	1.0	2.0	11/5/2018	Total 209 PCB cong (excl non-detects)	37.7	
112-133	Saltmarsh	S-WS212-18FSP13-20-30	WS212	2.0	3.0	11/5/2018	Total 209 PCB cong (excl non-detects)	6.1	
112-133	Upland	S-WS213-18FSP13-00-10	WS213	0.0	1.0	10/18/2018	Total 209 PCB cong (excl non-detects)	34.1	
112-133	Upland	S-WS213-18FSP13-10-20	WS213	1.0	2.0	10/18/2018	Total 209 PCB cong (excl non-detects)	25.8	
112-133	Saltmarsh	S-WS214-18FSP13-20-30	WS214	2.0	3.0	11/1/2018	PCB from Immunoassay (Aroclor 1254)	64	JD
112-133	Saltmarsh	S-WS214-18FSP13-30-40	WS214	3.0	4.0	11/1/2018	PCB from Immunoassay (Aroclor 1254)	83	JD
112-133	Saltmarsh	S-WS214-18FSP13-40-48	WS214	4.0	4.8	11/1/2018	Total 209 PCB cong (excl non-detects)	237	
112-133	Saltmarsh	S-WS214B-18FSP13-50-60	WS214B	5.0	6.0	1/31/2019	Total 209 PCB cong (excl non-detects)	77.0	
112-133	Upland	S-WS215-18FSP13-00-10	WS215	0.0	1.0	10/18/2018	Total 209 PCB cong (excl non-detects)	1530	
112-133	Upland	S-WS215-18FSP13-10-20	WS215	1.0	2.0	10/18/2018	PCB from Immunoassay (Aroclor 1254)	410	JD
112-133	Upland	S-WS215-18FSP13-20-30	WS215	2.0	3.0	10/18/2018	PCB from Immunoassay (Aroclor 1254)	428	
112-133	Upland	S-WS215B-18FSP13-30-40	WS215B	3.0	4.0	1/31/2019	Total 209 PCB cong (excl non-detects)	1580	
112-133	Saltmarsh	S-WS216-18FSP13-20-30	WS216	2.0	3.0	11/6/2018	PCB from Immunoassay (Aroclor 1254)	680	JD
112-133	Saltmarsh	S-WS216-18FSP13-30-40	WS216	3.0	4.0	11/6/2018	Total 209 PCB cong (excl non-detects)	40.6	
112-133	Upland	S-WS217-18FSP13-00-10	WS217	0.0	1.0	10/31/2018	PCB from Immunoassay (Aroclor 1254)	8.9	J
112-133	Upland	S-WS217-18FSP13-10-20	WS217	1.0	2.0	10/31/2018	PCB from Immunoassay (Aroclor 1254)	2.7	J
112-133	Upland	S-WS218-18FSP13-00-10	WS218	0.0	1.0	10/31/2018	PCB from Immunoassay (Aroclor 1254)	56	JD
112-133	Upland	S-WS218-18FSP13-10-20	WS218	1.0	2.0	10/31/2018	Total 209 PCB cong (excl non-detects)	12.2	
112-133	Upland	S-WS219-18FSP13-00-10	WS219	0.0	1.0	10/18/2018	Total 209 PCB cong (excl non-detects)	4.8	
112-133	Upland	S-WS219-18FSP13-10-20	WS219	1.0	2.0	10/18/2018	PCB from Immunoassay (Aroclor 1254)	4.1	J
112-133	Saltmarsh	S-WS220-18FSP13-20-30	WS220	2.0	3.0	11/5/2018	Total 209 PCB cong (excl non-detects)	12.2	
112-133	Saltmarsh	S-WS220-18FSP13-30-40	WS220	3.0	4.0	11/5/2018	Total 209 PCB cong (excl non-detects)	21.4	
112-133	Saltmarsh	S-WS220-18FSP13-40-48	WS220	4.0	4.8	11/5/2018	Total 209 PCB cong (excl non-detects)	21.4	
112-133	Upland	S-WS221-18FSP13-00-10	WS221	0.0	1.0	10/18/2018	Total 209 PCB cong (excl non-detects)	11.4	

Table 2-1a
Pre-Excavation PCB Characterization Sample Results for Parcel 112-133

Parcel	Type	Sample ID	Station ID	Sample Depth Top (ft)	Sample Depth Bottom (ft)	Sample Date	Description	Total PCB (mg/kg)	Final Qualifier
112-133	Upland	S-WS221-18FSP13-10-20	WS221	1.0	2.0	10/18/2018	PCB from Immunoassay (Aroclor 1254)	6.6	J
112-133	Channel	S-WS222-18FSP13-20-30	WS222	2.0	3.0	11/1/2018	Total 209 PCB cong (excl non-detects)	6.5	
112-133	Channel	S-WS223-18FSP13-00-10	WS223	0.0	1.0	11/1/2018	Total 209 PCB cong (excl non-detects)	0.062	
112-133	Channel	S-WS223-18FSP13-10-20	WS223	1.0	2.0	11/1/2018	PCB from Immunoassay (Aroclor 1254)	2.2	JB
112-133	Upland	S-WS224-18FSP13-00-10	WS224	0.0	1.0	11/1/2018	Total 209 PCB cong (excl non-detects)	166	
112-133	Upland	S-WS224-18FSP13-10-20	WS224	1.0	2.0	11/1/2018	Total 209 PCB cong (excl non-detects)	19.0	
112-133	Upland	S-WS238-18FSP13-00-10	WS238	0.0	1.0	10/31/2018	Total 209 PCB cong (excl non-detects)	2.8	
112-133	Upland	S-WS238-18FSP13-10-20	WS238	1.0	2.0	10/31/2018	PCB from Immunoassay (Aroclor 1254)	3.2	J
112-133	Upland	S-WS239-18FSP13-00-10	WS239	0.0	1.0	10/18/2018	Total 209 PCB cong (excl non-detects)	17.7	
112-133	Upland	S-WS239-18FSP13-10-20	WS239	1.0	2.0	10/18/2018	Total 209 PCB cong (excl non-detects)	139	
112-133	Upland	S-WS239B-18FSP13-20-30	WS239B	2.0	3.0	1/10/2019	Total 209 PCB cong (excl non-detects)	3.7	
112-133	Upland	S-WS239B-18FSP13-30-40	WS239B	3.0	4.0	1/10/2019	PCB from Immunoassay (Aroclor 1254)	3.5	J
112-133	Upland	S-WS239B-18FSP13-40-50	WS239B	4.0	5.0	1/10/2019	PCB from Immunoassay (Aroclor 1254)	1.6	JB
112-133	Upland	S-WS240-18FSP13-00-10	WS240	0.0	1.0	1/31/2019	Total 209 PCB cong (excl non-detects)	14.9	
112-133	Upland	S-WS240-18FSP13-10-20	WS240	1.0	2.0	1/31/2019	PCB from Immunoassay (Aroclor 1254)	3.3	J
112-133	Upland	S-WS241-18FSP13-00-10	WS241	0.0	1.0	1/9/2019	PCB from Immunoassay (Aroclor 1254)	190	JD
112-133	Upland	S-WS241R-18FSP13-00-10-REP	WS241	0.0	1.0	1/9/2019	PCB from Immunoassay (Aroclor 1254)	270	JD
112-133	Upland	S-WS241-18FSP13-10-20	WS241	1.0	2.0	1/9/2019	PCB from Immunoassay (Aroclor 1254)	9.5	J
112-133	Upland	S-WS241R-18FSP13-10-20-REP	WS241	1.0	2.0	1/9/2019	PCB from Immunoassay (Aroclor 1254)	9.6	J
112-133	Upland	S-WS241-18FSP13-20-30	WS241	2.0	3.0	1/9/2019	PCB from Immunoassay (Aroclor 1254)	6.2	J
112-133	Upland	S-WS241R-18FSP13-20-30-REP	WS241	2.0	3.0	1/9/2019	PCB from Immunoassay (Aroclor 1254)	5.4	J
112-133	Upland	S-WS242-18FSP13-00-10	WS242	0.0	1.0	1/9/2019	Total 209 PCB cong (excl non-detects)	4.2	
112-133	Upland	S-WS242-18FSP13-10-20	WS242	1.0	2.0	1/9/2019	PCB from Immunoassay (Aroclor 1254)	3.9	J

Notes:
Pre-excavation confirmatory congener samples are shaded green.
D - reported value is from a dilution; U - not detected; J - estimated value; B - contaminant detected in the blank.
Total 18 NOAA PCB congeners multiplied by a factor of 2.6.

Table 2-1b
Pre-Excavation PCB Characterization Sample Results for Parcel 111-146

Parcel	Type	Sample ID	Station ID	Sample Depth Top (ft)	Sample Depth Bottom (ft)	Sample Date	Description	Total PCB (mg/kg)	Final Qualifier
111-146	Upland	S-15L-INT214-00-10	INT214	0.0	1.0	7/14/2015	PCB from Immunoassay (Aroclor 1254)	3.8	
111-146	Upland	S-15L-INT214-10-20	INT214	1.0	2.0	7/14/2015	PCB from Immunoassay (Aroclor 1254)	0.5	U
111-146	Upland	S-15L-INT215-00-10	INT215	0.0	1.0	7/14/2015	PCB from Immunoassay (Aroclor 1254)	4.3	
111-146	Upland	S-15L-INT215-10-20	INT215	1.0	2.0	7/14/2015	PCB from Immunoassay (Aroclor 1254)	0.5	U
111-146	Upland	S-15L-INT216-00-10	INT216	0.0	1.0	7/14/2015	Total 139 PCB cong (excl non-detects)	88.0	
111-146	Upland	S-15L-INT216-10-20	INT216	1.0	2.0	7/14/2015	PCB from Immunoassay (Aroclor 1254)	3.8	
111-146	Upland	S-15L-INT217-00-10	INT217	0.0	1.0	7/14/2015	PCB from Immunoassay (Aroclor 1254)	4.9	
111-146	Upland	S-15L-INT217-10-20	INT217	1.0	2.0	7/14/2015	PCB from Immunoassay (Aroclor 1254)	2.8	
111-146	Upland	S-15L-INT218-00-10	INT218	0.0	1.0	7/14/2015	PCB from Immunoassay (Aroclor 1254)	2.6	
111-146	Upland	S-15L-INT218-10-20	INT218	1.0	2.0	7/14/2015	PCB from Immunoassay (Aroclor 1254)	1.2	
111-146	Upland	S-15L-INT219-00-10	INT219	0.0	1.0	7/14/2015	Total 139 PCB cong (excl non-detects)	13.0	
111-146	Upland	S-15L-INT219-10-20	INT219	1.0	2.0	7/14/2015	Total 139 PCB cong (excl non-detects)	22.0	
111-146	Upland	S-15L-INT219-10-20-REP	INT219	1.0	2.0	7/14/2015	Total 139 PCB cong (excl non-detects)	40.0	
111-146	Upland	S-15L-INT219-20-30	INT219	2.0	3.0	7/14/2015	PCB from Immunoassay (Aroclor 1254)	7.0	
111-146	Upland	S-15L-INT219-20-30-REP	INT219	2.0	3.0	7/14/2015	PCB from Immunoassay (Aroclor 1254)	8.2	
111-146	Mudflat	S-15L-INT220-00-10	INT220	0.0	1.0	7/14/2015	PCB from Immunoassay (Aroclor 1254)	42	D
111-146	Mudflat	S-15L-INT220-10-20	INT220	1.0	2.0	7/14/2015	PCB from Immunoassay (Aroclor 1254)	3.4	
111-146	Upland	S-15L-INT221-00-10	INT221	0.0	1.0	7/14/2015	PCB from Immunoassay (Aroclor 1254)	1.7	
111-146	Upland	S-15L-INT221-10-20	INT221	1.0	2.0	7/14/2015	PCB from Immunoassay (Aroclor 1254)	1.2	
111-146	Upland	S-15L-INT222-00-10	INT222	0.0	1.0	7/15/2015	PCB from Immunoassay (Aroclor 1254)	519	D
111-146	Upland	S-15L-INT222-00-10-REP	INT222	0.0	1.0	7/15/2015	PCB from Immunoassay (Aroclor 1254)	379	D
111-146	Upland	S-15L-INT222-10-20	INT222	1.0	2.0	7/15/2015	PCB from Immunoassay (Aroclor 1254)	4.1	
111-146	Upland	S-15L-INT222-10-20-REP	INT222	1.0	2.0	7/15/2015	PCB from Immunoassay (Aroclor 1254)	6.8	
111-146	Upland	S-15L-INT222-20-30	INT222	2.0	3.0	7/15/2015	PCB from Immunoassay (Aroclor 1254)	1.5	
111-146	Upland	S-15L-INT222-20-30-REP	INT222	2.0	3.0	7/15/2015	PCB from Immunoassay (Aroclor 1254)	1.3	
111-146	Saltmarsh	S-15G-INT223-00-10	INT223	0.0	1.0	8/5/2015	PCB from Immunoassay (Aroclor 1254)	89	D
111-146	Saltmarsh	S-15G-INT223-10-20	INT223	1.0	2.0	8/5/2015	PCB from Immunoassay (Aroclor 1254)	0.6	
111-146	Saltmarsh	S-3350-0.0-0.5	S-3350	0.0	0.5	11/14/2001	Total 18 NOAA PCB cong (excl non-detects)	312	
111-146	Saltmarsh	S-3350-0.0-0.5REP	S-3350	0.0	0.5	11/14/2001	Total 18 NOAA PCB cong (excl non-detects)	57.2	
111-146	Saltmarsh	S-3350-.5-1.0	S-3350	0.5	1.0	11/14/2001	Total 18 NOAA PCB cong (excl non-detects)	17.7	
111-146	Saltmarsh	S-3350-1.0-2.0	S-3350	1.0	2.0	11/14/2001	Total 18 NOAA PCB cong (excl non-detects)	0.86	
111-146	Saltmarsh	S-3350-2.0-3.0	S-3350	2.0	3.0	11/14/2001	Total 18 NOAA PCB cong (excl non-detects)	0.070	
111-146	Saltmarsh	S-3351-0.0-1.0	S-3351	0.0	1.0	11/14/2001	Total 18 NOAA PCB cong (excl non-detects)	936	
111-146	Saltmarsh	S-3351-1.0-2.0	S-3351	1.0	2.0	11/14/2001	Total 18 NOAA PCB cong (excl non-detects)	2.6	
111-146	Saltmarsh	S-3351-2.0-3.0	S-3351	2.0	3.0	11/14/2001	Total 18 NOAA PCB cong (excl non-detects)	9.1	
111-146	Saltmarsh	S-0927-1	S-927	0.0	1.0	10/11/2000	Total PCB Congeners (sum CONG x factor)	53.0	
111-146	Saltmarsh	S-0927-2	S-927	1.0	2.0	10/11/2000	Total PCB Congeners (sum CONG x factor)	230	
111-146	Saltmarsh	S-0927-3	S-927	2.0	3.0	10/11/2000	Total PCB Congeners (sum CONG x factor)	110	
111-146	Upland	S-0928-1	S-928	0.0	1.0	10/11/2000	Total PCB Congeners (sum CONG x factor)	4.8	
111-146	Saltmarsh	S-0929-1	S-929	0.0	1.0	10/10/2000	Total PCB Congeners (sum CONG x factor)	400	

Table 2-1b
Pre-Excavation PCB Characterization Sample Results for Parcel 111-146

Parcel	Type	Sample ID	Station ID	Sample Depth Top (ft)	Sample Depth Bottom (ft)	Sample Date	Description	Total PCB (mg/kg)	Final Qualifier
111-146	Saltmarsh	S-0929-2	S-929	1.0	2.0	10/10/2000	Total PCB Congeners (sum CONG x factor)	1100	
111-146	Mudflat	S-15D-VC19-00-08	VC19	0.0	0.8	12/4/2015	PCB from Immunoassay (Aroclor 1254)	305	D
111-146	Mudflat	S-15D-VC19-08-13	VC19	0.8	1.3	12/4/2015	Total 139 PCB cong (excl non-detects)	0.98	
111-146	Mudflat	S-15D-VC19-13-18	VC19	1.3	1.8	12/4/2015	PCB from Immunoassay (Aroclor 1254)	0.5	
111-146	Mudflat	S-15D-VI5-00-05	VI5	0.0	0.5	12/7/2015	PCB from Immunoassay (Aroclor 1254)	6.3	D
111-146	Mudflat	S-15D-VI5-05-10	VI5	0.5	1.0	12/7/2015	PCB from Immunoassay (Aroclor 1254)	1.0	
111-146	Mudflat	S-15D-VO16-00-05	VO16	0.0	0.5	12/4/2015	PCB from Immunoassay (Aroclor 1254)	137	D
111-146	Mudflat	S-15D-VO16-05-10	VO16	0.5	1.0	12/4/2015	PCB from Immunoassay (Aroclor 1254)	1.8	
111-146	Saltmarsh	S-WS225-18FSP13-00-10	WS225	0.0	1.0	11/1/2018	PCB from Immunoassay (Aroclor 1254)	360	JD
111-146	Saltmarsh	S-WS225-18FSP13-10-20	WS225	1.0	2.0	11/1/2018	Total 209 PCB cong (excl non-detects)	34.0	
111-146	Upland	S-WS226-18FSP13-00-10	WS226	0.0	1.0	11/1/2018	Total 209 PCB cong (excl non-detects)	5.94	
111-146	Upland	S-WS226-18FSP13-10-20	WS226	1.0	2.0	11/1/2018	PCB from Immunoassay (Aroclor 1254)	8.0	J
111-146	Mudflat	S-WS227-18FSP13-00-10	WS227	0.0	1.0	11/2/2018	PCB from Immunoassay (Aroclor 1254)	6.7	J
111-146	Mudflat	S-WS227-18FSP13-10-20	WS227	1.0	2.0	11/2/2018	PCB from Immunoassay (Aroclor 1254)	2.5	J
111-146	Upland	S-WS228-18FSP13-00-10	WS228	0.0	1.0	11/6/2018	Total 209 PCB cong (excl non-detects)	4.16	
111-146	Upland	S-WS228-18FSP13-10-20	WS228	1.0	2.0	11/6/2018	Total 209 PCB cong (excl non-detects)	25.9	
111-146	Saltmarsh	S-WS229-18FSP13-00-10	WS229	0.0	1.0	11/1/2018	PCB from Immunoassay (Aroclor 1254)	260	JD
111-146	Saltmarsh	S-WS229-18FSP13-10-20	WS229	1.0	2.0	11/1/2018	PCB from Immunoassay (Aroclor 1254)	81	JD
111-146	Saltmarsh	S-WS229-18FSP13-20-30	WS229	2.0	3.0	11/1/2018	Total 209 PCB cong (excl non-detects)	10.3	
111-146	Mudflat	S-WS230-18FSP13-00-10	WS230	0.0	1.0	10/31/2018	PCB from Immunoassay (Aroclor 1254)	8.9	J
111-146	Mudflat	S-WS230-18FSP13-10-20	WS230	1.0	2.0	10/31/2018	PCB from Immunoassay (Aroclor 1254)	3.1	J
111-146	Saltmarsh	S-WS231-18FSP13-00-10	WS231	0.0	1.0	11/1/2018	PCB from Immunoassay (Aroclor 1254)	330	JD
111-146	Saltmarsh	S-WS231-18FSP13-10-20	WS231	1.0	2.0	11/1/2018	Total 209 PCB cong (excl non-detects)	65.6	
111-146	Saltmarsh	S-WS231-18FSP13-20-30	WS231	2.0	3.0	11/1/2018	Total 209 PCB cong (excl non-detects)	34.1	
111-146	Mudflat	S-WS232-18FSP13-00-10	WS232	0.0	1.0	11/6/2018	Total 209 PCB cong (excl non-detects)	31.4	
111-146	Mudflat	S-WS232-18FSP13-10-20	WS232	1.0	2.0	11/6/2018	PCB from Immunoassay (Aroclor 1254)	17	JD
111-146	Upland	S-WS233-18FSP13-00-10	WS233	0.0	1.0	10/18/2018	Total 209 PCB cong (excl non-detects)	0.91	
111-146	Upland	S-WS233-18FSP13-10-20	WS233	1.0	2.0	10/18/2018	Total 209 PCB cong (excl non-detects)	24.4	
111-146	Saltmarsh	S-WS234-18FSP13-10-20	WS234	1.0	2.0	11/6/2018	Total 209 PCB cong (excl non-detects)	33.8	
111-146	Upland	S-WS235-18FSP13-00-10	WS235	0.0	1.0	10/18/2018	Total 209 PCB cong (excl non-detects)	0.588	
111-146	Upland	S-WS235-18FSP13-10-20	WS235	1.0	2.0	10/18/2018	PCB from Immunoassay (Aroclor 1254)	4.1	J
111-146	Saltmarsh	S-WS236-18FSP13-00-10	WS236	0.0	1.0	10/18/2018	PCB from Immunoassay (Aroclor 1254)	100	JD
111-146	Saltmarsh	S-WS236-18FSP13-10-20	WS236	1.0	2.0	10/18/2018	PCB from Immunoassay (Aroclor 1254)	93	JD
111-146	Saltmarsh	S-WS236-18FSP13-20-30	WS236	2.0	3.0	10/18/2018	PCB from Immunoassay (Aroclor 1254)	60	JD
111-146	Saltmarsh	S-WS236-18FSP13-30-40	WS236	3.0	4.0	10/18/2018	PCB from Immunoassay (Aroclor 1254)	81	
111-146	Saltmarsh	S-WS236B-18FSP13-40-50	WS236B	4.0	5.0	1/9/2019	Total 209 PCB cong (excl non-detects)	4.54	
111-146	Saltmarsh	S-WS236B-18FSP13-50-60	WS236B	5.0	6.0	1/9/2019	PCB from Immunoassay (Aroclor 1254)	6.7	J
111-146	Upland	S-WS237-18FSP13-00-10	WS237	0.0	1.0	10/18/2018	Total 209 PCB cong (excl non-detects)	0.599	
111-146	Upland	S-WS237-18FSP13-10-20	WS237	1.0	2.0	10/18/2018	PCB from Immunoassay (Aroclor 1254)	0.8	JB
111-146	Saltmarsh	S-WS243-18FSP13-10-20	WS243	1.0	2.0	1/9/2019	Total 209 PCB cong (excl non-detects)	20.9	

Table 2-1b
Pre-Excavation PCB Characterization Sample Results for Parcel 111-146

Parcel	Type	Sample ID	Station ID	Sample Depth Top (ft)	Sample Depth Bottom (ft)	Sample Date	Description	Total PCB (mg/kg)	Final Qualifier
111-146	Saltmarsh	S-WS243-18FSP13-20-30	WS243	2.0	3.0	1/9/2019	PCB from Immunoassay (Aroclor 1254)	6.9	J
111-146	Saltmarsh	S-WS243-18FSP13-30-40	WS243	3.0	4.0	1/9/2019	PCB from Immunoassay (Aroclor 1254)	3.1	J
111-146	Saltmarsh	S-WS301-18FSP13-00-10	WS301	0.0	1.0	10/16/2018	Total 209 PCB cong (excl non-detects)	74.1	
111-146	Saltmarsh	S-WS301-18FSP13-10-20	WS301	1.0	2.0	10/16/2018	Total 209 PCB cong (excl non-detects)	46.9	
111-146	Mudflat	S-WS302-18FSP13-00-10	WS302	0.0	1.0	10/16/2018	PCB from Immunoassay (Aroclor 1254)	0.6	JB
111-146	Mudflat	S-WS302-18FSP13-10-20	WS302	1.0	2.0	10/16/2018	PCB from Immunoassay (Aroclor 1254)	1.8	JB
111-146	Upland	S-WS303-18FSP13-00-10	WS303	0.0	1.0	10/16/2018	Total 209 PCB cong (excl non-detects)	1.31	
111-146	Upland	S-WS303-18FSP13-10-15	WS303	1.0	1.5	10/16/2018	PCB from Immunoassay (Aroclor 1254)	4.5	J
111-146	Mudflat	S-WS304-18FSP13-00-10	WS304	0.0	1.0	10/16/2018	PCB from Immunoassay (Aroclor 1254)	64	JD
111-146	Mudflat	S-WS304-18FSP13-10-20	WS304	1.0	2.0	10/16/2018	PCB from Immunoassay (Aroclor 1254)	94	JD
111-146	Mudflat	S-WS304-18FSP13-20-27	WS304	2.0	2.7	10/16/2018	PCB from Immunoassay (Aroclor 1254)	4.1	
111-146	Saltmarsh	S-WS305-18FSP13-00-10	WS305	0.0	1.0	11/2/2018	Total 209 PCB cong (excl non-detects)	33.0	
111-146	Saltmarsh	S-WS305-18FSP13-10-20	WS305	1.0	2.0	11/2/2018	Total 209 PCB cong (excl non-detects)	6.55	
111-146	Saltmarsh	S-WS306-18FSP13-00-10	WS306	0.0	1.0	11/2/2018	PCB from Immunoassay (Aroclor 1254)	74	JD
111-146	Saltmarsh	S-WS306-18FSP13-10-20	WS306	1.0	2.0	11/2/2018	PCB from Immunoassay (Aroclor 1254)	300	JD
111-146	Saltmarsh	S-WS306-18FSP13-20-30	WS306	2.0	3.0	11/2/2018	PCB from Immunoassay (Aroclor 1254)	98	JD
111-146	Saltmarsh	S-WS306-18FSP13-30-40	WS306	3.0	4.0	11/2/2018	Total 209 PCB cong (excl non-detects)	58.2	
111-146	Saltmarsh	S-WS306-18FSP13-40-50	WS306	4.0	5.0	11/2/2018	Total 209 PCB cong (excl non-detects)	52.0	
111-146	Saltmarsh	S-WS306B-18FSP13-50-60	WS306B	5.0	6.0	1/24/2019	Total 209 PCB cong (excl non-detects)	43.2	
111-146	Saltmarsh	S-WS306B-18FSP13-60-70	WS306B	6.0	7.0	1/24/2019	PCB from Immunoassay (Aroclor 1254)	24	JD
111-146	Upland	S-WS307-18FSP13-00-10	WS307	0.0	1.0	10/16/2018	Total 209 PCB cong (excl non-detects)	0.196	
111-146	Upland	S-WS307-18FSP13-10-20	WS307	1.0	2.0	10/16/2018	PCB from Immunoassay (Aroclor 1254)	3.1	J
111-146	Saltmarsh	S-WS308-18FSP13-10-20	WS308	1.0	2.0	11/2/2018	PCB from Immunoassay (Aroclor 1254)	190	JD
111-146	Saltmarsh	S-WS308-18FSP13-20-30	WS308	2.0	3.0	11/2/2018	PCB from Immunoassay (Aroclor 1254)	490	JD
111-146	Saltmarsh	S-WS308-18FSP13-30-40	WS308	3.0	4.0	11/2/2018	Total 209 PCB cong (excl non-detects)	69.3	
111-146	Saltmarsh	S-WS308-18FSP13-40-50	WS308	4.0	5.0	11/2/2018	Total 209 PCB cong (excl non-detects)	34.3	
111-146	Upland	S-WS309-18FSP13-00-10	WS309	0.0	1.0	10/16/2018	Total 209 PCB cong (excl non-detects)	1.38	
111-146	Upland	S-WS309-18FSP13-10-20	WS309	1.0	2.0	10/16/2018	PCB from Immunoassay (Aroclor 1254)	4.0	J
111-146	Mudflat	S-WS310-18FSP13-00-10	WS310	0.0	1.0	11/6/2018	Total 209 PCB cong (excl non-detects)	54.4	
111-146	Mudflat	S-WS310-18FSP13-10-20	WS310	1.0	2.0	11/6/2018	PCB from Immunoassay (Aroclor 1254)	5.5	J
111-146	Saltmarsh	S-WS311-18FSP13-00-10	WS311	0.0	1.0	11/6/2018	PCB from Immunoassay (Aroclor 1254)	74	JD
111-146	Saltmarsh	S-WS311-18FSP13-10-20	WS311	1.0	2.0	11/6/2018	PCB from Immunoassay (Aroclor 1254)	92	JD
111-146	Saltmarsh	S-WS311-18FSP13-20-30	WS311	2.0	3.0	11/6/2018	Total 209 PCB cong (excl non-detects)	3.44	
111-146	Saltmarsh	S-WS311-18FSP13-30-40	WS311	3.0	4.0	11/6/2018	PCB from Immunoassay (Aroclor 1254)	4.6	J
111-146	Upland	S-WS312-18FSP13-00-10	WS312	0.0	1.0	10/16/2018	Total 209 PCB cong (excl non-detects)	39.1	
111-146	Upland	S-WS312-18FSP13-10-20	WS312	1.0	2.0	10/16/2018	PCB from Immunoassay (Aroclor 1254)	4.2	J
111-146	Saltmarsh	S-WS313-18FSP13-00-10	WS313	0.0	1.0	11/5/2018	PCB from Immunoassay (Aroclor 1254)	80	JD
111-146	Saltmarsh	S-WS313-18FSP13-10-20	WS313	1.0	2.0	11/5/2018	Total 209 PCB cong (excl non-detects)	37.5	
111-146	Saltmarsh	S-WS313-18FSP13-20-30	WS313	2.0	3.0	11/5/2018	Total 209 PCB cong (excl non-detects)	9.08	
111-146	Saltmarsh	S-WS313-18FSP13-30-40	WS313	3.0	4.0	11/5/2018	PCB from Immunoassay (Aroclor 1254)	1.6	

Table 2-1b
Pre-Excavation PCB Characterization Sample Results for Parcel 111-146

Parcel	Type	Sample ID	Station ID	Sample Depth Top (ft)	Sample Depth Bottom (ft)	Sample Date	Description	Total PCB (mg/kg)	Final Qualifier
111-146	Saltmarsh	S-WS313-18FSP13-40-50	WS313	4.0	5.0	11/5/2018	PCB from Immunoassay (Aroclor 1254)	0.6	
111-146	Saltmarsh	S-WS321-18FSP13-00-10	WS321	0.0	1.0	1/24/2019	Total 209 PCB cong (excl non-detects)	54.8	
111-146	Saltmarsh	S-WS321-18FSP13-10-20	WS321	1.0	2.0	1/24/2019	PCB from Immunoassay (Aroclor 1254)	23	JD
111-146	Upland	S-WS322-18FSP13-00-10	WS322	0.0	1.0	1/31/2019	Total 209 PCB cong (excl non-detects)	6.31	
111-146	Upland	S-WS322-18FSP13-10-20	WS322	1.0	2.0	1/31/2019	PCB from Immunoassay (Aroclor 1254)	0.5	J

Notes:
Pre-excavation confirmatory congener samples are shaded green.
D - reported value is from a dilution; U - not detected; J - estimated value; B - contaminant detected in blank.
Total 18 NOAA PCB congeners multiplied by a factor of 2.6.

Table 2-1c
Pre-Excavation PCB Characterization Sample Results for Parcel 111-98

Parcel	Type	Sample ID	Station ID	Sample Depth Top (ft)	Sample Depth Bottom (ft)	Sample Date	Description	Total PCB (mg/kg)	Final Qualifier
111-98	Upland	S-15L-INT225-00-10	INT225	0.0	1.0	7/15/2015	PCB from Immunoassay (Aroclor 1254)	3.6	
111-98	Upland	S-15L-INT225-10-19	INT225	1.0	1.9	7/15/2015	PCB from Immunoassay (Aroclor 1254)	4.7	
111-98	Upland	S-15L-INT226-00-10	INT226	0.0	1.0	7/15/2015	Total 139 PCB cong (excl non-detects)	50.0	
111-98	Upland	S-15L-INT226-10-20	INT226	1.0	2.0	7/15/2015	Total 139 PCB cong (excl non-detects)	28.0	
111-98	Upland	S-15L-INT226-20-30	INT226	2.0	3.0	7/15/2015	PCB from Immunoassay (Aroclor 1254)	1.0	
111-98	Saltmarsh	S-15G-INT227-00-10	INT227	0.0	1.0	8/13/2015	PCB from Immunoassay (Aroclor 1254)	210	D
111-98	Saltmarsh	S-15G-INT227-10-20	INT227	1.0	2.0	8/13/2015	PCB from Immunoassay (Aroclor 1254)	2687	D
111-98	Saltmarsh	S-15G-INT227-20-30	INT227	2.0	3.0	8/13/2015	Total 139 PCB cong (excl non-detects)	23.0	
111-98	Saltmarsh	S-15G-INT227-30-37	INT227	3.0	3.7	8/13/2015	PCB from Immunoassay (Aroclor 1254)	18	D
111-98	Upland	S-WS314-18FSP13-00-10	WS314	0.0	1.0	10/31/2018	Total 209 PCB cong (excl non-detects)	1.23	
111-98	Upland	S-WS314-18FSP13-10-20	WS314	1.0	2.0	10/31/2018	PCB from Immunoassay (Aroclor 1254)	2.2	J
111-98	Upland	S-WS315-18FSP13-00-10	WS315	0.0	1.0	10/31/2018	Total 209 PCB cong (excl non-detects)	3.82	
111-98	Upland	S-WS315-18FSP13-10-20	WS315	1.0	2.0	10/31/2018	PCB from Immunoassay (Aroclor 1254)	8.1	J
111-98	Upland	S-WS316-18FSP13-00-10	WS316	0.0	1.0	10/31/2018	Total 209 PCB cong (excl non-detects)	5.99	
111-98	Upland	S-WS316-18FSP13-10-20	WS316	1.0	2.0	10/31/2018	PCB from Immunoassay (Aroclor 1254)	3.5	J

Notes:
Pre-excavation confirmatory congener samples are shaded green.
D - reported value is from a dilution; J - estimated value
Total 18 NOAA PCB congeners multiplied by a factor of 2.6.

Table 2-1d
Pre-Excavation PCB Characterization Sample Results for Parcel 111-155

Parcel	Type	Sample ID	Station ID	Sample Depth Top (ft)	Sample Depth Bottom (ft)	Sample Date	Description	Total PCB (mg/kg)	Final Qualifier
111-155	Upland	S-15L-INT228-00-10	INT228	0.0	1.0	7/13/2015	PCB from Immunoassay (Aroclor 1254)	0.5	U
111-155	Upland	S-15L-INT228-10-20	INT228	1.0	2.0	7/13/2015	PCB from Immunoassay (Aroclor 1254)	1.1	
111-155	Upland	S-15L-INT228-20-30	INT228	2.0	3.0	7/13/2015	PCB from Immunoassay (Aroclor 1254)	5.0	
111-155	Saltmarsh	S-15G-INT229-00-10	INT229	0.0	1.0	8/28/2015	Total 139 PCB cong (excl non-detects)	12.0	
111-155	Saltmarsh	S-15G-INT229-10-20	INT229	1.0	2.0	8/28/2015	PCB from Immunoassay (Aroclor 1254)	7.4	
111-155	Saltmarsh	S-15G-INT229-20-30	INT229	2.0	3.0	8/28/2015	PCB from Immunoassay (Aroclor 1254)	4.5	
111-155	Saltmarsh	S-15G-INT229-30-40	INT229	3.0	4.0	8/28/2015	PCB from Immunoassay (Aroclor 1254)	0.8	
111-155	Saltmarsh	S-15G-INT229-40-50	INT229	4.0	5.0	8/28/2015	PCB from Immunoassay (Aroclor 1254)	1.2	
111-155	Saltmarsh	S-WS317-18FSP13-00-10	WS317	0.0	1.0	11/5/2018	Total 209 PCB cong (excl non-detects)	23.5	
111-155	Saltmarsh	S-WS317-18FSP13-10-20	WS317	1.0	2.0	11/5/2018	Total 209 PCB cong (excl non-detects)	2.71	
111-155	Mudflat	S-WS318-18FSP13-00-10	WS318	0.0	1.0	10/31/2018	Total 209 PCB cong (excl non-detects)	35.9	
111-155	Mudflat	S-WS318-18FSP13-10-20	WS318	1.0	2.0	10/31/2018	Total 209 PCB cong (excl non-detects)	28.6	
111-155	Mudflat	S-WS318-18FSP13-20-27	WS318	2.0	2.7	10/31/2018	PCB from Immunoassay (Aroclor 1254)	8.0	
111-155	Upland	S-WS319-18FSP13-00-10	WS319	0.0	1.0	10/31/2018	Total 209 PCB cong (excl non-detects)	0.0988	
111-155	Upland	S-WS319-18FSP13-10-20	WS319	1.0	2.0	10/31/2018	PCB from Immunoassay (Aroclor 1254)	1.9	J
111-155	Mudflat	S-WS320-18FSP13-00-10	WS320	0.0	1.0	11/5/2018	PCB from Immunoassay (Aroclor 1254)	5.9	J
111-155	Mudflat	S-WS320-18FSP13-10-20	WS320	1.0	2.0	11/5/2018	PCB from Immunoassay (Aroclor 1254)	6.4	J

Notes:
Pre-excavation confirmatory congener samples are shaded green.
U - not detected; J - estimated value
Total 18 NOAA PCB congeners multiplied by a factor of 2.6.

Table 3-1a
Compliance Survey Locations for West Zone 2-3 Parcel 112-133

Parcel	Station ID	Location	Easting	Northing	Design Elevation	Post-Excavation Elevation	Δ (ft)
112-133	INT205	Sidewall	815196.0	2706308.0	5.5	TBD	TBD
112-133	WS209	Sidewall	815307.7	2706456.4	4.6	TBD	TBD
112-133	WS211	Sidewall	815242.1	2706370.9	5.0	TBD	TBD
112-133	WS213	Sidewall	815122.5	2706225.1	5.8	TBD	TBD
112-133	WS219	Sidewall	815090.4	2706165.8	3.7	TBD	TBD
112-133	WS221	Sidewall	815056.0	2706110.2	3.9	TBD	TBD
112-133	WS242	Sidewall	815121.7	2706030.9	4.5	TBD	TBD
112-133	WS244	Sidewall	815412.0	2706619.0	4.5	TBD	TBD
112-133	WS245	Sidewall	815360.0	2706539.0	4.3	TBD	TBD
112-133	WS246	Sidewall	815008.0	2706192.0	5.7	TBD	TBD
112-133	WS247	Sidewall	814976.0	2706119.0	5.9	TBD	TBD
112-133	WS251	Sidewall	815484.0	2706600.0	-3.2	TBD	TBD
112-133	WS252	Sidewall	815427.0	2706524.0	-3.2	TBD	TBD
112-133	WS253	Sidewall	815368.0	2706447.0	-3.2	TBD	TBD
112-133	WS254	Sidewall	815312.0	2706376.0	-3.2	TBD	TBD
112-133	WS255	Sidewall	815253.0	2706305.0	-3.3	TBD	TBD
112-133	WS256	Sidewall	815260.0	2706217.0	-3.4	TBD	TBD
112-133	WS257	Sidewall	815316.0	2706133.0	-3.3	TBD	TBD
112-133	WS258	Sidewall	815273.0	2706097.0	-3.1	TBD	TBD
112-133	WS259	Sidewall	815023.0	2706063.0	2.7	TBD	TBD
112-133	S-3305	Floor	815273.0	2706372.0	0.3	TBD	TBD
112-133	S-3340	Floor	815205.0	2706097.0	-2.7	TBD	TBD
112-133	WS201	Floor	815226.7	2706033.2	-2.8	TBD	TBD
112-133	WS202	Floor	815224.1	2706155.5	-4.5	TBD	TBD
112-133	WS203	Floor	815125.6	2706124.0	-2.9	TBD	TBD
112-133	WS206	Floor	815433.2	2706569.3	-1.8	TBD	TBD
112-133	WS208B	Floor	815380.1	2706497.6	-2.4	TBD	TBD
112-133	WS210	Floor	815323.3	2706415.0	-1.3	TBD	TBD
112-133	WS212	Floor	815239.9	2706320.3	-0.6	TBD	TBD
112-133	WS215B	Floor	815191.4	2706254.7	0.8	TBD	TBD
112-133	WS216	Floor	815174.3	2706211.3	-1.7	TBD	TBD
112-133	WS218	Floor	814998.5	2706174.7	4.6	TBD	TBD
112-133	WS220	Floor	815273.1	2706153.6	-2.2	TBD	TBD
112-133	WS224	Floor	815130.4	2706042.8	2.7	TBD	TBD
112-133	WS239B	Floor	814987.1	2706117.2	3.7	TBD	TBD

Notes:
Elevation measurements at sidewall locations will be taken at the base of the sidewall (bottom of the excavation).
Locations WS244 - WS247 and WS251 - WS259 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 3-1b
Compliance Survey Locations for West Zone 2-3 Parcel 111-146

Parcel	Station ID	Location	Easting	Northing	Design Elevation	Post-Excavation Elevation	Δ (ft)
111-146	WS226	Sidewall	815174.2	2705919.0	3.3	TBD	TBD
111-146	WS228	Sidewall	815082.0	2705879.5	3.6	TBD	TBD
111-146	WS248	Sidewall	815195.0	2705997.0	3.3	TBD	TBD
111-146	WS249	Sidewall	814995.0	2705806.0	2.4	TBD	TBD
111-146	WS250	Sidewall	814916.0	2705728.0	3.2	TBD	TBD
111-146	WS260	Sidewall	815252.0	2706007.0	-3.0	TBD	TBD
111-146	WS261	Sidewall	815249.0	2705911.0	-1.4	TBD	TBD
111-146	WS262	Sidewall	815191.0	2705869.0	-1.5	TBD	TBD
111-146	WS263	Sidewall	815160.0	2705821.0	-4.2	TBD	TBD
111-146	WS264	Sidewall	815065.0	2705813.0	-3.4	TBD	TBD
111-146	WS265	Sidewall	814981.0	2705751.0	-3.0	TBD	TBD
111-146	WS312	Sidewall	814745.8	2705282.1	4.5	TBD	TBD
111-146	WS323	Sidewall	814882.0	2705629.0	3.8	TBD	TBD
111-146	WS324	Sidewall	814874.0	2705535.0	2.6	TBD	TBD
111-146	WS325	Sidewall	814844.0	2705449.0	1.8	TBD	TBD
111-146	WS326	Sidewall	814774.0	2705379.0	4.3	TBD	TBD
111-146	WS328	Sidewall	814928.0	2705672.0	-3.1	TBD	TBD
111-146	WS329	Sidewall	814928.0	2705567.0	-3.3	TBD	TBD
111-146	WS330	Sidewall	814885.0	2705470.0	-3.5	TBD	TBD
111-146	WS331	Sidewall	814835.0	2705388.0	-3.2	TBD	TBD
111-146	WS332	Sidewall	814852.0	2705295.0	-3.2	TBD	TBD
111-146	S-3351	Floor	815237.0	2705992.0	-1.1	TBD	TBD
111-146	WS225	Floor	815245.5	2705953.0	0.0	TBD	TBD
111-146	WS229	Floor	815145.5	2705865.7	-1.6	TBD	TBD
111-146	WS231	Floor	815063.7	2705847.2	-1.2	TBD	TBD
111-146	WS234	Floor	815004.2	2705793.1	-1.0	TBD	TBD
111-146	WS236B	Floor	814937.1	2705725.5	-3.9	TBD	TBD
111-146	WS243	Floor	815206.9	2705897.3	0.1	TBD	TBD
111-146	WS301	Floor	814906.3	2705641.3	-1.0	TBD	TBD
111-146	WS305	Floor	814895.7	2705553.3	-0.8	TBD	TBD
111-146	WS306B	Floor	814861.2	2705468.7	-5.3	TBD	TBD
111-146	WS308	Floor	814810.1	2705389.0	-2.9	TBD	TBD
111-146	WS311	Floor	814768.8	2705332.3	-0.9	TBD	TBD
111-146	WS313	Floor	814851.3	2705270.8	-1.0	TBD	TBD

Notes:
Elevation measurements at sidewall locations will be taken at the base of the sidewall (bottom of the excavation).
Locations WS248 - WS250, WS260 - WS265, WS323 - WS326 and WS328 - WS332 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 3-1c
Compliance Survey Locations for West Zone 2-3 Parcels 111-98 and 111-155

Parcel	Station ID	Location	Easting	Northing	Design Elevation	Post-Excavation Elevation	Δ (ft)
111-98	WS327	Sidewall	814918.0	2705126.0	0.9	TBD	TBD
111-98	INT227	Floor	814929.0	2705112.0	-2.0	TBD	TBD
111-98	WS333	Floor	814908.0	2705139.0	5.1	TBD	TBD
111-155	WS317	Sidewall	814927.2	2705064.2	0.4	TBD	TBD
111-155	WS334	Sidewall	814943.0	2705086.0	-3.2	TBD	TBD
111-155	WS318	Floor	814939.9	2705036.2	-2.9	TBD	TBD

Notes:
Elevation measurements at sidewall locations will be taken at the base of the sidewall (bottom of the excavation).
Locations WS327, WS333 and WS334 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 7-1a
Proposed Restoration Acreages by Cover Type for Parcel 112-133

Habitat Type	Existing Pre-Construction Area [acres]	Proposed Area of Restoration [acres]
High Marsh	0.155	0.155
Low Marsh	0.469	0.469
Scrub-Shrub Marsh	0.112	0.112
Mudflat/Subtidal	0.602	0.602
Upland	0.291	0.291
Upland/Lawn	0.127	0.127
TOTAL	**1.754**	**1.754**

Table 7-1b
Proposed Restoration Acreages by Cover Type for Parcel 111-146

Habitat Type	Existing Pre-Construction Area [acres]	Proposed Area of Restoration [acres]
High Marsh	0.000	0.059
Beach	0.052	0.052
Low Marsh	0.506	0.503
Scrub-Shrub Marsh	0.219	0.219
Mudflat/Subtidal	0.278	0.278
Phragmites	0.027	0.000
Upland	0.095	0.066
TOTAL	**1.177**	**1.177**

Table 7-1c
Proposed Restoration Acreages by Cover Type for Parcels 111-98 111-155

Habitat Type	Existing Pre-Construction Area [acres]	Proposed Area of Restoration [acres]
Low Marsh	0.029	0.029
Mudflat/Subtidal	0.028	0.028
Upland/Lawn	0.006	0.006
TOTAL	**0.063**	**0.063**

Table 7-2a
Parcel 112-133 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"	105	Area 1
Iva frutescens	high-tide bush	36"	149	Area 2
Juniperus virginiana	eastern red cedar	48"	16	Area 3
Iva frutescens	high-tide bush	36"	77	Area 4
Rosa virginiana	Virginia rose	36"	29	Area 5
Kalmia latifolia	mountain laurel	48"	48	Area 6
Iva frutescens	high-tide bush	36"	39	Area 7
Juniperus virginiana	eastern red cedar	48"	3	Area 8
Acer rubrum	red maple	120"	1	
Rosa virginiana	Virginia rose	36"	9	Area 9
Clethra alnifolia	sweet pepperbush	36"	9	
Juniperus virginiana	eastern red cedar	48"	12	Area 10
Iva frutescens	high-tide bush	36"	21	
Juniperus virginiana	eastern red cedar	48"	20	Area 11
Iva frutescens	high-tide bush	36"	36	
Clethra alnifolia	sweet pepperbush	36"	22	Area 12
Iva frutescens	high-tide bush	36"	186	Area 13
Iva frutescens	high-tide bush	36"	89	Area 14
Juniperus virginiana	eastern red cedar	48"	16	Area 15
Iva frutescens	high-tide bush	36"	27	
Iva frutescens	high-tide bush	36"	24	Area 16
Rosa virginiana	Virginia rose	36"	21	Area 17
Iva frutescens	high-tide bush	36"	21	
Iva frutescens	high-tide bush	36"	113	Area 18
Juniperus virginiana	eastern red cedar	48"	22	Area 19
Quercus rubra	northern red oak	120"	3	
Iva frutescens	high-tide bush	36"	19	Area 20
Juniperus virginiana	eastern red cedar	48"	37	Area 21
Quercus rubra	northern red oak	120"	6	
Acer rubrum	red maple	120"	6	
Iva frutescens	high-tide bush	36"	124	Area 22
Total Proposed Trees/Shrubs for Parcel 112-133			**1,310**	

Table 7-2b
Parcel 111-146 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"	63	Area 1
Iva frutescens	high-tide bush	36"	73	Area 2
Iva frutescens	high-tide bush	36"	57	Area 3
Lindera benzoin	spicebush	36"	57	
Rosa virginiana	Virginia rose	36"	57	
Lindera benzoin	spicebush	36"	30	Area 4
Iva frutescens	high-tide bush	36"	30	
Solidago bicolor	white goldenrod	36"	195	Area 5
Acer rubrum	red maple	120"	70	
Total Proposed Trees/Shrubs for Parcel 111-146			**632**	

Table 7-2c
Parcels 111-98/111-155 Shrub Restoration Summary

Scientific Name	Common Name	On-Center Spacing Requirements (inches)	Number of Proposed Plants	Shrub Restoration Area
Rosa virginiana	Virginia rose	36"	52	Area 1
Rhus glabra	smooth sumac	36"	52	Area 1
Lindera benzoin	spicebush	36"	52	Area 1
Juniperus virginiana	eastern red cedar	48"	29	Area 1
Lindera benzoin	spicebush	36"	88	Area 2
Solidago bicolor	white goldenrod	36"	88	Area 2
Total Proposed Trees/Shrubs for Parcels 111-98/111-155			**361**	

Note:
A portion of Shrub Restoration Area 1 may not require restoration if not disturbed by remediation activities.

Appendix A

West Zone 2-3

Pre-Excavation Tree and Shrub Inventories

Appendix A
Parcel 112-133

JACOBS

Memorandum

Subject	Parcel 112-133 Native Tree and Shrub Inventory	**Project Name**	New Bedford Harbor Superfund Site
Attention	Marie Esten USACE	**Project No.**	35BG6000
From	Jessica Rebholz/Kim Degutis	**Document Control No.**	ACE-J23-35BG6000-M1-0029
Date	22 May 2019		

Attachments: Figure 1 Parcel 112-133 Pre-Excavation Tree and Shrub Inventory, Tables 3-1 and 3-2 (inventory results)

1.0 Background

Jacobs conducted an inventory of existing trees and shrubs on Parcel 112-133 in the intertidal remediation area (Figure 1) on 24 April 2018. 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 112-133 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 tables included in Section 3 below.

3.0 Results

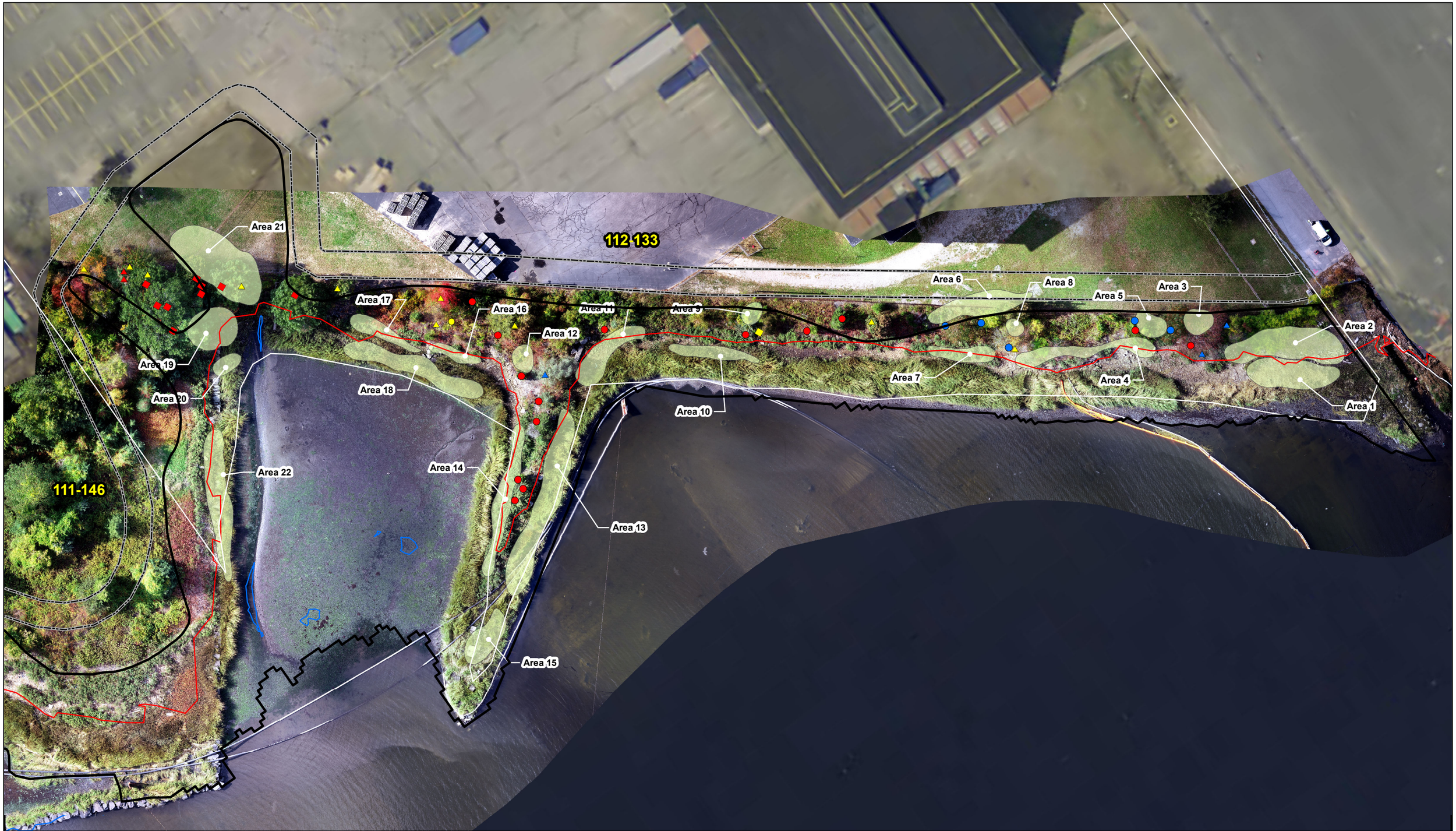
Eastern red cedar (*Juniperus virginiana*) is the dominant tree type within Parcel 112-133. Most of the trees identified on-site are considered native and non-invasive. A list of the trees identified is provided in Table 3-1. For each species, the number of individual trees noted was calculated as an indication of the relative dominance of the species on-site. A total of 45 trees were identified.

Twenty-two (22) shrub areas were inventoried within Parcel 112-133. High-tide bush (*Iva frutescens*), poison ivy (*Toxicodendron radicans)*, and eastern red cedar (*Juniperus* virginiana) were found throughout Parcel 112-133 (Table 3-2).

Each area where shrubs were identified and inventoried is identified on Figure 1. Shrubs were classified by genus and species. Table 3-2 also identifies whether the shrub occurred in upland or wetland, as well as any notes regarding specific species.

4.0 Conclusion

The species makeup of Parcel 112-133 is comprised almost entirely of native, non-invasive trees and shrubs, with high-tide bush (*Iva frutescens*), poison ivy (*Toxicodendron radicans)*, and eastern red cedar (*Juniperus* virginiana) being the dominant shrubs and eastern red cedar (*Juniperus virginiana*) being the dominant tree.



Legend

- Red cedar
- White oak
- White pine
- Red maple
- White poplar
- Black cherry
- Proposed Access Road
- Silky willow
- Northern catalpa
- MLLW
- MHHW
- Parcel Boundary
- 0-1' Excavation Depth
- Inventoried Shrub Areas

0 50 100 Feet

Basemap Data Source:
Green Seal Environmental, MassGIS

May 2019

Vertical Datum:
NAVD88

JACOBS

Parcel 112-133 Pre-Excavation Tree and Shrub Inventory

New Bedford Harbor Superfund Site

Figure 1

Table 3-1
Existing Tree Inventory for Parcel 112-133

Scientific Name	Common Name	Tree Count (≥3" DBH)	Invasive[1]	Native/Non-Native[2]
Prunus serotina	black cherry	1	no	native, county documented
Catalpa speciosa	northern catalpa	5	no	native, state documented
Salix sericea	silky willow	3	no	native, county documented
Populus alba	white poplar	1	yes	non-native, county documented
Acer rubrum	red maple	10	no	native, county documented
Pinus strobus	white pine	2	no	native, county documented
Quercus alba	white oak	9	no	native, county documented
Juniperus virginiana	eastern red cedar	14	no	native, county documented
	Total	**45**		

[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]PLANTS Database | USDA PLANTS, USDA-NRCS, plants.sc.egov.usda.gov/java/.

Table 3-2
Existing Shrub Cover for Parcel 112-133, All Areas

Scientific Name	Common Name	Percent Areal Cover	Native/Non-Native[2]	Wetland/Upland	Area
Iva frutescens	high-tide bush	25%	native, county documented	wetland	Area 1
Toxicodendron radicans	poison ivy	45%	native, county documented	upland	Area 2
Juniperus virginiana	eastern red cedar	20%	native, county documented	upland	Area 3
Iva frutescens	high-tide bush	30%	native, county documented	wetland	Area 4
Rosa virginiana	Virginia rose	5%	native, county documented	upland	Area 5
Toxicodendron radicans	poison ivy	45%	native, county documented	upland	Area 6
Iva frutescens	high-tide bush	30%	native, county documented	wetland	Area 7
Juniperus virginiana	eastern red cedar	2%	native, county documented	upland	Area 8
Acer rubrum	red maple	5%	native, county documented	wetland	
Rosa virginiana	Virginia rose	50%	native, county documented	upland	Area 9
Toxicodendron radicans	poison ivy	40%	native, county documented	upland	
Iva frutescens	high-tide bush	40%	native, county documented	wetland	Area 10
Juniperus virginiana	eastern red cedar	10%	native, county documented	upland	
Juniperus virginiana	eastern red cedar	10%	native, county documented	upland	Area 11
Toxicodendron radicans	poison ivy	50%	native, county documented	upland	
Toxicodendron radicans	poison ivy	15%	native, county documented	upland	Area 12
Iva frutescens	high-tide bush	40%	native, county documented	wetland	Area 13
Iva frutescens	high-tide bush	80%	native, county documented	wetland	Area 14

Table 3-2
Existing Shrub Cover for Parcel 112-133, All Areas

Scientific Name	Common Name	Percent Areal Cover	Native/Non-Native[2]	Wetland/Upland	Area
Toxicodendron radicans	poison ivy	20%	native, county documented	upland	Area 15
Juniperus virginiana	eastern red cedar	20%	native, county documented	upland	
Toxicodendron radicans	poison ivy	75%	native, county documented	upland	Area 16
Smilax glauca	glaucous-leaved greenbriar	10%	native, county documented	upland	Area 17
Rosa virginiana	Virginia rose	65%	native, county documented	upland	
Iva frutescens	high-tide bush	15%	native, county documented	wetland	Area 18
Juniperus virginiana	eastern red cedar	5%	native, county documented	upland	Area 19
Quercus rubra	northern red oak	35%	native, county documented	upland	
Iva frutescens	high-tide bush	10%	native, county documented	wetland	Area 20
Toxicodendron radicans	poison ivy	30%	native, county documented	upland	Area 21
Acer rubrum	red maple	15%	native, county documented	wetland	
Juniperus virginiana	eastern red cedar	3%	native, county documented	upland	
Quercus rubra	northern red oak	15%	native, county documented	upland	
Iva frutescens	high-tide bush	30%	native, county documented	wetland	Area 22

[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 A
Parcel 111-146

JACOBS

Memorandum

Subject	Parcel 111-146 Native Tree and Shrub Inventory	**Project Name**	New Bedford Harbor Superfund Site
Attention	Marie Esten USACE	**Project No.**	35BG6000
From	Jessica Rebholz/Kim Degutis	**Document Control No.**	ACE-J23-35BG6000-M1-0029
Date	21 May 2019		

Attachments: Figure 1 Parcel 111-146 Pre-Excavation Tree and Shrub Inventory, Tables 3-1 through 3-6 (inventory results)

1.0 Background

Jacobs conducted an inventory of existing trees and shrubs on Parcel 111-146 in the intertidal remediation area (Figure 1) on 14 February 2019. 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.

At the time of the inventory, proposed access roads had not been defined. Therefore, there are several trees within the proposed access road (Figure 1) that were not captured at the time of the inventory. During access road construction, the contractor will replace trees cleared resulting from access road construction in-kind.

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 111-146 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*) and northern red maple (*Acer rubrum*) are the dominant tree species within Parcel 111-146. The majority of 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. A total of 22 trees were identified.

Five shrub areas were inventoried within Parcel 111-146. High-tide bush (*Iva frutescens*) and red maple (*Acer rubrum*) were the dominant shrub species within Parcel 111-146 (Tables 3-2 through 3-6).

Each area where shrubs were identified and inventoried is identified on Figure 1. Shrubs were classified by genus and species. Tables 3-2 through 3-6 also identify whether the shrub occurred in upland or wetland, as well as any notes regarding specific species.

4.0 Conclusion

The species makeup of Parcel 111-146 is comprised almost entirely of native, non-invasive trees and shrubs, with high-tide bush (*Iva frutescens*) and red maple (*Acer rubrum*) being the dominant shrubs and eastern red cedar (*Juniperus virginiana*) and northern red maple (*Acer rubrum*) being the dominant trees.

Legend

- Autumn olive
- Eastern red cedar
- American elm
- MLLW
- Common juniper
- Northern red maple
- Staghorn sumac
- MHHW
- Tree of heaven
- White oak
- White pine
- 0-1' Excavation Area
- Parcel Boundary
- Proposed Access Road
- Inventoried Shrub Areas

0 50 100 Feet

Basemap Data Source:
Green Seal Environmental, MassGIS

Vertical Datum:
NAVD88

Parcel 111-146 Pre-Excavation Tree and Shrub Inventory

New Bedford Harbor Superfund Site

JACOBS

Figure 1

Table 3-1
Existing Tree Inventory for Parcel 111-146

Scientific Name	Common Name	Tree Count (≥3" DBH)	Invasive[1]	Native/Non-Native[2]
Elaeagnus umbellata	autumn olive	2	yes	non-native, county documented
Ulmus americana	American elm	1	no	native, county documented
Juniperus communis	common juniper	1	no	native, county documented
Ailanthus altissima	tree of heaven	1	yes	non-native, county documented
Rhus typhina	staghorn sumac	1	no	native, county documented
Acer rubrum	northern red maple	7	no	native, county documented
Pinus strobus	white pine	1	no	native, county documented
Quercus alba	white oak	1	no	native, county documented
Juniperus virginiana	eastern red cedar	7	no	native, county documented
	Total	**22**		

[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]PLANTS Database | USDA PLANTS, USDA-NRCS, plants.sc.egov.usda.gov/java/.

Table 3-2
Existing Shrub Cover for Parcel 111-146, Area 1

Scientific Name	Common Name	Area 1 Percent Areal Cover	Invasive[1]	Native/Non-Native[2]	Upland/Wetland
Iva frutescens	high-tide 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 3-3
Existing Shrub Cover for Parcel 111-146, Area 2

Scientific Name	Common Name	Area 2 Percent Areal Cover	Invasive[1]	Native/Non-Native[2]	Upland/Wetland
Lonicera morrowii	Morrow's honeysuckle	30%	yes	non-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 3-4
Existing Shrub Cover for Parcel 111-146, Area 3

Scientific Name	Common Name	Area 3 Percent Areal Cover	Invasive[1]	Native/Non-Native[2]	Upland/Wetland
Iva frutescens	high-tide bush	20%	no	native, county documented	wetland
Rosa virginiana	Virginia rose	2%	no	native, county documented	both
Elaeagnus umbellata	autumn olive	2%	yes	non-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 3-5
Existing Shrub Cover for Parcel 111-146, Area 4

Scientific Name	Common Name	Area 4 Percent Areal Cover	Invasive[1]	Native/Non-Native[2]	Upland/Wetland
Toxicodendron radicans	poison ivy	5%	no	native, county documented	both
Iva frutescens	high-tide bush	80%	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 3-6
Existing Shrub Cover for Parcel 111-146, Area 5

Scientific Name	Common Name	Area 5 Percent Areal Cover	Invasive[1]	Native/Non-Native[2]	Upland/Wetland
Toxicodendron radicans	poison ivy	2%	no	native, county documented	both
Solidago bicolor	white goldenrod	15%	no	native, county documented	upland
Acer rubrum	red maple	80%	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 A
Parcels 111-98 & 111-155

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Memorandum

Subject	Parcels 111-98 and 111-155 Native Tree and Shrub Inventory	**Project Name**	New Bedford Harbor Superfund Site
Attention	Marie Esten USACE	**Project No.**	35BG6000
From	Jessica Rebholz/Kim Degutis	**Document Control No.**	ACE-J23-35BG6000-M1-0029
Date	21 May 2019		

Attachments: Figure 1 Parcels 111-98 and 111-155 Pre-Excavation Tree and Shrub Inventory, Tables 3-1 through 3-3 (inventory results)

1.0 Background

Jacobs conducted an inventory of existing trees and shrubs on Parcels 111-98 and 111-155 in the intertidal remediation area (Figure 1) on 14 February 2019. 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 Parcels 111-98 and 111-155 and identified all trees within the proposed excavation area. 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

Staghorn sumac (*Rhus typhina*) is the dominant tree type within Parcels 111-98 and 111-155. All 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. A total of 4 trees were identified.

Two shrub areas were inventoried within Parcels 111-98 and 111-155. Staghorn sumac (*Rhus typhina*) is the dominant shrub species in Area 1, while white goldenrod (*Solidago bicolor*) is the dominant shrub species in Area 2 (Tables 3-2 and 3-3).

Each area where shrubs were identified and inventoried is identified on Figure 1. Shrubs were classified by genus and species. Tables 3-2 and 3-3 also identify whether the shrub occurred in upland or wetland, as well as any notes regarding specific species.

4.0 Conclusion

The species makeup of Parcels 111-98 and 111-155 is comprised almost entirely of native, non-invasive trees and shrubs, with Staghorn sumac (*Rhus typhina*) and white goldenrod (*Solidago bicolor*) being the dominant shrubs and Staghorn sumac (*Rhus typhina*) being the dominant tree.

111 155

105-170

Area 2

111 98

Area 1

111-146

Legend

- Red maple
- Staghorn sumac
- MLLW
- MHHW
- 0-1' Excavation Area
- Proposed Access Road
- Inventoried Shrub Areas
- Parcel Boundary

0 25 50 Feet

July 2019

Basemap Data Source:
Green Seal Environmental, MassGIS

Vertical Datum:
NAVD88

Parcels 111-98/111-155 Pre-Excavation Tree and Shrub Inventory

New Bedford Harbor Superfund Site

JACOBS

Figure 1

Table 3-1
Existing Tree Inventory for Parcels 111-98/111-155

Scientific Name	Common Name	Tree Count (≥3" DBH)	Invasive[1]	Native/Non-Native[2]
Rhus typhina	staghorn sumac	3	no	native, county documented
Acer rubrum	northern red maple	1	no	native, county documented
	Total	**4**		

[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]PLANTS Database | USDA PLANTS, USDA-NRCS, plants.sc.egov.usda.gov/java/.

Table 3-2
Existing Shrub Cover for Parcels 111-98/111-155, Area 1

Scientific Name	Common Name	Area 1 Percent Areal Cover	Invasive[1]	Native/Non-Native[2]	Upland/Wetland
Elaeagnus umbellata	autumn olive	2%	yes	non-native, county documented	upland
Rosa virginiana	Virginia rose	2%	no	native, county documented	upland
Toxicodendron radicans	poison ivy	10%	no	native, county documented	both
Rhus typhina	staghorn sumac	45%	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

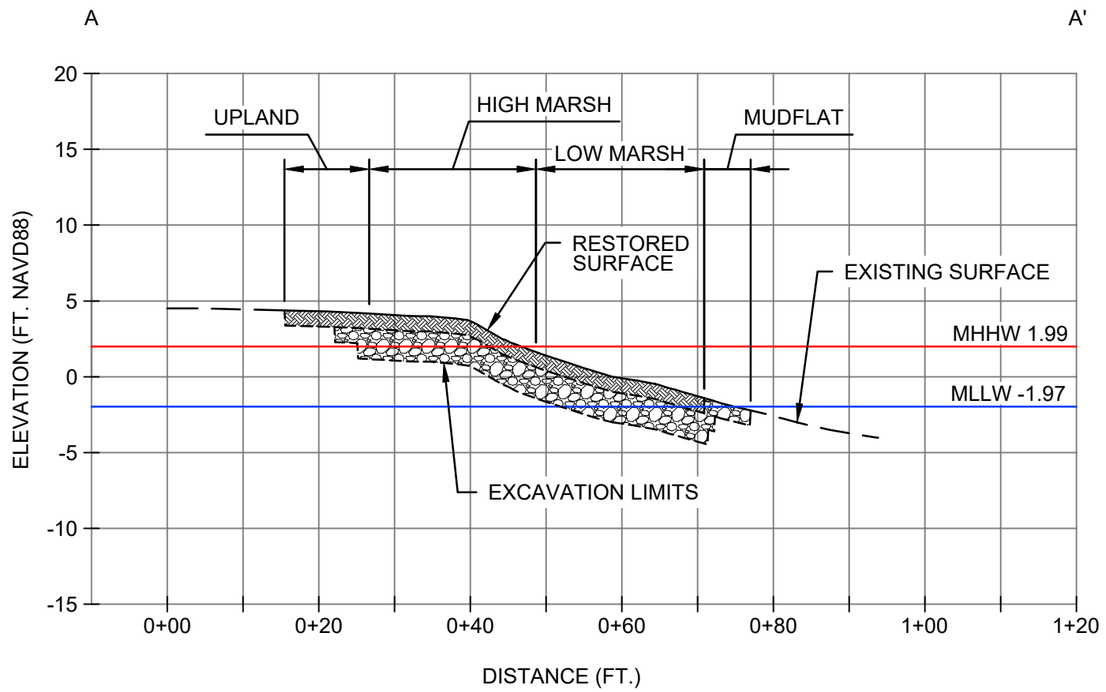
Table 3-3
Existing Shrub Cover for Parcels 111-98/111-155, Area 2

Scientific Name	Common Name	Area 2 Percent Areal Cover	Invasive[1]	Native/Non-Native[2]	Upland/Wetland
Solidago bicolor	white goldenrod	35%	no	native, county documented	upland
Elaeagnus umbellata	autumn olive	10%	yes	non-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

Appendix B
Cross Sections



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.

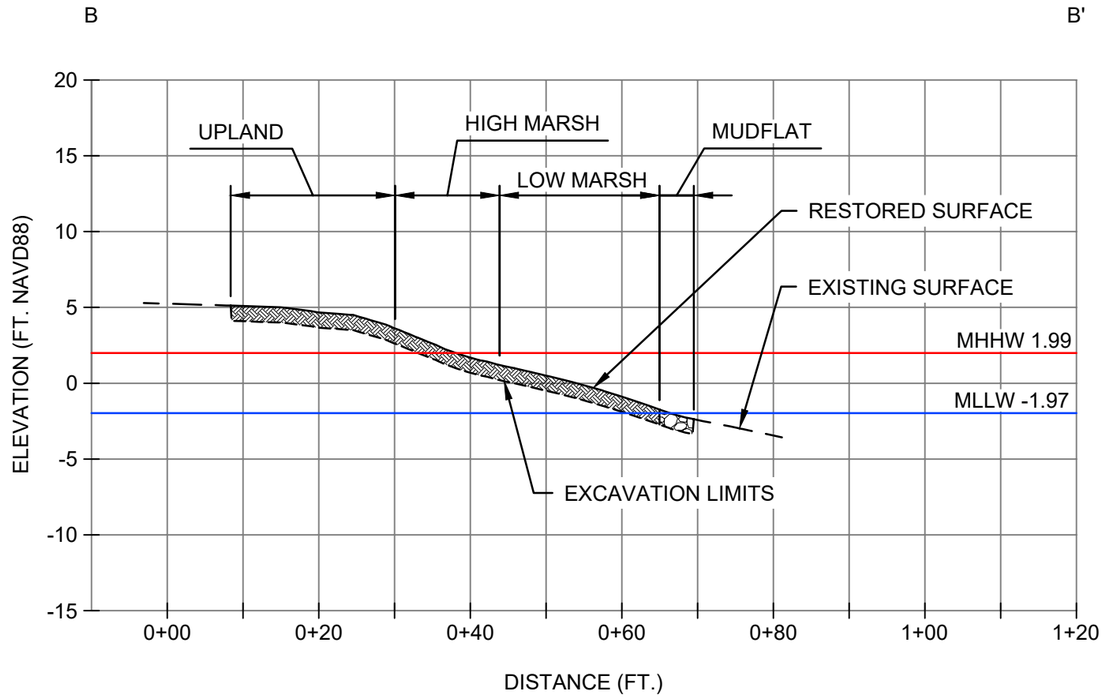
JACOBS®

WEST ZONE 2
SECTION A-A'

NEW BEDFORD HARBOR

MAY 2019 | FIGURE 1

BY:ENGLANLL LAST SAVED:5/28/2019 CREATED:5/20/2019



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.

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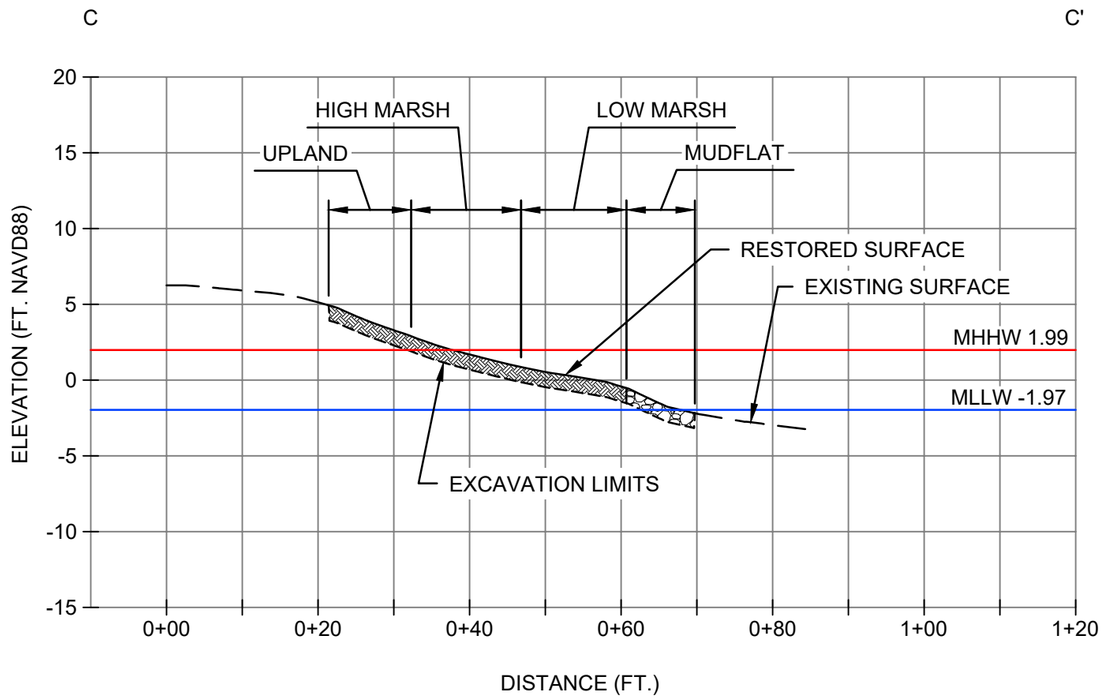
WEST ZONE 2
SECTION B-B'

NEW BEDFORD HARBOR

MAY 2019 | FIGURE 2

BY:ENGLANLL LAST SAVED:5/21/2019 CREATED:5/20/2019



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.

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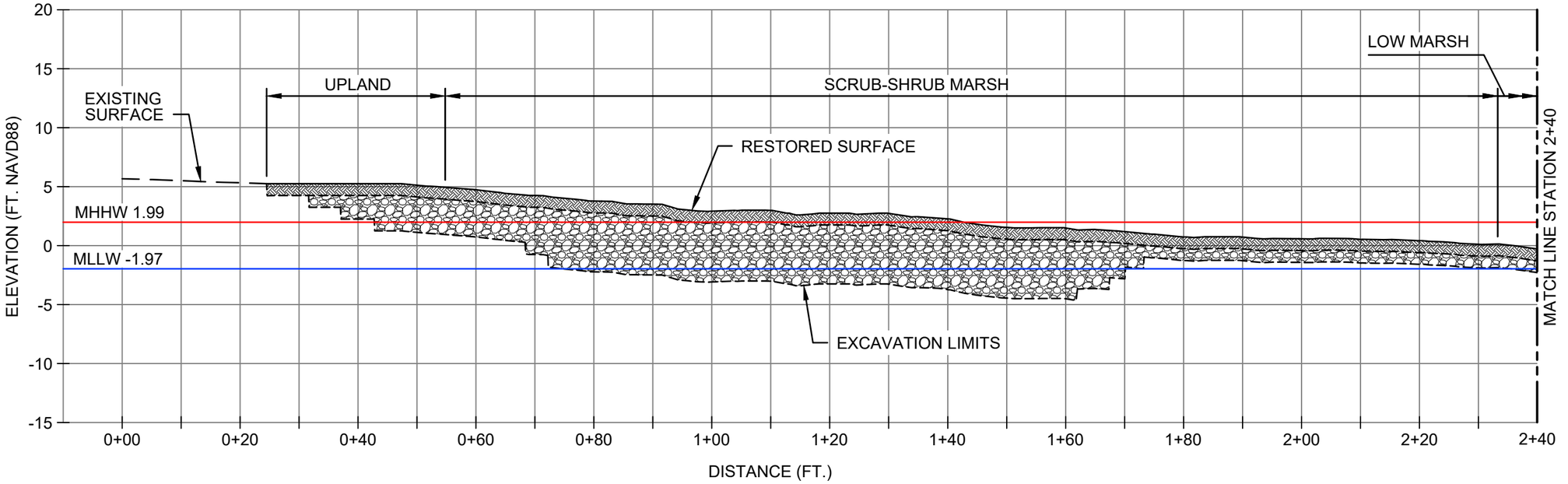
WEST ZONE 2
SECTION C-C'

NEW BEDFORD HARBOR

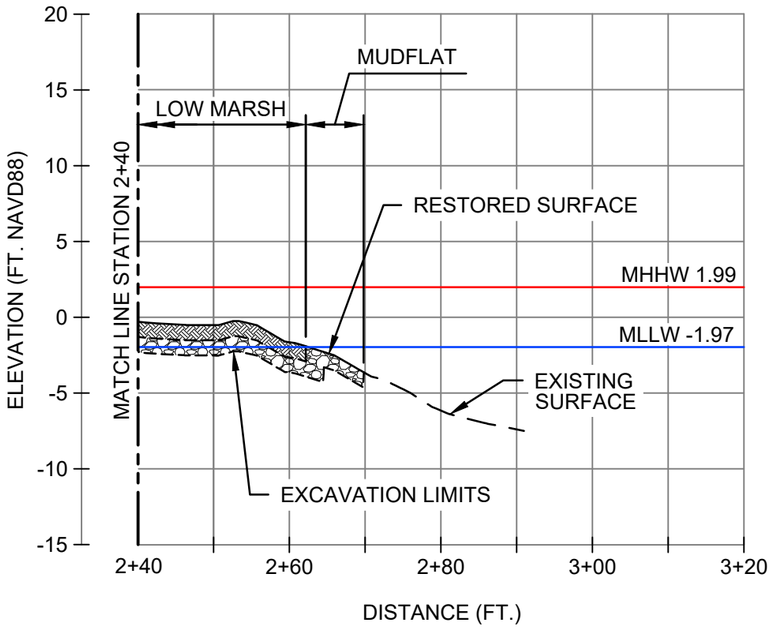
MAY 2019 | FIGURE 3

BY:ENGLANLL LAST SAVED:5/21/2019 CREATED:5/20/2019

D



D'



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.

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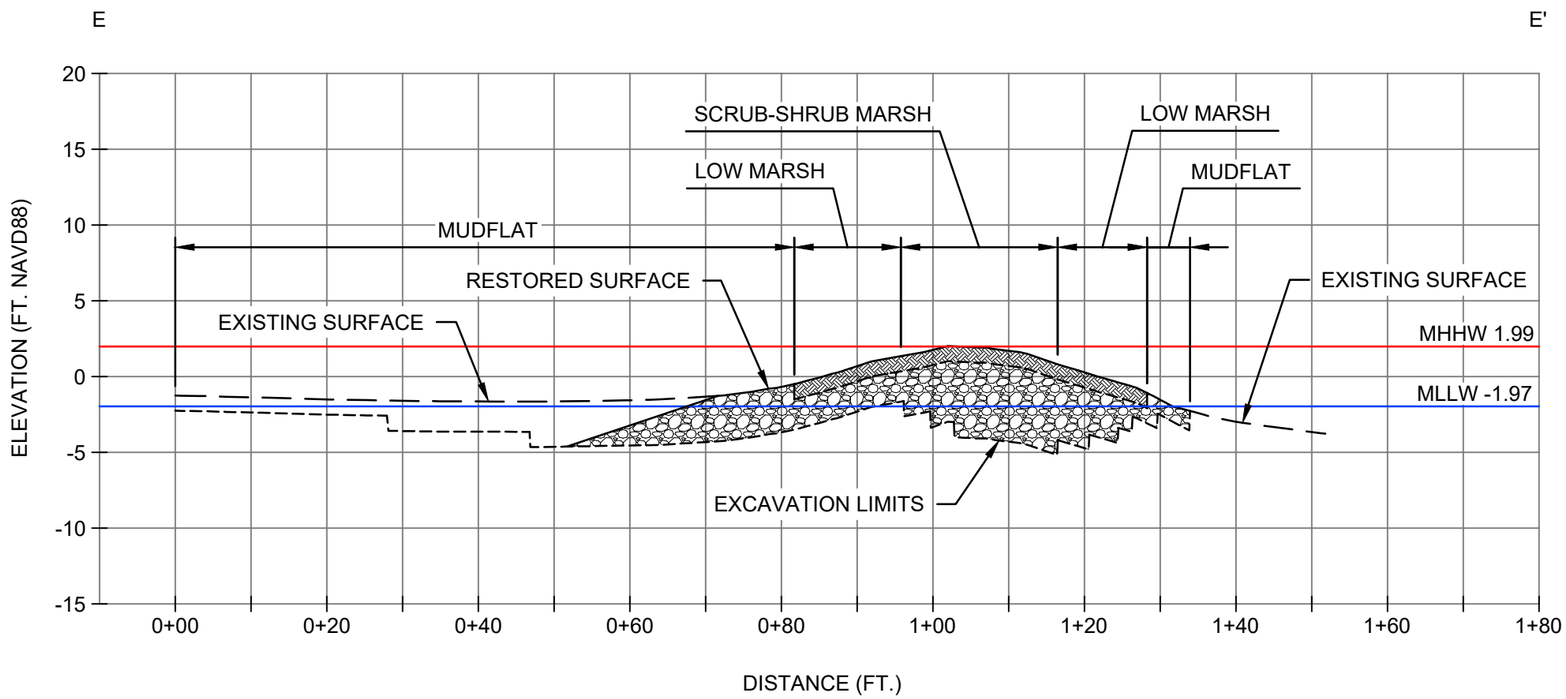
WEST ZONE 2
SECTION D-D'

NEW BEDFORD HARBOR

MAY 2019 | FIGURE 4

CREATED:5/20/2019 LAST SAVED:5/23/2019 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.

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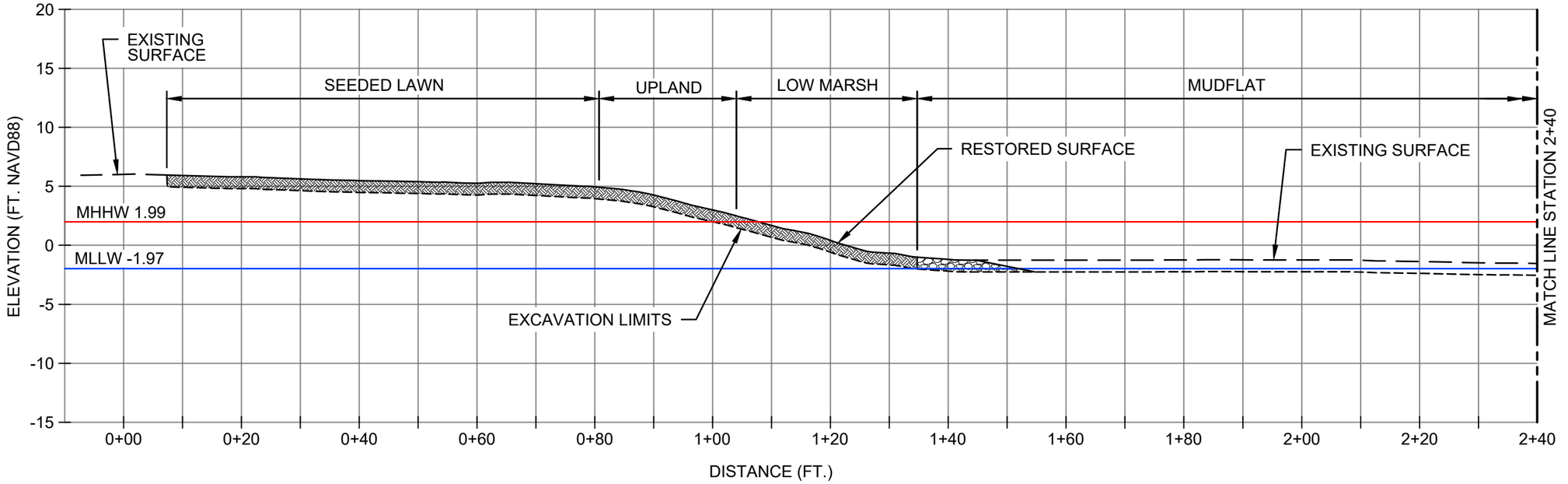
WEST ZONE 2
SECTION E-E'

NEW BEDFORD HARBOR

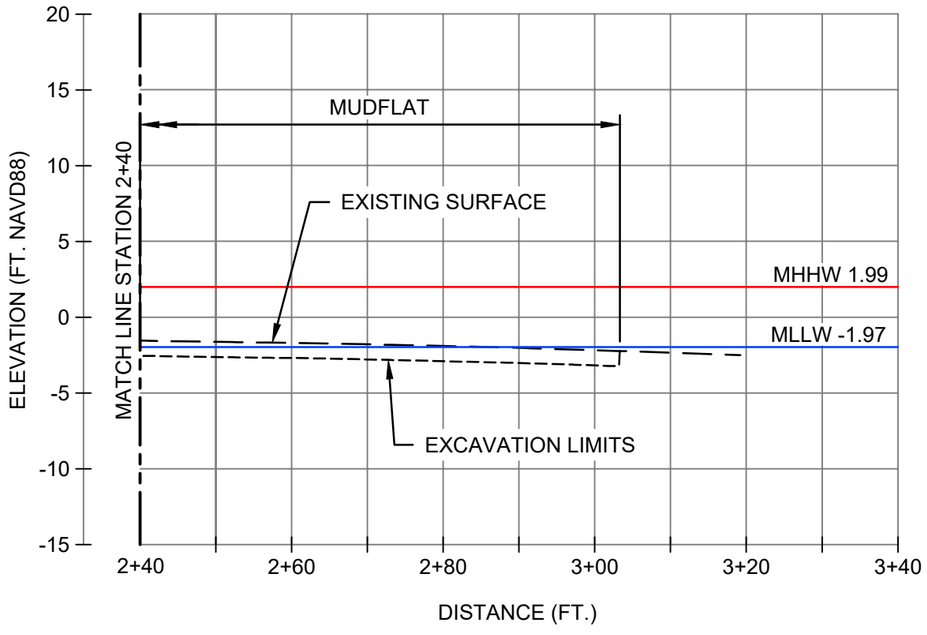
MAY 2019 | FIGURE 5

BY:ENGLANLL LAST SAVED:5/24/2019 CREATED:5/20/2019

F



F'



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.

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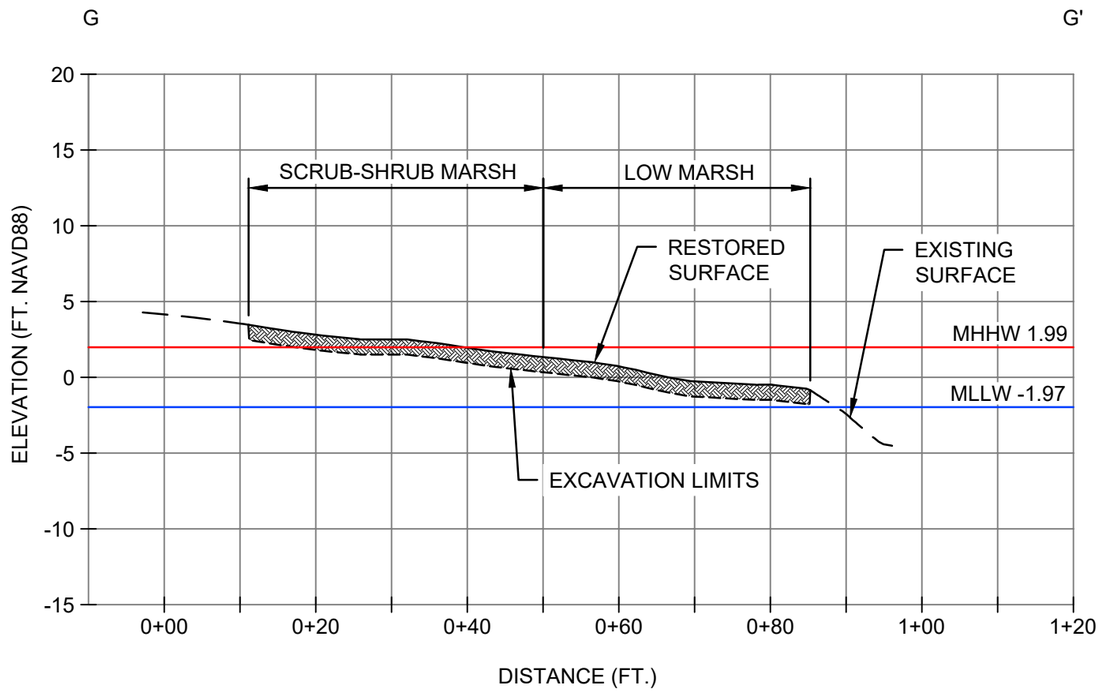
WEST ZONE 2
SECTION F-F'

NEW BEDFORD HARBOR

MAY 2019 | FIGURE 6

CREATED:5/20/2019 LAST SAVED:5/24/2019 BY:ENGLANLL



LEGEND:

- MHHW 1.99
- MLLW -1.97
- TOPSOIL BACKFILL

BY:ENGLANLL

LAST SAVED:5/22/2019

CREATED:5/20/2019

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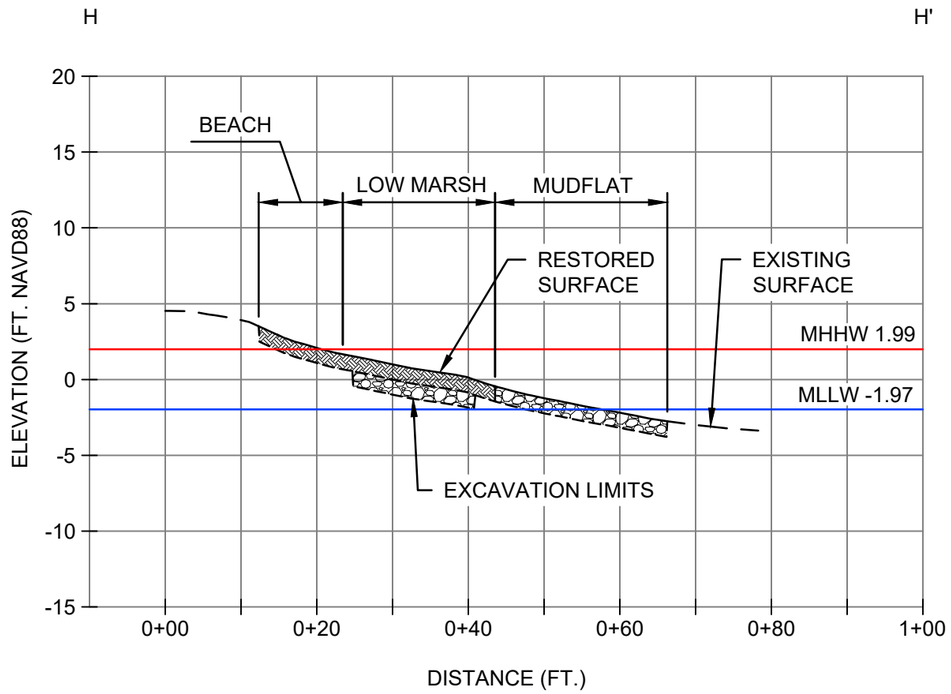
WEST ZONE 2
SECTION G-G'

NEW BEDFORD HARBOR

MAY 2019 | FIGURE 7



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.

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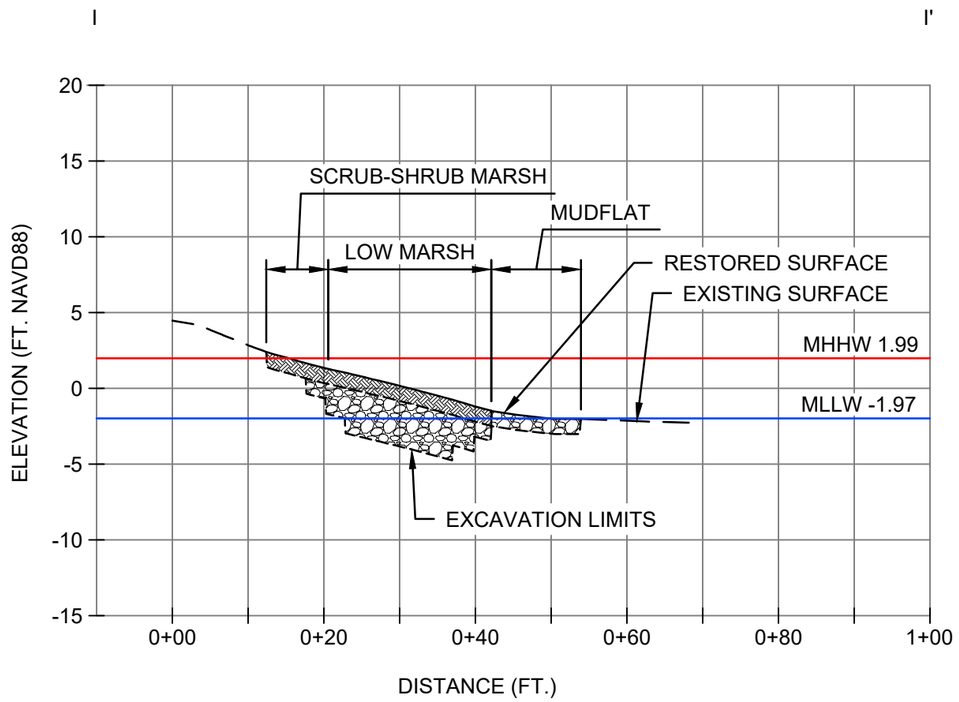
WEST ZONE 2
SECTION H-H'

NEW BEDFORD HARBOR

MAY 2019 | FIGURE 8

BY:ENGLANLL
LAST SAVED:5/22/2019
CREATED:5/20/2019



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.

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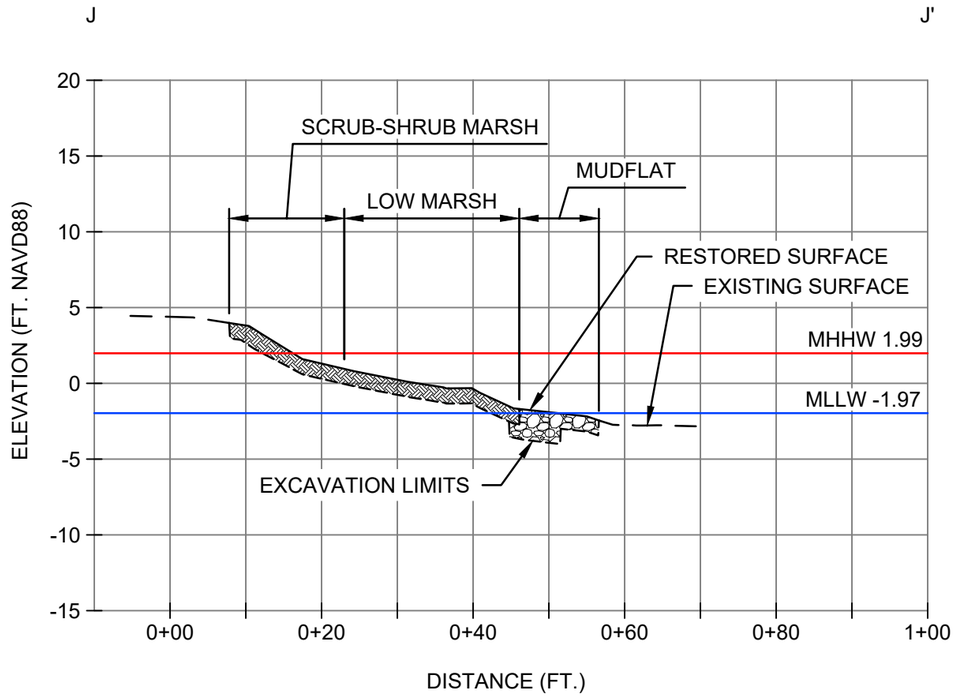
WEST ZONE 2
SECTION I-I'

NEW BEDFORD HARBOR

MAY 2019 | FIGURE 9

BY:ENGLANLL
LAST SAVED:5/22/2019
CREATED:5/20/2019



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.

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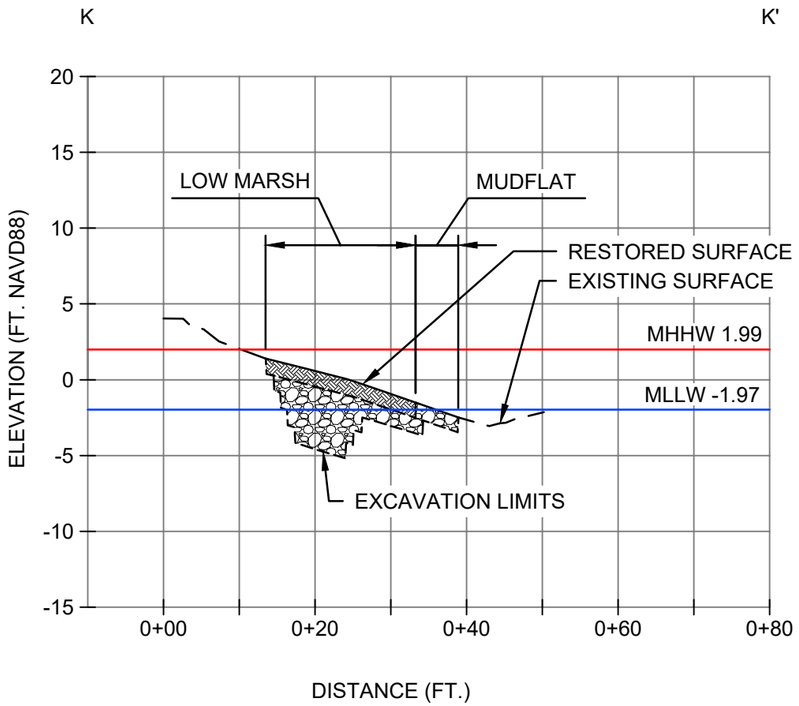
WEST ZONE 3
SECTION J-J'

NEW BEDFORD HARBOR

MAY 2019 | FIGURE 10

BY:ENGLANLL
LAST SAVED:5/22/2019
CREATED:5/20/2019



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.

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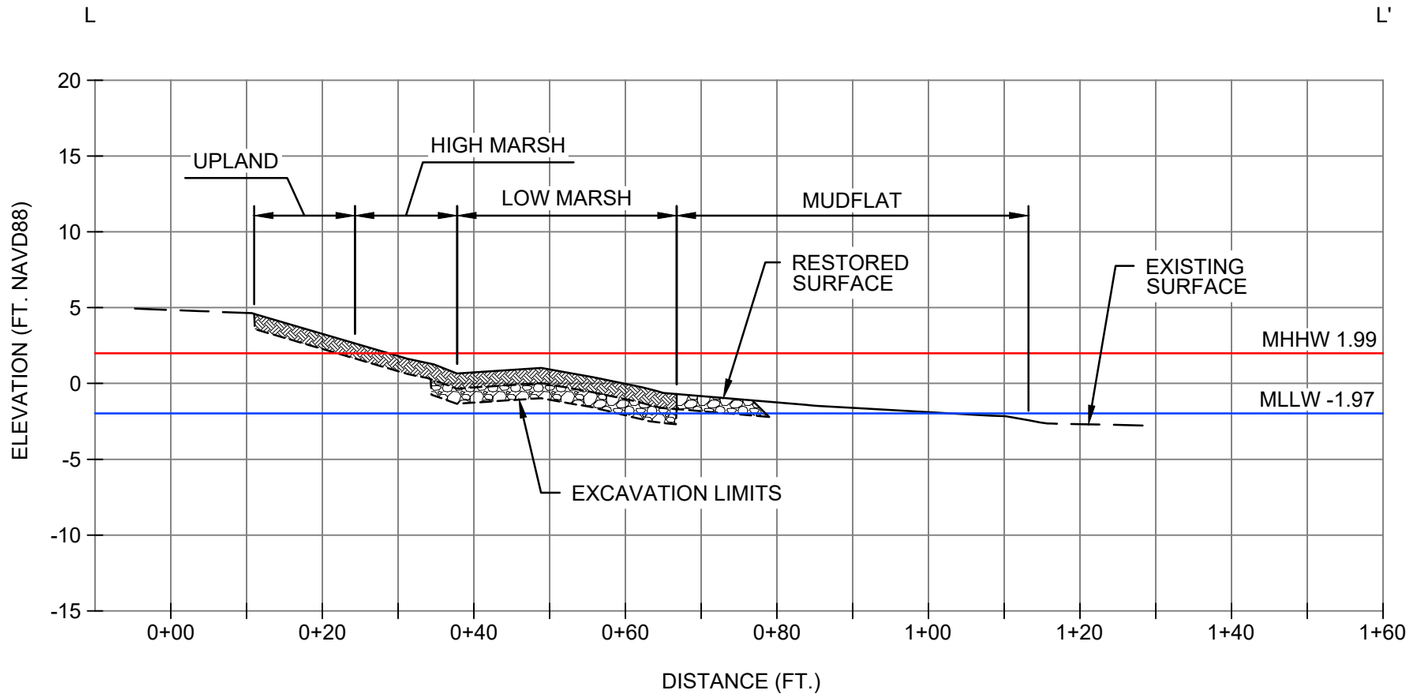
WEST ZONE 3
SECTION K-K'

NEW BEDFORD HARBOR

MAY 2019 | FIGURE 11

BY:ENGLANLL LAST SAVED:5/28/2019 CREATED:5/20/2019



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.

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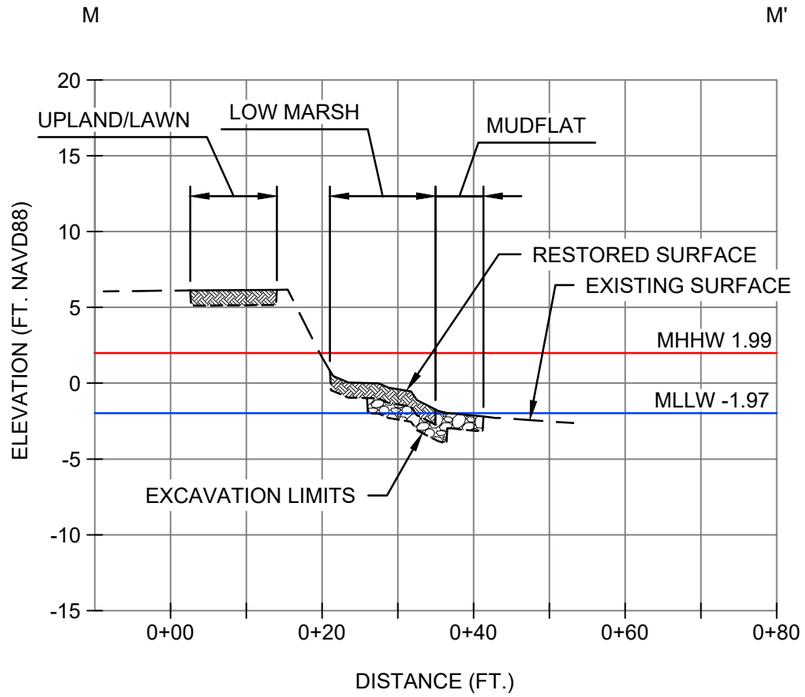
WEST ZONE 3
SECTION L-L'

NEW BEDFORD HARBOR

MAY 2019 | FIGURE 12

BY:ENGLANLL LAST SAVED:7/17/2019 CREATED:5/20/2019



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.

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WEST ZONE 3
SECTION M-M'

NEW BEDFORD HARBOR

MAY 2019 | FIGURE 13

BY:ENGLANLL
LAST SAVED:7/17/2019
CREATED:5/20/2019

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
- 1-foot Contour
- Mean Higher High Water
- Mean Lower Low Water
- Cross Section Locations
- Parcel Boundary
- Proposed High Marsh
- Proposed Low Marsh
- Minimal Backfill as Needed for Drainage or Slope Stability
- Proposed Scrub-Shrub Marsh
- Proposed Upland/Lawn
- Proposed Upland

0 50 100 Feet

July 2019

Basemap Data Source:
Green Seal Environmental, MassGIS

Vertical Datum:
NAVD88

Intertidal West Zone 2-3 Parcel 112-133
Cross Section Locations

New Bedford Harbor Superfund Site

JACOBS

Figure 14

Legend

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

0 50 100 Feet

May 2019

Basemap Data Source:
Green Seal Environmental, MassGIS

Vertical Datum:
NAVD88

Intertidal West Zone 2-3 Parcel 111-146
Cross Section Locations
New Bedford Harbor Superfund Site

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Figure 15

111-155

111-98

105-170

M

M'

0

5

5

0

5

5

Legend

- Cross Section Location
- 1-foot Contour
- Mean Lower Low Water
- Mean Higher High Water
- 0-1' Excavation Depth
- 1-2' Excavation Depth
- Parcel Boundary
- Proposed Low Marsh
- Minimal Backfill as Needed for Drainage or Slope Stability
- Proposed Upland/Lawn

0 40 80 Feet

July 2019

Basemap Data Source:
Green Seal Environmental, MassGIS

Vertical Datum:
NAVD88

Intertidal West Zone 2-3 Parcels 111-98/111-155 Cross Section Locations

New Bedford Harbor Superfund Site

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Figure 16

Appendix C

Schedule

(to be provided at a later date)