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The Commonwealth of Massachusetts

Executive Office of Environmental Affairs

Department of Environmental Quality Engineering

Bureau of Waste Site Cleanup

One Winter Street, Boston, Mass. 02108

Daniel S. Greenbaum
Commissioner

October 16, 1989

Frank Ciavattieri
Director, Waste Management Branch
Mary Sanderson
Project Manager New Bedford Harbor
USEPA, Region I
HRS - CAN-3
JFK Building
Boston, MA 02208

Dear Mr. Ciavattieri and Ms. Sanderson:

The Department of Environmental Protection has been requested to identify Applicable or Relevant and Appropriate Requirements (ARARs) for the hot spot operable unit of the New Bedford Harbor superfund site. This request was made on behalf of EPA by Charles Bering, Regional Counsel for the New Bedford Harbor Case, in a letter dated June 29, 1989. This request established the close of the public comment period as the practical deadline for a timely Agency response to the state's identification of ARARs for this operable unit. Normally the DEP does not specifically submit an "ARARs letter" for each site, prior to the signing of a Record of Decision. The identification of action, location, and chemical specific ARARs is done at every step in the process of remedial assessment selection and implementation for a federal superfund site. We are persuaded, however, that the New Bedford Harbor operable unit presents a number of unique characteristics which warrant a focused effort on our part to identify state laws, regulations, and policies which we feel are applicable or relevant and appropriate to the Proposed Plan for the Hot Spot.



The Hot Spot remedial action proposed by the agency consists of removal by dredging of approximately 10,000 cubic yards of sediments containing PCBs at concentrations greater than 4,000 ppm which are located in the hot spot area of the Acushnet River Estuary. Dredged sediments would be transported by a hydraulic pipeline to a shoreline basin known as the confined disposal facility (CDF) off of Sawyer Street in New Bedford. Sediments would be allowed to settle, be dewatered by plate and frame units, and then incinerated. Incinerator ash would be solidified and stored in a portion of the CDF, until a decision on its final disposal is made later in the project. This operable unit also includes the necessary air quality control and water treatment units.

In viewing this proposed plan the Department has reviewed statutes, regulations, and policies in all three of its Bureaus: Waste Site Cleanup, Resource Protection, and Waste Prevention. In Addition we have included the concerns of the EOEPA offices of Coastal Zone Management and Massachusetts Environmental Policy Act in enforcing applicable provisions of their standards. Attached to this letter in Attachment 3 is a short list of the laws, regulations and policies which comprise the ARARs identified to date which could apply to the operable unit. Because of specific concerns, we have concentrated on the identification of some specific requirements, and we have summarized these requirements below. Detailed discussions of the specific areas of concern are included in attachment 1 and 2.

1. Environmental Impacts ARARs

The Massachusetts Environmental Policy Act (MEPA) establishes standards to minimize environmental impact on publically funded projects. We believe these requirements are applicable to the proposed plan. In addition Federal consistency in the coastal zone requires adherence to applicable standards for the protection of the environment. For the proposed plan, the Department believes the use of silt curtains around the area to be dredged would be an applicable requirement. The Department believes that justification for non-use of silt curtains would be required to be technically well founded by a monitoring program near the dredge, such that water quality impacts are minimized and a level of environmental protection is achieved acceptable to a decision making committee. Monitoring and decision making on dredging operations should achieve a level of control similar to that in the pilot study. This level of control would be relevant to the proposed remedial action to protect coastal resources.

Water pollution control during sediment dewatering and treatment must meet best available technology as the applicable requirement. Wetlands regulations are applicable to this remedial action, where it impacts estuarine areas, as well as inland vegetated wetlands. They are also applicable to alterations and structures located below existing or historical mean high water, whichever is farther landward.

2. Process Control Requirements

Hazardous Waste Regulations, while exempt from applicability to control measures under MGL Chapter 21E per se, contain relevant and appropriate requirements. Specifically, side wall and bottom material in the CDF must achieve a maximum permeability standard of 1×10^{-7} cm/sec; the CDF must be covered while it contains hot spot material and all residue hot spot material must be removed from the CDF following the remedial action. Under the provisions of relevant and appropriate sections of 310 CMR 30.000, residual materials from the incinerator must be tested to determine if they are a hazardous waste. Appropriate tests are the EP Toxicity and TCLP as described in 310 CMR 30.155. If the ash fails one of these tests, it must be solidified or otherwise treated so that the material is no longer a hazardous waste as defined in these regulations.

Solidified ash, if it is to be ultimately discarded and not used for any structural buliding purpose, must be stored and ultimately disposed of as a solid waste. Applicable standards for storage and disposal of solid waste are contained in sections 19.11 and 19.111 of the solid waste regulations. For storage of solidified ash, as a solid waste, all existing and new landfills shall incorporate environmental control systems into the overall design of the facility to provide protection to groundwater, surface water and air quality. For disposal of the solidified ash, applicable requirements of solid waste regulations require a liner material to achieve a 1×10^{-7} cm/sec maximum permeability standard. If the ultimate disposal of solidified ash is a section of the CDF, the material on the floor and sidewalls must be demonstrated to meet this applicable standard. The operation of the incinerator and air quality control equipment must achieve air quality control standards contained in 310 CMR 6.00-8.00.

Although the air quality at the site currently exceeds recommended allowable ambient limits (AALs) for PCBs and lead, the effect of remedial actions on AALs must be evaluated by appropriate monitoring and modeling techniques. Remedial actions, including incinerator operation, must be implemented without further adverse impacts on AALs.

If you have any additional questions, please contact us at 292-5819.

Very truly yours,


Helen Waldorf
Acting Federal Superfund
Coordinator


Paul Craffey
Project Manager

Attachments

cc: Roxanne Mayer, OGC
Janet McCabe, EOE
Judy Pederson, CZM
Judy Perry, DWPC
Rich Giosa, BSWM
Michael Murphy, ORS

Attachment 1

Environmental Impact Controls Discussion

A. MEPA Requirements (M.G.L. c. 30, sec. 61)

All agencies, departments, boards, commissions and authorities of the Commonwealth shall review, evaluate, and determine the impact on the natural environment of all works, projects or activities conducted by them and shall use all practicable means and measures to minimize damage to the environment. Unless a clear contrary intent is manifested, all statutes shall be interpreted and administered so as to minimize and prevent damage to the environment. Any determination made by an agency of the Commonwealth shall include a finding describing the environmental impact, if any, of the project and a finding that all feasible measures have been taken to avoid or minimize said impact.

As used in this section and section sixty-two, "damage to the environment" shall mean any destruction, damage or impairment, actual or probable, to any of the natural resources of the Commonwealth and shall include but not be limited to air pollution, water pollution, improper sewage disposal, pesticide pollution, excessive noise, improper operation of dumping grounds, impairment and eutrophication of rivers, streams, flood plains, lakes, ponds, or other surface or subsurface water resources; destruction of seashores, dunes, marine resources, underwater archaeological resources, wetlands, open spaces, natural areas, parks, or historic districts or sites. Damage to the environment shall not be construed to include any significant damage to or impairment of such resources.

B. Federal Consistency In The Coastal Zone

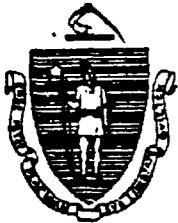
The proposed plan involves Federal actions in the coastal zone which must be consistent with applicable coastal zone management regulations. These regulations require protection of the coastal zone environment to the maximum extent feasible. Private parties performing dredging work in the coastal zone in Massachusetts have been consistently required to enclose the area of operation with silt curtains. This will effectively control the level of the fines resuspended in the water column, in order to meet this applicable section of coastal zone management regulations. (See memo from CZM incorporated into this attachment dated 10/12/89 from Jeffery Benoit, Director MCZM to Helen Waldorf). In certain circumstances, where deployment of a silt curtain is not feasible or effective, a private party has been required to provide water quality monitoring in order to control or shutdown operations to prevent negative impacts on the environment from contaminants and suspended sediments. For this project the Department has determined that the use of a silt curtain to protect coastal values and water quality is applicable

to this project. In certain circumstances, a monitoring program must be acceptable to the Commonwealth in lieu of silt curtains. Justification for non-use of silt curtains would require a technically well founded monitoring program near the dredge with respect to anticipated water quality, and decisions regarding shutdown of dredging operations to protect the environment should be made by a decision making committee as described below.

For projects involving contaminated sediments additional monitoring is required to observe and control dredging operations, and achieve the applicable protectiveness standards of coastal zone management regulations. The extensive monitoring program developed by the EPA during the pilot dredging and disposal study may be adequate to meet this standard. At a minimum, a decision making committee would monitor dredging operations and would include one member from the Department's Bureau of Waste Site Cleanup and Resource Protection and one member from the Office of Coastal Zone Management - in addition to the appropriate membership on the Federal side, as determined by the Agency. Decision making criteria should include modifying or suspending operations if PCBs, or metals levels reach a level of statistical significance; if they reach level twice the mean contaminant levels which now exist during tidal flow; or an alternate numerical decision criteria decided by a consensus of decision making committee. In addition, the decision making committee should establish environmentally protective control criteria, based on suspended solids and other data collected near the dredge. The near field control criteria must be acceptable to the Commonwealth if silt curtains or a more protective technology are not in use.

- C. Division of Water Pollution Control
(see attached memo dated 9/27/89 from Judy Perry to Helen Waldorf).

- D. Division of Wetland and Waterways
(See attached memo dated 9/21/89 from Gayle Gorman to Frank Ciavatterri).



COASTAL ZONE
MANAGEMENT

The Commonwealth of Massachusetts

Executive Office of Environmental Affairs

100 Cambridge Street

Boston, Massachusetts 02202

MEMORANDUM

To: Helen Waldorf, DEP Division of Hazardous Waste
From: Jeffrey R. Benoit, Director, MCZM *JRB*
Date: October 12, 1989
Re: MCZM ARARs for the New Bedford Harbor Hot Spot
Feasibility Study

The Massachusetts Coastal Zone Management (MCZM) Office has reviewed the July 1989 Hot Spot Feasibility Study for the New Bedford Harbor Superfund Site. MCZM supports the EPA/DEP decision to remediate the Hot Spot portion of the Superfund site first as an interim step to minimize this source of PCB's to the harbor and Buzzards Bay thereby reducing the public health and environmental threats. The purpose of this memo is to identify MCZM's "applicable or relevant and appropriate standards, limitations, criteria, and requirements" (ARARs) for the site and the proposed remedial action.

The Massachusetts Coastal Zone Management Program is a federally funded and approved state CZM program under the national Coastal Zone Management Act of 1972 as amended (P.L. 92-583). The MCZM Program Policies are implemented on a networking basis with other state Executive Office of Environmental Affairs (EOEA) agencies, the standards and criteria for administering these policies are contained within these agencies regulations.

MCZM Regulatory Policies relevant to the proposed Hot Spot Remediation

Policy #1 - Protect ecologically significant resource areas for their contributions to marine productivity and value as natural habitats and storm buffers.

Policy #3 - Support attainment of the national water quality goals for all waters of the coastal zone through coordination with existing water quality planning and management agencies. Ensure that all activities endorsed by CZM in its policies are consistent with federal and state effluent limitations and water quality standards.

Policy #5 - Ensure that dredging and disposal of dredged material minimize adverse effects on water quality, physical processes, marine productivity and public health.

Policy #10 - All development must conform to existing applicable state and federal requirements governing sub-surface waste discharges, sources of air and water pollution and protection of inland wetlands.

The following is a summary of remedial action activities, relevant MCZM regulatory policies and EOE agency ARARs.

Dredging - Policies #1,3,5,10

310 CMR 9.00 Administration of Waterways Licenses
310 CMR 10.00 Wetlands Protection Regulations
314 CMR 9.00 Certification for dredging, dredged material disposal and filling in waters

Silt curtains or a more protective technology must be used to minimize the migration of suspended sediments carrying PCB and metal contaminants.

Wetlands and Tidelands - Policies #1,10

310 CMR 9.00 Administration of Waterways Licenses
310 CMR 10.00 Wetlands Protection Regulations

Activities must not alter wetlands and shall minimize impacts on tidelands.

Dewatering - Policies #3,10

310 CMR 9.00 Administration of Waterways Licenses
310 CMR 10.00 Wetlands Protection Regulations
314 CMR 9.00 Certification for dredging, dredged material disposal and filling in waters
314 CMR 4.00 Surface Water Discharge Quality Standards

The dewatering, effluent treatment and discharge process should meet water quality standards, or where not attainable for PCBs, the process should meet the criteria set forth in the decision document.

Incineration - Policies #1,10

310 CMR 6.00 Ambient Air Quality Standards for the Commonwealth of Massachusetts
310 CMR 7.00 Air Pollution Control

Disposal - Policies #1,3,5,10

310 CMR 10.00 Wetlands Protection Regulations
310 CMR 19.00 Solid Waste Disposal Regulations
310 CMR 30.00 Hazardous Waste Regulations

The ash remaining from the sediment incineration process should be solidified and stored or disposed of in a confined disposal facility (CDF) which is lined or which meets the permeability standards set by DEP.

JRB/SM/JP



The Commonwealth of Massachusetts

Executive Office of Environmental Affairs

Department of Environmental Quality Engineering

Division of Water Pollution Control

One Winter Street, Boston, Mass. 02108

Cornelius J. O'Leary
Acting Director
(617) 292-5647

MEMORANDUM:

TO: Helen Waldorf, Bureau of Waste Site Cleanup
FROM: Judy Perry *J. Perry*
DATE: - September 27, 1989
RE: ARARS for New Bedford Harbor "HOT SPOT" Cleanup

Activities likely to be included in EPA's plan for the cleanup of PCB "hot spots" within the New Bedford Harbor Superfund site are:

- (1) hydraulic dredging of contaminated sediment
- (2) transport of dredged slurry
- (3) dewatering of dredged sediment
- (4) treatment of water from dewatering and from air pollution equipment
- (5) incineration of contaminated sediments

Applicable or relevant and appropriate requirements for the above activities, as they are generally regulated by DWPC are discussed below. In general, best available technology is required to ensure that ambient water quality is maintained and that potential pollutant releases do not result in toxicity to aquatic organisms.

(Water quality standards for toxic substances are found at 314 CMR 4.03(4)(7)).

1. Hydraulic dredging is required for unconfined contaminated sediments since in our judgement this is the best available method to minimize resuspension and dispersal of highly contaminated sediments. In some cases, depending on the actual work site configuration, silt curtains would be required. In the case of the upper estuary in New Bedford, we would certainly recommend the use of silt curtains if the material to be dredged consists of over 30% fines and if the dredge is equipped with spuds, which we understand caused water quality impacts during the pilot dredge project. Justification for non-use of silt curtains would need to be technically well-founded with respect to anticipated water quality.

In order to meet the state water quality standards for oil and grease of 15 mg/l (at 314 CMR 4.03(4)(5)), which may be liberated during dredging at the "hot spot", sorbant booms should be used.

In order to ensure that dredging of the "hot spot" does not adversely affect aquatic life, toxicity tests are recommended by DWPC. These tests might be patterned after those done during the pilot dredging project, with both acute and chronic toxicity and bioaccumulation of PCB's and PAH's assessed. In the event toxic effects are observed we would expect that contingency plans including work stoppage and additional protective engineering measures would be implemented.

2. Transport of the slurry: DWPC requirements for this activity would be to use best engineering practice to ensure the integrity of the pipeline from the dredge site to the dewatering site in order to prevent an unauthorized discharge of pollutants to the harbor.
3. Settling and dewatering of dredged sediments. The containment must be structurally sound.
4. Treatment of Water - The water discharged from the containment area should be treated using best available technology in order to approach as closely as possible the following:

| | |
|-----|----------|
| PCB | 0.6 ug/l |
| Cu | 5.4 ug/l |
| Cd | 0.2 ug/l |
| Pb | 2.7 ug/l |

These were the background values for waters north of the Coggeshall Street bridge prior to the pilot dredging project. TSS should be less than 10 mg/l using best available technology. Coagulants used to reduce the solids content of the discharge must be non-toxic to marine life.

5. Incineration of sediments - This activity does not appear to have potential water quality impacts.

JP/wo
70/m-waldorf

MEMORANDUM

TO: Frank Ciavaterri, New Bedford Harbor Project Manager, US EPA
THROUGH: Bob Bois, ^{Acting} State Project Manager for NBH
FROM: Gayle Garman, Environmental Engineer G² 6/21/89
SUBJECT: Comments on the DRAFT Hot Spot Feasibility Study for
New Bedford Harbor
DATE: June 20, 1989

Removal and immobilization of the Hot Spot sediments as quickly as is safely feasible is a reasonable and desirable step in the remediation of the New Bedford Harbor (NBH) Superfund site. This action should destroy approximately 45% of the PCB's in NBH, thus preventing this mass of recalcitrant toxicants from entering the Buzzards Bay food chain and then recycling in the biosphere. However, there are two concerns with the concept of a separate Record of Decision:

- 1) The 55% of the mass of PCB's which will remain in the estuary, where they are vulnerable to resuspension, make a contribution to the overall risk from this site comparable to the risk from the Hot Spot. What assurance does Massachusetts have that EPA will not indefinitely postpone the remediation of the remainder of the estuary once the Hot Spot has been removed?
- 2) The proposed remediation does not address the elimination or control of contamination sources, in particular, sewer overflows which occur in both rainy and dry weather conditions. PCB's sequestered in the New Bedford sewers continue to be transported to NBH, and industrial discharges of other toxicants including, but not limited to, heavy metals, have not yet been controlled. While clean-up of the Hot Spot will remove a significant mass of PCB's, the site will continue to receive toxic contaminants, and will require further remediation.

Specific comments on the introductory material:

- 1) The description of dissolution processes in the estuary should include the upwelling of groundwater in the Acushnet River and estuary. This process will be more significant in the upper estuary than in lower reaches, because the other major contributor to water exchange in the estuary, tidal flushing, will decrease in proportion to the decrease in the tidal prism as you move up the estuary. The significance of this continuing input to dissolved PCB's is a function of the volume of fresh(ground)water input, compounded by the demonstrated increase in "leachability" of the PCB's with a reduction in salinity. This process could also be a significant factor in the success or failure of any unlined disposal sites located in the waterway.

2) Table ES-2, Comparative Analysis Summary Table, does not mention the heavy metal residual that may remain after "solvent extraction". It seems unlikely that treatment with an organic solvent will remove the high concentrations of toxic metallic ions known to exist in these sediments.

3) The discharge of the suspended Hot Spot sediments into the CDF after dredging will create a high degree of turbulence and the PCB mass adsorbed to the sediments, in concentrations of as much as 30,000 ppm, will dissolve in the dredgewater in proportion to the concentration gradient between the solid and liquid phases. This will increase the concentration of dissolved PCB's which, in turn, will produce an increased rate of volatilization, which is driven by the concentration gradient between the dissolved PCB's and their equilibrium value, also known as the Henry's Law Constant. The net effect is that the PCB's may volatilize to an extent that toxic air concentrations are produced.

I will comment on the Applicable or Relevant and Appropriate (ARAR) regulations from the Division of Wetlands and Waterways Regulation:

MGL c. 131, s. 40, The Wetlands Protection Act, and the consequent regulations at 310 CMR 10.00 et seq. have jurisdiction over coastal and estuarine areas as well as inland vegetated wetlands. All wetland resource areas include a 100 ft. buffer zone, except for the resource areas of Bordering Land Subject to Flooding and Land Subject to Coastal Storm Flowage. Both of these resource areas extend to the the 100-year flood elevation as mapped by the Federal Emergency Management Agency (FEMA). Wetland resources, each of which has performance standards described in the pertinent section of the regulations, which may apply to the Hot Spot remediation, include:

310 CMR 10.25, Land Under the Ocean "means land extending from mean low water seaward to the boundary of the municipality's jurisdiction and includes land under estuaries."

310 CMR 10.26, Land in Designated Port Areas, "means those areas designated in 310CMR 9.24(2) and 310 CMR 9.24(3) of the regulations adopted pursuant to the Waterways Law, MGL c. 91."

310 CMR 10.27, Coastal Beaches, "means unconsolidated sediment subject to wave, tidal, and coastal storm action which forms the gently sloping shore of a body of saltwater, and includes tidal flats. Coastal beaches extend from the mean low water line landward to the dune line, coastal bankline or the seaward edge of existing man-made structures, ..., whichever is closest to the ocean."

310 CMR 10.30, Coastal Banks, "means the seaward face or side of any elevated landform other than a coastal dune which lies at the landward edge of a coastal beach, land subject to tidal action, or other wetland."

310 CMR 10.32, Salt Marshes, "means a coastal wetland that extends landward up to the highest high tideline, ..., and is characterized by plants that are well adapted to, or prefer living in, saline soils."

310 CMR 10.34, Land Containing Shellfish, "means land under the ocean, tidal flats, rocky intertidal shores, salt marshes and land under salt ponds when any such land contains shellfish."

In addition, MGL c. 91, the Waterways Regulation Act, and the consequent regulations at 310 CMR 9.00 et seq., is also a location specific ARAR that regulates alterations and structures located below existing and historical mean high water, whichever is farther landward. These regulated lands are known as Commonwealth tidelands and have been subject to regulation since colonial times

99

cc: Elizabeth Kouloheras, Section Chief, DWR/SERO

Gerry Monte, Acting Section Chief, BWSC/SERO

Attachment 2

Process Control Requirements Discussion

A. Hazardous Waste Regulations

The Division of Hazardous Waste regulates the handling, storage, treatment, and transport of oil and hazardous materials under the authority MGL Chapter 21C and uses the regulatory requirements contained in 310 CMR 30.000. Waste Site Cleanup under Chapter 21E is exempt from the facility licensing requirements of 310 CMR 30.000, therefore the regulation, in its entirety, would not be considered applicable. The Department's Division of Hazardous Waste has determined that standards contained in these regulations involving the handling and treatment of contaminated sediments would be relevant and appropriate to this project.

1. Liner

The issue of lining the Confirmed Disposal Facility (CDF) has been discussed numerous times during the Pilot Study Project and Feasibility Study of this project. A decision was made not to line the CDF in order to evaluate the fate of contaminants - both metals and PCB's. If large numbers of CDF's were required and if large volumes of sediment must be disposed of, unlined facilities may be the only feasible way of implementing sediment disposal for the entire New Bedford project. Moreover, during the Pilot Study we considered that sediments themselves contain a high content of organic matter, clays and fines and that they serve the function of a barrier through the bottom of the CDF.

The current proposal contemplates utilizing the CDF as a receiving and settling basin for hot spot sediments. The bottom of the basin is currently lined with sediments dredged from the Cove during the pilot study and the walls of the CDF were constructed with...stone dust material. The CDF would be required to meet appropriate and relevant requirements for the handling of hazardous materials contained in 310 CMR 30.00 for the use of impoundments to treat hazardous materials. "Liners" for impoundments to contain hazardous materials must be tested in the field to meet a permeability standard of 1×10^{-7} cm/sec.

The use of an unlined shoreline CDF for settling of hot spot material should meet certain state standards as follows: 310 CMR 30.610 Surface Impoundments of the DEP Hazardous Waste Regulations "...prescribe requirements which apply to owners and operators of facilities that use surface impoundments require that "...each surface impoundment shall be underlain by two liners which are designed and constructed in a manner that prevents the migration of liquids into or out of the space between the liners...Each liner shall be...of a hydraulic conductivity not to exceed 1×10^{-7} cm/sec."

The various layers of organic sediment materials now in and under the CDF may meet this relevant and appropriate requirement if the permeability standard can be met.

Also included as additional information a memorandum dated October, 1989, from John Carrigan to Helen Waldorf.

B. Solid Waste Regulations

The CDF was not constructed with a double liner for the pilot study. However, as an existing surface impoundment, 30.613: Special Provisions for Existing Portions of Existing Surface Impoundments would be relevant and appropriate wherein the owner must install a double liner etc. within four years. 30.617(2) specifies that the owner shall remove or decontaminate all waste residues, contaminated containment system components (e.g., liners), contaminated subsoils, and structure and equipment contaminated with waste or leachate, and manage them as hazardous waste.

If complete removal/decontamination is impractical the Department may approve alternate closure plan as follows:

1. Remove wastes, waste residues, contaminated equipment and soils to the extent practicable;
2. Eliminate free liquids by either removing liquid wastes or solidifying the remaining wastes and waste residues;
3. Stabilize remaining wastes to a bearing capacity sufficient to support final cover; and
4. Cover the surface impoundment with a final cover designed and constructed to:
 - a. Provide long-term minimization of the migration of liquid through the closed impoundment;
 - b. Function with minimum maintenance;
 - c. Promote drainage and minimize erosion or abrasion of the final cover;
 - d. Accomodate settling and subsidence so that the cover's integrity is maintained; and
 - e. Have permeability less than or equal to the permeability of any bottom liner system or natural subsoils present.

If treated in this way, the Massachusetts Solid Waste Regulations and Guidance Document then become the appropriate and relevant requirements. The Solid Waste Management Facility Guidance Document for the Massachusetts Division of Solid Waste Management, December 1988, is a supplement to the state's site assignment regulations and Solid Waste Management Regulations. It has been used for several years to require certain standards of landfills in the Commonwealth. In particular, the Guidance

Document specifies required Landfill Technical Design Standards for Environmental Control, Monitoring, and Closure and Post-Closure.

For Environmental Control Systems, Liner System Design, Liner System Components, and Landfills Caps and Covers are specified. Under the Liner System Design Requirements, the Guidance Document states that:

"The solid waste management facility regulations require that a liner system be provided for all new or expanding landfills which meets Best Available Control Practice Standards (BACT)."

Although the regulations are still in draft form because of an ongoing lawsuits, they specify that compacted soil liners must have a minimum thickness of two feet and a maximum hydraulic conductivity of 1×10^{-7} . These regulations, along with the Guidance Document, have been used for several years for all new and/or expanding solid waste landfills in the Commonwealth.

The Guidance Document further states the Minimum design Criterial for all Liner Systems as follows:

- "(a) the liner must be constructed of materials that have chemical properties which will prevent failure upon exposure to solid waste leachate. Appropriate methods for testing compatibility of liner materials include:
 1. EPA test method 9100 (EPA Document SW-846) for soil liners; or
 2. EPA test method 9090 (EPA Document SW-846) for synthetic liner materials.
- (b) the liner must have sufficient strength and thickness to prevent failures due to pressure gradients, including static head and external hydrological forces, climatic conditions and the stresses of installation and daily operations;
- (c) the liner must have a hydraulic conductivity, measured in the field, which does not exceed 1×10^{-7} cm/sec. Reliance upon hydraulic conductivities measured soley in the lab is not sufficient because installation techniques in the field will result in hydraulic conductivities higher than those measured under ideal lab conditions..."

For soil liners, the minimum design standards required in the Guidance Document are that:

- "(a) Soil liners shall be a minimum of 24 inches thick.
- (b) The following properties are recommended for all soils to be used as liner materials:
 1. a minimum of 50% of the soil by weight should pass a #200 sieve;
 2. a minimum of 25% of the soil by weight should consist of <2um clay size particles;
 3. the liquid limit should be 30 or greater;
 4. the plasticity index should be 15 or greater;
 5. the density should be, at minimum, 95% standard, or 90% Modified Proctor density;
 6. the maximum clod size should not exceed 1/2 of the lift thickness;
 7. the maximum rock size should not exceed 2-4 inches or no more than 1/2 the lift thickness, whichever is less."

These requirements appear to be relevant and appropriate for the use of the "unlined" CDF for disposal of the solidified ash. As such, the proponent must show that the use of the pilot study facility provides "...equivalent or greater protection of groundwater resources and will:

- (a) meet or exceed the performance and efficiency requirements set forth in the regulations; and
- (b) provide equivalent structural integrity and durability."

C. Air Quality Regulations

Incineration and the other components of the project will have to meet the requirements of 310 CMR 6.00 through 8.00 Air Quality and Pollution Regulations. Specifically:

- "1. For each waste feed, a hazardous waste incinerator shall achieve a destruction and removal efficiency (DRE) of 99.99% for each Principal Organic Hazardous Constituent (POHC) designated in the Department's approval. DRE shall be determined for each POHC from the following equation:

$$\text{DRE} = \frac{(W_{in} - W_{out})}{W_{in}} \times 100\%$$

Where:

- W in = Mass feed rate of one POHC in the waste stream feeding the incinerator, and
- W out = Mass emission rate of the same POHC present in exhaust emissions prior to release to the atmosphere;

The DRE for PCB's is 99.9999% and are covered by the Federal TSCA regulations.

- 2. For a hazardous waste incinerator with the potential to emit hydrogen chloride (HCl) at a rate equal to or greater than four (4) pounds per hour, such HCl emissions shall be limited to no greater than the larger of either four (4) pounds per hour or 1% of the HCl in the combustion gas prior to entering any air pollution control equipment;
- 3. Particulate emissions from a hazardous waste incinerator shall not exceed 0.08 grains per dry standard cubic foot when corrected for the amount of oxygen in the stack gas according to the formula:

$$PC = PM \times \frac{14}{21-Y}$$

Where:

- PC = the corrected concentration of particulate matter
- PM = the measured concentration of particulate matter, and
- Y = the measured concentration (percent by volume, dry) of oxygen in the stack gas.

The current 24 hour ceiling threshold Effects Exposure Limit (TEL) values and annual average Allowable Ambient Limit (AAL) are:

| | TEL | | AAL | |
|------------------|-------------------|-----|------------------|-----|
| | (24 hour ceiling) | | (annual average) | |
| | ug/m | ppb | ug/m | ppb |
| Cadmium | 0.003 | - | 0.001 | - |
| Chromium (metal) | 1.36 | - | 0.68 | - |
| Lead | 0.14 | - | 0.07 | - |
| PCBs | 0.003 | - | 0.0005 | - |

These exposure concentrations for air contaminants were developed and recommended by the Office of Research and Standards (ORS). Both the TEL and AAL values should be used for each substance. In the case where the TEL equal the AAL concentration and averaging time should be used.

The Department feels that under most circumstance AAL's are relevant and appropriate standards, however we acknowledge that both TELs and AALs are exceeded for PCB's and lead at the site under existing conditions. Preliminary information from the pilot study air monitoring program indicates that remedial actions, under these circumstances must use requirements for ambient air levels which are similar to ambient water quality criteria for PCB's. Level are already exceeded on the site, therefore monitoring and air quality modeling must demonstrate that remedial actions are not causing a significant negative impact on air quality. The relevant and appropriate requirement, in this case, would be decision making criteria and a decision making committee to require changes in site operations if it determines a significant air quality impact could occur. This committee should be comprised of one member each from the Department's Bureaus of Waste Site Cleanup, and Waste Prevention and one member from the Office of Coastal Zone Management, along with appropriate membership on the Federal side.

COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE PREVENTION
DIVISION OF HAZARDOUS WASTE

MEMORANDUM

TO: Helen Waldorf, WSC
Paul Craffey, WSC

DATE: October 4, 1989

THRU: Jeffery H. Chormann, BWP

FROM: John A. Carrigan, Geologist, BWP



SUBJECT: ARARs for New Bedford Harbor

In your work order of August 30, 1989 you requested assistance in preparing the ARARs for the New Bedford Harbor "Hot Spots" Interim Measure. This memorandum summarizes what the RCRA/21C ARRARS would appear to be for the "Hot Spot" Interim Measure.

The portions of 310 CMR 30.000 that are "relevant and appropriate" to the "Hot Spot" Interim Measure are determined by the type of waste generated at the site. 310 CMR 30.131 defines any waste (including soils) containing PCBs in concentration equal to or greater than 50 parts per million (ppm) as an MA02 hazardous waste. In accordance with 310 CMR 30.370 generators of such waste must comply with the following requirements:

- 1) 310 CMR 30.001 through 30.009;
- 2) 310 CMR 30.060 through 30.064 - notification requirements;
- 3) 310 CMR 30.303 - EPA identification number;
- 4) 310 CMR 30.304 - offering waste for transportation;
- 5) 310 CMR 30.310 through 30.314 - manifest requirements;
- 6) 310 CMR 30.320 through 30.324 - pre-transport requirements;
- 7) 310 CMR 30.330 through 30.334 - record keeping and reporting;
- 8) 310 CMR 30.361 - international shipments;
- 9) all applicable requirements of 40 CFR 761 (U.S. Toxic Substance Control Act); and
- 10) shall send such wastes only to facilities which meet all the requirements of 310 CMR 30.501(3)(a), (b) and (c).

Items (1) through (8) are essentially for the onsite generation and offsite disposal of MA02 waste and may not be "relevant and appropriate" for the "Hot Spot" Interim Measure as long as no MA02 waste is disposed of offsite. However in the event that the

remedial action were to result in the offsite disposal of MA02 waste than those regulations would be "relevant and appropriate".

The storage, treatment, or disposal of MA02 waste is exempted by 310 CMR 30.801(12) from 21C licensing requirements if the facility meets all the requirements of 310CMR30.501(3)(a), (b) and (c) which reads:

"(3)(a) Except as provided in 310 CMR 30.500 and in 310 CMR 30.370 and 30.801, the requirements of 310 CMR 30.060 through 30.999 do not apply to facilities for the storage, treatment, or disposal of hazardous wastes containing PCBs in concentrations equal to or greater than 50 parts per million, provided that such facilities shall meet all of the following requirements:

1. They comply with all the applicable standards set forth in 40 CFR Part 761 for the storage, treatment, or disposal, as the case may be, of PCBs.
2. In the case of Annex I or Annex II facilities, they have been formally granted status as such by EPA pursuant to 40 CFR Part 761, and such status is in effect at the time.
3. If such facilities burn or incinerate PCBs, they do so in compliance with 310 CMR 7.00.

(b) Any facility which is subject to 310 CMR 30.501(3) and which the Department determines is not in compliance with 310 CMR 30.501(3)(a)1 or 3 shall be deemed in violation of M.G.L. c. 21C and 310 CMR 30.000 regardless of whether that facility has the status of Annex I or Annex II facility.

(c) The owner or operator of an Annex III facility shall notify the Department in compliance with the requirements of 310 CMR 30.060 through 30,064."

This regulation is "relevant and appropriate" to the storage, treatment, and disposal of the contaminated sediments that will be dredged from the "Hot Spots" since these contain PCBs at concentrations equal to or in excess of 50 ppm.

In addition if the contaminated sediment or any residual material generated from the treatment of the sediment (ie: ash) qualifies as a characteristic waste under 310 CMR 30.120 than all the standards of 310 CMR 30.000 would be "relevant and appropriate" to the point in the remediation where the sediment or material no longer exhibits the characteristic. If the sediment or any residual material is determined to be EP-Toxic, pursuant to 310 CMR 30.120 than the following regulations would be "relevant and appropriate":

- 1) 310 CMR 30.510 - general facility management standards;
- 2) 310 CMR 30.520 - contingency plan, emergency procedures;
- 3) 310 CMR 30.660 - ground water monitoring for land; disposal or storage units (CDF, waste pile, or land fill);
- 4) 310 CMR 30.580 and 30.590 - closure/post-closure requirements

- 5) 310 CMR 30.600 - technical standards
- 6) 310 CMR 30.610 - surface impoundments
- 7) 310 CMR 30.620 through 30.630 - landfills
- 8) 310 CMR 30.640 - waste piles
- 9) 310 CMR 30.700 - location standards

If the contaminated sediment dredged from the "Hot Spots" is found to be EP-toxic than the surface impoundment requirements of 310 CMR 30.610 would be "relevant and appropriate" to the CDF. This would include the minimum technical design requirements of 310 CMR 30.612 such as a double liner with leak detection, and the cap design requirements of 310 CMR 30.617 if any hazardous waste or waste residue remain in the impoundment upon closure. If the incinerator ash (treated sediment) is hazardous based on a characteristic than the requirements of 310 CMR 30.640 and 30.641 (waste pile) would be "relevant and appropriate" unless the requirements of 310 CMR 30.640(4) are satisfied:

"(4) 310 CMR 30.641 and 30.660 (Groundwater Protection) do not apply to a waste pile that is inside or under a structure that provides protection from precipitation so that neither run-off nor leachate is generated, provided that:

- (a) Neither liquids nor materials containing free liquids are placed in the pile;
- (b) The pile is protected from surface water run-on by the structure or in some other manner acceptable to the Department;
- (c) Where necessary the pile is designed and operated to control dispersal of the waste by wind by means other than wetting; and
- (d) The pile will not generate leachate through decomposition or any other reaction."

If the final treated "sediment" is still an EP-Toxic characteristic waste, pursuant to 310 CMR 30.125, than the landfill requirements of 310 CMR 30.620 would be "relevant and appropriate". Also the requirements of 310 CMR 30.580 (Closure), 310 CMR 30.590 (Post-closure) and 310 CMR 30.660 (Groundwater Protection) would be "relevant and appropriate" to any surface impoundment, waste pile, or landfill that stores, treats, or is a disposal site for any sediment/waste that is EP-Toxic.

Should you have any questions please contact me at 292 - 5584.

Attachment 3

ARARs - List of Massachusetts Statutes, Regulations and Standards, New Bedford Hot Spot Operable Unit

| Subject Area | Statutory Authority | Regulations |
|---|--------------------------|--|
| Surface Water Quality | MGLc 21 s27&43 | 314 CMR 3.00&4.00 |
| Wastewater Treatment | | 314 CMR 12.00 |
| Dredging | | 314 CMR 9.00 |
| Air Quality and Air Pollution Control | MGLc 111 s142d | 310 CMR 6.00-8.00 |
| Wetlands Protection | MGLc 131 s40 | 310 CMR 10.00 |
| Waterways | | 310 CMR 9.00 |
| Solid Waste Management | MGLc 21H | 310 CMR 19.00 |
| Hazardous Waste Management & Surface Impoundments | MGLc 21C | 310 CMR 30.00 |
| Hazardous Substance, Right to Know | MGLc 111F | 105 CMR 670.00 454 CMR 21.00 310 CMR 33.00 |
| Coastal Zone Management | MGLc 21A MGLc 6A s2-7 | 301 CMR 20.00 |
| Massachusetts Environmental Policy Act | MGLc 30 s61-62 | 301 CMR 11.00 |

Attachment 3 ARARs continued

Policies and Other Requirements:

| Name or Type of Requirement | Policy Number or Short Name | Agency |
|---|--------------------------------|--------|
| Recommended Threshold Effects Exposure Limits and Allowable Ambient Limits. | TELs and AALs | DEP |
| Policy on Allowable Sound Emissions | ASEs | DEP |
| Ecological Protection | Policy 1 | CZM |
| Attainment of National Water Quality Goals | Policy 3 | CZM |
| Dredging Impact Minimization | Policy 5 | CZM |
| Pollution Control | Policy 10 | CZM |