RETURN TO SER AR INDEX

From: Sneeringer, Paul J NAE
To: Bachand, Michael L NAE; Keegan, Michael F NAE
Cc: Michalak, Scott C NAE
Subject: South Marine Terminal Project in New Bedford, MA - Proposed Mitigation (UNCLASSIFIED)
Date: Friday, May 25, 2012 4:33:00 PM
Attachments: State Enhanced Remedy New Bedford - South Terminal 1-18-12 - Mitigation.pdf
Figures 10 -16. pdf.pdf

Classification: UNCLASSIFIED
Caveats: NONE

Mikes:

Enclosed for your review is documentation on mitigation proposed for the South Marine Terminal Project in New Bedford, Massachusetts. The 17.73 acre Winter Flounder spawning habitat creation area is located adjacent to the New Bedford Harbor Federal Navigation Project ("FNP"). In addition, the 3.47 acre intertidal creation area, the 10.91 acre near shore, sub-tidal enhancement area, and the 1.9 acre successional marsh restoration area are all located in close proximity to the New Bedford Hurricane Barrier. Please let me know if any of this proposed mitigation will require a consent/acceptance letter from the Corps due to potential impacts to Federal Projects. Please let me know if you need additional information to complete your review of this issue. Thanks for your review.

Paul Sneeringer
(978) 505-9216

Classification: UNCLASSIFIED
Caveats: NONE

SDMS DocID 517386

Finally, the entry channel must be wide enough to allow for some drifting of the vessel as it maneuvers into and out of the port. The drifting in question could be from tidal currents, wind forces, or errors in navigation; however, without the extra width, the potential for grounding of the vessel is high. Therefore, the channel is 175 feet wide (plus the 100 foot wide tug channel), which is the minimum width that is acceptable to allow for some.

After further analysis, the Commonwealth has concluded that this is the maximum practicable reduction in dredging that can be achieved while still meeting the Project Purpose.

7.2. Conceptual Mitigation Plan - Proposed Compensatory Mitigation for Unavoidable Direct Impacts

Unavoidable direct impacts are both permanent and temporary. Permanent impacts involve filling of existing resource areas and dredging of resource areas in such a manner as the functions and values of that area are permanently lost. Temporary impacts involve maintenance dredging of areas and/or minor changes in elevation from dredging of resource areas, such that the functions and values of that area are not permanently lost, or are anticipated recover relatively quickly. Mitigation is proposed for both temporary and permanent direct impacts.

Permanent Impacts

Permanent direct impacts to existing resource areas are as follows:

- Filling of 1.43 acres of intertidal area,
- Filling of 4.06 acres of shallow, near-shore sub-tidal area;
- Filling of 0.18 acres of salt marsh,

- Dredging of 3.68 acres of near-shore, subtidal area from -1 to -6 MLLW to between -30 and -32 MLLW (Quayside Areas).
- 4.43 acres of near-shore, subtidal area will be dredged to -14 MLLW (Quayside Areas).
- Dredging of 4.03 acres of near-shore, subtidal area from -5 to -14 MLLW -14 MLLW (Tug Channel).
- Dredging of 8.76 acres of near-shore, subtidal area from -4 to -6 MLLW to -45 MLLW, but which will be subsequently filled and capped (CAD Cell).
- Destruction of approximately 9,285,300 shellfish.

Temporary Impacts

Temporary direct impacts to existing resource areas are as follows:

- Dredging of 8.01 acres of near-shore, subtidal area from -4 to -6 MLLW to between -6 and -7 MLLW (Gifford Street Channel Re-Alignment and Mooring Mitigation Areas).
- Dredging of 7.01 acres of subtidal area from -20 to -25 MLLW to -30 MLLW (South Terminal Channel).
- Dredging of 19.6 acres of subtidal area from -26 to -30 MLLW to -30 MLLW (Maintenance Dredging of Federal Navigation Project).

In order to compensate for both Permanent and Temporary direct impacts to resource areas due to construction of the Proposed South Terminal Extension CDF, a number of potential mitigation options have been evaluated. The results of this evaluation were that the following mitigation package is proposed (see **Figure 10** for locations):

- Creation of 17.73 acres of Winter Flounder spawning habitat (see **Figures 11 and 12**), via the placement of dredged navigational dredging parent material or CAD Cell parent material into a deep area, in order to create a shallow area more suitable for Winter Flounder spawning, at a location outside of the New Bedford Hurricane Barrier. While the primary purpose of this action is to create Winter Flounder spawning habitat, this action will also enhance spawning and foraging areas for scup, black sea bass and windowpane flounder, also create shallow areas that will enhance foraging viability of the area for avian wildlife, including the Common Tern and the Roseate Tern and will also sequester PCBs in sediment. PCBs currently existing in sediment within the Winter Flounder mitigation area are below EPA superfund cleanup levels for both the upper and lower harbor.
- Creation/Enhancement of 3.47 acres of inter-tidal area and enhancement of 10.91 acres of near-shore, shallow, sub-tidal areas located in the outer harbor, immediately southwest of the Hurricane Barrier, where a PCB-contaminated area has been partially (approximately 20 acres) capped (OU-3 pilot cap) (see **Figures 12 and 13**), to enhance spawning and foraging areas for winter flounder, scup, black sea bass and windowpane flounder, and enhance foraging area for avian wildlife identified within the resource delineation, including the Common Tern and the Roseate Tern, enhancement of shellfish habitat, and enhancement of horseshoe crab habitat. PCBs currently existing in sediment within this area to be capped are below EPA superfund cleanup levels for both the upper and lower harbor.

- Creation/Enhancement of up to approximately 1.9 acres of a combination of successional marsh areas (mudflat, low marsh, high marsh, and transitional area) to enhance spawning and foraging areas for winter flounder, scup, black sea bass and windowpane flounder, and enhance foraging area for avian wildlife, enhancement of shellfish habitat, and enhancement of horseshoe crab habitat (see **Figures 14, 15, and 16**).
- Completion of a Tern Monitoring program to provide additional information on the utilization of New Bedford Harbor by terns.
- Relaying of shellfish from Fish Closure Area 1 to other locations within Fish Closure Area 1 and/or relaying of shellfish from Fish Closure Areas 2 or 3 to a location south of the City of New Bedford (but within City of New Bedford waters), under MassDMF permit, and/or seeding to compensate for shellfish lost during filling, capping and/or dredging operations. (Please note that relaying of shellfish from Fish Closure Area 1 to any other area is restricted – See letter from US EPA attached to **Appendix 52**.)
- Dredge and disposal of approximately 240,000 cubic yards of sediment impacted with PCB concentrations of up to approximately 20 mg/kg into Confined Aquatic Disposal Cells in New Bedford Harbor.

7.2.1. Winter Flounder Spawning Habitat Creation

Three locations located outside of the New Bedford Hurricane Barrier, adjacent to the Federal Channel, were proposed by USEPA as potential pilot Winter Flounder spawning mitigation locations, this proposal was based on the assumption that the locations met specific criteria associated with depth, PCB concentration in sediment, and strength of current. The three areas were screened for suitability for Winter Flounder spawning habitat creation via collection of

bathymetric data, PCB concentration in sediment, and current data (for the location of data points, and a presentation of data collected in the three screening areas, please see **Appendix 71**).

Literature indicates the winter flounder spawn at a water depth of approximately -16.4 feet MLLW and shallower, and that currents less than 0.6 knots will prevent Winter Flounder eggs from being swept out to sea. Based upon the results of the screening investigation, it was determined that the chosen location had existing bathymetry that is deeper than what is conventionally considered Winter Flounder spawning habitat, and had currents below 0.6 knots.

Samples of sediment collected from the proposed area Winter Flounder mitigation area were collected and analyzed for the presence of PCBs. The results of the testing indicated PCB concentrations in sediment between 1.3 mg/kg and 8.2 mg/kg within the proposed mitigation area, indicating PCB concentrations, although generally below EPA Superfund cleanup levels for the upper and lower Harbor, could have impacts such that capping the areas would result an environmental benefit by isolating the contaminants from the environment. (Please note that PCB concentrations in sediment are calculated by summing the 18 NOAA Congeners and multiplying by a factor of 2.0, which is a non-location specific factor used by NOAA to calculate total PCBs since 1988. Please see Appendix 1 for additional information).

Based upon the results of the suitability analysis, it was determined that an area located immediately north of the Butler Flat's Lighthouse would be suitable for a pilot test, intended to create Winter Flounder spawning habitat. The area targeted for mitigation is at least approximately 17.73 acres in area, and is located outside of the New Bedford Hurricane Barrier.

The area is approximately 1 mile south of the proposed facility in an area with a water depth of between approximately -22 feet MLLW to -18 feet MLLW. The proposed mitigation would change the elevation of the targeted area to a depth of approximately -16 MLLW or deeper, in order to create conditions suitable for Winter Flounder spawning. A figure showing the proposed mitigation area, as well as a conceptual cross-section are included as **Figures 11 and 12**.

The mitigation would have a dual purpose. The work will not only create an area that is within the elevation range for preferred Winter Flounder spawning, the work will also cap PCB contaminated sediment, and enhance the area as habitat for fish and shellfish. The mitigation will be achieved via placement of dredged parent material within the target area. The parent material will be generated from either the construction of the South Terminal Expansion (i.e. parent material from the dredge footprint of the proposed facility) or from the construction of a CAD Cell, or both. The target final elevation after fill placement will be a depth of approximately -16 feet MLLW or deeper.

The mitigation is anticipated to also have a beneficial impact upon terns, including the Common and Roseate Tern. Common Terns feed mainly on a wide variety of small fish and crustaceans; however, their primary prey in most Atlantic coast breeding areas is the American sand lance. Similarly, the Roseate Tern feeds almost exclusively on small fish (see **Appendix 65**). Both the Roseate Tern and the Common Tern forage by plunge-diving (diving from heights of between 1-12 meters and oven submerging to greater than 50 centimeters. Creating shallower water in the area of this mitigation project will make the area more attractive for the type of game fish that

both the Roseate Tern and Common Tern hunt, as many types of fish seek shallower water to escape predators. Therefore, it is likely that this mitigation project will benefit the tern population by creating a more productive foraging area.

About 70% of the Common and Roseate Tern's diet consists of Sand Lance (see **Appendix 66**). Sand Lance occur throughout the water column over sandy substrates into which they burrow. The sand lance burrows for rest and escape from predators; hence much time may be spent within the substrate, isolated from the water column. Due to this specific defense behavior, the sand lance is particularly vulnerable to become contaminated by adjacent contaminated sediment, such as the high levels of PCBs within the contaminated sediment of New Bedford Harbor. It is likely the Common Tern and Roseate Tern's preference for American sand lance is the source of high levels of PCBs found in chicks found dead at Bird Island in 1970, and increased levels of PCBs within existing Roseate and Common Tern colonies. Historical bird observations presented within **Section 6** indicate that Common and Roseate Terns have been observed outside of the Hurricane Barrier, but not in the areas north of the Hurricane Barrier. PCB concentrations outside of the Hurricane Barrier have been shown via EPA sampling to typically be less than 1 ppm, except for a few isolated areas. The proposed mitigation areas contain concentrations of PCBs above 1 ppm (in one location the concentrations are higher than 8 ppm). Capping of PCB contaminated sediment within these areas will allow sand lance to burrow without being exposed to PCB contaminated sediment. Therefore, capping of contaminated sediment will benefit the Common and Roseate Tern populations by reducing their exposure to a source of contamination shown to be detrimental to those species.

7.2.2. Intertidal Habitat Creation and Near-Shore, Shallow, Sub-tidal Enhancement

This proposed alternative would utilize parent material from the construction of South Terminal or from a CAD Cell to cap 10.91 acres of near-shore, shallow, sub-tidal environment, and create an adjacent new 3.47 acre intertidal area, in order to compensate for permanent loss of intertidal area and temporary and permanent impacts to sub-tidal areas via construction of the South Terminal CDF. The location of the proposed intertidal creation and sub-tidal enhancement is located immediately outside of the New Bedford Hurricane Barrier, east and slightly south of the end of Gifford Street.

The proposed intertidal creation and sub-tidal enhancement areas would be created outside the Hurricane Barrier on the New Bedford side of the Bay (see **Figures 10 and 13** for the location of the proposed intertidal creation area). The location of the intertidal creation was selected because it was previously an intertidal area (prior to the construction of the New Bedford Hurricane Barrier) that was formerly affected by an anthropogenic structure (the Hurricane Barrier), and would significantly benefit from new intertidal habitat. A cross-sectional diagram of an example beach profile for the proposed created intertidal area is included in **Figure 12**. The profile created will include a large proportion of intertidal sandy (silt/sand/gravel mixture) area, representing creation of preferential habitat.

The proposed mitigation location is not accessible from the shore and is rarely travelled by recreational vessels. As a result, the critical area would be relatively isolated from human impacts, and would provide a prime location to enhance spawning and foraging areas for winter flounder, scup, black sea bass and windowpane flounder, and enhance foraging area for avian

wildlife identified within the resource delineation, including the Common Tern and the Roseate Tern, and create horseshoe crab spawning habitat.

Both the inter-tidal creation area and the sub-tidal enhancement areas were also chosen due to the presence of PCB impacted sediment in the area. The placement of the parent material will also cap PCB contaminated sediment associated with a portion of the New Bedford Harbor superfund project called "OU-3". The mitigation is located within a near-shore, shallow, sub-tidal area located in the outer harbor, immediately southwest of the Hurricane Barrier, where a PCB-contaminated area has been partially (approximately 20 acres) capped (OU-3 pilot cap) (see **Figure 13)**, OU-3 is a 17,000 acre area outside of the Hurricane Barrier. A hotspot area was located in the vicinity of the proposed mitigation that was partially capped in 2005 (OU-3 pilot cap). The OU-3 pilot cap area was identified for remediation under the New Bedford Harbor Superfund project; however, the OU-3 pilot cap area is not within the area slated for intertidal creation. The OU-3 pilot cap project was a "pilot study"; a remedy decision has not been issued for OU-3. The mitigation project would have the dual purpose of creating intertidal area while simultaneously capping and isolating from the environment sediments with a high level (but likely lower than 10 mg/kg) of PCB contamination within them.

Through bioaccumulation and uptake, PCBs impact a variety of types of marine life, and also have subsequent effects on avian wildlife. The effects of PCBs on Common and Roseate terns via their ingestion of sand lance were discussed in the previous section; it is anticipated that the isolation of PCB contaminated sediment in the location of the proposed intertidal creation area will also benefit both terns and other avian wildlife. A summary of available literature

presenting some evidence of the impact of PCBs on the reproductive cycle of Winter Flounder is attached as **Appendix 72**. The literature search consists of one study noting the link between PCB contamination and a reduction in Winter Flounder larval length and body weight. The other study notes that reduced larval length and body weight results in significant decreased survival potential. The two studies taken together indicate that PCBs in sediment have a significant impact on the ability for Winter Flounder to produce viable offspring that ultimately contribute to propagation of the species. As a result, it is likely that eliminating direct contact from PCB impacted sediment would result in a positive impact to the Winter Flounder population. Therefore, isolation of PCB sediments would be beneficial to Winter Flounder.

It is suspected that PCB impacted sediment affects many species, in addition to Winter Flounder, and that capping PCB impacted sediment will create an area that will be relatively more productive as a shallow near-shore subtidal environment for spawning and foraging areas for many species, including Winter Flounder, Scup, Black Sea Bass and Windowpane Flounder. The areas will also therefore be more productive as foraging areas for avian wildlife, including the Common Tern and the Roseate Tern.

7.2.3. Successional Marsh Area Restoration/Enhancement

In addition to the intertidal area creation, the project proposes restoration/enhancement of a 1.9 acre Salt Marsh and successionary sequence in the drainage swale situated westerly of the Hurricane Barrier, just to the south of the Gifford Street Boat-ramp parking area. The area currently serves as a stormwater runoff channel that runs behind the Hurricane Barrier. The sediment within the stormwater runoff channel is currently impacted with PCBs, SVOCs, and

some metals (see **Appendix 73**). The maximum PCB concentration detected within the sediment of the channel is 55 mg/kg, from a sample collected in 2007. Additional sampling of sediment and adjacent upland material was also conducted in the Fall of 2011.

The western side of the channel is currently a rip-rap slope that has little ecological value. By removing PCB contaminated sediment and capping the residual impacted sediment, creating drainage channels, removing the rip-rap slope, and grading into the upland behind the rip-rap slope, the Commonwealth will create and enhance approximately 1.9 acres of mudflat, low marsh, high marsh, and transitional salt marsh area. This area is owned by the City of New Bedford, which supports the project, as it will not only revitalize a degraded wetland area, but will also extend a public walkway along this area, which has been planned by the City for some time. **Figure 10** shows the location of the drainage ditch, with relation to the footprint of the proposed terminal.

The project will enhance the hydraulic capacity of the drainage ditch to transport stormwater from behind the Hurricane Barrier by removing fill from the western side of the channel. A central drainage channel would run through the re-graded benthic substrate, allowing for stormwater drainage through the area, unimpeded. The restored area and the new salt marsh habitat will replicate the functions and values of salt marsh that will be lost during construction of the South Terminal CDF. **Figure 14** shows the existing resource areas within the drainage ditch. **Figure 15** shows the current conceptual plan for mitigation within the drainage ditch. A cross-section of the proposed work is attached as **Figure 16**.

Currently, the drainage swale in this location is tidally influenced (it is subtidal), however the quality of the resource is degraded mudflat/drainage ditch. The area of the proposed mitigation is currently characterized by the growth of invasive species and has a large amount of trash evident. The sediments in the drainage swale are contaminated (with PCBs, see **Appendix 73**).

The goal of the restoration project at this location is to create a functioning marsh area in a publically visible area, so as to have both an ecological and educational benefit. The mitigation project at this location would include four primary elements:

- Removal of PCB and metals contaminated sediments;
- Re-grading of the swale profile to allow for the creation of a successionary sequence of marsh vegetation;
- Planting of high, low, and transitional marsh species within the regraded swale; and
- Installation of a public access walkway/bike path adjacent to the created marsh area.

The proposed marsh restoration/creation includes the following characteristics:

- Sampling to determine the extent and depth of PCB and metals contaminated sediments;
- Excavation and removal of those sediments and placement of those sediments in a CAD Cell;
- Installation of a layer of parent material across the bottom of swale (within areas that were below Mean High Water prior to excavation of the PCB impacted sediment), while shallowing some areas in order to create a suitable environment for low-marsh plants, while including a deeper flow channel through the middle of the swale for transport of tidal flows.

- Excavation of fill on the western side of the drainage swale and grading of the area with benched sides that will promote high and low marsh vegetation growth as well as transitional vegetation growth.
- Planting of Low Marsh vegetation (such as sp. *spartina alternaflora*) on the lower created benched steps;
- Planting of High Marsh vegetation (such as sp. s*partina patens, sp. solidago sempervirens, sp. iva frutescens, sp. morella (myrica) pensylvanica* and sp. *hibiscus moschuetos*; and
- Planting of Transition Zone vegetation (such as sp. *panicum virgatum*, sp. *iva frutescens*, and some sp. *ammophila brevigulata and prunus maritima*);
- Installation of an adjacent public access walkway/bike path and bordering ornamental fence (such as a split-rail fence).

To keep trash from entering the mitigated area, a local stormwater outfall (located at the corner of Cove Street and Rodney French Boulevard) will be retro-fitted with a hooded catch basin, or trash screen to catch trash prior to its discharge to the drainage ditch. This screen or catch basin will be maintained by the Commonwealth (although responsibility for maintenance of the structure may be transferred to the City of New Bedford Department of Public Infrastructure).

7.2.4. Tern Survey Plan

Although it is not currently anticipated that Common Tern and Roseate Tern habitat will be substantially impacted by completion of the South Terminal CDF project, elements of the proposed project mitigation related to creation of intertidal and shallow water subtidal habitat, in

FIGURE 10

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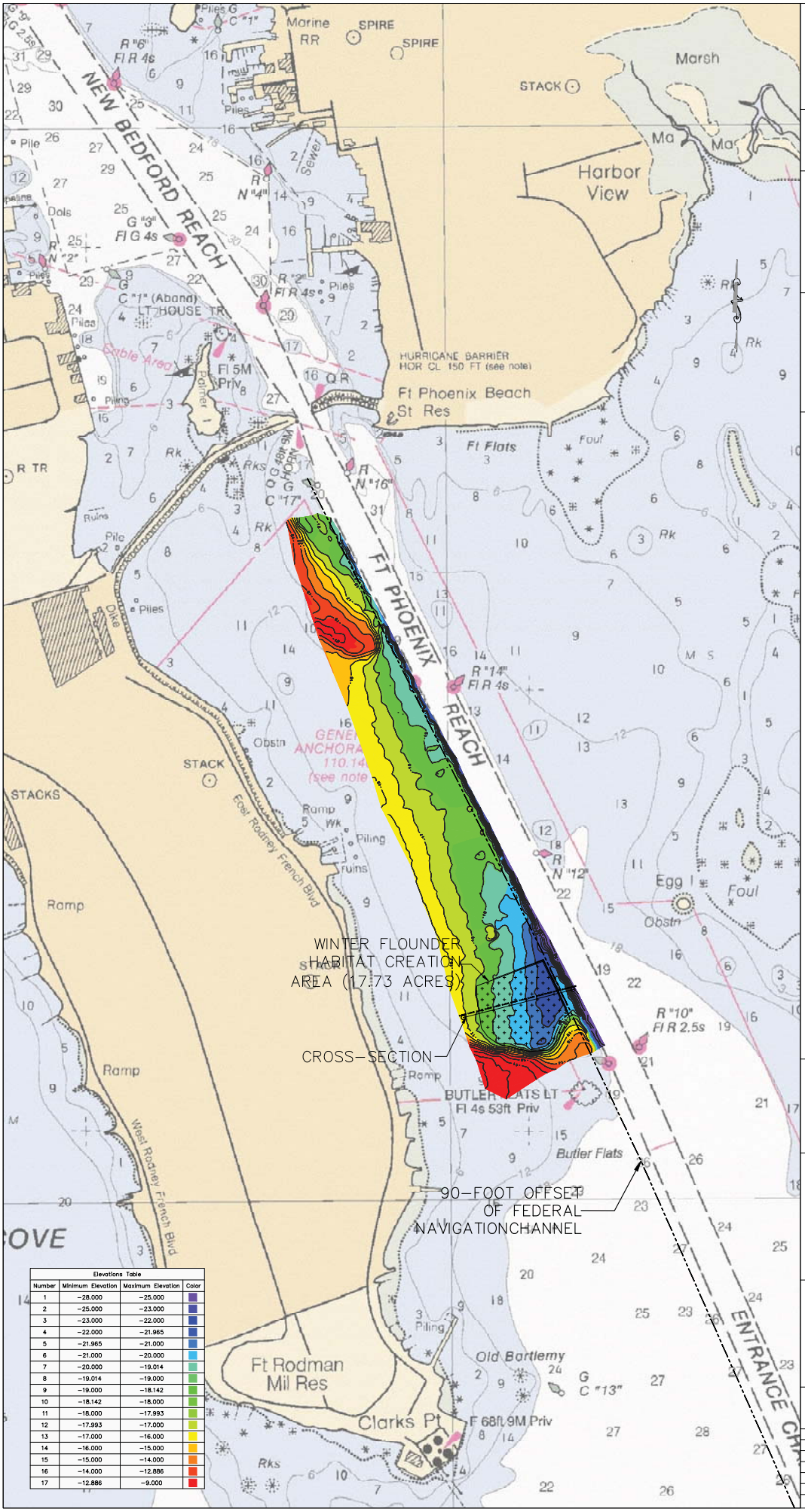
Mitigation Areas Locus Map

NEW BEDFORD MARINE COMMERCE TERMINAL
NEW BEDFORD, MA

Scale: 1"=1500'

0 750 1500 2250

FIGURE 11



Elevations Table			
Number	Minimum Elevation	Maximum Elevation	Color
1	-28.000	-25.000	
2	-25.000	-23.000	
3	-23.000	-22.000	
4	-22.000	-21.965	
5	-21.965	-21.000	
6	-21.000	-20.000	
7	-20.000	-19.014	
8	-19.014	-19.000	
9	-19.000	-18.142	
10	-18.142	-18.000	
11	-18.000	-17.993	
12	-17.993	-17.000	
13	-17.000	-16.000	
14	-16.000	-15.000	
15	-15.000	-14.000	
16	-14.000	-12.886	
17	-12.886	-9.000	

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REVISIONS

NO.	DATE	DESCRIPTION
1.	11/22/10	MITIGATION AREAS
2.	12/15/10	BATHY UPDATED

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PREPARED FOR:

COMMONWEALTH OF MASSACHUSETTS

DRAWING TITLE:

NEW BEDFORD MARINE COMMERCE TERMINAL WINTER FLOUNDER MITIGATION AREA

Scale: 1"=500'

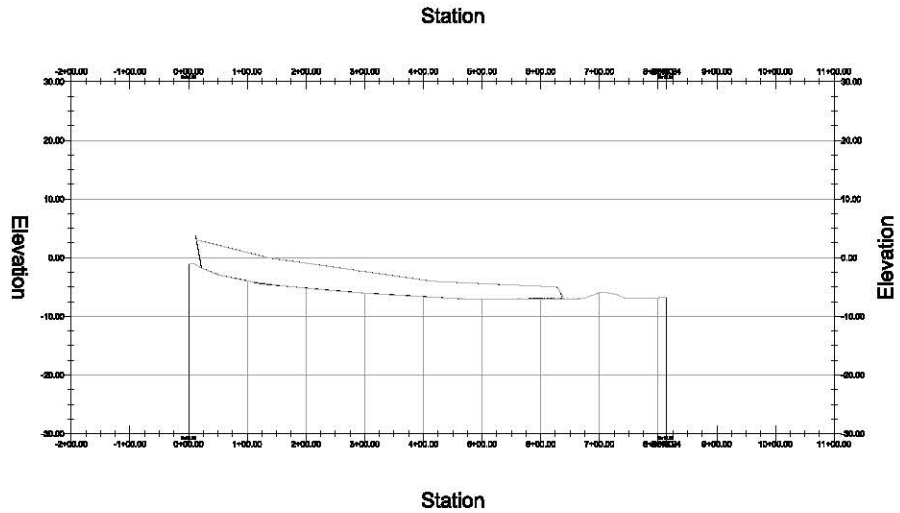
0 250 500 1000 1500 FEET

Date	6/5/10
Proj. Mgr.	JAB
Design	GCD
Check	CM
Drawn	GCD
Job. No.	6690.002
Last Rev.	9/20/11

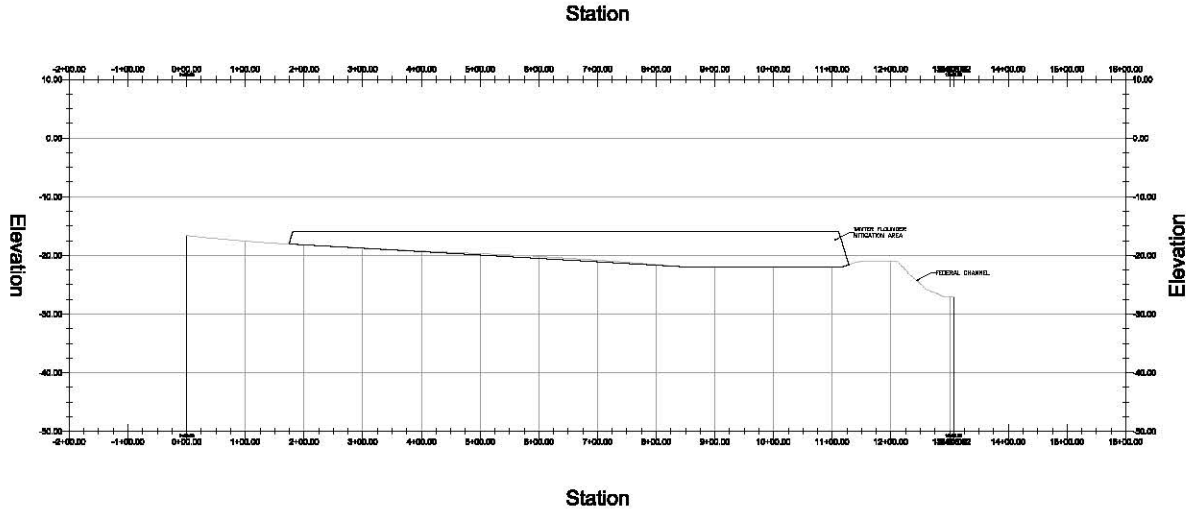
Drawing No.

FIGURE 12

PROFILE VIEW OF PROPOSED MITIGATION AREA AT OU#3 PILOT CAP AREA



WINTER FLOUNDER MITIGATION AREA CROSS SECTION



APEX

ROCKVILLE, MD
SOUTH WINDSOR, CT - BOSTON, MA - NEW BEDFORD, MA - HOLYOKE, MA

100% DESIGN FOR REVIEW SET
NOT FOR CONSTRUCTION

PROJECT
NEW BEDFORD MARINE COMMERCE TERMINAL

OWNER
MASSACHUSETTS CLEAN ENERGY CENTER
55 SUMMER STREET, 6TH FLOOR
BOSTON, MA

NO.	DATE	DESCRIPTION	BY

PROJECT NO.	6680
CADD FILE	MIT_OU3_FLNDR
DESIGNED BY	CWM
DRAWN BY	CWM
CHECKED BY	CHM
DATE	8-8-11
DRAWING SCALE	NTS

GRAPHIC SCALE

SHEET TITLE

OU-3 CAPPING AREA CROSS SECTIONS

DRAWING NO.

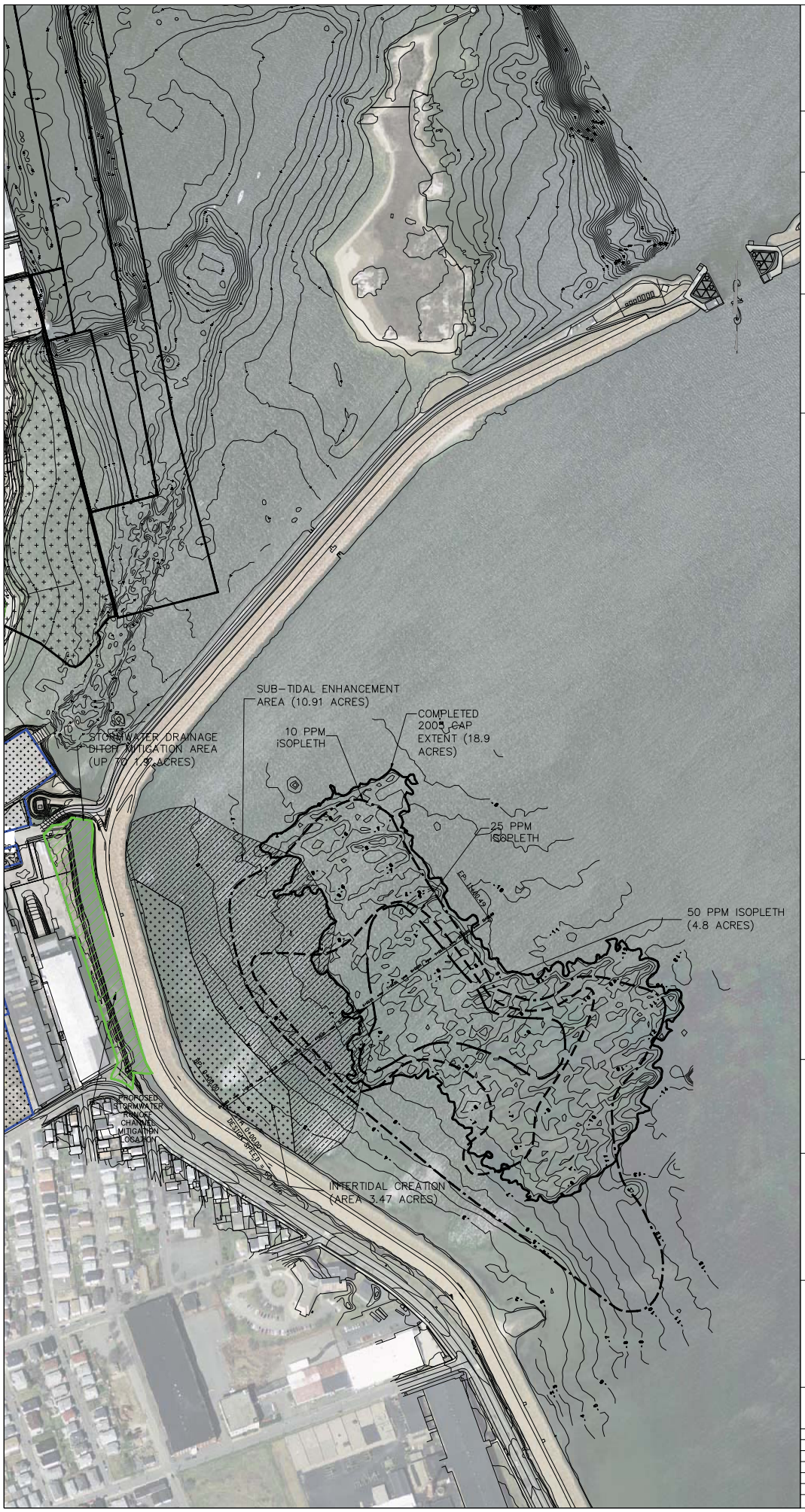
X-5

71 OF 73

PLOT SCALE 1"=1'

P:\Jobs\6680 NBH_ Phase IV\PLANS\FINAL_PLANS\P-MITIGATION_OU3_FLOUNDER.dwg

FIGURE 13



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DRAWING TITLE:

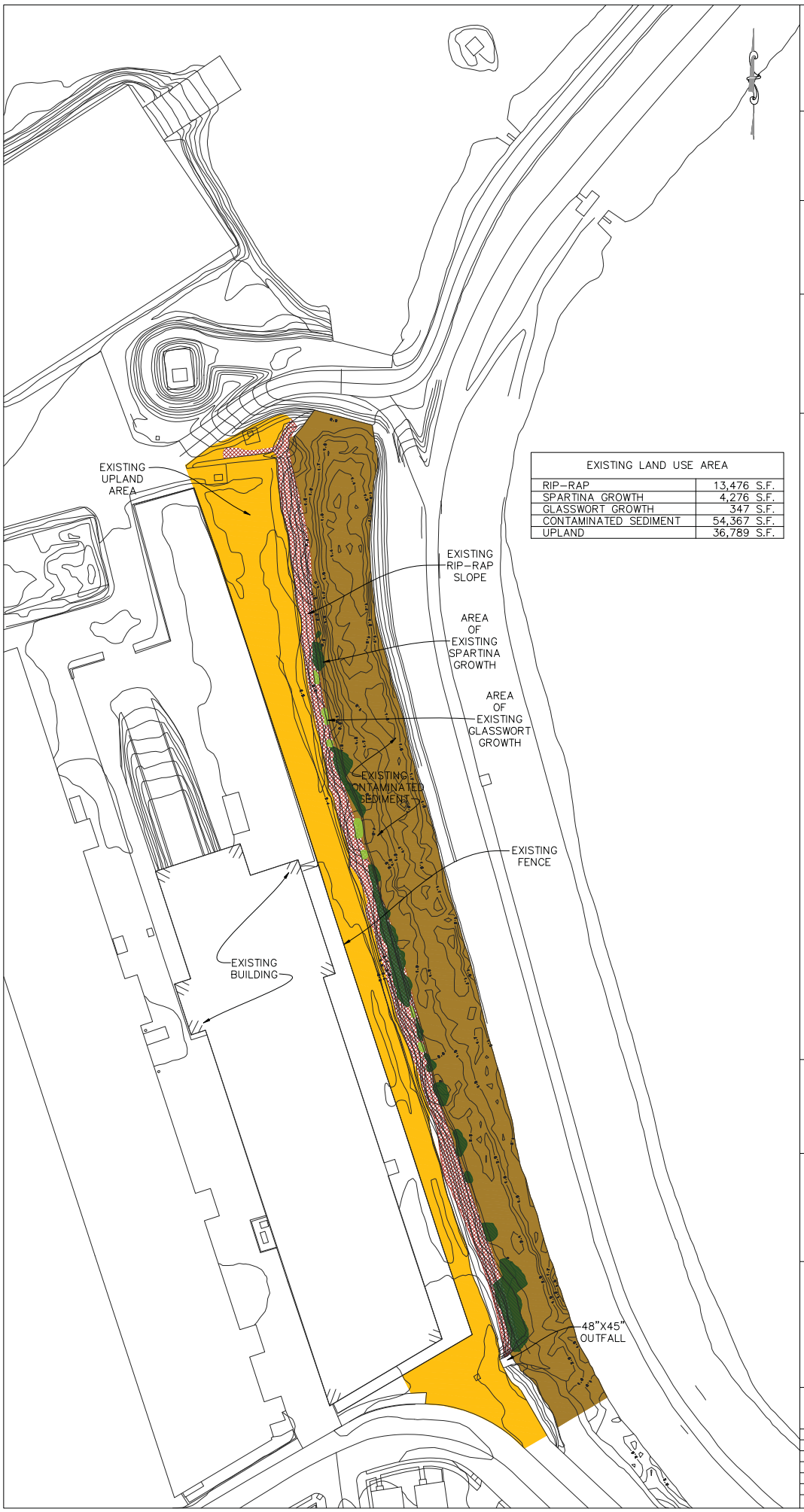
NEW BEDFORD MARINE COMMERCE TERMINAL SUBTIDAL/INTERTIDAL MITIGATION AREAS

Scale: 1"=150'

0 75 150 300 600 FEET

Date 6/5/10	Drawing No.
Proj. Mgr. JAB	
Design GCD	
Check CM	
Drawn GCD	
Job. No. 6690.002	
Last Rev. 6/5/10	

FIGURE 14



EXISTING LAND USE AREA	
RIP-RAP	13,476 S.F.
SPARTINA GROWTH	4,276 S.F.
GLASSWORT GROWTH	347 S.F.
CONTAMINATED SEDIMENT	54,367 S.F.
UPLAND	36,789 S.F.

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PREPARED FOR:

COMMONWEALTH OF MASSACHUSETTS

DRAWING TITLE:

NEW BEDFORD MARINE COMMERCE TERMINAL HURRICANE BARRIER SWALE MITIGATION AREA EXISTING CONDITIONS

Scale: 1"=40'

0 20 40 80 120 FEET

Date 1/05/11	Drawing No.
Proj. Mgr. JAB	
Design GCD	
Check CHM	
Drawn GCD	
Job. No. 6690	
Last Rev. 9/21/11	

FIGURE 15

PROPOSED LAND USE AREA	
PEDESTRIAN WALKWAY	9,358 S.F.
WETLAND TRANSITION PLANTINGS	11,278 S.F.
HIGH MARSH SPECIES PLANTINGS	14,962 S.F.
LOW MARSH SPECIES PLANTINGS	32,362 S.F.
REMEDIATED CHANNEL	29,245 S.F.
UNMODIFIED UPLAND	12,050 S.F.

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COMMONWEALTH OF MASSACHUSETTS

DRAWING TITLE:

NEW BEDFORD MARINE COMMERCE TERMINAL HURRICANE BARRIER SWALE MITIGATION AREA PROPOSED CONDITIONS

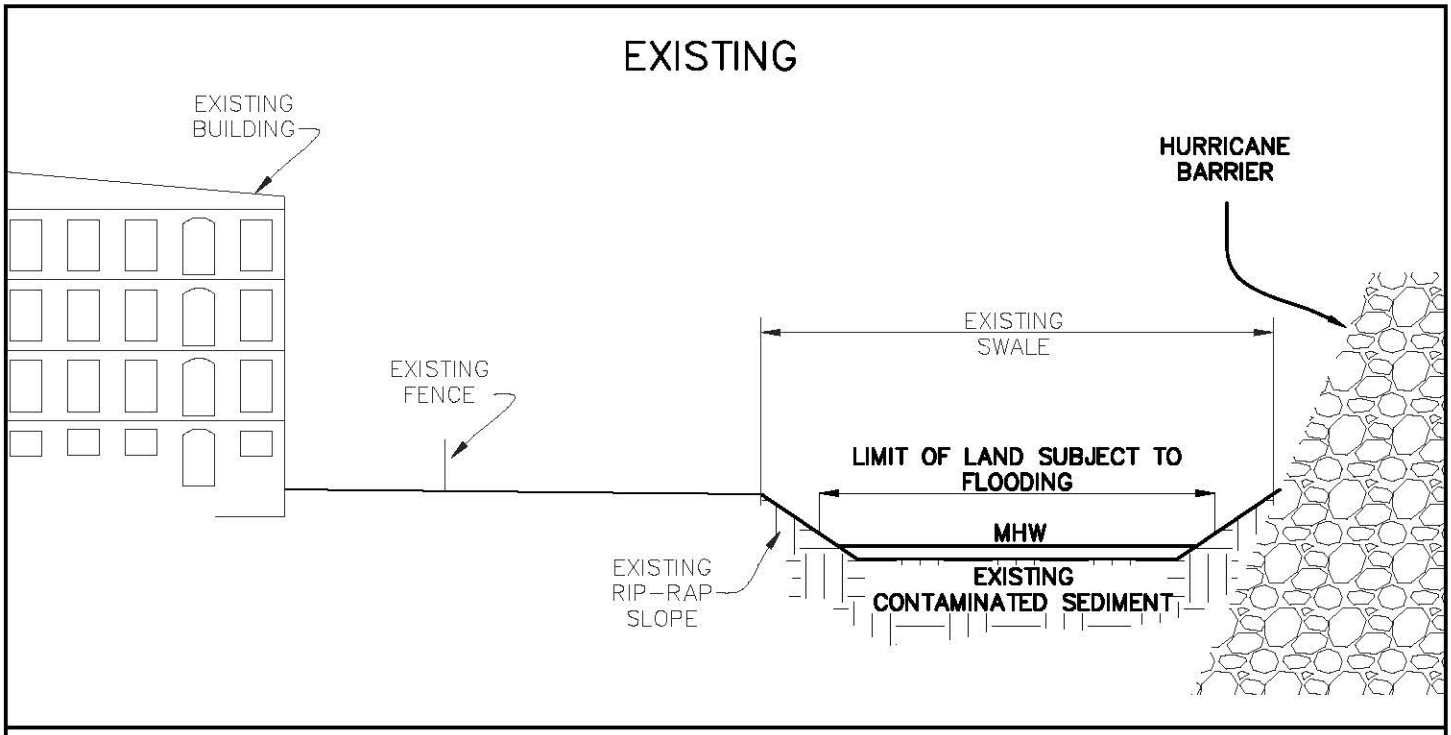
Scale: 1"=40'

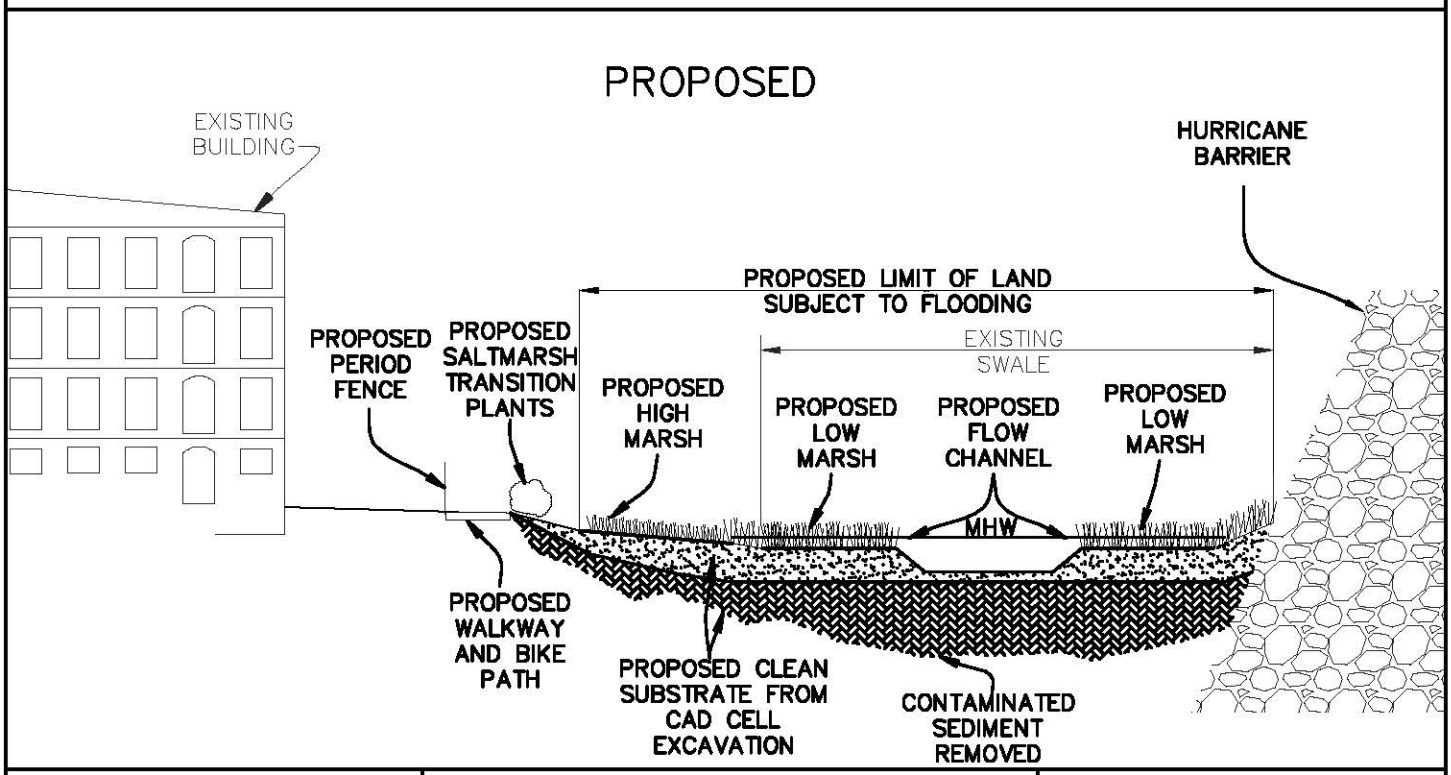
0 20 40 80 120 FEET

Date	1/05/11
Proj. Mgr.	JAB
Design	GCD
Check	CHM
Drawn	GCD
Job. No.	6690
Last Rev.	9/21/11

Drawing No.

FIGURE 16





Scale: 1"=30'

0 15 30 60

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STORMWATER DRAINAGE SWALE MITIGATION AREA CROSS-SECTION

NEW BEDFORD MARINE COMMERCE TERMINAL

COMMONWEALTH OF MASSACHUSETTS