RETURN TO SER AR INDEX

ENVIRONMENTAL PROTECTION AGENCY
REGION I

SOUTH TERMINAL PROJECT, NEW BEDFORD HARBOR

DRAFT DETERMINATION OF COMPLIANCE WITH
SECTION 404 OF THE CLEAN WATER ACT
AND
SECTION 10 OF THE RIVERS AND HARBORS ACT OF 1899

PROJECT PROPONENT: Commonwealth of Massachusetts

WATERWAY: New Bedford Harbor

1.0: Authority: This document constitutes EPA Region I's (the "Region") draft evaluation and compliance determination for the State Enhanced Remedy, New Bedford Harbor – South Terminal project proposed by the Commonwealth of Massachusetts. This draft determination proposes to find compliance with Section 404 of the Clean Water Act (33 U.S.C § 1344) and Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. § 403), subject to the proposed conditions set forth herein.

1.1: Clean Water Act: Under Section 404 of the Clean Water Act, discharges of dredged or fill material into waters of the U.S. are prohibited except in compliance with the requirements of the § 404(b)(1) guidelines, which are set forth at 40 C.F.R. Part 230. Four of the key guidelines provisions are as follows:

Section 230.10(a) prohibits discharges into wetlands and other waters if there is a practicable alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem (as long as the alternative does not have other significant adverse environmental consequences).

Section 230.10(b) prohibits discharges which would cause or contribute to violations of state water quality standards; violate toxic effluent standards under § 307 of the Clean Water Act; jeopardize the continued existence of an endangered or threatened species, or result in the likelihood of the destruction or adverse modification of such species' critical habitat; or violate requirements of marine sanctuary designations.

Section 230.10(c) prohibits discharges which would cause or contribute to significant degradation of waters of the U.S. Significant degradation may include individual or cumulative impacts to human health and welfare; fish and wildlife; ecosystem diversity, productivity and stability; and recreational, aesthetic or economic values.

Section 230.10(d) prohibits discharges unless all appropriate and practicable steps have been taken to minimize potential adverse impacts of the discharge on the aquatic ecosystem. Compensatory mitigation for unavoidable impacts to the aquatic ecosystem must satisfy the requirements of 40 C.F.R. §§ 230.91-230.98.

SDMS Doc ID 529040

1.2: Rivers and Harbors Act of 1899: The obstruction or alteration (including dredging) of any navigable water of the United States is prohibited except as authorized after a finding that the activity in not contrary to the public interest and otherwise complies with applicable federal laws, pursuant to 33 C.F.R. Part 320.

2.0 Proposed Project

2.1 Project Description: The Commonwealth of Massachusetts proposes the development of an approximately 28-acre marine terminal capable of supporting offshore renewable energy development and other future uses. The facility would also provide a site for the disposal of navigational dredged material associated with the State Enhanced Remedy ("SER") during construction of the facility, and would support staging of additional dredged material for beneficial reuse during operation of the facility. The facility would be located at the South Terminal area in lower New Bedford Harbor. The proposal is described in detail in the document entitled State Enhanced Remedy in New Bedford, South Terminal and its appendices, dated January 18, 2012 and submitted by the Massachusetts Department of Environmental Protection ("MassDEP") on behalf of the Commonwealth (hereafter referred to as MassDEP 2012). The Commonwealth has updated and supplemented its January 18, 2012 submission with 4 additional submissions (including attachments), dated June 18, 2012 (hereafter MassDEP 2012a), June 29, 2012 (hereafter MassDEP 2012b), July 11, 2012 (hereafter MassDEP 2012c) and July 12, 2012 (hereafter MassDEP 2012d). The relationship between the proposal to construct a marine terminal and the SER is discussed more fully in EPA's July 16, 2012 Draft Determination for the South Terminal Project.

The project's components include:

1. Installation of a 1200 linear foot bulkhead in the Harbor, and placement of approximately 142,000 cubic yards of dredged material (clean sand) behind the bulkhead, resulting in the filling of intertidal habitat, shallow, near-shore sub-tidal habitat, and salt marsh. This filled structure, referred to as a confined disposal facility ("CDF"), will be adjacent to approximately 21.4 acres of upland that, together with the filled structure, will comprise the terminal facility;
2. Dredging of shallow, near-shore, sub-tidal habitat and deeper sub-tidal habitat to provide navigational access to and berthing at the terminal; to realign the Gifford Street Boat Ramp Channel and create new mooring areas (to mitigate impacts to recreational users from the South Terminal dredging); and to conduct maintenance dredging in the Federal Navigation Project channel and turning basin: and
3. Dredging of shallow, near-shore, sub-tidal habitat to create a confined aquatic disposal ("CAD") cell, identified as "CAD Cell 3," which will then be filled with contaminated dredged material from the above-described navigational dredging.
4. Disposal of contaminated dredged material from the above-described navigational dredging into CAD Cell 3 and existing CAD cell 2, and disposal of clean dredged material to cap existing CAD Cell 1 and the "Borrow Pit."
5. Compensatory mitigation to address impacts to wetlands, intertidal habitat, subtidal habitat, and shellfish resources.

2.2 Summary of Estimated Areal Impacts in Federally Regulated Waters

Permanent Impacts

For areas to be fully or partially filled for construction of the CDF:

Freshwater wetlands	0.10 acres[1]
Intertidal area:	1.94 acres
Shallow, near-shore sub-tidal area:	4.73 acres
Salt marsh:	0.18 acres[2]
Total:	6.95 acres

For areas to be dredged:

Shallow, near-shore sub-tidal area (to be dredged from between -1 and -13 MLLW to -14 MLLW)(Quayside Areas and Tug Channel):	8.46 acres
Shallow, near-shore sub-tidal area (to be dredged from between -1 and -6 MLLW to -30 to -32 MLLW)(Quayside Areas):	7.02 acres[3]
Total:	15.48 acres
Total Permanent Impacts:	22.43 acres

Temporary Impacts Associated with Dredging

Shallow, near-shore sub-tidal area (to be dredged from between -4 and -6 MLLW to -6 to -7 MLLW)(Gifford Street Mooring Basin and Channel):	6.17 acres

[1] In addition, there is a 0.4 acre freshwater wetland on one of the properties that may become incorporated into the terminal site, in which event it too would be filled. See section 4.3.7.

[2] This area was delineated during the June 28, 2012 site investigation, and a report submitted to EPA on July 11, 2012. Due to the late date of the submission of this report, EPA has not had adequate time to complete its review and confirm revised areal estimates of the salt marsh areas and impacts. For purposes of this analysis we are assuming the 0.18 acre impact that the Commonwealth has previously identified in prior submissions and will be evaluating this further before making a final decision on the project.

[3] This figure represents 3.68 acres that will definitely be dredged, and an additional 3.34 acres that are associated with a potential extension of the deep-draft quayside dredging area to the south and potential additional widening of the deep-draft channel. See MassDEP 2012a at pp. 2-4 and 9.

Shallow, near-shore sub-tidal area (to be dredged from between -4 and -6 MLLW to -45 MLLW)(CAD Cell):	8.76 acres[4]
Deeper, sub-tidal area (to be dredged from between -20 to -25 MLLW to -30 MLLW)(South Terminal Channel):	8.29 acres.[5]
Deeper, sub-tidal area (to be dredged from between -26 to -30 MLLW to -30 MLLW)(Maintenance Dredging of Federal Navigation Project):	15 acres[6]
Total:	38.22 acres

Temporary Impacts Associated with CAD Cell Filling and Capping

Capping Borrow Pit and CAD 1 with clean dredged material and disposal of contaminated dredged material into CAD cell 2	10.8 acres

2.3 Location: The project site is located adjacent to New Bedford Harbor in New Bedford, Massachusetts, immediately to the south of the existing South Terminal facility. A Site Locus Map is included as Figure 1 in MassDEP 2012. The latitude of this site is 41.622936. The longitude of this site is 70.915271. The site is located within the Cape Cod Watershed. The Hydrologic Unit Code for this site is 01090002.

2.4 Scope of Analysis: This CWA § 404 and RHA § 10 evaluation considers the effects on waters of the United States associated with the discharge of dredged and fill material into the CDF; the dredging to accommodate access to and berthing at the terminal and for the Gifford Street channel and mooring areas; the maintenance dredging of the Federal Navigation Project; and the dredging and filling associated with the CAD cells.

This evaluation does not consider the impacts associated with the offshore disposal of the material excavated from CAD Cell 3. Those impacts have been evaluated by the U.S. Army Corps of Engineers, which, on November 4 and 15, 2011, authorized the disposal of approximately 750,000 cubic yards of clean dredged sediments excavated from CAD Cell 3 at either the Cape Cod Bay Disposal Site or the Rhode Island Sound Disposal Site (both EPA

[4] This figure represents 6.3 acres that will definitely be dredged, and an additional 2.46 acres that would be dredged to accommodate additional excavate from the potential expansion of the deep-draft draft quayside dredging area and potential additional widening of the deep-draft channel. See MassDEP 2012b, pp. 3-4.

[5] This figure represents 7.01 acres that will definitely be dredged, and an additional 1.28 acres that are associated with a potential extension of the deep-draft quayside dredging area to the north. See MassDEP 2012a at pp. 3 and 10.

[6] Some or all of this dredging may not need to occur, depending on the draft of the vessels to be used at the site, so inclusion of this figure is a worst case scenario. See MassDEP 2012a at pp. 2-3, 4-5, and 10.

Designated Ocean Disposal Sites).

2.5 Site Description: New Bedford Harbor is located on the northern shore of the Buzzards Bay and borders the communities of Fairhaven to the east, and New Bedford to the west. The New Bedford Hurricane Barrier seawall and floodgates (immediately south of Palmer Island) demarcates the outer harbor from the inner harbor and there is also a federal navigation channel which leads into the inner harbor. The Acushnet River flows into the northernmost part of the upper estuary and is the most significant freshwater inflow into the harbor. The inner harbor contains several marinas, a recreational fleet, historical attractions, commercial fishing fleets, and fish processing/cold storage facilities. Land usage along the shore is a mixture of residential, commercial and industrial uses.

New Bedford Harbor is highly contaminated with polychlorinated biphenyls (PCBs) and heavy metals from manufacturing discharges that occurred from 1940 to the late 1970s. The harbor sediments are contaminated in varying degrees from the upper Acushnet River into Buzzards Bay. Bioaccumulation of PCBs within the marine food chain has resulted in closing the area to lobstering and fishing, and recreational activities and harbor development have been limited by the widespread PCB problem. The source of the contamination has been attributed to two electrical capacitor manufacturing facilities that operated between the 1940s and 1970s. One facility, Aerovox Corporation was located near the northern boundary of the site and the other facility, Cornell-Dubilier Electronics, Inc. is located just south of the New Bedford Hurricane Barrier. Based on the health concerns of the site, the Environmental Protection Agency (EPA) added the site to the National Priorities List in 1983 as a designated Superfund Site. EPA's selected remedy involves sediment removal by dredging and the containment of contaminated sediments. Full scale dredging began in 2004 and to date approximately 225,000 cubic yards of contaminated sediments have been remediated.

The upland portion of the project site is underlain by urban fill. The majority of the land that will be incorporated into the proposed terminal was once the site of a former mill complex. The mill was demolished in the 1930's. Currently, the land that covers the former mill complex contains areas of hummocky terrain typically indicative of remnant rubble or debris in the subsurface, and portions of the site (particularly the central, northern, and western portions) contain broken pieces of brick and mortar at or just below the ground surface. The Commonwealth has identified three areas on the upland portion of the site that require remediation to address PCB and petroleum-related contamination. One of these areas, southwest of the existing bulkhead extension, is a paved area associated with a release under 310 CMR 40.0000 (the Massachusetts Contingency Plan); the remedy for the release is an asphalt cap. There is also one 0.1 acre wetland pocket located on the upland portion of the site.

3.0 Aquatic Resource Functions and Values

3.1 Fresh Water Resources: A site investigation to characterize freshwater resources was conducted on June 28, 2012, and a report submitted to EPA on July 11, 2012. According to the report, fresh water resources are very limited at the project location, comprised of one small vegetated wetland located north of the existing paved area on parcel 49, approximately 4,600

square feet (0.1acres) in area.[7] This disturbed wetland has formed in a depressional area within the existing fill on site. Evidence of hydrology supporting this wetland is present. Soils consist of significantly disturbed urban fill. While no sampling data has been provided characterizing soils within this wetland, soil sampling conducted in the general vicinity of the wetland indicates that the wetland soils are likely to be contaminated with PCBs and metals (MassDEP 2012, Appendix 39, Table 1). Wetland vegetation consists primarily of *Phragmites australis* (common reed), an invasive species.

Functions and values associated with this wetland include groundwater recharge/discharge, floodflow alteration, sediment/toxicant retention, and wildlife habitat. However, these wetland functions and values are limited due to the small size and degraded nature of the wetland system and the surrounding landscape.

3.2 Salt Water resources

3.2.1 Water Quality Classification: The South Terminal Project will be constructed in the New Bedford Inner Harbor. This water body is classified as "SB," with qualifiers noted in the Massachusetts Water Quality Standards for shellfishing (314 C.M.R. Part 4.00).[8]

The SB classified waters are coastal and marine waters that are designated as habitat for fish, other aquatic life and wildlife, including for their reproduction, migration, growth and other critical functions, and for primary and secondary contact recreation. The "shellfishing" qualifier indicates that New Bedford Inner Harbor is also designated for shellfish harvesting with depuration.

The New Bedford Inner Harbor (MA95-42) is listed as an impaired water on Massachusetts' 2010 Clean Water Act § 303(d) list. http://www.mass.gov/dep/water/resources/10list3.pdf. The pollutants associated with the impairments are listed as priority organics, metals, nutrients, organic enrichment/low dissolved oxygen, fecal coliform, oil and grease, taste, odor and color, and objectionable deposits.

Twelve water column samples collected in December 2010 from four locations (at three different depths) in the vicinity of the South Terminal project area, confirm levels of pollutants above Massachusetts water quality criteria. Specifically, PCBs, bis(2-ethylhexyl)phthalate, copper, and lead concentrations exceeded Massachusetts water quality standards.

---

[7] The Commonwealth characterized this wetland as "isolated" and therefore not subject to federal jurisdiction. However, given that it is merely 153 feet from the high tide line the harbor, EPA believes this it is adjacent to (i.e., neighboring) a traditional navigable water and therefore subject to CWA jurisdiction.

[8] The Massachusetts Water Quality Standards also list New Bedford Inner Harbor with a "CSO" qualifier, indicating that the water body has been impacted by the discharge of combined sewer overflow (CSO) (314 CMR 4.06(1)(d)(10). The City of New Bedford has a long term CSO control plan and has been working to reduce CSO discharges through wastewater collection system improvement projects.

3.2.2 Tidal Wetlands, Finfish, Shellfish, Benthic Community:

Wetlands: Federally jurisdictional tidal wetlands at the project location consist of an emergent salt marsh system, situated directly within and adjacent to the proposed location of the CDF. This area was delineated during the June 28, 2012 site investigation, and a report submitted to EPA on July 11, 2012. Due to the late date of the submission of this report, EPA has not had adequate time to complete its review and confirm revised areal estimates of the salt marsh areas, including a newly identified south salt marsh area (Salt Marsh 2). Areal estimates in the recent report indicate a smaller area of salt marsh present at Salt Marsh 1 than had been previously described by the Commonwealth. For the purposes of the draft determination, the previously submitted estimate of the areal extent of Salt Marsh 1 is being used for assessment of impacts, combined with the areal estimate for the newly identified Salt Marsh 2 presented in the July 11, 2012 report. Areal estimates will be revised after EPA has completed review and confirmation of the new wetland delineation. For the purposes of the draft determination, the salt marsh resources present are estimated to be approximately 1.06 acres in area. Soil sampling indicates that the wetland soils are contaminated with PCBs and metals (MassDEP 2012, Appendix 36, Tables 2A and 2E). Wetland vegetation present includes *Spartina alternaflora*, and trace amounts of *Salicornia virginiana*.

Functions and values associated with this system include groundwater discharge, flood flow alteration, fish and shellfish habitat, shoreline stabilization, and wildlife habitat.

Other federally jurisdictional resource areas that will be impacted by the proposed project include intertidal and subtidal aquatic habitats, which provide critical habitat supporting the life cycles of numerous species, as described below.

Finfish: The finfish community of inner New Bedford Harbor is generally reflective of the greater Buzzards Bay system. Fish use this system both as year round residents and as seasonal transients. The most common or dominant species found in Buzzards Bay are listed in Table 3A below.

Table 3A: Dominant finfish species of Buzzards Bay (Howes and Goehringer, 1996)

Residents		Non-residents	
Common name	Scientific name	Common name	Scientific name
Sheepshead minnow	*Cyprinidon variegus*	Alewife	*Alosa pseudoharengus*
Atlantic herring	*Clupea harengus*	Blueback herring	*Alosa aestivalis*
Winter flounder	*Pseudopleuronectes americanus*	Atlantic menhaden	*Brevoortia tyrannus*
Mummichog	*Fundulus heteroclitus*	Tautog	*Tautoga onitis*

Striped killifish	*Fundulus majalis*	Black sea bass	*Centropristis striata*
Four-spined stickleback	*Apeltes quadracus*	Bluefish	*Pomatomus saltatrix*
scup	*Stenotomus chrysops*	Butterfish	*Peprilus triacanthus*
Atlantic silverside	*Menidia menidia*	Striped bass	*Morone saatilis*

As part of a Draft Environmental Impact Report ("DEIR"), Massachusetts Coastal Zone Management (MACZM) conducted finfish sampling in New Bedford Inner Harbor for a 12 month period between 1998 and 1999 (MACZM, 1999). Fish were collected in near shore locations in 50 foot beach seines with 3/16th inch mesh. Trawl sampling was also conducted with a 30 foot otter trawl with 2 inch stretch mesh in the body and a 1 inch stretch mesh in the cod end. Multiple stations were sampled from Popes Island south to the hurricane barrier.

Results of the beach seine showed that Atlantic silversides was the most abundant species present comprising almost 44% of the catch (Table 3B). Striped killifish, cunner, mummichog and winter flounder all represented significant percentages of the catch (Table 3B). "Other species" comprised about 18% of the catch these included black sea bass, northern puffer, northern kingfish, bluefish, Atlantic menhaden, and a handful of other species that may be only represented by 1 or 2 individuals.

Table 3B: Percent of fish caught in beach seine samples from New Bedford Harbor from June 1998 to May 1999 (MACZM, 1999)

Species	Percent of total catch
Atlantic silverside	43.6
Striped killifish	16.0
Cunner	7.5
Mummichog	8.7
Winter flounder	6.3
Other species	17.9

Trawl sampling was conducted utilizing a 400 meter tow length and was conducted over a depth range of 6.5 to 33 feet. As expected, the results of the trawl survey reflected a slightly different composition of species mix than the beach seines. Scup was the dominant species taken comprising almost a quarter of the catch (Table 3C). Cunner comprised 20.8% of the catch, while winter flounder, black sea bass and northern pipefish also represented a significant portion

of the total (Table 3C). "Other species" represented 28.2% of the catch and consisted of Atlantic herring, Atlantic silversides, bay anchovy, butterfish, seaboard goby, windowpane flounder and mummichog.

Table 3C: Percent of fish caught in trawl samples from New Bedford Harbor from June 1998 to May 1999 (MACZM, 1999)

Species	Percent of total catch
Scup	23.4
Cunner	20.8
Winter flounder	12.5
Black sea bass	9.1
Northern pipefish	6.0
Other species	28.2

Diadromous fish activity: Diadromous fish are species that regularly move between fresh and salt water. Four species of anadromous (species that live in salt water, but breed in freshwater) fish are known to inhabit Buzzards Bay. These are American shad, blueback herring, rainbow smelt and alewife (Howes and Goehringer, 1996). MACZM sampling in 1998-1999 found alewife in the fall sampling, and rainbow smelt in the spring and the summer (MACZM, 1999). White perch was collected in the spring, while blueback herring and American shad were not observed during the sampling (MACZM, 1999).

Endangered species: The National Marine Fisheries Service recently listed the Atlantic sturgeon (*Acipenser oxyrinchus oxyrincus*) as an endangered species. On June 19, 2012, NMFS wrote to EPA advising that because Atlantic sturgeon undertake large-scale marine migrations and will forage anywhere any available habitat exists, this species may be present in the vicinity of New Bedford Harbor. EPA is currently seeking additional technical assistance from NMFS and is in pre-consultation analysis with it to determine the potential for adverse effects to the species and measures to avoid or minimize such effects.

Benthos: The term benthos refers to organisms that live in or on the seafloor. A wide suite of invertebrates reside within the sediments and collectively are known as infauna. A lesser number of invertebrates live on the seafloor and are generally known as epifauna. In addition to those two classes of organisms, shellfish will be discussed as a separate category due to their commercial importance.

Benthic infauna: New Bedford has a long history as being an industrial port and this history is reflected in the high concentrations of a wide suite of chemicals in the sediments of New Bedford Inner Harbor. The chemical quality of the sediments has had a direct and indirect effect on the benthic infaunal community in this system. In some locations, high sediment concentrations of pollutants may preclude the presence of some sensitive species. Indirect

effects include adverse effects from extensive dredging in some areas due to the need to remediate the sediments, and beneficial effects from the complete lack of disturbance in other areas because the taking of shellfish has been banned.

Sampling sponsored by MACZM in 1999 was conducted in New Bedford Inner Harbor to characterize the general condition of the benthic community. The survey utilized the REMOTS® sediment-profile imaging system. This system generates a vertical cross section of the seafloor to a depth of about 20 cm. Biological condition inferences can be reasonably drawn from the images produced by this system. This system has been extensively used all over the world.

This survey showed, in general, that much of the benthic infaunal community in New Bedford Inner Harbor is comprised of a variety of small opportunistic polychaete worm species, such as *Streblospio benedicti* and *Mediomastus ambiseta* (MACZM, 1999). These species are shallow burrowers and tend to be indicative of frequently disturbed or stressed habitats. The survey did find areas that possessed not only these small polychaetes, but larger worms, such as *Nephtys incisa* and *Nereis virens* and large quantities of shellfish. The details of the shellfish resource will be discussed in a separate section below.

Benthic epifauna: Very little if any directed study of the benthic epifaunal community in New Bedford Inner Harbor exists. It is reasonable to assume that the normal assemblage of benthic epifaunal species that are common in Buzzards Bay likely occur within New Bedford Inner Harbor. Epifauna tend to be either more resilient or have less exposure than infauna, because they are not fully immersed in the sediments. In addition, their larval stages tend to be pelagic, so on a routine basis, new recruits from many of these species are likely washed into this area. Howes and Goehringer (1996) reported a wide assemblage of epibenthic organisms occurring in Buzzards Bay, the common ones are listed in Table 3D. It is reasonable to expect that some or many of these species are present in New Bedford Inner Harbor.

Table 3D: Common epibenthic species found in Buzzards Bay (Howes and Goehringer, 1996).

Species	Class/phylum	Species	Class/phylum
Semibalanus balanoides	Crustacea	*Balanus balanus*	Crustacea
Carcinus maenas	Crustacea	*Cancer irroratus*	Crustacea
Pagurus longicarpus	Crustacea	*Ampelisca spinipes*	Crustacea
Byblis serrata	Crustacea	*Littorina littorea*	Gastropoda
Littorina obtusata	Gastropoda	*Littorina saxatilis*	Gastropoda
Mytilus edulis	Bivalvia	*Modiolus modiolus*	Bivalvia
Crepidula fornicate	Gastropoda	*Retusa canaliculata*	Gastropoda

Uniciola irrorata	Crustacea	*Tellina teners*	Bivalvia
Cylichna orzya	Gastropoda	*Busycon canaliculatum*	Gastropoda
Homarus americanus	Crustacea	*Limulus polyphemus*	Arthropoda

Shellfish: New Bedford Inner Harbor has been administratively closed to shellfishing since 1979. A survey conducted by the Massachusetts Division of Marine Fisheries (MADMF) in the late 1990s showed a large abundance of commercial shellfish throughout New Bedford Inner Harbor. Quahogs (*Mercenaria mercenaries*) were the dominant species found throughout the Harbor, but soft shell clam (*Mya arenaria*), bay scallop (*Aequipecten irradians*), blue mussel (*Mytilus edulis*) and American oyster (*Crassostrea virginica*) were also noted as present.

In May 2010, the Commonwealth conducted a shellfish survey in the project area. The methodology of this survey was reviewed and approved by MADMF. Quahogs were the dominant shellfish present within the proposed project area. Quahog densities varied within the project area from 0 to 6.6 individuals per square foot. As part of this survey, quahogs were classified as seed, littleneck, cherrystone or chowder clams based on their size. Seed quahogs are any clam less than 50 mm in width, littlenecks are 51-60 mm in width, cherrystones are 60-70 mm in width and chowder clams are 71 mm or greater in width. Based on the results of this survey it is estimated that there are almost 10 million quahogs in the project area (Table 3E).

Table 3E: Quahog abundance by size classification within the New Bedford State Enhanced Remedy Project Footprint (MassDEP, 2012)

Seed	Littleneck	Cherrystone	Chowder
1,142,475	2,262,003	3,070,499	3,342,544
		Total	9,817,521

Marine Mammals and sea turtles: Humpback whales, Kemp's Ridley, Loggerhead and Leatherback turtles all may occasionally be present in Buzzards Bay. Due to depth and lack of desirable habitat, these species are unlikely to occur with Inner New Bedford Harbor (NMFS, June 19, 2012). Harbor and gray seals occur within Buzzards Bay, but they are found predominantly around the Elizabeth Islands chain and are unlikely to stray into Inner New Bedford Harbor (Buzzards Bay Comprehensive Conservation and Management Plan, 2012).

3.3 Avian Resources

To characterize the avian resources within the project area, the Commonwealth has pooled a variety of data sources, including historic dedicated surveys, and observations from Massachusetts Audubon and avid amateur birders in the area. "Priority species" have been identified by a joint commission of state and federal resource managers that work along the

Atlantic flyway (Puerto Rico to Canada). Table 3F lists "Priority species" that have been observed in New Bedford. Occurrence of other bird species in the project area is infrequent (MassDEP, 2012). Potential use of the project site by roseate terns will be discussed in Section 5.3 below and in Appendix K.

Table 3F: Bird species observed within or near proposed New Bedford State Enhanced Remedy Project Area (MassDEP, 2012)

American black duck	American oystercatcher	Baltimore oriole	Black crowned night heron
Blue winged warbler	Canada goose	Chimney swift	Eastern kingbird
Eastern towhee	Gadwell	Gray catbird	Great crested flycatcher
Killdeer	Least tern	Mallard	Nelson's sparrow
Northern flicker	Saltmarsh sparrow	Snowy egret	Spotted sandpiper
Willet	Willow flycatcher	Wood duck	

CLEAN WATER ACT SECTION 404(b)(1) GUIDELINES ANALYSIS

4.0 Alternatives (40 C.F.R. § 230.10(a))

4.1 Introduction: Forty C.F.R. § 230.10(a) prohibits a discharge of dredged or fill material if there "is a practicable alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem so long as the alternative does not have other significant adverse environmental consequences." 40 C.F.R. § 230.10(a). This fundamental requirement of the § 404 program is often expressed as the regulatory standard that a permit may only be issued for the "least environmentally damaging practicable alternative" or LEDPA.

An alternative is practicable if it is "available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes." Moreover, "…an area not presently owned by the applicant which could be reasonably be obtained, managed, or utilized in order to fulfill the basic purpose of the proposed activity may be considered." 40 C.F.R. § 230.10(a)(2). (The Region's analysis of the South Terminal Project generally uses the term "basic" when discussing the project purpose, recognizing that the regulations use the terms "overall" and "basic" interchangeably.)

A project proponent bears the burden of demonstrating that its preferred alternative is the LEDPA. This demonstration may be made either by showing that no other alternatives are practicable, by showing that no other alternatives are less damaging to the aquatic ecosystem, or both. For this project, the Commonwealth has primarily based its alternatives analysis on issues

related to the practicability of alternative sites. With one exception, the submission does not contain information that would allow a comparison of impacts to the aquatic ecosystem between the proposed project and each of the various alternatives.

4.2 Basic Project Purpose: EPA has determined that the basic project purpose is to develop a marine terminal that will provide infrastructure capable of supporting the development of offshore renewable energy facilities as well as other future uses (such as container shipping, break-bulk cargo shipping, bulk cargo shipping, short-seas shipping). A secondary purpose is to provide a site for the disposal of, and staging for beneficial reuse of, material dredged from navigational dredging associated with the State Enhanced Remedy ("SER").

4.2.1 Water Dependency: The construction of a marine terminal is considered to be a water dependent activity because it requires access to or proximity to waters of the U.S. in order to meet the basic project purpose. The project's secondary purpose -- disposal and storage of dredged material -- is not a water dependent activity.[9]

4**.3 Basic Project Purpose Criteria:** The Commonwealth's site feasability criteria and alternatives analysis relies on a report prepared by Tetra-Tech EC, Inc. on behalf of the Massachusetts Clean Energy Center, entitled "Port and Infrastructure Analysis for Off-Shore Wind Energy Development," (MassDEP 2012, Appendix 2), as well as on supplemental information provided by Siemens, a leading offshore wind energy manufacturer. [10] Id., Appendices 3 and 4; MassDEP 2012a, Appendix D.

Tetra-Tech screened potential marine port sites against ten "hard" criteria which represent "basic requirements without which a facility could not support a renewable energy terminal." MassDEP 2012 at 18-19. Some of the criteria were subsequently refined or modified after input to the Commonwealth from Siemens, based on its experience installing off-shore wind turbines in Europe (since there are no existing off-shore wind farms in the United States). Id. at 19-23. The Commonwealth identified the following key criteria that were significant for distinguishing among alternatives for purposes of determining the practicability of each alternative in light of the basic project purpose: horizontal clearance of at least 130 feet to accommodate expected widths of international vessels; jack-up barge access (which requires a stable harbor bottom); overhead clearance of at least 250 feet to accommodate the height of cranes and spuds of the installation vessels; total wharf and yard upland area of at least 28 acres; berthing space of at least 1,200 linear feet to accommodate one international vessel and two jack-up barges at any one time; site control and availability; and proximity to future offshore facilities.[11] Id. at 23-27.

---

[9] For discharges associated with a non-water dependent project, the regulations at § 230.10(a) presume that practicable, less environmentally damaging alternatives exist unless clearly demonstrated otherwise. 40 C.F.R. § 230.10(a)(3).

[10] Siemens has entered an agreement with Cape Wind Associates to be the turbine supplier for the 130 turbine wind farm proposed for installation at Horseshoe Shoals off of Nantucket Island. The Commonwealth hopes that its proposed terminal will be the staging area for the Cape Wind development.

[11] There were additional criteria, such as access to deep water navigation, that all of the alternatives satisfied and therefore were not discussed in detail as part of the alternatives analysis.

The ability to reuse dredged material for disposal and future staging was also a factor evaluated for each alternative, although it was not dispositive. Id. at 27.

The Region has tentatively determined that the Commonwealth has made an adequate demonstration that many of the above-referenced criteria are essential to satisfy the basic project purpose, as discussed further below in the context of specific alternatives.

4.4 Alternatives Evaluated: The Commonwealth evaluated the following alternative sites using the refined feasibility criteria: Port of Davisville, Quonset Business Park, Quonset Point, Rhode Island (RI); Dry Dock #4, Marine Industrial Park, South Boston, MA; Fall River State Pier, Fall River, MA; Union Wharf and Fairhaven Shipyard, Fairhaven, MA; North Terminal and Pope's Island, New Bedford, MA; and South Terminal, New Bedford MA (the preferred alternative) (*cites*). The Commonwealth concluded that all of the sites other than its preferred alternative are not practicable for one or more reasons, and that its preferred alternative therefore is the LEDPA. Id. at 27-54. The Region has evaluated the information provided by the Commonwealth and tentatively agrees that South Terminal is the LEDPA for the reasons set forth below.

4.4.1 Alternative I – Port of Davisville, Quonset Point, Rhode Island: To be practicable, an alternative must be available to the project proponent. The Port of Davisville is owned by the State of Rhode Island and operated by the Rhode Island Economic Development Corporation. Id., Appendix 2 at 5-28. Much of the upland portion of the port, including the two main piers, is already fully utilized for an existing auto import operation, reportedly the fifth busiest auto importer in North America, and growing. Indeed, the port is now the 7th largest car importer in North America. http://www.wpri.com/dpp/news/local_news/south_county/north-kingstow-port-of-davisville-celebrates-milestone. There is no realistic basis to believe that the piers and upland being used for the auto import operation could be purchased or leased by the Commonwealth to develop a marine terminal to support off-shore wind energy development, and the Commonwealth has no eminent domain authority in Rhode Island. The Region has tentatively determined that this area is not available and therefore not practicable.

The Commonwealth also evaluated a 27.5 acre area at the Port located just south of Pier 1, which is one of the two piers used for the auto import operation. MassDEP 2012 at 29. This is referred to as the "Magnolia Street Area" and depicted in Appendix 6, p. 6. In its January 18, 2012 submission, the Commonwealth reported that of this area, a 14.5 acre parcel was under agreement, and that the holder of the option had stated that it was not interested in granting a long term lease to the Commonwealth. Id. at 29-30. The Commonwealth subsequently provided information showing that the parcel is not available. See MassDEP 2012a at 15 and Attachment I. Based on the Commonwealth's submissions, it seems clear that the minimum acreage necessary to accommodate a marine terminal to support off-shore wind energy development is at least 20 acres, and possibly as large as 28 acres. MassDEP 2012, Appendices 3 and 4. Hence, the remaining available 13 acres at this site would not be large enough to be a feasible alternative. In addition, neither pier at the port to the north is available, as discussed above. Therefore the Region has tentatively determined that this site is not practicable in light of the basic project purpose.

Finally, the Commonwealth evaluated a 45 acre undeveloped area between the Magnolia Street

area and Quonset Airport. While there is ample backland area adjacent to the shoreline, there would be extensive environmental impacts associated with developing this parcel into a marine terminal capable of supporting offshore renewable energy development. Because of the unavailability of the piers at the Port of Davisville, access to this area would require the construction of a bulkhead which, to create sufficient berthing space, would involve filling 6 acres of salt marsh and approximately 15.7 acres of intertidal and shallow sub-tidal area. From an acreage standpoint, these impacts are substantially greater than the filling of 0.18 acre of salt marsh and 6.67 acres of intertidal and shallow subtidal area associated with the Commonwealth's preferred alternative. In addition, to create an adequate boat basin, turning basin, and access channel, approximately 32.75 acres of shallow sub-tidal habitat would need to be dredged, compared to between 18.31 and 21.65 acres of shallow sub-tidal habitat and between 7.01 and 8.29 acres of deeper subtidal areas that would be dredged for the Commonwealth's preferred project. [12] Id. at 31-32; MassDEP 2012a at 16-17. If the berthing area were shifted to the south to avoid the salt marsh, the length of the channel and associated dredging impacts would increase. Given the greater areal extent of the impacts associated with development of this site, particularly in the valuable salt marsh, intertidal, and shallow subtidal areas, EPA has tentatively determined that development of this parcel to meet the basic project purpose would not be less environmentally damaging to the aquatic ecosystem compared to the Commonwealth's preferred alternative. Therefore, the Region has tentatively determined that it is not the LEDPA and declines to reach any judgment about its practicability.

4.4.2 Alternative II – Dry Dock #4, Boston, Massachusetts: This site is located in the Marine Industrial Park in South Boston. The Commonwealth identified a number of reasons why, in its judgment, the site is not a practicable alternative. The first is that there is only 13-14 acres of land currently available. In order to obtain the necessary acreage, a long established and well known landmark, Harpoon Brewery, would need to agree to sell its premises or the Commonwealth would have to exercise eminent domain. A willing sale is not a likely scenario, and eminent domain proceedings could take years.

An additional issue is that the geologic nature of the sediments that underlay Boston Harbor are not sufficiently stable to support the equipment that would be employed for off-shore wind facility construction. Jack-up barges will be used to transport the constructed turbines from the terminal to the off-shore installation site. When the barges are being loaded, they are supported by 3 or 4 "spuds" (up to 250-foot long legs) that are planted on the ocean floor. In order to support the weight of the barge and the turbines, the ocean floor in front of the bulkhead must be of a uniform, hard consistency. MassDEP 2012 at 20, 34-36; MassDEP 2012a at 18. According to information provided by the Commonwealth, the ocean floor in Boston Harbor consists of fine-grained organic soil underlain by Boston Blue Clay. MassDEP 2012 at 34; MassDEP 2012a at 19. Blue clay does not provide the stability necessary to support the jack up barges. MassDEP 2012 at 36-37; MassDEP 2012a at 18-19 and Attachment K.

As discussed in section 4.4.1 above, the Commonwealth's submissions have demonstrated that

[12] Although the South Terminal Project also involves the potential for up to 15 acres of maintenance dredging in the Federal Navigation Project, this dredging is expected to result in only minimal temporary impacts.

the minimum acreage necessary to accommodate a marine terminal to support off-shore wind energy development is at least 20 acres, and possibly as large as 28 acres. Because the available acreage at Dry Dock #4 is only 13-14 acres, and because the Region tentatively agrees that the Harpoon Brewery parcel is not available to increase the site to a feasible size, the Region tentatively agrees that this site is not practicable.

Even if there were a way to acquire sufficient land, the Region tentatively has determined that this site also is not practicable to meet the basic project purpose because of the presence of unsuitable substrate. The Commonwealth's submissions demonstrate that in order to function safely, the jack-up barges that will be used to transport wind turbines to an offshore facility must be planted on a firm substrate so that they will not tip over or sink. The Boston Blue Clay that underlies Boston Harbor is too soft to reliably support jack-up barges without the risk of accidents and therefore renders the site impracticable.[13]

The Commonwealth has identified additional issues with this site. The first relates to the need for Federal Aviation Administration approval to operate the facility at this location due to its proximity to Logan Airport, and the potential incompatibility between the height of the turbines when loaded onto the barges traveling to the installation site and height restrictions that the FAA might establish. The second issue relates to the distance between this site and the locations of two currently proposed offshore wind farm developments: Nantucket Sound (for the Cape Wind project), and off the coast of Rhode Island (for the proposed Deepwater Wind project). The third relates to potential increased impacts on the federally endangered right whale due to additional vessel traffic in shipping lanes frequented by the whales. Because the Region has tentatively determined that this site is not practicable for the reasons discussed above, we have not reached any conclusions about the effect of these factors on the practicability of this alternative.

4.4.3 Alternative III – Fall River State Pier, Fall River, Massachusetts: There are several issues related to the practicability of this site. The first two relate to the size and availability of the facility. The upland area at the pier is only approximately 9 acres. It is currently in active use for offloading break-bulk and container ship cargo, for roll-on roll-off cargo, for cargo storage, and as a berthing and terminal location for cruise ships. MassDEP 2012 at 40 and Appendix 9. Because 9 acres is too small to accommodate a marine terminal to support off-shore wind energy development, additional property would also need to be obtained. The only parcel large enough to provide sufficient land is an approximately 29 acre parcel currently used for chemical manufacturing, storage, and distribution. Product is shipped to/from this site via rail, truck, or ships (using existing docks with deep water berths). See http://www.boremco.com/chemical-product-distribution.htm. Under state law, the existing water dependent users at both the pier area and the 29 acre parcel would have to be relocated to alternative locations having physical attributes, including proximity to the water, and associated business conditions, equal to or better than the existing location. 310 C.M.R. 9.36(4). The

[13] An additional site in Boston Harbor considered in the Tetra-Tech report, the Coastal Oil terminal site, is similarly impracticable in light of the presence of blue clay. See MassDEP 2012a at 19, 50, and Attachment K.

process of freeing the land would take years and it may be impossible to find alternative locations to move the existing water dependent users to.

As discussed in section 4.4.1 above, the Commonwealth's submissions have demonstrated that the minimum acreage necessary to accommodate a marine terminal to support off-shore wind energy development is at least 20 acres, and possibly as large as 28 acres. Because the acreage at the Fall River State Pier is only 9 acres, and because the Region tentatively agrees that neither the State Pier nor the 29-acre Boremco parcel is available in the foreseeable future due to the current presence of water dependent users, the Region tentatively agrees that this site is not practicable.

A third issue relates to height restrictions at this location. As discussed in the Commonwealth's submissions, one of the essential siting criteria is the absence of height restrictions that would constrain the construction or transportation of wind turbines. Crawler cranes, which are used at the turbine assembly site to unload and load the delivery and installation vessels, respectively, and for pre-assembly of the wind turbines, have boom heights that exceed 250 feet. MassDEP 2012 at 24 and Appendix 3, p. 2. The jack-up barges that will transport the turbines to the installation site have 150 – 250 foot legs (depending on the depth of the waters at the installation site) that extend above the barges when they are mobile. [14] MassDEP 2012, Appendix 2 at 3-25 to 3-26. Finally, the industry trend is toward transport of fully, rather than partially, pre-assembled turbines; the fully assembles units would extend 250 feet above the transport barge. MassDEP 2012, Appendix 3, p. 2; Appendix 4, p. 2; MassDEP 2012a, Attachment D. The Fall River Pier site presents two separate height constraints. First, the 135-foot high Braga Bridge is located over approximately 20% of the pier. MassDEP 2012 at 39. Its height would render much of the pier area inaccessible to the large crawler cranes that are necessary for transporting, stacking, assembling, loading, and unloading the wind turbine components. The Region has tentatively concluded that the presence of the bridge over this area makes the site impracticable from a logistical standpoint. In addition, the Mt. Hope Bridge, located south of the site, is only 135 feet high and would impose a significant vertical clearance constraint on the transport of the turbines to installation sites. Id. at 40. The Region has tentatively concluded that the height of this bridge also makes the site impracticable from a logistical standpoint.

4.4.4 Alternative IV – Union Wharf and Fairhaven Shipyard, Fairhaven Massachusetts: The combined wharf and upland areas for these two contiguous parcels totals approximately 9.14 acres. Id. at 45. If a CDF were constructed between these parcels, the total available area would only be approximately 12 acres, well below the size necessary to support off-shore wind energy development. Expansion to the west is not feasible because of the presence of the Federal Navigation Project. MassDEP 2012 at 45. Expansion to the north or south, as well as use of the existing 9.14 acres of wharfs and upland, would mean that the existing water dependent users, which include commercial offshore fishing vessels, commercial boat repair, near-shore lobster boats, and fish processing and packing, would have to be relocated to alternative locations having physical attributes, including proximity to the water, and

[14] It may be possible for the legs to be lowered temporarily to allow the barge to pass below a bridge of a channel if the channel is deep enough. Appendix 2 at 3-25.

associated business conditions, equal to or better than the existing location. Id.; see also 310 C.M.R. 9.36(4). The process of freeing the land would take years and it may be impossible to find alternative locations to move the existing water dependent users to. Additional acreage is not available to the east due to the residential neighborhoods located immediately to the east of the wharf and shipyard, and the adjacent roads are not suitable to transport large wind energy components.

For all of these reasons, the Region has tentatively determined that this site is not a practicable alternative.

4.4.5 Alternatives V and VI– North Terminal and Pope's Island, New Bedford, Massachusetts: Both of these sites are affected by similar issues. North Terminal is a marine industrial site located on the west side of upper New Bedford Harbor, just north of the Route 6 New Bedford-Fairhaven Bridge that spans the Harbor. It is occupied by a number of businesses, including shipyards, boat repair facilities, and marine bulk transfer businesses. Pope's Island is located in the middle of the Harbor and is traversed by the Route 6 Bridge. There is a 198-slip public marina on the south side of the island, and a variety of shipyards, marinas, boat repair facilities and marine supply businesses are located on the north side.

Vessel access to the area north of Route 6 is through a swing-span bridge, constructed in 1906, which, when open, provides two approximately 95-foot wide passages (one for boats traveling north and the other for boats traveling south). The horizontal clearances of the bridge cannot accommodate the vessels that would be used to support off-shore wind energy development. The international vessels, which will deliver the turbine components to the terminal, are 98-115 feet wide; and the jack-up barges, which will take the constructed turbines to the installation site, are approximately 100 feet wide. MassDEP 2012 at 20. Efforts over the past decade to reconstruct this bridge and provide great horizontal access have been unsuccessful, and existing plans have not moved beyond the conceptual stage. Id. at 47. All of North Terminal and the majority of Pope's Island are and will continue to be inaccessible to the necessary vessels unless and until a new bridge is built.

The Region has tentatively concluded that the bridge access issue alone means that the North Terminal site is infeasible and therefore not a practicable alternative. In addition, use of this site would require the displacement of existing water dependent users through the exercise of eminent domain, requiring the relocation of such users to comparable locations. Id. at 49-50. Similar to some other alternatives discussed above, the Region tentatively agrees that this site is not available in the foreseeable future due to the current presence of water dependent users, and for this additional reason the Region tentatively agrees that this site is not practicable.

While the northern portion of Pope's Island could potentially provide sufficient land for a terminal to support off-shore wind energy development, it is not accessible because of the bridge access issue discussed above. The southern portion of the island is accessible, but it is less than 10 acres in size, and use of additional parcels on the northern portion would be prevented by the presence of U.S. Route 6, which bisects the island. In addition, use of this site for the terminal would require multiple water dependent users to be displaced and relocated to comparable locations. Id. at 48-49. The Region has tentatively determined that these issues render the Pope's

Island site impracticable.[15]

4.4.6 Alternative VII – State Pier, New Bedford, Massachusetts: State Pier is a marine industrial terminal located on the west side of lower New Bedford Harbor, south of the Route 6 New Bedford-Fairhaven Bridge. The immediate backland at this site is only 7-8 acres, which is too small to accommodate a terminal to support offshore renewable energy development. MacArthur Drive, to the west, presents a significant road barrier to use of additional parcels to the west. Adjacent land uses to the north and south include several other wharfs and piers which support commercial fishing activities. The State Pier itself is used for many purposes, including ferry operations, cargo offloading and storage operations, cruise ship operations, and as a staging location for emergency vehicles. Use of the State Pier and any of the adjacent parcels (to provide additional backland space) would require the relocation of the existing water dependent users pursuant to 310 C.M.R. 9.36(4). The process of freeing the land would take years; and, according to the Commonwealth, relocation is unlikely to be feasible without the construction of a new marine terminal elsewhere in the Harbor. MassDEP 2012 at 53. Therefore, EPA has tentatively determined that the State Pier site is not a practicable alternative.

4.4.7 Alternative VIII – South Terminal, New Bedford, Massachusetts: South Terminal is located on the west side of lower New Bedford Harbor, just north of the Hurricane Barrier. The proposed facility would be constructed primarily on the site of the former Potomska Mill complex. The main portion of the facility would be comprised of approximately 11 contiguous acres of existing upland and 6.85 acres of additional land created by construction of a CDF in adjacent waters. An additional 8 acres of ancillary upland south of the main portion would be used for wind blade lay-down. In addition, two different configurations of an additional 2.4 acres are under consideration by the Commonwealth. Configuration A would add an additional 1.1acres contiguous to the main portion of the facility, and the remainder would be contiguous to the 8 acres of ancillary parcels to the south. Configuration B would add an additional .75 acres contiguous to the main portion, and 1.65 acres to the west of the 8 acres of ancillary parcels. MassDEP 2012a at 8 and Attachment D, pp. 2-3. The parcels of existing upland that would comprise terminal facility are owned by the New Bedford Redevelopment Authority, the Commonwealth, and several private owners with which the Commonwealth is engaged in negotiations to obtain the necessary property rights. MassDEP 2012a at 8-9. The Commonwealth anticipates completion of those negotiations in the near future and does not anticipate the need to relocate any water dependent users. Id.

There are no vertical or horizontal access issues at the South Terminal site. The entrance to the hurricane barrier just south of the site is 150 feet wide and therefore can accommodate the international vessels (98-115 feet wide) and the jack-up barges (100 feet wide) that will be used during the wind turbine construction process. MassDEP 2012 at 20 and 73. No bridges restrict

[15] The Commonwealth also stated it would need to create larger CDFs at these two sites than the one proposed at South Terminal in order to provide sufficient acreage, potentially resulting in greater impacts to the waters of the U.S. However, there is insufficient information in the submission to enable the Region to reach conclusions about whether the resulting aquatic impacts from terminal construction at these sites would be greater or less than what is proposed for South Terminal.

vertical clearance, and any height restrictions associated with operation of the New Bedford Airport do not extend south of Pope's Island and therefore would not affect this site. Id. at 74; Appendix 27. The substrate located at the base of the dredge footprint consists of materials that are sufficient to provide stable support for jack-up barges. Id. at 74; Appendix 26.

The Commonwealth proposes to fill approximately 0.1 acres of freshwater wetlands, 0.18 acres of salt marsh, 1.94 acres of intertidal habitat, and 4.07 acres of shallow subtidal habitat in order to construct a CDF adjacent to the existing upland. The CDF would be created by constructing a bulkhead and backfilling the intertidal, shallow subtidal, and saltmarsh areas with clean sand dredged from the proposed access channel. The construction of the CDF in waters of the U.S. is necessary both to ensure that the project site is of sufficient size to accommodate a marine terminal capable of supporting offshore renewable energy development, and to provide an area of sufficient load bearing capacity for assembly and transfer of turbines adjacent to the bulkhead. MassDEP 2012a, Attachment D, pp. 2-3. The Commonwealth provided persuasive information to justify construction of a solid fill structure rather than a pile-supported structure. MassDEP 2012 at 79-85. A pile-supported structure would not be sufficient to support the extremely heavy loads and vibration that will be associated with the construction cranes and the turbine components themselves. Id. The Commonwealth has taken steps to minimize the solid fill by redesigning the structure so that an additional 0.67 acres of shallow subtidal habitat, which the Commonwealth had originally planned to completely fill, will now be incorporated into a pile-supported apron adjacent to the wharf and will be only partially filled with riprap on the bottom. The wharf will provide approximately 1,200 linear feet of berthing space, sufficient to accommodate one international vessel and two jack-up barges at any one time, consistent with one of the siting criteria.

In order to provide vessel access to this site and to mitigate for the alteration of the nearby Gifford Street boat ramp channel and moorings, the Commonwealth proposes to conduct new dredging of up to approximately 21.65 acres of shallow sub-tidal habitat and 8.29 acres of deeper subtidal areas. If necessary to accommodate the draft of vessels that will utilize the terminal, the Commonwealth would also conduct maintenance dredging of up to 15 acres of deeper subtidal areas in the Federal Navigation Project channel. The Commonwealth also proposes to dredge up to 8.76 acres of shallow, near-shore subtidal area to create a confined aquatic disposal cell ("CAD") to allow for disposal of contaminated navigational dredged material. Finally, the Commmonwealth proposes to cap the existing Borrow Pit and CAD 1 with clean dredged material and dispose of contaminated dredged material into CAD cell 2, resulting in 10.8 acres of temporary impacts.

EPA has tentatively determined that the South Terminal site is practicable in light of the basic project purpose, provided that the Commonwealth is able to successfully complete negotiations with property owners in order to obtain control of the terminal site. EPA has further tentatively determined that the South Terminal site represents the LEDPA, based on the tentative determinations discussed above that the other alternatives are either not practicable or are not less environmentally damaging.

5.0 Evaluation of Impacts Related to Water Quality Standards, Toxic Effluent Standards, Endangered or Threatened Species, and Marine Sanctuaries (40 C.F.R. § 230.10(b))

Section 230.10(b) prohibits discharges which would cause or contribute to violations of state water quality standards developed pursuant to § 303 of the Clean Water Act; violate toxic effluent standards promulgated by EPA under § 307 of the Clean Water Act; jeopardize the continued existence of endangered or threatened species listed under the Endangered Species Act or result in the likelihood of the destruction or adverse modification of designated critical habitat for such species; or violate requirements established to protect any designated marine sanctuaries pursuant to the Marine Protection, Research, and Sanctuaries Act.

5.1 Water Quality Impacts: State water quality standards are comprised of designated uses, numerical and narrative criteria to maintain these uses, and antidegradation provisions to ensure that, among other things, existing water quality and uses be maintained and protected.

Construction of the South Terminal Project will involve completely filling approximately 6.18 acres of waters to create uplands (i.e., confined disposal facility); partially filling approximately 0.67 acres of waters (i.e., riprap scour protection and mitigation areas); and deepening approximately 44.94 acres of waters (i.e., navigation channel dredging and mooring area dredging). There will also be temporary impacts associated with dredging a confined aquatic disposal (CAD) cell and filling several CAD cells.

5.1.1 Water Column Impacts: The activities which have the potential to affect water column quality in New Bedford Harbor during construction include:

- Disturbance, due to 1) dredging of contaminated sediments from the harbor floor and 2) disposal of contaminated sediments into CAD cells, could temporarily cause an increase in toxics, including heavy metals and organic compounds;
- Disturbance, due to dredging, of any sediments from the harbor floor could temporarily cause an increase in suspended solids and turbidity, phosphorus, and a decrease in dissolved oxygen, due to the resuspension of organic matter and nutrients; and disturbance (turbidity) due to CAD cell capping.
- The driving of sheet piles to construct the confined disposal facility will produce locally elevated turbidity levels until their installation is complete due to the unavoidable disturbance of sediments during that work.
- High turbidity water generated by the dewatering of dredged material to be used as fill in upland areas (above Mean High Water) could be discharged directly to the New Bedford Harbor;
- Storm water runoff from excavation, stockpiling and fill areas could cause an increase in suspended solids and turbidity, phosphorus, and toxics, including heavy metals and organic compounds;
- Storm water runoff from construction vehicle washing, maintenance and storage refueling areas could contribute oil, grease and fuel and foaming; and
- If blasting is necessary to remove shallow rock from the navigational channel there would be a short term increase in turbidity in the water column due to the disturbance of sediments and rock.

Specific best management practices measures intended to ensure that the dredging and filling activities will not cause or contribute to water quality standards violations, including criteria exceedances and impairment of uses, have been proposed by the Commonwealth. They include the following:

- Dredging, capping, and disposal of contaminated sediments into CAD cells will occur within partitioned areas to prevent the migration of sediments from the dredging area to the rest of the harbor.
- Control of erosion and migration of excavated, dredged and stockpiled materials through the use of a variety of best management practices designed to maintain material stability, including silt fencing and covering of stockpiled materials.
- Water decanted off dredged material settling basins will be treated by settling and sand filtration or equivalent treatment technology.
- The placement of a silt curtain about the CAD cell during construction to prevent contaminated sediments from migrating beyond the work area.
- Implementation of storm water control measures consistent with EPA's 2012 Construction General Permit for storm water discharges associated with construction activities including the collection and treatment of runoff in the construction zone.

EPA has tentatively determined that the proposed project will not result in water column impacts that would cause or contribute to violations of Massachusetts' water quality standards provided that construction activities are carried out in accordance with the following:

- Storm water management practices consistent with the 2012 Construction General Permit[16] and with the best management practices requirements of 314 C.M.R. § 9.06(6), 310 C.M.R. § 10.05(6)(k) and the Massachusetts Stormwater Handbook; and
- dredging and disposal practices consistent with the Performance Standards in Appendix C.

5.1.2 Habitat, Fishery, and Shellfish Impacts: EPA's water quality antidegradation regulation at 40 C.F.R. § 131.12(a)(1) requires that existing water uses be maintained and protected. Massachusetts' water quality standards contain a similar requirement (314 C.M.R. § 4.04).

In the context of the loss of a use due to discharges of dredged or fill material, EPA interprets this provision to be satisfied as long as the discharge does not result in significant degradation of the aquatic ecosystem as defined under 40 C.F.R. § 230.10(c)[17]. In this case, there will be a permanent loss of nearly seven acres of aquatic habitat as a result of the construction of the South Terminal confined disposal facility ("CDF'), as well as temporary and permanent impacts

[16] National Pollutant Discharge Elimination System General Permit for Discharges from Construction Activities, effective February 16, 2012.

[17] EPA, *Questions & Answers on: Antidegradation*, page 5, 1985.

to 53.7 acres of intertidal and subtidal habitat, and the loss of over 9 million shellfish, due to dredging associated with the project. As discussed in section 6 below, EPA has tentatively determined that these impacts would not cause or contribute to significant degradation of the aquatic ecosystem in violation of § 230.10(c), provided that adequate compensatory mitigation is implemented.[18] Therefore, the project would not violate the federal and state antidegradation provisions.

Based on the foregoing, EPA has tentatively determined that the proposed project will not cause or contribute to violations of water quality standards. [19]

5.2 Toxic Effluent Standards: EPA has not promulgated any Toxic Effluent Standards pursuant to § 307 of the Clean Water Act that would be applicable to this project; hence discharges associated with this proposed project will not violate toxic effluent standards. The potential for water quality impacts associated with potentially toxic chemicals such as PCBs, PAHs, metals, etc., have been evaluated to ensure that state water quality standards will be met. See Section 5.1 above.

5.3 Endangered and Threatened Species: EPA has determined that the endangered roseate tern (*Sterna dougallii*) may be in the project area. EPA engaged in informal consultation with the U.S. Fish and Wildlife Service and has completed a final Biological Assessment (BA) of the potential effects of the construction and long-term operation of the project on the roseate tern, attached as Appendix K. For the reasons discussed in the final BA, EPA has concluded that the proposed NBH-South Terminal project may affect the roseate tern, but is unlikely to adversely affect the species. EPA will be transmitting the final Biological Assessment to FWS and will request concurrence from FWS prior to making a final decision on the project.

EPA has also identified the endangered Atlantic sturgeon (*Acipenser oxyrinchus oxyrincus*) as a species which has the potential to occur in the area and may be adversely affected by the proposed action. On June 19, 2012, National Marine Fisheries Service informed EPA that, because Atlantic sturgeon undertake large-scale marine migrations and will forage anywhere any available habitat exists, this species may be present in the vicinity of New Bedford Harbor. EPA is currently seeking additional technical assistance from NMFS and is in pre-consultation analysis with it. In that process, EPA and NMFS are discussing time of year restrictions, project sequencing options and mitigative dredging techniques which could greatly lessen or eliminate any potential adverse effects to the species. Prior to the issuance of a final decision on the impacts of the project, EPA will enter informal consultation with NMFS, which will include preparation of a Biological Assessment, and will seek concurrence with EPA's findings regarding the potential impacts to the sturgeon from the construction and operation of the project. See Appendix I for additional information.

---

[18] As discussed in section 6 below, EPA's conclusion regarding significant degradation under 40 C.F.R. § 230.10(c) also takes into account the secondary and cumulative impacts.

[19] MassDEP's Office of Operations and Environmental Compliance reached a similar conclusion as discussed in a June 18, 2012 memorandum to EPA provided that the performance measures outlined in that memorandum and its Appendix A are adhered to.

5.4 Marine Sanctuaries: There are no designated marine sanctuaries in or directly adjacent to the South Terminal project area.

6.0 Evaluation of Significance of Impacts, Including Secondary and Cumulative Impacts, to Waters of the U.S. (40 C.F.R. § 230.10(c) (including factual determinations under 40 C.F.R. §§ 230.11 and 230.20 - 230.77)

Section 230.10(c) prohibits discharges which would cause or contribute to significant degradation of waters of the U.S. Significant degradation may include individual or cumulative impacts to human health and welfare; fish and wildlife; ecosystem diversity, productivity and stability; and recreational, aesthetic or economic values. Findings are to be based on the factors and considerations set forth in subparts B through G of the § 404(b)(1) guidelines.

6.1 Physical and Chemical Characteristics of the Aquatic Ecosystem (Subpart C)

6.1.1 Substrate Impacts: The existing benthic substrate within the South Terminal project area is typically composed of coarser sandy sub-soils overlain by a layer of finer Polychlorinated Biphenyl ("PCB") and heavy metal contaminated sediments. As part of this project, benthic substrates will be filled to become upland; filled to become a shallower aquatic ecosystem (mitigation); filled in conjunction with CAD cell capping and dredged material disposal; dredged and armored; or just dredged.

All totaled, approximately 0.18 acres of salt marsh, 0.1 acres of freshwater wetlands, and approximately 6.67 acres of intertidal and sub-tidal benthic habitat will be completely filled as part of the construction of the South Terminal/Confined Disposal Facility. Another 0.67 acres of sub-tidal benthic habitat will be dredged and armored as part of this work.

In addition, filling will occur in conjunction with creating and/or enhancing 4.47 acres of intertidal habitat, 22.73 acres of winter flounder spawning habitat, and 14.91 acres of near-shore, shallow, sub-tidal habitat. Approximately 10.8 acres will be affected by capping two existing CAD cells and disposing of contaminated dredged material into a third existing CAD cell. All of these impacts will be temporary and a significant improvement in sediment quality by isolating the contaminated sediments from the environment.

Finally, approximately 53.7 acres of sub-tidal benthic habitat will be dredged and deepened as part of plans to maintenance dredge portions of the existing New Bedford Harbor Federal Navigation Project ("FNP"), to provide adequate navigational access to the South Terminal site, to realign the Gifford Street Boat Ramp Channel, to deepen areas within the North and South Mooring Areas, and to construct a confined aquatic disposal ("CAD") cell (into which contaminated navigational dredged material will be placed).

6.1.2 Suspended Particulate/Turbidity Impacts: In-water construction activities (i.e., filling and dredging) associated with the South Terminal Project will result in temporary suspended particulate/turbidity impacts to adjacent areas. These turbidity impacts could temporarily affect light penetration and chemical processes within adjacent benthic habitat

area and result in burial of adjacent benthic areas. The Commonwealth has proposed to sequence construction activities and to maintain adequate sedimentation/erosion controls during the construction phase of this project in order to minimize turbidity impacts into adjacent waters of the United States, including jurisdictional wetlands. With adequate sedimentation/erosion controls installed and maintained, EPA believes that turbidity impacts associated with the South Terminal Project will be short-term and minor.

6.1.3 Water Column Impacts: Although the dredging and filling activities associated with the South Terminal project have the potential to impact water quality in the project vicinity, EPA has tentatively determined that such impacts can be minimized with the diligent application of best management practices, such as those proposed by the Commonwealth and discussed above in Section 5.1.

6.1.4 Alteration of Current Patterns and Water Circulation: The proposed construction of the South Terminal/Confined Disposal Facility as well as the dredging of associated navigational channels will affect current patterns and water circulation. The new solid fill areas and deeper navigation channels will alter current patterns to adjacent areas. Circulation will improve to some localized areas and be obstructed to others. Due to the presence of the New Bedford Hurricane Barrier directly downriver of the South Terminal project area, EPA believes that this project will have limited impacts on wider current and water circulation patterns.

6.1.5 Alteration of Normal Water Fluctuations/Hydroperiod: The proposed construction of the South Terminal/Confined Disposal Facility as well as the dredging of associated navigational channels could affect normal water fluctuations. The new solid fill areas and deeper navigation may improve or obstruct water fluctuations/flushing of localized adjacent areas. Due to the presence of the New Bedford Hurricane Barrier directly downriver of the South Terminal project area, EPA believes that these water fluctuations/flushing impacts will be minor and limited to the project area and adjacent properties.

6.1.6 Alteration of Salinity Gradients: No alteration of salinity gradients is expected as a result of the South Terminal Project.

6.2 Biological Characteristics of the Aquatic Ecosystem (Subpart D)

6.2.1 Effect on Threatened/Endangered Species: EPA is currently in informal consultation with FWS regarding the roseate tern (see Section 5.3 above) and is seeking FWS's concurrence with EPA's determination that the proposed NBH-South Terminal project may affect the roseate tern, but is unlikely to adversely affect the species. EPA has recently begun discussions with NMFS to determine whether there would be potential adverse effects from the proposed project on the Atlantic sturgeon. Prior to the issuance of a final decision on the impacts of the project, EPA will enter informal consultation with NMFS, which will include preparation of a Biological Assessment, and will seek concurrence with EPA's findings regarding the potential impacts to the Atlantic sturgeon from the construction and operation of the project. See Appendix I and Appendix K for additional information.

6.2.2 Effect on Fish, Crustaceans, Mollusks, and Other Aquatic Organisms in the Food Web: The South Terminal project area serves as habitat for a variety of benthic infaunal species (worms and shellfish), benthic epifaunal species (crustaceans, gastropods, and mollusks), and plankton species that serve as prey species for fish species and other consumers in the food web (for more details see Section 3.2 above). New Bedford Harbor substrates also provide spawning and nursery habitat for economically-important fishery species such as winter flounder (*Pseudopleuronectes americanus)*, windowpane flounder (*Scopthalmus aquosus)*, scup (*Stenotomus chrysops)*, and black sea bass (*Centropristus striata).* (For more details see Appendix H).

As part of the South Terminal/Confined Disposal Facility Project approximately 0.18 acres of salt marsh and 6.67 acres of intertidal and sub-tidal benthic habitat will be permanently impacted by filling. Another approximately 53 acres of subtidal habitat will be temporarily impacted by the placement of fill. This total includes fill placed as part of the mitigation plan to create and enhance winter flounder spawning habitat, intertidal area and shallow subtidal habitat. It also includes acreage associated with the capping of CAD cell 1 and the "Borrow Pit" and the placement of contaminated dredged material into CAD cell 2. An additional 53.7 acres of sub-tidal benthic habitat will be deepened associated with the dredging of adjacent navigation channels and mooring areas. These various dredging and filling activities will result in either the removal (by dredging) or burial (by filling) of many of the benthic prey species. The benthic infaunal community will be removed with the dredge sediment or buried, so polychaetes, bivalves and burrowing amphipods will be lost within the footprint of proposed work. Epibenthic invertebrates with limited mobility (snails, sea stars, sand dollars, etc.) will also suffer significant mortality from the dredging. More mobile epibenthic invertebrates (crabs, lobsters, shrimp, etc.) will likely suffer some mortality as well, but their mobility will allow some individuals to leave or avoid the construction area.

Potential impacts to winter flounder and shellfish populations should be specifically noted. Regionally the number of winter flounder has greatly reduced in recent years. Winter flounder, which typically spawn in water depths between 0.3 to 4.5 meters deep, will be disproportionately impacted by the proposed South Terminal Project. The filling of subtidal areas and the deepening of navigational channels to below preferred spawning depths will result in the permanent loss of approximately 20.21 acres of winter flounder spawning and nursery habitat. EPA views this potential loss of habitat as critical and as such, these impacts need to be minimized and mitigated. In addition, the Commonwealth has estimated that the filling and dredging activities associated with the South Terminal Project will impact 9-10 million shellfish. All waters upstream of the New Bedford Harbor Hurricane Barrier are part of the Fish Closure Area #1. Fish, lobsters, and shellfish have accumulated high levels of PCBs in their tissues and as a result are not safe for human consumption. Thus, any consideration of relaying/transferring these shellfish to beds that are open has been eliminated. One of the preferred prey items of winter flounder are clam siphons, so the loss of this large number of shellfish represents a potential impact to the foraging opportunities for winter flounder. EPA views the potential loss of this quantity of shellfish to be substantial, and these impacts need to be minimized and mitigated with an appropriate shellfish reseeding program.

Overall, filling and dredging activities will generally lead to short term negative impacts to the local food web. Over time, less mobile benthic species (worms, gastropods, mollusks, etc.) will

recolonize appropriate portions of the construction area. More mobile benthic species (crabs, lobsters, shrimp, etc.) as well as juvenile and adult fish will leave the construction area and forage in adjacent unimpacted areas. As soon as the construction ceases, these more mobile creatures will return to the area. In cases where the South Terminal Project will have disproportionate impacts on winter flounder or shellfish habitat, EPA will require minimization and appropriate mitigation to avoid significant impacts.

6.2.3 Effect on other Wildlife (Mammals, Birds, Reptiles, and Amphibians): Impacts from the South Terminal Project on other wildlife species, such as to mammals, birds, reptiles, and amphibians are expected to be minor and short-term. Since these species are more mobile, they will be able to avoid most of the impacts from this project. They will be able to forage and/or spawn in adjacent unimpacted habitat areas.

6.3 Potential Impacts on Special Aquatic Sites (Subpart E)

6.3.1 Sanctuaries and Refuges: There are no designated sanctuaries and/or refuges within the South Terminal project area.

6.3.2 Wetlands: A total of 0.18 acres of salt marsh wetlands will be permanently filled as part of the creation of the confined disposal facility/marine terminal. Also, approximately 0.88 acres of salt marsh may be adversely affected by secondary impacts from the construction and operation of the facility. In addition, one small freshwater wetland on Parcel 49 of the site, approximately 0.1 acre in area, will be filled. [20]

Tidal wetlands: Federally jurisdictional tidal wetlands at the project location consist of an emergent salt marsh system, situated directly within and adjacent to the proposed location of the CDF. This area was delineated during the June 28, 2012 site investigation, and a report submitted to EPA on July 11, 2012 (MassDEP 2012c). Due to the late date of the submission of this report, EPA has not had adequate time to complete its review and confirm revised areal estimates of the salt marsh areas, including a newly identified south salt marsh area (Salt Marsh 2). Areal estimates in the recent report indicate a smaller area of salt marsh present at Salt Marsh 1 than had been previously described by the Commonwealth. For the purposes of the draft determination, the previously submitted estimate of the areal extent of Salt Marsh 1 is being used for assessment of impacts, combined with the areal estimate for the newly identified Salt Marsh 2 presented in the July 11, 2012 report. Areal estimates will be revised after EPA has completed review and confirmation of the new wetland delineation. For the purposes of the draft determination, the salt marsh resources present are estimated to be approximately 1.06 acres in

---

[20] On July 12, 2012, the Commonwealth informed EPA that there is a 0.4 acre freshwater wetland on one of the properties that may become incorporated into the terminal site. MassDEP 2012d. There is insufficient information available for EPA to determine the potential impacts of filling this wetland or appropriate mitigation at this time. EPA will evaluate this issue further once the Commonwealth determines whether the parcel will be incorporated into the site, and will ensure appropriate mitigation is developed consistent with the requirements discussed herein before making a final decision on the project.

area. Soil sampling indicates that the wetland soils are contaminated with PCBs and metals (MassDEP 2012, Appendix 36, Tables 2A and 2E). Wetland vegetation present includes *Spartina alternaflora*, and trace amounts of *Salicornia virginiana*.

Functions and values associated with this system include groundwater discharge, flood flow alteration, fish and shellfish habitat, shoreline stabilization, and wildlife habitat.

Freshwater wetlands: A site investigation to characterize freshwater resources was conducted on June 28, 2012, and a report submitted to EPA on July 11, 2012. According to the report, fresh water resources are very limited at the project location, comprised of one small vegetated wetland located north of the existing paved area on Parcel 49, approximately 4,600 square feet (0.1 acre) in area. [21] The proposed project will result in filling this wetland.

This disturbed wetland has formed in a depressional area within the existing fill on site. Evidence of hydrology supporting this wetland is present. Soils consist of significantly disturbed urban fill. While no sampling data has been provided characterizing soils within this wetland, soil sampling conducted in the general vicinity of the wetland indicates that the wetland soils are likely to be contaminated with PCBs and metals (MassDEP 2012, Appendix 39, Table 1). Wetland vegetation consists primarily of *Phragmites australis* (common reed), an invasive species.

Functions and values associated with this wetland include groundwater recharge/discharge, floodflow alteration, sediment/toxicant retention, and wildlife habitat. However, these wetland functions and values are limited due to the small size and degraded nature of the wetland system and the surrounding landscape.

Wetland mitigation: The Commonwealth submitted a Conceptual Mitigation Plan to provide compensatory mitigation for unavoidable direct and secondary impacts to the various resources affected by the project. MassDEP 2012 at 313-339 and referenced appendices. The Conceptual Mitigation Plan proposes to provide compensatory mitigation for the project's impacts to wetlands through wetland restoration and enhancement in the vicinity of the existing tidal tributary adjacent to the Hurricane Barrier (the Successional Marsh mitigation work). In addition, a pedestrian/bike path is proposed adjacent to the wetland restoration area, to provide public access and some educational benefit.

The existing tidal tributary currently provides few ecological services, and is degraded by sediments contaminated with PCBs, SVOCs and metals, as well as the presence of invasive plant species and trash. The proposed mitigation will entail the removal of contaminated sediments and replacement with clean substrate from the CAD cell #3 excavation. A new low flow channel will be constructed to maintain transport of tidal flow and storm water.[22] The rip rap and fill on

---

[21] As noted in footnote 7 above, EPA considers this wetland to be adjacent to a traditional navigable water and therefore subject to federal jurisdiction.

[22] The Corps of Engineers is reviewing the channel design to assure there will be no adverse effect on the operation of the Hurricane Barrier. EPA will coordinate with the Corps to make sure any concerns are addressed before EPA's final decision on the project.

the western side of the channel will be removed, and the area regraded to support low marsh, high marsh and transitional tidal wetland vegetation. These areas will be planted with *Spartina alternaflora* (low marsh); *Spartina patens, Solidago sempervirens, Iva frutescens, Morella pensylvanica, Hibiscus moschuetos* (high marsh); and *Panicum virgatum , Iva frutescens, Ammophila brevigulata, and Prunus maritima* (transitional zone).

The Commonwealth also proposes to install a hooded catch basin or a trash screen at a local storm water outfall to reduce trash inflow from that source. EPA recommends that both improvements be installed. While the trash screen would be effective at removing larger trash and debris, the hooded catch basin would have the added benefit of reducing the potential discharge of oil and other floatable contaminants in the storm water. It is important that both of these infrastructure improvements be regularly maintained to assure their effectiveness.

Pending submission and review of additional information, EPA has tentatively concluded that the proposed wetland restoration and enhancement project and infrastructure improvements will provide adequate compensatory mitigation to address the lost or impaired functions and values of the 0.1 acre freshwater wetland and 0.18 acre salt marsh areas to be filled by the proposed project. It will result in the removal of contaminated sediments and a potential source of pollutants. It will result in the removal of fill and rip rap, replacing it and restoring the area with natural wetland substrates. It will also remove invasive plant species and replace them with a more diverse and desirable assemblage of native species.

Wetlands functions and values that would be replaced or enhanced include: groundwater discharge; floodflow alteration; fish and shellfish habitat; sediment/toxicant retention; floodflow alteration; shoreline stabilization; and, enhanced wildlife habitat. Additional wetland functions and values provided by the wetland restoration and enhancement project include production export and recreational and educational components.

Lastly, the proposed infrastructure improvements will contribute to improved water quality, and help prevent degradation of the restoration area.

As noted above, the Commonwealth's most recent reports regarding on-site wetland resources and impacts were submitted to EPA on July 11, 2012 (MassDEP 2012c) and July 12, 2012 (MassDEP 2012d), leaving inadequate time for complete review prior to the issuance of the draft determination. EPA will conduct additional review of these reports and any required supplemental information before making a final decision on the project, which may result in the need for modifications to the proposed Compensatory Mitigation Plan, including the Invasive Species Management Plan. Also, based on these reviews, additional monitoring of the site's existing salt marsh areas may be necessary to ensure that no secondary impacts to these resources are occurring as a result of the construction and operation of the facility, and to inform the implementation of any necessary corrective actions.

6.3.3 Mudflats: The amount of existing mudflat areas within the South Terminal project area could not be verified based upon the documentation within the Commonwealth's subject application (MassDEP 2012). However, EPA assumes that a small portion of the existing intertidal shoreline areas include unvegetated intertidal mudflats. A total of 1.94 acres

of intertidal shoreline will be impacted as part of the construction of the South Terminal Project. Intertidal shoreline areas will be permanently filled as part of the construction of the South Terminal/Confined Disposal Facility. Intertidal shorelines and mudflats typically provide similar functions and values (benthic habitat, fish foraging habitat, etc.). Therefore, EPA believes that the Commonwealth's intertidal shoreline mitigation proposals (see Section 7.3 below) will create and/or enhance functions and values similar to mudflats.

6.3.4 Vegetated Shallows: EPA is unaware of any eelgrass beds or other vegetated shallow areas within the South Terminal project area.

6.3.5 Coral Reefs: There are no coral reefs within the South Terminal project area.

6.3.6 Riffle and Pool Complexes: The South Terminal project area is located within an estuarine portion of New Bedford Harbor. Therefore, there are no riffle and pool complexes within the project area.

6.4 Human Use Characteristics (Subpart F)

6.4.1 Effects on Municipal and Private Water Supplies: There are no local water supply wells or reservoirs located within the South Terminal project area.

6.4.2 Recreational and Commercial Fisheries Impacts: According to the New Bedford Harbor Development Commission, the New Bedford Commercial Fishing Fleet currently is comprised of approximately 500 vessels, 120 of which are transient vessels. Due to current fishing restrictions, commercial fishing vessels average 15 trips per year. Therefore, the New Bedford Commercial Fishing Fleet averages around 7,500 trips per year (MassDEP 2012 at 275).

In addition, there are approximately 1,500 recreational and charter vessels in New Bedford Harbor. If each of these vessels takes a trip once every other week between May and October, each vessel would average 12 trips per year and there would be a total of approximately 18,000 trips per year for the New Bedford recreational fleet (MassDEP 2012 at 274).

All of the dredging and filling activities associated with the construction of the South Terminal Project will take place within the Lower New Bedford Harbor, upriver of the New Bedford Harbor Hurricane Barrier. All waters upstream of the New Bedford Harbor Hurricane Barrier are part of EPA's Fish Closure Area #1. Fish, lobsters, and shellfish caught in this area are not safe for human consumption. Therefore, construction within this area will not negatively affect existing recreational and commercial fishing areas within the Lower New Bedford Harbor. In addition, the frequency of construction vessel traffic to and from the South Terminal site through the New Bedford Harbor Hurricane Barrier is expected to be minor and to not substantially affect navigational access to the port.

Some mitigation work associated with the South Terminal Project will occur outside of the New Bedford Hurricane Barrier (see Section 7.3). This proposed work includes filling associated with

the creation of the 22.73 acre winter flounder spawning habitat and the 4.47 acre intertidal shoreline area as well as the enhancement of the 14.91 acre near-shore, shallow, sub-tidal area; and the reseeding of shellfish. These mitigative measures will be located in areas without substantial fisheries resources outside of the main navigation channels or in areas temporarily closed to shellfishing. These mitigation projects should not substantially affect recreational or commercial fisheries users.

6.4.3 Effects on Water Related Recreation: The construction of the South Terminal/Confined Disposal Facility will involve filling a portion of the existing Gifford Street channel. In addition, the dredging of the navigational channel to access South Terminal will displace some existing boat moorings. The project design for the South Terminal Project includes plans to realign the channel accessing the Gifford Street boat ramp and to dredge two subtidal areas in order to create/enhance adjacent recreational mooring areas. This work will have a long-term positive impact to local recreational users.

The Gifford Street boat ramp parcel has been designated as one of the ancillary properties for South Terminal. This site will be actively used as a lay down area for storing wind turbine components, when the South Terminal facility is supporting the construction of offshore wind turbine projects. The Gifford Street boat ramp will have limited access during these times. However, when the South Terminal facility is used as a more conventional marine terminal, the Gifford Street boat ramp will be reopened for full recreational boating access.

Construction vessel traffic to and from the South Terminal site through the New Bedford Harbor Hurricane Barrier is expected to be minor and to not substantially affect general recreational patterns in this area. The Commonwealth has indicated that New Bedford Harbor is generally considered to be severely under-utilized by boat traffic (MassDEP 2012 at 276).

6.4.4 Aesthetic Impacts: During the construction phase of the South Terminal Project, construction equipment will have a short-term negative aesthetic impact on the project area. Over the course of this project, the South Terminal project site will be converted from a demolished mill property to an active marine terminal, similar in appearance to adjacent waterfront properties. Whether these aesthetic changes are positive or negative impacts is a subjective judgment.

6.4.5 Effects on Parks, National and Historical Monuments, National Seashores, Wilderness Areas, Research Sites, and Similar Preserves: The New Bedford Whaling National Historical Park is a collection of upland and waterfront properties that abuts the South Terminal project area. Principal waterfront parcels associated the national historical park include the Wharfinger Building on Pier 3; the Tonnessen Park, the Coast Guard Park, and the Schooner Ernestina on or adjacent to the State Pier; as well as the Bourne Counting House adjacent to Merrill's (Homer's) Wharf. All of these properties are located at the north end of the South Terminal project area. Construction proposed for areas adjacent to these properties is limited to maintenance dredging of the New Bedford Harbor Federal Navigation Project ("FNP"). This work is not expected to have a substantial impact on the New Bedford Whaling National Historic Park.

6.5 Secondary Impacts on Aquatic Resources (40 C.F.R. § 230.11)

Secondary impacts are effects on an aquatic ecosystem that are associated with a discharge of dredged or fill materials, but do not result from the actual placement of the dredged or fill material (40 C.F.R. § 230.11(h)). A number of potential secondary impacts are discussed below.

6.5.1 Storm Water Runoff: Secondary impacts from storm water runoff associated with the construction of the South Terminal Project include the following:

- Storm water runoff from excavation, stockpiling and fill areas could cause an increase in suspended solids and turbidity, phosphorus, and toxics, including heavy metals and organic compounds.

- Storm water runoff from construction vehicle washing, maintenance and storage refueling areas could contribute oil, grease and fuel and foaming.

The Commonwealth has proposed to manage construction consistent with requirements in EPA's 2012 Construction Storm Water General Permit and the Massachusetts Stormwater Handbook, as described in Section 5.1 above. Specific measures proposed to minimize water quality impacts due to secondary impacts include:

- Storm water in the project area, which currently infiltrates and flows overland (sheet flow) towards the harbor will be temporarily collected in temporary detention basins to remove suspended solids. Detention basins will allow infiltration, with overflow discharging to the harbor.

- Existing storm water drainage pipes, which carry street runoff and limited runoff from the project area, will be modified, strengthened and/or replaced to ensure the continued function of existing storm water infrastructure during and after construction.

Since the design for the terminal, for its initial purpose of an offshore renewable energy support terminal, anticipates that 90% of the completed terminal will be covered with crushed stone or other pervious cover, EPA expects little or no increase in storm water runoff volume following construction. Nevertheless, compliance with design standards included in the Massachusetts Stormwater Handbook, as required by 310 C.M.R. 10.00, will ensure that best management practice technologies are part of the storm water management system for whatever volume of storm water is generated by this facility.

If the terminal is repurposed at a later date, re-design of the site with additional paved areas or buildings will be subject to usual state and local oversight and permitting.

6.5.2 Dredging: The largest quantity of secondary impacts will result from the proposed dredging associated with the construction of South Terminal. As proposed, 53.7 acres of seafloor will be disturbed by dredging. Over 7 acres of winter flounder spawning habitat will be eliminated by deepening the seafloor beyond their preferred spawning depths. Another 8.46 acres of winter flounder spawning habitat will be dredged and routinely impacted by tug and vessel traffic at the terminal. The vast majority (>75%) of the projected shellfish impacts will occur within the dredge footprint. The replacement of these lost resources is discussed in detail in the Compensatory Mitigation section of this document, Section 7.3.

In addition to habitat loss, dredging has the potential to create adverse impacts on water quality and associated effects from elevated turbidity on fish benthic species. To minimize these impacts, the Commonwealth has proposed performance standards consistent with its 401 Water Quality Certification regulations for dredging (Appendix A of MassDEP's June 18, 2012 ARARs letter). Among other things, these performance standards provide for the use of protective measures such as silt curtains, and the "environmental" bucket on the dredge to minimize water quality impacts. They also establish turbidity levels that must be satisfied. Based on prior dredging conducted in this system using similar control technologies, total suspended solids (TSS) concentrations downstream and outside of the silt curtains were generally below 50 mg/l, and corresponding turbidity measurements were approximately 20 NTUs. Massachusetts' performance standards allow incremental changes in turbidity levels compared to background conditions. Both the performance standards and actual data from prior dredging projects within this system produced TSS concentrations well below what could be considered an acute threshold. Larval river herring may well be the most sensitive life stage of the most sensitive species to suspended sediment exposure. In laboratory experiments, larval herring did not experience any significant mortality after a 16 hour exposure to 200 mg/l of suspended sediment (Griffin et al., 2012). This magnitude of exposure and duration is likely greater than anything they could be exposed to in New Bedford Inner Harbor, so EPA believes that dredging with the aforementioned control techniques can be done with limited impacts to the water column. Monitoring will be conducted during construction to ensure that the Commonwealth's dredging performance standards are met.

6.5.3 Proliferation of Invasive Species: The construction of this marine terminal will result in the placement of new solid fill within the marine environment. The bulkhead of the terminal and the numerous pilings all represent new hard substrate that will over time support marine growth. International vessels represent an important vector for the spread of non-native or invasive species (Keller et al., 2011). Non-native species will be carried in ballast water, and can also be transported on the hull and the ship superstructure (Keller et al., 2011). Even though the Commonwealth has indicated that the international vessels are unlikely to need to carry ballast and no ballast water discharges will be allowed in the harbor, the potential for transport on the ship structure itself combined with new hard substrate at the terminal site represents an elevated risk of the spread of invasive species. To minimize this risk, EPA is proposing to require the Commonwealth to conduct an annual survey of the bulkhead and a subset of the pilings for the presence of non-native species. If a new invasive species (a species that has not been previously documented in New England) is found during one of the surveys, the Commonwealth would be required to consult the necessary experts on the new organism to determine the ecological risk posed by the species and to devise a control plan. Assuming that the new introduced species poses an ecological risk and the control plan is adequate, the Commonwealth would be required to implement the plan. Subsequently, the monitoring frequency would be increased/adjusted to assess the success of the control plan.

In addition, there is a potential for invasive species to intrude into the successional marsh compensatory mitigation area. EPA has reviewed the Commonwealth's proposed Invasive Species Management Plan ("ISMP") (MassDEP 2012a, Attachment P), and believes that a modified ISMP, in conjunction with the requirements of the Compensatory Mitigation Plan described in Section 7.3, would be adequate to control the spread of invasive plant populations within the proposed wetland restoration area that could prevent successful mitigation of impacts

to wetlands. Such modified ISMP must be incorporated as part the Commonwealth's Compensatory Mitigation Plan, which will be a condition of EPA's authorization.

6.5.4 Vessel Related Impacts: EPA believes that the vessels that will be involved in either construction or use of this facility have the potential to cause a variety of secondary impacts on aquatic resources:

Ballast water intake: The Commonwealth projects that the offshore wind development project anticipated to be the first user of the marine terminal will receive 26 international vessels within a 12 month period delivering components for wind turbine construction (MassDEP 2012). After offloading, these vessels will take on water from New Bedford Inner Harbor to use as ballast to stabilize the ship for the return trip across the Atlantic Ocean. The uptake of ballast water results in the entrainment of fish eggs and larvae associated with that volume of water. The Commonwealth estimates that each vessel will take on between 200,000 and 300,000 gallons of water for ballast (MassDEP 2012b). This would result in an annual removal of between 5,200,000 and 7,800,000 gallons per year. This volume of water represents less than 1% of the total volume of New Bedford Inner Harbor and thus likely represents a negligible potential impact to planktonic larvae and eggs within New Bedford Inner Harbor.

Discharge of bilge water: Large commercial vessels routinely carry bilge water, which is generally contaminated with a variety of contaminants including oil, degreasers and other cleaners. The Commonwealth has stated that no bilge water will be discharged from vessels docked at the terminal (MassDEP 2012). The Commonwealth states that if bilge water needs to be offloaded, it will be safely transferred to tanker trucks of licensed hazardous waste handlers (MassDEP 2012). Thus, EPA believes this represents a negligible potential secondary impact.

Increased boating traffic: Section 6.5.6.2 of the Commonwealth's January 2012 submission (MassDEP 2012) provides a vessel traffic analysis for existing and proposed maritime uses within New Bedford Harbor. This vessel traffic analysis documents that currently there are approximately 30,555 trips in and out of New Bedford Harbor per year. The main navigation users of New Bedford Harbor include recreational and charter vessels (18,000 trips per year), commercial fishing vessel fleet (7,500 trips per year), harbor work boats (2,000 trips per year), Government vessels (1,500 trips per year), and ferry ships (1,300 trips per year). Post-construction the South Terminal will likely add around 22 cargo ship trips and 65 jack-up barge trips per year when the facility is used to support off-shore wind energy projects and around three cargo vessel trips per week when the facility is used as a marine terminal. The addition of these 87 and 156 trips constitute a 0.28% and 0.5% increase in marine traffic entering and leaving New Bedford Harbor. The Commonwealth indicates that New Bedford Harbor is generally considered a severely under-utilized harbor. Therefore, EPA believes that the proposed increase in boating traffic associated with the South Terminal Project represents a negligible secondary impact.

Interference with other adjacent boating users: The proposed South Terminal project area is adjacent to the Gifford Street boat ramp. This boat ramp serves as an access point for trailered recreational vessels, and a number of recreational boats are moored in this general area. During the construction of the South Terminal Project and when the facility is used to support off-shore wind energy projects, use of the Gifford Street boat ramp will be greatly curtailed. The Gifford Street boat ramp site has been identified as an ancillary part of the overall South Terminal

Project. Wind turbine components such as windmill blades will be stored on this parcel. The Commonwealth has designed the South Terminal Project to include a realignment of the Gifford Street Navigation Channel as well as improvement dredging of adjacent mooring areas. This work will allow recreational crafts to navigate around commercial vessels moored at the South Terminal facility (MassDEP 2012). When the South Terminal facility converts to a normal marine cargo terminal, use of the Gifford Street boat ramp will be restored. Based upon this information, EPA believes that the interference with other adjacent boating users associated with the South Terminal Project will be a negligible secondary impact.

Increase in oil spill risk: Section 6.5.6.1 of the Commonwealth's January 2012 submission package (MassDEP 2012) provides an oil spill analysis for existing and proposed maritime uses within New Bedford Harbor and for regional navigation networks. Like the vessel traffic analysis discussed above, the oil spill analysis is principally based upon the number of trips made by various classes of vessels. However, the different classes of vessel are weighted differently using a "gallons of petroleum exposure" ("GPE") measure. The GPE measure approximates the total volume of petroleum that could be released at one time for a specific vessel. Along this line, vessels will with larger petroleum tanks have a larger GPE measure. The Commonwealth's oil spill analysis documents that the current New Bedford Harbor Oil Spill Threat is 1,777,039,500 GPE. The vessel classes which contribute most to the oil spill threat include large non-tank vessels (1,725,000,000 GPE), oil tankers and tank barges (43,250,000 GPE), and the commercial fishing fleet (7,500,000 GPE). When the South Terminal facility is used to support off-shore wind energy projects, approximately 2,787,500 GPE will be added to the oil spill threat [(22 annual cargo vessel trips X 75,000 gallons per vessel [or 1,650,000 GPE]) + (65 annual jack-up barge (via tug) trips X 17,500 gallons per tug [1,137,500 GPE])]. This will result in a 0.156% increase in the New Bedford Harbor oil spill risk. When the facility is used as a marine terminal approximately 11,700,000 GPE will be added to the oil spill threat [156 annual cargo vessel trips X 75,000 gallons per vessel]. This will result in a 0.65% in the New Bedford Harbor oil spill risk. Similar increases in oil spill risks are expected to regional navigation networks transited by these vessels. Based upon the small scope of potential increases in oil spill risk over existing conditions, EPA believes that the South Terminal Project will have a negligible secondary impact on oil spill risk.

6.6 Cumulative Impacts on the Aquatic Ecosystem (40 C.F.R. § 230.11(g)):

Cumulative impacts are the changes in an aquatic ecosystem that are attributable to the collective effect of a number of individual discharges of dredged or fill material. Although the impact of a particular discharge may constitute a minor change in itself, the cumulative effect of numerous such piecemeal changes can result in a major impairment of the water resources and interfere with the productivity and water quality of existing aquatic ecosystems.

In evaluating potential cumulative impacts from the South Terminal Project on the aquatic ecosystem, EPA concentrated its review on past and potential impacts to the Upper and Lower New Bedford Harbor from discharges of dredged and fill material ("filling") that have occurred in these areas since 1990 as well as those likely to occur in the foreseeable future. In conducting this evaluation, we reviewed projects associated with the New Bedford Harbor Superfund Project and associated phases of the State Enhanced Remedy, as well as public and private fill projects authorized by the U.S. Army Corps of Engineers as part of its Section 404 permitting process.

6.6.1 New Bedford Harbor Superfund Project: The 1998 Record of Decision ("ROD") defined a selected clean-up remedy for Polychlorinated Biphenyl ("PCB") contaminated sediment within the Upper and Lower New Bedford Harbor areas and an interim remedy for two areas of localized contamination in Outer New Bedford Harbor, south of the New Bedford Hurricane Barrier. The 1998 ROD identified cleanup levels for the harbor areas and discussed disposal options to permanently isolate the contaminated sediment from human and environmental receptors. The preferred disposal alternative recommended in the 1998 ROD involves the construction of four confined disposal facilities ("CDF"). A total of three CDFs (CDFs A-C) were proposed in New Bedford Upper Harbor and one CDF (CDF D) was proposed in New Bedford Lower Harbor. These CDFs would be constructed by creating enclosed containment cells and filling portions of New Bedford Harbor. PCB-contaminated sediment would be permanently isolated within these containment cells and appropriately capped. Based upon the conceptual CDF design drawings in the 1998 ROD, the construction of the four proposed CDFs would have filled at least 52 acres of New Bedford Harbor (CDF A – 11 acres of open water fill, CDF B – 10 acres of open water fill, CDF C – 12 acres of open water fill, and CDF D – 19+ acres of open water fill).

Since finalizing the 1998 ROD, EPA has continued to work to identify cost effective ways to dispose of PCB-contaminated sediments. The EPA has issued four Explanations of Significant Differences ("ESD"), which modify the remedy. As a result of the ESDs, one of the four CDFs –CDF D (the largest) -- was eliminated and the contaminated material that was to be contained in this CDF is now disposed of offsite or in a confined aquatic disposal ("CAD") cell.[23] The onsite processing and off-site disposal does not involve filling waters of the U.S. To date, EPA has only constructed only one CDF facility, the Sawyer Street CDF. This pilot CDF facility has been used for the temporary disposal of contaminated dredged sediments. As part of the construction of the Sawyer Street CDF, approximately 3.0 aces of waters of the United States were filled. Future dredging of PCB-contaminated sediment as part of the New Bedford Harbor Superfund Project may involve dredged material disposal alternatives such as the future construction of CDFs or CAD cells. Such disposal alternatives would involve filling impacts, but it is difficult at present to estimate the manner, size, and location of such filling.

6.6.2 State Enhanced Remedy: At the Commonwealth's request, after public review and comment, EPA integrated navigational dredging and disposal into its 1998 ROD decision as a state enhanced remedy ("SER") pursuant to the provisions of Comprehensive Environmental Response, Compensation, and Liability Act ("CERCLA") and the National Oil and Hazardous Substance Pollution Contingency Plan ("NCP"). PCB-contamination levels in the sediment in these navigational dredging areas are typically below the clean–up levels defined in the 1998 ROD, but they are unsuitable for offshore disposal. In January 2010, the Commonwealth requested inclusion of this proposed South Terminal Project in the SER. EPA review of that request is the subject of this Draft Determination.

Both dredging and disposal projects can be reviewed under the SER process. In the past, the Commonwealth has reviewed a range of potential disposal options for the unsuitable

---

[23] See Lower Harbor CAD Cell, Fourth Explanation of Significant Differences for New Bedford Harbor Superfund Site OU1, March 2011, Final at www.epa.gov/nbh.

navigational dredged material. In the 2000 New Bedford Fairhaven Municipal Harbor Plan, a total of six potential CDF sites were identified within the Upper and Lower New Bedford Harbor area (see MassDEP 2012, Figure 9). These six proposed CDFs, as shown on Figure 9, would fill approximately 189 acres of the Lower New Bedford Harbor. They included 1) the Railroad CDF, a modified version of CDF D, (12 acres of open water impacts); 2) Popes Island North CDF (21 acres of open water impacts); 3) Popes Island South CDF (16 acres of open water impacts); 4) State Pier CDF (23 acres of open water impacts); 5) the two Fairhaven South CDFs (46 acres of open water impacts); and 6) Seawall West, a previous configuration for the South Terminal area (71 acres of open water impacts).[24] To date, only CAD cells have been used to contain unsuitable navigational dredged material. In constructing CAD cells, areas of harbor bottom are excavated to create a containment cell. Unsuitable dredged material is then placed in the containment cell and after some time is allowed for dredged material settlement, a cap is installed at an elevation slightly below adjacent harbor bottom.

During Phases II and III of the SER, the Commonwealth used a pre-existing borrow pit and constructed CAD Cells #1 and #2 to dispose of navigational dredged PCB-contaminated sediment. All of these CAD cells are located to the north of Pope's Island in the Lower New Bedford Harbor. CAD Cell #3, proposed as part of this South Terminal Project, is located in this same area. The siting of these CAD cells as well as future CAD cells was the subject of the 2003 Dredged Material Management Plan, Final Environmental Impact Report for New Bedford and Fairhaven, ("DMMP") issued by the Massachusetts Office of Coastal Zone Management. [25] Disposal of unsuitable dredged material into CAD cells involves filling impacts, but these impacts are considered temporary, because the cells' caps will eventually be recolonized with benthic organisms similar to those on adjacent harbor bottom areas. No long-term impacts to the water column are expected with capped CAD cells.

Finally, the May 2010 New Bedford Fairhaven Municipal Harbor Plan discusses the possible beneficial re-use of "clean" dredged material for the rehabilitation of bulkheads and Waterfront Development Shoreline Facilities ("WDSF") within New Bedford and Fairhaven. In constructing WDSFs, clean dredged material may be used to create solid fill piers to replace dilapidated wharfs and/or bulkheads. The facilities would be considered permanent fills since they involve converting waters of the United States to non-jurisdictional upland areas. WDSF fills are meant to support expanded and/or rehabilitated waterfront uses, similar to the earlier CDF plans. However, the WDSF fills are proposed to be smaller than the CDFs since they are designed to retrofit the existing waterfront uses rather than to dispose of a set volume of dredged material.

The Executive Summary concept plan for the May 2010 New Bedford Fairhaven Municipal Harbor Plan identifies potential WDSF sites at South Terminal (4 acres of open water impacts),

---

[24] Except for this proposed South Terminal project and those projects already included in the completed Phase II and Phase III SER work plans, EPA's conclusions and findings in this Draft Determination are not an endorsement of nor an integration into the New Bedford Harbor State Enhanced Remedy of any particular project listed in the New Bedford/Fairhaven Municipal Harbor Plans.

[25] The DMMP may be found in the Administrative Record for this Draft Determination and at www.mass.gov/cam/dredgereports/2003/feirnm-f.htm.

New Bedford State Pier (< 1 acre of open water impacts), North Terminal (12 acres of open water impacts), Popes Island Terminal (4 acres of open water impacts) sites in New Bedford, as well as at the Union Wharf site (<1 acre of open water impacts) in Fairhaven, Massachusetts. Both the North Terminal and the Popes Island Terminal WDSF projects appear to rely on the replacement of the Route 6 Bridge to be practicable. Therefore, only the New Bedford State Pier and the Union Wharf WDSF projects appear to represent potential cumulative impacts, although at the present time it is not possible to determine whether either project is likely to occur in the foreseeable future.

6.6.3 Corps of Engineer's Permitted Projects in Upper and Lower New Bedford Harbor: In an attempt to objectively evaluate the cumulative impacts associated with recent filling projects in New Bedford Harbor not associated with the Superfund Program and the SER, EPA reviewed Section 404 permits issued by the U.S. Army Corps of Engineers ("Corps") for fills within New Bedford Harbor. Our file review indicated that since 1990 the Corps has issued a total of twenty Section 404 fill authorizations within the Upper and Lower New Bedford Harbor in New Bedford, Fairhaven, and Acushnet, Massachusetts.

These twenty Section 404 fill projects included shoreline stabilization work, construction of boat ramps, installation of intake/outlet pipes, environmental restoration projects, coal tar remediation work, and installation of submarine cables for the Route 6 Bridge. The total impact for these twenty projects was between 1-2 acres of waters of the United States. For the most part, these projects involved minor fill activities (< 1,000 square feet of fill). Larger impact (> 5,000 square feet of fill) projects were limited to coal tar remediation work, environmental restoration projects, and a few of the bulkhead projects.

6.6.4 Summary: In conducting a cumulative impacts analysis for the South Terminal Project, EPA reviewed Section 404 projects authorized by the Corps of Engineers over the past twenty years, as well as past filling associated with the New Bedford Harbor Superfund Project and the State Enhanced Remedy. We also considered filling projects likely to be completed in the foreseeable future. Based upon this review, we determined that larger fill projects within New Bedford Harbor have been associated with dredged material disposal work (i.e., CAD cells and CDFs) related to the New Bedford Harbor Superfund Project or the associated State Enhanced Remedy. Recently, the trend in designing cost-effective dredged material disposal projects has been to either avoid permanent filling impacts (with CAD cells) or to minimize the size of CDFs and/or WDSFs. Additional fill projects that would be subject to Corps permitting under Section 404 are likely to continue to be few and minor in scope. Based upon this information, EPA has tentatively determined that the cumulative effect of fills that we have reviewed herein do not, collectively, represent a major impairment of the aquatic ecosystem.

7.0 Mitigation (40 C.F.R. §§ 230.10(d), 230.70-77 and 230.90-99; 33 C.F.R. Part 332)

For a proposed project to comply with § 230.10(d) of the 404(b)(1) Guidelines, impacts to waters of the U.S. must be avoided and minimized to the extent practicable, and all appropriate and practicable steps must be taken to compensate for unavoidable impacts.

7.1 Avoidance/Minimization: EPA has determined that the basic project purpose for this project is to develop a marine terminal that will provide infrastructure capable of supporting

the development of offshore renewable energy facilities as well as other future uses (such as container shipping, break-bulk cargo shipping, bulk cargo shipping, short-seas shipping). As a water-dependent activity, some impacts to waters of the United States are unavoidable. The Commonwealth developed feasibility criteria in order to identify key parameters that are essential for a marine terminal site to be practicable for supporting the development of off-shore renewable energy facilities (see Section 4.3 above for more details; see also MassDEP 2012, MassDEP 2012a, and MassDEP 2012b). EPA's tentative determination that the South Terminal alternative is the least environmentally damaging practicable alternative ("LEDPA") is set forth in Section 4 above.

The Commonwealth worked with agencies with expertise in the construction of offshore wind energy projects and the regional shipping industry as well as with the Northeast Marine Pilots Association and the New Bedford Tug Operators to ensure that the design for the South Terminal Project is effective in supporting offshore renewable energy facilities as well as other marine terminal uses. Existing site-specific resources such as the New Bedford Harbor Federal Navigation Project ("FNP") were used to enhance commercial navigation access while minimizing impacts to waters of the United States.

As the design for the South Terminal Project has progressed, the Commonwealth has suggested measures to minimize adverse impacts to waters of the United States. For example, the current design for the South Terminal docking area incorporates a section of pile-supported wharf channelward of the proposed bulkhead. Since construction cranes do not need to access this waterside section of the South Terminal, it was possible to incorporate a pile-supported structure rather than a solid-fill wharf in this area. While this existing subtidal area will be deepened, armored with scour protection, and substantially shaded by the overhead pile-supported wharf, it will not be completely filled. This modification resulted in a 0.67 acre reduction in the overall impacts associated with the South Terminal project. The Commonwealth also made adjustments to the original terminal design in order to avoid construction impacts to the adjacent paleosol formation.

EPA has tentatively determined that the Commonwealth has designed the footprint of the South Terminal Project in a manner that minimizes the impacts to the aquatic environment to the extent practicable in light of the basic project purpose.

7.2 Measures to minimize adverse impacts: There are a number of measures that the Commonwealth will be implementing during the construction of the South Terminal Project in order to minimize adverse impacts on aquatic resources within New Bedford Harbor. Refer to the DRAFT conditions section (Section 20) of this decision document for details on these additional measures to be taken.

7.3 Compensatory Mitigation: The Commonwealth submitted a Conceptual Mitigation Plan (MassDEP 2012; MassDEP 2012a) to provide compensatory mitigation for unavoidable direct and secondary impacts to the various resources affected by the project. EPA's evaluation of the Conceptual Mitigation Plan is described below.

7.3.1 Winter Flounder Spawning Habitat: Inshore stocks of winter flounder have a preferred spawning depth of < 5 m (Pereira et al., 1999). The Commonwealth proposes to

place clean sand excavated from the CAD cell dredging to fill in an area to the south of the hurricane barrier to reduce the existing depths (MassDEP 2012a, Appendix A,, Draft Plan Sheets P-5.1 and X-5.1). The intent is to change the depth of areas that are >5m to final depths that are within the preferred depth range of winter flounder spawning. The Commonwealth proposes to create new winter flounder spawning habitat over 22.73 acres of the seafloor, to compensate for the loss of winter flounder habitat associated with dredging and with filling to construct the CDF. The proposed project will result in between 16.2 and 20.21 acres of impact to winter flounder habitat (MassDEP 2012a). [26] As a result, the Commonwealth has committed to a slightly greater than 1 to 1 replacement ratio of winter flounder spawning habitat (MassDEP 2012a). An additional benefit resulting from this work is the isolation of existing contaminants present in the sediments at this location. Currently, PCB concentrations range from 1 to 8 ppm throughout this area, so placement of clean sand will eliminate exposure of elevated levels of PCBs to the biological community.

This placement of fill represents a temporary impact to the marine environment. As soon as the filling stops, mobile crustaceans will return to the newly filled footprint. Lobsters, crabs and shrimp use chemoreception to detect prey and they are drawn to the "odor" of disturbed sediments. It is believed that they view the presence of disturbed sediments as an opportunity to forage for exposed and defenseless benthic infauna. The benthic infaunal community will begin colonizing the newly exposed sediments during the next spawning event. Typically, opportunistic shallow burrowing polychaetes are the first organisms to colonize an area. The paradigm for benthic community ecology follows that the quick reproducing small polychaetes comprise the initial or Stage I benthic community Rhoads and Germano, 1986). The Stage II community features slightly larger polychaetes and some small shellfish that typically are slightly deeper burrowers than what is found in Stage I (Rhodes and Germano, 1986). The final step in the successional process is the Stage III community. This community is characterized by large deep burrowing bivalves and larger polychates (Rhoads and Germano, 1986). Full recovery to a Stage III successional community will likely take 3-7 years (Rhoads and Germano, 1986). The finfish community will begin using the area once the placement of sand has been completed. Winter flounder and other species that may utilize the bottom for spawning will be able to use the bottom within the mitigation footprint shortly after the sand has been placed.

During construction, the Commonwealth will conduct a bathymetric survey to ensure that the appropriate depths are achieved. In addition, the bathymetric survey will be repeated annually for 5 years post-construction to determine if the newly placed fill is eroding from the site. Monitoring of the biological success of this mitigation effort will occur through a targeted sampling of winter flounder eggs. Winter flounder eggs will be collected using an epibenthic sled in multiple locations within the project footprint and at several control stations. Sampling will begin prior to construction to establish a baseline and continue for 5 years post construction. The data will be statistically analyzed for differences between sampling locations and through time.

---

[26] The extent of impacts will depend on whether the potential extension of the deep draft dredging area to the south and the potential widening of the deep draft channel (discussed above in Section 2) occur.

The bathymetric survey is intended to assess the stability of the newly created habitat, while the monitoring of winter flounder eggs assesses whether the created habitat is supporting the intended functions. EPA proposes to include a requirement that if, after 5 years the bathymetric survey detects a significant loss of habitat due to sediment erosion/migration, the Commonwealth must place additional material to ensure that winter flounder spawning habitat is replicated in a 1 to 1 ratio.

Winter flounder that spawn in the New Bedford Harbor/Buzzards Bay areas are considered part of the Southern New England/Mid-Atlantic inshore stock. This stock has been decimated and currently the population is estimated to be at 10% of what is needed to support a commercial fishery (ASMFC, 2009). There is currently a commercial fishing moratorium on this species, and recreational fishing has been virtually eliminated as well (ASMFC, 2009). Due to the dire condition of this formerly commercially important species, EPA views the protection of habitats critical to its survival as essential. Recovery of winter flounder stocks will not occur without protection of spawning and nursery habitat. The Commonwealth's mitigation proposal will replace at a slightly greater than 1 to 1 ratio the quantity of winter flounder habitat impacted by the proposed project. EPA expects that the quality of the newly created spawning habitat may be superior to what it is replacing as it will be built with clean material free from any PCB contamination. EPA has tentatively determined that this mitigation proposal adequately offsets the unavoidable impacts to winter flounder spawning habitat.

7.3.2 Intertidal habitat creation and near-shore, shallow, sub-tidal enhancement: The Commonwealth has proposed to place clean sand excavated from the CAD cell dredging in an area referred to as the OU-3 Hot-Spot (MassDEP 2012a, Appendix A,, Draft Plan Sheet P-5.2 and X-5.1). In the nearshore segment of the project, seafloor depths will be raised to create or enhance 4.47 acres of intertidal habitat, to compensate for the 1.94 acres of intertidal habitat that will be filled to construct the CDF. In addition, clean sand will be placed in this area to enhance shallow subtidal habitat of 14.91 acres to compensate for filling and dredging impacts to subtidal habitat. This action will also serve to remediate the sediments within that acreage. Currently, PCB concentrations in these sediments range from 1-8 ppm. Remediation of these sediments will eliminate exposure of elevated levels of PCBs to the biological community. As described in greater detail above, this fill placement would result in a temporary adverse impact to the marine environment. Overall, however, there would be an overall beneficial effect from the proposed habitat creation and enhancement.

The Commonwealth will conduct bathymetric surveys during construction to assure that the appropriate elevations are achieved. This is particularly critical for the creation of intertidal habitat, where misjudging depths by mere inches will result in subtidal habitat, not the preferred intertidal habitat. In addition, bathymetric surveys will be conducted annually for 5 years post construction to examine patterns of sediment erosion or accretion. EPA proposes to include a requirement that if, after 5 years there have been significant changes to the newly created habitat (especially the created intertidal area), the Commonwealth must supplement the area with additional clean sand to ensure that the area of habitat created is equivalent to the amount of habitat lost.

Near shore shallow sub-tidal and intertidal habitats serve as important refuge areas for many species of fish and invertebrates (Whitlatch, 1982). Juvenile winter flounder and a host of other fish species use these shallow areas to avoid predation from larger fish that cannot access these

shallow habitats (Pereira et al., 1999; Whitlatch, 1982). Due to the ecological importance of these habitats, EPA has tentatively determined that equivalent compensation is appropriate. The Commonwealth's proposal will compensate for these impacted habitats in a slightly greater than 1 to 1 ratio (MassDEP 2012a). EPA expects that the newly created habitat will be of superior quality than the area it is replacing, because it will be free of PCBs and other contaminants. EPA has tentatively determined that this proposed mitigation will adequately address the proposed unavoidable impacts to intertidal and near shore shallow sub-tidal habitats.

7.3.3 Shellfish mitigation: The Commonwealth has pledged to replace the shellfish resource lost by the construction of this project. It proposes to seed 9,817,121 quahogs, equivalent to the estimated loss number, in multiple locations south of the hurricane barrier. The exact locations have yet to be selected, and this would be carried out over a 3-5 year period. The seed clams that the Commonwealth proposes to use are in the 20-25 mm width range, and they have an expected 40% survival rate (MassDEP 2012). After each area of seafloor is seeded, the Commonwealth would administratively close that area for 3 years to allow the seeded clams to mature.

Shellfish are a commercially important species and serve a number of important ecological roles as well. Clams are prolific filter feeders that can improve water quality through their normal feeding activities (Doering and Oviatt, 1986). Doering and Oviatt (1986) observed that quahogs can filter up to 5 liters (1.32 gallons) of water per hour, though the actual rate can vary with clam size and water temperature. At this filtration rate, the projected number of quahogs impacted by the project could filter more than 300 million gallons of water a day. This represents a substantial ecological service. In addition, the siphons of hard clams are important prey items for winter flounder and other demersal fish species (Pereira et al., 1999). Nearly 10 million shellfish represent a substantial prey base for demersal fish.

EPA has tentatively determined that the Commonwealth's proposal does not adequately compensate for the ecological value of the lost shellfish resources. The seed clams are smaller than the clams that will be lost and thus do not filter as much water, nor do they represent an equivalent prey value for demersal fish as the individuals that will be lost. Accounting for the 40% survival rate of the seed clams, EPA has tentatively concluded that 24,542,803 seed quahogs should be placed in multiple transplant locations to offset an equivalent number of individuals that will be lost to construction. The figure of 24,542,803 is derived by multiplying the number of clams lost by 2.5. This approach accounts for the 40% survival rate (MassDEP, 2012) that is to be expected for seed clams of this size. Recognizing that cost and availability of seed clams may be an issue, EPA has tentatively determined to allow the Commonwealth to conduct this work over a 10 year period.

7.3.4 Wetland mitigation: The Conceptual Mitigation Plan proposes to provide compensatory mitigation for the project's impacts to wetlands through wetland restoration and enhancement in the vicinity of the existing tidal tributary adjacent to the Hurricane Barrier. In addition, a pedestrian/bike path is proposed adjacent to the wetland restoration area, to provide public access and some educational benefit.

The existing tidal tributary currently provides few ecological services, and is degraded by sediments contaminated with PCBs, SVOCs and metals, as well as the presence of invasive plant species and trash. The proposed mitigation will entail the removal of contaminated sediments

and replacement with clean substrate from the CAD cell excavation. A new low flow channel will be constructed to maintain transport of tidal flow and storm water.[27] The rip rap and fill on the western side of the channel will be removed, and the area regraded to support low marsh, high marsh and transitional tidal wetland vegetation. These areas will be planted with *Spartina alternaflora* (low marsh); *Spartina patens, Solidago sempervirens, Iva frutescens, Morella pensylvanica, Hibiscus moschuetos* (high marsh); and *Panicum virgatum , Iva frutescens, Ammophila brevigulata, and Prunus maritima* (transitional zone).

The Commonwealth also proposes to install a hooded catch basin or a trash screen at a local storm water outfall to reduce trash inflow from that source. EPA recommends that both improvements be installed. While the trash screen would be effective at removing larger trash and debris, the hooded catch basin would have the added benefit of reducing the potential discharge of oil and other floatable contaminants in the storm water. It is important that both of these infrastructure improvements be regularly maintained to assure their effectiveness.

EPA has tentatively concluded that the proposed wetland restoration and enhancement project and infrastructure improvements will provide adequate compensatory mitigation to address the lost or impaired functions and values of the 0.1 acre freshwater wetland and 0.18 acre salt marsh areas to be filled by the proposed project. [28] It will result in the removal of contaminated sediments and a potential source of pollutants. It will result in the removal of fill and rip rap, replacing it and restoring the area with natural wetland substrates. It will also remove invasive plant species and replace them with a more diverse and desirable assemblage of native species.

Wetlands functions and values that would be replaced or enhanced include: groundwater discharge; floodflow alteration; fish and shellfish habitat; sediment/toxicant retention; floodflow alteration; shoreline stabilization; and, enhanced wildlife habitat. Additional wetland functions and values provided by the wetland restoration and enhancement project include production export and recreational and educational components.

Lastly, the proposed infrastructure improvements will contribute to improved water quality, and help prevent degradation of the restoration area.

The Conceptual Mitigation Plan proposes that the wetlands mitigation area will be inspected by a wetland scientist on a monthly basis during the period from April through October for the first three years after construction, and during May and September of the fourth and fifth years after construction. The presence and species diversity of plants will be monitored, as well as the

---

[27] The Corps of Engineers is reviewing the channel design to assure there will be no adverse effect on the operation of the Hurricane Barrier. EPA will coordinate with the Corps to make sure any concerns are addressed before EPA's final decision on the project.

[28] On July 12, 2012, the Commonwealth informed EPA that there is a 0.4 acre freshwater wetland on one of the properties that may become incorporated into the terminal site. MassDEP 2012d. There is insufficient information available for EPA to determine the potential impacts of filling this wetland or appropriate mitigation at this time. EPA will evaluate this issue further once the Commonwealth determines whether the parcel will be incorporated into the site, and will ensure appropriate mitigation is developed consistent with the requirements discussed herein before making a final decision on the project.

presence of invasive species. According to the Conceptual Mitigation Plan, invasive species will be removed by hand, or if necessary, other control methods will be evaluated.

In addition to the Conceptual Mitigation Plan, the Commonwealth submitted an Invasive Species Management Plan (ISMP) (MassDEP 2012a, Attachment P). EPA believes that a modified ISMP, in conjunction with the requirements of the Compensatory Mitigation Plan, would be adequate to control the spread of invasive plant populations within the proposed wetland restoration area that could prevent successful mitigation of impacts to wetlands. The ISMP, modified as described below, must be incorporated as part the Commonwealth's Compensatory Mitigation Plan, which will be a condition of EPA's authorization.

First, the ISMP proposes monitoring and reporting to occur after the first, third and fifth years of restoration. This schedule must be modified to require monitoring and reporting on an annual basis for five years at a minimum. The ISMP monitoring and reporting should be coordinated with the monitoring and reporting requirements of the Compensatory Mitigation Plan. Subsequent monitoring and reporting may be required, depending upon the success of the compensatory mitigation and the need for corrective measures in the event of unsuccessful compensatory mitigation.

Secondly, the ISMP states that "removal of all invasive plant species around the periphery of the restoration area is not feasible." The ISMP does not provide adequate information to support this statement. More detailed information must be submitted for review on the types, location and areal extent of invasive species in the vicinity of the proposed compensatory mitigation project. Because the presence of peripheral invasive species is likely to undermine the success of the proposed mitigation, and because invasive species removal is common practice, the Commonwealth must provide clear explanation and justification for its proposal to not include removal of existing invasive species as part of its ISMP.

Lastly, the Commonwealth's most recent reports regarding on-site wetland resources and impacts were submitted to EPA on July 11, 2012 (MassDEP 2012c) and July 12, 2012 (MassDEP 2012d), leaving inadequate time for complete review prior to the issuance of the draft determination. EPA will conduct additional review of these reports and any required supplemental information before making a final decision on the project, which may result in the need for modifications to the proposed Compensatory Mitigation Plan, including the ISMP. Also, based on these reviews, additional monitoring of the site's existing salt marsh areas may be necessary to ensure that no secondary impacts to these resources are occurring as a result of the construction and operation of the facility, and to inform the implementation of any necessary corrective actions.

7.3.5 Requirements for Final Mitigation Plan: Under 40 C.F.R. § 230.94(c)), an approved Mitigation Plan covering all components of the proposed compensatory mitigation is required prior to final project authorization. Several requirements must be met before a final Mitigation Plan is approved:

• The Commonwealth must prepare a comprehensive draft Mitigation Plan and submit it to EPA for review.

• After EPA's review and comment, the Commonwealth must prepare a final Mitigation Plan, which must be approved by EPA prior to project authorization.

• The final Mitigation Plan will be incorporated as a condition of the authorization by reference.

• The final Mitigation Plan must include the 12 components listed below. EPA may also require additional information as necessary to determine the appropriateness, feasibility, and practicability of the mitigation project.

7.3.5.1 Twelve Components of a Compensatory Mitigation Plan:

1. Objectives**.** A description of the resource type(s) and amount(s) that will be provided, the method of compensation (restoration, establishment, preservation etc.), and how the anticipated functions of the mitigation project will address lost or compromised functions and values of impacted resources.

2. Site selection. A description of the factors considered during the site selection process. This should include consideration of onsite alternatives and practicability of accomplishing ecologically self-sustaining aquatic resource restoration, establishment, enhancement, and/or preservation at the mitigation project site.

3. Site protection instrument. A description of the legal arrangements and instruments, including site ownership, which will be used to ensure the long-term protection of the mitigation project site.

4. Baseline information. A description of the ecological characteristics of the impact site and the proposed mitigation project site. This may include descriptions of historic and existing plant communities, historic and existing hydrology, soil conditions, a map showing the locations of the impact and mitigation site(s) or the geographic coordinates for those site(s), and other characteristics appropriate to the type of resource proposed as compensation. The baseline information should include a delineation of waters of the United States on the proposed mitigation project site.

5. Determination of mitigation credit. An explanation of how the mitigation project will provide the required compensation for unavoidable impacts to aquatic resources resulting from the proposed activity.

6. Mitigation work plan. Detailed written specifications and work descriptions for the mitigation project, including: the geographic boundaries of the project; construction methods, timing, and sequence; source(s) of water; methods for establishing the desired plant community; plans to control invasive plant species; proposed grading plan; channel form (e.g., typical channel cross-sections) and design discharge[29]; soil management; and erosion control measures.

7. Maintenance plan. A description and schedule of maintenance requirements to ensure the continued viability of the resource once initial construction is completed.

---

[29] The work plan in this case will also need to ensure that there will be no adverse impact on the Hurricane Barrier.

8. Performance standards. Ecologically-based standards that will be used to determine whether the mitigation project is achieving its objectives.

9. Monitoring requirements. A description of parameters monitored to determine whether the mitigation project is on track to meet performance standards and if adaptive management is needed. A schedule for monitoring and reporting monitoring results to EPA must be included.

10. Long-term management plan. A description of how the mitigation project will be managed after performance standards have been achieved to ensure the long-term sustainability of the resource, including long-term financing mechanisms and the party responsible for long-term management.

11. Adaptive management plan. A management strategy to address unforeseen changes in site conditions or other components of the mitigation project, including the party or parties responsible for implementing adaptive management measures.

12. Financial assurances. A description of financial assurances that will be provided and how they are sufficient to ensure a high level of confidence that the mitigation project will be successfully completed, in accordance with its performance standards.

8.0 Summary of Section 404 (b) (1) Guidelines Analysis and Tentative Determination:

Based upon the analysis of the South Terminal Project, as described in Sections 4.0 – 7.0 of this decision document, the EPA has tentatively determined that this project as currently designed complies with the Section 404 (b) (1) guidelines with the inclusion of appropriate mitigation and special conditions (see Section 20.0).

RIVERS AND HARBORS ACT SECTION 10 PUBLIC INTEREST REVIEW

9.0 Analysis of Beneficial and Detrimental Impacts to the Environment and the Public Interest (33 C.F.R. § 320.4(a-r))

9.1 Public interest review factors (33 CFR 320.4(a) (1))

9.1.1 Conservation: The South Terminal Project is proposed to be constructed at the site of the former Potomska Mills in New Bedford, Massachusetts. This project will not result in the conservation of additional land, and it will not result in the use of lands conserved for other purposes.

9.1.2 Economics: The South Terminal Project will have both short-term and long-term positive economic impacts for the Port of New Bedford and adjacent communities. In the short-term the construction of the South Terminal and the dredging of the associated navigational channels will create short-term construction jobs. Post-construction operations at the terminal are expected to create several hundred permanent jobs when the site is used to support the construction of offshore wind energy projects or as a cargo terminal. Maintenance dredging and/or deepening of the existing navigational channels will have a positive economic

impact on other existing maritime industries within the Port of New Bedford. The creation of these maritime jobs will also result in indirect and induced economic benefits for regional companies that support maritime companies and their workers. (MassDEP 2012 at 67-73).

9.1.3 Aesthetics: The South Terminal Project will have short-term negative aesthetic impacts during the construction phase of this project. In the long-term, the site will be changed from a demolished mill property to an active marine terminal, similar in appearance to adjacent waterfront properties. Whether these aesthetic changes are positive or negative impacts is a subjective judgment.

9.1.4 General environmental concerns: The South Terminal Project will have both negative and positive environmental impacts. These impacts are detailed within Sections 5 and 6 above, and within this Section 9.

9.1.5 Wetlands: A total of 0.18 acres of salt marsh wetlands will be permanently filled as part of the creation of the confined disposal facility/marine terminal. Also, approximately 0.88 acres of salt marsh may be adversely affected by secondary impacts from the construction and operation of the facility. In addition, one small wetland on Parcel 49 of the site, approximately 0.1 acre in area, will be filled.

Tidal wetlands: Federally jurisdictional tidal wetlands at the project location consist of an emergent salt marsh system, situated directly within and adjacent to the proposed location of the CDF. This area was delineated during the June 28, 2012 site investigation, and a report submitted to EPA on July 11, 2012. Due to the late date of the submission of this report, EPA has not had adequate time to complete its review and confirm revised areal estimates of the salt marsh areas, including a newly identified south salt marsh area (Salt Marsh 2). Areal estimates in the recent report indicate a smaller area of salt marsh present at Salt Marsh 1 than had been previously described by the Commonwealth. For the purposes of the draft determination, the previously submitted estimate of the areal extent of Salt Marsh 1 is being used for assessment of impacts, combined with the areal estimate for the newly identified Salt Marsh 2 presented in the July 11, 2012 report. Areal estimates will be revised after EPA has completed review and confirmation of the new wetland delineation. For the purposes of the draft determination, the salt marsh resources present are estimated to be approximately 1.06 acres in area. Soil sampling indicates that the wetland soils are contaminated with PCBs and metals (SER 1/18/12 Application, Appendix 36, Tables 2A and 2E). Wetland vegetation present includes *Spartina alternaflora*, and trace amounts of *Salicornia virginiana*.

Functions and values associated with this system include groundwater discharge, flood flow alteration, fish and shellfish habitat, shoreline stabilization, and wildlife habitat.

Freshwater wetlands: A site investigation to characterize freshwater resources was conducted on June 28, 2012, and a report submitted to EPA on July 11, 2012. According to the report, fresh water resources are very limited at the project location, comprised of one small vegetated wetland located north of the existing paved area on Parcel 49, approximately 4,600 square feet

(0.1 acre) in area.[30] The proposed project will result in filling this wetland. [31]

This disturbed wetland has formed in a depressional area within the existing fill on site. Evidence of hydrology supporting this wetland is present. Soils consist of significantly disturbed urban fill. While no sampling data has been provided characterizing soils within this wetland, soil sampling conducted in the general vicinity of the wetland indicates that the wetland soils are likely to be contaminated with PCBs and metals (SER 1/18/12 Application, Appendix 39, Table 1). Wetland vegetation consists primarily of *Phragmites australis* (common reed), an invasive species.

Functions and values associated with this wetland include groundwater recharge/discharge, floodflow alteration, sediment/toxicant retention, and wildlife habitat. However, these wetland functions and values are limited due to the small size and degraded nature of the wetland system and the surrounding landscape.

Wetland mitigation: The Commonwealth submitted a Conceptual Mitigation Plan (MassDEP 2012) to provide compensatory mitigation for unavoidable direct and secondary impacts to the various resources affected by the project. The Conceptual Mitigation Plan proposes to provide compensatory mitigation for the project's impacts to wetlands through wetland restoration and enhancement in the vicinity of the existing tidal tributary adjacent to the Hurricane Barrier. In addition, a pedestrian/bike path is proposed adjacent to the wetland restoration area, to provide public access and some educational benefit.

The existing tidal tributary currently provides few ecological services, and is degraded by sediments contaminated with PCBs, SVOCs and metals, as well as the presence of invasive plant species and trash. The proposed mitigation will entail the removal of contaminated sediments and replacement with clean substrate from the CAD cell excavation. A new low flow channel will be constructed to maintain transport of tidal flow and stormwater.[32] The rip rap and fill on the western side of the channel will be removed, and the area regraded to support low marsh, high marsh and transitional tidal wetland vegetation. These areas will be planted with *Spartina alternaflora* (low marsh); *Spartina patens, Solidago sempervirens, Iva frutescens, Morella pensylvanica, Hibiscus moschuetos* (high marsh); and *Panicum virgatum , Iva frutescens, Ammophila brevigulata, and Prunus maritima* (transitional zone).

---

[30] As noted in footnote 7 above, EPA considers this wetland to be adjacent to a traditionally navigable water and therefore subject to federal jurisdiction.

[31] On July 12, 2012, the Commonwealth informed EPA that there is a 0.4 acre freshwater wetland on one of the properties that may become incorporated into the terminal site. MassDEP 2012d. There is insufficient information available for EPA to determine the potential impacts of filling this wetland or appropriate mitigation at this time. EPA will evaluate this issue further once the Commonwealth determines whether the parcel will be incorporated into the site, and will ensure appropriate mitigation is developed consistent with the requirements discussed herein before making a final decision on the project.

[32] The Corps of Engineers is reviewing the channel design to assure there will be no adverse effect on the operation of the Hurricane Barrier. EPA will coordinate with the Corps to make sure any concerns are addressed before EPA's final decision on the project.

The Commonwealth also proposes to install a hooded catch basin or a trash screen at a local storm water outfall to reduce trash inflow from that source. EPA recommends that both improvements be installed. While the trash screen would be effective at removing larger trash and debris, the hooded catch basin would have the added benefit of reducing the potential discharge of oil and other floatable contaminants in the storm water. It is important that both of these infrastructure improvements be regularly maintained to assure their effectiveness.

Pending submission and review of additional information, EPA has tentatively concluded that the proposed wetland restoration and enhancement project and infrastructure improvements will provide adequate compensatory mitigation to address the lost or impaired functions and values of the 0.1 acre freshwater wetland and 0.18 acre salt marsh areas to be filled by the proposed project. It will result in the removal of contaminated sediments and a potential source of pollutants. It will result in the removal of fill and rip rap, replacing it and restoring the area with natural wetland substrates. It will also remove invasive plant species and replace them with a more diverse and desirable assemblage of native species.

Wetlands functions and values that would be replaced or enhanced include: groundwater discharge; floodflow alteration; fish and shellfish habitat; sediment/toxicant retention; floodflow alteration; shoreline stabilization; and, enhanced wildlife habitat. Additional wetland functions and values provided by the wetland restoration and enhancement project include production export and recreational and educational components.

Lastly, the proposed infrastructure improvements will contribute to improved water quality, and help prevent degradation of the restoration area.

As noted above, the Commonwealth's most recent reports regarding on-site wetland resources and impacts were submitted to EPA on July 11, 2012 (MassDEP 2012c) and July 12, 2012 (MassDEP 2012d), leaving inadequate time for complete review prior to the issuance of the draft determination. EPA will conduct additional review of these reports and any required supplemental information before making a final decision on the project, which may result in the need for modifications to the proposed Compensatory Mitigation Plan, including the Invasive Species Management Plan. Also, based on these reviews, additional monitoring of the site's existing salt marsh areas may be necessary to ensure that no secondary impacts to these resources are occurring as a result of the construction and operation of the facility, and to inform the implementation of any necessary corrective actions.

9.1.6 Historic properties: During 2010, the Commonwealth conducted archaeological surveys to identify historical and archaeological sites that could potentially be impacted by the South Terminal Project. As a result of these surveys, a number of archaeologically-sensitive "Paleosols" and a localized shipwreck were identified. (MassDEP 2012, at 107-111). The EPA has begun coordination with the Massachusetts State Historic Preservation Officer ("MA SHPO"), the Massachusetts Board of Underwater Archaeological Resources ("BUAR"), as well as the Wampanoag (Aquinnah) and the Mashpee Wampanoag Tribal Historic Preservation Officers ("THPO") in an attempt to avoid or to minimize impacts to these in-water historic properties. EPA's preliminary determination is that the South Terminal

Project will have "no adverse effect" on these in-water historic properties or any adjacent upland historic properties. EPA will conclude coordination with the historic agencies prior to issuing a final determination on this project. See also Appendix G.

9.1.7 Fish and Wildlife: The South Terminal Project will result in negative impacts to fish and wildlife habitat areas within New Bedford Harbor. All totaled, approximately 0.18 acres of salt marsh, 0.1 acres of freshwater wetlands, and 6.67 acres of intertidal and sub-tidal benthic habitat will be permanently impacted due to filling to construct the CDF. Another approximately 53 acres of subtidal habitat will be temporarily impacted by the placement of fill as part of the mitigation plan to create and enhance winter flounder spawning habitat, intertidal area and shallow subtidal habitat, and associated with the capping of CAD cell 1 and the "Borrow Pit." In addition, approximately 53.7 acres of sub-tidal benthic habitat will be dredged and deepened as part of plans to maintenance dredge portions of the existing New Bedford Harbor Federal Navigation Project, to provide adequate navigational access to the South Terminal site, to realign the Gifford Street Boat Ramp Channel, to deepen areas within the North and South Mooring Areas, and to create CAD Cell #3. These impacts are discussed more fully in Sections 5 and 6 above and in Appendix H.

The proposed filling and dredging associated with the South Terminal Project will directly impact habitat areas for crustaceans, mollusks and other aquatic organisms that are prey species for finfish, birds, and mammal species (see Section 6.2.2 for more details). Less mobile organisms (worms, gastropods, mollusks, etc.) will likely be completely removed (by dredging) or buried (by filling) by this work. These populations are expected to be lost throughout the South Terminal construction area. More mobile organisms (crabs, lobsters, shrimp, etc.) will likely suffer some mortality as well, but their mobility will allow some individuals to leave or avoid the construction area. These survivors as well as juvenile and adult fish will be able to forage and/or spawn in adjacent unimpacted habitat areas. The South Terminal Project is expected to result in the permanent loss of approximately 20.21 acres of winter flounder spawning and nursery habitat and the loss of 9-10 million individual shellfish. If blasting is required to remove fractured bedrock from the South Terminal/Confined Disposal Facility area, this could have a negative impact on fish eggs and larvae, as well as aquatic invertebrates (crustaceans, gastropods, mollusks, etc.), juvenile and adult fish, amphibians, and reptiles.

As part of the South Terminal Project approximately 247,100 cubic yards of Polychlorinated Biphenyl ("PCB") and heavy metal contaminated sediment will be removed from the South Terminal project area, adjacent navigational channels, and confined aquatic disposal ("CAD") Cell #3 and placed into CAD cells #2 and #3 (MassDEP 2012a, Appendix S). Removal and segregation of these contaminated sediments will result in long-term positive impacts for fish and wildlife habitat within New Bedford Harbor. As part of its proposed mitigation package for the South Terminal Project, the Commonwealth proposes to create 22.73 acres of shallow water Winter Flounder spawning habitat, 14.91 acres of near-shore shallow, sub-tidal habitat, and 4.47 acres of intertidal habitat in Outer New Bedford Harbor to mitigate for winter flounder spawning habitat losses. In addition, the Commonwealth will seed shellfish areas in the Outer New Bedford Harbor to mitigate for unavoidable shellfish impacts associated with this project.

As noted in Section 5.3 above, EPA engaged in informal consultation with the U.S. Fish and Wildlife Service and has completed a final Biological Assessment (BA) of the potential effects

of the construction and long-term operation of the project on the endangered roseate tern, attached as Appendix K. For the reasons discussed in the final BA, EPA has concluded that the proposed NBH-South Terminal project may affect the roseate tern, but is unlikely to adversely affect the species. Also as noted in Section 5.3, the National Marine Fisheries Service has informed EPA that the endangered Atlantic sturgeon may be present in the vicinity of New Bedford Harbor. EPA is currently seeking additional technical assistance from NMFS and is in pre-consultation analysis with it. In that process, EPA and NMFS are discussing time of year restrictions, project sequencing options and mitigative dredging techniques which could greatly lessen or eliminate any potential adverse effects to the species. Prior to the issuance of a final decision on the impacts of the project, EPA will enter informal consultation with NMFS, which will include preparation of a Biological Assessment, and will seek concurrence with EPA's findings regarding the potential impacts to the sturgeon from the construction and operation of the project.

9.1.8 Flood hazards: The New Bedford Harbor area is actively protected from coastal flooding by the existing New Bedford Hurricane Barrier, located directly downriver of the South Terminal project site. If the New Bedford Hurricane Barrier is closed and heavy rain is expected, flood waters from the Acushnet River need to be stored within the New Bedford Inner Harbor Basin. The Commonwealth has documented that approximately 27.33 acre-feet of flood storage will be lost due to filling impacts associated with the South Terminal/Confined Disposal Facility (MassDEP 2012, at 112-114). In a December 16, 2010 e-mail, the New England District of the U.S. Army Corps of Engineers had requested that the Commonwealth develop and implement a plan to mitigate for the 27.33 acre-feet of lost flood storage. Recently, the Commonwealth has documented that the New Bedford Harbor Trustee Council is in the process of developing plans for a Marsh Island Restoration Project, which will create up to 39.67 acre-feet of flood storage within the New Bedford Harbor Basin (MassDEP 2012a, at 41-43; MassDEP 2012b at 6 and Attachment B). EPA has tentatively determined that the proposed Marsh Island Restoration Project will adequately mitigate for unavoidable floodplain storage losses associated with the South Terminal Project. See Appendix L for more details on this issue.

9.1.9 Floodplain values: The construction of the South Terminal confined disposal facility will result in the loss of approximately 27.33 acre-feet of flood storage within the New Bedford Hurricane Barrier basin. As stated in Section 9.1.8, the New England District of the U.S. Army Corps of Engineers previously requested that the Commonwealth develop and implement a plan to mitigate for this lost flood storage. EPA has tentatively determined that the proposed Marsh Island Restoration Project will adequately mitigate for unavoidable floodplain storage losses associated with the South Terminal Project**.** Therefore, the South Terminal Project will not result in substantial long-term negative impacts on floodplain values within New Bedford Harbor.

9.1.10 Land use: The South Terminal Project is proposed to be located on properties within New Bedford's designated port area. The basic project purpose is to create a marine terminal capability of supporting offshore renewable energy projects. This basic project purpose is consistent with current land-use patterns and is unlikely to require substantial changes in adjacent land-use patterns.

9.1.11 Navigation: As part of the South Terminal Project, the Commonwealth proposes to improve commercial navigation access to the South Terminal site by widening and deepening the existing commercial navigation channel to this site. This proposed dredging will provide positive short-term and long-term navigation impacts for commercial and recreational vessels in the vicinity of the South Terminal site. In addition, the Commonwealth may need to maintenance dredge portions of the existing New Bedford Harbor Federal Navigation Project ("FNP"). This proposed maintenance dredging will provide short-term and long-term positive navigation impacts for commercial vessels accessing the South Terminal site as well as other maritime properties along the New Bedford shoreline, south of the Route 9 Bridge.

9.1.12 Shore erosion and accretion: The construction of the South Terminal/Confined Disposal Facility will result in the filling of approximately 0.18 acres of salt marsh**,** 0.1 acres of freshwater wetlands, as well as 6.67 acres of intertidal and sub-tidal areas. The existing shoreline within the South Terminal project area is mostly vegetatively stabilized. The current design for the South Terminal Project includes the installation of steel-sheet bulkheads with associated scour protection to stabilize the fill/dredge areas. Although the proposed shoreline realignment and deeper navigation channels may obstruct and/or improve local circulation/tidal flushing patterns, these impacts on shoreline erosion and accretion are expected to be minor compared to circulation obstruction impacts associated with the adjacent New Bedford Hurricane Barrier.

9.1.13 Recreation: The construction of the South Terminal Project is expected to have short-term negative impacts and long-term positive impacts to recreational users in the New Bedford Lower Harbor within and directly adjacent to the project area. The construction of the South Terminal/Confined Disposal Facility includes filling a portion of the existing Gifford Street boat ramp Channel. In addition, the dredging of an improved commercial channel to access the South Terminal site will displace some existing recreational boat moorings. The project design for the South Terminal Project includes plans to realign the Gifford Street boat ramp Channel and to dredge two areas to create/enhance two adjacent recreational mooring areas. These mitigative measures will result in a long-term positive impact to local recreational users.

The Gifford Street boat ramp parcel has been designated as one of the ancillary properties for South Terminal. This site will be actively used as a lay down area for storing wind turbine components, when the South Terminal facility is supporting the construction of offshore wind turbine projects. The Gifford Street boat ramp will have limited access during these times. However, when the South Terminal facility is used as a more conventional marine terminal, the Gifford Street boat ramp will be reopened for full recreational boating access.

Construction vessel traffic to and from the South Terminal site through the New Bedford Hurricane Barrier is expected to be minor and to not substantially affect general recreational patterns in this area. The Commonwealth has indicated that New Bedford Harbor is generally considered to be severely under-utilized by boat traffic (MassDEP 2012 at 276).

9.1.14 Water supply and conservation: The South Terminal Project will not affect local water supply systems and/or conservation. There are no local water supply wells or reservoirs located within the project area.

9.1.15 Water quality: The development of the South Terminal property will not have any long term effect on water quality. Potential short term impacts will be mitigated through the use of dredging and filling practices that minimize discharge of excavated sediments into the surrounding water column, stockpiling practices that minimize erosion of stockpiled materials, and construction site management practices that control pollution runoff during rain events.

9.1.16 Energy needs: The redevelopment of the South Terminal property will result in increased energy use during the construction phase of this project (short-term) as well as during its operation as a marine terminal (long-term). However, the basic purpose for this project is to construct a marine terminal capable of supporting the construction of regional offshore renewable energy projects. Development of wind energy projects will make a substantial contribution to allowing utility companies to meet state renewable energy mandates as well as to providing cleaner sources of electricity to the New England regional electric grid.

9.1.17 Public Safety: The South Terminal Project is not expected to affect public safety.

9.1.18 Food and fiber production: This project is not expected to affect food and/or fiber production within New Bedford Harbor. While there is shellfish and finfish habitat within the South Terminal project area, all waters upstream of the New Bedford Harbor Hurricane Barrier are part of the Fish Closure Area #1. Fish, lobsters, and shellfish caught in this area are not safe for human consumption. In addition, this project will not involve any permanent impacts to agricultural or silvicultural lands.

9.1.19 Mineral needs: Construction of the South Terminal Project will necessitate the use of various mineral resources. However, it is not anticipated that this project will result in the short-term or long-term depletion of any mineral resources.

9.1.20 Consideration of property ownership: EPA's determination related to the South terminal project does not convey any property rights to the Commonwealth. The Commonwealth will need to purchase parcels and/or to acquire easements in order to utilize state, municipal, and/or private properties as part of the main South Terminal site and/or ancillary parcels. The facility operator will need to be careful in how wind turbine components are stored on the main South Terminal site and on ancillary parcels, in order to ensure that uses on adjacent properties are not substantially impacted. For example, vehicular access along Gifford Street will need to be maintained at all times and there should be no inadvertent impacts to the adjacent radio tower rigging and/or underground utilities. With this in mind, the South Terminal Project is not expected to result in any substantial property ownership impacts.

9.2 Additional Public Interest Review General Criteria (33 C.F.R. § 320.4(a) (2)):

9.2.1 The relative extent of the public and private need for the proposed work: The Commonwealth's basic project purpose for this project is to construct a multi-use marine terminal capable of supporting the installation of off-shore renewable energy projects such as off-shore wind farms. The Commonwealth's application provides strong evidence of the public and private need for maintenance and improvement dredging of these portions of New Bedford Harbor as well as for the development of such a marine terminal (MassDEP 2012).

9.2.2 The practicability of using reasonable alternative locations and/or methods to accomplish the objective of the proposed structure or work: The Commonwealth's submission for the South Terminal Project discusses feasibility criteria for siting a multi-use marine terminal capable of supporting the installation of off-shore renewable energy projects. These screening criteria included attributes such as proximity to future off-shore wind facilities, total wharf and upland yard area, berthing space, site availability, as well as site access horizontal and vertical clearances. A total of eight possible terminal locations, within and outside of New Bedford Harbor, were evaluated against the screening criteria. As discussed in Section 4 above, EPA has tentatively determined that the Commonwealth has demonstrated that the South Terminal site is the least environmentally damaging practicable alternative.

9.2.3 The extent and permanence of the beneficial and/or detrimental effects that the proposed structures or work may have on the public and private uses for which the area is suited: The Commonwealth's proposal for the South Terminal Project includes the filling of waters of the United States, including jurisdictional wetlands, in order to construct the South Terminal/Confined Disposal Facility area with associated scour protection. As part of the construction of the South Terminal Project approximately 0.18 acres of salt marsh, 0.1 acres of freshwater wetlands, and 6.67 acres of tidal waters and will be filled. In addition, the Commonwealth proposes to cap the existing Borrow Pit and CAD 1 with clean dredged material and dispose of contaminated dredged material into CAD cell 2, resulting in 10.8 acres of temporary impacts. Finally, filling will occur in conjunction with creating and/or enhancing 4.47 acres of intertidal habitat, 22.73 acres of winter flounder spawning habitat, and 14.91 acres of near-shore, shallow, sub-tidal habitat. The temporary and permanent impacts associated with this filling are discussed more fully in Sections 5 and 6 above and in Appendix H.
The South Terminal project also includes improvement dredging to provide adequate commercial navigational access to the South Terminal site, to realign the Gifford Street boat ramp Channel, and to deepen areas within the North and South Mooring Areas; dredging to construct the CAD cell #3 cell; and possible maintenance dredging of portions of the existing New Bedford Harbor Federal Navigation Project. All dredging will result in the removal of PCB-contaminated sediments with construction areas. Over 53.7 acres of sub-tidal benthic habitat will be dredged and deepened as part of this work. The impacts associated with these dredging activities are discussed more fully in Sections 5 and 6 above.

The construction of the South Terminal confined disposal facility will result in the loss of approximately 27.33 acre-feet of flood storage within the New Bedford Hurricane Barrier basin. As stated in Section 9.1.8, the New England District of the U.S. Army Corps of Engineers previously requested that the Commonwealth develop and implement a plan to mitigate for this

lost flood storage. Recently, the Commonwealth has documented that the New Bedford Harbor Trustee Council is in the process of developing plans for a Marsh Island Restoration Project, which will create up to 39.67 acre-feet of flood storage within the New Bedford Harbor Basin. MassDEP 2012a, at 41-43; MassDEP 2012b at 6 and Attachment B. EPA has tentatively determined that the proposed Marsh Island Restoration Project will adequately mitigate for unavoidable floodplain storage losses associated with the South Terminal Project. See Appendix L for more details on this issue.

The Commonwealth's mitigation proposals have been designed to compensate for impacts to specific habitat types. The successional marsh mitigation project involves the removal of PCB-contaminated sediment and partial filling/reshaping the cross-section of a tidal tributary/New Bedford Hurricane Barrier drainage way, in order to restore and to enhance up to 1.9 acres of salt marsh resource areas. The 4.47 acre intertidal mitigation project is meant to compensate for unavoidable impacts to intertidal areas associated with the construction of the South Terminal/Confined Disposal facility. As part of this work near-shore shallow sub-tidal areas will be partially filled with clean sand excavated from the navigational dredging. This beneficial use of dredged material will provide a secondary benefit by improving the cap to the OU-3 pilot cap area. The Commonwealth proposes to compensate for permanent impacts to winter flounder spawning habitat areas with the creation of the 22.73 acre winter flounder spawning habitat mitigation area as well as the 14.91 acre near-shore, shallow, sub-tidal mitigation area. Both these project involve partial filling of sub-tidal areas with clean sand excavated from navigational dredging. Finally, the Commonwealth has proposed to compensate for unavoidable impacts to shellfish species by reseeding shellfish in areas of the Outer New Bedford Harbor (for more detailed discussion of the Commonwealth's mitigation proposals and EPA's additional requirements, please see Section 7.3 above).

EPA has worked with the Commonwealth to avoid and to minimize impacts to waters of the United States, including jurisdictional wetlands, to the extent practicable. EPA has tentatively determined that the proposed mitigation with additional EPA conditions will adequately offset all temporary and permanent unavoidable impacts to waters of the United States.

9.3 Public Interest Tentative Determination: EPA has considered all relevant public interest review factors associated with the proposed South Terminal Project in New Bedford, Massachusetts. Factors considered included conservation, economics, aesthetics, general environmental concerns, wetlands, historic properties, fish and wildlife values, flood hazards, floodplain values, land use, navigation, shore erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food and fiber production, mineral needs, consideration of property ownership and in general, the needs and welfare of the people. After weighing the positive and negative impacts associated with this project, EPA has preliminarily determined that the South Terminal Project is not contrary to the overall public interest. NOTE: EPA will need to conclude coordination and/or consultation with Federal and State resource agencies in several areas before a FINAL determination can be made as to whether this project can be authorized as part of the State Enhanced Remedy.

OTHER FEDERAL LAWS AND EXECUTIVE ORDERS

10.0 Endangered Species Act: For detailed discussion, see Appendix I – Endangered Species Act and Appendix K – Final Biological Assessment. Summary information also available in Section 5.3 of this Appendix.

11.0 Essential Fish Habitat: For detailed discussion, see Appendix H – Essential Fish Habitat. Summary information on winter flounder also available in Section 7.3.1 of this Appendix.

12.0 Fish and Wildlife Coordination Act: For detailed discussion, see Appendix O. Summary information also available in Sections 5 and 6 of this Appendix.

13.0 Historic Properties: For detailed discussion, see Appendix G – National Historic Preservation Act. Summary information on historic properties also available in Section 9.1.6 of this Appendix.

14.0 Consultation with Indian Tribes: For detailed discussion, see Appendix G – National Historic Preservation Act.

15.0 Environmental Justice Issues (E.O. 12898): For detailed discussion, see Appendix M – Environmental Justice.

16.0 Floodplains E.O. (E.O. 11988): For detailed discussion, see Appendix L – Floodplain Management Executive Order. Summary information on floodplain management issues also available in Section 9.1.8 and Section 9.1.9 of this Appendix.

17.0 Wetlands E.O. (E.O. 11990): Executive Order 11990 requires Federal agencies to take actions to minimize the destruction, loss or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands. This order emphasizes the importance of avoiding undertaking new construction located in wetlands unless there is practicable alternative to that construction, minimizing the harm to wetlands if the only practicable alternative requires construction in the wetland, and providing early and adequate opportunities for public review of plans and proposals involving new construction in wetlands.

There is a 4,600 square foot (0.1 acre) freshwater depressional wetland as well as a 1.06 acre salt marsh wetland within the South Terminal/Confined Disposal Facility project area. In designing the South Terminal Project, the Commonwealth was able to minimize direct fill impacts to only 0.18 acre of salt marsh by carefully choosing the alignment of the facility bulkhead. The remaining 0.88 acre of existing salt marsh will be directly adjacent to the facility bulkhead, but the Commonwealth has explained why it does not believe that salt marsh erosion (secondary impacts) will occur. MassDEP 2012b at 6-7. The 0.1 acre freshwater wetland is located within the middle of the proposed fill area and there are no practicable alternatives to avoid these wetland impacts. The Commonwealth proposes to mitigate these 0.28 acres of unavoidable wetland impacts through the Successional Marsh mitigation work, which involves regrading an existing tidal tributary/ New Bedford Harbor Hurricane Barrier drainageway in order to create and/or to restore up to 1.9 acres of tidal marsh areas. Members of the general public will have an

opportunity to comment on these proposed wetland impact and/or mitigation during the public comment period for this DRAFT decisional document.

18.0 Invasive Species E.O. (E.O. 13112): For detailed discussion, see Appendix N and Sections 6.5 and 7.3 of this Appendix.

19.0 Section 176(C) Of The Clean Air Act General Conformity Rule Review: EPA's General Conformity Rule, 40 C.F.R. Part 93, Subpart B, implements section 176(c) of the Clean Air Act for non-attainment areas and maintenance areas. It requires that federal actions, unless exempt, conform with the federally approved implementation plans. EPA has analyzed the impacts on air quality associated with the construction of the South Terminal Project for conformity applicability pursuant to that General Conformity Rule. EPA has determined that such impacts will not exceed de minimis levels of direct or indirect emissions of a criteria pollutant or its precursors, and are exempted by 40 C.F.R. § 93.153. Any later indirect emissions are generally not within EPA's continuing program responsibility and generally cannot be practicably controlled by EPA. For these reasons a conformity determination is not required for EPA's authorization of this project.

SPECIAL CONDITIONS

20.0 Conditions

20.1 Conditions to be met before EPA's Final Decision:

1. The Commonwealth shall conduct and submit to EPA a modeling study to examine the potential lethal and sublethal effects of noise generated by blasting and pile-driving associated with the proposed project on the Atlantic sturgeon.

2. EPA has not had sufficient time to review the additional wetlands information submitted on July 11 and 12, 2012. Additional monitoring requirements or other conditions may be necessary to ensure appropriate avoidance, minimization and mitigation of impacts to wetland resources.

3. The Commonwealth must prepare a comprehensive draft Mitigation Plan and submit it to EPA for review.

4. After EPA's review and comment, the Commonwealth must prepare a final Mitigation Plan, which must be approved by EPA prior to project authorization.

5. The final Mitigation Plan will be incorporated as a condition of the authorization by reference.

6. The final Mitigation Plan must include the 12 components listed below:

   a. Objectives. A description of the resource type(s) and amount(s) that will be provided, the method of compensation (restoration, establishment, preservation etc.), and how the anticipated functions of the mitigation project will address lost or compromised functions and values of impacted resources.

b. Site selection. A description of the factors considered during the site selection process. This should include consideration of onsite alternatives and practicability of accomplishing ecologically self-sustaining aquatic resource restoration, establishment, enhancement, and/or preservation at the mitigation project site.

c. Site protection instrument. A description of the legal arrangements and instrument including site ownership that will be used to ensure the long-term protection of the mitigation project site.

d. Baseline information. A description of the ecological characteristics of the impact site and the proposed mitigation project site. This may include descriptions of historic and existing plant communities, historic and existing hydrology, soil conditions, a map showing the locations of the impact and mitigation site(s) or the geographic coordinates for those site(s), and other characteristics appropriate to the type of resource proposed as compensation. The baseline information should include a delineation of waters of the United States on the proposed mitigation project site.

e. Determination of mitigation credit. An explanation of how the mitigation project will provide the required compensation for unavoidable impacts to aquatic resources resulting from the proposed activity.

f. Mitigation work plan. Detailed written specifications and work descriptions for the mitigation project, including: the geographic boundaries of the project; construction methods, timing, and sequence; source(s) of water; methods for establishing the desired plant community; plans to control invasive plant species; proposed grading plan; channel form (e.g., typical channel cross-sections) and design discharge ; soil management; and erosion control measures.

g. Maintenance plan. A description and schedule of maintenance requirements to ensure the continued viability of the resource once initial construction is completed.

h. Performance standards. Ecologically-based standards that will be used to determine whether the mitigation project is achieving its objectives.

i. Monitoring requirements. A description of parameters monitored to determine whether the mitigation project is on track to meet performance standards and if adaptive management is needed. A schedule for monitoring and reporting monitoring results to EPA must be included.

j. Long-term management plan. A description of how the mitigation project will be managed after performance standards has been achieved to ensure the long-term sustainability of the resource, including long-term financing mechanisms and the party responsible for long-term management.

k. Adaptive management plan. A management strategy to address unforeseen changes in site conditions or other components of the mitigation project, including the party or parties responsible for implementing adaptive management measures.

l. Financial assurances. A description of financial assurances that will be provided and how they are sufficient to ensure a high level of confidence that the mitigation project will be successfully completed, in accordance with its performance standards.

20.2 Draft Conditions Proposed to be Incorporated into EPA's Final Decision

A. Dredging Special Conditions:

1. The project will adhere to the Performance Standards in Appendix C to this Draft Determination and the conditions in the TSCA Determination attached as Appendix J(1) to this Draft Determination.

2. Dredging will be done using an environmental bucket and appropriate containment devices, such as silt curtains.

3. To the maximum extent practicable, dredging will be sequenced to avoid or minimize potential impacts to fish migration and spawning (during February-June for migration and winter flounder spawning). If dredging is not completely stopped during February-June, it will be restricted to deeper water to avoid winter flounder spawning habitat.

4. Ambient water column monitoring will be conducted in accordance with the Commonwealth's proposed protocols to ensure that the Performance Standards are met.

5. Dredging in the Federal Navigation Project channel will only target areas that are above target depths (based on the draft of the vessels to be used to support off-shore wind energy development). The Commonwealth has indicated that it is possible that no dredging will be necessary depending on the draft. The estimate of 15 acres is a worst case scenario.

B. Blasting Special Conditions:

1. Blasting shall only be conducted in the time period from November to February.

2. To the degree practicable, erect silt curtains to isolate large schools of fish from the blast zone.

3. Monitoring of potential fish mortality is required for each blast. If excessive mortalities (hundreds of fish/event) occur, then additional technologies, such as fish startle systems or bubble curtains, may also be considered for use.

4. Plan the blasting program to minimize the total weight of explosive charges per shot and the number of shots for the project.

5. Use angular stemming material of sufficient length in drill holes to reduce energy dispersal to the aquatic environment.

6. Subdivide the charge, using detonating caps with delays or delay connectors with detonating cord, to reduce total pressure. Avoid use of submerged detonation cord.

7. Use decking when possible in lengthy drill holes to reduce total pressure.

8. For seismic exploration, use non-explosive sources when possible or use linear charges for open water shots or buried charges.

9. Used shaped charges to focus the blast energy when the submerged surface charges are necessary, reducing energy released to the aquatic environment during demolition.

C. Mitigation Special Conditions:

1. The Commonwealth shall implement the EPA-approved final Compensatory Mitigation Plan. EPA approval of the Compensatory Mitigation Plan is dependent upon several requirements, specified in the Preconditions Section above and in Section 7.3 (Compensatory Mitigation) in Appendix E.

2. The Commonwealth shall create 22.73 acres of winter flounder spawning habitat in an area just south of the hurricane barrier, consistent with the conceptual mitigation plan. This represents a replacement ratio of slightly greater than 1 to 1. The sediments in the proposed area currently possess elevated levels (1.3 to 8.2 ppm) of PCBs and are below the preferred depth range of winter flounder spawning. Clean sand from the navigational dredging will be brought in to cap the contaminated sediments and to elevate the depth of the bottom to a depth more amenable to winter flounder spawning activities.

3. Extensive bathymetric monitoring of the winter flounder spawning creation area will be undertaken to ensure that the cap does not erode with time and to measure the use of this new habitat by winter flounder for spawning. After 5 years, the acreage of the creation area must equal or exceed the acreage of the impacted area. If the creation area falls short of that target, the Commonwealth must add supplementary material in a quantity to reconcile the difference.

4. The Commonwealth shall create/enhance 4.47 acres of intertidal habitat in the OU-3 area south of the hurricane barrier by placing clean sand from the navigational dredging into this area of shallow subtidal habitat possessing sediments with elevated (1.3 to 8.2 ppm) PCB concentrations. Similar to the winter flounder spawning creation, this effort would create new habitat by changing its natural depth and would represent an improvement in habitat quality by isolating an area of contamination.

5. Extensive bathymetric surveys will be done for 5 years post construction of the OU-3 intertidal habitat. If due to erosion or sediment migration, the final acreage of the creation/enhancement area does not equal or exceed the impacts to intertidal areas, then the Commonwealth must add supplemental material to reconcile the difference.

6. The Commonwealth shall remediate 14.91 acres of shallow subtidal habitat in the OU-3 area south of the hurricane barrier by placing clean sand from the navigational dredging over sediments contaminated with elevated (1.3 to 8.2 ppm) levels of PCBs. This effort will not result in a change in habitat types, because the area will remain shallow subtidal habitat. It will result in a significant improvement in sediment quality by isolating the contaminated sediments from the environment.

7. The Commonwealth shall conduct a reseeding program of quahogs in open shellfishing areas south of the hurricane barrier. The Commonwealth plans to use larger seed clams and expects a survival rate of about 40%. As a result, the Commonwealth must reseed 24,542,803 clams to

offset the expected loss of 9,817,121 shellfish as a result of the project. Due primarily to the availability of seed, this replacement will take place over a 10 year time period (or longer if demonstrated to be necessary to achieve the mitigation goal).

8. The applicant proposes to restore/enhance a 1.9 acre salt marsh/tidal tributary in the inner harbor, bordering the western end of the hurricane barrier. Extensive monitoring will accompany this effort to ensure the success of the project.

The Commonwealth must implement its Invasive Species Plan with the following modifications: First, the ISMP proposes monitoring and reporting to occur after the first, third and fifth years of restoration. This schedule must be modified to require monitoring and reporting on an annual basis for five years at a minimum. The ISMP monitoring and reporting should be coordinated with the monitoring and reporting requirements of the Compensatory Mitigation Plan. Subsequent monitoring and reporting may be required, depending upon the success of the compensatory mitigation and the need for corrective measures in the event of unsuccessful compensatory mitigation. Secondly, the ISMP states that "removal of all invasive plant species around the periphery of the restoration area is not feasible." The ISMP does not provide adequate information to support this statement. More detailed information must be submitted for review on the types, location and areal extent of invasive species in the vicinity of the proposed compensatory mitigation project. Because the presence of peripheral invasive species is likely to undermine the success of the proposed mitigation, and because invasive species removal is common practice, the Commonwealth must provide clear explanation and justification for its proposal to not include removal of existing invasive species as part of its ISMP.

The Commonwealth also proposes to install a hooded catch basin or a trash screen at a local storm water outfall to reduce trash inflow from that source. EPA recommends that both improvements be installed. While the trash screen would be effective at removing larger trash and debris, the hooded catch basin would have the added benefit of reducing the potential discharge of oil and other floatable contaminants in the storm water. It is important that both of these infrastructure improvements be regularly maintained to assure their effectiveness.

9. The Commonwealth must develop and implement a post-construction monitoring plan for the bulkhead and pilings to detect the potential presence of new invasive species. At a minimum, the Commonwealth must conduct an annual survey of the bulkhead and a subset of the pilings for the presence of non-native species. If a new invasive species (a species that has not been previously documented in New England) is found during one of the surveys, the Commonwealth must consult the necessary experts on the new organism to determine the ecological risk posed by the species and to devise a control plan. Assuming that the new introduced species poses an ecological risk and the control plan is adequate, the Commonwealth must implement the plan. Subsequently, the monitoring frequency would be increased/adjusted to assess the success of the control plan.

D. Any Additional Conditions Resulting from EPA's ESA, EFH, and FWCA Consultations.

E. General Conditions:

1. Gifford Street provides the only vehicular access to the New Bedford Harbor Hurricane Barrier. The Commonwealth must allow vehicular access along Gifford Street at all times.

2. Environmental Monitor: EPA will include conditions related to the use of an Environmental Monitor for the duration of the construction.

3. EPA will require conformity with engineering plans and specifications.

4. EPA will include conditions similar to typical general conditions in Section 404 and Section 10 authorizations issued by the Corps of Engineers.

REFERENCE LIST

ASMFC. 2009. Status of winter flounder stocks. www.asmfc.org/managedspecies/winterflounder

Buzzards Bay National Estuary Program. 2012. Buzzards Bay Comprehensive Conservation and Management Plan 2012 Update.

Chang S, Berrien PL, Johnson DL, Morse WW. 1999. Essential fish habitat source document: Windowpane, Scophthalmus aquosus, life history and habitat characteristics. NOAA Tech Memo NMFS NE 137; 32 p.

Doering, P.H. and C.A. Oviatt. 1986. Application of filtration rate models to field populations of bivalves: an assessment using experimental mesocosms. Mar. Ecol. Prog. Ser. 31: 265-275.

Griffin, F.J., T. Dimarco, K.L. Menard, J.A. Newman, E.H. Smith, C.A. Vines, and G.N. Cherr. 2012. Larval Pacific herring (Clupea pallasi) survival in suspended sediments. Estuaries and Coasts, DOI 10.1007/s12237-012-9518-7.

Howes, B.L. and D.D. Goehringer. The Ecology of Buzzards Bay: An Estuarine Profile. U.S. Fish and Wildlife Service Biological Report 31, January 1996.

Keller, R.P., J.M. Drake, M. Drew, and D.M. Lodge. 2011. Linking environmental conditions and ship movements to estimate invasive species transport across the global shipping network. Diversity and Distribution. 17: 93-102.
MACZM. 1999. The New Bedford/Fairhaven Harbor Dredged Material Management Plan (DMMP) Draft Environmental Impact Report (DEIR).

Pereira, J.J., R. Goldberg, J.J. Ziskowski, P.L. Berrien, W.W. Morse and D.L. Johnson. 1999. Essential Fish Habitat Source Document: Winter Flounder, Pseudopleuronectes americanus, Life History and Habitat Characteristics. NOAA Technical Memorandum NMFS-NE-138: 39 p.

Rhoads, D.C. and J.D. Germano. 1986. Interpreting long-term changes in benthic community structure: a new protocol. Hydrobiologia. 142: 291-308.

Steimle FW, Zetlin CA, Berrien PL, Chang S. 1999a. Essential fish habitat source document: Black sea bass, Centropristis striata, life history and habitat characteristics. NOAA Tech Memo

NMFS NE 143; 42 p.

Steimle FW, Zetlin CA, Berrien PL, Johnson DL, Chang S. 1999b. Essential fish habitat source document: Scup, Stenotomus chrysops, life history and habitat characteristics. NOAA Tech Memo NMFS NE 149; 39 p.

US Army Corps of Engineers. 2008. After Action Report on the Fish Kills Resulting from Blasting in Support of Rock Removal from the Federal Navigation Project, Boston Harbor, Massachusetts Fall 2007.

Whitlatch, R. B., 1982, The ecology of New England tidal flats: a community profile: U.S. Fish and Wildlife Service, FWS/OBS-81/01, 125 p.