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New Bedford Harbor

135

U.S. EPA Superfund Program

November 1996

PROPOSED CLEANUP PLAN

Upper & Lower New Bedford Harbor

New Bedford, MA

SUMMARY

After an extensive process of studying New Bedford Harbor and developing consensus for a solution to its PCB contamination, the EPA is proposing the following remedy for the entire upper and lower Harbor areas:

- About 450,000 cubic yards (cy) of PCB-contaminated sediment spread over about 170 acres would be removed by dredging. In the upper Harbor north of Coggeshall St., sediments above 10 parts per million (ppm) PCBs would be dredged, while in the lower Harbor and in saltmarshes, sediments above 50 ppm would be dredged (see pg. 3)
- The dredged sediments would be placed in four shoreline confined disposal facilities (CDFs) (see pg 3)
- Water drained from the sediments that are placed in the CDFs would be treated to remove contaminants and returned to the Harbor
- An impermeable cover or cap on top of the CDFs would be constructed once the sediment settles enough to allow for construction (approximately 3 years after initial placement)
- A long term monitoring and maintenance program for the CDFs would take place
- Potential reuse of completed CDFs
- Estimated cost: $116,000,000

HOW WOULD THE CLEANUP AFFECT THE LOCAL AREA?

Find out about the proposed cleanup plan and how it compares with other cleanup options for the Site at an informational public meeting on Wednesday, Nov. 6. At the meeting, EPA will respond to your questions and concerns about the proposed cleanup and how it may affect you. The first hour will be a poster board session at which citizens are free to browse and ask questions. For further information on the meeting, call EPA Community Involvement Coordinator Kristen Conroy at (617) 565-3618.

INFORMATION SESSION
6:00 P.M.
WEDNESDAY, NOVEMBER 6
NEW BEDFORD VO-TECH HIGH SCHOOL AUDITORIUM
ASHLEY BLVD., NEW BEDFORD, MA

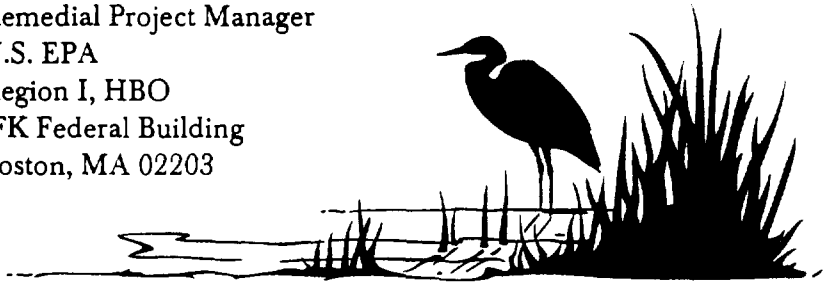
WHAT DO YOU THINK?

EPA is accepting public comment on this proposal from Nov. 7 through Dec. 9. You don't have to be a technical expert to comment -- if you have a concern or preference EPA wants to hear it before making a final decision on how to protect your community. To comment formally:

Offer oral comments during the formal public hearing scheduled on Wednesday, November 20, (See pg. 12), or

Send written comments postmarked no later than Dec. 9 to:

David Dickerson
Remedial Project Manager
U.S. EPA
Region I, HBO
JFK Federal Building
Boston, MA 02203



*In accordance with the Comprehensive Environmental Response, Compensation and Liability Act, (Section 117) the law that established the Superfund program, this document summarizes EPA's cleanup proposal and the other options evaluated. For more detailed information about the Site, see the Site administrative record including the August 1990 New Bedford Harbor Feasibility Study, available for review at the information repositories at the **Wilks Branch Library** and at **EPA's 90 Canal Street Office in Boston** (see page 13).*

SDMS DocID 55614

Review of Site History

New Bedford Harbor is an urban tidal estuary located on Buzzards Bay in southeastern Massachusetts. The communities of New Bedford, Fairhaven, Acushnet and Dartmouth border the Harbor and surrounding Site area.

1940's-late 1970's: Factories along the Acushnet River discharged industrial process wastes containing PCBs into the Harbor and the City sewerage system.

1976-1982: EPA conducted a New England-wide PCB survey, including New Bedford Harbor. EPA and the Commonwealth of Massachusetts identified widespread contamination of PCBs and heavy metals in the sediments and marine life throughout the Harbor and parts of Buzzards Bay.

1977: Massachusetts Department of Public Health issued a warning and subsequently, in 1979, established fishing closure areas in New Bedford Harbor and Buzzards Bay due to elevated levels of PCBs in edible fish and shellfish tissue.

1982: EPA added the New Bedford Harbor Site to the National Priorities List, making it eligible for federal Superfund cleanup funds, and began a comprehensive assessment of the nature and extent of PCB contamination in the Harbor.

1983: EPA issued a Remedial Action Master Plan which found widespread contamination of the Harbor and recommended further study. It also identified a Hot Spot portion consisting of about five acres in the upper Harbor which contained 45% of the mass of PCBs in the Harbor.

1984: EPA issued a Feasibility Study of the upper Harbor which evaluated a series of remedial alternatives for addressing the contamination.

1989: Engineering Feasibility Study and Pilot Study completed. Initiated as a result of comments received on the 1984 Feasibility Study, this study evaluated the effectiveness of specific dredging and disposal alternatives through actual onsite pilot tests. During this year EPA also issued a Proposed Plan for cleaning up the Hot Spot area of the Harbor.

April 1990: EPA issued a Record of Decision for cleaning up the Hot Spot consisting of dredging sediment exceeding 4,000 ppm PCBs, storing it in a confined disposal facility (CDF) then treating the sediment through onsite incineration.

August 1990: EPA issued a Feasibility Study and Risk Assessment for the entire Harbor. The human health risk assessment showed that the Harbor poses a potential risk to humans from ingestion of contaminated fish and shellfish and from direct contact with PCB-contaminated sediments. The ecological risk assessment concluded that PCB concentrations in sediment and sediment pore water were highly toxic to members of all major groups of marine life and that PCBs were highly suspected of damaging the Harbor's overall integrity as a functioning ecosystem.

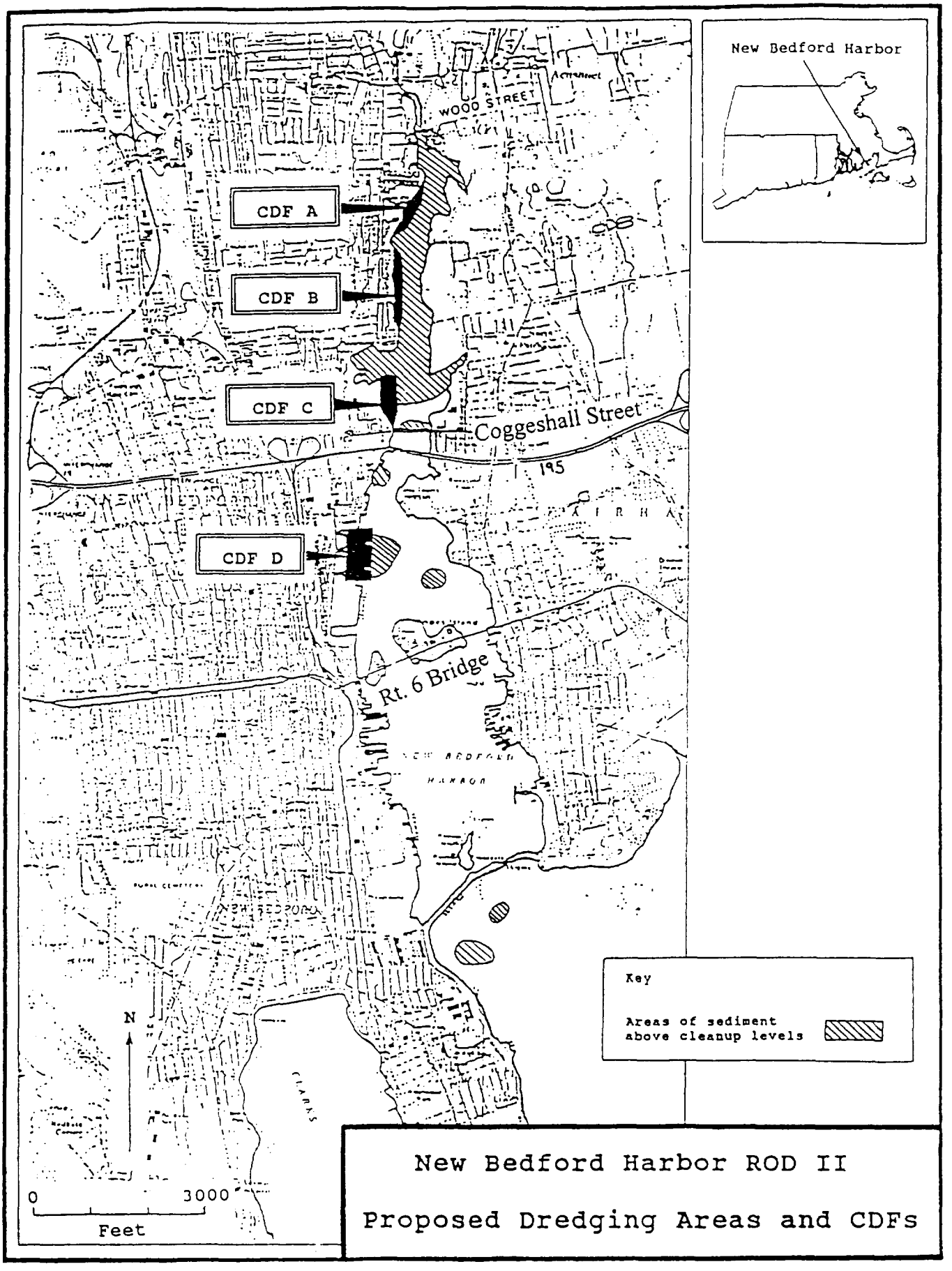
1992: EPA issued a Proposed Plan and an Addendum for cleaning up the upper and lower Harbor and a small area of Buzzards Bay.

1993: The New Bedford Harbor Superfund Site Community Forum is created in an effort to resolve community concerns about Hot Spot sediment incineration. EPA agrees to implement Hot Spot dredging, suspend incineration and undertake treatability studies on potential alternative technologies.

1995: EPA issues an Explanation of Significant Differences (ESD) to the April 1990 Record of Decision for the Hot Spot. The ESD documents the need for longer-term storage of Hot Spot sediments in the CDFs while EPA undertakes the treatability studies. Dredging of the Hot Spot is completed.

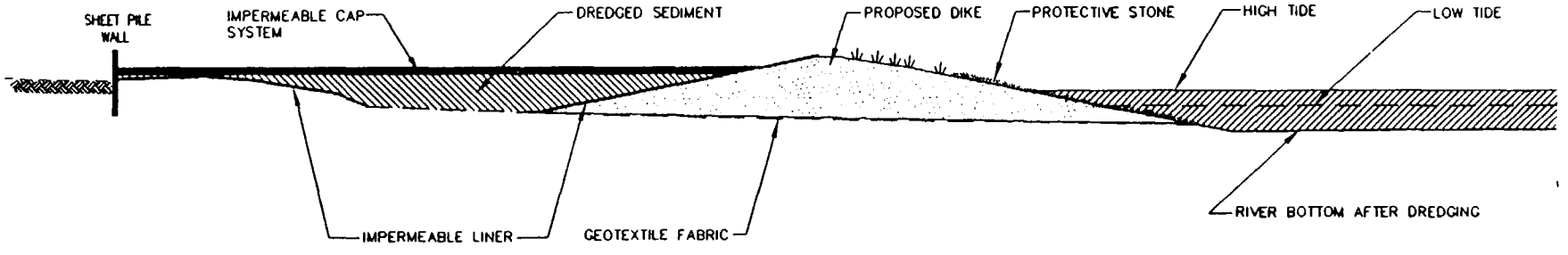
1993-1996: In response to comments received on the 1992 Proposed Plan and Addendum, EPA works with other federal and state agencies and the Community Forum to address concerns about the cleanup. EPA continues to pursue alternative treatment technologies for the Hot Spot sediments.

October 1996: EPA issues the first report of the Long-Term Monitoring project for the Harbor. This report reiterates the severely damaged nature of the Harbor ecosystem, especially the upper Harbor area north of Coggeshall Street.



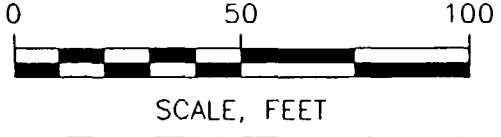
New Bedford Harbor ROD II

Proposed Dredging Areas and CDFs



TYPICAL CDF CROSS - SECTION

(to scale)



A Closer Look at the EPA's Proposal...

The proposed cleanup consists of a dredging and sediment containment approach using the cleanup levels discussed on page 1 combined with treatment of the seawater drained from the CDFs. The remedy can be divided into the six different implementation components described below.

1. Construction of CDFs and Water Treatment Facilities

The first step in the cleanup process is to design and construct the CDFs and associated water treatment facilities. Dredged contaminated sediments will then be piped into the CDFs and passively dewatered. Dredging need not wait until all these facilities are constructed, however, since the process can be staged so that dredging begins once the first CDF is ready to accept sediments.

Locating the four CDFs in contaminated areas avoids dredging approximately 126,000 cy of underlying contaminated sediment. The side walls of these CDFs will be lined with a synthetic impermeable material, but not the bottoms of the CDFs, since a) the existing sediments in these areas are very low in permeability, b) the integrity of a man-made impermeable liner constructed in saturated conditions can't be guaranteed, and c) the dredged sediments themselves will form into a highly impermeable product. Computer modelling indicates that long-term worst-case PCB leakage rates from the CDFs would be at least 98 percent lower than the current rate of PCBs in the water fluxing seaward at the Coggeshall Street bridge. Each CDF will include perimeter groundwater monitoring wells in order to verify that they are operating safely. *Continued on page 6*

Why is cleanup needed?

The EPA's studies of New Bedford Harbor conclude that the highly PCB-contaminated sediment poses significant risks to both human health and the marine ecosystem. Some type of cleanup action is therefore required to prevent the continued endangerment of people and marine organisms. More specifically:

High PCB levels in fish and shellfish in the Harbor and surrounding Buzzard's Bay area present unacceptable risks to human health via ingestion of PCB-contaminated seafood. As a result, in addition to various finfishing restrictions, 18,000 acres of otherwise productive lobstering grounds have been designated off-limits since 1979 by the Massachusetts Department of Public Health.

The ecological health of the Harbor continues to be severely damaged by the presence of PCBs in both the sediments and water column. Current levels of PCBs in the water are 10 to 100 times higher than EPA's chronic water quality standard for protection of marine life. Likewise, the current maximum levels of PCBs in sediment are at least 1,000 times higher than levels that are considered ecologically protective. Since PCBs by their nature accumulate within the food chain, especially in fatty tissue, this ecological damage can also impart direct health risks to people who regularly consume PCB-contaminated seafood.

Although the most toxic areas of sediment were removed in 1994 and 1995 during the hot spot dredging, the remaining sediments are still significantly polluted and continue to be a source of contamination. Every day about one half pound of PCBs migrate from the upper Harbor seaward to the lower and outer Harbor areas.

Repeated physical contact with PCB-contaminated shoreline sediments, especially those sediments north of the Coggeshall Street bridge, presents carcinogenic risks to human health.

By removing or isolating the contaminated sediments from the Harbor, in time, the high levels of PCBs in the water column and in seafood will decrease to safe levels. Computer modelling suggests that the PCB levels in the water column will drop to levels at or below EPA's chronic water quality standard of 0.03 ug/l (micrograms per liter, or parts per billion) for marine life approximately 10 years after remediation to the cleanup levels proposed herein.

For seafood, the process for estimating the timeframes for reductions in PCB levels is more complex, and the results vary depending on species. Computer modelling does suggest, however, that PCB levels in many commercially important species would be well below the FDA criteria of 2 ppm at the 10 year mark using the proposed cleanup levels. (See pg. 14 for additional discussion.) Thus, removal or isolation of the contaminated sediments addresses all of the principal threats listed above.

A Closer Look *(continued from page 5)*

2. Dredging of Sediments With PCB Levels Above Cleanup Levels

Sediments above the target cleanup levels will be removed from the river bottom by a cutterhead dredge, a type of dredge proven to be environmentally safe. The sediments will then be pumped by the dredge to one of the four CDFs. A few areas of contaminated sediments in deep water and in the upper Harbor saltmarshes may have to be removed by a less intrusive method such as clamshell bucket, and transported separately to the CDFs. The sediments near submerged high-voltage power cables in the upper Harbor will not be removed for safety reasons. However, EPA proposes to reduce the overall width of this undredged cable corridor as much as possible through collaborative efforts with the ComElectric power utility. Other potential remedies for this cable corridor will also be considered, including capping, bioremediation and reconstruction of the power lines in a way that allows complete dredging.

To ensure that residential areas neighboring the dredging areas are not impacted by airborne PCBs, air monitoring in these neighborhoods will be performed throughout the dredging process. Similarly, the water column will be sampled during dredging operations to ensure that sediment resuspension will be below pre-established safe levels.

3. Operation of the CDFs and Water Treatment

Once the dredge starts pumping contaminated sediment into the CDFs, a process of continually draining off and treating the seawater brought in along with the sediments will occur. This water will be treated by physical and chemical processes to reduce PCBs and heavy metals to very low levels before discharge back into the Harbor.

To ensure the safety of workers at the CDFs, as well as other workers and residents in areas surrounding the CDFs, air monitoring will be performed at all CDFs (in addition to the off-Site areas discussed previously). To help control airborne PCB emissions from the CDFs, a minimum of two feet of water will be maintained above the dredged sediment during dredging operations. Other emission control methods will be employed as necessary.

4. Preliminary Capping and Sediment Consolidation

Once the CDFs have been filled with sediment, a preliminary cap will be installed to prevent escape of PCB-dust and to allow for precipitation runoff while the underlying contaminated sediment consolidates. This consolidation or settling process is required to establish appropriate foundation conditions prior to construction of a final impermeable cap. Where manageable (e.g., CDF D), and if scheduling permits, cleaner dredged sediments from Harbor shipping channels will be used for the preliminary cap during this settling period. It is anticipated that approximately 3 years of sediment consolidation will be required before final capping can be initiated.

Perimeter air and groundwater monitoring around the CDFs will continue during this interim time frame, although the air monitoring will be on a more limited basis than during full operation of the CDFs.

5. Final Capping of the CDFs, Monitoring and Long-Term Maintenance

Once the dredged sediment has sufficiently consolidated, the final cap or cover on the CDFs will be constructed. This cap will consist of a multi-layered system that will prevent water infiltration into and promote surface drainage away from the underlying sediments. Once capped, a long-term monitoring and maintenance program will begin to keep the CDFs in good repair and to monitor against groundwater contamination and airborne PCB emissions. The figure on page 4 shows a cross-sectional view of a final CDF.

EPA will continue to work with the local communities to develop appropriate plans for beneficial reuse of each CDF. For example, the City of New Bedford has expressed an interest in the reuse of CDF D as a commercial marine facility. As a result, the conceptual design of this CDF includes sheet pile walls (rather than earthen dikes) on the seaward side of the CDF to promote docking, and a footprint that will accommodate future boat hauling activities. Design accommodations also can be made to the other CDFs provided that the ultimate land use is developed in advance in conjunction with the surrounding communities.

6. Review of the Completed Remedy

Because contaminated sediments will remain in CDFs at the Site, EPA will review the cleanup, as required by the Superfund statute, no less than every five years after the cleanup begins. The five year review is performed to ensure that human health and the environment are protected by the cleanup action. In addition, as agreed to in the New Bedford Harbor Superfund Community Forum agreement for ROD 2, EPA will conduct an ongoing literature review of treatment alternatives for potential use on materials in the CDFs until the CDFs are capped. Once capped, the technology review will continue at least every five years.

Proposed Enhancement of the Remedy to Include Navigational Dredging

In addition to this Superfund cleanup, the Commonwealth of Massachusetts has requested an enhancement of the remedy, as allowed by Superfund regulations. The enhancement would include dredging and disposal of an additional 1 million cy of sediments generated from the maintenance dredging of navigational channels. The Commonwealth's proposal to implement this remedy enhancement is expressly dependent on its ability to receive state bond funding for navigational dredging of "designated port areas" of the Commonwealth such as New Bedford Harbor. Although these "navigational" sediments fall below the proposed target cleanup levels for PCBs (and thus do not overlap with the sediments slated for Superfund dredging), they are still contaminated with metals and lower levels of PCBs. As a result, disposal options are limited, and an alternative disposal plan is required if the Harbor shipping channels are to be maintained to their originally-approved depths.

Although this enhancement of the remedy would be administered and funded entirely by the Commonwealth of Massachusetts, and would be implemented in a way that would not significantly delay the Superfund cleanup, the EPA is soliciting your comments on the concept of performing the remedial and navigational dredging simultaneously as an enhanced remedy. From EPA's and the Commonwealth's perspectives the benefits of such a linkage would primarily stem from a streamlined permitting process for navigational sediment disposal facilities, as well as the possibility of using navigational sediments for preliminary cap material (especially for CDF D). Also, the preferred alternative would enjoy an added degree of protectiveness as a result of the enhanced remedy since the navigational sediment contains PCBs up to 50 ppm and heavy metals. The navigational dredging works in concert with the City's plans for developing the public and economic uses of the Harbor. The MA Office of Coastal Zone Management intends to conduct a separate public comment process on the specific details of navigational dredging projects in the State, including New Bedford Harbor.

If this enhancement occurs, the 28,000 cy of sediment from the two areas of remedial dredging just south of the hurricane barrier (see pg 3) would most likely be disposed of in a large proposed "navigational" CDF just north of this barrier on the New Bedford shore. Implementation of this enhancement is expressly dependent on available Commonwealth funding.

How Does EPA Choose a Cleanup Plan?

The EPA uses the nine criteria described below to evaluate the advantages and disadvantages of all cleanup alternatives. The final cleanup plan must meet the first two criteria (protecting public health and the environment and complying with environmental laws and regulations), and must achieve the best balance among the next five criteria.

1. **Overall Protection of Human Health and the Environment:** Will the cleanup protect me now and later whether I am walking along or wading in the Harbor, or enjoying a water dependent use of the Harbor? Will the cleanup allow aquatic life in and near the Harbor to flourish in a well balanced and functional ecosystem?
2. **Compliance with Applicable or Relevant and Appropriate Requirements (ARARs):** Is the cleanup legal? Does it meet all federal and state environmental regulations. Are any regulations being waived? Why?
3. **Long-Term Effectiveness and Permanence:** Is there any risk to human health and the environment left at the Site after the cleanup is completed? If so, are there adequate and reliable measures or controls in place to manage that risk?
4. **Reduction of Contaminant Toxicity, Mobility or Volume Through Treatment:** Does the alternative use treatment to reduce the harmful effects of PCBs and other contaminants in the sediment, their ability to spread, or the amount of contaminated sediment?
5. **Short-Term Effectiveness:** How quickly are Site risks reduced? Will workers, residents or aquatic life face short-term risks if contaminants are released to the air or water during cleanup activities?
6. **Implementability:** What are the technical difficulties and uncertainties associated with each cleanup alternative? Are they reliable and easily monitored? Is all the necessary equipment and personnel available? Is there enough space at the Site to locate a containment area or treatment process equipment?
7. **Cost:** What is the total cost of an alternative over time in today's dollars? EPA is required to select a plan that affords protection and is cost effective. Does a more expensive remedy mean more protection for human health and the environment?
8. **State Acceptance:** Does the Commonwealth of Massachusetts agree with EPA's recommendation for the preferred alternative?
9. **Community Acceptance:** What reservations, objections, suggestions, or modifications do interested parties offer during the public comment period?

The various cleanup alternatives for the Site are evaluated against these nine criteria in the summary chart on pages 10 and 11.

FOUR TYPES OF CLEANUP

Although reducing risks often involves combinations of highly technical processes, at the New Bedford Harbor Site, there are really only four basic approaches or combinations thereof.

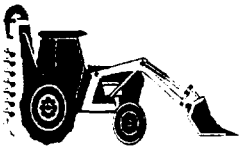
TAKE LIMITED ACTION ONLY:

Leave the Site as it is, restrict access, and monitor it.

CAP CONTAMINATED SEDIMENTS IN PLACE:

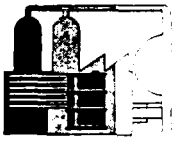
Leave contaminated sediments in place and cover or cap them to prevent exposure to, or spread of, contaminants. This method, like the next method, reduces risks from exposure to contamination, but does not destroy or reduce the contamination.

DREDGE AND CONTAIN CONTAMINATED SEDIMENTS ONSITE:



Remove contaminated sediments and dispose of them in carefully engineered shoreline sediment disposal facilities.

TREAT CONTAMINATION ON SITE:



Use treatment technology to destroy or remove contaminants. Treated material can be left on Site. Contaminants captured by the treatment process are disposed in an off-Site hazardous waste facility. Offsite disposal of the entire volume of dredged sediment was ruled out due to legal provisions favoring onsite remedies, the lack of appropriate disposal facilities in New England, and the lack of state acceptance and permitting for new offsite disposal facilities within MA.

CLEANUP ALTERNATIVES

During the upcoming public comment period, EPA welcomes your comments on the proposed cleanup plan as well as the other technical approaches EPA evaluated.

The following sections outline the most basic components of each cleanup alternative analyzed in the August 1990 Feasibility Study for the New Bedford Site. You are encouraged to review this Feasibility Study for a more comprehensive description of each alternative.

Costs associated with each alternative have been updated since initially estimated in the 1990 Feasibility Study and later presented in the 1992 Proposed Plan. The revised estimates include more accurate projections for air monitoring, dredging and water treatment based on experience from the Hot Spot cleanup, and have been updated to 1996 cost levels.

NON-REMOVAL OPTIONS

ALTERNATIVE 1: MINIMAL ACTION ONLY

- No dredging, treatment or capping of contaminated sediments would take place
- Institutional controls (e.g., limits on shoreline use, fishing bans, warning signs, fencing etc.) would be used to limit potential exposure
- Environmental monitoring and Site reviews would take place to track Site conditions over time
- Development of this alternative is a standard practice and is used as a baseline for comparison with other remedial alternatives under consideration
- Estimated net present worth (NPW) cost: $9,510,000

ALTERNATIVE 2: CAPPING (WITH SOME DREDGING OF CONTAMINATED SHIPPING CHANNELS)

- Sediments in both the upper and lower Harbor with greater than 10 ppm PCBs (except sediments in shipping channels) would be capped in place with three to five feet of clean sand
- Approximately 187 acres in the upper Harbor and 170 acres in the lower Harbor would be capped
- Institutional controls would be required to minimize long term cap disturbance, especially in shallow and shoreline areas

FOR THE NEW BEDFORD HARBOR SITE

- Sediments exceeding 10 ppm PCBs in shipping channels would be dredged and disposed in CDFs B and C; water drained from the sediments in the CDFs would be treated prior to discharge to the Harbor
- Estimated NPW cost: $147,600,000

REMOVAL OPTIONS USING A 10 PPM PCB ACTION LEVEL

ALTERNATIVE 3 & 3D: DREDGE, DEWATER AND ONSITE DISPOSAL

- Sediments in both the upper and lower Harbor exceeding 10 ppm PCBs would be dredged and disposed of in CDFs A - D, as well as in an additional large island CDF north of Popes Island. For alternative 3d, which includes a mechanical dewatering step that alternative 3 does not, a smaller additional CDF would be needed rather than the large island CDF (there are no Alternatives 3a, 3b or 3c - the "d" simply stands for dewatering)
- Discounting the contaminated sediments underlying the CDFs which EPA believes would not need to be dredged, approximately 769,000 cy (for Alternative 3) or 744,000 cy (for Alternative 3d) would be dredged
- Water drained from the sediments once in the CDFs would be treated to remove contaminants prior to discharge back to the Harbor
- The dredged sediments could be mechanically dewatered prior to final disposal to reduce the volume of disposal facilities required
- After a three to five year period of initial settling, the CDFs would be capped with an impermeable cover system
- A long-term CDF monitoring and maintenance program would be implemented to ensure the integrity of the CDFs over time
- Estimated NPW cost: Alt. 3 - $145,900,000

  Alt. 3d - $184,500,000

Note: parts of this alternative (i.e., the 10 ppm action level for the upper Harbor, CDF disposal and water treatment in general) are incorporated into EPA's proposed remedy

ALTERNATIVE 4: DREDGING, SOLIDIFICATION, AND ON-SITE DISPOSAL

- Similar to Alt. 3, but includes treatment of the dredged sediments using solidification or cement-like agents
- The total volume of dredged sediments would increase due to the addition of the solidification reagents
- As in Alt. 3 CDFs would still be required for the final disposal of the treated sediments
- New preliminary information from the 1996 hot spot treatability studies suggests that solidification might not be effective in preventing PCB leakage, especially for higher concentrations of sediment PCBs
- Estimated NPW cost: $305,700,000

ALTERNATIVE 5: DREDGING, SOLVENT EXTRACTION, AND ON-SITE DISPOSAL

- Also similar to Alt. 3, but includes treatment of the dredged sediments using solvent extraction to remove PCBs
- As in Alt. 3 CDFs would still be required for the final disposal of the treated sediments
- The extracted PCB mixture would be treated onsite to destroy the PCBs
- If testing of the treated sediments determined that leaching of residual metals was excessive, the sediments would be solidified prior to disposal to immobilize the metals.
- Estimated NPW cost: $533,400,000

ALTERNATIVE 6: DREDGING, INCINERATION AND ON-SITE DISPOSAL

- Also similar to Alt. 3, but includes treatment of the dredged sediments using onsite incineration to destroy the PCBs
- As in Alt. 3 CDFs would still be required for the final disposal of the treated sediments
- As with alternative 5, if necessary, the sediments would be solidified prior to disposal to immobilize the metals
- Estimated NPW cost: $575,900,000

Continued on page 12

Nine Criteria	no sediment cleanup	10 ppm cleanup level				
	1 Limited action only	2 Capping	3, 3d Dredging w/ CDF disposal	4 Alt. 3 plus Solidifi-cation	5 Alt. 3 plus Solvent extrac-tion	6 Alt. 3 plus Incinera-tion
Protects human health and environ-ment	○	◒	●	●	●	●
Meets or waives * federal and State require-ments	◒	●	●	●	●	●
Long-term effectiveness & perman-ance	○	◒	●	◓	●	●
Reduction of mobility, toxicity & volume thru treatment	○	○	○	◒	●	●
Short-term effective-ness	●	◒	●	◒	◒	◒
Implemen-table	◒	●	●	●	◒	◒
Total Cost millions	$9.5	$147.6	$145.9 - 3 184.5 - 3d	$305.7	$533.4	$575.9
Preliminary State Acceptance	○	○	●	◒	◒	○
Community Acceptance	To be determined after the public comment period					

*Waiver applies to FDA tolerance level for PCB concentration in fish tissue and a Clean Water Act discharge regulation. See discussion on page 14.

Nine Criteria	50 PPM Cleanup Level			10 PPM Upper, 50 PPM Lower Harbor
	7 Upper Harbor only; capping 50-500 ppm,dred-ging >500 ppm	8 Dredg-ing with CDF disposal	9 Dredging > 50ppm, treating > 500 ppm, CDF disposal	10 Proposed Remedy
Protects human health and environment	◒	●	●	●
Meets or waives* federal and State requirements	◒	●	●	●
Long-term effectiveness & permanance	○	●	●	●
Reduction of mobility,toxicity volume thru treatment	○	○	◒	○
Short-term effectiveness	◒	●	◒	●
Implementable	●	●	◒	●
Cost millions	81.7	85.4	176.1	115.5
Preliminary State Agency Acceptance	○	●	◒	●
Community Acceptance	To be determined after the public comment period			

○ does not meet criteria ◒ partially meets criteria ● meets or exceeds criteria

Cleanup Alternatives *(continued from page 9)*

Removal Options Using Other PCB Action Levels

Alternative 7: Capping (50-500 ppm) and CDF Disposal (>500 ppm) in the Upper Harbor; Minimal/No-Action in the Lower Harbor

- Sediments in the upper Harbor with 50-500 ppm PCBs would be capped with approx. three feet of sand
- Sediments in the upper Harbor exceeding 500 ppm PCBs would be dredged and disposed of in CDFs A and B
- Sediments in the lower Harbor would be left in place untouched, and institutional controls and long-term monitoring would be implemented
- Water drained from the CDF sediments would be treated prior to discharge back to the Harbor, the CDF would in time be capped, and a long term monitoring and maintenance program would be implemented
- Estimated NPW cost: $81,700,000

Alternative 8: Site Wide Dredging at 50 ppm PCBs with CDF Disposal

- Sediments exceeding 50 ppm PCBs in both the upper and lower Harbor (including two areas just south of the hurricane barrier) would be dredged and disposed of in CDF D
- Approximately 360,000 cy of contaminated sediment would be dredged
- Water drained from the sediments would be treated prior to discharge back to the Harbor, the CDF would in time be capped, and a long term monitoring and maintenance program would be implemented
- Estimated NPW cost: $85,400,000

Note: as with Alt. 3, parts of this alternative (i.e., the 50 ppm action level for the lower Harbor, CDF disposal and water treatment) are incorporated into EPA's proposed remedy.

Alternative 9: Dredging and CDF Disposal for 50-500 ppm PCBs, Treatment for >500 ppm PCBs

- Sediments with between 50 to 500 ppm PCBs would be dredged and disposed of in CDFs; sediments exceeding 500 ppm PCBs (which occur only in the upper Harbor) would be treated on Site with either incineration or solvent extraction
- CDF D would be used for disposal of both the treated and untreated sediments
- Water drained from the sediments would be treated prior to discharge back to the Harbor, the CDF would in time be capped, and a long term monitoring and maintenance program would be implemented
- If necessary, the sediments would be solidified prior to disposal to immobilize the metals
- Estimated NPW cost: $176,100,000

What's a Formal Comment?

EPA uses public comments throughout Site investigations and to improve cleanup proposals as appropriate before making a final cleanup decision. Any comments received outside the official public comment period are considered "informal". Only those comments received during the public comment period, either oral or written, are considered "formal" comments. Federal regulations require that EPA respond in writing only to "formal" comments.

For the New Bedford Harbor Superfund Site, the public comment period for the cleanup of the upper and lower Harbor runs from Nov. 7 through Dec. 9, 1996. To make a formal comment, you need only speak during the public hearing scheduled for Nov. 20 or submit a written comment anytime between Nov. 7 through Dec. 9. EPA will not respond to formal comments made during the hearing on Nov. 20 since the purpose is simply to record comments of those who prefer to offer their comments orally. Once the hearing is completed, EPA will respond to informal questions. The hearing is scheduled for **Nov. 20 at 6 p.m.** at the **New Bedford Vocational Technical High School.**

When the public comment period closes, EPA will review all formal comments and make a final cleanup decision. EPA will then prepare a Responsiveness Summary that answers all comments received during the public comment period. The Responsiveness Summary along with all comments will be attached to the Record of Decision and will become part of the official public record for the Site.

For More Detailed Information

To help the public understand and comment on the proposal for the Site, this publication summarizes a number of different reports and studies. All of the technical and public information publications prepared to date for the Site are available at the two New Bedford Harbor Site information repositories:

Wilks Branch Library
1911 Acushnet Ave.
New Bedford, MA 02745
phone 508-991-6214
hours: M-Th 9-9p.m.,
Fri-Sat 9-5 p.m.

EPA Records Center
90 Canal Street
Boston, MA 02114
phone 617-573-5729
hours: 10:00 a.m.-1 p.m.
2:00 p.m.-5:00 p.m.

EPA Prefer *(continued from last page)*

Moving to the other alternatives, the minimal action approach (Alt. 1) is not preferred since significant risks to human health AND the marine environment remain at the Site without some type of active measure to remove, isolate or contain the contaminated sediment.

Capping sediments in place using a 10 ppm TCL (Alt. 2) is not recommended for a variety of reasons. First, adding 3 feet of cap material in the upper Harbor creates almost 100 acres of new tidal flat area. This radically alters the natural characteristics of this ecologically important area. Second, maintaining and preserving the entire 257 acre underwater cap is considered difficult and unreliable, especially since the cap will be in a relatively shallow, high-energy (i.e., erosion prone) environment. Third, the numerous combined sewer overflows and storm drains adjacent to the capped areas would have to be eliminated or reconstructed, a proposition that poses significant implementability and cost challenges to the local communities as well as to the Superfund remedy.

Alts. 4, 5 and 6 are essentially the same as Alt. 3 (sitewide dredging using a 10 ppm TCL), but add various treatment technologies. The same extremely large amount of CDF storage volume would be required for these alternatives. Thus, in addition to the same implementability and cost challenges associated with Alt. 3, Alts. 4, 5 and 6 would have even higher costs ($306 million to $576 million) as well as higher short-term risks due to the extensive materials handling required during treatment. Moreover, based on new information from the Hot Spot experience and ensuing treatability studies, Alt. 6 (on Site incineration) would probably not receive local acceptance, and Alt. 4 (solidification) might mobilize rather than immobilize PCBs. Alt. 5 (solvent extraction) on the other hand would require additional treatment steps for control of heavy metals, since the solvent extraction approach applies to organic contaminants only.

Alt. 7 is a hybrid approach focussing ONLY on the upper Harbor; no active remediation would occur in the lower Harbor. For the upper Harbor, this alternative calls for capping of sediments between 50 and 500 ppm PCBs, and dredging and CDF disposal for sediments above 500 ppm PCBs. This alternative is unacceptably less protective than the proposed remedy because it includes a higher TCL for the upper Harbor, because it does not address any contamination in the lower Harbor, and to a lesser extent, because of the concerns regarding capping listed above.

Alt. 8, sitewide dredging and CDF-disposal using a 50 ppm TCL, is similar to the proposed remedy except that it calls for a higher TCL for the upper Harbor (50 versus 10 ppm PCBs). This alternative is not preferred because the proposed remedy attains a higher degree of sediment quality in the ecologically important upper Harbor - a degree which approaches that called for by the ecologic risk assessment.

Finally, Alt. 9 calls for treatment of sediments above 500 ppm PCBs (which only occur in the upper Harbor), and dredging and CDF-disposal for all other sediments above 50 ppm PCBs. This alternative is not preferred because treatment is not considered to be cost-effective (i.e., CDF disposal without treatment is protective on its own), and since this alternative would be less protective for the upper Harbor compared to the proposed remedy.

All of the nine alternatives as well as the proposed remedy are compared in summary fashion to the nine Superfund selection criteria in the chart on pgs. 10 and 11.

The Commonwealth of Massachusetts has an opportunity to review and comment on the Proposed Plan and generally reserves its acceptance until that time. Because of the unique circumstances surrounding the New Bedford Harbor Site which led to the creation of the Community Forum, the Commonwealth, along with other Forum members, has been an active participant in developing and reviewing the alternatives presented in this Plan. As a result, the Commonwealth has given its preliminary assessment of the various alternatives in the attached comparison chart. This by no means endorses any particular alternative and the Commonwealth will participate in the comment period. This information is presented to supplement the reader's knowledge about the Commonwealth's initial assessment of each alternative. The Commonwealth believes the proposed remedy to be the best remedial option, but does withhold final concurrence until a review of all public comments.

ADDITIONAL INFORMATION

In addition to comments about EPA's preferred alternative presented in this Proposed Plan, EPA is also soliciting specific public comment on ARARs waivers, a finding of no practical alternative to wetlands/floodplain impacts, and on a method designed to achieve water quality standards in the Harbor over time. Each item is described in more detail below.

1. ARARs Waivers

Food and Drug Administration PCB Tolerance Level

EPA is proposing to waive the Food and Drug Administration (FDA) tolerance level of 2 ppm for PCB concentration in fish tissue throughout the Site (21 U.S.C. §342, 346). To achieve the FDA tolerance level in biota in all portions of the Site, remediation to a 1 ppm TCL in all areas of the Site would likely be required. EPA has determined that a 1 ppm TCL would result in greater risk to human health and the environment due to the radical alterations of the Harbor environment that would be required as compared to other alternatives employing TCLs of 10 ppm and/or 50 ppm (the protectiveness waiver).

While a 1 ppm TCL would be more protective for aquatic organisms than a higher TCL and should lead to achievement of the FDA level more quickly than alternatives with a higher TCL, a staggering 1,000 acres and/or 2.1 million cy of sediments must be dredged or capped to meet this 1 ppm TCL, including at least 47 acres of wetland areas and salt marsh. Either a capping or dredging/CDF approach for such an undertaking would have very damaging side effects. Destruction of the saltmarsh areas in particular would profoundly affect the Harbor ecosystem since it is an area of tremendous productivity and ecological importance. Furthermore, a post-dredging restoration program would not reestablish the affected saltmarshes or its associated wildlife for many years during which the ecosystem will be dramatically affected.

It is also important to note that the FDA tolerance level for fish tissue of 2 ppm PCBs isn't completely protective for area residents. The FDA level is based on national patterns of seafood consumption; whereas the Site specific fish tissue criteria of 0.02 ppm is based on local consumption rates which are more frequent than the national average. Therefore, even if a 1 ppm TCL were to result in fish tissue concentrations falling to the FDA tolerance level and the fishing ban in the Harbor were to be lifted, area residents would still be warned to limit their local seafood intake to acceptable levels until tissue levels reach 0.02 ppm.

Although the FDA tolerance level may not be achieved at the ten year mark for all biota in all portions of the Site with a 10 ppm and/or a 50 ppm TCL, water quality will significantly improve and a corresponding reduction in the PCB biota levels is expected.

National Pollutant Discharge Elimination System

EPA is also proposing to waive a National Pollutant Discharge Elimination System regulation which could be interpreted to prohibit new discharges into water (in this case New Bedford Harbor) that does not meet applicable water quality criteria (WQC) unless certain conditions are met (40 CFR 122.4(i)). EPA is invoking the protectiveness waiver for this ARAR because compliance would essentially prevent the cleanup of this Site.

Two potential alternatives exist which could allow for the relocation of the CDF discharges to an area south of the hurricane barrier (an area which complies with WQC). The treated water could be routed through the City sewerage system and new secondary treatment plant, or a new dedicated outfall pipe could be built. EPA believes that neither of these alternatives is viable for a variety of reasons. The saline nature of the treated water could severely damage the biological processes of the City's secondary plant, and the addition of 2 million gallons a day of flow from the CDFs would take up a significant part of the new plant's treatment capacity. In addition, if the City's plant were to be in noncompliance, the remedial activities would have to be halted. Construction of a new dedicated discharge pipe, on the other hand, would add very significant delays and costs and unnecessarily disrupt 2 1/2 miles of densely populated, urban areas. An underwater approach for this dedicated pipe is not recommended because, in addition to significant schedule and cost impacts, its construction would cause disruption of benthic habitat and migration of contaminated sediment.

Even if these obstacles could be overcome, there is a competing regulatory issue involved with the relocation of a discharge from "SB" waters (the inner Harbor) to "SA" waters (the outer Harbor). The SA waters south of the hurricane barrier are by definition more pristine and held to higher standards of use than SB waters. Relocation of the CDF discharge to these areas could degrade these waters or impact the ability to maintain their designated use.

The alternative to compliance, therefore, is to prevent the remedy from going forward until Harbor waters either reach water quality standards or until the other conditions in the regulation are met, neither of which can be accomplished in a reasonable time frame. Such a result becomes the limited action alternative which for the reasons stated on page 8 of this Plan is unacceptable.

2. Finding of No Practical Alternative

Section 404 of the Clean Water Act, Executive Orders 11988 (Floodplain Management) and 11990 (Protection of Wetlands), and Section 10 of the Rivers and Harbors Act require a determination that federal actions involving dredging and filling activities or activities in floodplains and wetlands have the least adverse effects on the environment compared to other alternatives and that mitigation be carried out to the extent practicable. Public notice of this determination is also required.

Through its analysis of all the alternatives developed for this Site , EPA has determined that there is no practicable alternative to the preferred remedy which would have less adverse impact on the aquatic ecosystem, wetlands or floodplains at the Site. EPA reviewed alternatives to dredging such as capping and bioremediation as well as dredging to various target cleanup levels in sediment. EPA also considered offsite disposal, ocean dumping, treatment of sediments and various locations for the confined disposal facilities. As summarized in this Plan, each alternative had some adverse impact on the aquatic life, wetlands and the floodplain given the nature and extent of contamination in the Harbor. Of all the alternatives that mitigate Site risks, EPA believes that the preferred alternative causes the least damage to the ecosystem. Engineering controls will be implemented during dredging and filling activities to minimize both further degradation of Harbor waters and adverse effects on wetlands, floodplains and aquatic life to the extent possible. Mitigative measures such as replanting in saltmarsh areas and around CDF dikes will occur.

3. Water Quality Standards

Because the New Bedford Harbor water quality is so degraded, §402 of the Clean Water Act requires that discharges meet ambient water quality criteria (WQC) as a strategy to restore water quality. Except for copper, EPA expects to attain compliance with WQC during its remedial activities. Consistent with §303 of the CWA and its Total Maximum Daily Load approach, however, EPA proposes to use discharge limits for the CDF water treatment plants that are below current background levels of copper, but above the EPA WQC. This approach allows for attainment of ambient WQC throughout the waterbody in a phased or step-wise approach.

Put simply, removing the contaminated sediments that act as a source of copper will more than offset the amount of copper which will be temporarily discharged back into the Harbor from the treatment plants. At the end of 8 years (the estimated time for completion of dredging), the net result will be a significant reduction of a non-point source of copper in the Harbor.

For more information about the TMDL Program, consult the TMDL guidance located in the Administrative Record.

4. Prior Proposed Plans

In January and May 1992 EPA issued a Proposed Plan and an Addendum Proposed Plan, respectively, for clean up of the upper and lower Harbor and the upper Buzzard's Bay portion of the Site. As a result of comments received during the public comment period for those documents, EPA has modified its preferred alternative as outlined in this Proposed Plan. The preferred alternative contained in this Plan differs from the proposals presented in the 1992 Plans in two significant ways.

First, sediment PCB TCLs have been lowered from 50 to 10 ppm in the upper Harbor, and from 500 to 50 ppm in the upper Harbor saltmarshes. Lowering these TCLs results in additional volume of dredged sediments, the need for additional CDF volume and associated additional costs.

These changes reflect comments from the 1992 Plans that a sitewide TCL of 50 ppm was not protective enough. EPA agrees and has lowered the upper Harbor TCL to 10 ppm and the saltmarsh TCL to 50 ppm to provide an additional measure of risk reduction for both human health and ecological risks. Lowering the TCLs any further in the upper Harbor would result in more harm to the ecology of the area than benefit to either human health or the environment. A TCL of 10 ppm was not applied to the lower Harbor given its industrial character including many point and non-point sources of contamination which are likely to continue after the remedy is completed.

Second, at least for this phase of remediation, the proposed cleanup activities in the outer Harbor area below the hurricane barrier will no longer include capping the contaminated sediments at the City of New Bedford Wastewater Treatment Plant outfall. The preferred alternative still includes dredging the two areas located just south of the barrier, however TCLs in this area for this remedial phase have been raised from 10 ppm to 50 ppm.

There were many comments concerning the complexity of the technical and administrative issues which need to be addressed and integrated in the remedial action in the outfall area, and concerning the limited knowledge EPA currently has about the extent of PCB contamination in upper Buzzards Bay. Many commenters felt action in this area was premature. EPA agrees and is proposing an interim remediation of two areas located just south of the hurricane barrier with sediments exceeding 50 ppm PCBs. EPA is also

Continued on page 18

Cleanup Plan ◇ Upper & Lower New Bedford Harbor _____

Use This Space to Write Your Comments

(or to be added to the mailing list)

EPA wants your written comments on the options under consideration for dealing with the contamination at the New Bedford Harbor Superfund Site. You can use the form below to send written comments. If you have questions about how to comment, please call EPA Community Involvement Coordinator Kristen Conroy at 617/ 565-3618. This form is provided for your convenience. Please mail this form or additional sheets of written comments, postmarked no later than December 9, 1996 to:

David Dickerson
Remedial Project Manager
U.S. Environmental Protection Agency
Region I, HBO
JFK Federal Building
Boston, MA 02203 - 0001

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(Attach sheets as needed)

Comments submitted by: _____

Mailing list additions, deletions or changes

If you did not receive this through the mail and would like to

- ☐ be added to the Site mailing list
- ☐ note a change of address
- ☐ be deleted from the mailing list

Name : _____

Address: _____

_____

_____

Please check the appropriate box and fill in the correct name and address above.

New Bedford Harbor Superfund Site

Public Comment Sheet *(cont....)*

Fold, staple, stamp, and mail

Place Stamp Here

David Dickerson
Remedial Project Manager
U.S. Environmental Protection Agency
Region I HBO
JFK Federal Building
Boston, MA 02203 -0001

Why Does EPA Prefer the Proposed Alternative?

Of all the cleanup alternatives evaluated in detail, EPA prefers the remedy proposed herein because it offers the best balance among the nine Superfund criteria, especially since it is both protective and cost-effective. From a protectiveness standpoint, one of the most important considerations is the PCB target cleanup level (TCL). This TCL is the sediment PCB criteria used to determine the vertical and horizontal extent of the PCB contaminated sediment addressed by the cleanup. As discussed below, the proposed remedy's "hybrid" TCLs of 10 ppm and 50 ppm PCBs in the upper and lower Harbor, respectively, strikes the best balance between implementability, protectiveness and cost. Moreover, from an operational or short-term effectiveness standpoint, all of the proposed remedy's main features (dredging, CDF disposal, and water treatment) are proven technologies for applications of this type.

EPA began its selection process by evaluating TCLs of 10, 50 and 500 ppm PCBs. Since computer modelling indicates that the 500 ppm TCL offers very little advantage compared to the minimal action (Alternative 1) approach which is not protective, the TCL choice essentially comes down to 10 versus 50 ppm PCBs. EPA recognizes that the ecological risk assessment concludes that a TCL range of 0.1 to 1 ppm PCBs is appropriate to protect the marine ecosystem. However, a 1 ppm TCL covers an enormous 1000 acre area and/or a staggering 2.1 million cubic yards (cy) of required disposal volume. The scale of such an undertaking poses extreme if not insurmountable implementability problems, as well as destroys valuable Harbor wetlands. (See discussion of FDA waiver on pg. 14)

Likewise, when applying the 10 ppm TCL to the entire Site (Alternative 3) the scale of contamination also poses serious challenges in terms of the areal extent of contamination (400 acres), volume (approximately 926,000 cy of contaminated sediments) and cost (in the $146-148 million range for either dredging or capping). These challenges are compounded by the fact that many other interests in and around the Harbor would be competing for the same land (and water) required to support a remedy of this magnitude. For these reasons, the proposed remedy applies this 10 ppm TCL to the upper Harbor only since this area, with its large saltmarshes, contains ecologically important breeding, nursery and feeding areas. A 50 ppm TCL in these saltmarshes will be used to minimize adverse impacts and to remove significant sources of PCBs along the edge of the saltmarsh. In contrast, the lower Harbor is a state designated port area, and is predominantly lined with industrial and commercial facilities. This is not meant in anyway to discount the value of the lower Harbor and EPA believes it is important to restore the lower Harbor as much as possible, but given its current and future use, a 50 ppm TCL in this area is believed to be an appropriate, well-balanced and resource-focused approach. *Continued on Page 13*

ADDITIONAL INFORMATION *continued from page 15*

proposing to supplement the existing data base for the upper Bay area through additional investigation and sampling activities to better define the extent of PCB contamination. The results of those studies and any necessary action will be implemented through a third operable unit at the Site.

EPA will respond to all formal comments already received on the January and May 1992 Proposed Plans, as well as to any formal comments received on this Plan in a Responsiveness Summary which will accompany the second Record of Decision. It is **not necessary** to resubmit comments made during the 1992 public comment period. All comments received to date from the 1992 comment period by EPA are included in the Administrative Record for the Site and are available for public review.

Community acceptance is usually not evaluated until the public comment period closes in order to provide interested parties with an opportunity to review the Proposed Plan and comment on it. Consistent with that, EPA will not select a final remedy until the public comment period is closed and all comments have been considered. As explained above, however, EPA has received some comments on its 1992 Plan which may be relevant to the reader. In summary, the potentially responsible parties indicated a preference for the capping alternative and a PCB TCL of 50 ppm. The natural resource trustees commented that a true protective level for aquatic life in the Harbor is a 1 ppm PCB concentration level in the sediment. The Trustees recognize, however, that the benefits gained by a 1 ppm level are outweighed by the damage such a level would cause to the Site ecology. Finally, members of the New Bedford Harbor Community Forum reached consensus in July 1996 on dredging and containment of the sediment, location of the CDFs, and the need for further review of potential treatment technologies.