DRAFT
FIFTH EXPLANATION OF SIGNIFICANT DIFFERENCES (ESD)
FOR THE
NEW BEDFORD HARBOR SUPERFUND SITE
UPPER AND LOWER HARBOR OPERABLE UNIT 1 (OU1)
NEW BEDFORD, MASSACHUSETTS
APRIL 2015

EPA REGION 1

I. INTRODUCTION

A. SITE NAME AND LOCATION

New Bedford Harbor Superfund Site (Site)
Upper and Lower Harbor Operable Unit 1 (OU1)
Bristol County, Massachusetts

B. LEAD AND SUPPORT AGENCIES

Lead Agency:	United States Environmental Protection Agency (EPA) Region 1
Contact:	Ginny Lombardo, Team Leader (617) 918-1754
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	David Lederer, Remedial Project Manager (617) 918-1325
	Kelsey O'Neil, Community Involvement Coordinator (617) 918-1331
Support Agency:	Massachusetts Department of Environmental Protection (MassDEP)
Contact:	Joseph Coyne, Project Manager (617) 348-4066

C. LEGAL AUTHORITY FOR EXPLANATION OF SIGNIFICANT DIFFERENCES

Section 117(c) of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), 42 U.S.C. § 9617(c), and Section 300.435(c)(2)(i) of the National Contingency Plan (NCP), 40 CFR § 300.435(c)(2)(i), require that, if any remedial action is taken after adoption of a final remedial action plan, and such action differs in any significant respect from the final plan, EPA shall publish an explanation of the significant differences (ESD) and the reasons such changes were made. While not required by Section 300.435(c)(2) of the NCP, EPA is holding a public comment period on this draft ESD from April 24, 2015 to May 26, 2015 to ensure that all interested parties have an opportunity to provide input to EPA before its final decision on this modification to the remedy.

D. SUMMARY OF ESD

The Record of Decision (ROD) for OU1 (also known as the OU1 ROD or the 1998 ROD) was signed on September 25, 1998. The cleanup plan selected in the OU1 ROD called for dredging of approximately 450,000 cubic yards of *in situ* sediment in the Upper Harbor and Lower Harbor

contaminated with polychlorinated biphenyls (PCBs) above the selected cleanup levels. The OU1 ROD called for the construction of four shoreline confined disposal facilities (CDFs) (CDFs A, B, C, and D) to contain and isolate in perpetuity the dredged sediment. The CDFs were conceptually located in PCB-contaminated areas to avoid the need to dredge an additional approximately 126,000 cubic yards of *in situ* sediment, which instead would have been contained within the footprint of the CDFs.

Since that time, EPA has gathered additional site information and refined the cleanup approach for the Upper and Lower Harbor areas through four prior ESDs. ESD1 provided for the use of the Pilot CDF (also referred to as the Debris Disposal Area (DDA)) at EPA's Sawyer Street facility in New Bedford as an interim TSCA (Toxic Substances Control Act) facility for PCB-contaminated sediment. ESD2, along with ESD4, eliminated CDF D, and instead selected a combination of off-site disposal and the construction and use of a Lower Harbor Confined Aquatic Disposal (CAD) cell (LHCC) for the permanent disposal of the sediment slated for CDF D. ESD3 addressed temporary storage of dredged material in a lined sediment storage cell, Cell #1, at EPA's Sawyer Street facility. ESD4 also included an increased estimate of total *in situ* sediment above the 1998 ROD's action levels, indicating approximately 900,000 cubic yards of *in situ* contaminated sediment to be dredged to meet the sediment cleanup levels.

Through this draft fifth ESD to the OU1 ROD, EPA is proposing to modify the remedy for the Upper and Lower Harbor by eliminating the construction of the planned CDFs A, B and modified-C and selecting off-site disposal for the sediment slated for disposal in those planned confined disposal facilities. As conceptually planned under the OU1 ROD, CDFs A, B and C were to be shoreline structures (see attached Figure 21a from the OU1 ROD). Note that CDF C was planned for construction at and around the location of the pilot study CDF (see discussion in Section II.A, below, regarding the creation and use of the pilot study CDF). As such, the Pilot CDF is located within the footprint of the conceptual location of CDF C.

Further, through this draft fifth ESD, EPA is confirming that the Pilot CDF is protective, and is proposing to make this Pilot CDF a permanent TSCA disposal facility. Monitoring and modeling have confirmed that the Pilot CDF is suitable as a permanent TSCA disposal facility. As part of the cleanup plan, following completion of remedial dredging activities, the Pilot CDF would be covered with a clean cover/cap meeting all applicable federal and state standards that is technically equivalent to a cap conforming to the design requirements at 40 CFR § 761.61(a)(7).

E. PUBLIC COMMENT PERIOD

This draft ESD is being issued for public comment. A formal public comment period on this draft ESD will run from April 24, 2015 to May 26, 2015. During this period, EPA will accept written and e-mailed comments on this draft ESD. Comments should be sent:

via mail to: Ginny Lombardo, Team Leader, New Bedford Harbor Superfund Site
U.S. EPA Region I
Office of Site Remediation and Restoration (OSRR7-1)
5 Post Office Square, Suite 100
Boston, MA 02109-3912

via email to: lombardo.ginny@epa.gov.

EPA is specifically seeking public comments on EPA's draft determination under the Clean Water Act that the OU1 remedy as proposed to be modified to include off-site disposal for the approximately 175,000 cubic yards of *in situ* PCB-contaminated sediment previously slated for disposal in CDFs A, B and modified-C and the use of the Pilot CDF as a permanent disposal facility for approximately 19,000 cubic yards of PCB-contaminated sediment and debris and incidental sand is the least environmentally damaging practicable alternative to prevent contaminated sediment from impairing wetlands and aquatic habitats at the New Bedford Harbor Superfund Site. For further discussion, see Section IV, below.

In addition, EPA confirms its prior findings under TSCA that the remedy will not pose an unreasonable risk of injury to health or the environment. In accordance with 40 CFR § 761.61(c) of the TSCA regulations, EPA must make a determination that the selected cleanup alternative will not pose an unreasonable risk of injury to health or the environment. TSCA determinations for the remedy were previously made in the 1998 ROD (page 38); ESD1 (Section III.C); ESD2 (Appendix A); ESD3 (Section III); and ESD4 (Attachment B). Those TSCA determinations remain effective for the remedy as proposed to be modified by this draft ESD with the exception of the ESD2 TSCA determination, which will be superseded by the attached draft determination under TSCA. EPA requests public comment on EPA's draft determination under TSCA that off-site disposal for the approximately 175,000 cubic yards of *in situ* PCB-contaminated sediment previously slated for disposal in CDFs A, B and modified-C and the use of the Pilot CDF as a permanent disposal facility for approximately 19,000 cubic yards of PCB-contaminated sediment and debris and incidental sand will not pose an unreasonable risk of injury to health or the environment so long as the conditions set forth in the draft TSCA Determination are maintained. For further discussion, see Section VI, below.

The final ESD will include a copy of all comments received during the comment period, along with EPA's responses to those comments and a description of any changes to the ESD since the issuance of the draft ESD.

F. PUBLIC RECORD

EPA will consider and respond to all formal comments received during the comment period before issuing the final ESD. EPA's responses to these comments will be included in the final ESD. The public comments and EPA's responses to them will be made part of the public administrative record for the Site that is available for public review at the two locations listed below:

EPA Region 1 Records Center
5 Post Office Square
Boston, MA 02109-3912
(617) 918-1440
Monday – Friday 9:00 am – 5:00 pm

New Bedford Free Public Library
613 Pleasant Street, 2nd Floor Reference Department
New Bedford, MA 02740
(508) 961-3067
Monday – Thursday: 9:00 am – 9:00 pm
Friday – Saturday: 9:00 am – 5:00 pm

II. SUMMARY OF SITE HISTORY, CONTAMINATION PROBLEMS AND SELECTED REMEDY

A. SITE HISTORY AND ENFORCEMENT ACTIVITY

Concerns about PCB-contaminated sediment and seafood in and around New Bedford Harbor were first identified in the mid-1970s as a result of EPA region-wide sampling programs. The manufacture and sale of PCBs was banned by TSCA in 1978. In 1979, the Massachusetts Department of Public Health promulgated regulations prohibiting fishing, shellfishing and lobstering within the Site due to elevated PCB levels in area seafood. Due to these concerns, the Site was proposed for the Superfund National Priorities List (the NPL) in 1982, and finalized on the NPL in September 1983. Pursuant to 40 CFR § 300.425(c)(2), the Commonwealth of Massachusetts (Commonwealth) nominated the Site as its priority site for listing on the NPL.

EPA's site-specific investigations began in 1983 and 1984. Site investigations continued throughout the rest of the 1980s and early 1990s, including a pilot dredging and disposal study in 1988 and 1989 (which resulted in the creation of a pilot study CDF and disposal of contaminated sediment into the pilot study CDF, discussed in Section III.B, below), a baseline public health risk assessment in 1989, and computer modeling of site cleanup options and an updated feasibility study for the Site completed in 1990. Thousands of additional environmental samples have been taken since then to support the implementation of the remedy.

Collectively, these investigations identified the former Aerovox facility on Belleville Avenue in New Bedford, an electrical manufacturing plant located on the western shore of New Bedford Harbor, as the primary source of PCBs to the Site. PCB wastes were discharged from the facility's operations directly to the Upper Harbor through drainage trenches and discharge pipes, or indirectly throughout the site via CSOs (combined sewer overflows) and the City's sewage treatment plant outfall. PCBs were also released to the Harbor from the Cornell Dubilier Electronics, Inc. (CDE) facility just south of the hurricane barrier in New Bedford.

Based on the results of these investigations, state and federal enforcement actions were initiated against parties who owned and/or controlled both the Aerovox and CDE facilities, as well as the City of New Bedford (though the City is not a Potentially Responsible Party for this Site), pursuant to CERCLA, Massachusetts General Law c.21E, and other federal and state environmental statutes. For a summary of these enforcement actions and resulting settlements, please see Section II of the 1998 ROD (http://www.epa.gov/region1/superfund/sites/newbedford/38206.pdf). The site cleanup is being managed by EPA, in partnership with the U.S. Army Corps of Engineers and MassDEP.

In April 1990, EPA issued a ROD for the Hot Spot Operable Unit of the Site (OU2). The Hot Spot ROD called for dredging and on-site incineration of sediment above 4,000 ppm (parts per million) PCBs in the vicinity of the Aerovox facility. Dredging and placement of this sediment—about 14,000 cubic yards in volume and 5 acres in area—into a storage cell built at EPA's Sawyer Street facility (Cell #1) began in April 1994 and was completed in September 1995. Pursuant to an April 1999 amendment to the 1990 Hot Spot ROD, the contaminated sediment was removed from the storage cell, dewatered, and transported to an offsite landfill for permanent disposal. This final offsite disposal phase of the Hot Spot remedy was completed in May 2000.

As summarized above, EPA issued the OU1 ROD for cleanup of the Upper and Lower New Bedford Harbor areas in September 1998. As discussed above, the 1998 ROD originally included four shoreline CDFs (CDFs A, B, C and D), but has been modified with ESDs issued in 2001, 2002, 2010 and 2011. Section II.C, below, describes the OU1 remedy in more detail.

In September 2013, the U.S. District Court approved a landmark $366.25 million cash-out settlement with AVX Corp., whose corporate predecessor, Aerovox Corp., owned and operated the Aerovox facility (through "reopeners" of a 1992 settlement with AVX). Due to prior limitations in Superfund funding (which had typically been $15 million per year for this Site), the project was expected to take another 40 years. With this settlement, this project will be accelerated to be substantially completed within 5 to 7 years. With the accelerated pace of cleanup, EPA will shortly need to build CDFs A, B and modified-C for the disposal of approximately 175,000 cubic yards of *in-situ* PCB-contaminated sediment, or select an alternative disposal method, which EPA proposes in this draft ESD5.

B. Contamination Problems

As noted above, the main site concern is the widespread PCB contamination in New Bedford Harbor sediment, especially in the Upper Harbor. PCB levels in sediment generally decrease from north to south. Because of this sediment contamination, PCBs are also found in elevated levels in the water column and in local seafood. In addition to the PCB contamination, Harbor sediment also contains high levels of other contaminants, including heavy metals (e.g., cadmium, chromium, copper and lead). High levels of solvents (e.g., trichloroethylene) have also been identified in sediment adjacent to the Aerovox facility. However, because many of these other contaminants are co-located with PCBs, the OU1 ROD contains action levels only for PCBs.

As described more completely in Sections V and VI of the 1998 ROD, EPA found the PCB contamination to result in unacceptable risks to human health and the environment. The biggest human health risk was found to be from frequent (e.g., weekly) ingestion of local seafood, although unacceptable risks were also found from frequent human contact with, or incidental ingestion of, PCB-contaminated shoreline sediment. Ecologically, EPA's investigations concluded that the Harbor's marine ecosystem is severely damaged from the widespread sediment PCB contamination.

C. Summary of Remedy Originally Selected in the 1998 ROD as Modified by the 2001, 2002, 2010 and 2011 ESDs

The 1998 ROD cleanup plan called for dredging of approximately 450,000 cubic yards of *in situ* sediment in the Upper Harbor and Lower Harbor with PCBs above the selected cleanup levels:

- Upper Harbor subtidal and mudflat areas: 10 ppm PCBs
- Lower Harbor subtidal and mudflat areas: 50 ppm PCBs
- Intertidal areas with abutting residential land use: 1 ppm PCBs
- Intertidal areas with public access of abutting recreational land use: 25 ppm PCBs
- Saltmarsh areas with little or no public access: 50 ppm PCBs.

The OU1 ROD called for the construction of four shoreline confined disposal facilities (CDFs) (A, B, C, and D) to contain and isolate the dredged sediment, associated water treatment, capping of the CDFs, long-term monitoring and maintenance, and institutional controls. The CDFs were conceptually located in PCB-contaminated areas to avoid the need to dredge an additional approximately 126,000 cubic yards of *in situ* sediment, which instead would have been contained within the footprint of the CDFs. The required storage volume of the four CDFs was estimated to be 40% greater than the estimated 450,000 cubic yards needing dredging (i.e., 630,000 cubic yards) to account for the anticipated bulking or expansion of the sediment due to the hydraulic dredging and CDF disposal process. The ROD also required that institutional controls, such as the state-mandated fish closure areas, be in place until PCB levels in seafood reach acceptable levels for human consumption.

In September 2001, EPA issued an ESD revising the OU1 remedy (ESD1). ESD1 reduced the footprint of CDF D, revised the CDF D wall design, incorporated the use of mechanical dewatering for the dredged sediment (to reduce the disposal volume), and incorporated a rail spur for use in the cleanup efforts. Benefits of dewatering are detailed in ESD1 and include the production of a dewatered sediment "filter cake" that could be placed mechanically into the CDFs and is drier than the slurry from hydraulic dredging. This would reduce the time required for consolidation, capping and beneficial reuse of the final CDFs. ESD1 also provided for the use of the Pilot CDF at EPA's Sawyer Street facility as an interim TSCA storage facility for PCB-contaminated sediment. This ESD also noted that the total estimated volume of *in situ* sediment to be dredged could be as high as 800,000 cubic yards.

In August 2002, EPA issued the second ESD revising the OU1 remedy (ESD2). ESD2 eliminated the construction of the planned 17-acre CDF D (the largest of the four CDFs), and instead selected off-site disposal for the dredged and dewatered sediment slated for that CDF. A smaller shoreline facility, Area D, replaced CDF D in the same area to support both the sediment dewatering building and the rail car and truck loading area required for off-site disposal of the dewatered sediment (no contaminated sediment has been disposed of within the Area D facility). ESD2 also added the desanding operation at EPA's Sawyer Street facility as a component of the remedy, which improved the efficiency of the dewatering operation.

In March 2010, EPA issued the third ESD revising the OU1 remedy (ESD3). ESD3 documented the use of Cell #1 (located at EPA's Sawyer Street facility) for temporary storage of PCB- and VOC (volatile organic compound)-contaminated sediment from OU1.

In March 2011, EPA issued the fourth ESD revising the OU1 remedy (ESD4). ESD4 incorporated the construction and use of the LHCC for permanent disposal of approximately 300,000 cubic yards of mechanically dredged sediment. The fourth ESD also updated the volume of total *in situ* contaminated sediment to be addressed to meet cleanup levels to be approximately 900,000 cubic yards, of which approximately 425,000 cubic yards would be disposed of off-site[1], approximately 300,000 cubic yards would be disposed of in the LHCC, and approximately 175,000 cubic yards would be disposed of in remaining CDFs A, B, and C.[2]

In January 2014, EPA modified the conceptual design of CDF C such that no CDF structure would be constructed within the area between the southern boundary of Sawyer Street and Coggeshall Street or within the Acushnet River adjacent to these properties. Therefore, the overall size of CDF C could be limited to only the area adjacent to the Pilot CDF. This remedial design change was determined to be a non-significant or minor change. This change was estimated to result in a reduction in capacity of CDF C by one-half to two-thirds the original conceptual design capacity (CDF modified-C).

III. Description of Significant Differences and the Basis for these Differences

A. Selection of Off-Site Transportation and Disposal of Contaminated Sediment that had been Slated for Disposal in Confined Disposal Facilities A, B and Modified-C

As detailed above, the New Bedford Harbor OU1 remedy currently includes a combination of technologies for disposal of contaminated sediment from the Upper and Lower Harbors, including shoreline Confined Disposal Facilities (CDFs), a Confined Aquatic Disposal (CAD) cell, a pilot cap area, and off-site disposal. With respect to the CDFs, as discussed in detail in ESD2, CDF D, the largest of the four planned CDFs, was eliminated due to cost and implementability issues, and EPA indicated that it would re-evaluate the use of CDFs A, B and C going forward. Consistent with ESD2 and in responses to comments on the 2013 cash-out settlement with AVX, EPA notified the public that the Agency would evaluate alternative disposal options and consider other protective, cost-effective alternatives for the disposal of the approximately 175,000 cubic yards of *in situ* contaminated sediment, other than in the selected CDFs A, B and C.

It is important to note that included in the approximately 175,000 cubic yard estimate of *in-situ* contaminated sediment to be addressed under this ESD is approximately 48,000 cubic yards of contaminated intertidal vegetated material, with the rest (approximately 127,000 cubic yards) being non-vegetated *in-situ* subtidal sediment. This vegetated material, located in intertidal saltmarsh and fringe wetland areas, will be mechanically excavated, likely from the shoreline, rather than hydraulically dredged given its location. Due to the presence of vegetation and the nature of this

[1] Included in this estimate of 425,000 cubic yards is approximately 10,000 cubic yards of contaminated sediment in the Outer Harbor just south of the New Bedford Hurricane Barrier near the New Bedford shore that have been addressed by a pilot underwater cap.

[2] It is important to note that these volumes represent the amount of sediment to be dredged, not the reduced volumes of material that will be disposed of after desanding and dewatering processes are applied to the dredged sediment. See Section III.A, below, for further discussion of this issue.

material, this contaminated sediment volume would likely not be processed through desanding or dewatering equipment, but instead would require stabilization through the addition of Portland cement. As a result of stabilization, the approximately 48,000 cubic yards of contaminated intertidal vegetated material would increase by 13% in volume to approximately 54,000 cubic yards. As a result, only approximately 127,000 cubic yards of the approximately 175,000 cubic yards of *in-situ* PCB-contaminated sediment will be subject to desanding and dewatering operations, which will reduce its volume to approximately 83,000 cubic yards.[3] That means the volume of contaminated sediment under evaluation in this ESD for disposal includes the approximately 54,000 cubic yards of stabilized vegetated contaminated sediment and approximately 83,000 cubic yards (approximately 127,000 cubic yards of *in situ* non-vegetated subtidal sediment x 0.65 conversion factor), for a total estimated disposal volume of approximately 137,000 cubic yards.

In April 2015, EPA issued a Focused Feasibility Evaluation (FFE). The FFE analyzed disposal of the approximately 175,000 cubic yards of *in situ* PCB-contaminated sediment via the currently selected disposal option of CDFs versus a proposed alternative disposal option of off-site disposal. For clarity, a description of both disposal options is provided below along with a brief evaluation of a few of the NCP's nine criteria applied to both options.[4] A more complete discussion of the two options is provided in the FFE.

- A CDF is an engineered structure consisting of dikes or other structures that would enclose a disposal area for containment of the stabilized vegetated contaminated sediment, sand and dewatered sediment filter cake. As conceptually planned under the OU1 ROD, CDFs A, B and modified-C were to be shoreline structures. For the purpose of the FFE and this ESD, primarily to simplify the cost estimate, it was assumed that only one shoreline CDF would need to be constructed to accommodate the 175,000 cubic yards of *in situ* PCB-contaminated sediment. As detailed above, the storage volume or "air space" of the CDF would need to be approximately 137,000 cubic yards with additional adequate capacity for interim and final cap material, for a total of 145,000 cubic yards.

- Off-site disposal is the transportation and permanent disposal of the stabilized vegetated contaminated sediment, sand and dewatered sediment filter cake at a facility that is permitted to accept and dispose of the material. Prior to disposal, the material would be characterized and classified as either a non-hazardous or hazardous material based on RCRA regulations and as either waste required (≥50 ppm PCBs) or not required (<50 ppm PCBs) to be sent to a TSCA-permitted facility. Disposal of these contaminated materials via off-site transportation and disposal provides for the disposal of material with ≥ 50 ppm PCB at a TSCA-permitted facility or a RCRA hazardous waste-permitted landfill and disposal of material with <50 ppm PCBs at a state-permitted non-hazardous waste RCRA Subtitle D

[3] To account for desanding and dewatering operations, a conversion factor of 0.65 is applied to convert *in situ* subtidal sediment to separated sand and dewatered sediment filter cake.

[4] While EPA's "A Guide to Preparing Superfund Proposed Plans, Records of Decision, and Other Remedy Selection Decision Documents" (EPA 540-R-98-031, OSWER 9200.1-23P, July 1999, http://www.epa.gov/superfund/policy/remedy/rods/pdfs/guide_decision_documents_071999.pdf) explained that a new nine NCP criteria analysis is not required for the issuance of an ESD, the FFE has detailed nine criteria analyses for both alternatives as well as a comparative analysis.

landfill. As explained above, the volume of material for off-site disposal would be approximately 137,000 cubic yards.

Disposal via CDFs or off-site disposal are both equally protective of human health and the environment, because under either disposal scenario the contaminated sediment driving the unacceptable risks would be removed, and exposure pathways would be eliminated or controlled. In addition, both disposal alternatives are compliant with applicable or relevant and appropriate requirements (ARARs).

The effectiveness of disposal in CDFs depends on the design, construction, operation, and management of the facility. Institutional controls would be required for CDF properties to ensure the integrity of the caps over time and restrict property uses that could damage the caps and structures. Whereas effectiveness of off-site transportation and disposal at a TSCA-permitted facility is assured as the material is disposed at a facility that is permitted to manage and dispose of PCB-contaminated materials.

Both options include dredging, desanding and dewatering operations that pose short-term impacts to workers from handling and managing contaminated material. There would be more significant short-term impacts to workers and the community during construction of CDFs, as they are conceptually planned adjacent to active residential and commercial properties. For off-site disposal, road transport by truck can result in short-term impacts to the community from truck traffic and to workers from material handling when loading trucks. Rail transport generally presents fewer risks than road transport. The off-site disposal alternative would utilize transportation by rail of the dewatered sediment filter cake to the maximum extent practicable, thereby significantly reducing any short-term impacts.

Design, construction and filling of the CDFs would likely take on the order of five or more years, with interim and then final capping likely adding another one to two years. Operation, maintenance and monitoring of the CDFs would need to be performed in perpetuity. In contrast, off-site transportation and disposal is currently ongoing for disposal of sand and dewatered sediment filter cake for approximately 425,000 cubic yards of *in situ* contaminated sediment in accordance with the current OU1 remedy, and would continue with the off-site disposal alternative for the approximately 175,000 cubic yards of *in situ* contaminated sediment currently slated to be disposed of in CDFs A, B and modified-C. There would be no delay to cleanup operations for the off-site disposal alternative.

While disposal in CDFs has complex engineering and administrative implementability issues, off-site transportation and disposal is readily implementable. There is adequate capacity at existing off-site TSCA-permitted disposal facilities to accommodate the additional PCB-contaminated sediment. Since off-site disposal is currently being used for approximately 425,000 cubic yards of *in situ* contaminated sediment, there are no significant technical or administrative implementability issues expected. In addition, CDFs would require development of beneficial reuse plans for each CDF, but off-site disposal would not have this requirement. The CDFs would have created additional new shoreline properties that would have been available for beneficial reuse to the community, but the creation of such new shoreline properties would also have the potential to

alter shoreline uses for properties abutting the proposed CDFs, both during construction and over the long-term.

The cost estimates discussed herein do not include the costs associated with excavation or dredging and processing of the *in situ* sediment to produce the stabilized vegetated material, sand and dewatered sediment filter cake for disposal. These elements of the remedy are already in place and are not being modified. They are the same preceding operations for either disposal alternative.

The present worth cost of disposal in CDFs A, B and modified-C, including construction, filling, and capping, is estimated as $56 million. A summary of the cost estimate for CDF disposal is included in Table 1. The present worth cost of disposal via off-site transportation and disposal is estimated as $33 million. A summary of the cost estimate for off-site disposal is included in Table 2. Disposal via off-site transportation and disposal at a TSCA-permitted facility would save approximately $23 million over construction and disposal in shoreline CDFs. The actual cost savings is likely greater since the CDF cost estimate was conservatively calculated, primarily to simplify the cost estimate, assuming one CDF would be needed, when two or three CDFs could be necessary, and the cost estimate did not include land acquisition costs.

Considering the potential effectiveness and implementability concerns associated with CDFs, the longer timeframe needed for CDF construction and utilization, and the higher estimated cost of CDF disposal as compared to off-site disposal, EPA proposes, through this draft ESD, to eliminate CDFs A, B and modified-C as a disposal element of the OU1 remedy and instead select off-site disposal for the approximately 175,000 cubic yards on *in situ* contaminated sediment currently slated to be disposed of in CDFs A, B and modified-C.

B. Use of the Pilot Confined Disposal Facility (CDF) as a Permanent TSCA Facility

The Pilot CDF (modified from the original pilot study CDF), located at EPA's Sawyer Street facility, is proposed to be made permanent as a remedial component of the OU1 remedy consistent with the process laid out in ESD1.

A pilot study CDF was constructed along the shoreline just north of the end of Sawyer Street as part of the 1988/89 pilot dredging and disposal study and consisted of approximately six acres, partially on existing upland and partially on newly created land within the adjacent subtidal area.[5] The pilot study CDF, as shown in attached Figure 2-1 from the pilot study report (USACE, 1990), consisted of primary and secondary cells and required the construction of approximately 1,800 linear feet of dike, 700 feet of which was constructed on sediment originally located below the high water line. To accommodate the needs of the ongoing Superfund cleanup, the pilot study CDF was modified over time.

[5] The pilot study CDF initially consisted of an approximately 145,000 square foot primary cell and an approximately 32,500 square foot secondary cell separated by a sheet pile wall, approximately 400 linear feet in length. The initial primary cell of the pilot study CDF was partially filled with approximately 6,100 cubic yards of *in situ* sediment dredged from the cove just north of Sawyer Street and the pilot study CDF (designated as Dredging Area #1).

In the early 1990s, as part of the OU2 Hot Spot ROD implementation, the pilot study CDF was modified to accommodate the Hot Spot water treatment facility and to allow construction of a lined sediment holding cell (Cell #1). Cell #1 was constructed in the western portion of the primary cell. Another sheet pile wall was constructed bisecting the primary cell. Sediment from the original pilot dredging from the cove area that was initially located within the footprint of Cell #1 was relocated and consolidated to the eastern end of the initial primary cell. The eastern portion of the initial primary cell, which is mostly coincident with the newly created land (i.e., filled subtidal area), became known as the Debris Disposal Area (DDA). (See attached Figure 1 from ESD3.) This eastern area, or DDA, is what is now referred to as the Pilot CDF. The Pilot CDF is approximately 1.65 acres.

ESD1 documented the use of the Pilot CDF as an interim TSCA facility for PCB-contaminated sediment. At the time of ESD1, groundwater and air monitoring data, along with surface concentration data and geophysical data, were evaluated and supported the use of the Pilot CDF as an interim TSCA storage facility for PCB-contaminated sediment. ESD1 indicated that groundwater and air monitoring and modeling would continue to confirm the protectiveness of the CDF and that, once all data were in hand, if such data confirmed that the Pilot CDF would be suitable for a permanent CDF, EPA would propose to make the Pilot CDF a permanent TSCA disposal facility.

PCB-contaminated sediment and debris have been disposed at the Pilot CDF over the years. A total of approximately 19,000 cubic yards of materials were disposed in this area from 1989-2014. The weighted average PCB concentration overall of the materials disposed is estimated to be on the order of 200-260 ppm, and such materials had *in situ* PCB levels ranging from non-detect to 23,000 ppm. Other than PCBs, the materials disposed in the Pilot CDF are not classified as hazardous waste under federal and state standards.

Groundwater and air monitoring performed at the Pilot CDF since 1992, along with groundwater modeling, demonstrate that PCBs are not migrating from the Pilot CDF area. See attached Figure 1 from the Sawyer Street Semi-annual Groundwater Monitoring Technical Memorandum showing location of groundwater monitoring wells. As noted in ESD1, underlying the Pilot CDF is a clay layer sandwiched between the Pilot CDF contents and the underlying sands. The clay layer acts as a naturally impermeable barrier to the movement of contaminants from the area. The constructed dike serves as three sidewalls of the Pilot CDF. Due to the type and quantity of materials used to construct the dike, these sidewalls have moderate permeability with an estimated hydraulic conductivity of 3 ft/day. Although these sidewalls are not impermeable, the over 20 years of groundwater monitoring data demonstrate that PCBs are not migrating. The sheet pile wall that serves as the sidewall separating the Pilot CDF from Cell #1 is impermeable. Consistent with the process described in ESD1, since the monitoring and modeling performed to date of the Pilot CDF confirm that PCBs are not migrating from the area and given the subsurface and sidewall features, EPA intends to make the Pilot CDF an element of the final remedy.

EPA is guided by the NCP's preference for treatment of hazardous substances that pose a principal threat. With respect to the sediment dredged from the Harbor, water was removed from the wet sediment prior to disposal, and that water removed from the sediment was treated prior to discharge. The sediment and debris in the Pilot CDF are adequately contained, and the Pilot CDF

has been documented to be protective. Although some sediment with highly elevated *in situ* PCB concentrations has been placed in the Pilot CDF, such sediment is commingled with lower concentration sediment and debris and cannot be segregated. Therefore, further treatment of sediment with highly elevated *in situ* PCB concentrations is not considered practicable and is not necessary to maintain protectiveness.

EPA will continue to utilize the Pilot CDF area as a staging and storage area for sand from the desanding operations and debris generated from dredging operations. There may be additional incidental disposal of sand from the desanding operations in the Pilot CDF over the course of remaining remedial dredging operations. Following completion of remedial dredging activities, the Pilot CDF will require final capping, institutional controls and long-term monitoring and maintenance. The final clean cover/cap, meeting all applicable federal and state standards, will be technically equivalent to a cap conforming to the design requirements at 40 CFR § 761.61(a)(7), and can be designed to be consistent with expected future uses. Institutional controls will be required to restrict reuse of the area to passive recreational use and ensure that the integrity of the cap and the Pilot CDF's sidewalls are maintained for long-term protectiveness. Long-term monitoring and maintenance will include periodic groundwater and air monitoring of the CDF and periodic inspections of the integrity of the cap and sidewalls and effectiveness of institutional controls in protecting the cap and sidewalls.

In Section VI, below, EPA provides its draft determination under TSCA that use of the Pilot CDF as a permanent disposal facility for PCB-contaminated sediment and debris and incidental sand will not pose an unreasonable risk of injury to health or the environment so long as the conditions set forth in the draft TSCA Determination are maintained.

It should be noted that this draft ESD does not alter EPA's decision, as documented in ESD3, to temporarily hold PCB-contaminated and VOC-contaminated sediment in Cell #1. As noted above, Cell #1 was initially constructed as part of the Hot Spot remedy, and Hot Spot sediment was temporarily stored in it from April 1994 to May 2000. This Hot Spot sediment was excavated and disposed off-site in May 2000. Cell #1 is currently used for interim storage of contaminated sediment from the OU1 Harbor cleanup, consistent with ESD3. The material in Cell #1 will be removed and disposed at an off-site TSCA- and/or hazardous waste-permitted facility under the OU1 cleanup plan. Following removal and off-site disposal, the Cell #1 storage area will be decommissioned. Further, as part of Cell #1 decommissioning, EPA will ensure the integrity of the Pilot CDF sheet pile sidewall is retained when the contents of Cell #1 are removed.

IV. APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS (ARARS)

Since off-site disposal and CDFs are already components of the current remedy, the ARARs related to the significant differences outlined in Section III (off-site disposal for the sediment currently slated for disposal in CDFs A, B or modified-C and finalization of the Pilot CDF as a permanent disposal facility) are already included in the OU1 ROD and ESD2. However, former regulations that incorporated requirements of Executive Orders 11988 (Management of Floodplain) and 11990 (Protection of Wetlands) at 40 CFR Part 6, Appendix A, as cited in the 1998 ROD, no longer exist. Federal Emergency Management Agency (FEMA) regulations at 44 CFR § 9, which set forth the policy, procedure and responsibilities to implement and enforce these Executive

Orders, are considered relevant and appropriate. These regulations have been previously cited as an ARAR in ESD4 for the LHCC component of the OU1 remedy. The Pilot CDF will be capped and maintained in compliance with these FEMA regulations within the 500-year flood plain of New Bedford Harbor.

EPA has made a draft determination in accordance with Section 404 of the Clean Water Act and 40 CFR Part 230 that the OU1 remedy as proposed to be modified to include the off-site disposal for the approximately 175,000 cubic yards of *in situ* PCB-contaminated sediment previously slated for disposal in CDFs A, B and modified-C and the use of the Pilot CDF as a permanent disposal facility for approximately 19,000 cubic yards of PCB-contaminated sediment and debris and incidental sand would be the least environmentally damaging practicable alternative. Because the Pilot CDF (approximately 1.65 acres) is much smaller than the conceptually planned size of CDFs A, B and modified-C (on the order of 10 acres), the proposed modified OU1 remedy would have a reduced impact on the aquatic ecosystem. Selection of off-site disposal would eliminate additional filling activity, but would require dredging in the areas where CDFs A, B and modified-C were conceptually planned. A final determination will be made after considering all public comments received by the Agency during the public comment period.

In accordance with Section 761.61(c) of the TSCA PCB regulations, EPA has made a draft determination that off-site disposal for the approximately 175,000 cubic yards of *in-situ* PCB-contaminated sediment slated for disposal in CDFs A, B and modified-C and the use of the Pilot CDF as a permanent disposal facility for approximately 19,000 cubic yards of PCB-contaminated sediment and debris and incidental sand will not pose an unreasonable risk of injury to health or the environment so long as the conditions set forth in the draft TSCA Determination are maintained. The draft TSCA Determination is provided in Section VI, below. A final determination will be made after considering all public comments received by the Agency during the public comment period.

V. SUPPORTING AGENCY COMMENTS

EPA will accept comments on the draft ESD during a formal public comment period. In its final selection of a disposal alternative, EPA will consider comments the State may provide on the draft ESD and ultimately whether the State concurs with or opposes the remedy modification proposed. State comments or other information received from the State may result in the choice of an alternative other than the preferred alternative.

In the Final ESD, EPA will also respond to comments it has received from the public on the draft ESD. EPA may modify or choose an alternative other than the preferred alternative based on comments or other information it receives from the public.

VI. STATUTORY DETERMINATIONS

As part of this draft ESD, in accordance with 40 C.F.R. § 761.61(c) of the TSCA PCB regulations, the Director of the Office of Site Remediation and Restoration, EPA Region 1, has made a draft determination that off-site disposal for the approximately 175,000 cubic yards of *in-situ* PCB-contaminated sediment slated for disposal in CDFs A, B and modified-C and the use of

the Pilot CDF as a permanent disposal facility for approximately 19,000 cubic yards of PCB-contaminated sediment and debris and incidental sand will not pose an unreasonable risk of injury to health or the environment so long as the conditions set forth in the draft TSCA Determination are maintained. The draft TSCA Determination is included as Attachment A.

Also as part of this draft ESD, in accordance with Section 404 of the Clean Water Act, EPA has made a draft determination that the OU1 remedy as proposed to be modified to include off-site disposal for the approximately 175,000 cubic yards of *in-situ* PCB-contaminated sediment slated for disposal in CDFs A, B, and modified-C and the use of the Pilot CDF as a permanent disposal facility for approximately 19,000 cubic yards of PCB-contaminated sediment and debris and incidental sand is the least environmentally damaging practicable alternative to prevent contaminated sediment from impairing wetlands and aquatic habitats.

The remedy as proposed to be modified herein remains protective of human health and the environment, complies with all federal and state requirements that are applicable or relevant and appropriate to the remedy, and is cost-effective. In addition, the remedy as proposed to be modified utilizes permanent solutions and alternative treatment technologies to the maximum extent practicable for this Site.

VII. PUBLIC PARTICIPATION

EPA, the Army Corps of Engineers, and MassDEP meet regularly with site stakeholders to keep them up to date on the Site's cleanup status, including the issues described herein. EPA's spring 2015 public meeting is scheduled for Thursday April 23, 2015 at 6:00pm at Howland Green Library Branch, 3 Rodney French Boulevard, New Bedford, MA. EPA will present an overview of this draft ESD at the public meeting. A 30 day public comment period will then follow the public meeting and will be held from April 24, 2015 through May 26, 2015. Additional meetings and outreach efforts with other groups occur as necessary to successfully implement the cleanup program.

VIII. DECLARATION

For the foregoing reasons, by my signature below, I approve the issuance of this fifth Explanation of Significant Differences for the New Bedford Harbor Superfund Site located in New Bedford, Acushnet, Fairhaven and Dartmouth, Massachusetts and the changes and conclusions stated therein.

_____ _____

Nancy Barmakian, Acting Director
Office of Site Remediation and Restoration
EPA Region 1

Date

TABLE 1: SUMMARY OF THE COST OF CDF DISPOSAL ALTERNATIVE

ITEM		COST ESTIMATE
BUILD CDF		
CDF CONSTRUCTION	$42,527,416	
STORMWATER MANAGEMENT	$153,482	
MONITORING WELLS	$60,904	
SUBTOTAL		$42,741,802
FILL CDF		
TRANSFER MATERIALS	$10,709,631	
TRUCK DECONTAMINATION	$279,946	
AIR MONITORING	$167,813	
STORMWATER MANAGEMENT	$501,199	
SUBTOTAL		$11,658,589
CAP CDF		
INTERIM CAP	$701,614	
FINAL CAP	$3,642,239	
SUBTOTAL		$4,343,853
TOTAL CAPITAL COST		$58,744,244
TOTAL CAPITAL COST (PRESENT WORTH)		**$54,672,973**
CDF O&M		
GW MONITORING ANNUAL	$47,860	
CAP MAINTENANCE ANNUAL	$65,405	
TOTAL ANNUAL COST	$113,265	
30 YEARS O&M		$1,235,280
TOTAL O&M (PRESENT WORTH)		**$1,184,817**
TOTAL PRESENT WORTH COST		**$55,857,790**

TABLE 2: SUMMARY OF THE COST FOR OFF-SITE TRANSPORTATION AND DISPOSAL

ITEM	ESTIMATED QUANTITY (CYS OF MATERIAL FOR TRANSPORT & DISPOSAL)	COST ESTIMATE
PROJECT YEAR 1		
FILTER CAKE	34,925	$8,570,176
SAND	6,350	$1,000,444
VEGETATED MATERIAL	27,000	$7,222,103
PROJECT YEAR 2		
FILTER CAKE	34,925	$8,862,341
SAND	6,350	$1,035,858
VEGETATED MATERIAL	27,000	$7,448,976
TOTAL COST		**$34,139,898**
TOTAL PRESENT WORTH COST		**$33,008,084**

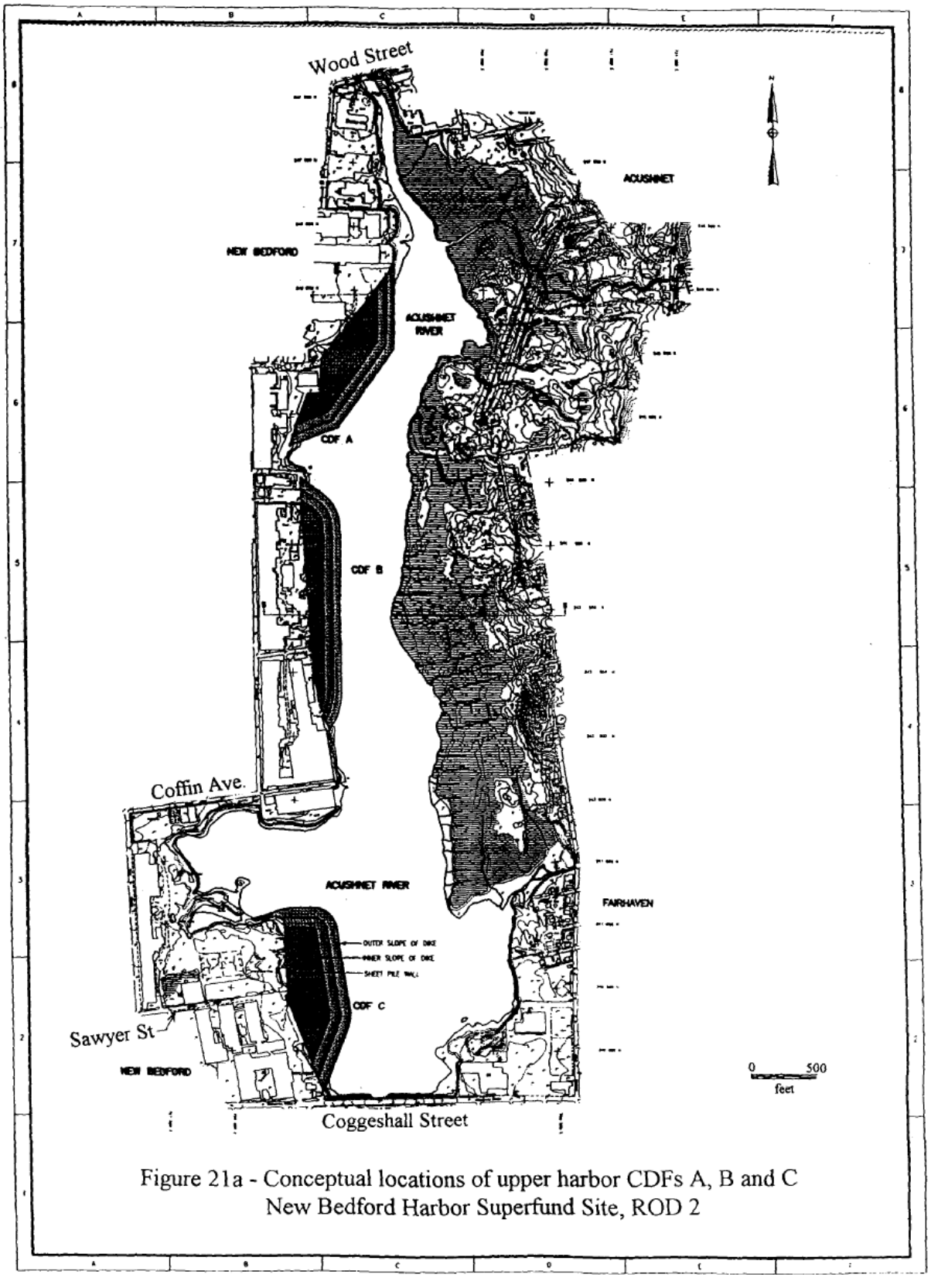


Figure 21a - Conceptual locations of upper harbor CDFs A, B and C
New Bedford Harbor Superfund Site, ROD 2

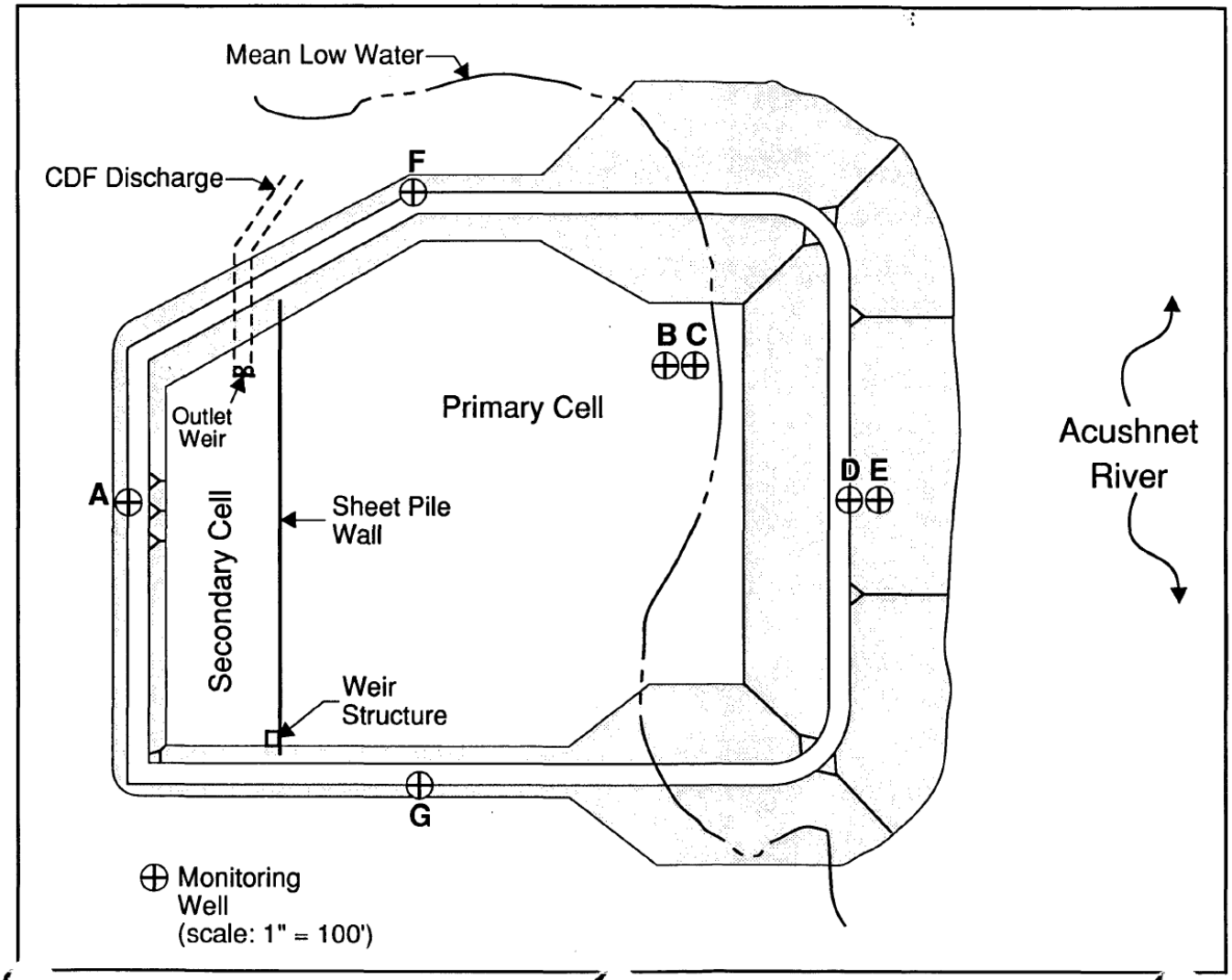
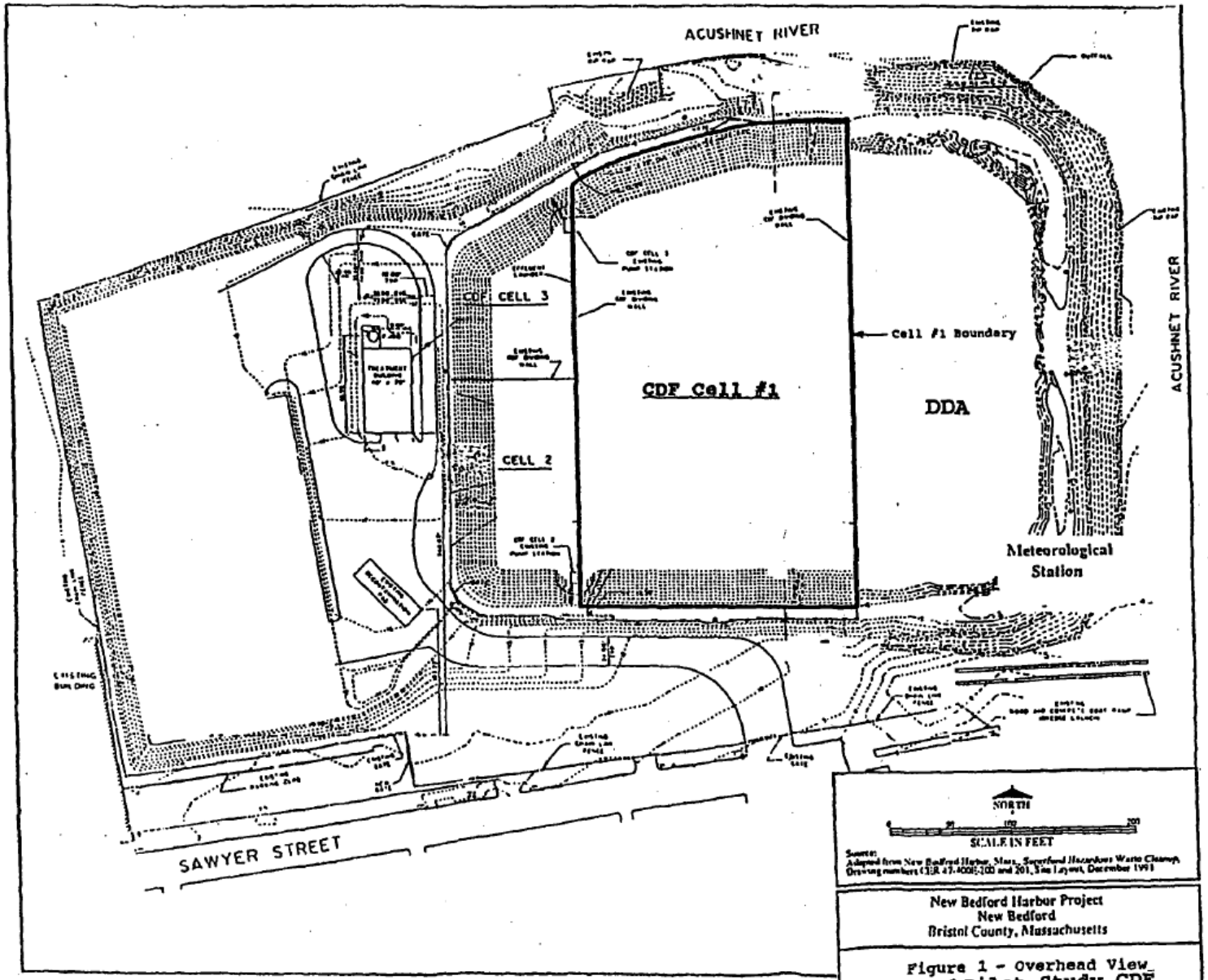


Figure 2-1 Confined Disposal Facility



New Bedford Harbor Project
New Bedford
Bristol County, Massachusetts

Figure 1 - Overhead View of Pilot Study CDF

N
W E
S

0 50 100 200 Feet

Monitoring Well Locations

New Bedford Harbor
Sawyer Street CDF
New Bedford, MA

SCALE	DATE	PROJECT NO.
1:1300	06/14	60317716

AECOM

Figure Number

1

ATTACHMENT A

Draft TSCA 40 CFR § 761.61(c) Determination for

New Bedford Harbor

Cleanup and disposal of polychlorinated biphenyls ("PCBs") are regulated under the Toxic Substances Control Act ("TSCA") and the PCB Regulations at 40 CFR Part 761. Under 40 CFR § 761.61(c), EPA may authorize disposal of PCBs in a manner not otherwise specified, provided EPA determines that the disposal will not pose an unreasonable risk of injury to health or the environment.

In its 1998 Record of Decision ("ROD") for the New Bedford Harbor Superfund Site ("Site"), EPA selected a cleanup remedy for the entire upper and lower harbor areas (operable unit ("OU") 1). The ROD called for dredged PCB-contaminated sediment to be placed in four shoreline confined disposal facilities ("CDFs"). In this ROD, EPA determined that disposal of dredged sediment from New Bedford Harbor into CDFs did not pose an unreasonable risk of injury to health or the environment based on the technical design and monitoring and maintenance considerations.

Consistent with 40 CFR § 761.61(c), I have reviewed the Administrative Record for the Site and considered the use of the Pilot CDF as a permanent disposal location for approximately 19,000 cubic yards of PCB-contaminated sediment and debris and incidental sand, and the off-site disposal for the approximately 175,000 cubic yards of *in situ* PCB-contaminated sediment slated for disposal in CDFs A, B and modified-C, as set out in the draft Explanation of Significant Differences ("ESD") for OU1 for the Site.

Pilot CDF

In the September 27, 2001 ESD for OU1, EPA found that use of the Debris Disposal Area ("DDA" and hereinafter also referred to as the "Pilot CDF") within the pilot study CDF as a temporary storage facility for PCB-contaminated sediment from New Bedford Harbor would not pose an unreasonable risk of injury to health or the environment provided that certain conditions were maintained, including: groundwater and air monitoring of the DDA was continued as long as the PCB-contaminated sediment remained in place; subsurface conditions remained intact; surface PCB concentrations in this area remained low or alternatively a clean cover (approximately six inches thick) was placed so that it would not pose an unreasonable risk to health or the environment; and a final resolution of the facility was made in a future decision document.

There are approximately 19,000 cubic yards (yd^3) of PCB-contaminated sediment and debris currently stored in the Pilot CDF. EPA will continue to utilize the Pilot CDF area as a staging and storage area for sand from the desanding operations and debris generated from dredging

operations. Conditions previously established in the TSCA determination under 40 CFR § 761.61(c) in the September 27, 2001 ESD shall continue to apply during this period. There may be additional incidental disposal of sand from the desanding operations in the Pilot CDF over the course of remaining remedial dredging operations.

Following completion of remedial dredging activities, EPA is proposing to make the Pilot CDF a permanent disposal location for the approximately 19,000 cubic yards of PCB-contaminated sediment and debris that are currently stored in the DDA, including any additional incidental PCB-contaminated sand from the desanding operations. Based on conservative assumptions, EPA calculated a weighted average PCB concentration for materials placed in the DDA of 260 parts per million ("ppm") and such materials had *in situ* PCB levels ranging from non-detect to 23,000 ppm. Given that approximately 35% of the overall volume consisted of large debris, including steel, the overall average PCB concentration in the DDA is expected to be lower than the calculated estimate. Additional incidental disposal of sand is expected to be low PCB concentration material consistent with the concentration of sand generated in past years and will not significantly increase the volume of material disposed in the Pilot CDF nor change the estimated average PCB concentration in the Pilot CDF. Subsurface conditions remain intact and the results of air and groundwater monitoring since the early 2000s indicate that the Pilot CDF is functioning as an effective containment facility for management of the PCB-contaminated sediment and debris. The efficacy of the Pilot CDF as a permanent disposal location for these PCB-contaminated sediment and debris is also supported by the March 2015 "Modeling Analysis of Potential Environmental Impact of the Pilot Confined Disposal Facility," which concluded that discharge of PCBs from the groundwater to the harbor would unlikely be measurable.

Based on the above information and in accordance with 40 CFR § 761.61(c), I have determined that the use of the Pilot CDF (i.e., the DDA) as a permanent disposal location for approximately 19,000 cubic yards of PCB-contaminated sediment and debris and incidental sand will not pose an unreasonable risk of injury to health or the environment provided the following conditions are maintained:

1. Periodic monitoring of the area is performed, including groundwater and air monitoring and inspections of the integrity of the cap and sidewalls;

2. A clean cover/cap, meeting all applicable federal and state standards, that is technically equivalent to a cap conforming to the design requirements at 40 CFR § 761.61(a)(7), is placed over the Pilot CDF area following completion of remedial dredging activities; and

3. Institutional controls are implemented following construction of the cap to ensure long-term integrity and maintenance of the cap and sidewalls.

Off-Site Disposal of Dredged PCB-Contaminated Sediment

In the August 16, 2002 ESD for OU1, EPA determined that off-site disposal of PCB-contaminated sediment instead of containing the sediment into CDF D would not pose an unreasonable risk of injury to health or the environment provided the following conditions were met:

1. All dredged sediment is disposed of in accordance with TSCA based on *in situ* PCB levels and not subject to dilution.

2. Protocols, developed in accordance with TSCA, will be developed and maintained for the following activities:

    A. Sampling of all dredged material (including separated sand and gravel) before it is transported offsite; and

    B. Best efforts are used to rinse desanding and dewatering equipment when handling TSCA and non-TSCA material to avoid mixing.

3. Stockpiled material shall be bermed while awaiting transport to capture runoff. Runoff shall be collected and treated to applicable water quality standards.

4. Groundwater and air monitoring and dust suppression measures as described in the August 16, 2002 ESD are maintained until the desanding, dewatering and transporting of PCB-contaminated sediment ceases.

In the draft ESD, EPA is proposing to modify the 1998 ROD for OU1 to eliminate construction of CDFs A, B, and modified-C and to dispose of approximately 175,000 cubic yards of *in situ* PCB-contaminated sediment slated for disposal in these planned CDFs to an off-site disposal facility that is permitted to accept PCB waste as appropriate. Consistent with 40 CFR § 761.61(c), I have determined that removal and off-site disposal of PCB-contaminated sediment in a facility or facilities that are permitted to accept PCB waste will not pose an unreasonable risk of injury to health or the environment provided these activities are implemented consistent with the following conditions:

1. All dredged sediment is disposed of in accordance with TSCA based on *in situ* PCB levels and not subject to dilution.

2. Protocols, developed in accordance with TSCA, will be maintained for the sampling of all dredged material (including separated sand and gravel) before it is transported offsite.

3. Stockpiled material shall be bermed while awaiting transport to capture runoff. Runoff shall be collected and treated to applicable water quality standards.

4. Groundwater and air monitoring and dust suppression measures as described in the August 16, 2002 ESD are maintained until the desanding, dewatering and transporting of PCB-contaminated sediment ceases.

5. These conditions shall apply to all PCB-contaminated sediment to be disposed off-site and shall supersede conditions previously established in the August 16, 2002 ESD.

EPA has eliminated the requirement to rinse the desanding and dewatering equipment since the desanding and dewatering plants have been constructed. As each process is self-contained, mixing is not a concern for these operations.

_____ _____

Nancy Barmakian, Acting Director Date
Office of Site Remediation and Restoration
EPA Region 1