RETURN TO SER AR INDEX

Response to EPA Comments from USEPA Document Entitled: "NBH-South Terminal Proposal (8/25/10 Submittal)"

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Response to EPA Comments from

USEPA Document Entitled: "NBH-South Terminal Proposal (8/25/10 Submittal)"

INTRODUCTION

The following information represents responses to USEPA comments that were received by the South Terminal Project team via a correspondence from USEPA entitled "NBH – South Terminal Proposal (8/25/10 Submittal)" on September 22, 2010, as well as (similar) comments that were received during an in-person briefing between members of the South Terminal Project Team and members of the USEPA review team on September 16, 2010. The responses to the USEPA comments are provided in numeric sequence, with the numbered sections matching the corresponding questions from the USEPA document entitled: "NBH – South Terminal Proposal (8/25/10 Submittal)". USEPA's document consisted of eleven (11) points; ten (10) of which are addressed within this document. The document notes that Phil Weinberg and Paul Craffey of MassDEP will respond to point number eleven (11) separately.

Response to USEPA Comment Number 1.- Linkages to SER

In an attachment to an e-mail dated September 23, 2010, USEPA requested that the nexus of the South Terminal CDF to the New Bedford Remediation be more fully detailed. (In a subsequent follow-up conversation, EPA acknowledged that the South Terminal CDF need not be linked to the dredging of the federal navigational channel in order to have a sufficient nexus). Our response is as follows:

The area in front of existing South Terminal, and the area around the Gifford Street Boat Ramp and (what is known as) the Gifford Street Mooring Area, are part of planned State Enhanced Remedy (SER) dredging (see **Appendix 1** which includes figures from the New Bedford Harbor Plan [2009] indicating the areas in need of dredging and already contemplated under the SER process). As set forth in the Record of Decision in 1998 and in the phases of navigational dredging following the decision, navigational dredging is recognized as a state enhancement to the CERCLA remediation, because this dredging removes and safely disposes of PCB's that would otherwise stay in the harbor. The dredging that will occur in this area, and the creation of the CDF, enhances the remedy in precisely the same fashion. The dredging that will be needed in order to make the South Terminal Extension serviceable wholly overlaps with the area that has already been planned to be dredged, and would be dredged with or without the South Terminal CDF, under the SER process (see Overlay Map also in **Appendix 1**). SER dredging of a part of the channel in front of existing South Terminal, as well as the Gifford Street Boat Ramp channel, was recently completed (in October of 2009) under Phase III of the SER Navigational Dredge Project in New Bedford Harbor. Additional dredging was originally scheduled (for Phase III) both for the Gifford Street Boat Ramp Channel and the Gifford Street Mooring Basin, however a shortfall in funding for the Phase III project forced the NBHDC and the State of Massachusetts to reduce the Phase III dredge footprint in this area. It has always been the intent of the NBHDC and MADEP to finish the planned SER dredging of the Gifford Street and South Terminal areas in a future phase of SER dredging (ideally all of it in Phase IV if sufficient funding can be acquired). The footprint for the dredging that would need to be conducted to allow appropriate vessel berthing and access to the proposed South Terminal Extension overlaps with the South Terminal and Gifford Street Boat Ramp and Mooring Basin dredging that is already and otherwise contemplated for this area. Based upon this information, then, the South Terminal CDF (depending upon the final construction methodology) will be linked to the SER in the following potential ways:

- **Navigational Dredging** – Facilitation of navigational dredging, and resulting removal of contaminated sediments from the bottom of the Harbor in locations where USEPA will not be completing remediation, is the prime reason for the creation of the State Enhanced Remedy. As noted above, the dredging for the South Terminal CDF overlies navigational dredging planned by the New Bedford Harbor Development Commission. The dredge footprint for the South Terminal CDF overlies two proposed dredge areas that are included within Phase IV Navigational Dredging for the State Enhanced Remedy, and are also highlighted within the 2009 New Bedford/Fairhaven Harbor Plan:
    - **South Terminal Dredging** – The northern portion of the South Terminal CDF dredging overlies the basin for the existing South Terminal bulkhead. The South Terminal basin extends the length of the existing South Terminal bulkhead, and extends approximately 300 feet to the west of the bulkhead. Navigational dredging for the South Terminal basin is required to maintain the -20 MLLW to -

25 MLLW approved basin depth at this location. This area is scheduled to be dredged in Phase IV regardless of whether the South Terminal CDF is constructed. This area is highlighted within the New Bedford/Fairhaven Harbor Plan.

  - **Gifford Street Boat Ramp and Mooring Area Dredging** – The southern portion of the South Terminal CDF dredging overlies areas that are anticipated to be dredged during Phase IV Navigational Dredging to deepen the existing Gifford Street Mooring area. This area of the harbor has accumulated sediments over time and is currently too shallow to be utilized for mooring vessels. This area is highlighted within the New Bedford/Fairhaven Harbor Plan. Therefore, part of Phase IV Navigational Dredging was to conduct maintenance dredging within the Gifford Street Mooring area.

- **Disposal of Contaminated Navigational Dredging Material Within CAD Cells** – The primary methodology for disposal of contaminated material generated during navigational dredging is disposal of that material within CAD Cells located within the Dredge Materials Management Plan-designated area north of Pope’s Island within New Bedford Harbor. Disposal of contaminated navigational dredging material removed from the dredge footprint associated with the extension of South Terminal (as part of the South Terminal CDF Project) within CAD Cells is anticipated, as disposing of these materials by other means is likely to be costly and problematic from an engineering standpoint, unless the contaminated material has specific geotechnical properties that lend it to amendment and re-use within the CDF.

- **Disposal of Contaminated Navigational Dredging Material Within the South Terminal CDF** – An alternate methodology for disposal of contaminated material generated during navigational dredging is disposal of that material within the South Terminal CDF, if the contaminated material that is dredged is suitable (from a geotechnical standpoint) for amendment and re-use, and if such disposal complies with all applicable laws, including TSCA. Disposal of contaminated material in this manner within the South Terminal CDF would also facilitate the goals of the State Enhanced Remedy as it facilitates the navigational dredging in the Harbor, which removes PCB contaminated sediment and enhances the Remedy.
- **Utilization of Clean (Parent) Material From CAD Cell Construction –** Clean (parent) material is generated during CAD Cell construction. Removal of clean (parent) material is required in order to create a disposal location for navigational dredging spoils. It is likely that the quantity of contaminated material that will be generated from dredging the South Terminal CDF and/or other planned Phase IV navigational dredge activities will be greater than that which can be accommodated given the capacity of existing CAD Cells in the Harbor. As a result, a new CAD Cell will likely be needed to be created to accommodate the contaminated material. Clean material from this new CAD Cell can be incorporated into the construction of the South Terminal CDF.
- **Utilization of Clean (Parent) Material From Navigational Dredging –** Clean (parent) material will be generated during navigational dredging. This material exists, in places, below the contaminated sediments within the footprint of the navigational dredging that will be conducted as part of the Phase IV Navigational Dredge Project. This material could be placed within the South Terminal CDF, instead of separating it from placing it

into a CAD Cell (which is not necessary as the material is not contaminated and would be taking space that could otherwise be utilized to sequester other contaminated material).

Although the design process for the South Terminal CDF has not yet been completed, it is evident that both contaminated sediment and clean sediment are present within the proposed project footprint. Given this reality, there are a number of potential scenarios by which the design could be completed. Those completed designs would be linked to the State Enhanced Remedy in one or more of the above-mentioned ways. The following is a list of potential construction scenarios, and a description of the ways that that each construction scenario would be linked to the State Enhanced Remedy:

- *Use of Clean CAD Cell Material as Fill for the South Terminal CDF* - In this scenario, only clean material from the CAD Cell would be used as fill for the South Terminal CDF. This scenario likely would be linked to the State Enhanced Remedy in the following ways:
    - Navigational Dredging
    - Disposal of Contaminated Navigational Dredge Material Within CAD Cells
    - Utilization of Clean (Parent) Material From CAD Cell Construction
- *Use of Clean CAD Cell Material and Clean Material from Navigational Dredging as Fill for the South Terminal CDF* - In this scenario, clean material from navigational dredging and clean material from CAD Cell construction would be used as fill for the South Terminal CDF. This scenario likely would be linked to the State Enhanced Remedy in the following ways:
    - Navigational Dredging

    - Disposal of Contaminated Navigational Dredge Material Within CAD Cells
    - Utilization of Clean (Parent) Material From CAD Cell Construction
    - Utilization of Clean (Parent) Material From Navigational Dredging
- *Use of Clean CAD Cell Material and Clean Material from Navigational Dredging and Contaminated Navigational Dredge Material as Fill for the South Terminal CDF* - In this scenario, clean material from navigational dredging, contaminated material from navigational dredging, and clean material from CAD Cell construction would be used as fill for the South Terminal CDF. This scenario likely would be linked to the State Enhanced Remedy in the following ways:
    - Navigational Dredging
    - Disposal of Contaminated Navigational Dredge Material Within CAD Cells
    - Disposal of Contaminated Material Within the South Terminal CDF
    - Utilization of Clean (Parent) Material From CAD Cell Construction
    - Utilization of Clean (Parent) Material From Navigational Dredging
- *Use of Clean Material from the Navigational Dredging Fill for the South Terminal CDF* - In this scenario, only clean navigational dredging would be used as fill for the South Terminal CDF. This scenario likely would be linked to the State Enhanced Remedy in the following ways:
    - Navigational Dredging
    - Disposal of Contaminated Navigational Dredge Material Within CAD Cells
    - Utilization of Clean (Parent) Material From Navigational Dredging
- *Use of Clean Material from Navigational Dredging and Contaminated Navigational Dredge Material as Fill for the South Terminal CDF* - In this scenario, clean material

from navigational dredging and contaminated navigational dredge material would be used as fill for the South Terminal CDF. This scenario likely would be linked to the State Enhanced Remedy in the following ways:

- o Navigational Dredging
- o Disposal of Contaminated Navigational Dredge Material Within CAD Cells
- o Disposal of Contaminated Material Within the South Terminal CDF
- o Utilization of Clean (Parent) Material From Navigational Dredging

Navigational dredging will be coordinated with construction of the CDF such that the time frame for both activities will align properly. We also confirm that the CDF will be constructed from clean sand from navigational dredging or CAD cell construction, and potentially contaminated sand from navigational dredging or CAD cell construction (subject to the limitations set forth in the next two paragraphs). Should a CAD Cell be constructed in association with construction of the CDF, the use of clean material from the CAD Cell in construction of the CDF will be timed to coincide with construction of the CAD Cell.

In the event that contaminated navigational dredging material is utilized within the CDF construction, the sediment will be characterized as to whether the material is solid waste, TSCA waste, or hazardous waste. Sampling and analysis protocols (as well as which analytical parameters will be utilized, RIM or 401 Water Quality Certification parameters) will be coordinated with USEPA personnel.

Should it be determined that contaminated navigational dredging material is to be placed within the South Terminal CDF, hydraulic conductivity information will be collected within the existing sediments within the proposed footprint as well as from contaminated navigational dredging material mixed with cement or other additives under consideration, that is to be placed within the South Terminal CDF and will be presented to USEPA.

Regardless of whether contaminated sand will be used, the commonwealth will supply data on hydraulic conductivity after further discussion with EPA regarding a sampling and testing protocol (see Section 2.0).

The Commonwealth submits that this project facilitates navigational dredging, which in turn enhances the CERCLA remediation in precisely the ways envisioned by the original ROD. Therefore, the EPA may properly approve this project as part of the state enhanced remedy.

Response to USEPA Comment Number 2. - Sediment Characterization

Sampling and Analytical Programs

Under the State Enhanced Remedy (SER), the project Stakeholders, including the relevant regulatory agencies, MADEP, the NBHDC, and the USEPA have been adhering to a set of Project Standards known as the *SER Performance Standards for Navigational Dredging in New Bedford/Fairhaven Harbor*. These protocols were originally developed for the "Phase I Dredging" (the State Pier berth, fairways, and channels) as part of the Navigational Dredge Program for New Bedford Harbor, and were subsequently adopted (with some minor modifications) for subsequent Phases of work (including Phase II and Phase III Navigational Dredging so far) to the later dredging Phases under the SER. The State Pier project was completed utilizing input from all of the regulatory programs that govern like projects. As such, the list of sampling and monitoring required was thought to be representative of what would otherwise required under a full permitting process for all relevant programs. As such, the Stakeholders under the SER Process felt that it represented the best model for regulatory guidance concerning future SER projects that had been developed, and the *SER Performance Standardards* have been applied to the subsequent dredging programs. At the conclusion of each

Phase of Navigational Dredging, a "Post-Dredge Report" is compiled which summarizes the work completed and the results of monitoring conducted. This document allows relevant regulatory programs to review the Navigational Dredge Program standards as the overall program unfolds, and make adjustments to the program as necessary, such as the addition of a Sediment Trap Monitoring Program at the end of the Phase II Dredge Project, that was added to the Dredge Program at the request of USEPA and MACZM, and the modification of the barge water filtering program when dredging in areas of historically high PCB concentrations (over 50 ppm total PCBs), which was added to the program for Phase III Dredging at the request of USEPA and MADEP.

The SER Performance Standards include (but are not limited to) the following types of sampling and monitoring:

- Pre-dredge sampling of contaminated sediments to document the levels of PCB's and metals in the sediments prior to dredging;
- Post-dredge sampling of contaminated sediments to document the levels of PCB's and metals in the sediments that remain on the Harbor bottom after the completion of dredging in an area;
- Water quality monitoring (meeting 401 Water Quality Program guidance) is conducted during dredging, and includes the development of background level turbidity in the Harbor and the general area of the dredging, and monitoring in and around the dredge site to determine relative impacts of the dredging on the water column. The water quality monitoring is utilized as a real-time monitoring tool to ensure that the dredging does not create an unacceptable level of turbidity (and hence entrainment of contaminated

sediment particles) in the water column. If water quality monitoring determines that levels of turbidity above the established Performance Standard criteria rare present during dredge events, then the dredge process is halted and adjustments to the methodology are made in order to bring the dredging back into compliance with the standards. If multiple exceedences occur (water quality turbidity readings are not reduced by engineering controls such as modifications to the dredge process), then sampling and analysis of the impacted water body in the area of the dredging is required by the standards.

- Pore water that results from the natural dewatering process of dredging into scows is treated through filtration systems that are identified in the Performance Standards prior to discharge. The discharge water is sampled for turbidity levels at regular intervals during the dredge process, and modifications to the dredge process (including cleaning or addition of filter systems) are implemented if exceedences are noted.
- As noted above, sediment trap monitoring of general harbor sedimentation rates (as a measure of suspended sediment that may be contaminated) is being conducted. Sediment trap data is analyzed for rate of sedimentation per time increment.
- Sampling and analytical testing of the thickness of contaminated sediments overlying "parent geological material" in the footprint of the CAD Cells is collected in order to determine the thickness of the "Top of CAD" material that must be removed during CAD Construction prior to accessing the clean parent material that is suitable for offshore disposal.

The SER Performance Standards have been incorporated in previous versions of the Alternatives Analysis for the South Terminal Project, including the latest submittal of August 25, 2010.

Additionally, the approved New Bedford/Fairhaven Harbor Plan (copy can be viewed at the New Bedford HDC website) includes a copy of the SER Performance Standards for Navigational Dredging in New Bedford/Fairhaven Harbor in an attachment entitled "Dredge Management Plan".

Additional sampling and analysis has been conducted as part of the SER regulatory program in the past to satisfy specific conditions and/or regulatory concerns. Examples of additional monitoring programs that have been undertaken include the USEPA collection of Acoustic Dopler Current Profiler (ADCP) data during the placement of sediments into the CAD Cell via dump scow, which provided regulators with information as to the settlement rate and pathway of sediments as they were disposed of in a CAD Cell in the Harbor.

Specific additional sampling and analytical parameters have been included into past navigational dredge project phases during the design process. As design specifics are determined, particularly those that have to do with construction means and methods and the potential impacts to the environment from specific construction methods, additional monitoring and sampling has been developed and approved by the SER Committee. This has been standard practice for previous Phases of SER dredging. As specific design features are developed during the design process, they are circulated to the SER Committee members for comment. If stakeholders indicate that additional sampling or monitoring of a particular aspect of the project is needed, then draft additional sampling or monitoring parameters are included in the project, and the SER Committee reviews and provides concurrence with that additional sampling and/or monitoring. In keeping with that historical context, it is the intent of the Project to likewise continue with this approach, and review and adapt sampling and analytical testing and monitoring as necessary to satisfy the needs of the SER stakeholders.

<u>Existing Sediment Characterization Data Relevant to South Terminal Project</u>

USEPA has also asked for a characterization of sediments in the area. Historic sediment characterization is attached as **Appendix 2** of this document. Samples have been historically collected from within the inter-tidal area, from within sub-tidal area, both within the proposed facility footprint and within the proposed dredge footprint. The primary methodology for characterization of these sediment samples has been analysis for PCB concentrations.

In accordance with the collaborative procedures relating to existing State Enhanced Remedy protocols/procedures, the Project proposes to work directly with USEPA to develop a specific sampling and analytical program for the South Terminal Project that will both fulfill the traditional requirements of the SER Performance Standards, as well as address specific data needs that are necessary for regulatory parties that are stakeholders in the SER process. While agreeing that a sampling and analytical program that is developed at this stage in the project may need to be augmented at a later date with additional data once specific design elements are laid out in detail, the Project Team will develop a Sampling and Analysis Plan (SAP), through direct discussions with USEPA, that will be focused on quantifying and qualifying the types of materials that will be incorporated into this project. Elements that will be included in the plan include (but are not necessarily be limited to):

- Hydraulic conductivity data on organic sediments within the project footprint that may be contaminated, both prior to disturbance (i.e., un-amended) and after incorporation into the Project (i.e., amended);
- Analytical data concerning the quality of the sediments that will be disturbed as part of the project, particularly those sediments that may contain contaminants;
- Analytical data concerning the quality of sediments that may be incorporated into the CDF; and
- A sampling and analytical plan for the determination of the thickness of the contaminated sediment overlying "parent geological material" (in relevant portions of the project), and a method upon which the interface between the overlying contaminated organic sediment and the "parent material" can reasonably be determined.

As discussed in the response to Question 1, contaminated navigational dredging material will either be disposed of within the South Terminal CDF (subject to conditions described above) or will be transported to a CAD Cell for disposal.

2.1 Impacts to Aquatic Life Resulting from Re-Suspension/Bioavailability From Proposed Dredging Activity

Completion of the proposed dredging may result in some re-suspension/bioavailability of contaminated sediments. The re-suspension will be a by-product of the dredging activity that will result from either mechanical or hydraulic means of collecting sediment for sequestration and disposal. The re-suspension will be controlled utilizing a combination of Bests Management

Practices, including the use of environmental buckets, silt curtains, time of year restrictions, filtration of decant water and other methodologies.

However, the removal of the contaminated sediments within the dredge area will result in a significant reduction in bioavailability of contaminants in the long-term. The suspension of harbor sediments within the water column during dredging operations will cause a temporary increase in the bioavailability of superfund contaminants of concern. However, based on the results of previous studies (WES, 1986; Bohlen et al., 1979), re-suspended dredged material should settle rapidly (within approximately 1,500 feet) of the dredge area, and typically within hours of the cessation of dredging activities. This information is further supported by a study completed by Battelle on behalf of USEPA, dated December 15, 2009, and referenced within the Essential Fish Habitat Assessment prepared for this project which stated that the plume of suspended sediment that was generated during disposal of sediment within a CAD Cell dissipated to near-background levels within 90 minutes.

Given the commitment to using best management practices, and the documented minimal re-suspension effects of dredging, the dredging will not significantly increase the bio-availability of the contaminants and will not have a significant adverse effect on aquatic life.

Dredging will produce conditions similar to those which arise whenever rough seas or turbid conditions form within New Bedford Harbor, as the result of storm events. Observed conditions over the past nine years in New Bedford Harbor have indicated that storm events, particularly in shallow-water areas, are very likely to create sufficient turbulence due to wave action such that visibility when diving within New Bedford Harbor is virtually non-existent. The removal of the fine-grained contaminated material reduces the amount of turbidity that such storm events will create in the future, and will further reduce the bioavailability of PCB and metals impacts within sediment that is entrained within the water column during these storm events in the vicinity of the South Terminal CDF.

It is expected that the dredging portion of the project will last for approximately one to two months and suspended sediment (absent the proposed controls) would be elevated during this time period. Although dredging will temporarily increase turbidity during the dredging activity (which will last a matter of hours before settling out from the water column), this effect will only last for the short lifespan of the dredge project. The re-suspension and increased bioavailability of sediment due to storm events in shallow waters (such as those at the South Terminal CDF) will be a continual process, repeated during each storm event, until such time as the impacted sediment is removed.

2.2 Source of PCB Contamination

USEPA stated within its letter that "sediment characterization for the subtidal and intertidal areas needs to document the assertion that the area below MHW at the South Terminal site acts as a source of PCB contamination to other parts of New Bedford Harbor." The Commonwealth has **not** stated that the areas below MHW act as a particularly noteworthy source of PCB contamination to other parts of New Bedford Harbor, but instead asserted that all contaminated areas within New Bedford Harbor act as sources of contamination to non-impacted areas outside of New Bedford Harbor. The following are quoted from the Functions and Values Assessment prepared for this site:

- *Within Sediment/Toxicant Reduction – "Fine grained material or sediment are present below the low tide line and are also interspersed within the sand-dominated coastal beach, which results in the elevated concentrations of PCBs in both locations; however, this area of New Bedford Harbor is not one typically that is responsible for sediment retention, and it definitely is not responsible for toxicant retention, and instead serves to export toxicants to un-impacted areas within Buzzard's Bay."*
- *Within Nutrient Removal/Retention/Transformation and Production Export (Nutrient) – "The flow regime, low detention time, absence of slowly draining fine-grained material or deep organic/sediment deposits limit the capabilities of the wetland areas to act as a sink for nutrients. As stated before, the sediments within the wetland areas are contaminated with PCBs. The production of food or usable products for humans or other living organisms by the wetland areas are not beneficial to humans, wildlife, fish or the environment. Therefore, the functions/values of Nutrient Removal/Retention/ Transformation and Production Export (Nutrient) are not highly functioning for the wetland areas, and those aspects that are functioning, present a significant risk to the environment."*

The results of analysis of intertidal sediments (see **Appendix 2**) has shown that concentrations of PCBs at these locations may be lower than many other locations within New Bedford Harbor; however, the concentrations are still well above the acceptable level for sediments within the Commonwealth of Massachusetts. Analysis of sediments collected within the footprint of the facility to date range from 0.07 mg/kg to 2 mg/kg in concentrations of total PCBs. Analysis of sediments collected within the proposed dredge footprint to date range from 1 mg/kg to 16 mg/kg.

When assessing the potential for re-use of sediment within fresh water bodies in the Commonwealth of Massachusetts under the Federal 401 Water Quality Certification (which is considered a suitably analogous standard by which to evaluate ecological risk under 310 CMR 40.0000, the Massachusetts Contingency Plan for releases of PCBs), MassDEP utilizes the level of 0.0598 mg/kg. The Commonwealth of Massachusetts has set an upper limit of < 2 mg/kg for reuse of soil (or sediment) within either lined or unlined landfills. Regardless of the benchmark utilized for assessment, the sediments both within the footprint of the proposed facility, as well as within the proposed dredge footprint contain concentrations of PCBs that are higher than that of uncontaminated locations outside of New Bedford Harbor. Storm events, natural erosion, and tidal exchanges naturally transport sediment from within New Bedford Harbor to Buzzard's Bay and other surrounding areas. Therefore, these areas act as a source of contamination to uncontaminated areas outside of New Bedford Harbor.

Response to USEPA Comment Number 3. - Impacts from Pilings and Shadings

A temporary bridge is currently proposed to connect the southern portion of the South Terminal CDF to the southern ancillary properties. In order to support the bridge, up to 10 pilings (between 30-inches and 48-inches in diameter) will need to be installed beneath the bridge. The bridge would be removed at a later date, after the initial use of the facility was complete. The pilings are intended to be temporary, and would be removed from the substrate when the structure is removed. It is currently anticipated that the pilings would be installed via a barge-mounted crane, that would drive the pilings to the appropriate depth. The pilings would be extracted in a similar fashion from a barge-mounted piece of construction equipment.

A "Bailey Bridge" is constructed from metal truss sections, and reinforced steel grid for the deck of the bridge. It is currently anticipated that the bridge would be approximately 30 to 40 feet wide, and would be approximately 300 to 400 feet long. As a result of the truss/grid type of construction, the structure is not opaque, and allows sunlight to penetrate (see **Appendix 3** for a picture of a bridge deck). Therefore, the bridge will minimize shading issues on the adjacent salt marsh. Additionally, the bridge is located adjacent to, rather than atop, the salt marsh, which will further minimize shading to the salt marsh. Once work at the facility is complete, and the bridge is removed, the pilings will be extracted.

Impacts from installation and removal of the bridge are anticipated to be minor, as the pilings for the bridge will be able to be installed from a barge-mounted crane or pile driver or similar piece of equipment or from a piece of land-based equipment, depending on the location of the pilings. Similarly, a combination of barge-mounted cranes and land-mounted cranes (or similar pieces of equipment) would be utilized to transport the bridge units into place atop the pilings. It is currently anticipated that suspended sediment generation will be minor during the installation operation; however, silt curtains will be utilized, where they can be utilized effectively to minimize ecological damage (for example, silt curtains would not be utilized in water shallower than -5 MLLW, as they would increase the suspension of sediment, rather than decreasing suspended sediment).

It is currently anticipated that the temporary bridge will be required for the first offshore renewable energy support project. It is anticipated that an easement for a land-connection to the southern parcels will be negotiated in the future to deal with subsequent offshore renewable energy support projects. Should, in the future, the bridge be needed again, a separate permitting process would be undertaken to re-install the bridge.

Response to USEPA Comment Number 4. - Boat Traffic Secondary Impacts

The analysis of boat traffic secondary impacts is broken down into two sub-sections:

1). An analysis of the increased risk due to oil spills due to operation of the new facility.

2). An analysis of the increased vessel traffic due to operation at the new facility.

Please note that both question 4.0 and question 5.0 both refer to potential prop wash and associated turbidity secondary impact issues. The response to both of these questions with regard to prop wash and turbidity temporary impacts are included within Section 5.0.

4.1 Oil Spill Analysis

The following is an analysis that was conducted in order to determine the increased risk in oil spills due to the South Terminal CDF construction. In order to conduct this analysis, existing research into the vessel traffic and the risk of associated oil spills was reviewed. The most up-to-date analysis of the risk posed to coastal communities in Massachusetts by oil spills was prepared by Nuka Research & Planning Group, LLC for the Massachusetts Department of Environmental Protection, titled "Evaluation of Marine Oil Spill Threat to Massachusetts Coastal Communities", dated December 2009 (included as **Appendix 4**).

As stipulated within this report, the main risk of spills in many harbors and ports (not to mention navigable waterways) is the possibility that a vessel will accidentally discharge petroleum through a vessel sinking, grounding, collision, fire or through accidental or illegal discharges from vessel operations, such as bilge pumping, changing engine oil, or refueling. For the purposes of this section, the assumption is made that the larger the size of the fleet of vessels servicing a harbor, the larger the threat of an oil spill from any of these possible sources. To estimate the magnitude of each oil spill threat for the purpose of comparison, a gallons of petroleum exposure measure (GPE) is calculated for each threat within each harbor in Massachusetts. For vessels permanently stationed within a harbor, the total GPE is the volume of petroleum product that could be released at any one point in time (usually the volume of the fuel tank of the vessel); for vessels in transit, the total GPE is the volume of petroleum product times the number of visits that the vessel makes to that port.

There are two categories of potential risk from vessels that are evaluated below: oil spill risk from vessels within and/or transiting to and from New Bedford Harbor, oil spill risk from increases in bulk oil storage within New Bedford Harbor, and the potential increased risk for oil spills from regional vessel transits. The following outlines the existing Oil Spill Threat in these three categories:

Existing Oil Spill Threat For New Bedford Harbor

The following is a summary of the existing oil spill threat based upon existing traffic (based upon data gathered from 2006) in Gallons of Petroleum Exposure (GPE) for the City of New Bedford, based upon the category of vessel:

- Oil Tanker or Tank Barge Activity – 43,250,000 GPE

- Large Nontank Vessels – 1,725,000,000 GPE
- Recreational and Charter Vessels – 300,000 GPE
- Commercial Fishing Vessel Fleet – 7,500,000 GPE
- Ferry Terminals – 5,500 GPE
- Other Large Vessels (Tugs, Training Vessels) – 84,000 GPE
- Vessels Associated with Shipyard Activity – 900,000 GPE

Total Existing Oil Spill Threat in GPE for Vessels, New Bedford Harbor: **1,777,039,500 GPE**

Existing Oil Spill Threat for Vessel Activity Within Shipping Lanes

The following is a summary of the existing oil spill threat for existing shipping lanes based upon existing traffic (based upon data gathered from 2006) in Gallons of Petroleum Exposure (GPE) for the following areas:

- Regional Transit Vessels (South Coastal/New Bedford) – 1,517,636,000 GPE
- Regional Transit Vessels (Dartmouth/Fairhaven/Marion/Mattapoisett/Wareham/ Westport) – 1,562,611,000 GPE
- Cape and Islands – 1,562,611,000 GPE

Increased Vessel Traffic Due to South Terminal CDF Construction and Operation

Increased traffic at the South Terminal CDF site is anticipated to include the following vessels during the first year:

- An international vessel (similar to a traditional non-tank vessel), between 140 - 150 meters (460 – 490 feet) in length. The international vessel can only carry components for 6 turbines at one time. Therefore, for constructing an offshore wind energy facility for 130 turbines, 22 separate shipments from international vessels would need to be received at the support facility. These shipments would be anticipated to be receive within the first year of operation of the facility.

- Two installation vessels would be also required at the facility. Offshore renewable energy facility installation ships would consist of jack-up barges that would be approximately 91 meters (300 feet) in length and 30 meters (100 feet) in width. The vessels would not be powered on their own, and would require a tug to maneuver them out of dock and out to the construction site. It is currently anticipated that each barge would require one tug (each tug is estimated to be approximately 30 meters, or 100 feet in length) to maneuver the vessel out to sea; however, the facility would employ two tugs (one for each installation vessel). Each installation vessel would be capable of delivering components for installation of 2 wind turbines for each trip, resulting in a total of 65 total trips for the vessels during the first year.

In accordance with the categorization system created by Nuka Research & Planning Group, LLC within their report, the anticipated increased oil spill threat for the additional vessels is as follows:

- International Vessels: Nontank Vessels within New Bedford area anticipated to have an average fuel capacity of 75,000 gallons. 22 annual non-tank vessels X 75,000 gallons per vessel equates to 1,650,000 GPE for the international vessels.
- Installation Vessels (and tugs) Within the Port of New Bedford: For commercial tugs between 65 and 100 feet in length, the average fuel capacity is 17,500 gallons. There are anticipated to be two tugs in port at any one time in order to assist in tendering the

installation vessels in and out of port. Therefore, the increased oil spill threat due to the additional tugs is: 2 tugs X 17,500 gallons per tug, which equates to an increase of 35,000 GPE.

- Installation Vessels (and tugs) In Transit to the Construction Site: There are anticipated to be one tug that accompanies each installation vessel to the construction site. There are anticipated to be approximately 65 trips to the construction site. Therefore, the increased oil spill threat in transit to the construction site due to the installation vessels is: 65 tugs X 17,500 gallons per tug, which equates to an increase of 1,137,500 GPE.

The total increase in oil spill threat for New Bedford Harbor is: 1,650,000 GPE + 35,000 GPE = **1,685,000 GPE.** As stated earlier, the total existing oil spill risk for the Port of New Bedford is: 1,777,039,500 GPE. Therefore, the construction of the South Terminal CDF will result in a 1,685,000/1,777,039,500 = **0.095%** increase in oil spill risk for the Port of New Bedford, an extremely small increase over current existing conditions.

The total increase in oil spill threat for areas within which the international vessels and installation vessels/tugs will transit is: 1,650,000 GPE + 1,137,500 GPE = **2,787,500 GPE** over the course of a year of installation. As stated earlier, the total existing oil spill risk for areas surrounding the south coast as well as Cape Cod and the Island is:

- Regional Transit Vessels (South Coastal/New Bedford) – 1,517,636,000 GPE
- Regional Transit Vessels (Dartmouth/Fairhaven/Marion/Mattapoisett/Wareham/ Westport) – 1,562,611,000 GPE
- Cape and Islands – 1,562,611,000 GPE

Therefore, the relative increase in oil spill risk due to the addition of international vessels and the transit of installation vessels is:

- Regional Transit Vessels (South Coastal/New Bedford) – 2,787,500/1,517,636,000 = **0.18%**
- Regional Transit Vessels (Dartmouth/Fairhaven/Marion/Mattapoisett/Wareham/ Westport) – 2,787,500/1,562,611,000 = **0.18%**
- Cape and Islands – 2,787,500/1,562,611,000 = **0.18%**

All of which represent an extremely small increase in oil spill risk over current existing conditions.

Maritime Terminal Operation

After the initial use of the facility as an offshore renewable energy support facility, the facility will serve as a maritime terminal. Increased traffic at the South Terminal CDF site (subsequent to the first year) is anticipated to include the following vessels:

- An average of one cargo vessel per week is currently anticipated at the facility subsequent to the first year. This vessel would likely be similar in size to the above-mentioned international vessel (similar to a traditional non-tank vessel), between 140 - 150 meters (460 – 490 feet) in length. Alternately, several smaller, short-seas shipping barges may service the site, (transmitting a similar quantity of cargo) which could result in an average of approximately four smaller barges (similar in size to the installation vessels) per week. Therefore, the total anticipated traffic increase is an average of 3 vessels per week (approximately 156 vessels per year).

In accordance with the categorization system created by Nuka Research & Planning Group, LLC within their report, the anticipated increased oil spill threat for the additional vessels is as follows:

- Non-Tank Cargo Vessels within New Bedford area anticipated to have an average fuel capacity of 75,000 gallons. 156 annual non-tank vessels X 75,000 gallons per vessel equates to **11,700,000 GPE** for the oil spill threat (after the first year) for cargo vessels. This value would be the same for both vessels within New Bedford Harbor and Vessels in transit to the site.

The total increase in oil spill threat for New Bedford Harbor is: **11,700,000 GPE.** As stated earlier, the total existing oil spill threat for the Port of New Bedford is: 1,777,039,500 GPE. Therefore, the oil spill threat (after the first year) will result in a 11,700,000/1,777,039,500 = **0.65%** increase in oil spill threat for the Port of New Bedford, an extremely small increase over current existing conditions.

The total increase in oil spill threat for areas within which the cargo vessels will transit is: **11,700,000 GPE** over the course of a year. As stated earlier, the total existing oil spill risk for areas surrounding the south coast as well as Cape Cod and the Island is:

- Regional Transit Vessels (South Coastal/New Bedford) – 1,517,636,000 GPE
- Regional Transit Vessels (Dartmouth/Fairhaven/Marion/Mattapoisett/Wareham/ Westport) – 1,562,611,000 GPE
- Cape and Islands – 1,562,611,000 GPE

Therefore, the relative increase in oil spill threat after the first year of operation of the new terminal is:

- Regional Transit Vessels (South Coastal/New Bedford) – 11,700,000/1,517,636,000 = **0.77%**
- Regional Transit Vessels (Dartmouth/Fairhaven/Marion/Mattapoisett/Wareham/ Westport) – 11,700,000/1,562,611,000 = **0.75%**
- Cape and Islands – 11,700,000/1,562,611,000 = **0.75%**

All of which represent an extremely small increase in oil spill risk over current existing conditions.

4.2 Vessel Traffic Analysis

Another potential secondary impact is the potential for increased vessel traffic to result in resulting restrictions to the usage of the harbor (due to limited Harbor accessibility and resources) or resulting in increased ecological impacts (due to the potential for prop wash to res-suspend sediments and cause turbidity that would affect avian wildlife or essential fish within New Bedford Harbor). In order to conduct this analysis, existing research into vessel traffic was reviewed. The most up-to-date analysis of vessel traffic in coastal communities in Massachusetts was formulated in order to assess oil spill risks within a document prepared by Nuka Research & Planning Group, LLC for the Massachusetts Department of Environmental Protection, titled "Evaluation of Marine Oil Spill Threat to Massachusetts Coastal Communities", dated December 2009 (included as **Appendix 4**). To help translate some of these numbers into vessel trips (from the GPE oil risk metric utilized within the report) information on vessel types and traffic was utilized from the New Bedford/Fairhaven Harbor Plan.

For the purposes of this section, the assumption is made that the larger number of vessels transiting in and out of a port, the larger the potential impact of interference to other vessels and from prop wash or disturbance of bottom sediments. To estimate the traffic within New Bedford Harbor, vessel numbers and usage are extrapolated from a gallon of petroleum exposure measure (GPE) metric calculated within Nuka Research & Planning Group, LLC report.

There are two categories of potential risk from vessels that are evaluated below: the potential for additional vessels to restrict usage of the harbor for existing vessels (particularly restrictions at the New Bedford Hurricane Barrier), and the potential increased ecological risk posed by increased prop wash or disturbance of bottom sediments. The following outlines the existing vessel traffic impacts in these two categories:

Existing Maritime Traffic Within New Bedford Harbor

The following is a summary of the existing marine traffic (based upon data gathered from 2006) for the City of New Bedford, based upon the category of vessel:

- Oil Tanker or Tank Barge Activity – Total traffic within New Bedford Harbor is formulated at 43,250,000 GPE. Typical general purpose tankers that transport bulk fuel within New Bedford Harbor are approximately 10,000 Dead Weight Tons, which equates to an approximate average capacity of 4,375,000 gallons per tanker. Therefore the average number of trips per year for oil tankers within New Bedford Harbor is 10 trips/year for Oil Tankers or Tank Barges.

- Large Nontank Vessels – Information within the Nuka Research & Planning Group, LLC report specifically states that there are currently approximately 23 trips per year of Non-Tank Vessels.
- Recreational and Charter Vessels – Total recreational and charter vessel traffic is formulated at 300,000 GPE. Typical recreational vessels have an average capacity of approximately 200 gallons per vessel, which equates to approximately 1,500 recreational vessels. Assuming each vessel on average takes a trip once every other week between May and October of each year, there are 12 trips per year per vessel = 18,000 trips per year.
- Cruise Ships - American Cruise Lines makes weekly port calls to the New Bedford State Pier from late Spring to early Fall for a total of between 20 and 24 visits = approximately 22 trips per year.
- Vessel Maintenance and Repair - There are two major facilities in Fairhaven that service commercial and recreational vessels and there are several other smaller repair facilities scattered around the harbor. These facilities account for approximately 200 trips per year within New Bedford Harbor.
- Government vessels - A variety of government boats regularly operate in the Harbor including law enforcement boats (US Coast Guard, Mass Environmental Police, State Police Marine Unit, New Bedford Police Marine Unit, Harbormasters (New Bedford and Fairhaven)), EPA, Army Corps of Engineering, research vessels, and visiting vessels. These vessels account for approximately 1,500 trips per year.
- Harbor Work Boats - These include harbor tugs, pilot boats, commercial assist vessels (e.g. SeaTow), marina launches, or marine contractor vessels working on infrastructure

projects ranging from dredging to pier repair. These vessels account for approximately 2,000 trips per year.

- Commercial Fishing Vessel Fleet – 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, over the course of a year, an average fishing vessel spends 226 days in port. Every extended commercial fishing trip lasts one to two weeks. Therefore there are (on average) 15 trips per year per vessel, which is a total of 7,500 trips per year for the commercial fishing fleet.
- Ferry Terminals – There is currently one ferry terminal within New Bedford Harbor (The New Bedford-Martha's Vineyard Fast Ferry). According to the New Bedford Fast Ferry Website, the ferry makes approximately (approximately 1,300 trips per year).

Therefore, the total estimated number of trips in and out of New Bedford Harbor each year is 30,555 trips per year or approximately 84 trips per day.

According to the New Bedford Harbor Development Commission and Port Security personnel, the existing level of traffic is quite low compared to the existing capacity of traffic that the New Bedford Hurricane Barrier can accommodate; in fact, New Bedford Harbor is generally considered to be severely under-utilized. New Bedford Harbor is a relatively low-traffic harbor, and significant expansion of vessel traffic would be extremely unlikely to hinder the demands on traffic. Waits for entrance into New Bedford Harbor are currently extremely infrequent, and often there is no traffic transiting the Hurricane Barrier opening, nor are there typically lines to enter or exit the harbor. Therefore, the existing traffic numbers calculated above indicate relatively low quantity of traffic, and relatively small increases or decreases in traffic would have a relatively small change in either the operational or environmental impact to New Bedford Harbor.

Increased Vessel Traffic Due to South Terminal CDF Construction

Increased traffic at the South Terminal CDF site is anticipated to include the following vessels during the first year:

- An international vessel (similar to a traditional non-tank vessel), between 140 - 150 meters (460 – 490 feet) in length. The international vessel can only carry components for 6 turbines at one time. Therefore, for constructing an offshore wind energy facility for 130 turbines, 22 separate shipments from international vessels would need to be received at the support facility. These shipments would be anticipated to be receive within the first year of operation of the facility.
- Two installation vessels would be also required at the facility. Offshore renewable energy facility installation ships would consist of jack-up barges that would be approximately 91 meters (300 feet) in width and 30 meters (100 feet) in width. The vessels would not be powered on their own, and would require a tug to maneuver them out of dock and out to the construction site. It is currently anticipated that each barge would require one tug (each tug is estimated to be approximately 30 meters, or 100 feet in length) to maneuver the vessel out to sea; however, the facility would employ two tugs (one for each installation vessel). Each installation vessel would be capable of delivering components for installation of 2 wind turbines for each trip, resulting in a total of 65 total trips for the vessels during the first year.

Increased traffic at the South Terminal CDF site (subsequent to the first year) is anticipated to include the following vessels:

- An average of one cargo vessel per week is currently anticipated at the facility subsequent to the first year. This vessel would likely be similar in size to the above-mentioned international vessel (similar to a traditional non-tank vessel), between 140 - 150 meters (460 – 490 feet) in length. Alternately, several smaller, short-seas shipping barges may service the site, (transmitting a similar quantity of cargo) which could result in an average of approximately four smaller barges (similar in size to the installation vessels) per week. Therefore, the total anticipated traffic increase is an average of 3 vessels per week (approximately 156 vessels per year).

<u>Proportional Increase in Marine Traffic</u>

- *First Year Traffic Increase:* The increase in traffic for the first year is anticipated to be (22 + 65 = 87) 87 total trips. This represents an increase of 87/30,555 = 0.28% increase in marine traffic.
- *Post-First Year Traffic Increase:* The increase in traffic for subsequent years is anticipated to be 156 total trips. This represents an increase in 156/30,555 = 0.5% increase in marine traffic.

Both of the above scenarios represent very small increases in marine traffic for the Port of New Bedford, and are extremely unlikely to cause any major disruption to marine traffic.

Potential for Traffic Interference With Commercial Fishing Industry

Conflict with commercial fishing vessels is not anticipated, particularly considering the professional skills/experience of both the fishing vessel crews and the merchant mariners operating the large freighters and tugs. This is confirmed by long (literally centuries of) experience with the operation of both merchant ships and commercial fishing vessels in the Harbor.

South Terminal itself serves as a temporary berth for commercial fishing vessels for off-loading of catches at fish processing facilities. Long-term berthing for vessels is generally not permitted. Cargo vessels transiting to the South Terminal CDF location will not disrupt operations at the fish processing facilities, as the cargo vessels will transit sufficiently far from the bulkhead to allow unloading operations at the facilities to proceed unhindered. Interference with arrivals and departures at the fish processing facilities due to the additional vessel traffic will also be relatively minor, as unloading at the facilities typically takes up to an hour or more and transiting vessels will likely only pass through the channel in front of the existing South Terminal bulkhead for 10-15 minutes or so. Once the vessels have passed the fish processing facilities, no further interference is anticipated during berthing operations of the cargo vessels.

A similar sharing of the water sheet currently exists in the area north of the Route 6 Bridge at Bridge Terminal on Fish Island and at Maritime Terminal and North Terminal. North Terminal currently harbors existing fish processing facilities, and also allows berthing of fishing vessels. Maritime Terminal and Bridge Terminal load and unload cargo vessels. The mixture of commercial fishing vessels and cargo vessels and has not proved burdensome to existing commercial fishing traffic in this location; similarly, it is not anticipated to be burdensome at South Terminal.

Should unexpected conflicts arise regarding vessel traffic at either the Hurricane Barrier or at South Terminal, it may prove necessary to implement various traffic management practices to ensure that vessels can continue to operate safely, efficiently, and with minimal impact on the environment. Although not currently anticipated, if required, these considerations will be included in the design and in evaluation of the proposed future operation of the South Terminal CDF.

Response to USEPA Comment Number 5. - Proportional Increase in Prop Wash and Turbidity

In most areas within New Bedford Harbor, a proportional increase in prop wash (caused by a proportional increase in vessel traffic) could be linked to a representative corresponding increase in suspended sediment caused by prop wash (however, this is anticipated not to be the case at the South Terminal CDF location, see discussion below). Prop wash from marine vessels increases turbidity by mixing sediment below the prop into the water column via turbulence. The suspended sediment becomes entrained within the water column, and is subsequently more bio-available to marine life via ingestion or respiration. Bottom sediment within New Bedford Harbor is impacted with PCBs and heavy metals; therefore, entrainment of this sediment within New Bedford Harbor, while not adding to contaminants within New Bedford Harbor, re-suspends contaminants, increasing their bio-availability to marine life.

The greatest risk for increased turbidity lies at each vessel's docking location. This is because each dock location is dredged to the approximate depth that vessels berthing at that facility require. Therefore, although a vessel may draft only 6 feet, that vessel typically is moored within an area that can accommodate at most 7 to 8 feet; therefore, the vessel has the most risk of entraining sediment when it is berthing and leaving its dockage, due to the proximity of its prop to the harbor bottom (channels and fairways are typically deeper than the deepest draft vessel that will transit the Harbor, and therefore there is much less of a risk from entrained sediment within these areas).

Although there are mitigating factors that will likely result in significantly less (or perhaps no) additional turbidity to be added to New Bedford Harbor as a result of the new facility (see discussion below), the worst-case scenario is that, as stated above, turbidity would increase proportionally with harbor traffic. Existing traffic within New Bedford Harbor can be utilized as a relative measure of the existing level of turbulence caused by prop wash within New Bedford Harbor from marine operations. The relative increase in marine traffic due to the South Terminal CDF can then be compared to the existing level of marine traffic to determine the relative increase in turbidity and therefore suspended sediment and water quality impact, as follows.

- *First Year Traffic Increase:* The increase in traffic for the first year is anticipated to be (22 + 65 = 87) 87 total trips. This represents an increase of 87/30,555 = 0.28% increase in marine traffic.

- *Post-First Year Traffic Increase:* The increase in traffic for subsequent years is anticipated to be 156 total trips. This represents an increase in 156/30,555 = 0.5% increase in marine traffic.

It is assumed in this worst-case analysis, that all vessels, regardless of draft, generate increased turbidity due to prop wash: vessels with smaller draft tend to berth or moor in shallower areas and vessels with deeper drafts tend to berth in deeper areas. In both cases, the props for the vessels will be relatively close to the bottom of the harbor, and will therefore have impacts on turbidity within the Harbor. Therefore, in the worst case analysis, the relative increase in entrained sediment within New Bedford Harbor from creation of the South Terminal CDF will range from 0.28% to 0.5%, a very small increase, relative to existing conditions.

It is very likely that operations at the South Terminal CDF will result in significantly less increased suspended sediment than the worst-case scenario described above. The greatest risk of entrained sediment occurs from fine-grained organic material that accumulates at the bottom of the harbor. Specifically within New Bedford Harbor, fine-grained organic material that is impacted by metals and PCBs would generate the largest potential impact to marine organisms; however, this material will be removed from the South Terminal CDF dredge footprint prior to the start of operations at the facility. It is anticipated that, due to the dredge depth within the footprint of the proposed facility (-20 to -30 MLLW, as stated previously), that the geologic material that will be present below the props within the South Terminal CDF dredge footprint will be glacial till material. Glacial till is tightly-packed combination of sand, silt and gravel that was left after passage of the glaciers. This material will be free of anthropogenic contaminants as a result of the date of its formation (the glaciers retreated from this region 13,000 years ago).

Due to the density of this material, it is often very difficult to remove even with heavy equipment. Therefore, it is highly unlikely that prop wash could dislodge it. As a result, prop wash from the new vessels is unlikely to be a significant concern. Therefore, although the worst-case scenario indicates an increase in turbidity of 0.28% to 0.5%, the actual increase in turbidity is anticipated to be significantly less than this number.

Response to USEPA Comment Number 6. - Bilge and Ballast Water

Language included in the first submittal was intentionally conservative. Our recent follow-up contacts with shippers, Coast Guard regulators, and marine operators have allowed us to temper/refine our analysis of the challenges and potential hazards of handling expected bilge and ballast water from vessels that will be associated with offshore renewable energy support as well as vessels that are expected to utilize the South Terminal CDF after the first offshore renewable energy support project is complete.

Bilge Water

Handling bilge water is a routine task for licensed merchant ships. Section 311 of the Clean Water Act, as amended by the Oil Pollution Act of 1990 (33 U.S.C. 2701-2720), applies to ships and prohibits discharge of oil or hazardous substances in harmful quantities into or upon U.S. navigable waters, or into or upon the waters of the contiguous zone, or which may affect natural resources in the U.S. EEZ (extending 200 miles (320 km) offshore). Coast Guard regulations (33 CFR §151.10) prohibit discharge of oil within 12 miles (19 km) from shore, unless passed through a 15-ppm oil water separator, and unless the discharge does not cause a visible sheen. Beyond 12 miles (19 km), oil or oily mixtures can be discharged while a vessel is proceeding en route and if the oil content without dilution is less than 100 ppm. Vessels are required to maintain an Oil Record Book to record disposal of oily residues and discharges overboard or disposal of bilge water.

In addition to Section 311 requirements, the Act to Prevent Pollution from Ships (APPS) implements MARPOL Annex I concerning oil pollution. APPS applies to all U.S. flagged ships anywhere in the world and to all foreign flagged vessels operating in the navigable waters of the United States, or while at a port under U.S. jurisdiction. To implement APPS, the Coast Guard has promulgated regulations prohibiting the discharge of oil or oily mixtures into the sea within 12 nautical miles (22 km) of the nearest land, except under limited conditions.

Coast Guard regulations are very specific, inspections are frequent, and federal penalties and fines for noncompliance are stiff. A No Discharge Zone has been created for Buzzards Bay which includes New Bedford Harbor. Non-compliance also can result in significant fines from State regulators. No discharge of bilge water into the harbor will be permitted from vessels while at the South Terminal CDF or while transiting through inland waters to or from New Bedford Harbor. The Coast Guard Marine Safety Detachment in New Bedford enforces compliance, boarding each large international merchant vessel prior to their entering port to ensure all their systems are functioning properly and they are fully compliant with all applicable safety, environmental and port security regulations. The Coast Guard also responds to all reports of observed discharges or oily sheens on the water (that would likely result if bilge water were improperly discharged).

Please note that large merchant ships do routinely have contaminated bilge water of varying quantities. The principle contaminant of bilge water is almost exclusively hydrocarbons or cleaning solvents from products used to clean, fuel or lubricate onboard machinery. Most, if not all, of these ships will have oil-water separators that collect the waste oil and some other contaminants in bilge water. The cleaned water is often discharged at sea. The concentrated oil waste collected from the bilges is pumped off in port for disposal at licensed facilities, usually to tanker trucks specifically designed, licensed, and exclusively used for this purpose. This waste is then taken to approved disposal sites. No bilge water will be pumped into the POTW.

In the event oily bilge water needs to be pumped and disposed of, there are many experienced commercial contractors located in Eastern Mass that provide this service (existing maritime cargo support facilities within New Bedford Harbor utilize these contractors). The contractors listed below are some that have vacuum trucks and disposal facilities available:

- Clean Harbors
- General Chemical
- Maxymilliam Technologies
- Cyn Environmental
- Moran Environmental
- Triumvirate Environmental

<u>Ballast Water</u>

Vessels involved in offshore wind renewable energy construction projects will most likely not have a need to carry any ballast water. The freighters carrying the renewable energy components from international destinations will be fully laden, and thus unlikely to need ballast except possibly a small amount for vessel trim. This will also apply to international cargo vessels. Vessels transiting from over-seas are required to flush out their ballast tanks (if in use) several times enroute to minimize the risk of carrying an invasive/non-indigenous species into U.S. waters.

The jack up barges and support vessels for wind farm construction, and the smaller short-seas shipping vessels will most likely not need any ballast, both due to the construction of the vessels and the type of loading (i.e., similar to the international vessels, these vessels will be fully loaded and will likely not require ballast). No discharge of ballast water will be allowed in port or in transit while these vessels are operating in inland waters. In the unlikely event that ballast water has to be dealt with, the water will be profiled appropriately and collected and disposed of in accordance with all requisite regulations. No discharges of contaminated ballast water will be intentionally made into New Bedford Harbor or the Buzzards Bay No Discharge Zone by vessels operating out of the South Terminal CDF.

Response to USEPA Comment Number 7. Stormwater Discharges

The following abbreviated stormwater management plan has been prepared to address concerns raised by USEPA. A more formal stormwater management plan, with additional detail, will be finalized with design documents prior to construction:

SITE EVALUATION, ASSESSMENT, AND PLANNING

7.1.1 Soils, Slopes, Vegetation, and Current Drainage Patterns

Soil type(s): The two major soil types on the site are defined as (651) Udorthents smoothed and (602) Urban Land. Their approximate distribution on the site is depicted in Figure 1. These two soil types compose the landward soils with the other unit on the map (607) being salt water.

Figure 1 Approximate distribution of NRCS Mapped Soil Units at Site[1]

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[1] http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx

Udorthents smoothed (651) - These soils are described as made land over loose sandy and gravelly glaciofluvial deposits and/or firm coarse-loamy basal till derived from granite and gneiss. They have a wide range of water transmitting capability which ranges from moderately low to very high. Typical profile is 0 to 6 inches variable and 6 to 60 inches variable. The depth to the water table is typically more than 80 inches.

Urban Land (602) – These soils are filled lands composed of urban fill material which has been excavated and transported to the area. These are not naturally occurring soils.

Slopes/Drainage Patterns: The project site is located on a parcel of land approximately 7 acres abutting the New Bedford Inner Harbor New Bedford, MA. The parcel is relatively flat and gently slopes towards the harbor. The current site consists mainly of previously disturbed land which has reverted back to shrubland and small amounts of developed and paved surfaces. The site slopes generally from west to east.

Existing off-site runoff currently flows across the site via sheet flow and discharges into New Bedford Inner Harbor. Two stormwater easements are located on the northern and southern portions of the projects and contain stormwater outfalls which discharge directly into the harbor. During construction stormwater which would be traveling through the site will be temporarily re-routed around the construction area to minimize sediment in the runoff. This rerouted runoff will be controlled by BMPs utilizing diversions, check dams, and temporary sedimentation basins. The current stormwater outfalls will be extended and not impacted during construction activities. The outfalls will be extended to ensure that the water conveyed by them is not discharged into the new bulkhead area being created as part of the project.

Vegetation: Vegetation on the site in the project area is representative of disturbed shrubland community. Native grasses and weeds are interspersed in the herbaceous layer. The site is partially located within the footprint of a former mill building which was demolished in 1939. Much of the rubble from the factory remains on-site and pioneering vegetation has taken over and stabilized the soils. The vegetation on the beach is sparse limited to some occasional beach grass. The beach is not a barrier beach and the project will not impact any existing dune areas. The entire area surrounding the project has been previously disturbed and developed.

7.1.2 Receiving Waters

Description of receiving waters: The receiving water for this project is the New Bedford Inner Harbor. The Inner Harbor abuts the site and direct discharges to the harbor will be avoided. The Inner Harbor is considered an impacted water body and has TMDL limits set for it. Through the use of properly engineered sediment and erosion controls no sediment from the project will enter into the receiving waters without prior treatment for suspended solids and other TMDL limits. The stormwater system will be designed and operated to ensure that discharges from the site do not cause or contribute to a violation of any applicable water quality standard, in accordance with federal and/or state ARARs.

Description of stormwater:

Existing stormwater patterns

Two existing piped drainage systems pass through the project in the northern portion of the property and include outfalls within the project limits. One system is near the northern limit of the project roughly extending east from Wright Street. This storm drain discharges through the existing bulkhead into New Bedford Harbor. The second piped system extends east from the cul-de-sac on Blackmer Street passing beneath the shoreline and discharges just offshore. Only limited amounts of runoff from the margins of the project area drain to these piped systems. The majority of runoff from the landward portions of the project area is generally by overland flow easterly to the harbor.

The southern portion of the project has no defined drainage system. Runoff is overland either onto abutting commercial/industrial property to the east or to existing storm drainage systems in Gifford Street to the north and Cove Street to the south. The small portion of the project areas located north of Gifford Street are drained primarily by overland flow directly or indirectly (across abutting property) to the harbor with small portions draining toward Gifford Street.

Proposed stormwater system

With respect to the existing stormwater outfalls on the northern portion of the project, it is proposed that the two pipelines will be extended through the new bulkhead as it is constructed. The existing pipelines will be modified and strengthened or replaced as necessary to accommodate anticipated loads from filling, storage, trucks and other heavy equipment including cranes.

During construction considerable effort will be taken to eliminate the potential of sediment or other pollutants reaching the harbor. As is typical of any project covering several acres and requiring the movement of large quantities of earth materials, the project must be designed to address concerns for control of erosion and sedimentation due to potentially large areas of unstabilized soil materials. As detailed below, these will be addressed by implementation of conventional stormwater controls and BMPs. The project must also address control of the runoff from dredged materials used for site fills which have the potential for pollutants including PCBs and metals. Containment of stormwater and active controls will be implemented to address this potentiality. A system including handling and dewatering basins; monitoring stormwater; active control of outlet; filtering or additional settling, as necessary; and testing and monitoring will be implemented to control runoff.

Following construction the stormwater system must accommodate the intended facility use for support of offshore wind energy. It is anticipated that small portions of the site (less than 10%) will have paved access driveways or haul routes, but the predominant surface will be crushed aggregate (stone and other clean material) for the storage of components and the operation of cranes and other heavy equipment. It is reasonable to assume that over time there will be some changes in surfaces as equipment changes occur which may require isolated hardstands or support pads. However at this time it is envisioned that crushed aggregate will remain the predominant surface material.

After the initial use of the facility for offshore renewable energy support, the facility will be utilized for other types of maritime commerce. As previously stated, it is currently anticipated that sufficient compaction of the crushed aggregate surface will have occurred during the facility's initial use, that the crushed stone surface can be used without paving to service maritime commerce. Although it may be found to be necessary to pave the site at some future date, it is currently not anticipated that that will be necessary at this time. Therefore, it is not practical at this time to predict when this might occur or how much additional land area might be covered by additional impervious surfaces such as buildings or pavement. Should the use of the facility change in the future, any proposed changes would have to be designed to the then-applicable codes and regulations and be permitted in accordance with the applicable regulations.

Description of impaired waters or waters subject to TMDLs: New Bedford Inner Harbor which is the water body which abuts the project site is listed as a Category 5 impaired water body. A Category 5 TMDL has thresholds placed on target pollutants which have exceeded the TMDL in the past and are potentially impacting the water body. The TMDL's listed for New Bedford Inner Harbor are; priority organics, metals, nutrients, organic enrichment/low dissolved oxygen, pathogens, oil & grease, taste odor color, and objectionable deposits.

7.1.3 Potential Sources of Pollution

Potential sources of sediment to stormwater runoff:

During the site construction potential sources of sediments would include:

- Clean stockpiled dredge material for filling behind the bulkhead

- Contaminated dredge material for filling behind the bulkhead (if utilized)
- Contaminated soils currently under an asphalt engineered barrier located at the DMF properties (MassDEP information for Release Number #4-0015490 located at 16 Blackmer Street states that the primary pollutant for this site is lead, but other contaminants include PAHs, and TPH).
- Clearing, grading, excavating and un-stabilized areas
- Soil transported on the construction vehicles during transport
- Dust from construction activities
- Run-off from stock piled material

Table 7.1 Potential pollutants and sources, other than sediment, to stormwater runoff:

Stormwater Pollutants	Location
PCB's	Limited to the approximate upper two to three feet of dredged sediment
Heavy Metals	Limited to upper foot of dredged sediment and soils beneath the engineered barrier at 16 Blackmer Street.
Oil, Grease, Fuel	Construction vehicle washing area, vehicle maintenance area and vehicle storage area
Fuel	Construction vehicle re-fueling area
Paint	Structure construction area and supply storage areas
Trash & Debris	Waste storage area
Sanitary Waste	Portable bathroom facilities
Landscaping materials (fertilizers, pesticides etc.)	Supply storage area and landscape areas under construction
Building materials	Supply storage area and structure construction areas

In order to be protective of water quality in New Bedford Harbor, the above potential stormwater pollutants will be controlled through a number of measures, including use of retention and/or detention basins, installation of erosion and sedimentation controls, isolation of contaminated material both during construction and post-construction, protection of stockpiled sediment, control of sheet flow runoff at the site, maintenance (or appropriate alteration) of existing Activity and Use Limitations, treatment (as necessary) of detained stormwater prior to discharge, and use of Best Management Practices.

In order to prevent sources of sediment and pollution from discharging into the harbor, contaminated dredged sediments (if utilized) will be stock piled in protected areas to prevent contamination of clean areas. The material will be allowed to dry, and the water from the dredged material will be directed to a selected basin where additional settlement will occur. It is anticipated that the majority of water will naturally infiltrate. Since PCB's are strongly organophilic, they adhere to organic sediments or soil particles which will be filtered by the soils beneath the dredged material and will not migrate into the groundwater. The potentially contaminated material will be carefully managed to ensure that the sediment remains on-site and does not travel to clean areas. The material will be used on-site and will be buried beneath several feet of clean dredged material or crushed stone. Although there may be some impacted sediment, the majority of dredged material will be clean material and will be stockpiled separately during the handling and dewatering process.

Dewatering will be conducted in accordance with the State Enhanced Remedy Performance Standards. The erosion and sediment controls associated with dewatering will include at a minimum, earth berms, hay bale barriers and silt fencing. The material will only remain stockpiled on-site temporarily until it can be used behind the sheet piles which will be installed. Stormwater from the handling and dewatering basins will be carefully controlled and no discharge will occur until the stormwater is monitored for turbidity.

Turbid stormwater from dredge handling and dewatering basins will be conveyed to secondary basins for additional settling. If fine-grained sediments persist in the stormwater, sand and/or geotextile filters will be employed to further reduce particulates. Stormwater on-site will either infiltrate or drain towards the sheet pile contained fill area. Any water which is not captured by temporary sediment basins or which is traveling through the site via sheet flow during stormwater events will be held behind the sheet piled area. This will allow for additional settlement of the sediments suspended in the stormwater.

Weep holes in the sheet piling (if shown to be necessary during the design process) will be sealed with a filter fabric or geotextile capable of filtering contaminated fine-grained material, while allowing inter-change of pore-space water. Water within the stormwater basins will be monitored and can be tested for turbidity and other parameters prior to being either treated and/or discharged.

Contaminated dredge material (if utilized) will be isolated from stormwater flows via several feet of clean dredge material and crushed stone. Additionally, contaminated dredge material will need to be mixed with concrete or other solidifying agent for geotechnical purposes; as a result, it is anticipated that there will be no erosion of contaminated dredge material during operation of the facility.

In order to satisfy the conditions of the existing Activity and Use Limitation in place at the property at 16 Blackmer Street, the existing asphalt barrier will either need to be maintained, a 3" concrete barrier will need to be installed, or three feet of clean material will need to be placed on top of the contaminated material. Alternately, the site can be re-opened under 310 CMR 40.0000, and an adjustment to the remedy for the facility can be assessed, in which an alternate method for handling impacted soils (consistent with 310 CMR 40.0000) is instituted. One of the above-mentioned strategies will be implemented to maintain a level of "No Significant Risk" from the impacted soils at this location.

7.2 EROSION AND SEDIMENT CONTROL BMPS

7.2.1 Minimize Disturbed Area and Protect Natural Features and Soil

1. Prior to the start of any earthwork silt fences and hay bales will be installed. Temporary detention basins for handling and dewatering dredge materials will be installed prior to dredging activities.
2. All silt fences will be inspected weekly and after every rain event that produces runoff within a 24-hour period and will be repaired or replaced as necessary. Silt fencing will be cleaned out when sediment has reached 6 inches in depth.
3. Any environmental or historic resource areas will be surveyed and flagged to define limits of work.
4. Installation of siltation booms and water quality protection measures will be installed prior to the driving of sheet piling.
5. All areas to be excavated will be laid out by a surveyor prior to excavation.

7.2.2 Phase Construction Activity

The site will be constructed in several phases. Erosion control measures will be installed incrementally with each phase. After these measures are in place the land will be cleared, stabilized, construction entrances will be constructed, and staging areas will be established. Siltation curtains and booms will be deployed prior to navigational dredging work within the water begins, as required by State Enhanced Remedy Performance Standards. The sheet piles will be placed and dredging in front of the bulk head will commence. A CAD Cell may be constructed in coordination with constructed with the facility. CAD Cell construction will likely begin prior to the start of dredging, in order to allow placement of contaminated material from the site for disposal. Material from dredging activities (either from the CAD Cell or from navigational dredging or both) will be separated and staged on-site for dewatering. Once material is sufficiently dewatered it will be utilized as fill behind the bulkhead to establish additional land area. To the extent practicable and allowed under applicable law, contaminated navigational dredge material will be buried at depth, covered by several feet of clean dredge material and filled to preclude their erosion after the construction phase is completed. The entire site will then receive final grading, installation of crushed aggregate surface. Prior to finish grading, the permanent stormwater detention basins and controls will be installed.

7.2.3 Control Stormwater Flowing onto and through the Project

Temporary re-routing of sheet flow through the area by means of diversions and swales will be employed to control stormwater run-off traveling through the site and entering the area behind the new bulkhead area. Stormwater within the project area will similarly be controlled by diversions and swales, routed to temporary detention basins which will allow for settling and infiltration of stormwater. The area immediately behind the bulkhead will be utilized as a final storage location for stormwater. This area will not yet have weepholes installed, and therefore, detention of the stormwater behind the sheet-pile wall will allow suspended sediment to settle out prior to its percolation or discharge (if necessary). Once installed, weep holes in the sheet piling (if shown to be necessary) will be sealed with a filter fabric or geotextile capable of filtering contaminated fine-grained material, while allowing inter-change of pore-space water.

7.2.4 Stabilize Soils

TEMPORARY MEASURES

1. All soil excavated and stockpiled on site will be covered with pneumatically applied straw mulch with tackfiers or polymer emulsions to resist erosion if it is to be left in place for more than 48 hours without re-handling.
2. All dredged material will be transferred to earth enclosed basins for handling and dewatering. Surface sediments, fine-grained sediments and other dredge material which has the potential for containing pollutants will be segregated and placed in separate dewatering and handling areas. Materials of particular concern will be placed on polyethylene liner rated for the pollutant of concern and will be surrounded by hay bales and silt fencing to reduce or remove the possibility of migration of sediment through the site.
3. All stockpiles of topsoil and other earth materials will be contained at a minimum by continuous silt fence. All soil stockpiles on existing slopes in excess of 1:10 (10 percent) will be surrounded by berm and swale system to ensure erosion and sedimentation are minimized. Sediment stockpiled from dredging will initially be placed within dewatering basins constructed of earthen berms. Runoff from the dewatering basins will be monitored

and routed to temporary sediment basins. Once adequately dewatered, clean sediments will be moved to stockpiles and will have hay bales and silt fencing surrounding the piles. All runoff will be routed to temporary sediment basins.

4. During construction, those areas of exposed soil that have been graded but will not be worked for three weeks or more will be treated periodically with water containing liquid polymer emulsions as necessary or covered with pneumatically applied straw mulch.

PERMANENT MEASURES

1. As soon as weather permits after the completion of fine grading, all disturbed areas will be permanently stabilized with placement of crushed rock, mulch or grass seed. Small portions of the site will be paved for access driveways, equipment pads and hardstand areas. Landscaping will generally be limited to the site perimeter and will consist of trees and shrubs for screening and loam and grass seeding for surface stabilization.
2. All plantings shall be installed as early as possible upon completion of grading and construction and will be maintained (in the case of plantings) to ensure proper growth for a minimum of three months.

7.2.5 Protect Slopes

1. Erosion control matting will be used on any cut, fill or regraded slopes steeper than 3 horizontal to 1 vertical.

7.2.6 Protect Storm Drain Inlets

1. Outlets from basins and culverts will be protected during construction activities with crushed rock and hay bales.

2. After the construction activities are competed, paved areas are to be swept and catch basins (where applicable) are to be inspected and cleaned if necessary twice annually to prevent a build up of sediment.
3. When sediments reach a depth of 6 inches, they are to be removed from the stormwater management basin.

7.2.7 Establish Perimeter Controls and Sediment Barriers

1. Prior to the start of any earthwork silt fences and hay bales will be installed. Clearing will initially be limited to the site perimeter and other areas of silt fence installation.
2. All silt fences will be inspected weekly and after every rain event that produces runoff within a 24 hour period and repaired or replace as necessary. Silt fencing will be cleaned out when sediment has reached 6 inches in depth.
3. Siltation curtains and booms will be installed as needed during work within water in accordance with the State Enhanced Remedy Performance Standards.

7.2.8 Retain Sediment On-Site

1. Temporary sediment basins will be constructed at selected locations on the lower portions of the project area to treat runoff from the construction sites. These temporary basins will be repositioned as construction progresses. Ultimately construction runoff will be routed through completed portions of the drainage system to the detention basins.
2. Dredged material will initially be deposited within dewatering basins which will allow for infiltration of the water from the stock piled material. Stormwater from within the basins will be routed to temporary sediment basins to remove additional suspended soils and reduce sediment migration through the site.

3. Silt fence and hay bales will be installed down gradient from slopes which have the potential of sediments washing away during construction.
4. Soil will be stock piled on-site for reuse. No soils will be removed from the project area.

7.2.9 Establish Stabilized Construction Exits

1. Construction entrances will be either through the entrance off of Blackmer Street or from the entrance to the northern portion of the site on Wright Street.
2. Pavement will be swept periodically to limit the tracking of sediment off-site. At a minimum, sediments are to be swept on a weekly basis.
3. All soil or sediment tracked onto Wright Street or Blackmer Street will be removed immediately.
4. A stone stabilization pad at the site entrance will be maintained by the contractor. The maintenance will include removal and replacement, top dressing with additional stone or constructing additional length as conditions demand or as directed by the engineer.
5. The stones will be replaced whenever sediment has in-filled spaces between stones limiting the tracking pads ability to capture soil from the tires of trucks and other construction equipment.

7.3 GOOD HOUSEKEEPING BMPS

7.3.1 Material Handling and Waste Management

Solid waste disposal from the project site during construction or operation of the facility will be stored in portable dumpsters, removed by a private hauler and brought to municipal facilities.

During the construction period, portable toilets will be placed on site for the construction workers. Sanitary waste from these toilets will be disposed of by a private company.

7.3.2 Establish Proper Building Material Staging Areas

For the duration of the construction period a staging area and a supply storage/stockpile area will be designated and established. No materials are to be stored in other locations. Materials within the staging area will be covered when not in use. No cans will be left open when not in use. It can be anticipated that the following items will likely be stored within the staging area; wood, construction material, sheet piles, lubricating oil/grease, gasoline, paint and other coating materials. Additional items such as construction equipment may be stored during the site construction.

7.3.3 Designate Washout Areas

A construction washout area will be established near the construction entrance. Signs will be installed designating the washout area. A temporary polyethylene liner will be installed in the washout area. This will allow any solids suspended in the wash water sufficient time to settle out, concrete to harden and water to evaporate. The washout area shall be inspected daily for leaks and to determine when the contents need to be removed. Silt fence and hay bales will be installed immediately down gradient from the washout area to capture and detain any wash water which by-passes the area.

7.3.4 Establish Proper Equipment/Vehicle Fueling and Maintenance Practices

Most standard rubber tire equipment/vehicle fueling will occur off-site. By re-fueling equipment/vehicles off-site the risk of fuel spills will be reduced. Track equipment and some select rubber tired equipment/vehicles will be re-fueled on site. Personnel will stay with the equipment during re-fueling to prevent over-filling and/or spilling. Maintenance and refueling shall occur away from drainage paths. Equipment/vehicles will be inspected daily for leaks, damage and/or other service problems. Precautionary measures will be taken to prevent contamination of the ground water or surface runoff when maintenance is necessary. The ground surface will be protected with drip pans, drip clothes or absorbent pads. Spent fluids will be placed in appropriate receptacles and removed from site and recycled when possible.

7.3.5 Control Equipment/Vehicle Washing

Equipment/vehicles will be washed off-site whenever possible. On-site washing will be without detergent and the wash water shall be directed to a detention area to allow for settling and infiltration. An area will be designated with signs as the equipment/vehicle washing area to prevent wash water from by-passing the designated detention area.

7.3.6 Spill Prevention and Control Plan

This site does not, and is extremely unlikely to, contain above ground oil storage over 1,350 gallons nor below ground storage of greater then 42,000 gallons and therefore is not subject to a Spill Prevention Control and Countermeasures Plan (SPCC).

7.3.7 Any Additional BMPs

Permanent BMPs include the detention basins which will control flow from the site. In the process of detaining the stormwater runoff, some of the runoff will infiltrate into the ground and some will evaporate. Both inlet and outlet controls will be protected by riprap to prevent un-necessary erosion.

7.4 SELECTING POST-CONSTRUCTION BMPs

The utilization of crushed aggregate for the majority of the projects' finished surface will allow for the direct storage of three or more inches of rainfall and its subsequent infiltration. It is anticipated that runoff from the site will be limited to large rain events. The site will be graded to flow via sheetflow directly toward stormwater detention basins. Where sheetflow is not practical, swales and ditches will be utilized and in limited areas, catch basins and closed piping will be necessary. Contaminated dredge material (if utilized) will be isolated from stormwater flows via several feet of clean dredge material and crushed stone. Additionally, contaminated dredge material will need to be mixed with concrete or other solidifying agent for geotechnical purposes; as a result, it is anticipated that there will be no erosion of contaminated dredge material during operation of the facility. Filtration of weep-hole water (if necessary) will also keep impacted material from migrating offsite; therefore, it is anticipated that separate surface-level stormwater controls to deal with impacted material will be unnecessary. All of these conveyances will direct stormwater runoff to detention basins for treatment. Detention basins with outlet control structures will be constructed as part of the post-construction BMPs. The basins will allow for the settling out of sediments and the longer retention time will allow for infiltration and evaporation of the runoff water. Landscape areas will be minimal and typically limited to the site perimeter. Landscaping will consist primarily of turf and screening trees and shrubs. The landscape areas will provide additional areas for infiltration and for uptake from the trees and plantings, thereby reducing the amount of runoff reaching the detention basins. Rip rap will be provided at outlets as energy dissipating devices which will reduce the erosion potential.

7.5 FINAL STABILIZATION

Upon completion of final grading in a given area of the site, that area shall be provided with final stabilization. Final stabilization may include the installation of crushed rock, landscaping or pavement.

7.6 OVERALL SEQUENCE OF CONSTRUCTION ACTIVITY

The following is an estimate of the approximate sequence of construction for the development of the site:

- Mobilize
- Install perimeter erosion and sedimentation controls
- Install sheet pile bulkheads. Bulkheads will be terminated with a tight connection at the shoreline.
- To filter water leakage through the weep holes, non-woven geotextile will be utilized on the inside face of the sheet pile to filter water passing outward to the harbor.
- Grub and clear site vegetation
- Construct dredge material handling and dewatering areas using earth berms sized to contain all stormwater inside without any uncontrolled runoff
- Install additional sedimentation basins and traps for treatment of stormwater from dredge material handling and dewatering areas
- Install additional temporary stormwater basins for sediment control for the remainder of the project areas
- Construct CAD Cell (if necessary and transport clean material to South Terminal CDF).

- Complete navigational dredging seaward of sheet pile bulkheads. Dredging will be accomplished using water tight buckets, tight bottom barges, sediment curtains, floating booms and other BMPs, as necessary, to control introduction of turbidity into the harbor's waters
- Separate soft, organic and/or contaminated sediment from clean sediment for dewatering
- After dewatering to improve engineering properties, dredge material will be utilized for backfill behind (landward of) bulkheads to dispose of the dredged material and create usable land area
- Potentially contaminated or contaminated dredge material will be disposed of at depth so as to be protected from any long-term erosion potential and therefore not be a potential source or reintroduction of contaminants back into New Bedford Harbor
- Grade upland portion of the site to design contours and elevations
- Establish crushed aggregate surface in laydown areas
- Construct paved areas, hardstand, equipment pads and building foundations and building structures and/or renovation of existing building structures (as stated earlier, asphalt areas are projected to be very minimal).
- Install permanent soil stabilization

Response to USEPA Comment Number 8. - Truck Traffic, Noise and Air Impacts and Environmental Justice

8.1 ENVIRONMENTAL JUSTICE

U.S. Executive Order 12898 (Federal Actions to Address Environmental Justice (EJ) in Minority Populations and Low-Income Populations) directs federal agencies to assess proposed actions or alternatives for disproportionately high and adverse human health or environmental impacts on minority and low-income populations. Identification of health and environmental issues is accomplished through public involvement and the scoping process. Environmental justice has been an important consideration in the NEPA process since the issuance of Executive Order 12898 in 1994, which required all federal agencies, including the U.S. EPA, to identify and address "disproportionately high and adverse human health or environmental effects of its programs, policies and activities on minority populations and low-income populations in the United States."

To determine the potential impacts on EJ populations, the U.S. EPA provides guidelines for conducting an analysis of the area, and including the following steps:

- Encourage meaningful community representation in the permitting process through the use of effective public participation strategies and special efforts to reach out to communities of color and low income populations;
- Identify the area impacted by the proposed facility or activity and assessing whether there is the potential for a disproportionately high and adverse human health or

environmental effect on low-income or minority populations from the Proposed Action;

- If a disproportionate impact is found, considering alternatives that have a less disproportionate effect on low-income and minority populations; and
- Identifying mitigation measures that address and needs of affected low-income and minority populations.

8.1.1 Determination of the Environmental Justice Areas

Study Area

The community of concern (CoC) or study area for EJ includes ten U.S. Census block groups along or adjacent to the truck route for vehicles that would service the proposed South Terminal in New Bedford (see **Appendix 5**, Block Groups along the Proposed Truck Access Route). The proposed truck access and egress route is expected to be along Route 18, which extends approximately 2.6 miles from Interstate 195 on the north side to Gifford Street on the south side. Route 18 runs approximately through the middle of these block groups. Most of the land use on the east side of the route is industrial, supporting the waterfront businesses as well as the city. Most of the land use on the west side of the route is residential with some commercial uses.

Minority Community or Population

EPA's Office of Environmental Justice has defined the term "minority" to include Hispanics, Asian-Americans and Pacific Islander, African-Americans, and American Indians and Alaskan Natives. If an area is found to be at or above 50 percent minority, then it is flagged as an EJ area.

Low Income Community or Population

Although the U.S. Census Bureau does not provide a specific definition for "low income," it is used interchangeably with "poverty." The Census determines poverty by comparing the total income of each family against it corresponding threshold.

The 2000 Census data will be used to determine whether an area along the truck route meets the low-income and/or minority criteria. The U.S. Census Bureau tracts located wholly or partially within or along the truck access route (Route 18) will be analyzed.

Statistical Reference Area

As part of this analysis, a statistical reference area was chosen to compare the results of the CoC area, described above. Data was derived from the U.S. Census 2000 for the New Bedford Urbanized Area, Central Place statistical area.

Results and Analysis

Minority and low income data for the statistical reference area and the CoC areas are shown in Table 1. Two block groups (tract 6519 BG 2 and Tract 6526 BG 1) were determined to be EJ areas since their minority percentages were greater than 50 percent (in bold). All but one block group had low-income percentages at or above 25 percent (in bold).

Table 1. Demographics of Truck Route Access Areas

U.S. Census Location		Total Population	Minority Population	% Minority	Low-Income Population	% Low-Income
Census Tract 6511	Block Group 1	960	394	41.0	457	**48.2**
Census Tract 6512	Block Group 2	877	307	35.0	360	**41.1**
Census Tract 6513	Block Group 1	1,178	273	23.2	328	**27.8**
Census Tract 6513	Block Group 2	1,065	386	36.2	290	**27.6**
Census Tract 6518	Block Group 1	1,091	255	23.4	384	**35.6**
Census Tract 6518	Block Group 4	757	300	39.6	291	**40.3**
Census Tract 6519	Block Group 1	802	373	46.5	179	24.2
Census Tract 6519	Block Group 2	1,063	822	**77.3**	397	**37.8**
Census Tract 6526	Block Group 1	513	309	**60.2**	198	**38.6**
Census Tract 6526	Block Group 2	1,042	427	41.0	473	**45.4**
Census Tract Average		9,358	385	42.4	336	36.6
New Bedford	Urbanized Area, City (part)	93,465	19,622	21.0	18,468	20.2

Source: U.S. Census 2000, SF-3 data, Tables P7 and P87.

The average percent of minorities and low-income populations for the ten block groups are 42.4% and 36.6%, respectively. These percentages are significantly higher than those of the New Bedford Urbanized Area, Central Plan geographic area. In fact, all the census tract block groups for minority and poverty populations are significantly higher than the statistical reference area. Therefore, all of the block groups along the proposed truck access route are considered as EJ areas.

Summary of EJ Criteria

The EJ CoC Area contains neighborhoods with highly diverse populations in terms of minority and income characteristics.

Minority EJ populations greater than 50 percent exist in two block groups within the CoC. Low income populations at or above 25% exist in the entire within the CoC area except for one block group.

All of the block groups have higher percentages of minority and low income populations greater than the New Bedford Urbanized Area, Central Place statistical area.

8.2 EXISTING AND PROPOSED VEHICLE TRAFFIC

The project proposes to construct the South Terminal within a Designated Port area along the New Bedford industrial waterfront (see **Appendix 5**). Vehicular access to the proposed terminal will be along Route 18. The route runs approximately 2.6 miles from I-195 on the north side to one of the main roads, Potomska Street, that lead to the terminal on the south side.

This route currently serves hundreds of businesses within the industrial port on the east side as well as hundreds of residences and some commercial operations on the west side. See **Appendix 5** for the primary land uses along this route.

Existing Vehicular Traffic Along Route 18

Available traffic data from MassDOT was collected for this route. Annual average daily traffic (AADT) ranged between 48,600 and 23,700 with the high volumes being in the north and the lowest numbers being in the south. The average of all the AADT traffic counts is 33,330.

Existing truck traffic along Route 18 has been estimated to generate approximately 1,370 trips, which represents 4.0 percent of the average AADT for the traffic route based on MassDOT data for 2007.

PROPOSED VEHICULAR TRAFFIC ALONG ROUTE 18

The proposed South Terminal project at the southern end of Route 18 will generate different amounts of traffic during the three main stages of its construction and use:

1. Construction of the South Terminal (9 months),

2. Use of the Terminal as a staging area for wind turbines (second year), and

3. Use of the Terminal for port shipping operations (third year and beyond).

Each of these uses will generate a different level of truck activity along Route 18 as shown in the following table:

Table 2. Vehicle and Truck Trips Along Route 18

	AADT(1)	Cumulative	% Increase	Trucks	Cumulative	% Increase
Existing	34,240 (2)			1,370 (3)		
Stage 1	168	34,408	0.5	168	1,538	12.3
Stage 2	0	34,240	0.0	0	1,370	0.0
Stage 3	42	34,282	0.1	42	1,412	3.1

1. AADT: Average Annual Daily Traffic

2. Source: MassDOT, Average of Route 18 AADT, 2004 – 2005.

3. Source: MassDOT, Truck Peak Hour and Average Day History, 2007.

Truck traffic will generate only a half percent increase over existing traffic and increase 12.3 percent over existing truck traffic during Stage 1, the construction of the South Terminal. When the terminal is used for wind turbine lay down area during Stage 2, there will not be any additional vehicular traffic over the current amounts. During Stage 3, there will be a 0.1 percent increase in AADT counts or 3.1 percent increase over existing truck counts.

8.3 Environmental Justice Effects

8.3.1 Direct and Indirect Effects

Proposed Action and Community Response

As discussed above, the CoC impact area is considered to have Environmental Justice (EJ) areas because significant portions of its population are made up of minorities and low income people.

The proposed South Terminal expansion is a compatible land use with the surrounding community and similar to existing industrial port uses that are located along New Bedford's waterfront. The South Terminal expansion has been proposed for some type of waterfront industrial use as part of the development of the New Bedford Fairhaven Municipal Harbor Plan, which was approved by the State and City in June 2010. During the review and approval process, there were a considerable number of community meetings that identified this project as well as other port development projects. Fort Point Associates, Inc (FPA) led the consultant team and was responsible for overall project planning and public participation. According to FPA, there were no concerns or objections raised about this project during the public review process. The following is a summary of the public process associated with the preparation of the harbor plan:

The Harbor Plan Renewal Committee had thirteen (13) members - seven from New Bedford and six from Fairhaven. Six New Bedford members were named by the Mayor and the seventh by the President of the City Council. The Fairhaven Town Selectmen named the six Fairhaven members. The Committee met approximately monthly over the period of Plan development, commencing in February 2008 until August 2008 and than during review and approval of the draft plan in the spring of 2009. All Committee meetings were open to the public. The Committee reviewed the consultants' analyses and findings and provided overall policy direction and guidance in shaping the Harbor Plan.

Four public workshops and two general public meetings were held. The workshops focused on the commercial fishing industry, dredging, recreational boating, and tourism/public access/environmental issues. A general public meeting was held near the beginning of the process to inform the public about the goals and objectives of the renewal, to obtain preliminary input and an update on the planning process, and to offer an opportunity for the public to contribute to shaping overall project direction. A second public meeting was in May 2009 to review the draft plan with interested individuals and organizations. Notices were placed on the Harbor Development Commission website and in the local newspaper, emails sent out and flyers posted to advertise workshops and public meetings. Over 45 individual interviews were held with key waterfront harbor stakeholders who offered a broad range of perspectives on harbor issues and activities.

Furthermore, the project will bring in significant benefits to the surround community, including enhancing the local economy and bringing increased employment opportunities and tax revenues to the area.

As a result of the proposed South Terminal project, there will be a slight increase in truck traffic over existing traffic due to the trucking needs during its construction and operation after it is constructed.

ANALYSIS OF THE POTENTIAL FOR DISPROPORTIONATE EFFECTS

Stage 1 Construction Impacts – Traffic, Air, and Noise

During the construction (Stage 1) of the project, all the EJ communities along Route 18, which include the project site, may experience a temporary increase in traffic, air, and noise impacts from construction vehicles because of their location and proximity. The average annual daily traffic (AADT) during this nine-month construction period will increase less than one half percent over existing traffic. Noise levels, in general, do not increase proportionally with increases in traffic due to the existing noise levels and any increases are expected to be minimal. Air quality impacts are expected to be minor since the construction truck use of Route 18 will be spread over the course of the day and will not be concentrated at any one time or place. Furthermore, the Project will develop a Construction Management Plan (CMP) to minimize construction-related transportation impacts. The CMP will include measures to control time of route use, methods to control fugitive dust, wash down controls, measures to reduce potential emissions, and related best management practices to reduce traffic and construction impacts. Therefore, no disproportionately high and adverse health or environmental effects due to traffic, air, or noise impacts are expected within the EJ communities along Route 18.

Stage 2 Impacts – Traffic, Air, and Noise

During the use of the project area for wind turbine assembly, which will be approximately one year, no additional trucks are expected since the wind turbine components will be brought to and taken from the site by ocean going vessels. No traffic, air, or noise impacts are expected within the EJ communities along Route 18. Therefore, the use of the terminal during this stage does not create disproportionately high and adverse human health effects on EJ populations.

Stage 3 Impacts – Traffic, Air, and Noise

During Stage 3, the project site is expected to be used for break bulk operations and generate relatively small amount of truck traffic. Due to the relatively minor amount of traffic (approximately 0.1 percent increase) over existing traffic, traffic, air, and noise impacts are expected to be minimal. Therefore, no disproportionately high and adverse health or environmental effects due to traffic, air, or noise impacts are expected within the EJ communities along Route 18.

Cumulative Impacts – Traffic, Air, and Noise

The primary sources of air quality and noise impacts to the EJ communities to the west of Route 18 arise directly or indirectly from port activities, including vessel activities, seafood processing and cargo activities. Over the past several decades there have been significant year to year variations in the number of fishing vessels in the harbor, the pounds of seafood landed and processed and the tons of freight handled at local port facilities. These year to year variations are part of the normal functioning of the port and relate to economic conditions and natural resource cycles.

Fishing vessels as a source of noise and air quality impacts from idling engines has diminished in recent years with increased restrictions on the number of days at sea allowed for each vessel and by retirement of older fishing vessels in the fleet. The City of New Bedford is working to provide shoreside power at City owned fishing vessel docks to further minimize the need to run engines and generators while at the dock. Further, fishing vessels are located generally 1500 feet or more from EJ communities and thus would have little to no impact.

Truck traffic volume, and related noise and air quality impacts, derives directly from the volume of products shipped in and out of the port. While these volumes vary over time, the number of trucks involved in supporting existing conditions in New Bedford Harbor is so much greater than those from the proposed project that the change in impacts would be minimal. In the context of the Route 18 reconstruction project now under design, the levels of service (LOS) along Route 18 are at or above LOS D, suggesting that air quality impacts from idling vehicles will be minimal. In fact, the project will include signal timing to improve traffic flow, while making the highway more pedestrian friendly. Cumulative impacts from noise are similarly expected to be minimal as the overall increase in traffic in the long term is expected to be a 0.1 percent increase in average daily vehicular traffic or a 3.1 percent increase over average daily truck traffic. Using the inverse square law of calculating sound levels, such a small increase in noise generation would not produce a noticeable change in overall levels of sound as measured in dBA. For example, a doubling of traffic would result in only a 3 dBA increase in noise levels.

Given that the impacts of proposed project alone are insignificant, the cumulative impacts of continued port operations and the proposed project are expected to be insignificant as well.

MITIGATION MEASURES

The proposed South Terminal project, which is still going through its approval process, will have additional public input. This input will inform the residents of the adjacent EJ communities with descriptive information on flyers and notices in the appropriate language (Portuguese, Spanish, etc.). One or more community meetings will be held in the affected neighborhoods.

During this process, traffic concerns identified by the public will be addressed. For example, the state is currently improving intersections along Route 18 near the State Pier to allow better access to the industrial waterfront. Community concerns about other intersections may improve their use and reduce impacts.

A construction management plan will be required as part of the development. As explained above, this will ensure that the measures are implemented to reduce traffic and air quality impacts as a result of the project.

Response to USEPA Comment Number 9. - Flood Plain Impacts

Construction of the South Terminal CDF will result in minor flood storage loss due to filling within the footprint of the facility. USEPA asked us to assess the impact of the loss of flood storage volume, particularly under the circumstance of a major coastal storm when the New

Bedford Hurricane Barrier would be closed and heavy rain is expected within the watershed for New Bedford Harbor. This analysis has been completed utilizing a combination of 100-year flood elevations associated with FEMA flood maps as well as an analysis of the impact of filling within New Bedford Harbor conducted by the US Army Corps of Engineers.

The US Army Corps of Engineers assessed the potential impacts that filling and diking may have upon the elevation of flood levels within New Bedford Harbor when the New Bedford Hurricane Barrier is closed and heavy rains are expected within the document entitled "Hydrology of Floods, New Bedford Harbor, Massachusetts" completed by the Hydrologic Engineering Section of the Water Control Branch, Engineering Division of the Department of the Army, Corps of Engineers, New England Division, dated September 1987. This document states that "for every 100 acres of harbor area lost above +2.0 feet NGVD, but below +6.0, either by diking or filling, there will be a resulting rise in project design flood level of about 0.2 feet." 100 acres lost between +2.0 feet and +6.0 feet (4 feet of filling over 100 acres) equates to approximately 400 acre-feet, the flood storage loss of which is estimated to result in a rise in flood level within New Bedford Harbor of 0.2 feet.

The following table outlines the volume of material that will be placed within the footprint of the facility between elevation +2.0 and elevation +6.0 NGVD as follows:

Elevation	Area Within Project Footprint (ft^2)	Average Area (ft^2)	Average Volume (yd^3)
+2.0 NGVD	255475	268235	9934.63
+3.0 NGVD	280995	290990	10777.41
+4.0 NGVD	300985	307308.5	11381.80
+5.0 NGVD	313632	324177	12006.56
+6.0 NGVD	334722	0	0
		TOTAL (yd^3):	**44100.40**

Where:

Area within Project Footprint = Area within the footprint of the facility at the noted elevation.

Average Area = Average between two successive elevations (for example, average between the area of the footprint of the facility at +2.0 NGVD and +3.0 NGVD).

Average Volume = Average Area X 1 Foot (in cubic yards).

The analysis indicates that 44,100 cubic yards of fill equates to approximately 27.33 acre feet of fill material that will be placed between elevation +2.0 and elevation +6.0 NGVD due to the South Terminal CDF project. Therefore, 27.33 acre-feet of flood storage loss equates to a rise in project design flood level of approximately **0.01367 feet**, or **0.164 inches**.

In order to illustrate the impact that a 0.164 inch change in flood elevation would have upon the City of New Bedford, a location was chosen within New Bedford upon which to assess the impact of the vertical change in flood storage elevation (a location at North Terminal along the New Bedford waterfront). A plan of the location and a cross-section of the area is attached as **Appendix 6**. The FEMA flood map shows that the 100-year flood elevation within New

Bedford Harbor is at the elevation of +5 NAVD 88. The location in question was chosen because the area is relatively flat and is near in elevation to the FEMA 100-year flood elevation (between +4 and +6 NAVD 88); therefore, a change in flood elevation is most likely to have the greatest horizontal change in flood water encroachment in this location, and other locations are likely to be impacted less than this location. As can be seen on the cross-section, a vertical change in flood elevation of +0.164 inches, results in a corresponding horizontal flood encroachment of **11.28 inches.** Please note that this represents the horizontal encroachment during a worst-case flooding event, and is analyzed at a representative worst-case location, where the flood elevation occurs within a flat area. *Other areas within New Bedford Harbor should see significantly less encroachment (if any), either because the 100 year flood elevation is below existing land elevation, or because existing land elevation is steeper than the relatively flat study location. Therefore, the anticipated rise in flood elevation due to filling due to construction of the South Terminal CDF is unlikely to have an adverse impact to the surrounding floodplain.*

Response to USEPA Comment Number 10. - Compensatory Mitigation

Within the mitigation proposal submitted thus far to USEPA, two items include proposed work within an area designated as OU-3 by the Record of Decision for the New Bedford Superfund Site:

- Planned enhancement to 16.1 acres of near-shore, shallow, subtidal areas via the sequestration of PCBs in sediment outside of the Hurricane Barrier at the OU3 New Bedford Superfund Site; and

- Historic enhancement to 18.9 acres of near-shore, shallow, subtidal areas in 2005 via the sequestration of PCBs in sediment outside of the Hurricane Barrier at the OU3 New Bedford Superfund Site.

Within the more detailed descriptions for the work associated with those two proposals, the following statements are made: "*Either remediation or capping of the OU-3 area is part of the New Bedford Superfund Record of Decision. Capping this area not only will have significant environmental benefits, but will complete a significant task associated with Superfund Cleanup, and will save significant costs and logistical difficulties for USEPA*." **Please note that this statement was NOT made for the 11.8 acre area that was presented as a primary location for enhancement/mitigation for intertidal and shallow-water essential fish habitat and/or tern foraging grounds.** The 11.8 acre enhancement/mitigation work is entirely new work that is not required to be done, and therefore should be fully credited as mitigation. This statement is only applicable to areas within OU-3 that contain concentrations of PCBs above 50 mg/kg. The approximate area of OU-3 that was delineated as "to be capped" during the Phase II Navigational Dredge Project is approximately 35 acres in size. Only 4.8 acres of the "to be capped" area within OU-3 contains PCBs above 50 mg/kg. According to the as-built plan for the capping of OU-3 during Phase II, it appears that the entire 4.8 acre area that contained PCB concentrations above 50 mg/kg was capped in 2005 (see **Appendix 7** for a figure showing the delineation of the 50 mg/kg area within the greater OU-3 area).

As discussed with USEPA, USEPA does not grant mitigation credit for work that is required to be completed; however, in this case, USEPA was required to remediate the 4.8 acre area under the 1998 Record of Decision, and the New Bedford Harbor Development Commission capped the area, through funding granted by the Commonwealth of Massachusetts. Additionally, capping of the material had the additional environmental benefit of not only sequestering PCB contaminated sediment, but also raising in elevation the area, such that it enhanced the habitat by making the area more suitable for Essential Fish spawning and foraging, as well as foraging by avian wildlife. Therefore, it is currently unclear exactly how much credit may be granted for this 4.8 acre area; however, the area should be broken out and considered separately. Therefore, the above-listed two mitigation proposals are broken into three proposals as outlined below:

- Planned enhancement to 16.1 acres of near-shore, shallow, subtidal areas, which contain PCB concentrations below 50 mg/kg, via the sequestration of PCBs in sediment outside of the Hurricane Barrier at the OU3 New Bedford Superfund Site; and
- Historic enhancement to 14.1 acres of near-shore, shallow, subtidal areas in 2005, which contain PCB concentrations below 50 mg/kg, via the sequestration of PCBs in sediment outside of the Hurricane Barrier at the OU3 New Bedford Superfund Site.
- Historic enhancement to 4.8 acres of near-shore, shallow, subtidal areas in 2005, which contain PCB concentrations above 50 mg/kg, via the sequestration of PCBs in sediment outside of the Hurricane Barrier at the OU3 New Bedford Superfund Site.

Please note that these three areas do not represent the full mitigation proposal, which was forwarded to USEPA in a separate document, and only represent a clarification of the two individual proposals (divided into three separate proposals herein). In addition, even if the EPA were to disregard these items entirely (which it should not do), the other mitigation proposed, which is new and is not required, is sufficient to mitigate the impacts of the project.